Appendix E Confirmation Soil Sampling Analytical Laboratory Reports

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Data Validation Summary

Prepared by: Gretchen Heavner

Date: December 6, 2021

Project No.: Cantera-TOC

Sample Event(s): 2021 Confirmation Sampling

Sample Delivery Group(s): FBI107284, FBI107439, FBI107470, FBI107474, FBI107499,

FBI107507, FBI107529, FBI107530, FBI108011, FBI108025, FBI108107, FBI108108, FBI108129, FBI108153, FBI108177, FBI108202, FBI108241, FBI108279, FBI108430, FBI109204, FBI109205, FBI109218, FBI110063, FBI110112, FBI110129,

FBI110205, FBI111149, FBI111170, FBI111201

Sample Media: Soil

A Compliance Screening (Stages 1 & 2A) data quality review was performed on total petroleum hydrocarbons (TPHs), volatile organic compounds (VOCs), and metals resulting from laboratory analysis. The analytical data were validated in accordance with the National Functional Guidelines for Inorganic Superfund Methods Data Review (USEPA 2020a) and/or National Functional Guidelines for Organic Superfund Methods Data Review (USEPA 2020b).

A total of 81 soil samples were submitted in 29 sample delivery groups, FBI107284, FBI107439, FBI107470, FBI107474, FBI107499, FBI107507, FBI107529, FBI107530, FBI108011, FBI108025, FBI108107, FBI108108, FBI108129, FBI108153, FBI108177, FBI108202, FBI108241, FBI108279, FBI108430, FBI109204, FBI109205, FBI109218, FBI110063, FBI110112, FBI110129, FBI110205, FBI111149, FBI111170 and FBI111201, to Friedman & Bruya, Inc. for chemical analysis. The analytical holding times were met for all sample delivery groups and the method blanks had no detections. The matrix spike/matrix spike duplicate (MS/MSD) and laboratory control sample/laboratory control sample duplicate (LCS/LCSD) recoveries and sample/sample duplicate, MS/MSD, and LCS/LCSD relative percent differences all met U.S. Environmental Protection Agency (USEPA) requirements.

USEPA METHOD 8021B

The benzene result in sample CAA6A-SS-02 was flagged "j" by the laboratory to indicate the analyte concentration is reported below the lowest calibration standard. The value reported is an estimate. The sample was non-detect so this will be retained as a "UJ" qualifier.

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Project No.: Cantera-TOC Date: December 6, 2021

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NWTPH-DX

In sample delivery groups FBI108129, FBI108153, FBI108241, FBI108279, FBI109204, FBI1111149, and FBI108202 the laboratory flagged the detected diesel range result from samples CAA6B-BASE-01 and CAA3-SS-04 and the motor oil range results from samples CAA1A-BASE-01, CAA1A-SS-05, CAA1B-SS-02, CAA1B-SS-06, CAA1B-SS-08, CAA1B-SS-04, and CAA1B-SS-05 "x" to indicate the sample chromatographic pattern does not resemble the fuel standard used for quantitation. A review of the chromatograms concurs with this assessment. The laboratory note shall be preserved in the database and in data tables as a chromatogram footnote with no additional qualifiers being added to the results.

In sample delivery groups FBI108129, FBI108153, and FBI110063 the laboratory flagged the surrogate recoveries for samples CAA1A-BASE-01, CAA1A-SS-05, CAA1B-SS-02, and CAA2B-Base-04 "ip" to indicate recovery fell outside of control limits (high) due to sample matrix effects. This laboratory qualifier will be retained as a final qualifier "J" for database entry and data table reporting to indicate the results should be considered an estimate.

In sample delivery group FBI108202 the laboratory flagged the MS and MSD recoveries and relative percent difference (RPD) for sample 108202-01 "b" to indicate the analyte was spiked at a level that was less than 5 times that present in the sample. Matrix spike recoveries may not be meaningful. Additionally, the method is in control based on the LCS. It is with professional judgement that no additional qualifiers will be added to the results based on the MS/MSD information alone.

NWTPH-GX

In sample delivery groups FBI108153, FBI108279, FBI110129, and FBI108202 the laboratory flagged the surrogate recoveries for samples CAA1B-SS-02, CAA1A-BASE-02, CAA1B-SS-08, CAA2B-Base-02 and CAA1B-SS-04 "ip" to indicate recovery fell outside of control limits (high) due to sample matrix effects. This laboratory qualifier will be retained as a final qualifier "J" for database entry and data table reporting to indicate the results should be considered an estimate.

In sample delivery group FBI108153, the laboratory flagged the duplicate results for sample CAA1B-SS-03 "a" to indicate the analyte was detected at a level less than 5 times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis. Additionally, the difference between the two results is less than the reporting limit and the method is in control based on the LCS. It is with professional judgement that the laboratory note shall be preserved in the database and in data tables as a laboratory qualifier, with no additional qualifiers being added to the results.

In sample delivery group FBI108279, the laboratory flagged the duplicate results for batch sample 108249-01 "a" to indicate the analyte was detected at a level less than 5 times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis. Because the sample is from another project and the method is in control based on the LCS, it is with

January 2022 2021 Confirmation Sampling
Page 2 of 3

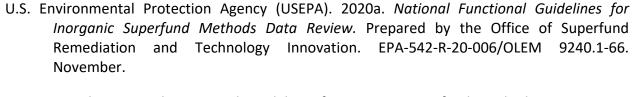
Project No.: Cantera-TOC Date: December 6, 2021

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professional judgment that the laboratory note shall be preserved in the database and in data tables as a laboratory qualifier, with no additional qualifiers being added to the results.

No qualifiers were added to the analytical results based on the data quality review. Data are determined to be of acceptable quality for use as reported by the laboratory, with some laboratory qualifiers being updated to conform to the final qualifiers used for data table reporting and database storage.

REFERENCES



_____. 2020b. National Functional Guidelines for Organic Superfund Methods Data Review. Prepared by the Office of Superfund Remediation and Technology Innovation. EPA-540-R-20-005/OLEM 9240.0-51. November.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Arina Podnozova, B.S. Eric Young, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282 fbi@isomedia.com www.friedmanandbruya.com

July 22, 2021

Rusty Jones, Project Manager Crete Consulting 16300 Christensen Road, Suite 214 Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on July 19, 2021 from the TOC Seattle Terminal 1, F&BI 107284 project. There are 11 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures

c: Jamie Stevens, K.im Hempel, Lynn Grochala, Kristin Anderson, Reid Casscadden CTC0722R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on July 19, 2021 by Friedman & Bruya, Inc. from the Crete Consulting TOC Seattle Terminal 1, F&BI 107284 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Crete Consulting
107284 -01	CAA7-BASE-19
107284 -02	CAA7-BASE-17
107284 -03	CAA7-BASE-16
107284 -04	CAA7-BASE-15
107284 -05	CAA7-BASE-18
107284 -06	CAA7-BASE-14
107284 -07	CAA7-BASE-13

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020B

Client ID: CAA7-BASE-19 Client: Crete Consulting

Date Received: 07/19/21 Project: TOC Seattle Terminal 1, F&BI 107284

 Date Extracted:
 07/20/21
 Lab ID:
 107284-01

 Date Analyzed:
 07/20/21
 Data File:
 107284-01.041

 Matrix:
 Soil
 Instrument:
 ICPMS2

Units: mg/kg (ppm) Dry Weight Operator: SP

Concentration

Analyte: mg/kg (ppm)

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020B

Client ID: CAA7-BASE-17 Client: Crete Consulting

Date Received: 07/19/21 Project: TOC Seattle Terminal 1, F&BI 107284

 Date Extracted:
 07/20/21
 Lab ID:
 107284-02

 Date Analyzed:
 07/20/21
 Data File:
 107284-02.044

 Matrix:
 Soil
 Instrument:
 ICPMS2

Units: mg/kg (ppm) Dry Weight Operator: SP

Concentration

Analyte: mg/kg (ppm)

Arsenic 5.66

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020B

Client ID: CAA7-BASE-16 Client: Crete Consulting

Date Received: 07/19/21 Project: TOC Seattle Terminal 1, F&BI 107284

 Date Extracted:
 07/20/21
 Lab ID:
 107284-03

 Date Analyzed:
 07/20/21
 Data File:
 107284-03.045

 Matrix:
 Soil
 Instrument:
 ICPMS2

Units: mg/kg (ppm) Dry Weight Operator: SP

Concentration

Analyte: mg/kg (ppm)

Arsenic 3.06

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020B

Client ID: CAA7-BASE-15 Client: Crete Consulting

Date Received: 07/19/21 Project: TOC Seattle Terminal 1, F&BI 107284

 Date Extracted:
 07/20/21
 Lab ID:
 107284-04

 Date Analyzed:
 07/20/21
 Data File:
 107284-04.046

 Matrix:
 Soil
 Instrument:
 ICPMS2

Units: mg/kg (ppm) Dry Weight Operator: SP

Concentration

Analyte: mg/kg (ppm)

Arsenic 3.79

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020B

Client ID: CAA7-BASE-18 Client: Crete Consulting

Date Received: 07/19/21 Project: TOC Seattle Terminal 1, F&BI 107284

 Date Extracted:
 07/20/21
 Lab ID:
 107284-05

 Date Analyzed:
 07/20/21
 Data File:
 107284-05.047

 Matrix:
 Soil
 Instrument:
 ICPMS2

Units: mg/kg (ppm) Dry Weight Operator: SP

Concentration

Analyte: mg/kg (ppm)

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020B

Client ID: CAA7-BASE-14 Client: Crete Consulting

Date Received: 07/19/21 Project: TOC Seattle Terminal 1, F&BI 107284

 Date Extracted:
 07/20/21
 Lab ID:
 107284-06

 Date Analyzed:
 07/20/21
 Data File:
 107284-06.048

 Matrix:
 Soil
 Instrument:
 ICPMS2

Units: mg/kg (ppm) Dry Weight Operator: SP

Concentration

Analyte: mg/kg (ppm)

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020B

Client ID: CAA7-BASE-13 Client: Crete Consulting

Date Received: 07/19/21 Project: TOC Seattle Terminal 1, F&BI 107284

 Date Extracted:
 07/20/21
 Lab ID:
 107284-07

 Date Analyzed:
 07/20/21
 Data File:
 107284-07.049

 Matrix:
 Soil
 Instrument:
 ICPMS2

Units: mg/kg (ppm) Dry Weight Operator: SP

Concentration

Analyte: mg/kg (ppm)

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020B

Client ID: Method Blank Client: Crete Consulting

Date Received: Not Applicable Project: TOC Seattle Terminal 1, F&BI 107284

Date Extracted:07/20/21Lab ID:I1-441 mbDate Analyzed:07/20/21Data File:I1-441 mb.037Matrix:SoilInstrument:ICPMS2

Units: mg/kg (ppm) Dry Weight Operator: SP

Concentration

Analyte: mg/kg (ppm)

Arsenic <1

ENVIRONMENTAL CHEMISTS

Date of Report: 07/22/21 Date Received: 07/19/21

Project: TOC Seattle Terminal 1, F&BI 107284

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 107284-01 x5 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet wt)	MS	MSD	Criteria	(Limit 20)
Arsenic	mg/kg (ppm)	10	5.99	92	94	75-125	2

Laboratory Code: Laboratory Control Sample

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Arsenic	mg/kg (ppm)	10	96	80-120

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte may be due to carryover from previous sample injections.
- cf The sample was centrifuged prior to analysis.
- d The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv Insufficient sample volume was available to achieve normal reporting limits.
- f The sample was laboratory filtered prior to analysis.
- fb The analyte was detected in the method blank.
- fc The analyte is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.
- hs Headspace was present in the container used for analysis.
- ht The analysis was performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of control limits due to sample matrix effects.
- j The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the analyte is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

Ph. (206) 285-8282 Seattle, WA 98119-2029 3012 16th Avenue West Friedman & Bruya, Inc. 011-3548-110 Address_ JATI-BASE-IM CM7-BASE-15 CU1-848-17 CAA7-BASE-118 61-3549-LY10 Phone City, State, ZIP Company TOC Seattle Termina Report To K. Jones, J. Stevens, K. Hempe 48 Pto Sample ID Email Relinquisked by Received by: Received by: Relinquished by: 40 20 \mathcal{C} 2 8 0 Lab ID SIGNATURE 7.19.2021 Date Sampled Ł Somo Time Sampled SAMPLE CHAIN OF CUSTODY 00 \equiv S SAMPLERS (signature) 四四 130 120 PROJECT NAME REMARKS 25 Toc Seathe Terminal 1 788 Sample Type # of Jars PRINT NAME TPH-HCID TPH-Diesel TPH-Gasoline BTEX by 8021B VOCs by 8260C INVOICE TO SVOCs by 8270D TETE GIVENTIVE Samples redeived at PAHs 8270D SIM COMPANY \times Arsenic Other ☐ Dispose after 30 days ☐ Archive Samples RUSH 24- lew Rush charges authorized by: TURNAROUND TIME SAMPLE DISPOSAL 7.19.21 DATE Notes TIME

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Arina Podnozova, B.S. Eric Young, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282 fbi@isomedia.com www.friedmanandbruya.com

July 28, 2021

Rusty Jones, Project Manager Crete Consulting 16300 Christensen Road, Suite 214 Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on July 27, 2021 from the TOC Seattle Terminal 1, F&BI 107439 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures

c: Time Oil Terminal 1 Group

CTC0728R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on July 27, 2021 by Friedman & Bruya, Inc. from the Crete Consulting TOC Seattle Terminal 1, F&BI 107439 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Crete Consulting</u>
107439 -01	CAA6A-SS-02
107439 -02	CAA6A-SS-03
107439 -03	CAA6A-SS-04

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/28/21 Date Received: 07/27/21

Project: TOC Seattle Terminal 1, F&BI 107439

Date Extracted: 07/27/21 Date Analyzed: 07/28/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE AND TPH AS GASOLINE USING METHOD 8021B AND NWTPH-Gx

Sample ID Laboratory ID	<u>Benzene</u>	Gasoline <u>Range</u>	Surrogate (% Recovery) (Limit 50-132)
CAA6A-SS-02 107439-01 1/5	<0.02 j	130	81
CAA6A-SS-03 107439-02	< 0.02	<5	88
CAA6A-SS-04 107439-03	< 0.02	<5	84
Method Blank _{01-1659 MB}	< 0.02	<5	95

ENVIRONMENTAL CHEMISTS

Date of Report: 07/28/21 Date Received: 07/27/21

Project: TOC Seattle Terminal 1, F&BI 107439

Date Extracted: 07/27/21 Date Analyzed: 07/27/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Sample ID	Diesel Range	Motor Oil Range	Surrogate (% Recovery)
Laboratory ID	$\frac{\text{Diesel Range}}{(\text{C}_{10}\text{-C}_{25})}$	(C ₂₅ -C ₃₆)	(Limit 53-144)
CAA6A-SS-02 107439-01	510	380	91
CAA6A-SS-03 107439-02	<50	<250	99
CAA6A-SS-04 107439-03	<50	<250	91
Method Blank	<50	<250	97

ENVIRONMENTAL CHEMISTS

Date of Report: 07/28/21 Date Received: 07/27/21

Project: TOC Seattle Terminal 1, F&BI 107439

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 107425-01 (Duplicate)

		Sample	Duplicate	
	Reporting	Result	Result	RPD
Analyte	Units	(Wet Wt)	(Wet Wt)	(Limit 20)
Benzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Benzene	mg/kg (ppm)	0.5	89	69-120
Gasoline	mg/kg (ppm)	20	95	71 - 131

ENVIRONMENTAL CHEMISTS

Date of Report: 07/28/21 Date Received: 07/27/21

Project: TOC Seattle Terminal 1, F&BI 107439

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 107439-01 (Matrix Spike)

·	•	- ,	Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	440	94	91	64-133	3

Laboratory Code: Laboratory Control Sample

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Diesel Extended	mg/kg (ppm)	5,000	94	58-147

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte may be due to carryover from previous sample injections.
- cf The sample was centrifuged prior to analysis.
- d The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv Insufficient sample volume was available to achieve normal reporting limits.
- f The sample was laboratory filtered prior to analysis.
- fb The analyte was detected in the method blank.
- fc The analyte is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.
- hs Headspace was present in the container used for analysis.
- ht The analysis was performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of control limits due to sample matrix effects.
- j The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the analyte is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

CAA6A-SS-02 CAA6A-SS-03 Company Toc REPORT TO R. Jowes, J. Stevens K. Hempel Seattle, WA 98119-2029 Friedman & Bruya, Inc. 10-55-49VY City, State, ZIP Address_ Ph. (206) 285-8282 3012 16th Avenue West Sample ID Email - Relinquished by; Received by: Received by: Relinquished by: 0% 014-47.21.21 Lab ID SIGNATURE Sampled Date SAMPLE CHAIN OF CUSTODY ME Sampled Service Services SAMPLERS (signature)

Kusty Jones

PROJECT NAME Sop. 1358 Time REMARKS Project specific RLs? - Yes / No Toc Scattle Terminal 1 SOIL Sample Type ← List / # of PRINT NAME \mathcal{D} \mathcal{O} \times Sorol NWTPH-Dx NWTPH-Gx BTEX EPA 8021 þ NWTPH-HCID Samples received at H INVOICE TO ANALYSES REQUESTED VOCs EPA 8260 P0# PAHs EPA 8270 CHESTED Samples received at ORE Consulting FIBE PCBs EPA 8082 COMPANY Default: Dispose after 30 days Archive samples Rush charges authorized by: XRUSH 74 Now TURNAROUND TIME SAMPLE DISPOSAL 527.2 のれた Benzewe only DATE Notes から TIME

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Arina Podnozova, B.S. Eric Young, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282 fbi@isomedia.com www.friedmanandbruya.com

July 30, 2021

Rusty Jones, Project Manager Crete Consulting 16300 Christensen Road, Suite 214 Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on July 28, 2021 from the TOC Seattle Terminal 1, F&BI 107470 project. There are 7 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures

c: TOC Seattle Terminal 1

CTC0730R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on July 28, 2021 by Friedman & Bruya, Inc. from the Crete Consulting TOC Seattle Terminal 1, F&BI 107470 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Crete Consulting
107470 -01	CAA6A-SS-05
107470 -02	CAA6A-SS-01
107470 -03	CAA6A-SS-09

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/30/21 Date Received: 07/28/21

Project: TOC Seattle Terminal 1, F&BI 107470

Date Extracted: 07/29/21 Date Analyzed: 07/29/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Sample ID Laboratory ID	Gasoline Range	Surrogate (<u>% Recovery</u>) (Limit 58-139)
CAA6A-SS-09 107470-03	<5	86
Method Blank 01-1661 MB2	<5	85

ENVIRONMENTAL CHEMISTS

Date of Report: 07/30/21 Date Received: 07/28/21

Project: TOC Seattle Terminal 1, F&BI 107470

Date Extracted: 07/29/21 Date Analyzed: 07/29/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE AND TPH AS GASOLINE USING METHOD 8021B AND NWTPH-Gx

Sample ID Laboratory ID	<u>Benzene</u>	Gasoline <u>Range</u>	Surrogate (% Recovery) (Limit 50-132)
CAA6A-SS-05 107470-01	< 0.02	<5	79
CAA6A-SS-01 107470-02	< 0.02	<5	82
Method Blank	< 0.02	<5	78

ENVIRONMENTAL CHEMISTS

Date of Report: 07/30/21 Date Received: 07/28/21

Project: TOC Seattle Terminal 1, F&BI 107470

Date Extracted: 07/29/21 Date Analyzed: 07/29/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Sample ID Laboratory ID	$\frac{\text{Diesel Range}}{\text{(C}_{10}\text{-C}_{25})}$	$rac{ ext{Motor Oil Range}}{ ext{(C}_{25} ext{-C}_{36} ext{)}}$	Surrogate (% Recovery) (Limit 53-144)
CAA6A-SS-05 107470-01	<50	<250	95
CAA6A-SS-01 107470-02	<50	<250	99
Method Blank	<50	<250	96

ENVIRONMENTAL CHEMISTS

Date of Report: 07/30/21 Date Received: 07/28/21

Project: TOC Seattle Terminal 1, F&BI 107470

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 107437-01 (Duplicate)

		Sample	Duplicate	
	Reporting	Result	Result	RPD
Analyte	Units	(Wet Wt)	(Wet Wt)	(Limit 20)
Benzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Benzene	mg/kg (ppm)	0.5	90	69-120
Gasoline	mg/kg (ppm)	20	85	71 - 131

ENVIRONMENTAL CHEMISTS

Date of Report: 07/30/21 Date Received: 07/28/21

Project: TOC Seattle Terminal 1, F&BI 107470

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 107470-01 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	< 50	98	107	64-133	9

Laboratory Code: Laboratory Control Sample

			$\operatorname{Percent}$	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Diesel Extended	mg/kg (ppm)	5,000	98	58-147

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte may be due to carryover from previous sample injections.
- cf The sample was centrifuged prior to analysis.
- d The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv Insufficient sample volume was available to achieve normal reporting limits.
- f The sample was laboratory filtered prior to analysis.
- fb The analyte was detected in the method blank.
- fc The analyte is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.
- hs Headspace was present in the container used for analysis.
- ht The analysis was performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of control limits due to sample matrix effects.
- j The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the analyte is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

Report To K. Address Company_ City, State, ZIP. Too Seattle Terminal

_Email

Default: Dispose after 30 days

Other_

☐ Archive samples

SAMPLE DISPOSAL

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Rush charges authorized by:

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Seattle, W. Ph. (206) 2 3012 16th £

givel at .	Samples received at 4 oC		Received by:	Ph. (206) 285-8282 Received by:
1	TRI	BISRAT TADESE	WV.	3012 16th Avenue West
15	Crete Consulting 7.28.21 1636	Rusty Tomes	Relinquished by:	Friedman & Bruya, Inc.
	COMPANY	PRINT NAME	SIGNATURE	
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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Arina Podnozova, B.S. Eric Young, B.S.

3012 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282 fbi@isomedia.com www.friedmanandbruya.com

August 2, 2021

Rusty Jones, Project Manager Crete Consulting 16300 Christensen Road, Suite 214 Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on July 29, 2021 from the TOC Seattle Terminal 1, F&BI 107474 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures

c: TOC Seattle Terminal 1 Group

CTC0802R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on July 29, 2021 by Friedman & Bruya, Inc. from the Crete Consulting TOC Seattle Terminal 1, F&BI 107474 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Crete Consulting</u>
107474 -01	CAA6A-BASE-01
107474 -02	CAA6A-BASE-02
107474 -03	CAA6A-BASE-03

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/02/21 Date Received: 07/29/21

Project: TOC Seattle Terminal 1, F&BI 107474

Date Extracted: 07/29/21 Date Analyzed: 07/29/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Sample ID Laboratory ID	<u>Benzene</u>	Gasoline <u>Range</u>	Surrogate (% Recovery) (Limit 50-150)
CAA6A-BASE-01 107474-01	< 0.02	40	101
CAA6A-BASE-02 107474-02	0.038	<5	101
CAA6A-BASE-03 107474-03	0.077	<5	101
Method Blank _{01-1663 MB}	< 0.02	<5	103

ENVIRONMENTAL CHEMISTS

Date of Report: 08/02/21 Date Received: 07/29/21

Project: TOC Seattle Terminal 1, F&BI 107474

Date Extracted: 07/29/21 Date Analyzed: 07/29/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Sample ID Laboratory ID	$rac{ ext{Diesel Range}}{ ext{(C}_{10} ext{-C}_{25})}$	$\frac{ ext{Motor Oil Range}}{ ext{(C}_{25} ext{-C}_{36} ext{)}}$	Surrogate (% Recovery) (Limit 48-168)
CAA6A-BASE-01 107474-01	98	<250	102
CAA6A-BASE-02 107474-02	<50	<250	109
CAA6A-BASE-03 107474-03	<50	<250	103
Method Blank	<50	<250	100

ENVIRONMENTAL CHEMISTS

Date of Report: 08/02/21 Date Received: 07/29/21

Project: TOC Seattle Terminal 1, F&BI 107474

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE AND TPH AS GASOLINE

USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 107474-01 (Duplicate)

		Sample	Duplicate	
	Reporting	Result	Result	RPD
Analyte	Units	(Wet Wt)	(Wet Wt)	(Limit 20)
Benzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Gasoline	mg/kg (ppm)	40	41	2

		Percent				
	Reporting	Spike	Recovery	Acceptance		
Analyte	Units	Level	LCS	Criteria		
Benzene	mg/kg (ppm)	0.5	92	69-120		
Gasoline	mg/kg (ppm)	20	90	71 - 131		

ENVIRONMENTAL CHEMISTS

Date of Report: 08/02/21 Date Received: 07/29/21

Project: TOC Seattle Terminal 1, F&BI 107474

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 107473-01 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	83	117	115	73-135	2

		Percent			
	Reporting	Spike	Recovery	Acceptance	
Analyte	Units	Level	LCS	Criteria	
Diesel Extended	mg/kg (ppm)	5,000	84	74-139	

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte may be due to carryover from previous sample injections.
- cf The sample was centrifuged prior to analysis.
- d The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv Insufficient sample volume was available to achieve normal reporting limits.
- f The sample was laboratory filtered prior to analysis.
- fb The analyte was detected in the method blank.
- fc The analyte is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.
- hs Headspace was present in the container used for analysis.
- ht The analysis was performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of control limits due to sample matrix effects.
- j The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the analyte is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

CALOR CALABRE-03 CAA6A-13A5E-02 CANON-BASE-01 Phone Address Ph. (206) 285-8282 Seattle, WA 98119-2029 3012 I 6th Avenue West City, State, ZIP Company_ Friedman & Bruya, Inc. REPORTO K. LORDY, J. STEVENS K. HOMPE P 47 40 Sample ID loc Seattle Terminal 4 Email Received by: Relinquished by: Received by: Relinquished by: $^{\circ}$ DI A-E Lab ID SIGNATURE 7.79.7021 Date Sampled 122 SAMPLE CHAIN OF CUSTODY Time Sampled 0910 28 0915 SAMPLERS (signature) Project specific RLs? - Yes / No PROJECT NAME REMARKS Too Seathe Terminal 1 Sample 788 Char Eusty Jone # of Jars PRINT NAME S S J NWTPH-Dx NWTPH-Gx BTEX EPA 8021 NWTPH-HCID INVOICE TO ANALYSES REQUESTED VOCs EPA 8260 PAHs EPA 8270 CRETE CONSULTING TOB! PCBs EPA 8082 COMPANY Samples received at ☐ Archive samples □ Standard turnaround

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Rush charges authorized by: Default: Dispose after 30 days Other_ TURNAROUND TIME fol Page# SAMPLE DISPOSAL 7.27.7 Bente W on Ly DATE To t 129/21 Notes <u>0</u> TIME 10/5

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Arina Podnozova, B.S. Eric Young, B.S.

3012 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282 fbi@isomedia.com www.friedmanandbruya.com

August 2, 2021

Rusty Jones, Project Manager Crete Consulting 16300 Christensen Road, Suite 214 Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on July 29, 2021 from the TOC Seattle Terminal 1, F&BI 107499 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures

c: TOC Seattle Terminal 1 Group

CTC0802R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on July 29, 2021 by Friedman & Bruya, Inc. from the Crete Consulting TOC Seattle Terminal 1, F&BI 107499 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u> <u>Crete Consulting</u> 107499 -01 CAA6A-SS-06

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/02/21 Date Received: 07/29/21

Project: TOC Seattle Terminal 1, F&BI 107499

Date Extracted: 07/30/21 Date Analyzed: 07/30/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE AND TPH AS GASOLINE USING METHOD 8021B AND NWTPH-Gx

Sample ID Laboratory ID	<u>Benzene</u>	Gasoline <u>Range</u>	Surrogate (% Recovery) (Limit 50-132)
CAA6A-SS-06 107499-01	<0.02	<5	79
Method Blank	< 0.02	<5	81

ENVIRONMENTAL CHEMISTS

Date of Report: 08/02/21 Date Received: 07/29/21

Project: TOC Seattle Terminal 1, F&BI 107499

Date Extracted: 07/30/21 Date Analyzed: 07/30/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Sample ID Laboratory ID	$rac{ ext{Diesel Range}}{ ext{(C}_{10} ext{-C}_{25})}$	$\frac{ ext{Motor Oil Range}}{ ext{(C}_{25} ext{-C}_{36} ext{)}}$	Surrogate (% Recovery) (Limit 48-168)
CAA6A-SS-06 107499-01	<50	<250	109
Method Blank _{01-1756 MB}	<50	<250	100

ENVIRONMENTAL CHEMISTS

Date of Report: 08/02/21 Date Received: 07/29/21

Project: TOC Seattle Terminal 1, F&BI 107499

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE AND TPH AS GASOLINE

USING EPA METHOD 8021B AND NWTPH-Gx $\,$

Laboratory Code: 107499-01 (Duplicate)

		Sample	Duplicate	
	Reporting	Result	Result	RPD
Analyte	Units	(Wet Wt)	(Wet Wt)	(Limit 20)
Benzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Benzene	mg/kg (ppm)	0.5	91	66-121
Gasoline	mg/kg (ppm)	20	105	61 - 153

ENVIRONMENTAL CHEMISTS

Date of Report: 08/02/21 Date Received: 07/29/21

Project: TOC Seattle Terminal 1, F&BI 107499

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 107499-01 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	< 50	120	118	73-135	2

		Percent			
	Reporting	Spike	Recovery	Acceptance	
Analyte	Units	Level	LCS	Criteria	
Diesel Extended	mg/kg (ppm)	5,000	115	74-139	

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte may be due to carryover from previous sample injections.
- cf The sample was centrifuged prior to analysis.
- d The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv Insufficient sample volume was available to achieve normal reporting limits.
- f The sample was laboratory filtered prior to analysis.
- fb The analyte was detected in the method blank.
- fc The analyte is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.
- hs Headspace was present in the container used for analysis.
- ht The analysis was performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of control limits due to sample matrix effects.
- j The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the analyte is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

Report to Table Chair Heard SAMPLERS (Sample Project specific Ris? Yes / No Profession Report to Table Chair Heard Address City, State, ZIP Phone Email Date Project specific Ris? Yes / No Project Risk Risk Risk Risk Risk Risk Risk Risk
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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Arina Podnozova, B.S. Eric Young, B.S.

3012 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282 fbi@isomedia.com www.friedmanandbruya.com

December 2, 2021

Rusty Jones, Project Manager Crete Consulting 16300 Christensen Road, Suite 214 Tukwila, WA 98188

Dear Mr Jones:

Included are the amended results from the testing of material submitted on July 30, 2021 from the TOC Seattle Terminal 1, F&BI 107507 project. The NWTPH-Gx sample and duplicate results were updated to reflect the reanalysis for inhomogeneity.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures

c: Time Oil Terminal 1

CTC0803R.DOC

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Arina Podnozova, B.S. Eric Young, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282 fbi@isomedia.com www.friedmanandbruya.com

August 3, 2021

Rusty Jones, Project Manager Crete Consulting 16300 Christensen Road, Suite 214 Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on July 30, 2021 from the TOC Seattle Terminal 1, F&BI 107507 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures

c: Time Oil Terminal 1

CTC0803R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on July 30, 2021 by Friedman & Bruya, Inc. from the Crete Consulting TOC Seattle Terminal 1, F&BI 107507 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u> <u>Crete Consulting</u> 107507 -01 CAA6A-Base-04

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/03/21 Date Received: 07/30/21

Project: TOC Seattle Terminal 1, F&BI 107507

Date Extracted: 07/30/21 Date Analyzed: 07/30/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Sample ID Laboratory ID	Benzene	Gasoline <u>Range</u>	Surrogate (<u>% Recovery</u>) Limit 50-150)
CAA6A-Base-04 107507-01	< 0.02	<5	94
Method Blank 01-1663 MB2	< 0.02	<5	102

ENVIRONMENTAL CHEMISTS

Date of Report: 08/03/21 Date Received: 07/30/21

Project: TOC Seattle Terminal 1, F&BI 107507

Date Extracted: 07/30/21 Date Analyzed: 07/30/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Sample ID Laboratory ID	$rac{ ext{Diesel Range}}{ ext{(C}_{10} ext{-C}_{25} ext{)}}$	$\frac{ ext{Motor Oil Range}}{ ext{(C}_{25} ext{-C}_{36} ext{)}}$	Surrogate (% Recovery) (Limit 53-144)
CAA6A-Base-04 107507-01	<50	<250	95
Method Blank 01-1757 MB	<50	<250	97

ENVIRONMENTAL CHEMISTS

Date of Report: 08/03/21 Date Received: 07/30/21

Project: TOC Seattle Terminal 1, F&BI 107507

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 107474-01 (Duplicate)

		Sample	Duplicate	
	Reporting	Result	Result	RPD
Analyte	Units	(Wet Wt)	(Wet Wt)	(Limit 20)
Benzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Gasoline	mg/kg (ppm)	40	41	2

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Benzene	mg/kg (ppm)	0.5	92	69-120
Gasoline	mg/kg (ppm)	20	90	71 - 131

ENVIRONMENTAL CHEMISTS

Date of Report: 08/03/21 Date Received: 07/30/21

Project: TOC Seattle Terminal 1, F&BI 107507

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 107500-01 (Matrix Spike)

·	`	- /	Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	< 50	106	104	64-133	2

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Diesel Extended	mg/kg (ppm)	5,000	102	58-147

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte may be due to carryover from previous sample injections.
- cf The sample was centrifuged prior to analysis.
- d The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv Insufficient sample volume was available to achieve normal reporting limits.
- f The sample was laboratory filtered prior to analysis.
- fb The analyte was detected in the method blank.
- fc The analyte is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.
- hs Headspace was present in the container used for analysis.
- ht The analysis was performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of control limits due to sample matrix effects.
- j The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the analyte is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Arina Podnozova, B.S. Eric Young, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282 fbi@isomedia.com www.friedmanandbruya.com

August 3, 2021

Rusty Jones, Project Manager Crete Consulting 16300 Christensen Road, Suite 214 Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on July 30, 2021 from the TOC Seattle Terminal 1, F&BI 107529 project. There are 5 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures

c: Time Oil Terminal 1

CTC0803R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on July 30, 2021 by Friedman & Bruya, Inc. from the Crete Consulting TOC Seattle Terminal 1, F&BI 107529 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Crete Consulting</u>
107529 -01	CAA6A-Base-01-8
107529 -02	CAA6A-Base-02A-8
107529 -03	CAA6A-Base-03-8

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/03/21 Date Received: 07/30/21

Project: TOC Seattle Terminal 1, F&BI 107529

Date Extracted: 08/02/21 Date Analyzed: 08/02/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
CAA6A-Base-01-8 107529-01	<5	83
Method Blank 01-1666 MB	<5	69

ENVIRONMENTAL CHEMISTS

Date of Report: 08/03/21 Date Received: 07/30/21

Project: TOC Seattle Terminal 1, F&BI 107529

Date Extracted: 08/02/21 Date Analyzed: 08/02/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE USING METHOD 8021B

Sample ID Laboratory ID	<u>Benzene</u>	Surrogate (% Recovery) (Limit 50-150)
CAA6A-Base-02A-8 107529-02	< 0.02	102
CAA6A-Base-03-8 107529-03	< 0.02	101
Method Blank	< 0.02	87

ENVIRONMENTAL CHEMISTS

Date of Report: 08/03/21 Date Received: 07/30/21

Project: TOC Seattle Terminal 1, F&BI 107529

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Laboratory Code: 107523-01 (Duplicate)

		Sample	Duplicate	
	Reporting	Result	Result	RPD
Analyte	Units	(Wet Wt)	(Wet Wt)	(Limit 20)
Benzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Benzene	mg/kg (ppm)	0.5	85	69-120
Gasoline	mg/kg (ppm)	20	110	71 - 131

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte may be due to carryover from previous sample injections.
- cf The sample was centrifuged prior to analysis.
- d The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv Insufficient sample volume was available to achieve normal reporting limits.
- f The sample was laboratory filtered prior to analysis.
- fb The analyte was detected in the method blank.
- fc The analyte is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.
- hs Headspace was present in the container used for analysis.
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- jl The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
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- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

Company Tol Scattle Termina) 1 Report To K. Jones, J. Stevens, K. Hempel City, State, ZIP Address_ CAA6A-BASE-01-8 Seattle, WA 98119-2029 3012 I 6th Avenue West Friedman & Bruya, Inc. CAMON-BASE-024-8 Ph. (206) 285-8282 CANDA-BASE-03-8 Sample ID Email Received by: Relinquished by: Received by: Relinquished by: 00 20 O(A-E Lab ID SIGNATURE 7.827 Sampled < SAMPLE CHAIN OF CUSTODY SAMPLERS (signature)

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PROJECT NAME Sampled える 1525 Project specific RLs? - Yes / No REMARKS NS S Too Seathe Terminal 1 しるろ Sample Туре Serot KRU JOE MOHAMED # of Jars 八 5 PRINT NAME J NWTPH-Dx \prec **NWTPH-Gx** Samples received at 4 °C メ BTEX EPA 8021 NWTPH-HCID INVOICE TO ANALYSES REQUESTED VOCs EPA 8260 PAHs EPA 8270 SECTE CONSULTING 18R4 PCBs EPA 8082 COMPANY ☐ Standard turnaround

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Rush charges authorized by: SAMPLE DISPOSAL Default: Dispose after 30 days Page # / BO / Of / Of / Of / OT / TURNAROUND TIME 7/30/21 7.35.2 BENEAUE ONLY DATE Notes 1674 TIME 1674

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Arina Podnozova, B.S. Eric Young, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282 fbi@isomedia.com www.friedmanandbruya.com

August 3, 2021

Rusty Jones, Project Manager Crete Consulting 16300 Christensen Road, Suite 214 Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on July 30, 2021 from the TOC Seattle Terminal 1, F&BI 107530 project. There are 8 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures

c: Time Oil Terminal 1

CTC0803R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on July 30, 2021 by Friedman & Bruya, Inc. from the Crete Consulting TOC Seattle Terminal 1, F&BI 107530 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Crete Consulting
107530 -01	CAA6A-SS-07
107530 -02	CAA6A-SS-08
107530 -03	CAA6A-Base-01-4
107530 -04	CAA6A-Base-02A-5
107530 -05	CAA6A-Base-03-4

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/03/21 Date Received: 07/30/21

Project: TOC Seattle Terminal 1, F&BI 107530

Date Extracted: 08/02/21 Date Analyzed: 08/02/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Sample ID Laboratory ID	Gasoline Range	Surrogate (<u>% Recovery</u>) (Limit 58-139)
CAA6A-Base-01-4 107530-03	<5	84
Method Blank 01-1666 MB	<5	69

ENVIRONMENTAL CHEMISTS

Date of Report: 08/03/21 Date Received: 07/30/21

Project: TOC Seattle Terminal 1, F&BI 107530

Date Extracted: 08/02/21 Date Analyzed: 08/02/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE USING METHOD 8021B

Sample ID Laboratory ID	<u>Benzene</u>	Surrogate (% Recovery) (Limit 50-132)
CAA6A-Base-02A-5	0.044	80
CAA6A-Base-03-4 107530-05	< 0.02	82
Method Blank	<0.02	87

ENVIRONMENTAL CHEMISTS

Date of Report: 08/03/21 Date Received: 07/30/21

Project: TOC Seattle Terminal 1, F&BI 107530

Date Extracted: 08/02/21 Date Analyzed: 08/02/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE AND TPH AS GASOLINE USING METHOD 8021B AND NWTPH-Gx

Sample ID Laboratory ID	<u>Benzene</u>	Gasoline <u>Range</u>	Surrogate (% Recovery) (Limit 50-132)
CAA6A-SS-07 107530-01	< 0.02	<5	81
CAA6A-SS-08 107530-02	< 0.02	<5	78
Method Blank	< 0.02	<5	87

ENVIRONMENTAL CHEMISTS

Date of Report: 08/03/21 Date Received: 07/30/21

Project: TOC Seattle Terminal 1, F&BI 107530

Date Extracted: 08/02/21 Date Analyzed: 08/02/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Sample ID Laboratory ID	$\frac{\text{Diesel Range}}{(C_{10}\text{-}C_{25})}$	$\frac{\text{Motor Oil Range}}{\text{(C}_{25}\text{-C}_{36}\text{)}}$	Surrogate (% Recovery) (Limit 53-144)
CAA6A-SS-07 107530-01	<50	<250	97
CAA6A-SS-08 107530-02	<50	<250	93
Method Blank _{01-1761 MB}	<50	<250	93

ENVIRONMENTAL CHEMISTS

Date of Report: 08/03/21 Date Received: 07/30/21

Project: TOC Seattle Terminal 1, F&BI 107530

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE AND TPH AS GASOLINE

USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 107523-01 (Duplicate)

		Sample	Duplicate	
	Reporting	Result	Result	RPD
Analyte	Units	(Wet Wt)	(Wet Wt)	(Limit 20)
Benzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Benzene	mg/kg (ppm)	0.5	85	69-120
Gasoline	mg/kg (ppm)	20	110	71 - 131

ENVIRONMENTAL CHEMISTS

Date of Report: 08/03/21 Date Received: 07/30/21

Project: TOC Seattle Terminal 1, F&BI 107530

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 107537-01 (Matrix Spike)

•	·	- ,	Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	< 50	83	83	64-133	0

			$\operatorname{Percent}$	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Diesel Extended	mg/kg (ppm)	5,000	92	58-147

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte may be due to carryover from previous sample injections.
- cf The sample was centrifuged prior to analysis.
- d The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv Insufficient sample volume was available to achieve normal reporting limits.
- f The sample was laboratory filtered prior to analysis.
- fb The analyte was detected in the method blank.
- fc The analyte is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.
- hs Headspace was present in the container used for analysis.
- ht The analysis was performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of control limits due to sample matrix effects.
- j The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- $\rm jl$ The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the analyte is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

Ph. (206) 285-8282	Seattle, WA 98119-2029 Re	3012 16th Avenue West Re	Friedman & Bruya, Inc.				reference (see a construction of the members of the construction o	CAA6A-BASE-03-4	CARGA-BASE-02A-5	CANGA-BASE-01-4	CARA-SS-08	CAA64-55-07	Sample ID		PhoneEmail	City, State, ZIP		Company Tol Seattle]	Report To R. Jones, J. Stevens, K. Henge	107530
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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Arina Podnozova, B.S. Eric Young, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282 fbi@isomedia.com www.friedmanandbruya.com

August 4, 2021

Rusty Jones, Project Manager Crete Consulting 16300 Christensen Road, Suite 214 Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on August 2, 2021 from the TOC Seattle Terminal 1, F&BI 108011 project. There are 8 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures

c: Time Oil Terminal 1

CTC0804R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on August 2, 2021 by Friedman & Bruya, Inc. from the Crete Consulting TOC Seattle Terminal 1, F&BI 108011 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Crete Consulting
108011 -01	CAA5-SS-02
108011 -02	CAA5-SS-03

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/04/21 Date Received: 08/02/21

Project: TOC Seattle Terminal 1, F&BI 108011

Date Extracted: 08/03/21 Date Analyzed: 08/03/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	$\frac{\text{Diesel Range}}{(\text{C}_{10}\text{-C}_{25})}$	$\frac{\text{Motor Oil Range}}{\text{(C}_{25}\text{-C}_{36}\text{)}}$	Surrogate (% Recovery) (Limit 53-144)
CAA5-SS-02 108011-01	<50	<250	95
CAA5-SS-03 108011-02	<50	<250	91
Method Blank 01-1766 MB	<50	<250	98

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020B

Client ID: CAA5-SS-02 Client: Crete Consulting

Date Received: 08/02/21 Project: TOC Seattle Terminal 1, F&BI 108011

 Date Extracted:
 08/03/21
 Lab ID:
 108011-01 x5

 Date Analyzed:
 08/03/21
 Data File:
 108011-01 x5.073

Matrix: Soil Instrument: ICPMS2 Units: mg/kg (ppm) Dry Weight Operator: SP

Concentration

Analyte: mg/kg (ppm)

Arsenic 5.63

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020B

Client ID: CAA5-SS-03 Client: Crete Consulting

Date Received: 08/02/21 Project: TOC Seattle Terminal 1, F&BI 108011

Matrix: Soil Instrument: ICPMS2 Units: mg/kg (ppm) Dry Weight Operator: SP

Concentration

Analyte: mg/kg (ppm)

Arsenic 6.36

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020B

Client ID: Method Blank Client: Crete Consulting

Date Received: NA Project: TOC Seattle Terminal 1, F&BI 108011

Units: mg/kg (ppm) Dry Weight Operator: SP

Concentration

Analyte: mg/kg (ppm)

Arsenic <1

ENVIRONMENTAL CHEMISTS

Date of Report: 08/04/21 Date Received: 08/02/21

Project: TOC Seattle Terminal 1, F&BI 108011

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 108011-01 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	< 50	84	88	64-133	5

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Diesel Extended	mg/kg (ppm)	5,000	82	58-147

ENVIRONMENTAL CHEMISTS

Date of Report: 08/04/21 Date Received: 08/02/21

Project: TOC Seattle Terminal 1, F&BI 108011

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 108010-01 x5 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet wt)	MS	MSD	Criteria	(Limit 20)
Arsenic	mg/kg (ppm)	10	<5	82	77	75-125	6

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Arsenic	mg/kg (ppm)	10	91	80-120

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte may be due to carryover from previous sample injections.
- cf The sample was centrifuged prior to analysis.
- d The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv Insufficient sample volume was available to achieve normal reporting limits.
- f The sample was laboratory filtered prior to analysis.
- fb The analyte was detected in the method blank.
- fc The analyte is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.
- hs Headspace was present in the container used for analysis.
- ht The analysis was performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of control limits due to sample matrix effects.
- j The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- $\rm jl$ The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the analyte is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

Report To R. Jones, J. Stevens, K. Hempe Phone_ CA15-SS-03 City, State, ZIP Address Company_ Ph. (206) 285-8282 Seattle, WA 98119-2029 3012 16th Avenue West Friedman & Bruya, Inc. CAR5-55-02 110801 Sample ID TOC Seattle Terminal 1 Email Relinquished by: Relinquished by: Received by: Received by: Lab ID 9 0 SIGNATURE 8.2.2 Sampled Date SAMPLE CHAIN OF CUSTODY Sampled 1505 でで Time PROJECT NAME SAMPLERS (signature) REMARKS Project specific RLs? - Yes / No to C Wath Tombral 4 Sample 7105 Type まるな Treso # of Jars PRINT NAME \sim NWTPH-Dx DRUNEN NWTPH-Gx BTEX EPA 8021 NWTPH-HCID INVOICE TO ANALYSES REQUESTED スカダーの/ダー VOCs EPA 8260 PO# PAHs EPA 8270 rete Consulting PCBs EPA 8082 COMPANY Arsenic (6010/ Samples received at 100 Default: Dispose after 30 days SAMPLE DISPOSAL

Of Archive samples □ Standard turnaround

KRUSH 24-How v Rush charges authorized by: TURNAROUND TIME 8.2.21 DATE Notes TIME 254

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Arina Podnozova, B.S. Eric Young, B.S.

3012 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282 fbi@isomedia.com www.friedmanandbruya.com

August 5, 2021

Rusty Jones, Project Manager Crete Consulting 16300 Christensen Road, Suite 214 Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on August 3, 2021 from the TOC Seattle Terminal 1, F&BI 108025 project. There are 8 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures

c: Time Oil Terminal 1

CTC0805R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on August 3, 2021 by Friedman & Bruya, Inc. from the Crete Consulting TOC Seattle Terminal 1, F&BI 108025 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Crete Consulting
108025 -01	CAA5-SS-04
108025 -02	CAA5-SS-01

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/05/21 Date Received: 08/03/21

Project: TOC Seattle Terminal 1, F&BI 108025

Date Extracted: 08/03/21 Date Analyzed: 08/03/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	$rac{ ext{Diesel Range}}{ ext{(C}_{10} ext{-C}_{25})}$	$\frac{\text{Motor Oil Range}}{\text{(C}_{25}\text{-C}_{36}\text{)}}$	Surrogate (% Recovery) (Limit 56-165)
CAA5-SS-04 108025-01	<50	<250	79
CAA5-SS-01 108025-02	3,200	2,000	84
Method Blank _{01-1792 MB}	<50	<250	91

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020B

Client ID: CAA5-SS-04 Client: Crete Consulting

Date Received: 08/03/21 Project: TOC Seattle Terminal 1, F&BI 108025

 Date Extracted:
 08/04/21
 Lab ID:
 108025-01

 Date Analyzed:
 08/04/21
 Data File:
 108025-01.052

 Matrix:
 Soil
 Instrument:
 ICPMS2

Units: mg/kg (ppm) Dry Weight Operator: SP

Concentration

Analyte: mg/kg (ppm)

Arsenic 4.08

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020B

Client ID: CAA5-SS-01 Client: Crete Consulting

Date Received: 08/03/21 Project: TOC Seattle Terminal 1, F&BI 108025

 Date Extracted:
 08/04/21
 Lab ID:
 108025-02

 Date Analyzed:
 08/04/21
 Data File:
 108025-02.053

 Matrix:
 Soil
 Instrument:
 ICPMS2

Units: mg/kg (ppm) Dry Weight Operator: SP

Concentration

Analyte: mg/kg (ppm)

Arsenic 5.26

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020B

Client ID: Method Blank Client: Crete Consulting

Date Received: NA Project: TOC Seattle Terminal 1, F&BI 108025

Matrix: Soil Instrument: ICPMS2

Units: mg/kg (ppm) Dry Weight Operator: SP

Concentration

Analyte: mg/kg (ppm)

Arsenic <1

ENVIRONMENTAL CHEMISTS

Date of Report: 08/05/21 Date Received: 08/03/21

Project: TOC Seattle Terminal 1, F&BI 108025

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 108025-01 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	< 50	83	84	63-146	1

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Diesel Extended	mg/kg (ppm)	5,000	82	79-144

ENVIRONMENTAL CHEMISTS

Date of Report: 08/05/21 Date Received: 08/03/21

Project: TOC Seattle Terminal 1, F&BI 108025

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 108010-01 x5 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet wt)	MS	MSD	Criteria	(Limit 20)
Arsenic	mg/kg (ppm)	10	<5	85	90	75-125	6

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Arsenic	mg/kg (ppm)	10	83	80-120

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte may be due to carryover from previous sample injections.
- cf The sample was centrifuged prior to analysis.
- d The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv Insufficient sample volume was available to achieve normal reporting limits.
- f The sample was laboratory filtered prior to analysis.
- fb The analyte was detected in the method blank.
- fc The analyte is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.
- hs Headspace was present in the container used for analysis.
- ht The analysis was performed outside the method or client-specified holding time requirement.
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- $\rm jl$ The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the analyte is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

do the John Marie Land Seattle, WA 98119-2029 Phone City, State, ZIP Address Company Toc Seattle Termina 1 3012 16th Avenue West Friedman & Bruya, Inc. Ph. (206) 285-8282 Report To R. Jones J. Stevens, KHEMPE 108025 CAS-35-01 Sample ID CAAS-85-04 Email Relinquished by: Received by: Relinquished by: Received by: 2 Lab ID ō SIGNATURE 8,3,221 Sampled Sero SAMPLE CHAIN OF CUSTODY Sampled 010 PROJECT NAME SAMPLERS (signature) 1070 Project specific RLs? - Yes / No Time REMARKS Too Seattle Termina 1 7000 多う Sample Type ひななる Tisty Joses Jars # of PRINT NAME \times NWTPH-Dx NWTPH-Gx .-BTEX EPA 8021 NWTPH-HCID INVOICE TO ANALYSES REQUESTED VOCs EPA 8260 P0# ME 08/03/21 PAHs EPA 8270 TRBY CRETE Consulting PCBs EPA 8082 COMPANY Samples received at Arsenic (6000 6000 \times ☐ Standard turnaround ARUSH 24-Hove Other_ Rush charges authorized by: Default: Dispose after 30 days Page # TURNAROUND TIME SAMPLE DISPOSAL 8/3/21 8.3,22 DATE Notes TIME きる 50

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Arina Podnozova, B.S. Eric Young, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282 fbi@isomedia.com www.friedmanandbruya.com

August 10, 2021

Rusty Jones, Project Manager Crete Consulting 16300 Christensen Road, Suite 214 Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on August 6, 2021 from the TOC Seattle Terminal 1, F&BI 108107 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures

c: Time Oil Terminal 1

CTC0810R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on August 6, 2021 by Friedman & Bruya, Inc. from the Crete Consulting TOC Seattle Terminal 1, F&BI 108107 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Crete Consulting
108107 -01	CAA1A-TP3-7
108107 -02	CAA1A-TP3-9
108107 -03	CAA1A-TP4-8
108107 -04	CAA1A-TP4-12.2
108107 -05	CAA1A-TP4-13.9

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/10/21 Date Received: 08/06/21

Project: TOC Seattle Terminal 1, F&BI 108107

Date Extracted: 08/06/21 Date Analyzed: 08/06/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	<u>Gasoline Range</u>	Surrogate (% Recovery) (Limit 58-139)
CAA1A-TP3-7 108107-01	<5	85
CAA1A-TP3-9 108107-02	<5	81
CAA1A-TP4-8 108107-03	35	87
CAA1A-TP4-12.2 108107-04	<5	82
CAA1A-TP4-13.9 108107-05	<5	83
Method Blank 01-1768 MB	<5	96

ENVIRONMENTAL CHEMISTS

Date of Report: 08/10/21 Date Received: 08/06/21

Project: TOC Seattle Terminal 1, F&BI 108107

Date Extracted: 08/06/21 Date Analyzed: 08/06/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	$\frac{\text{Diesel Range}}{\text{(C}_{10}\text{-C}_{25})}$	$rac{ ext{Motor Oil Range}}{ ext{(C}_{25} ext{-C}_{36} ext{)}}$	Surrogate (% Recovery) (Limit 48-168)
CAA1A-TP3-7 108107-01	<50	<250	95
CAA1A-TP3-9 108107-02	<50	<250	95
CAA1A-TP4-8 108107-03	280	<250	95
CAA1A-TP4-12.2 108107-04	<50	<250	95
CAA1A-TP4-13.9 108107-05	<50	<250	94
Method Blank	<50	<250	99

ENVIRONMENTAL CHEMISTS

Date of Report: 08/10/21 Date Received: 08/06/21

Project: TOC Seattle Terminal 1, F&BI 108107

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

			Percent	Percent		
	Reporting	Spike	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	LCS	LCSD	Criteria	(Limit 20)
Gasoline	mg/kg (ppm)	20	85	85	71-131	0

ENVIRONMENTAL CHEMISTS

Date of Report: 08/10/21 Date Received: 08/06/21

Project: TOC Seattle Terminal 1, F&BI 108107

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 108107-01 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	< 50	98	100	73-135	2

			Percent		
	Reporting	Spike	Recovery	Acceptance	
Analyte	Units	Level	LCS	Criteria	
Diesel Extended	mg/kg (ppm)	5,000	98	74-139	_

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte may be due to carryover from previous sample injections.
- cf The sample was centrifuged prior to analysis.
- d The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv Insufficient sample volume was available to achieve normal reporting limits.
- f The sample was laboratory filtered prior to analysis.
- fb The analyte was detected in the method blank.
- fc The analyte is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.
- hs Headspace was present in the container used for analysis.
- ht The analysis was performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of control limits due to sample matrix effects.
- j The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the analyte is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

Ph. (206) 285-8282 Seattle, WA 98119-2029 3012 16th Avenue West Friedman & Bruya, Inc. PANIA-TP4-12.2 CHAIN_TP3-7 Address Company Toc Seattle Terminal 1 Report To_ 8-LAL-AME ally tosia City, State, ZIP Sample ID 401801 Email J. Stevens, K. Hempe Relinquished by: Received by: Received by: Relinquished by: 03A-E .02 A-E 3-4 ho -01 A-E 05 A-E Lab ID SIGNATURE 8.60.2021 Sampled Date oves SAMPLE CHAIN OF CUSTODY Time Sampled PROJECT NAME 202 188 Project specific RLs? - Yes REMARKS 1500 050 TOC Scattle Tominal 1 252 Sample Type ار 8 ランス Jars # of PRINT NAME \mathcal{T} 2 S J S Samo Hoone NWTPH-Dx NWTPH-Gx BTEX EPA 8021 080 NWTPH-HCID INVOICE TO ANALYSES REQUESTED VOCs EPA 8260 PO# Cate PAHs EPA 8270 787 PCBs EPA 8082 COMPANY Consulting ME 8/6/21 Samples redeived at ____ ☐ Standard turnaround

▼ RUSH 8/9 Morning

Rush charges authorized by: Default: Dispose after 30 days ☐ Archive samples TURNAROUND TIME Page#_ SAMPLE DISPOSAL 8,6,21 DATE 6.21 Notes TIME 1882

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Arina Podnozova, B.S. Eric Young, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282 fbi@isomedia.com www.friedmanandbruya.com

August 10, 2021

Rusty Jones, Project Manager Crete Consulting 16300 Christensen Road, Suite 214 Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on August 6, 2021 from the TOC Seattle Terminal 1, F&BI 108108 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures

c: Time Oil Terminal 1

CTC0810R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on August 6, 2021 by Friedman & Bruya, Inc. from the Crete Consulting TOC Seattle Terminal 1, F&BI 108108 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Crete Consulting
108108 -01	CAA1A-SS-04
108108 -02	CAA1A-SS-03

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/10/21 Date Received: 08/06/21

Project: TOC Seattle Terminal 1, F&BI 108108

Date Extracted: 08/06/21 Date Analyzed: 08/06/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Gasoline Range	Surrogate (<u>% Recovery</u>) (Limit 58-139)
CAA1A-SS-04 108108-01	<5	82
CAA1A-SS-03 108108-02	<5	80
Method Blank	<5	96

ENVIRONMENTAL CHEMISTS

Date of Report: 08/10/21 Date Received: 08/06/21

Project: TOC Seattle Terminal 1, F&BI 108108

Date Extracted: 08/06/21 Date Analyzed: 08/06/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	$rac{ ext{Diesel Range}}{ ext{(C}_{10} ext{-C}_{25})}$	$\frac{\text{Motor Oil Range}}{\text{(C}_{25}\text{-C}_{36}\text{)}}$	Surrogate (% Recovery) (Limit 48-168)
CAA1A-SS-04 108108-01	<50	<250	94
CAA1A-SS-03 108108-02	<50	<250	96
Method Blank	<50	<250	99

ENVIRONMENTAL CHEMISTS

Date of Report: 08/10/21 Date Received: 08/06/21

Project: TOC Seattle Terminal 1, F&BI 108108

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

			Percent	Percent		
	Reporting	Spike	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	LCS	LCSD	Criteria	(Limit 20)
Gasoline	mg/kg (ppm)	20	85	85	71-131	0

ENVIRONMENTAL CHEMISTS

Date of Report: 08/10/21 Date Received: 08/06/21

Project: TOC Seattle Terminal 1, F&BI 108108

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 108107-01 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	< 50	98	100	73-135	2

			Percent		
	Reporting	Spike	Recovery	Acceptance	
Analyte	Units	Level	LCS	Criteria	
Diesel Extended	mg/kg (ppm)	5,000	98	74-139	Ī

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
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- d The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv Insufficient sample volume was available to achieve normal reporting limits.
- f The sample was laboratory filtered prior to analysis.
- fb The analyte was detected in the method blank.
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- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.
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- ip Recovery fell outside of control limits due to sample matrix effects.
- j The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
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- L The reported concentration was generated from a library search.
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- pc The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

Address .Company Report To_ City, State, ZIP Seattle, WA 98119-2029 Ph. (206) 285-8282 3012 16th Avenue West Friedman & Bruya, Inc. CAAIA-50-05 C1414-85-04 Sample ID Too seathe Termina Email To Stevens Kithempe Relinquished by: Received by: Relinquished by: Received by: OR A-E 01 A-E Lab ID SIGNATURE 8,6,2 Sampled Date < over SAMPLE CHAIN OF CUSTODY Time Sampled SAMPLERS (signature)

Fusty loves

PROJECT NAME コのの 示 Project specific RLs? - Yes / No REMARKS Too Scattle Terminal 1 つるか Sample Туре Jars # of PRINT NAME >; NWTPH-Dx NWTPH-Gx BTEX EPA 8021 NWTPH-HCID INVOICE TO ANALYSES REQUESTED VOCs EPA 8260 PAHs EPA 8270 rete Consulting PCBs EPA 8082 COMPANY ME 8/6/21 CO,/VS3 Samples required at ___OC Standard turnaround WRUSH 3/9 Morning Rush charges authorized by: ☐ Archive samples Default: Dispose after 30 days Page# TURNAROUND TIME SAMPLE DISPOSAL 8.6.2 DATE Notes HMIL 1567

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Arina Podnozova, B.S. Eric Young, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282 fbi@isomedia.com www.friedmanandbruya.com

August 11, 2021

Rusty Jones, Project Manager Crete Consulting 16300 Christensen Road, Suite 214 Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on August 9, 2021 from the TOC Seattle Terminal 1, F&BI 108129 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures

c: Time Oil Terminal 1

CTC0811R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on August 9, 2020 by Friedman & Bruya, Inc. from the Crete Consulting TOC Seattle Terminal 1, F&BI 108129 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Crete Consulting
108129 -01	CAA1A-BASE-01
108129 -02	CAA1A-BASE-03
108129 -03	CAA1A-SS-05

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/11/21 Date Received: 08/09/21

Project: TOC Seattle Terminal 1, F&BI 108129

Date Extracted: 08/09/21 Date Analyzed: 08/10/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Sample ID Laboratory ID	<u>Gasoline Range</u>	Surrogate (% Recovery) (Limit 50-150)
CAA1A-BASE-01 108129-01 1/50	4,400	ip
CAA1A-BASE-03 108129-02	<5	101
CAA1A-SS-05 108129-03 1/10	2,700	135
Method Blank	<5	89

ENVIRONMENTAL CHEMISTS

Date of Report: 08/11/21 Date Received: 08/09/21

Project: TOC Seattle Terminal 1, F&BI 108129

Date Extracted: 08/09/21 Date Analyzed: 08/09/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Sample ID Laboratory ID	$rac{ ext{Diesel Range}}{ ext{(C}_{10} ext{-C}_{25})}$	$\frac{\text{Motor Oil Range}}{(\text{C}_{25}\text{-C}_{36})}$	Surrogate (% Recovery) (Limit 48-168)
CAA1A-BASE-01 108129-01	31,000	3,500 x	${\rm ip}$
CAA1A-BASE-03 108129-02	<50	<250	92
CAA1A-SS-05 108129-03	38,000	14,000 x	ip
Method Blank	<50	<250	94

ENVIRONMENTAL CHEMISTS

Date of Report: 08/11/21 Date Received: 08/09/21

Project: TOC Seattle Terminal 1, F&BI 108129

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 108111-01 (Duplicate)

		Sample	Duplicate	
	Reporting	Result	Result	RPD
Analyte	Units	(Wet Wt)	(Wet Wt)	(Limit 20)
Gasoline	mg/kg (ppm)	<5	<5	nm

			I GICGIII		
	Reporting	Spike	Recovery	Acceptance	
Analyte	Units	Level	LCS	Criteria	
Gasoline	mg/kg (ppm)	20	120	71-131	-

ENVIRONMENTAL CHEMISTS

Date of Report: 08/11/21 Date Received: 08/09/21

Project: TOC Seattle Terminal 1, F&BI 108129

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 108113-02 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	< 50	94	97	73-135	3

			Percent		
	Reporting	Spike	Recovery	Acceptance	
Analyte	Units	Level	LCS	Criteria	
Diesel Extended	mg/kg (ppm)	5,000	96	74-139	_

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte may be due to carryover from previous sample injections.
- cf The sample was centrifuged prior to analysis.
- d The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv Insufficient sample volume was available to achieve normal reporting limits.
- f The sample was laboratory filtered prior to analysis.
- fb The analyte was detected in the method blank.
- fc The analyte is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.
- hs Headspace was present in the container used for analysis.
- ht The analysis was performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of control limits due to sample matrix effects.
- j The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the analyte is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

Phone_ Company Toc Seattle Termina 1 Report To R, Jones, J, Stevens, K, Hempel CAAIA-BASE-03 City, State, ZIP. Address CAAIA-85-05 Seattle, WA 98119-2029 3012 16th Avenue West ph. (206) 285-8282 Friedman & Bruya, Inc. CAAIA-BASE-OI 108129 Sample ID Email Relinquished by: Relinquished by: Received by: Received by: \mathcal{O} 6 01 A.E 8.9.2021 Lab ID SIGNATURE Sampled Date ≺ 22 SAMPLE CHAIN OF CUSTODY Sampled 052 1250 PROJECT NAME SAMPLERS (signature) Time Project specific RLs? - Yes / No REMARKS 1300 Tocseattle Terminal 1 SOIL Sample Type Rusty Jomes NAM # of Jars PRINT NAME S Un \mathcal{T} NWTPH-Dx アケイス \prec NWTPH-Gx BTEX EPA 8021 NWTPH-HCID INVOICE TO ANALYSES REQUESTED VOCs EPA 8260 PO# PAHs EPA 8270 TUBIT CRETE Consulfing PCBs EPA 8082 Samples redeived at COMPANY □ Standard turnaround

▼ RUSH 24-How Default: Dispose after 30 days Other_ Rush charges authorized by: TURNAROUND TIME Col SAMPLE DISPOSAL 14°C 8.9.2 DATE Notes KON 雪 HMII

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Arina Podnozova, B.S. Eric Young, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282 fbi@isomedia.com www.friedmanandbruya.com

August 12, 2021

Rusty Jones, Project Manager Crete Consulting 16300 Christensen Road, Suite 214 Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on August 10, 2021 from the TOC Seattle Terminal 1, F&BI 108153 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures

c: Time Oil Terminal 1

CTC0812R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on August 10, 2020 by Friedman & Bruya, Inc. from the Crete Consulting TOC Seattle Terminal 1, F&BI 108153 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Crete Consulting
108153 -01	CAA1B-SS-03
108153 -02	CAA1B-BASE-01
108153 -03	CAA1B-SS-02
108153 -04	CAA1B-SS-01
108153 -05	CAA1A-SS-02
108153 -06	CAA1A-BASE-02

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/12/21 Date Received: 08/10/21

Project: TOC Seattle Terminal 1, F&BI 108153

Date Extracted: 08/11/21 Date Analyzed: 08/11/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
CAA1B-SS-03 108153-01	9.7	97
CAA1B-BASE-01 108153-02	13	100
CAA1B-SS-02 108153-03 1/20	2,600	ip
CAA1B-SS-01 108153-04	8.0	100
CAA1A-SS-02 108153-05 1/5	330	114
CAA1A-BASE-02 108153-06 1/10	1,100	ip
Method Blank ⁰¹⁻¹⁷⁷³ MB	<5	81

ENVIRONMENTAL CHEMISTS

Date of Report: 08/12/21 Date Received: 08/10/21

Project: TOC Seattle Terminal 1, F&BI 108153

Date Extracted: 08/11/21 Date Analyzed: 08/11/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Sample ID Laboratory ID	$rac{ ext{Diesel Range}}{ ext{(C}_{10} ext{-C}_{25})}$	$rac{ ext{Motor Oil Range}}{ ext{(C}_{25} ext{-C}_{36} ext{)}}$	Surrogate (% Recovery) (Limit 48-168)
CAA1B-SS-03 108153-01	<50	<250	96
CAA1B-BASE-01 108153-02	<50	<250	83
CAA1B-SS-02 108153-03	30,000	1,400 x	ip
CAA1B-SS-01 108153-04	<50	<250	96
CAA1A-SS-02 108153-05	3,000	<250	94
CAA1A-BASE-02 108153-06	560	<250	96
Method Blank	<50	<250	93

ENVIRONMENTAL CHEMISTS

Date of Report: 08/12/21 Date Received: 08/10/21

Project: TOC Seattle Terminal 1, F&BI 108153

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 108153-01 (Duplicate)

		Sample	Duplicate	
	Reporting	Result	Result	RPD
Analyte	Units	(Wet Wt)	(Wet Wt)	(Limit 20)
Gasoline	mg/kg (ppm)	9.7	13	29 a

			I GICGIII		
	Reporting	Spike	Recovery	Acceptance	
Analyte	Units	Level	LCS	Criteria	
Gasoline	mg/kg (ppm)	20	120	71-131	-

ENVIRONMENTAL CHEMISTS

Date of Report: 08/12/21 Date Received: 08/10/21

Project: TOC Seattle Terminal 1, F&BI 108153

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 108137-01 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	520	91	96	73-135	5

			Percent		
	Reporting	Spike	Recovery	Acceptance	
Analyte	Units	Level	LCS	Criteria	
Diesel Extended	mg/kg (ppm)	5,000	96	74-139	

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte may be due to carryover from previous sample injections.
- cf The sample was centrifuged prior to analysis.
- d The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv Insufficient sample volume was available to achieve normal reporting limits.
- f The sample was laboratory filtered prior to analysis.
- fb The analyte was detected in the method blank.
- fc The analyte is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.
- hs Headspace was present in the container used for analysis.
- ht The analysis was performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of control limits due to sample matrix effects.
- j The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the analyte is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

3012 16th Avenue West		K Friedman & Bruya, Inc.	3			5.50	CAHLA BASE-02	CAXIX-SS-02	CAA1B-SS-01	CA411B-SS-02	CAAIB-BASE-01	CAAIB-SS-03	Sample ID		PhoneF	City, State, ZIP	Company (S) Seath	.	[08153
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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Arina Podnozova, B.S. Eric Young, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282 fbi@isomedia.com www.friedmanandbruya.com

August 13, 2021

Rusty Jones, Project Manager Crete Consulting 16300 Christensen Road, Suite 214 Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on August 11, 2021 from the TOC Seattle Terminal 1, F&BI 108177 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures

c: Time Oil Terminal 1

CTC0813R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on August 11, 2021 by Friedman & Bruya, Inc. from the Crete Consulting TOC Seattle Terminal 1, F&BI 108177 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Crete Consulting
108177 -01	CAA1A-SS-06
108177 -02	CAA1A-SS-01

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/13/21 Date Received: 08/11/21

Project: TOC Seattle Terminal 1, F&BI 108177

Date Extracted: 08/12/21 Date Analyzed: 08/12/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Sample ID Laboratory ID	<u>Gasoline Range</u>	Surrogate (% Recovery) (Limit 50-150)
CAA1A-SS-06 108177-01	<5	77
CAA1A-SS-01 108177-02	120	118
Method Blank	<5	88

ENVIRONMENTAL CHEMISTS

Date of Report: 08/13/21 Date Received: 08/11/21

Project: TOC Seattle Terminal 1, F&BI 108177

Date Extracted: 08/12/21 Date Analyzed: 08/12/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Sample ID Laboratory ID	$rac{ ext{Diesel Range}}{ ext{(C}_{10} ext{-C}_{25})}$	$\frac{\text{Motor Oil Range}}{\text{(C}_{25}\text{-C}_{36}\text{)}}$	Surrogate (% Recovery) (Limit 53-144)
CAA1A-SS-06 108177-01	<50	<250	89
CAA1A-SS-01 108177-02	330	<250	92
Method Blank	<50	<250	86

ENVIRONMENTAL CHEMISTS

Date of Report: 08/13/21 Date Received: 08/11/21

Project: TOC Seattle Terminal 1, F&BI 108177

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 108177-01 (Duplicate)

		Sample	Duplicate	
	Reporting	Result	Result	RPD
Analyte	Units	(Wet Wt)	(Wet Wt)	(Limit 20)
Gasoline	mg/kg (ppm)	<5	<5	nm

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Gasoline	mg/kg (ppm)	20	110	71-131

ENVIRONMENTAL CHEMISTS

Date of Report: 08/13/21 Date Received: 08/11/21

Project: TOC Seattle Terminal 1, F&BI 108177

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 108164-01 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	< 50	100	98	64-133	2

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Diesel Extended	mg/kg (ppm)	5,000	100	58-147

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte may be due to carryover from previous sample injections.
- cf The sample was centrifuged prior to analysis.
- d The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv Insufficient sample volume was available to achieve normal reporting limits.
- f The sample was laboratory filtered prior to analysis.
- fb The analyte was detected in the method blank.
- fc The analyte is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.
- hs Headspace was present in the container used for analysis.
- ht The analysis was performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of control limits due to sample matrix effects.
- j The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the analyte is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

Ph. (206) 285-8282	Seattle, WA 98119-2029	3012 16th Avenue West	Friedman & Bruya, Inc.	,								CARIA-55-01	CAA11-55-56	Sample ID		PhoneEmail	City, State, ZIP	Report To R. Joves, J. Stevens, Company Toc Seattle Term	i.
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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Arina Podnozova, B.S. Eric Young, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282 fbi@isomedia.com www.friedmanandbruya.com

August 16, 2021

Jamie Stevens, Project Manager Crete Consulting 16300 Christensen Road, Suite 214 Tukwila, WA 98188

Dear Ms Stevens:

Included are the results from the testing of material submitted on August 12, 2021 from the TOC Seattle Terminal 1, F&BI 108202 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures

c: Time Oil Terminal 1

CTC0816R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on August 12, 2021 by Friedman & Bruya, Inc. from the Crete Consulting TOC Seattle Terminal 1, F&BI 108202 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Crete Consulting
108202 -01	CAA1B-SS-04
108202 -02	CAA1B-SS-05

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/16/21 Date Received: 08/12/21

Project: TOC Seattle Terminal 1, F&BI 108202

Date Extracted: 08/12/21 Date Analyzed: 08/13/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
CAA1B-SS-04 108202-01 1/50	6,900	ip
CAA1B-SS-05 108202-02 1/100	3,500	113
Method Blank	<5	88

ENVIRONMENTAL CHEMISTS

Date of Report: 08/16/21 Date Received: 08/12/21

Project: TOC Seattle Terminal 1, F&BI 108202

Date Extracted: 08/13/21 Date Analyzed: 08/13/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Sample ID Laboratory ID	$rac{ ext{Diesel Range}}{ ext{(C}_{10} ext{-C}_{25})}$	$\frac{\text{Motor Oil Range}}{(C_{25}\text{-}C_{36})}$	Surrogate (% Recovery) (Limit 48-168)
CAA1B-SS-04 108202-01	9,800	500 x	98
CAA1B-SS-05 108202-02	13,000	890 x	144
Method Blank _{01-1877 MB}	<50	<250	94

ENVIRONMENTAL CHEMISTS

Date of Report: 08/16/21 Date Received: 08/12/21

Project: TOC Seattle Terminal 1, F&BI 108202

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 108177-01 (Duplicate)

		Sample	Duplicate	
	Reporting	Result	Result	RPD
Analyte	Units	(Wet Wt)	(Wet Wt)	(Limit 20)
Gasoline	mg/kg (ppm)	<5	<5	nm

			I GICGIII		
	Reporting	Spike	Recovery	Acceptance	
Analyte	Units	Level	LCS	Criteria	
Gasoline	mg/kg (ppm)	20	110	71-131	-

ENVIRONMENTAL CHEMISTS

Date of Report: 08/16/21 Date Received: 08/12/21

Project: TOC Seattle Terminal 1, F&BI 108202

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 108202-01 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	8,200	132 b	79 b	73-135	50 b

			Percent		
	Reporting	Spike	Recovery	Acceptance	
Analyte	Units	Level	LCS	Criteria	
Diesel Extended	mg/kg (ppm)	5,000	96	74-139	

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte may be due to carryover from previous sample injections.
- cf The sample was centrifuged prior to analysis.
- d The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv Insufficient sample volume was available to achieve normal reporting limits.
- f The sample was laboratory filtered prior to analysis.
- fb The analyte was detected in the method blank.
- fc The analyte is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.
- hs Headspace was present in the container used for analysis.
- ht The analysis was performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of control limits due to sample matrix effects.
- j The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the analyte is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

Report To J. Stevens, R. Tenes, K. Hempel Company TOC Seattle Terminal 1	Termina !	1 1	SAMPLI PROJEC	SAMPLERS (signature) Lusty Jones PROJECT NAME To C Scattle Torwind	(Crw)		0	Sme	PO#	#			C St.	ا تقانست ا	TURN TURN andard JSH JSH	TURNAROUND TIME Standard turnaround RUSH 24-Hours Rush charges authorized by:
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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Arina Podnozova, B.S. Eric Young, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282 fbi@isomedia.com www.friedmanandbruya.com

August 18, 2021

Rusty Jones, Project Manager Crete Consulting 16300 Christensen Road, Suite 214 Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on August 16, 2021 from the TOC Seattle Terminal 1, F&BI 108241 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures

c: Time Oil Terminal 1

CTC0818R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on August 16, 2021 by Friedman & Bruya, Inc. from the Crete Consulting TOC Seattle Terminal 1, F&BI 108241 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Crete Consulting
108241 -01	CAA1B-SS-06
108241 -02	CAA1B-SS-07

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/18/21 Date Received: 08/16/21

Project: TOC Seattle Terminal 1, F&BI 108241

Date Extracted: 08/16/21 Date Analyzed: 08/17/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 58-139)
CAA1B-SS-06 108241-01 1/100	5,200	105
Method Blank 01-1779 MB	<5	82

ENVIRONMENTAL CHEMISTS

Date of Report: 08/18/21 Date Received: 08/16/21

Project: TOC Seattle Terminal 1, F&BI 108241

Date Extracted: 08/17/21 Date Analyzed: 08/17/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Sample ID Laboratory ID	$rac{ ext{Diesel Range}}{ ext{(C}_{10} ext{-C}_{25})}$	$rac{ ext{Motor Oil Range}}{ ext{(C}_{25} ext{-C}_{36} ext{)}}$	Surrogate (% Recovery) (Limit 53-144)
CAA1B-SS-06 108241-01	8,100	350 x	92
Method Blank	<50	<250	89

ENVIRONMENTAL CHEMISTS

Date of Report: 08/18/21 Date Received: 08/16/21

Project: TOC Seattle Terminal 1, F&BI 108241

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 108221-01 (Duplicate)

		Sample	Duplicate	
	Reporting	Result	Result	RPD
Analyte	Units	(Wet Wt)	(Wet Wt)	(Limit 20)
Gasoline	mg/kg (ppm)	<5	<5	nm

			I GICGIII		
	Reporting	Spike	Recovery	Acceptance	
Analyte	Units	Level	LCS	Criteria	
Gasoline	mg/kg (ppm)	20	105	71-131	-

ENVIRONMENTAL CHEMISTS

Date of Report: 08/18/21 Date Received: 08/16/21

Project: TOC Seattle Terminal 1, F&BI 108241

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 108228-01 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	< 50	102	103	73-135	1

			Percent		
	Reporting	Spike	Recovery	Acceptance	
Analyte	Units	Level	LCS	Criteria	
Diesel Extended	mg/kg (ppm)	5,000	100	74-139	_

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte may be due to carryover from previous sample injections.
- cf The sample was centrifuged prior to analysis.
- d The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv Insufficient sample volume was available to achieve normal reporting limits.
- f The sample was laboratory filtered prior to analysis.
- fb The analyte was detected in the method blank.
- fc The analyte is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.
- hs Headspace was present in the container used for analysis.
- ht The analysis was performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of control limits due to sample matrix effects.
- j The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the analyte is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

Company TOC Seattle Terminal I Report To K. Jones, J. Stevens, K. Hempe Phone City, State, ZIP Address CALIB-95-06 CAKIB-55-07 Ph. (206) 285-8282 Seattle, WA 98119-2029 3012 16th Avenue West Friedman & Bruya, Inc. Sample ID 142801 Email Relinquished by: Received by: Received by: Relinquished by: 8 Lab ID から SIGNATURE 8.16.221 Sampled Date Soral SAMPLE CHAIN OF CUSTODY Sampled SAMPLERS (signature)

Fusty Jowes

PROJECT NAME 1125 三 Project specific RLs? - Yes / No Time REMARKS Too Seattle Terminal 1 18.8 18.8 Sample Type Michie LAY. # of Jars n \mathcal{D} PRINT NAME Jones NWTPH-Dx **NWTPH-Gx** BTEX EPA 8021 NWTPH-HCID INVOICE TO ANALYSES REQUESTED VOCs EPA 8260 ME BILLY 31M PO# PAHs EPA 8270 CREITE CONSUMMING PCBs EPA 8082 COMPANY Samples received at SAMPLE DISPOSAL

D Archive samples Standard turnaround _lother_ Rush charges authorized by: Default: Dispose after 30 days NC-SA Page#___ TURNAROUND TIME 8.16.21 11/9/1/3 HOLD DATE 8 Notes 1152 557 TIME င်္ဂ

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Arina Podnozova, B.S. Eric Young, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282 fbi@isomedia.com www.friedmanandbruya.com

August 23, 2021

Rusty Jones, Project Manager Crete Consulting 16300 Christensen Road, Suite 214 Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on August 18, 2021 from the TOC Seattle Terminal 1, F&BI 108279 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures

c: TOC Seattle Terminal 1

CTC0823R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on August 18, 2021 by Friedman & Bruya, Inc. from the Crete Consulting TOC Seattle Terminal 1, F&BI 108279 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Crete Consulting
108279 -01	CAA1B-SS-08
108279 -02	CAA1B-SS-09

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/23/21 Date Received: 08/18/21

Project: TOC Seattle Terminal 1, F&BI 108279

Date Extracted: 08/18/21 Date Analyzed: 08/18/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 58-139)
CAA1B-SS-08 108279-01 1/20	4,500	ip
Method Blank	<5	91

ENVIRONMENTAL CHEMISTS

Date of Report: 08/23/21 Date Received: 08/18/21

Project: TOC Seattle Terminal 1, F&BI 108279

Date Extracted: 08/18/21 Date Analyzed: 08/18/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Sample ID Laboratory ID	$\frac{\text{Diesel Range}}{\text{(C}_{10}\text{-C}_{25})}$	$rac{ ext{Motor Oil Range}}{ ext{(C}_{25} ext{-C}_{36} ext{)}}$	Surrogate (% Recovery) (Limit 53-144)
CAA1B-SS-08 108279-01	8,900	320 x	90
Method Blank 01-1892 MB	<50	<250	87

ENVIRONMENTAL CHEMISTS

Date of Report: 08/23/21 Date Received: 08/18/21

Project: TOC Seattle Terminal 1, F&BI 108279

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 108249-01 (Duplicate)

		Sample	Duplicate	
	Reporting	Result	Result	RPD
Analyte	Units	(Wet Wt)	(Wet Wt)	(Limit 20)
Gasoline	mg/kg (ppm)	99	14	150 a

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Gasoline	mg/kg (ppm)	20	110	61-153

ENVIRONMENTAL CHEMISTS

Date of Report: 08/23/21 Date Received: 08/18/21

Project: TOC Seattle Terminal 1, F&BI 108279

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 108272-01 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	5,100	105	100	64-133	5

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Diesel Extended	mg/kg (ppm)	5,000	96	58-147

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte may be due to carryover from previous sample injections.
- cf The sample was centrifuged prior to analysis.
- d The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv Insufficient sample volume was available to achieve normal reporting limits.
- f The sample was laboratory filtered prior to analysis.
- fb The analyte was detected in the method blank.
- fc The analyte is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.
- hs Headspace was present in the container used for analysis.
- ht The analysis was performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of control limits due to sample matrix effects.
- j The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the analyte is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

BUALB-55-09 Seattle, WA 98119-2029 Ph. (206) 285-8282 3012 16th Avenue West Friedman & Bruya, Inc. CAA1B-SS-08 Address Company TOC Seattle Termina Report To K. Jones, J. Stevens, K. Hempe City, State, ZIP Sample ID _Email Received by: Received by: Relinquished by: Relinquished by:) (၁) \bigcirc Lab ID ASE SIGNATURE 8,18,21 Date Sampled Time Sampled Fust Jows
PROJECT NAME 100 Project specific RLs? - Yes / No REMARKS Too Seattle Terminal 1 7000 Sample Type # of Jars PRINT NAME S S NWTPH-Dx いるのい NWTPH-Gx BTEX EPA 8021 NWTPH-HCID INVOICE TO ANALYSES REQUESTED PO# PAHs EPA 8270 CRETE Fig. B PCBs EPA 8082 COMPANY Samples received at BUILDING SAMPLE DISPOSAL

Archive samples □ Standard turnaround

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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Arina Podnozova, B.S. Eric Young, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282 fbi@isomedia.com www.friedmanandbruya.com

August 30, 2021

Rusty Jones, Project Manager Crete Consulting 16300 Christensen Road, Suite 214 Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on August 26, 2021 from the TOC Seattle Terminal 1, F&BI 108430 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures

c: TOC Seattle Terminal 1

NAACTC0830R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on August 26, 2021 by Friedman & Bruya, Inc. from the Crete Consulting TOC Seattle Terminal 1, F&BI 108430 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u> <u>Crete Consulting</u> 108430 -01 CAA1B-BASE-02

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/30/21 Date Received: 08/26/21

Project: TOC Seattle Terminal 1, F&BI 108430

Date Extracted: 08/27/21 Date Analyzed: 08/27/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 58-139)
CAA1B-BASE-02 108430-01 1/5	57	99
Method Blank	<5	93

ENVIRONMENTAL CHEMISTS

Date of Report: 08/30/21 Date Received: 08/26/21

Project: TOC Seattle Terminal 1, F&BI 108430

Date Extracted: 08/27/21 Date Analyzed: 08/27/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Sample ID Laboratory ID	$\frac{\text{Diesel Range}}{\text{(C}_{10}\text{-C}_{25})}$	$\frac{\text{Motor Oil Range}}{\text{(C}_{25}\text{-C}_{36})}$	Surrogate (% Recovery) (Limit 48-168)
CAA1B-BASE-02 108430-01	<50	<250	94
Method Blank	<50	<250	95

ENVIRONMENTAL CHEMISTS

Date of Report: 08/30/21 Date Received: 08/26/21

Project: TOC Seattle Terminal 1, F&BI 108430

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

			Percent	Percent		
	Reporting	Spike	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	LCS	LCSD	Criteria	(Limit 20)
Gasoline	mg/kg (ppm)	20	130	120	61-153	8

ENVIRONMENTAL CHEMISTS

Date of Report: 08/30/21 Date Received: 08/26/21

Project: TOC Seattle Terminal 1, F&BI 108430

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 108430-01 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	< 50	107	109	73-135	2

			Percent		
	Reporting	Spike	Recovery	Acceptance	
Analyte	Units	Level	LCS	Criteria	
Diesel Extended	mg/kg (ppm)	5,000	106	74-139	-

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte may be due to carryover from previous sample injections.
- cf The sample was centrifuged prior to analysis.
- d The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv Insufficient sample volume was available to achieve normal reporting limits.
- f The sample was laboratory filtered prior to analysis.
- fb The analyte was detected in the method blank.
- fc The analyte is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.
- hs Headspace was present in the container used for analysis.
- ht The analysis was performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of control limits due to sample matrix effects.
- j The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the analyte is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

R				,	
Friedman & Bruya, Inc. 3012 16th Avenue West Seattle, WA 98119-2029 Ph. (206) 285-8282 Recommendation Recom			8/27/21ME	Sample ID	Report To R. Jones J. Stevens K. Hempe Company TOC Seattle Terminal 1 Address City, State, ZIP Phone 206, 713 9372 Email
Relinquished by: Received by: Received by: Received by:				Lab ID 01 A. E	Jeven na l
SIGNATURE				Date Sampled $8/24/2621$	
				Time Sampled	SAMPLERS (signature) PROJECT NAME TOC Scattle Terminal 1 REMARKS Project specific RLs? - Yes / No
Me Colonial				Sample Type	SAMPLERS (signature) PROJECT NAME TOC Scattle Terminal A REMARKS Project specific RLs? - Yes / I
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				NWTPH-Gx	
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				NWTPH-HCID	
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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Arina Podnozova, B.S. Eric Young, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282 fbi@isomedia.com www.friedmanandbruya.com

September 15, 2021

Rusty Jones, Project Manager Crete Consulting 16300 Christensen Road, Suite 214 Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on September 13, 2021 from the TOC Seattle Terminal 1, F&BI 109204 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures

c: TOC Seattle Terminal 1

CTC0915R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on September 13, 2021 by Friedman & Bruya, Inc. from the Crete Consulting TOC Seattle Terminal 1, F&BI 109204 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Crete Consulting
109204 -01	CAA6B-SS-02
109204 -02	CAA6B-BASE-01

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 09/15/21 Date Received: 09/13/21

Project: TOC Seattle Terminal 1, F&BI 109204

Date Extracted: 09/13/21 Date Analyzed: 09/13/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Sample ID Laboratory ID	Benzene		e Surrogate (% Recovery) (Limit 50-132)
CAA6B-SS-02 109204-01	< 0.02	<5	77
CAA6B-BASE-01 109204-02	< 0.02	91	85
Method Blank 01-1936 MB	< 0.02	<5	76

ENVIRONMENTAL CHEMISTS

Date of Report: 09/15/21 Date Received: 09/13/21

Project: TOC Seattle Terminal 1, F&BI 109204

Date Extracted: 09/13/21 Date Analyzed: 09/13/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Sample ID Laboratory ID	$rac{ ext{Diesel Range}}{ ext{(C}_{10} ext{-C}_{25})}$	$\frac{ ext{Motor Oil Range}}{ ext{(C}_{25} ext{-C}_{36} ext{)}}$	Surrogate (% Recovery) (Limit 48-168)
CAA6B-SS-02 109204-01	<50	<250	94
CAA6B-BASE-01 109204-02	290 x	<250	95
Method Blank	<50	<250	102

ENVIRONMENTAL CHEMISTS

Date of Report: 09/15/21 Date Received: 09/13/21

Project: TOC Seattle Terminal 1, F&BI 109204

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 109204-01 (Duplicate)

		Sample	Duplicate	
	Reporting	Result	Result	RPD
Analyte	Units	(Wet Wt)	(Wet Wt)	(Limit 20)
Benzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Benzene	mg/kg (ppm)	0.5	74	66-121
Gasoline	mg/kg (ppm)	20	90	61-153

ENVIRONMENTAL CHEMISTS

Date of Report: 09/15/21 Date Received: 09/13/21

Project: TOC Seattle Terminal 1, F&BI 109204

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 109184-01 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	< 50	122	120	73-135	2

		Percent			
	Reporting	Spike	Recovery	Acceptance	
Analyte	Units	Level	LCS	Criteria	
Diesel Extended	mg/kg (ppm)	5,000	130	74-139	

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte may be due to carryover from previous sample injections.
- cf The sample was centrifuged prior to analysis.
- d The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv Insufficient sample volume was available to achieve normal reporting limits.
- f The sample was laboratory filtered prior to analysis.
- fb The analyte was detected in the method blank.
- fc The analyte is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.
- hs Headspace was present in the container used for analysis.
- ht The analysis was performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of control limits due to sample matrix effects.
- j The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the analyte is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

Report To R. Jones, J. Stevens, K. Hempe Company_ToC 3012 I 6th Avenue West CANOB-BASE-01 CA16B-58-02 Phone, City, State, ZIP Address_ Ph. (206) 285-8282 Seattle, WA 98119-2029 Friedman & Bruya, Inc. hocbol Sample ID Email Relinquished by: Received by: Received by: Relinquished by: S 0) A-E Lab II) SIGNATURE 9,13,21 Sampled Date SAMPLE CHAIN OF CUSTODY Sampled 8 ラス SAMPLERS (signature) Project specific RLs? - Yes / No REMARKS PROJECT NAME Time TOC Scattle Terminal 1 SOIL Sample Type Jars # of PRINT NAME S \mathcal{D} ONES NWTPH-Dx × NWTPH-Gx or co cre BTEX EPA 8021 NWTPH-HCID INVOICE TO ANALYSES REQUESTED VOCs EPA 8260 PAHs EPA 8270 CRETE CONSULTING FLBJ PCBs EPA 8082 COMPANY 09-13-2021 USI, Samples □ Other_ SAMPLE DISPOSAL Default: Dispose after 30 days TURNAROUND TIME recei red at 4 9-13-21 Sentene only 9,13,21 Alve anstruction DATE Notes ြင TIME

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Arina Podnozova, B.S. Eric Young, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282 fbi@isomedia.com www.friedmanandbruya.com

September 16, 2021

Rusty Jones, Project Manager Crete Consulting 16300 Christensen Road, Suite 214 Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on September 13, 2021 from the TOC Seattle Terminal 1, F&BI 109205 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures

c: TOC Seattle Terminal 1

CTC0916R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on September 13, 2021 by Friedman & Bruya, Inc. from the Crete Consulting TOC Seattle Terminal 1, F&BI 109205 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u> <u>Crete Consulting</u> 109205 -01 CAA6B-SS-01

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 09/16/21 Date Received: 09/13/21

Project: TOC Seattle Terminal 1, F&BI 109205

Date Extracted: 09/13/21 Date Analyzed: 09/14/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Sample ID Laboratory ID	<u>Benzene</u>	Gasoline <u>Range</u>	Surrogate (% Recovery) (Limit 50-150)
CAA6B-SS-01 109205-01	<0.02	<5	94
Method Blank 01-1935 MB	< 0.02	<5	87

ENVIRONMENTAL CHEMISTS

Date of Report: 09/16/21 Date Received: 09/13/21

Project: TOC Seattle Terminal 1, F&BI 109205

Date Extracted: 09/13/21 Date Analyzed: 09/13/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Sample ID Laboratory ID	$rac{ ext{Diesel Range}}{ ext{(C}_{10} ext{-C}_{25})}$	$\frac{ ext{Motor Oil Range}}{ ext{(C}_{25} ext{-C}_{36} ext{)}}$	Surrogate (% Recovery) (Limit 48-168)
CAA6B-SS-01 109205-01	<50	<250	96
Method Blank	<50	<250	102

ENVIRONMENTAL CHEMISTS

Date of Report: 09/16/21 Date Received: 09/13/21

Project: TOC Seattle Terminal 1, F&BI 109205

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE AND TPH AS GASOLINE USING METHOD 8021B AND NWTPH-Gx

Laboratory Code: 109160-01 (Duplicate)

		Sample	Duplicate	
	Reporting	Result	Result	RPD
Analyte	Units	(Wet Wt)	(Wet Wt)	(Limit 20)
Benzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Benzene	mg/kg (ppm)	0.5	99	69-120
Gasoline	mg/kg (ppm)	20	95	71 - 131

ENVIRONMENTAL CHEMISTS

Date of Report: 09/16/21 Date Received: 09/13/21

Project: TOC Seattle Terminal 1, F&BI 109205

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 109184-01 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	< 50	122	120	73-135	2

			Percent		
	Reporting	Spike	Recovery	Acceptance	
Analyte	Units	Level	LCS	Criteria	
Diesel Extended	mg/kg (ppm)	5,000	130	74-139	

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte may be due to carryover from previous sample injections.
- cf The sample was centrifuged prior to analysis.
- d The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv Insufficient sample volume was available to achieve normal reporting limits.
- f The sample was laboratory filtered prior to analysis.
- fb The analyte was detected in the method blank.
- fc The analyte is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.
- hs Headspace was present in the container used for analysis.
- ht The analysis was performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of control limits due to sample matrix effects.
- j The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the analyte is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

Seattle, WA 98119-2029 Phone_ Ph. (206) 285-8282 3012 16th Avenue West Report To K. Joves, T. Stevens, K. Hempel Friedman & Bruya, Inc. City, State, ZIP Address Company Tol Scattle Terminal 1 CAMOB-SS-OI 109 205 Sample ID Email Relinquished by: Received by: Relinquished by: Received by: 01 A.E 9.13,21 Lab ID SIGNATURE Sampled Date Sano Service SAMPLE CHAIN OF CUSTODY Sampled 1030 Time SAMPLERS (signature) PROJECT NAME REMARKS Project specific RLs? - Yes / No Toc scatte Terminal 1 205 Sample Туре Nhan Phan # of Jars PRINT NAME S ~ NWTPH-Dx NWTPH-Gx BTEX EPA 8021 NWTPH-HCID INVOICE TO ANALYSES REQUESTED VOCs EPA 8260 PO# TO BI PAHs EPA 8270 CATE CONSULTING PCBs EPA 8082 Samples received at COMPANY Page # of TURNAROUND TIME Default: Dispose after 30 days ☐ Archive samples Rush charges authorized by: □ Standard turnaround SAMPLE DISPOSAL 9-13-2 9.13.2 4 oc DATE Benzene only Notes TIME る三 126

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Arina Podnozova, B.S. Eric Young, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282 fbi@isomedia.com www.friedmanandbruya.com

September 15, 2021

Rusty Jones, Project Manager Crete Consulting 16300 Christensen Road, Suite 214 Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on September 13, 2021 from the TOC Seattle Terminal 1, F&BI 109218 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures

c: TOC Seattle Terminal 1

CTC0915R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on September 13, 2021 by Friedman & Bruya, Inc. from the Crete Consulting TOC Seattle Terminal 1, F&BI 109218 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Crete Consulting
109218 -01	CAA6B-BASE-02
109218 -02	CAA6B-BASE-03
109218 -03	CAA6B-BASE-04

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 09/15/21 Date Received: 09/13/21

Project: TOC Seattle Terminal 1, F&BI 109218

Date Extracted: 09/12/21 Date Analyzed: 09/12/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 58-139)
CAA6B-BASE-02 109218-01	24	102
Method Blank 01-1936 MB	<5	90

ENVIRONMENTAL CHEMISTS

Date of Report: 09/15/21 Date Received: 09/13/21

Project: TOC Seattle Terminal 1, F&BI 109218

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 109204-01 (Duplicate)

		Sample	Duplicate	
	Reporting	Result	Result	RPD
Analyte	Units	(Wet Wt)	(Wet Wt)	(Limit 20)
Gasoline	mg/kg (ppm)	<5	<5	nm

			I GICGIII		
	Reporting	Spike	Recovery	Acceptance	
Analyte	Units	Level	LCS	Criteria	
Gasoline	mg/kg (ppm)	20	90	61-153	-

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
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- jl The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
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- lc The presence of the analyte is likely due to laboratory contamination.
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- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

Ph. (206) 285-8282 3012 16th Avenue West Phone_ Seattle, WA 98119-2029 CHALOB-BASE-02 Friedman & Bruya, Inc. CALOB-BASE-03 City, State, ZIP Company TOC Seattle Terminal STORY BASE-OF Address Report To 109218 Sample ID Email Relinquished by: Relinquished by: Received by: Received by: 3 02 0) A-6 Lab ID SIGNATURE 12.2.2 Sampled Date 5000 SAMPLE CHAIN OF CUSTODY Sampled PROJECT NAME Project specific RLs? - Yes / No SAMPLERS (signature) REMARKS Too Seattle Terminal I つるか Sample Type Sarah Assor Jars # of 7 PRINT NAME 5 5 Washer - proya NWTPH-Dx NWTPH-Gx Swo BTEX EPA 8021 NWTPH-HCID INVOICE TO MALYSES REQUESTED VOCs EPA 8260 PO# CAME CONSTITUTE PAHs EPA 8270 PCBs EPA 8082 COMPANY 09-13-21 Samples redeived at Default: Dispose after 30 days Other ☐ Archive samples RUSH Frater pe RT 1/13/14
Rush charges authorized by: ~6 TURNAROUND TIME CI/ Page # SAMPLE DISPOSAL 9/13/21 9,3,2 Set A SA DATE Notes 1607 1007 2 TIME 5

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Arina Podnozova, B.S. Eric Young, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282 fbi@isomedia.com www.friedmanandbruya.com

September 17, 2021

Rusty Jones, Project Manager Crete Consulting 16300 Christensen Road, Suite 214 Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on September 13, 2021 from the TOC Seattle Terminal 1, F&BI 109219 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures

c: TOC Seattle Terminal 1

CTC0917R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on September 13, 2021 by Friedman & Bruya, Inc. from the Crete Consulting TOC Seattle Terminal 1, F&BI 109219 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID Crete Consultin

109219 -01 Northeast 109219 -02 South

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 09/17/21 Date Received: 09/13/21

Project: TOC Seattle Terminal 1, F&BI 109219

Date Extracted: 09/15/21 Date Analyzed: 09/15/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	$rac{ ext{Diesel Range}}{ ext{(C}_{10} ext{-C}_{25})}$	$\frac{\text{Motor Oil Range}}{(C_{25}\text{-}C_{36})}$	Surrogate (% Recovery) (Limit 48-168)
Northeast 109219-01	<50	<250	97
South 109219-02	<50	<250	102
Method Blank 01-2108 MB	<50	<250	98

ENVIRONMENTAL CHEMISTS

Date of Report: 09/17/21 Date Received: 09/13/21

Project: TOC Seattle Terminal 1, F&BI 109219

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 109219-01 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	< 50	118	124	73-135	5

			Percent		
	Reporting	Spike	Recovery	Acceptance	
Analyte	Units	Level	LCS	Criteria	
Diesel Extended	mg/kg (ppm)	5,000	118	74-139	_

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte may be due to carryover from previous sample injections.
- cf The sample was centrifuged prior to analysis.
- d The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv Insufficient sample volume was available to achieve normal reporting limits.
- f The sample was laboratory filtered prior to analysis.
- fb The analyte was detected in the method blank.
- fc The analyte is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.
- hs Headspace was present in the container used for analysis.
- ht The analysis was performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of control limits due to sample matrix effects.
- j The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the analyte is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

South Phone Company Tol Seattle Report To_ City, State, ZIP Address Ph. (206) 285-8282 Seattle, WA 98119-2029 3012 16th Avenue West Friedman & Bruya, Inc. Northeast Sample ID M. How H. Stades K. Howe Email Relinquished by: Relinquished by: Received by: Received by: (crimina) 9 Lab ID SIGNATURE 09.13.2 Sampled Date SAMPLE CHAIN OF CUSTODY Time Sampled orto SAMPLERS (signature)

Eusty Jouls

PROJECT NAME 545 Project specific RLs? - Yes / No REMARKS TOO seathe Terminal 1 SOF Sample 150C Туре Liz Webber-Bruy9 Jars - aver PRINT NAME NWTPH-Dx 1. Joseph NWTPH-Gx BTEX EPA 8021 NWTPH-HCID INVOICE TO ANALYSES REQUESTED VOCs EPA 8260 P0# 0473-7 PAHs EPA 8270 CREATE CONSULTING PCBs EPA 8082 COMPANY Samples received at Rush charges authorized by: Standard turnaround □ Archive samples Default: Dispose after 30 days 40 TURNAROUND TIME SAMPLE DISPOSAL 9/13/21 9.13.2 DATE Notes HMIL 1607 2

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Arina Podnozova, B.S. Eric Young, B.S.

3012 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282 fbi@isomedia.com www.friedmanandbruya.com

October 7, 2021

Rusty Jones, Project Manager Crete Consulting 16300 Christensen Road, Suite 214 Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on October 4, 2021 from the TOC Seattle Terminal 1, F&BI 110063 project. There are 8 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures

c: TOC Seattle Terminal 1

CTC1007R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on October 4, 2021 by Friedman & Bruya, Inc. from the Crete Consulting TOC Seattle Terminal 1, F&BI 110063 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Crete Consulting
110063 -01	CAA2B-Base-04
110063 -02	CAA2B-Base-04-0.5
110063 -03	CAA2B-Base-04-1

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 10/07/21 Date Received: 10/04/21

Project: TOC Seattle Terminal 1, F&BI 110063

Date Extracted: 10/05/21 and 10/06/21 Date Analyzed: 10/05/21 and 10/06/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	<u>Gasoline Range</u>	Surrogate (<u>% Recovery</u>) (Limit 58-139)
CAA2B-Base-04 110063-01 1/10	2,100	ip
CAA2B-Base-04-0.5	410	108
Method Blank 01-1971 MB	<5	98
Method Blank 01-1975 MB	<5	87

ENVIRONMENTAL CHEMISTS

Date of Report: 10/07/21 Date Received: 10/04/21

Project: TOC Seattle Terminal 1, F&BI 110063

Date Extracted: 10/05/21 and 10/06/21 Date Analyzed: 10/05/21 and 10/06/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	$\frac{\text{Diesel Range}}{\text{(C}_{10}\text{-C}_{25})}$	$\frac{\text{Motor Oil Range}}{(C_{25}\text{-}C_{36})}$	Surrogate (% Recovery) (Limit 53-144)
CAA2B-Base-04 110063-01	11,000	<250	ip
CAA2B-Base-04-0.5 110063-02	3,400	<250	98
Method Blank 01-2272 MB	<50	<250	89
Method Blank 01-2285 MB	<50	<250	96

ENVIRONMENTAL CHEMISTS

Date of Report: 10/07/21 Date Received: 10/04/21

Project: TOC Seattle Terminal 1, F&BI 110063

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 110053-02 (Duplicate)

		Sample	Duplicate	
	Reporting	Result	Result	RPD
Analyte	Units	(Wet Wt)	(Wet Wt)	(Limit 20)
Gasoline	mg/kg (ppm)	<5	<5	nm

			I GICGIII		
	Reporting	Spike	Recovery	Acceptance	
Analyte	Units	Level	LCS	Criteria	
Gasoline	mg/kg (ppm)	20	100	71-131	-

ENVIRONMENTAL CHEMISTS

Date of Report: 10/07/21 Date Received: 10/04/21

Project: TOC Seattle Terminal 1, F&BI 110063

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 110058-01 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	56	95	97	64-133	2

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Diesel Extended	mg/kg (ppm)	5,000	88	58-147

ENVIRONMENTAL CHEMISTS

Date of Report: 10/07/21 Date Received: 10/04/21

Project: TOC Seattle Terminal 1, F&BI 110063

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 110080-01 (Duplicate)

		Sample	Duplicate	
	Reporting	Result	Result	RPD
Analyte	Units	(Wet Wt)	(Wet Wt)	(Limit 20)
Gasoline	mg/kg (ppm)	<5	<5	nm

			I GICGIII		
	Reporting	Spike	Recovery	Acceptance	
Analyte	Units	Level	LCS	Criteria	
Gasoline	mg/kg (ppm)	20	95	71-131	-

ENVIRONMENTAL CHEMISTS

Date of Report: 10/07/21 Date Received: 10/04/21

Project: TOC Seattle Terminal 1, F&BI 110063

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 110063-01 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	9,400	97	89	73-135	9

			Percent		
	Reporting	Spike	Recovery	Acceptance	
Analyte	Units	Level	LCS	Criteria	
Diesel Extended	mg/kg (ppm)	5,000	100	74-139	

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
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- c The presence of the analyte may be due to carryover from previous sample injections.
- cf The sample was centrifuged prior to analysis.
- d The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv Insufficient sample volume was available to achieve normal reporting limits.
- f The sample was laboratory filtered prior to analysis.
- fb The analyte was detected in the method blank.
- fc The analyte is a common laboratory and field contaminant.
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- hs Headspace was present in the container used for analysis.
- ht The analysis was performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of control limits due to sample matrix effects.
- j The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
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- lc The presence of the analyte is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Arina Podnozova, B.S. Eric Young, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282 fbi@isomedia.com www.friedmanandbruya.com

October 11, 2021

Rusty Jones, Project Manager Crete Consulting 16300 Christensen Road, Suite 214 Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on October 6, 2021 from the TOC Seattle Terminal 1, F&BI 110112 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures

c: TOC Seattle Terminal 1

CTC1011R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on October 6, 2021 by Friedman & Bruya, Inc. from the Crete Consulting TOC Seattle Terminal 1, F&BI 110112 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Crete Consulting
110112 -01	CAA2B-BASE-03
110112 -02	CAA2B-BASE-03-0.5
110112 -03	CAA2B-BASE-03-1

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 10/11/21 Date Received: 10/06/21

Project: TOC Seattle Terminal 1, F&BI 110112

Date Extracted: 10/06/21 Date Analyzed: 10/07/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
CAA2B-BASE-03 110112-01	48	93
Method Blank 01-1973 MB	<5	97

ENVIRONMENTAL CHEMISTS

Date of Report: 10/11/21 Date Received: 10/06/21

Project: TOC Seattle Terminal 1, F&BI 110112

Date Extracted: 10/06/21 Date Analyzed: 10/06/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	$\frac{\text{Diesel Range}}{\text{(C}_{10}\text{-C}_{25})}$	Motor Oil Range (C ₂₅ -C ₃₆)	Surrogate (% Recovery) (Limit 56-165)
CAA2B-BASE-03 110112-01	120	<250	84
Method Blank	<50	<250	87

ENVIRONMENTAL CHEMISTS

Date of Report: 10/11/21 Date Received: 10/06/21

Project: TOC Seattle Terminal 1, F&BI 110112

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

			Percent	Percent		
	Reporting	Spike	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	LCS	LCSD	Criteria	(Limit 20)
Gasoline	mg/kg (ppm)	20	100	95	60-120	5

ENVIRONMENTAL CHEMISTS

Date of Report: 10/11/21 Date Received: 10/06/21

Project: TOC Seattle Terminal 1, F&BI 110112

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 110082-01 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	< 50	90	92	63-146	2

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Diesel Extended	mg/kg (ppm)	5,000	88	79-144

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte may be due to carryover from previous sample injections.
- cf The sample was centrifuged prior to analysis.
- d The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv Insufficient sample volume was available to achieve normal reporting limits.
- f The sample was laboratory filtered prior to analysis.
- fb The analyte was detected in the method blank.
- fc The analyte is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.
- hs Headspace was present in the container used for analysis.
- ht The analysis was performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of control limits due to sample matrix effects.
- j The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the analyte is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

Report To R. Joves, J. Steve.
Company Tol Scattle 110112 City, State, ZIP_ Address SA

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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Arina Podnozova, B.S. Eric Young, B.S.

3012 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282 fbi@isomedia.com www.friedmanandbruya.com

October 11, 2021

Rusty Jones, Project Manager Crete Consulting 16300 Christensen Road, Suite 214 Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on October 6, 2021 from the TOC Seattle Terminal 1, F&BI 110129 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures

c: TOC Seattle Terminal 1

CTC1011R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on October 6, 2021 by Friedman & Bruya, Inc. from the Crete Consulting TOC Seattle Terminal 1, F&BI 110129 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Crete Consulting
110129 -01	CAA2B-Base-02
110129 -02	CAA2B-Base-02-0.5
110129 -03	CAA2B-Base-02-0.7

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 10/11/21 Date Received: 10/06/21

Project: TOC Seattle Terminal 1, F&BI 110129

Date Extracted: 10/07/21 Date Analyzed: 10/07/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Sample ID Laboratory ID	<u>Gasoline Range</u>	Surrogate (% Recovery) (Limit 50-150)
CAA2B-Base-02 110129-01 1/5	570	ip
Method Blank 01-2289 MB2	<5	101

ENVIRONMENTAL CHEMISTS

Date of Report: 10/11/21 Date Received: 10/06/21

Project: TOC Seattle Terminal 1, F&BI 110129

Date Extracted: 10/07/21 Date Analyzed: 10/07/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Sample ID Laboratory ID	$\frac{\text{Diesel Range}}{\text{(C}_{10}\text{-C}_{25})}$	$\frac{\text{Motor Oil Range}}{(\text{C}_{25}\text{-C}_{36})}$	Surrogate (% Recovery) (Limit 48-168)
CAA2B-Base-02 110129-01	1,700	<250	98
Method Blank 01-2288 MB2	<50	<250	97

ENVIRONMENTAL CHEMISTS

Date of Report: 10/11/21 Date Received: 10/06/21

Project: TOC Seattle Terminal 1, F&BI 110129

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 110119-01 (Duplicate)

		Sample	Duplicate	
	Reporting	Result	Result	RPD
Analyte	Units	(Wet Wt)	(Wet Wt)	(Limit 20)
Gasoline	mg/kg (ppm)	<5	<5	nm

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Gasoline	mg/kg (ppm)	20	110	71-131

ENVIRONMENTAL CHEMISTS

Date of Report: 10/11/21 Date Received: 10/06/21

Project: TOC Seattle Terminal 1, F&BI 110129

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 110042-46 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	64	91	99	64-133	8

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Diesel Extended	mg/kg (ppm)	5,000	90	58-147

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte may be due to carryover from previous sample injections.
- cf The sample was centrifuged prior to analysis.
- d The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv Insufficient sample volume was available to achieve normal reporting limits.
- f The sample was laboratory filtered prior to analysis.
- fb The analyte was detected in the method blank.
- fc The analyte is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.
- hs Headspace was present in the container used for analysis.
- ht The analysis was performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of control limits due to sample matrix effects.
- j The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the analyte is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

Report To R. Towes, T. Stevens, K. Hempel

Company Toc Scattle Terminal 1

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3012 16th Avenue West Seattle, WA 98119-2029 Ph. (206) 285-8282

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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Arina Podnozova, B.S. Eric Young, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282 fbi@isomedia.com www.friedmanandbruya.com

October 14, 2021

Rusty Jones, Project Manager Crete Consulting 16300 Christensen Road, Suite 214 Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on October 11, 2021 from the TOC Seattle Terminal 1, F&BI 110205 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures

c: TOC Seattle Terminal 1

CTC1014R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on October 11, 2021 by Friedman & Bruya, Inc. from the Crete Consulting TOC Seattle Terminal 1, F&BI 110205 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Crete Consulting
110205 -01	CAA2B-BASE-01
110205 -02	CAA2B-BASE-01-0.5

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 10/14/21 Date Received: 10/11/21

Project: TOC Seattle Terminal 1, F&BI 110205

Date Extracted: 10/12/21 Date Analyzed: 10/12/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 58-139)
CAA2B-BASE-01 110205-01	54	118
Method Blank 01-2297 MB	<5	101

ENVIRONMENTAL CHEMISTS

Date of Report: 10/14/21 Date Received: 10/11/21

Project: TOC Seattle Terminal 1, F&BI 110205

Date Extracted: 10/11/21 Date Analyzed: 10/11/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Sample ID Laboratory ID	$\frac{\text{Diesel Range}}{\text{(C}_{10}\text{-C}_{25})}$	$\frac{ ext{Motor Oil Range}}{ ext{(C}_{25} ext{-C}_{36} ext{)}}$	Surrogate (% Recovery) (Limit 48-168)
CAA2B-BASE-01 110205-01	250	<250	105
Method Blank 01-2346 MB	<50	<250	93

ENVIRONMENTAL CHEMISTS

Date of Report: 10/14/21 Date Received: 10/11/21

Project: TOC Seattle Terminal 1, F&BI 110205

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 110202-01 (Duplicate)

		Sample	Duplicate	
	Reporting	Result	Result	RPD
Analyte	Units	(Wet Wt)	(Wet Wt)	(Limit 20)
Gasoline	mg/kg (ppm)	<5	<5	nm

			1 ercent		
	Reporting	Spike	Recovery	Acceptance	
Analyte	Units	Level	LCS	Criteria	
Gasoline	mg/kg (ppm)	20	95	61-153	_

ENVIRONMENTAL CHEMISTS

Date of Report: 10/14/21 Date Received: 10/11/21

Project: TOC Seattle Terminal 1, F&BI 110205

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 110180-05 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	< 50	102	104	73-135	2

			Percent		
	Reporting	Spike	Recovery	Acceptance	
Analyte	Units	Level	LCS	Criteria	
Diesel Extended	mg/kg (ppm)	5,000	102	74-139	

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte may be due to carryover from previous sample injections.
- cf The sample was centrifuged prior to analysis.
- d The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv Insufficient sample volume was available to achieve normal reporting limits.
- f The sample was laboratory filtered prior to analysis.
- fb The analyte was detected in the method blank.
- fc The analyte is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.
- hs Headspace was present in the container used for analysis.
- ht The analysis was performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of control limits due to sample matrix effects.
- j The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the analyte is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Arina Podnozova, B.S. Eric Young, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282 fbi@isomedia.com www.friedmanandbruya.com

November 12, 2021

Rusty Jones, Project Manager Crete Consulting 16300 Christensen Road, Suite 214 Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on November 9, 2021 from the TOC Seattle Terminal 1, F&BI 111149 project. There are 10 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures

c: TOC Seattle Terminal 1

CTC1112R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on November 9, 2021 by Friedman & Bruya, Inc. from the Crete Consulting TOC Seattle Terminal 1, F&BI 111149 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Crete Consulting
111149 -01	CAA3-SS-04
111149 -02	CAA3-BASE-03

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/12/21 Date Received: 11/09/21

Project: TOC Seattle Terminal 1, F&BI 111149

Date Extracted: 11/10/21 Date Analyzed: 11/10/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Sample ID Laboratory ID	Gasoline Range	Surrogate (<u>% Recovery</u>) (Limit 58-139)
CAA3-SS-04 111149-01	21	108
CAA3-BASE-03 111149-02	<5	102
Method Blank ⁰¹⁻²⁵³⁴ MB	<5	100

ENVIRONMENTAL CHEMISTS

Date of Report: 11/12/21 Date Received: 11/09/21

Project: TOC Seattle Terminal 1, F&BI 111149

Date Extracted: 11/10/21 Date Analyzed: 11/10/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Sample ID Laboratory ID	$rac{ ext{Diesel Range}}{ ext{(C}_{10} ext{-C}_{25} ext{)}}$	$\frac{\text{Motor Oil Range}}{\text{(C}_{25}\text{-C}_{36}\text{)}}$	Surrogate (% Recovery) (Limit 53-144)
CAA3-SS-04 111149-01	67 x	<250	91
CAA3-BASE-03 111149-02	<50	<250	91
Method Blank 01-2611 MB2	<50	<250	91

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID: CAA3-SS-04 Client: Crete Consulting

Date Received: 11/09/21 Project: TOC Seattle Terminal 1, F&BI 111149

115

Lab ID: Date Extracted: 11/09/21 111149-01 Date Analyzed: 11/10/21 Data File: 111011.D Matrix: Soil Instrument: GCMS4 Units: mg/kg (ppm) Dry Weight Operator: WE

Upper Lower Surrogates: % Recovery: Limit: Limit: 1,2-Dichloroethane-d4 101 90 109 Toluene-d8 103 89 112 4-Bromofluorobenzene 99 84

Concentration mg/kg (ppm) Compounds:

Trichloroethene < 0.02

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID: CAA3-BASE-03 Client: Crete Consulting

Date Received: 11/09/21 Project: TOC Seattle Terminal 1, F&BI 111149

Lab ID: Date Extracted: 11/09/21 111149-02 Date Analyzed: 11/10/21 Data File: 111012.DMatrix: Soil Instrument: GCMS4 Units: mg/kg (ppm) Dry Weight Operator: WE

Upper Lower Surrogates: % Recovery: Limit: Limit: 1,2-Dichloroethane-d4 98 90 109 Toluene-d8 106 89 112 4-Bromofluorobenzene 98 84 115

Compounds: Concentration mg/kg (ppm)

Trichloroethene <0.02

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID: Method Blank Client: Crete Consulting

Date Received: Not Applicable Project: TOC Seattle Terminal 1, F&BI 111149

Date Extracted: 11/09/21 Lab ID: 01-2571 mb
Date Analyzed: 11/09/21 Data File: 110919.D
Matrix: Soil Instrument: GCMS4

Units: mg/kg (ppm) Dry Weight Operator: WE

Upper Lower Surrogates: % Recovery: Limit: Limit: 1,2-Dichloroethane-d4 93 90 109 Toluene-d8 104 89 112 4-Bromofluorobenzene 98 84 115

Concentration

Compounds: mg/kg (ppm)

Trichloroethene <0.02

ENVIRONMENTAL CHEMISTS

Date of Report: 11/12/21 Date Received: 11/09/21

Project: TOC Seattle Terminal 1, F&BI 111149

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 111177-03 (Duplicate)

		Sample	Duplicate	
	Reporting	Result	Result	RPD
Analyte	Units	(Wet Wt)	(Wet Wt)	(Limit 20)
Gasoline	mg/kg (ppm)	<5	<5	nm

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Gasoline	mg/kg (ppm)	20	105	61-153

ENVIRONMENTAL CHEMISTS

Date of Report: 11/12/21 Date Received: 11/09/21

Project: TOC Seattle Terminal 1, F&BI 111149

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 111155-01 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	8,000	76	65	64-133	16

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Diesel Extended	mg/kg (ppm)	5,000	100	58-147

ENVIRONMENTAL CHEMISTS

Date of Report: 11/12/21 Date Received: 11/09/21

Project: TOC Seattle Terminal 1, F&BI 111149

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 111035-02 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet wt)	MS	MSD	Criteria	(Limit 20)
Trichloroethene	mg/kg (ppm)	1	< 0.02	77	75	21-139	3

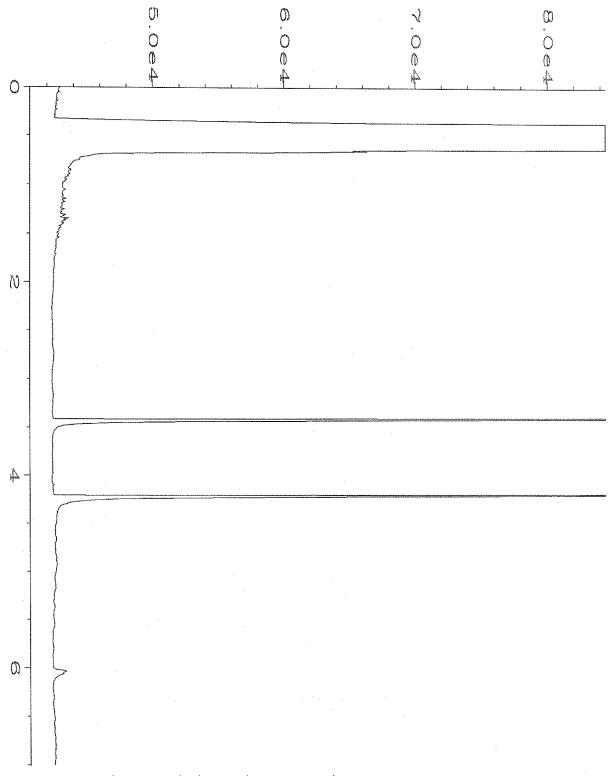
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	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Trichloroethene	mg/kg (ppm)	1	101	63-121

ENVIRONMENTAL CHEMISTS

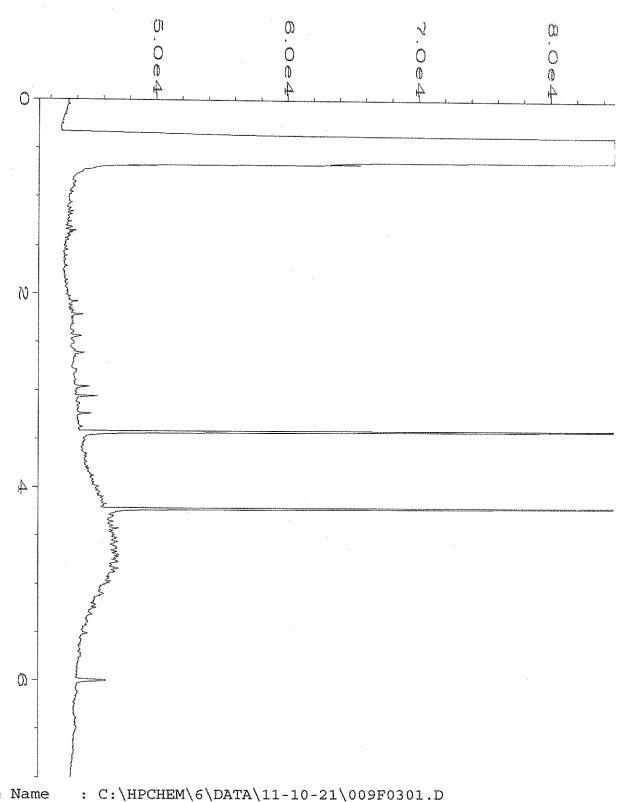
Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte may be due to carryover from previous sample injections.
- cf The sample was centrifuged prior to analysis.
- d The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv Insufficient sample volume was available to achieve normal reporting limits.
- f The sample was laboratory filtered prior to analysis.
- fb The analyte was detected in the method blank.
- fc The analyte is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.
- hs Headspace was present in the container used for analysis.
- ht The analysis was performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of control limits due to sample matrix effects.
- j The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the analyte is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

Ph. (206) 285-8282	3012 16th Avenue West Seattle, WA 98119-2029	Friedman & Bruya, Inc.	^~		,			-				CASBASEOS	CA3-58-04	Sample ID		PhoneEr	City, State, ZIP		Company Toc Seattle	Report To K, Jowes J.	Phi III
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                 : 111149-01
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                                               Sequence Line
                                                                : 3
Acquired on
                : 10 Nov 21 09:21 AM
                                               Instrument Method: DX.MTH
                                               Analysis Method : DEFAULT.MTH
Report Created on: 10 Nov 21 10:45 AM
```

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Arina Podnozova, B.S. Eric Young, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282 fbi@isomedia.com www.friedmanandbruya.com

November 16, 2021

Rusty Jones, Project Manager Crete Consulting 16300 Christensen Road, Suite 214 Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on November 10, 2021 from the TOC Seattle Terminal 1, F&BI 111201 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures

c: TOC Seattle Terminal 1

CTC1116R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on November 10, 2020 by Friedman & Bruya, Inc. from the Crete Consulting TOC Seattle Terminal 1, F&BI 111201 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Crete Consulting
111201 -01	CAA3-DUP-01
111201 -02	CAA3-SS-01
111201 -03	CAA3-BASE-01
111201 -04	CAA3-DUP-02
111201 -05	CAA3-SS-02
111201 -06	CAA3-BASE-02

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/16/21 Date Received: 11/10/21

Project: TOC Seattle Terminal 1, F&BI 111201

Date Extracted: 11/11/21 Date Analyzed: 11/11/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Sample ID Laboratory ID	Gasoline Range	Surrogate (<u>% Recovery</u>) (Limit 58-139)
CAA3-DUP-01	<5	100
CAA3-SS-01 111201-02	9.8	104
CAA3-BASE-01 111201-03	66	111
CAA3-DUP-02 111201-04	38	104
CAA3-SS-02 111201-05 1/5	220	107
CAA3-BASE-02 111201-06 1/5	130	103
Method Blank ⁰¹⁻²⁵³⁶ MB	<5	100

ENVIRONMENTAL CHEMISTS

Date of Report: 11/16/21 Date Received: 11/10/21

Project: TOC Seattle Terminal 1, F&BI 111201

Date Extracted: 11/11/21 Date Analyzed: 11/11/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Sample ID Laboratory ID	$\frac{\text{Diesel Range}}{(\text{C}_{10}\text{-C}_{25})}$	Motor Oil Range (C ₂₅ -C ₃₆)	Surrogate (% Recovery) (Limit 53-144)
CAA3-DUP-01 111201-01	<50	<250	95
CAA3-SS-01 111201-02	<50	<250	93
CAA3-BASE-01 111201-03	170	<250	96
CAA3-DUP-02 111201-04	160	<250	92
CAA3-SS-02 111201-05	92	<250	93
CAA3-BASE-02 111201-06	370	<250	92
Method Blank 01-2619 MB	<50	<250	94

ENVIRONMENTAL CHEMISTS

Date of Report: 11/16/21 Date Received: 11/10/21

Project: TOC Seattle Terminal 1, F&BI 111201

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

			Percent	Percent		
	Reporting	Spike	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	LCS	LCSD	Criteria	(Limit 20)
Gasoline	mg/kg (ppm)	20	105	105	61-153	0

ENVIRONMENTAL CHEMISTS

Date of Report: 11/16/21 Date Received: 11/10/21

Project: TOC Seattle Terminal 1, F&BI 111201

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 111201-01 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	< 50	90	90	64-133	0

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Diesel Extended	mg/kg (ppm)	5,000	90	58-147

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte may be due to carryover from previous sample injections.
- cf The sample was centrifuged prior to analysis.
- d The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv Insufficient sample volume was available to achieve normal reporting limits.
- f The sample was laboratory filtered prior to analysis.
- fb The analyte was detected in the method blank.
- fc The analyte is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.
- hs Headspace was present in the container used for analysis.
- ht The analysis was performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of control limits due to sample matrix effects.
- j The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the analyte is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

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Ph. (206) 285-8282	Seattle, WA 98119-2029	3012 16th Avenue West	Friedman & Bruya, Inc.					CAA3-BASE-02	CXX3-55-02	CAA3-DUP-07	CAA3-BASE-01	CAA3-55-01	CAAS-DUP-01	Sample ID		Phone	City, State, ZIP	Address	Company Toc Scottic	town /	111 20
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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Arina Podnozova, B.S. Eric Young, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 (206) 285-8282 fbi@isomedia.com www.friedmanandbruya.com

November 12, 2021

Rusty Jones, Project Manager Crete Consulting 16300 Christensen Road, Suite 214 Tukwila, WA 98188

Dear Mr Jones:

Included are the results from the testing of material submitted on November 9, 2021 from the TOCST 1, F&BI 111170 project. There are 9 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures

c: TOC Seattle Terminal 1

CTC1112R.DOC

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on November 9, 2021 by Friedman & Bruya, Inc. from the Crete Consulting TOCST 1, F&BI 111170 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u> <u>Crete Consulting</u> 111170 -01 CAA3-SS-03

All quality control requirements were acceptable.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/12/21 Date Received: 11/09/21

Project: TOCST 1, F&BI 111170

Date Extracted: 11/09/21 Date Analyzed: 11/10/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 58-139)
CAA3-SS-03 111170-01 1/10	270	107
Method Blank	<5	112

ENVIRONMENTAL CHEMISTS

Date of Report: 11/12/21 Date Received: 11/09/21

Project: TOCST 1, F&BI 111170

Date Extracted: 11/10/21 Date Analyzed: 11/10/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	$rac{ ext{Diesel Range}}{ ext{(C}_{10} ext{-C}_{25})}$	$\frac{ ext{Motor Oil Range}}{ ext{(C}_{25} ext{-C}_{36} ext{)}}$	Surrogate (% Recovery) (Limit 53-144)
CAA3-SS-03 111170-01	<50	<250	94
Method Blank 01-2611 MB2	<50	<250	91

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID: CAA3-SS-03 Client: Crete Consulting
Date Received: 11/09/21 Project: TOCST 1, F&BI 111170
Date Extracted: 11/09/21 Lab ID: 111170-01

Date Analyzed: 11/10/21 Data File: 111019.D Matrix: Soil Instrument: GCMS4 Units: mg/kg (ppm) Dry Weight Operator: WE

Upper Lower Surrogates: % Recovery: Limit: Limit: 1,2-Dichloroethane-d4 104 90 109 Toluene-d8 108 89 112 4-Bromofluorobenzene 100 84 115

Compounds: Concentration mg/kg (ppm)

Trichloroethene <0.02

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID: Method Blank Client: Crete Consulting
Date Received: Not Applicable Project: TOCST 1, F&BI 111170

Date February 11/09/91

11/09/21 Lab ID: Date Extracted: 01-2571 mbDate Analyzed: 11/09/21 Data File: 110919.D Matrix: Soil Instrument: GCMS4 Units: mg/kg (ppm) Dry Weight Operator: WE

Upper Lower Surrogates: % Recovery: Limit: Limit: 1,2-Dichloroethane-d4 93 90 109 Toluene-d8 104 89 112 4-Bromofluorobenzene 98 84 115

Concentration

Compounds: mg/kg (ppm)

Trichloroethene <0.02

ENVIRONMENTAL CHEMISTS

Date of Report: 11/12/21 Date Received: 11/09/21

Project: TOCST 1, F&BI 111170

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 111051-11 (Duplicate)

		Sample	Duplicate	
	Reporting	Result	Result	RPD
Analyte	Units	(Wet Wt)	(Wet Wt)	(Limit 20)
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Gasoline	mg/kg (ppm)	20	85	71-131

ENVIRONMENTAL CHEMISTS

Date of Report: 11/12/21 Date Received: 11/09/21

Project: TOCST 1, F&BI 111170

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 111155-01 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5.000	8,000	76	65	64-133	16

Laboratory Code: Laboratory Control Sample

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Diesel Extended	mg/kg (ppm)	5,000	100	58-147

ENVIRONMENTAL CHEMISTS

Date of Report: 11/12/21 Date Received: 11/09/21

Project: TOCST 1, F&BI 111170

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 111035-02 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet wt)	MS	MSD	Criteria	(Limit 20)
Trichloroethene	mg/kg (ppm)	1	< 0.02	77	75	21-139	3

Laboratory Code: Laboratory Control Sample

	J			
			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Trichloroethene	mg/kg (ppm)	1	101	63-121

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte may be due to carryover from previous sample injections.
- cf The sample was centrifuged prior to analysis.
- d The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv Insufficient sample volume was available to achieve normal reporting limits.
- f The sample was laboratory filtered prior to analysis.
- fb The analyte was detected in the method blank.
- fc The analyte is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.
- hs Headspace was present in the container used for analysis.
- ht The analysis was performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of control limits due to sample matrix effects.
- j The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the analyte is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

Friedman & Bruya, Inc. 3012 16th Avenue West Seattle, WA 98119-2029 Ph. (206) 285-8282 Received by:					CAA3-85-03	Sample ID		PhoneEmail	City, State, ZIP	Address	Company Tol Seattle T	Report To K. Joves J. S.	
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Appendix F Import Laboratory Report

SUBMITTAL REVIEW COMMENT FORM

Submittal Title:	Bedding Sand	Submittal Identification Number	0A.1
Project Title: Project Number:	Time Oil Company - Seattle	Davieway/a).	CRETE- Reid Carscadden
Cantera Project Manager:	Kim Hempel	Reviewer(s):	(RC)/Jamie Stevens(JCS)
Dated Submitted:	10/07/2021	Final Review Date:	10/07/2021

Submittal Item No.	Reviewer Name	Review Date	Reviewer Comment with Contract Document Reference	Receipt Acknowledged	1 Accepted	Accepted as Noted	Revise and Resubmit	(Substitution Requests Only) Not Accepted
A.1	JCS	10/7/21	Bedding Sand		х			

CalPortland - Aggregate Submittal

Date: July 21,2021



Product Number: 8725

Product Description:
Specification Number:

Building Sand
ASTM C33, Fine Aggregate

Source:

Manke Pit

Location:

Shelton, WA

WSDOT Pit Number: x-125

Specification:

3/8"	100%passing
#4	95-100%
#8	80-100
#16	50-85
#30	25-60
#50	10-30
#100	2-10
#200	0-3

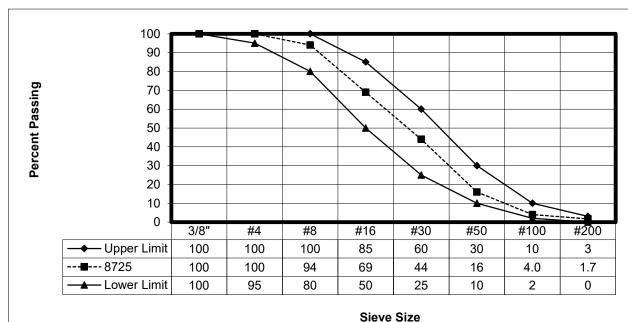
% Fracture Sand Equivalent L.A. Wear Degradation: Dust Ratio F.M. 2.3 to 3.1

Specific Gravity: Absorption: L.A. Abrasion: Degradation:

2.718
1.2%
11.0%
62

% Fracture: Sand Equivalent: Dust Ratio: F.M.

0%
0.00
0
2.72





To Whom it May Concern,

Sample IDs "Grab 01", "DP Agg 72021", and "DP Grab 02" (collected September 2nd, July 29th, and August 18th, 2021), are composite samples collected from active mine faces. As such, the samples are representative of all mined materials from their respective sources.

Thank you,

Annie Ayre

Environmental Manager

CalPortland

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

08/13/2021 P.O.#: 4501095667 Project: DP Agg

Client ID: DP Agg 72021

Sample Matrix: Soil

Cal Portland - Pioneer Aggregates Date Sampled: 07/29/2021

 4301 Pioneer Avenue
 Date Received: 07/29/2021

 DuPont, WA 98327
 Spectra Project: 2021070720

Attn: Jim Tweedy or Louie Bayless Spectra Number: 1

Rush

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Benzo(a)AnthraceneSIM	< 0.005	mg/Kg	8270E SIM	1,2-Dichlorobenzene	< 0.017	mg/Kg	SW846 8270E
Benzo(a)PyreneSIM	< 0.005	mg/Kg	8270E SIM	1,3-Dichlorobenzene	< 0.017	mg/Kg	SW846 8270E
Benzo(b)FluorantheneSIM	0.0056	mg/Kg	8270E SIM	1,4-Dichlorobenzene	< 0.017	mg/Kg	SW846 8270E
Benzo(k)FluorantheneSIM	0.0059	mg/Kg	8270E SIM	2,3,4,6-Tetrachlorophenol	< 0.017	mg/Kg	SW846 8270E
ChryseneSIM	< 0.005	mg/Kg	8270E SIM	2,3,5,6-Tetrachlorophenol	< 0.017	mg/Kg	SW846 8270E
Dibenz(a,h)AnthraceneSIM	< 0.005	mg/Kg	8270E SIM	2,4,5-Trichlorophenol	< 0.017	mg/Kg	SW846 8270E
Indeno(1,2,3-cd)PyreneSIM	< 0.005	mg/Kg	8270E SIM	2,4,6-Trichlorophenol	< 0.017	mg/Kg	SW846 8270E
Diesel	< 5.00	mg/Kg	NWTPH-Dx	2,4-Dichlorophenol	< 0.017	mg/Kg	SW846 8270E
Oil	<10.00	mg/Kg	NWTPH-Dx	2,4-Dimethylphenol	< 0.017	mg/Kg	SW846 8270E
Total Arsenic	< 2.5	mg/Kg	SW846 6010D	2,4-Dinitrophenol	< 0.017	mg/Kg	SW846 8270E
Total Barium	24.2	mg/Kg	SW846 6010D	2,4-Dinitrotoluene	< 0.017	mg/Kg	SW846 8270E
Total Cadmium	< 0.3	mg/Kg	SW846 6010D	2,6-Dinitrotoluene	< 0.017	mg/Kg	SW846 8270E
Total Chromium	15.0	mg/Kg	SW846 6010D	2-Chloronaphthalene	< 0.017	mg/Kg	SW846 8270E
Total Copper	6.8	mg/Kg	SW846 6010D	2-Chlorophenol	< 0.017	mg/Kg	SW846 8270E
Total Lead	< 2.5	mg/Kg	SW846 6010D	2-Methylnaphthalene	< 0.007	mg/Kg	SW846 8270E
Total Selenium	< 2.5	mg/Kg	SW846 6010D	2-Methylphenol	< 0.017	mg/Kg	SW846 8270E
Total Silver	< 0.7	mg/Kg	SW846 6010D	2-Nitroaniline	< 0.017	mg/Kg	SW846 8270E
Total Zinc	30.9	mg/Kg	SW846 6010D	2-Nitrophenol	< 0.017	mg/Kg	SW846 8270E
Total Silver	0.0347*	mg/Kg	SW846 6020B	3,3-Dichlorobenzidine	< 0.033	mg/Kg	SW846 8270E
Total Mercury	< 0.025	mg/Kg	SW846 7471B	3-Nitroaniline	< 0.033	mg/Kg	SW846 8270E
1,2,4-Trichlorobenzene	< 0.017	mg/Kg	SW846 8270E	4,6-Dinitro-2-Methylphenol	< 0.017	mg/Kg	SW846 8270E

^{*}Analyzed by Fremont Analytical. See complete report attached.

PARTIAL RESULTS

Final report will follow as soon as complete.

86 124	8270E SIM 8270E SIM SW846 8082A	2-Fluorophenol Phenol-d6	54 56	SW846 8270E SW846 8270E
124			56	SW846 8270E
	C11/0/46 0000 A			
	3 W 040 0082A	2,4,6-Tribromophenol	50	SW846 8270E
74	NWTPH-Dx			
49	SW846 8270E			
55	SW846 8270E			
91	SW846 8270E			
	49 55	49 SW846 8270E 55 SW846 8270E 91 SW846 8270E	49 SW846 8270E 55 SW846 8270E 91 SW846 8270E	49 SW846 8270E 55 SW846 8270E 91 SW846 8270E

SPECTRA LABORATORIES

Marie Holt, Customer Support & Proj. Manager

Page 1 of 3 a14exsur/mlh 2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

08/13/2021 P.O.#: 4501095667 Project: DP Agg

Client ID: DP Agg 72021

Sample Matrix: Soil

Cal Portland - Pioneer Aggregates Date Sampled: 07/29/2021

4301 Pioneer Avenue Date Received: 07/29/2021 DuPont, WA 98327 Spectra Project: 2021070720

Attn: Jim Tweedy or Louie Bayless Spectra Number: 1

Rush

Analyte	Result	Units	Method	Analyte	Result	Units	Method
4-Bromophenyl-phenylether	< 0.017	mg/Kg	SW846 8270E	Bis(2-Chloroethyl)Ether	< 0.017	mg/Kg	SW846 8270E
4-Chloro-3-Methylphenol	< 0.017	mg/Kg	SW846 8270E	Butylbenzylphthalate	< 0.017	mg/Kg	SW846 8270E
4-Chloroaniline	< 0.033	mg/Kg	SW846 8270E	Carbazole	< 0.017	mg/Kg	SW846 8270E
4-Chlorophenyl-phenylether	< 0.017	mg/Kg	SW846 8270E	Chrysene	< 0.017	mg/Kg	SW846 8270E
4-Methylphenol	< 0.017	mg/Kg	SW846 8270E	Di-n-Butylphthalate	< 0.017	mg/Kg	SW846 8270E
4-Nitroaniline	< 0.033	mg/Kg	SW846 8270E	Di-n-Octyl Phthalate	< 0.017	mg/Kg	SW846 8270E
4-Nitrophenol	< 0.017	mg/Kg	SW846 8270E	Dibenz(a,h)Anthracene	< 0.017	mg/Kg	SW846 8270E
Acenaphthene	< 0.007	mg/Kg	SW846 8270E	Dibenzofuran	< 0.017	mg/Kg	SW846 8270E
Acenaphthylene	< 0.007	mg/Kg	SW846 8270E	Dibenzothiophene	< 0.017	mg/Kg	SW846 8270E
Aniline	< 0.033	mg/Kg	SW846 8270E	Diethylphthalate	< 0.017	mg/Kg	SW846 8270E
Anthracene	< 0.007	mg/Kg	SW846 8270E	Dimethyl Phthalate	< 0.017	mg/Kg	SW846 8270E
Azobenzene	< 0.017	mg/Kg	SW846 8270E	Fluoranthene	< 0.007	mg/Kg	SW846 8270E
Benzidine	< 0.033	mg/Kg	SW846 8270E	Fluorene	< 0.007	mg/Kg	SW846 8270E
Benzo(a)Anthracene	< 0.017	mg/Kg	SW846 8270E	Hexachlorobenzene	< 0.017	mg/Kg	SW846 8270E
Benzo(a)Pyrene	< 0.017	mg/Kg	SW846 8270E	Hexachlorobutadiene	< 0.017	mg/Kg	SW846 8270E
Benzo(b)Fluoranthene	< 0.017	mg/Kg	SW846 8270E	Hexachlorocyclopentadiene	< 0.017	mg/Kg	SW846 8270E
Benzo(ghi)Perylene	< 0.017	mg/Kg	SW846 8270E	Hexachloroethane	< 0.017	mg/Kg	SW846 8270E
Benzo(k)Fluoranthene	< 0.017	mg/Kg	SW846 8270E	Indeno(1,2,3-cd)Pyrene	< 0.017	mg/Kg	SW846 8270E
Benzoic Acid	< 0.033	mg/Kg	SW846 8270E	Isophorone	< 0.017	mg/Kg	SW846 8270E
Benzyl Alcohol	< 0.017	mg/Kg	SW846 8270E	N-Nitroso-Di-n-Propylamine	< 0.017	mg/Kg	SW846 8270E
Biphenyl	< 0.017	mg/Kg	SW846 8270E	N-Nitrosodiphenylamine	< 0.017	mg/Kg	SW846 8270E

^{*}Analyzed by Fremont Analytical. See complete report attached.

PARTIAL RESULTS

Final report will follow as soon as complete.

Recovery	Method	Surrogate	Recovery	Method
86 8270E SIM 2-Fluoropher		2-Fluorophenol	54	SW846 8270E
124	8270E SIM	Phenol-d6	56	SW846 8270E
	SW846 8082A	2,4,6-Tribromophenol	50	SW846 8270E
74	NWTPH-Dx			
49	SW846 8270E			
55	SW846 8270E			
91	SW846 8270E			
	86 124 74 49 55	86 8270E SIM 124 8270E SIM SW846 8082A 74 NWTPH-Dx 49 SW846 8270E 55 SW846 8270E	86 8270E SIM 2-Fluorophenol 124 8270E SIM Phenol-d6 SW846 8082A 2,4,6-Tribromophenol 74 NWTPH-Dx 49 SW846 8270E 55 SW846 8270E	86 8270E SIM 2-Fluorophenol 54 124 8270E SIM Phenol-d6 56 SW846 8082A 2,4,6-Tribromophenol 50 74 NWTPH-Dx 49 SW846 8270E 55 SW846 8270E

SPECTRA LABORATORIES

Marie Holt, Customer Support & Proj. Manager

Page 2 of 3

SPECTRA Laboratories

...Where experience matters

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

08/13/2021

Cal Portland - Pioneer Aggregates

Attn: Jim Tweedy or Louie Bayless

4301 Pioneer Avenue

DuPont, WA 98327

P.O.#:

4501095667

Project:

DP Agg

Client ID:

DP Agg 72021

Sample Matrix:

Date Sampled:

07/29/2021

Date Received:

07/29/2021

Spectra Project:

2021070720

Spectra Number: 1

Rush

Soil

Analyte	Result	Units	Method	Analyte	Result	Units	Method
N-nitrosodimethylamine	< 0.017	mg/Kg	SW846 8270E				
Naphthalene	< 0.007	mg/Kg	SW846 8270E				
Nitrobenzene	< 0.017	mg/Kg	SW846 8270E				
Pentachlorophenol	< 0.017	mg/Kg	SW846 8270E				
Phenanthrene	< 0.007	mg/Kg	SW846 8270E				
Phenol	< 0.017	mg/Kg	SW846 8270E				
Pyrene	< 0.007	mg/Kg	SW846 8270E				
Pyridine	< 0.017	mg/Kg	SW846 8270E				
bis(2-Chloroethoxy)Methane	< 0.017	mg/Kg	SW846 8270E				
bis(2-Ethylhexyl)Phthalate	< 0.017	mg/Kg	SW846 8270E				
bis(2-chloroisopropyl)Ether	< 0.017	mg/Kg	SW846 8270E				

PARTIAL RESULTS
Final report will follow as soon as complete.

Recovery

56

Method

SW846 8270E

SW846 8270E SW846 8270E

Surrogate	Recovery	Method	Surrogate	
Nitrobenzene-d5SIM	86	8270E SIM	2-Fluorophenol	
p-Terphenyl-d14SIM	124	8270E SIM	Phenol-d6	
Decachlorobiphenyl		SW846 8082A	2,4,6-Tribromophenol	
p-Terphenyl	74	NWTPH-Dx		
Nitrobenzene-d5	49	SW846 8270E		
2-Fluorobiphenyl	55	SW846 8270E		
p-Terphenyl-d14	91	SW846 8270E		

Marce Nolt

SPECTRA LABORATORIES

Marie Holt, Customer Support & Proj. Manager

Page 3 of 3

^{*}Analyzed by Fremont Analytical. See complete report attached.



3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Spectra Laboratories Marie Holt 2221 Ross Way Tacoma, WA 98421

RE: 2021070720

Work Order Number: 2108132

August 12, 2021

Attention Marie Holt:

Fremont Analytical, Inc. received 1 sample(s) on 8/10/2021 for the analyses presented in the following report.

Sample Moisture (Percent Moisture) Total Metals by EPA Method 6020B

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes Project Manager

DoD-ELAP Accreditation #79636 by PJLA, ISO/IEC 17025:2017 and QSM 5.3 for Environmental Testing ORELAP Certification: WA 100009 (NELAP Recognized) for Environmental Testing Washington State Department of Ecology Accredited for Environmental Testing, Lab ID C910



Date: 08/12/2021

CLIENT:

Spectra Laboratories

Project: Work Order: 2021070720 2108132

Lab Sample ID

2108132-001

Client Sample ID

070720-1

Work Order Sample Summary

Date/Time Collected

Date/Time Received

07/29/2021 12:00 AM

08/10/2021 9:10 AM



Case Narrative

WO#: **2108132**Date: **8/12/2021**

CLIENT:

Spectra Laboratories

Project:

2021070720

I. SAMPLE RECEIPT:

Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.



Qualifiers & Acronyms

WO#:

2108132

Date Reported:

8/12/2021

Qualifiers:

- * Flagged value is not within established control limits
- B Analyte detected in the associated Method Blank
- D Dilution was required
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- I Analyte with an internal standard that does not meet established acceptance criteria
- J Analyte detected below Reporting Limit
- N Tentatively Identified Compound (TIC)
- Q Analyte with an initial or continuing calibration that does not meet established acceptance criteria
- S Spike recovery outside accepted recovery limits
- ND Not detected at the Reporting Limit
- R High relative percent difference observed

Acronyms:

%Rec - Percent Recovery

CCB - Continued Calibration Blank

CCV - Continued Calibration Verification

DF - Dilution Factor

DUP - Sample Duplicate

HEM - Hexane Extractable Material

ICV - Initial Calibration Verification

LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate

MCL - Maximum Contaminant Level

MB or MBLANK - Method Blank

MDL - Method Detection Limit

MS/MSD - Matrix Spike / Matrix Spike Duplicate

PDS - Post Digestion Spike

Ref Val - Reference Value

REP - Sample Replicate

RL - Reporting Limit

RPD - Relative Percent Difference

SD - Serial Dilution

SGT - Silica Gel Treatment

SPK - Spike

Surr - Surrogate



Analytical Report

Work Order: 2108132 Date Reported: 8/12/2021

Client: Spectra Laboratories

Project: 2021070720 Lab ID: 2108132-001

Client Sample ID: 070720-1

Collection Date: 7/29/2021

Matrix: Soil

Analyses	Result	RL	MDL	Qual Units DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 33294	Analyst: TN
Silver	0.0347	0.119	0.0336	J mg/Kg-dry 1	08/10/21 18:09:22
Sample Moisture (Percent Moisture)				Batch ID: R69167	Analyst: ALB
Percent Moisture	2.46	0.500	0.100	wt% 1	08/11/21 11:34:33

Date: 8/12/2021



Work Order: 21

2108132

CLIENT: Spectra Laboratories

Project:

2021070720

1.93

0.121

2.016

QC SUMMARY REPORT

Total Metals by EPA Method 6020B

Project: 2021070720	,								77777
Sample ID: MB-33294	SampType: MBLK			Units: mg/Kg		Prep Date:	8/10/2021	RunNo: 69151	
Client ID: MBLKS	Batch ID: 33294					Analysis Date:	8/10/2021	SeqNo: 1400121	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit H	ighLimit RPD Ref Val	%RPD RPDLimit	Qual
Silver	ND	0.118							
Sample ID: LCS-33294	SampType: LCS			Units: mg/Kg		Prep Date:	8/10/2021	RunNo: 69151	
Client ID: LCSS	Batch ID: 33294					Analysis Date:	8/10/2021	SeqNo: 1400122	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit H	lighLimit RPD Ref Val	%RPD RPDLimit	Qual
Silver	1.95	0.120	2.000	0	97.4	80	120		
Sample ID: 2108124-001AMS	SampType: MS			Units: mg/Kg		Prep Date:	8/10/2021	RunNo: 69151	
Client ID: BATCH	Batch ID: 33294					Analysis Date:	8/10/2021	SeqNo: 1400125	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit H	lighLimit RPD Ref Val	%RPD RPDLimit	Qual
Silver	1.98	0.119	1.984	0.04678	97.3	75	125		
Sample ID: 2108124-001AMSD	SampType: MSD			Units: mg/Kg		Prep Date:	8/10/2021	RunNo: 69151	
Client ID: BATCH	Batch ID: 33294					Analysis Date:	8/10/2021	SeqNo: 1400126	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit H	lighLimit RPD Ref Val	%RPD RPDLimit	Qual

0.04678

93.3

75

125

1.978

2.60

20

Silver



Sample Log-In Check List

С	ient Name: SPECTR ogged by: Clare Griggs		Work O	rder Numb	per: 2108132	
L	ogged by:	Clare Griggs	Date Re	eceived:	8/10/202	9:10:00 AM
Cha	in of Cust	odv				
		ustody complete?	Yes	✓	No 🗆	Not Present
		sample delivered?	UPS			
100	ı In					
Log					N. 🗆	A1A [
3.	Coolers are p	oresent?	Yes	V	No 🗌	NA 🗆
4.	Shipping con	tainer/cooler in good condition?	Yes	✓	No 🗆	
5.		ls present on shipping container/cooler? nments for Custody Seals not intact)	Yes		No 🗌	Not Present
6.	Was an atten	npt made to cool the samples?	Yes	✓	No 🗌	NA \square
7.	Were all item	s received at a temperature of >2°C to 6°C *	Yes	✓	N。 🗆	NA 🗆
8.	Sample(s) in	proper container(s)?	Yes	✓	No 🗆	
9.	Sufficient san	nple volume for indicated test(s)?	Yes	✓	No 🗆	
10.	Are samples	properly preserved?	Yes	✓	No 🗆	
11.	Was preserva	ative added to bottles?	Yes		No 🗹	NA 🗆
12.	Is there head	space in the VOA vials?	Yes		No 🗆	NA 🗹
13.	Did all sample	es containers arrive in good condition(unbroken)?	Yes	•	No 🗆	
14.	Does paperw	ork match bottle labels?	Yes	✓	No 🗆	
15.	Are matrices	correctly identified on Chain of Custody?	Yes	•	No 🗆	
16.	Is it clear wha	at analyses were requested?	Yes	✓	No 🗆	
17.	Were all hold	ing times able to be met?	Yes	✓	No 🗌	
Spe	cial Handli	ing (if applicable)				
		otified of all discrepancies with this order?	Yes		No 🗆	NA 🗹
	Person	Notified: Date				
	By Who	m: Via:	· D eMa	ii Pho	ne Fax	In Person
	Regardi	ng:				
	Client In	structions:				-
19.	Additional ren	narks:				
tem I	nformation	Item # Temp ℃				
	Sample	item # Temp *C				

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

SPECTRA Laboratories

(22) Ross Way, Tucoma, WA 98421 (253) 273 4850 Fax (253) 572-9838 www.spectra.fab.com info@spectra.fab.com SPECIAL INSTRUCTIONS COMMENTS

Total Silver by 6020 Report to MDL -Req. 0.10mg/kg CHAIN of CUSTODY

2-Day TAT please

8 of 8

Return Samples Y

N x Page

of

STANDARD

RUSH

Висх	BTEX NWTPH-G		EWITPH			NTS	GAI	NICS	5		FY	TAL							OTHE	ER		
BTEX	IEX NWTPH-G	O.H.d	ST HEW (TPH)	(06)		VENTS	A			W 8	CCIFY	60	(4.4)									
висх	FEX NWTPH-G	O.Hd	ST HEW (TPH)	(90)		LVENTS	4			8 A 8	COFY	60	(44)									
втех	TEX NWTPH-G	C H	ST HEW (TPH)	190		VENTS	4			8 8	CF	00	4		1					1 h		
BTEX	TEX NWTPH-G	DHO.	ST HEW ITE	100		2				1 to 1	0	\$ 1	TCLP METALS (SPECIFY) PH \$240-9345 TXTOX 9076 TURRIDITY FLASH POINT BOD SOUDS (SPECIFY)									
втех	TEX NWT	DH.D	E		8	R SO	8270/825 SEMI VOA	CB CB		TOTAL METALS RCRA	TOTAL METALS (SPECIFY)	TCLP METALS RCRA 8	4F2 (2k	14.5	9/		N.		SOUDS (SPECIFY)	OBDA		
BTEX	EX EX	- 1 60	1 8	1964 HEM (FOG)	200 624 VOA	СНГО	826 S	SOR P		M	1 ME	MET,	ME	\$24090468	1X/10X 8076	TURBIDITY	FLASH POINT		S (SI	IDI FPA SCEDA		11
1	00 2	3	1564	1464	9500	8260	8270	8270 PAH PNA 8082/608 PCB		TOTA		TCLP	2	26 Hz	TXT	TURB	FLAS	BOD	SCI	TO.		
					T						Х											
					1																	
			1																			
		1																				
					-			1	_			1										11
		1	1	1				1		Ц		4										11
		1	1				4		1			1	-			Ц						
		1																				
-	- sale	-					PF	RINTE	D NAM	AL		-		COM	PANY	1			DAT	E		IME
M	1)V7	N	en	Η,	_	Je	n D	rave	en		-				a						00 PM
du	Mo	end	7		- 6	Jus	stin	e	Ma	ent.	2	-	FA	I				8	10	/21	9:	10
		Jun June Ma	Im Dra	Seve Manty	Im Draven fine Monty	Impraven fine Monty	Impraven fine Marty Jus	Impraven se treparts Justin	Impraven Jen D treplanty Justine	Impraven Jen Drave fine Manty Justine Ma	Impraven Jen Draven fine Mante	Impraven Jen Draven fine Mantz	Impraven Jen Draven fine Mantz	Impraven Jen Draven : three Martz FA	Impraven Jen Draven Spe fine Mantz FAI	Impraven Jen Draven Spectra fine Mantz FAI	Impraven Jen Draven Spectra fine Mantz FAI	Justine Mantz FAI	Jun Draven Jen Draven Spectra Of five Martz FAI \$	Jen Draven Spectra 08/09	Impraven Jen Draven Spectra 08/09/21 FAI \$/10/21	Jen Draven Spectra 08/09/21 30

SPECTRA Laboratories

2221 Ross Way, Tacoma, WA 98421 (253) 272-4850 Fax (253) 572-9838 www.spectra-lab.com info@spectra-lab.com SPECIAL INSTRUCTIONS/COMMENTS:

CHAIN OF CUSTODY

SPECTRA PROJECT #

Return Samples: Y N Page

STANDARD RUSH **ADDRESS** aportand CLIENT: ADDRESS: CHANGE PROJECT: **HYDROCARBONS ORGANICS METALS** OTHER TOTAL METALS RCRA 8 + Co. PEY CONTACT: 8270 NUMBER OF CONTAINERS SAMPLED BY: TOTAL METALS (SPECIFY) TCLP METALS (SPECIFY) 8260 CHLOR SOLVENTS TCLP METALS RCRA 8 PHONE: 704-404 1664 SGT-HEM (TPH) 8270-625 SEMI VOA SOLIDS (SPECIFY) Prefer FAX e-MAIL: Cause a cal portland corpore-MAIL BTEX/NWTPH-G 1664 HEM (FOG) 8270 PAH/PNA NWTPH-HCID 8082/608 PCB 8260/624 VOA PH 9040/9045 FLASH POINT TX/TOX/EOX NWTPH-Dx TURBIDITY NWTPH-G PURCHASE ORDER # DATE TIME SAMPLE ID MATRIX SAMPLED SAMPLED 7.29 1:00 pm 5011 DP Agg & 7 7071 3 5 6 9 10 LAB USE ONLY SIGNATURE PRINTED NAME COMPANY DATE TIME RELINQUISHED BY RECEIVED BY T: 2664 niele 7/29 RELINQUISHED BY RECEIVED BY Payment Terms: Net 30 days. Past due accounts subject to 1 1/2% per month interest. Customer agrees to pay all costs of collection including reasonable attorney's fees and all other costs of collection regardless of whether suit is filed in Pierce Co., WA venue. Spectra Laboratories, LLC



3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Ayre Anne Ayre 5975 E Marginal Ways Seattle, WA 98134

RE: DP Agg

Work Order Number: 2108236

August 18, 2021

Attention Anne Ayre:

Fremont Analytical, Inc. received 1 sample(s) on 8/17/2021 for the analyses presented in the following report.

Polychlorinated Biphenyls (PCB) by EPA 8082

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes Project Manager

DoD-ELAP Accreditation #79636 by PJLA, ISO/IEC 17025:2017 and QSM 5.3 for Environmental Testing ORELAP Certification: WA 100009 (NELAP Recognized) for Environmental Testing Washington State Department of Ecology Accredited for Environmental Testing, Lab ID C910



Date: 08/19/2021

CLIENT: Ayre Work Order Sample Summary

Project: DP Agg **Work Order:** 2108236

Lab Sample ID Client Sample ID Date/Time Collected Date/Time Received

2108236-001 DP Grab 02 08/17/2021 11:15 AM 08/17/2021 12:56 PM



Case Narrative

WO#: **2108236**Date: **8/18/2021**

CLIENT: Ayre
Project: DP Agg

I. SAMPLE RECEIPT:

Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Prep Comments for METHOD (PREP-PCB-S), SAMPLE (2108236-001A) required Acid Cleanup Procedure (Using Method No 3665A).

Prep Comments for METHOD (PREP-PCB-S), SAMPLE (2108236-001A) required Florisil Cleanup Procedure (Using Method No 3620C).

Rev 1: Report has been revised to clarify that no PCBs were detected at or above the level of the MDL (i.e. <0.004 mg/kg).



Qualifiers & Acronyms

WO#: **2108236**

Date Reported: **8/18/2021**

Qualifiers:

- * Flagged value is not within established control limits
- B Analyte detected in the associated Method Blank
- D Dilution was required
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- I Analyte with an internal standard that does not meet established acceptance criteria
- J Analyte detected below Reporting Limit
- N Tentatively Identified Compound (TIC)
- Q Analyte with an initial or continuing calibration that does not meet established acceptance criteria
- S Spike recovery outside accepted recovery limits
- ND Not detected at the Reporting Limit
- R High relative percent difference observed

Acronyms:

%Rec - Percent Recovery

CCB - Continued Calibration Blank

CCV - Continued Calibration Verification

DF - Dilution Factor

DUP - Sample Duplicate

HEM - Hexane Extractable Material

ICV - Initial Calibration Verification

LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate

MCL - Maximum Contaminant Level

MB or MBLANK - Method Blank

MDL - Method Detection Limit

MS/MSD - Matrix Spike / Matrix Spike Duplicate

PDS - Post Digestion Spike

Ref Val - Reference Value

REP - Sample Replicate

RL - Reporting Limit

RPD - Relative Percent Difference

SD - Serial Dilution

SGT - Silica Gel Treatment

SPK - Spike

Surr - Surrogate



Analytical Report

Work Order: **2108236**Date Reported: **8/18/2021**

Client: Ayre **Collection Date:** 8/17/2021 11:15:00 AM

Project: DP Agg

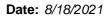
Lab ID: 2108236-001 **Matrix:** Solid

Client Sample ID: DP Grab 02

Analyses	Result	RL	MDL	Qual Units	DF	Date Analyzed
Polychlorinated Biphenyls (PC	B) by EPA 8082			Batch ID: 33386	6	Analyst: SB
Aroclor 1016	ND	0.0198	0.00319	mg/Kg-dry	1	08/17/21 16:52:48
Aroclor 1221	ND	0.0198	0.00319	mg/Kg-dry	1	08/17/21 16:52:48
Aroclor 1232	ND	0.0198	0.00319	mg/Kg-dry	1	08/17/21 16:52:48
Aroclor 1242	ND	0.0198	0.00319	mg/Kg-dry	1	08/17/21 16:52:48
Aroclor 1248	ND	0.0198	0.00394	mg/Kg-dry	1	08/17/21 16:52:48
Aroclor 1254	ND	0.0198	0.00394	mg/Kg-dry	1	08/17/21 16:52:48
Aroclor 1260	ND	0.0198	0.00394	mg/Kg-dry	1	08/17/21 16:52:48
Aroclor 1262	ND	0.0198	0.00394	mg/Kg-dry	1	08/17/21 16:52:48
Aroclor 1268	ND	0.0198	0.00394	mg/Kg-dry	1	08/17/21 16:52:48
Total PCBs	ND	0.0198	0.00394	mg/Kg-dry	1	08/17/21 16:52:48
Surr: Decachlorobiphenyl	97.4	20.6 - 142		%Rec	1	08/17/21 16:52:48
Surr: Tetrachloro-m-xylene	104	22 - 157		%Rec	1	08/17/21 16:52:48

NOTES:

ND - Sample is non-detect evaluated to the method detection limit (MDL). Any detections betweeen the MDL and the RL would be presented as a number qualified with a J.





Work Order: 2108236

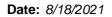
QC SUMMARY REPORT

CLIENT: Ayre

Polychlorinated Biphenyls (PCB) by EPA 8082

Sample ID: MB-33386	SampType: MBLK			Units: mg/Kg		Prep Da	ite: 8/17/20	021	RunNo: 693	321	
Client ID: MBLKS	Batch ID: 33386					Analysis Da	ite: 8/17/2 0	021	SeqNo: 140	04598	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qua
Aroclor 1016	ND	0.0500									
Aroclor 1221	ND	0.0500									
Aroclor 1232	ND	0.0500									
Aroclor 1242	ND	0.0500									
Aroclor 1248	ND	0.0500									
Aroclor 1254	ND	0.0500									
Aroclor 1260	ND	0.0500									
Aroclor 1262	ND	0.0500									
Aroclor 1268	ND	0.0500									
Total PCBs	ND	0.0500									
Surr: Decachlorobiphenyl	238		200.0		119	20.6	142				
Surr: Tetrachloro-m-xylene	214		200.0		107	22	157				
Sample ID: LCS1-33386	SampType: LCS			Units: mg/Kg		Prep Da	ite: 8/17/2 0	021	RunNo: 693	321	
Client ID: LCSS	Batch ID: 33386					Analysis Da	ite: 8/17/2 0	021	SeqNo: 140	04599	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qua
Aroclor 1016	0.918	0.0500	1.000	0	91.8	52.2	136				
Aroclor 1260	0.865	0.0500	1.000	0	86.5	50.5	150				
Surr: Decachlorobiphenyl	216		200.0		108	20.6	142				
Surr: Tetrachloro-m-xylene	218		200.0		109	22	157				
Sample ID: 2108236-001AMS	SampType: MS			Units: mg/Kg-	dry	Prep Da	ite: 8/17/2 0	021	RunNo: 693	321	
Client ID: DP Grab 02	Batch ID: 33386					Analysis Da	ite: 8/17/2 0	021	SeqNo: 140	04601	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qua
Aroclor 1016	0.393	0.0196	0.3912	0	100	38.6	146				
Aroclor 1260	0.367	0.0196	0.3912	0	93.8	24.6	161				
Surr: Decachlorobiphenyl	81.4		78.25		104	20.6	142				

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Work Order: 2108236

Surr: Tetrachloro-m-xylene

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QC SUMMARY REPORT

CLIENT: Avre

Project: Ayre DP Agg						Ро	lychlori	nated Biph	enyls (PC	B) by EP	308 A
Sample ID: 2108236-001AMS	SampType: MS			Units: mg/Kg	g-dry	Prep Date	e: 8/17/20	21	RunNo: 693	321	
Client ID: DP Grab 02	Batch ID: 33386					Analysis Date	e: 8/17/20	21	SeqNo: 140	14601	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Tetrachloro-m-xylene	82.7		78.25		106	22	157				
Sample ID: 2108236-001AMSD	SampType: MSD			Units: mg/Kg	g-dry	Prep Date	e: 8/17/20 :	21	RunNo: 693	321	
Client ID: DP Grab 02	Batch ID: 33386					Analysis Date	e: 8/17/20	21	SeqNo: 140	14602	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	0.374	0.0195	0.3897	0	96.1	38.6	146	0.3931	4.87	30	
Aroclor 1260	0.366	0.0195	0.3897	0	93.8	24.6	161	0.3671	0.407	30	
Surr: Decachlorobiphenyl	83.1		77.94		107	20.6	142		0		
Surr: Tetrachloro-m-xylene	82.6		77.94		106	22	157		0		
Sample ID: LCS2-33386	SampType: LCS			Units: mg/Kg]	Prep Date	e: 8/17/20	21	RunNo: 693	321	
Client ID: LCSS	Batch ID: 33386					Analysis Date	e: 8/18/20	21	SeqNo: 140	14605	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qua
Aroclor 1254	1.31	0.0500	1.000	0	131	48.1	147				
Surr: Decachlorobiphenyl	238		200.0		119	20.6	142				

200.0

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Sample Log-In Check List

Client Name: CALPO				Work Order Number: 2108236						
Lo	ogged by:	Gabrielle Coeuille	Date Re	ceived:	8/17/2021 1	12:56:53 PM				
Cha	in of Custo	<u>ody</u>								
1.	Is Chain of Co	ustody complete?	Yes	✓	No 🗌	Not Present				
2.	How was the	sample delivered?	Clien	<u>t</u>						
Log	ı İn									
_	Coolers are p	resent?	Yes		No 🗸	NA \square				
Э.	occiois are p	1000111.		ler present	110	TWY L				
4.	Shipping cont	tainer/cooler in good condition?	Yes		No \square					
5.		s present on shipping container/cooler? ments for Custody Seals not intact)	Yes		No 🗌	Not Present ✓				
6.	Was an attem	npt made to cool the samples?	Yes		No 🗸	NA 🗌				
		<u>u</u>	nknown p	orior to rece	<u>ipt</u>					
7.	Were all item	s received at a temperature of >2°C to 6°C *	Yes		No \square	NA 🗹				
8	Sample(s) in	proper container(s)?	Yes	✓	No \square					
		nple volume for indicated test(s)?	Yes	✓	No 🗆					
٠.		properly preserved?	Yes	✓	No \square					
11.	Was preserva	ative added to bottles?	Yes		No 🗸	NA \square				
40	la thana haad	anaca ia tha MOA viala	V		No 🗆	NA 🗹				
		space in the VOA vials?	Yes Yes	✓	No \square	NA 💌				
		es containers arrive in good condition(unbroken)? ork match bottle labels?		✓	No \square					
14.	Doco paper	on mater bette labels.	100		110					
15.	Are matrices	correctly identified on Chain of Custody?	Yes	✓	No \square					
16.	Is it clear wha	at analyses were requested?	Yes	✓	No \square					
17.	Were all hold	ing times able to be met?	Yes	✓	No \square					
Sne	ncial Handli	ing (if applicable)								
-		otified of all discrepancies with this order?	Yes	✓	No 🗌	NA 🗆				
	Person I	Notified: Anne Avre Date:		0/	17/2021					
	By Who	7 11110 7 1110	∏ eMa			In Person				
	Regardi			II V I HORK	Tax	III T CI SOIT				
	_	estructions:	iits.							
40	Additional ren	·								
		nains.								
<u>ltem</u>	<u>Information</u>									
		Item # Temp °C								

Sample 1

^{*} Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

COC 1.3 - 11.06.20



3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Ayre Anne Ayre 5975 E Marginal Ways Seattle, WA 98134

RE: MM Grab 2021

Work Order Number: 2109045

September 17, 2021

Attention Anne Ayre:

Fremont Analytical, Inc. received 1 sample(s) on 9/2/2021 for the analyses presented in the following report.

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Mercury by EPA Method 7471B

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Polychlorinated Biphenyls (PCB) by EPA 8082

Sample Moisture (Percent Moisture)

Semivolatile Organic Compounds by EPA Method 8270

Total Metals by EPA Method 6020B

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

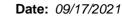
All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes Project Manager

DoD-ELAP Accreditation #79636 by PJLA, ISO/IEC 17025:2017 and QSM 5.3 for Environmental Testing ORELAP Certification: WA 100009 (NELAP Recognized) for Environmental Testing Washington State Department of Ecology Accredited for Environmental Testing, Lab ID C910





CLIENT: Ayre Work Order Sample Summary

Project: MM Grab 2021 Work Order: 2109045

Lab Sample ID Client Sample ID Date/Time Collected Date/Time Received

2109045-001 G01 09/02/2021 10:00 AM 09/02/2021 1:16 PM



Case Narrative

WO#: **2109045**Date: **9/17/2021**

CLIENT: Ayre

Project: MM Grab 2021

I. SAMPLE RECEIPT:

Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.



Qualifiers & Acronyms

WO#: **2109045**

Date Reported: 9/17/2021

Qualifiers:

- * Associated LCS is outside of control limits
- B Analyte detected in the associated Method Blank
- D Dilution was required
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- I Analyte with an internal standard that does not meet established acceptance criteria
- J Analyte detected below Reporting Limit
- N Tentatively Identified Compound (TIC)
- Q Analyte with an initial or continuing calibration that does not meet established acceptance criteria
- S Spike recovery outside accepted recovery limits
- ND Not detected at the Method Detection Limit
- R High relative percent difference observed

Acronyms:

%Rec - Percent Recovery

CCB - Continued Calibration Blank

CCV - Continued Calibration Verification

DF - Dilution Factor

DUP - Sample Duplicate

HEM - Hexane Extractable Material

ICV - Initial Calibration Verification

LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate

MCL - Maximum Contaminant Level

MB or MBLANK - Method Blank

MDL - Method Detection Limit

MS/MSD - Matrix Spike / Matrix Spike Duplicate

PDS - Post Digestion Spike

Ref Val - Reference Value

REP - Sample Replicate

RL - Reporting Limit

RPD - Relative Percent Difference

SD - Serial Dilution

SGT - Silica Gel Treatment

SPK - Spike

Surr - Surrogate



Work Order: **2109045**Date Reported: **9/17/2021**

Client: Ayre **Collection Date:** 9/2/2021 10:00:00 AM

Project: MM Grab 2021

Lab ID: 2109045-001 **Matrix:** Soil

Analyses	Result	RL	MDL	Qual Units	DF	Date Analyzed
Polychlorinated Biphenyls (PCE	3) by EPA 8082	2		Batch ID: 33689	9	Analyst: SB
Aroclor 1016	ND	0.0166	0.00267	mg/Kg-dry	1	09/14/21 11:45:50
Aroclor 1221	ND	0.0166	0.00267	mg/Kg-dry	1	09/14/21 11:45:50
Aroclor 1232	ND	0.0166	0.00267	mg/Kg-dry	1	09/14/21 11:45:50
Aroclor 1242	ND	0.0166	0.00267	mg/Kg-dry	1	09/14/21 11:45:50
Aroclor 1248	ND	0.0166	0.00330	mg/Kg-dry	1	09/14/21 11:45:50
Aroclor 1254	ND	0.0166	0.00330	mg/Kg-dry	1	09/14/21 11:45:50
Aroclor 1260	ND	0.0166	0.00330	mg/Kg-dry	1	09/14/21 11:45:50
Aroclor 1262	ND	0.0166	0.00330	mg/Kg-dry	1	09/14/21 11:45:50
Aroclor 1268	ND	0.0166	0.00330	mg/Kg-dry	1	09/14/21 11:45:50
Total PCBs	ND	0.0166	0.00330	mg/Kg-dry	1	09/14/21 11:45:50
Surr: Decachlorobiphenyl	82.5	20.6 - 142		%Rec	1	09/14/21 11:45:50
Surr: Tetrachloro-m-xylene	89.4	22 - 157		%Rec	1	09/14/21 11:45:50
Diesel and Heavy Oil by NWTPI	I-Dx/Dx Ext.			Batch ID: 33649	9	Analyst: IH
Diesel (Fuel Oil)	ND	16.9	3.81	mg/Kg-dry	1	09/09/21 16:46:24
Heavy Oil	ND	33.8	7.36	mg/Kg-dry	1	09/09/21 16:46:24
Total Petroleum Hydrocarbons	ND	50.6	11.2	mg/Kg-dry	1	09/09/21 16:46:24
Surr: 2-Fluorobiphenyl	86.3	50 - 150		%Rec	1	09/09/21 16:46:24
Surr: o-Terphenyl	90.8	50 - 150		%Rec	1	09/09/21 16:46:24
Polyaromatic Hydrocarbons by	EPA Method 8	270 (SIM)		Batch ID: 33603	3	Analyst: SB
Benz(a)anthracene	ND	19.0	2.39	μg/Kg-dry	1	09/03/21 18:57:43
Chrysene	ND	38.0	6.88	μg/Kg-dry	1	09/03/21 18:57:43
Benzo(b)fluoranthene	ND	19.0	2.05	μg/Kg-dry	1	09/03/21 18:57:43
Benzo(k)fluoranthene	ND	19.0	2.57	μg/Kg-dry	1	09/03/21 18:57:43
Benzo(a)pyrene	ND	19.0	2.14	μg/Kg-dry	1	09/03/21 18:57:43
Indeno(1,2,3-cd)pyrene	ND	38.0	6.78	μg/Kg-dry	1	09/03/21 18:57:43
Dibenz(a,h)anthracene	ND	38.0	8.30	μg/Kg-dry	1	09/03/21 18:57:43
Surr: 2-Fluorobiphenyl	79.4	27.9 - 129		%Rec	1	09/03/21 18:57:43
Surr: Terphenyl-d14 (surr)	85.8	39.1 - 145	0	%Rec	1	09/03/21 18:57:43



Work Order: **2109045**Date Reported: **9/17/2021**

Client: Ayre **Collection Date:** 9/2/2021 10:00:00 AM

Project: MM Grab 2021

Lab ID: 2109045-001 **Matrix:** Soil

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
Semivolatile Organic Compound	ds by EPA Metho	od 8270		Batch	ID: 3360	2	Analyst: SB
Phenol	ND	69.9	19.5		μg/Kg-dry	1	09/07/21 18:18:54
Bis(2-chloroethyl) ether	ND	93.2	32.4		μg/Kg-dry	1	09/07/21 18:18:54
2-Chlorophenol	ND	46.6	14.0		μg/Kg-dry	1	09/07/21 18:18:54
1,3-Dichlorobenzene	ND	46.6	15.3		μg/Kg-dry	1	09/07/21 18:18:54
1,4-Dichlorobenzene	ND	37.3	12.0		μg/Kg-dry	1	09/07/21 18:18:54
1,2-Dichlorobenzene	ND	37.3	12.3		μg/Kg-dry	1	09/07/21 18:18:54
Benzyl alcohol	ND	65.2	14.2		μg/Kg-dry	1	09/07/21 18:18:54
2-Methylphenol (o-cresol)	ND	55.9	23.9		μg/Kg-dry	1	09/07/21 18:18:54
Hexachloroethane	ND	69.9	19.0		μg/Kg-dry	1	09/07/21 18:18:54
N-Nitrosodi-n-propylamine	ND	93.2	44.2		μg/Kg-dry	1	09/07/21 18:18:54
3&4-Methylphenol (m, p-cresol)	ND	46.6	13.4		μg/Kg-dry	1	09/07/21 18:18:54
Nitrobenzene	ND	69.9	18.4		μg/Kg-dry	1	09/07/21 18:18:54
Isophorone	ND	37.3	12.2		μg/Kg-dry	1	09/07/21 18:18:54
2-Nitrophenol	ND	93.2	26.9		μg/Kg-dry	1	09/07/21 18:18:54
2,4-Dimethylphenol	ND	37.3	5.46		μg/Kg-dry	1	09/07/21 18:18:54
Bis(2-chloroethoxy)methane	ND	69.9	21.7		μg/Kg-dry	1	09/07/21 18:18:54
2,4-Dichlorophenol	ND	93.2	4.11		μg/Kg-dry	1	09/07/21 18:18:54
1,2,4-Trichlorobenzene	ND	37.3	11.5		μg/Kg-dry	1	09/07/21 18:18:54
Naphthalene	ND	46.6	14.1		μg/Kg-dry	1	09/07/21 18:18:54
4-Chloroaniline	ND	69.9	21.2		μg/Kg-dry	1	09/07/21 18:18:54
Hexachlorobutadiene	ND	37.3	8.54		μg/Kg-dry	1	09/07/21 18:18:54
4-Chloro-3-methylphenol	ND	93.2	34.3		μg/Kg-dry	1	09/07/21 18:18:54
2-Methylnaphthalene	ND	37.3	6.85		μg/Kg-dry	1	09/07/21 18:18:54
1-Methylnaphthalene	ND	37.3	11.0		μg/Kg-dry	1	09/07/21 18:18:54
Hexachlorocyclopentadiene	ND	93.2	20.7	Q	μg/Kg-dry	1	09/07/21 18:18:54
2,4,6-Trichlorophenol	ND	69.9	20.4		μg/Kg-dry	1	09/07/21 18:18:54
2,4,5-Trichlorophenol	ND	69.9	23.8		μg/Kg-dry	1	09/07/21 18:18:54
2-Chloronaphthalene	ND	37.3	6.62		μg/Kg-dry	1	09/07/21 18:18:54
2-Nitroaniline	ND	93.2	39.3		μg/Kg-dry	1	09/07/21 18:18:54
Acenaphthene	ND	37.3	6.51		μg/Kg-dry	1	09/07/21 18:18:54
Dimethylphthalate	ND	55.9	9.64		μg/Kg-dry	1	09/07/21 18:18:54



Work Order: **2109045**Date Reported: **9/17/2021**

Client: Ayre **Collection Date:** 9/2/2021 10:00:00 AM

Project: MM Grab 2021

Lab ID: 2109045-001 **Matrix:** Soil

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
Semivolatile Organic Compou	nds by EPA Metho	od 8270		Batch	ID: 33602	2	Analyst: SB
2,6-Dinitrotoluene	ND	46.6	16.0		μg/Kg-dry	1	09/07/21 18:18:54
Acenaphthylene	ND	37.3	5.84		μg/Kg-dry	1	09/07/21 18:18:54
2,4-Dinitrophenol	ND	46.6	16.0	Q	μg/Kg-dry	1	09/07/21 18:18:54
Dibenzofuran	ND	37.3	5.57		μg/Kg-dry	1	09/07/21 18:18:54
2,4-Dinitrotoluene	ND	93.2	30.8		μg/Kg-dry	1	09/07/21 18:18:54
4-Nitrophenol	ND	466	13.5		μg/Kg-dry	1	09/07/21 18:18:54
Fluorene	ND	37.3	4.66		μg/Kg-dry	1	09/07/21 18:18:54
4-Chlorophenyl phenyl ether	ND	37.3	7.56		μg/Kg-dry	1	09/07/21 18:18:54
Diethylphthalate	34.5	69.9	21.1	J	μg/Kg-dry	1	09/07/21 18:18:54
4,6-Dinitro-2-methylphenol	ND	186	21.4		μg/Kg-dry	1	09/07/21 18:18:54
4-Bromophenyl phenyl ether	ND	69.9	25.2		μg/Kg-dry	1	09/07/21 18:18:54
Hexachlorobenzene	ND	46.6	14.4		μg/Kg-dry	1	09/07/21 18:18:54
Pentachlorophenol	ND	93.2	10.9		μg/Kg-dry	1	09/07/21 18:18:54
Phenanthrene	ND	37.3	8.08		μg/Kg-dry	1	09/07/21 18:18:54
Anthracene	ND	37.3	5.17		μg/Kg-dry	1	09/07/21 18:18:54
Carbazole	ND	37.3	13.0		μg/Kg-dry	1	09/07/21 18:18:54
Di-n-butylphthalate	ND	37.3	10.1		μg/Kg-dry	1	09/07/21 18:18:54
Fluoranthene	10.9	37.3	8.22	J	μg/Kg-dry	1	09/07/21 18:18:54
Pyrene	25.0	37.3	9.23	J	μg/Kg-dry	1	09/07/21 18:18:54
Butyl Benzylphthalate	ND	46.6	13.7		μg/Kg-dry	1	09/07/21 18:18:54
bis(2-Ethylhexyl)adipate	ND	93.2	18.5		μg/Kg-dry	1	09/07/21 18:18:54
Benz(a)anthracene	ND	37.3	11.2		μg/Kg-dry	1	09/07/21 18:18:54
Chrysene	ND	46.6	20.4		μg/Kg-dry	1	09/07/21 18:18:54
bis (2-Ethylhexyl) phthalate	ND	37.3	10.5		μg/Kg-dry	1	09/07/21 18:18:54
Di-n-octyl phthalate	ND	69.9	24.3		μg/Kg-dry	1	09/07/21 18:18:54
Benzo(b)fluoranthene	ND	37.3	9.86		μg/Kg-dry	1	09/07/21 18:18:54
Benzo(k)fluoranthene	ND	37.3	9.34		μg/Kg-dry	1	09/07/21 18:18:54
Benzo(a)pyrene	ND	37.3	13.5		μg/Kg-dry	1	09/07/21 18:18:54
Indeno(1,2,3-cd)pyrene	ND	69.9	24.3		μg/Kg-dry	1	09/07/21 18:18:54
Dibenz(a,h)anthracene	ND	93.2	36.3		μg/Kg-dry	1	09/07/21 18:18:54
Benzo(g,h,i)perylene	ND	69.9	27.0		μg/Kg-dry	1	09/07/21 18:18:54



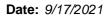
Work Order: **2109045**Date Reported: **9/17/2021**

Client: Ayre **Collection Date:** 9/2/2021 10:00:00 AM

Project: MM Grab 2021

Lab ID: 2109045-001 **Matrix:** Soil

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
Semivolatile Organic Compounds	by EPA Met	hod 8270		Batch	ID: 3360	2	Analyst: SB
Surr: 2,4,6-Tribromophenol	111	18.4 - 156	0		%Rec	1	09/07/21 18:18:54
Surr: 2-Fluorobiphenyl	99.1	17.6 - 135	0		%Rec	1	09/07/21 18:18:54
Surr: Nitrobenzene-d5	80.5	8.6 - 139	0		%Rec	1	09/07/21 18:18:54
Surr: Phenol-d6	83.8	17.2 - 136	0		%Rec	1	09/07/21 18:18:54
Surr: p-Terphenyl	115	35.1 - 146	0		%Rec	1	09/07/21 18:18:54
NOTES: Q - Indicates an analyte with a continuing calib	oration that does	s not meet acce	otance criteria				
Mercury by EPA Method 7471B				Batch	ID: 3363	2	Analyst: CH
Mercury	ND	0.256	0.00517		mg/Kg-dry	[,] 1	09/09/21 12:15:06
Total Metals by EPA Method 6020E	<u>3</u>			Batch	ID: 3361	4	Analyst: EH
Arsenic	0.643	0.0922	0.0309		mg/Kg-dry	, 1	09/09/21 17:41:09
Cadmium	0.0557	0.154	0.00254	J	mg/Kg-dry	<i>'</i> 1	09/08/21 19:55:03
Chromium	26.2	0.307	0.100		mg/Kg-dry	<i>'</i> 1	09/08/21 19:55:03
Copper	35.0	0.769	0.144		mg/Kg-dry	<i>'</i> 1	09/08/21 19:55:03
Lead	0.946	0.154	0.0320		mg/Kg-dry	<i>'</i> 1	09/08/21 19:55:03
Silver	0.0486	0.115	0.0325	J	mg/Kg-dry	<i>'</i> 1	09/08/21 19:55:03
Zinc	36.1	1.35	0.469		mg/Kg-dry	1	09/08/21 19:55:03
Sample Moisture (Percent Moisture	<u>e)</u>			Batch	ID: R696	99	Analyst: cb
Percent Moisture	2.19	0.500	0.100		wt%	1	09/03/21 11:44:10





QC SUMMARY REPORT

CLIENT: Ayre

Total Metals by EPA Method 6020B

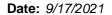
Project: MM Grab 2021

Sample ID: MB-33614	SampType: MBLK					Prep Date	e: 9/7/2021	RunNo: 697	RunNo: 69768		
Client ID: MBLKS	Batch ID: 33614					Analysis Date	e: 9/7/2021	SeqNo: 141	4499		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit RPD Ref	/al %RPD	RPDLimit	Qual	
Arsenic	ND	0.0902									
Cadmium	ND	0.150									
Chromium	ND	0.301									
Copper	ND	0.752									
Lead	ND	0.150									
Silver	ND	0.113									
Zinc	ND	1.32									

Sample ID: LCS-33614	SampType: LCS	SampType: LCS			Units: mg/Kg Prep Date:			1	RunNo: 697	768	
Client ID: LCSS	Batch ID: 33614					Analysis Da	te: 9/7/202	SeqNo: 1414500			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cadmium	1.88	0.160	2.000	0	93.8	80	120				
Chromium	41.7	0.320	40.00	0	104	80	120				
Copper	40.1	0.800	40.00	0	100	80	120				
Lead	20.8	0.160	20.00	0	104	80	120				
Silver	2.02	0.120	2.000	0	101	80	120				

Sample ID: 2108296-011AMS	SampType: MS		Units: mg/Kg-dry			Prep Date: 9/7/2021			RunNo: 697		
Client ID: BATCH	Batch ID: 33614					Analysis Da	te: 9/7/202	.1	SeqNo: 14 1	4503	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	45.1	0.101	42.00	1.362	104	75	125				
Cadmium	2.06	0.168	2.100	0.04000	96.4	75	125				
Chromium	64.4	0.336	42.00	17.92	111	75	125				
Copper	49.6	0.840	42.00	7.491	100	75	125				
Lead	21.3	0.168	21.00	1.160	96.1	75	125				
Silver	1.95	0.126	2.100	0	93.0	75	125				
Zinc	67.5	1.47	42.00	22.77	106	75	125				

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QC SUMMARY REPORT

CLIENT: Ayre

Total Metals by EPA Method 6020B

Project: MM Grab 2021

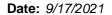
Sample ID: 2108296-011AMS SampType: MS Units: mg/Kg-dry Prep Date: 9/7/2021 RunNo: 69768 Client ID: BATCH Batch ID: 33614

Analysis Date: 9/7/2021 SeqNo: 1414503

%REC LowLimit HighLimit RPD Ref Val Analyte Result RL SPK value SPK Ref Val %RPD RPDLimit Qual

Sample ID: 2108296-011AMSD	SampType: MSD			Units: mg/Kg-	dry	Prep Date	e: 9/7/202	1	RunNo: 697		
Client ID: BATCH	Batch ID: 33614					Analysis Date	e: 9/7/202	1	SeqNo: 141	14504	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	46.0	0.103	42.96	1.362	104	75	125	45.14	1.82	20	
Cadmium	1.99	0.172	2.148	0.04000	90.8	75	125	2.064	3.61	20	
Chromium	61.6	0.344	42.96	17.92	102	75	125	64.43	4.48	20	
Copper	46.9	0.859	42.96	7.491	91.7	75	125	49.65	5.75	20	
Lead	20.9	0.172	21.48	1.160	91.7	75	125	21.35	2.32	20	
Silver	1.89	0.129	2.148	0	88.0	75	125	1.953	3.23	20	
Zinc	67.3	1.50	42.96	22.77	104	75	125	67.48	0.299	20	
Sample ID: LCS-33614	SampType: LCS			Units: mg/Kg		Prep Date	e: 9/7/202	1	RunNo: 697	768	
Client ID: LCSS	Batch ID: 33614					Analysis Date	e: 9/8/202	1	SeqNo: 141	14611	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qua
Arsenic	40.6	0.0960	40.00	0	101	80	120				
Zinc	41.0	1.40	40.00	0	103	80	120				

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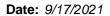
CLIENT: Ayre

Dua!aa4. MM Grah 2021 **QC SUMMARY REPORT**

Mercury by EPA Method 7471B

		21										
Sample ID: MB-33	3632	SampType: MBLK			Units: mg/Kg		Prep Date	9/8/202	1	RunNo: 69	807	
Client ID: MBLK	(S	Batch ID: 33632					Analysis Date	: 9/9/202	1	SeqNo: 14	15415	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit I	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury		ND	0.250									
Sample ID: LCS-3	33632	SampType: LCS			Units: mg/Kg		Prep Date	9/8/202	.1	RunNo: 69	807	
Client ID: LCSS		Batch ID: 33632					Analysis Date	: 9/9/202	:1	SeqNo: 14	15416	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit I	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury		0.446	0.250	0.5000	0	89.2	80	120				
Sample ID: 21082	96-001ADUP	SampType: DUP			Units: mg/Kg-	dry	Prep Date	: 9/8/202	1	RunNo: 69	807	
Client ID: BATC	Н	Batch ID: 33632					Analysis Date	: 9/9/202	:1	SeqNo: 14	15418	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit I	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury		0.0140	0.248						0.01277	9.26	20	J
Sample ID: 21082	96-001AMS	SampType: MS			Units: mg/Kg-	dry	Prep Date	9/8/202	1	RunNo: 69	807	
Client ID: BATC	Н	Batch ID: 33632					Analysis Date	: 9/9/202	1	SeqNo: 14	15419	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit I	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury		0.546	0.268	0.5367	0.01277	99.4	70	130				
Sample ID: 21082	96-001AMSD	SampType: MSD			Units: mg/Kg-	dry	Prep Date	9/8/202	1	RunNo: 69	807	
Client ID: BATC	Н	Batch ID: 33632					Analysis Date	9/9/202	1	SeqNo: 14	15420	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit I	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury		0.545	0.258	0.5161	0.01277	103	70	130	0.5464	0.257	20	

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QC SUMMARY REPORT

CLIENT: Ayre

Project: MM Grab 2	021						Diesel	and Heavy	Oil by NW	TPH-Dx/I	Dx Ex
Sample ID: MB-33649	SampType: MBLK			Units: mg/k	(g	Prep Da	te: 9/9/202	21	RunNo: 698	359	
Client ID: MBLKS	Batch ID: 33649					Analysis Da	te: 9/9/202	21	SeqNo: 14	16438	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	16.7									
Heavy Oil	ND	33.3									
Total Petroleum Hydrocarbons	ND	50.0									
Surr: 2-Fluorobiphenyl	3.00		3.333		90.0	50	150				
Surr: o-Terphenyl	3.08		3.333		92.5	50	150				
Sample ID: LCS-33649	SampType: LCS			Units: mg/k		Prep Da	te: 9/9/202	21	RunNo: 698	359	
Client ID: LCSS	Batch ID: 33649					Analysis Da	te: 9/9/202	21	SeqNo: 14	16439	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	517	150	500.0	0	103	77.2	122				
Surr: 2-Fluorobiphenyl	10.2		10.00		102	50	150				
Surr: o-Terphenyl	10.3		10.00		103	50	150				
Sample ID: 2109045-001AMS	SampType: MS			Units: mg/k	(g-dry	Prep Da	te: 9/9/202	21	RunNo: 698	359	
Client ID: G01	Batch ID: 33649					Analysis Da	te: 9/9/202	21	SeqNo: 14	16441	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	181	50.9	169.7	0	106	68	132				
Surr: 2-Fluorobiphenyl	3.19		3.393		94.0	50	150				
Surr: o-Terphenyl	4.06		3.393		120	50	150				
Sample ID: 2109045-001AMSD	SampType: MSD			Units: mg/k	(g-dry	Prep Da	te: 9/9/202	 21	RunNo: 698	359	
Client ID: G01	Batch ID: 33649					Analysis Da	te: 9/9/202	21	SeqNo: 14	16442	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	180	49.7	165.6	0	109	68	132	180.6	0.0567	30	
Surr: 2-Fluorobiphenyl	2.73		3.312		82.5	50	150		0		
Surr: o-Terphenyl	3.57		3.312		108	50	150		0		

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Date: 9/17/2021



Work Order: 2109045

QC SUMMARY REPORT

CLIENT: Ayre
Project: MM Grab 2021

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: 2109045-001AMSD

SampType: MSD

Units: mg/Kg-dry

Prep Date: 9/9/2021

RunNo: 69859

Client ID: G01

Batch ID: 33649

5 5 7

Analysis Date: 9/9/2021

SeqNo: 1416442

Analyte

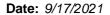
Result

RL SPK value SPK Ref Val

%REC LowLimit HighLimit RPD Ref Val

%RPD RPDLimit Qual

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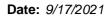
QC SUMMARY REPORT

CLIENT: Ayre

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Project: MM Grab 2	021				PO	iyaroman	c nyurocarbons b	by EPA Method 8270	(3114)
Sample ID: MB-33603	SampType: MBLK			Units: µg/Kg		Prep Date	9/3/2021	RunNo: 69751	
Client ID: MBLKS	Batch ID: 33603					Analysis Date	e: 9/3/2021	SeqNo: 1413886	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit RPD Ref Val	%RPD RPDLimit	Qual
Benz(a)anthracene	ND	20.0							
Chrysene	ND	40.0							
Benzo(b)fluoranthene	ND	20.0							
Benzo(k)fluoranthene	ND	20.0							
Benzo(a)pyrene	ND	20.0							
Indeno(1,2,3-cd)pyrene	ND	40.0							
Dibenz(a,h)anthracene	ND	40.0							
Surr: 2-Fluorobiphenyl	892		1,000		89.2	27.9	129		
Surr: Terphenyl-d14 (surr)	888		1,000		88.8	39.1	145		
Sample ID: LCS-33603	SampType: LCS			Units: µg/Kg		Prep Date	e: 9/3/2021	RunNo: 69751	
Client ID: LCSS	Batch ID: 33603					Analysis Date	e: 9/3/2021	SeqNo: 1413887	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit RPD Ref Val	%RPD RPDLimit	Qual
Benz(a)anthracene	1,560	20.0	2,000	0	77.9	64.4	113		
Chrysene	1,420	40.0	2,000	0	70.8	57.3	113		
Benzo(b)fluoranthene	1,470	20.0	2,000	0	73.6	58.2	115		
Benzo(k)fluoranthene	1,470	20.0	2,000	0	73.5	53.4	121		
Benzo(a)pyrene	1,560	20.0	2,000	0	78.2	64.7	125		
Indeno(1,2,3-cd)pyrene	1,430	40.0	2,000	0	71.6	61.6	113		
Dibenz(a,h)anthracene	1,490	40.0	2,000	0	74.7	62.1	116		
Surr: 2-Fluorobiphenyl	849		1,000		84.9	27.9	129		
Surr: Terphenyl-d14 (surr)	856		1,000		85.6	39.1	145		
Sample ID: 2109038-001AMS	SampType: MS			Units: µg/Kg-c	lry	Prep Date	e: 9/3/2021	RunNo: 69751	
Client ID: BATCH	Batch ID: 33603					Analysis Date	e: 9/3/2021	SeqNo: 1413889	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit RPD Ref Val	%RPD RPDLimit	Qual
Benz(a)anthracene	1,190	18.9	1,895	11.45	62.2	45	110		

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Work Order: 2109045

QC SUMMARY REPORT

CLIENT: Ayre

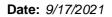
Project:

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: 2109038-001AMS	SampType: MS			Units: µg/K	g-dry	Prep Da	te: 9/3/2021		RunNo: 697	751	
Client ID: BATCH	Batch ID: 33603				Analysis Date: 9/3/2021				SeqNo: 14 1	13889	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chrysene	1,090	37.9	1,895	0	57.8	42.4	106				
Benzo(b)fluoranthene	1,140	18.9	1,895	0	60.0	43.7	108				
Benzo(k)fluoranthene	1,120	18.9	1,895	0	59.0	39.5	113				
Benzo(a)pyrene	1,190	18.9	1,895	7.844	62.6	44.1	122				
Indeno(1,2,3-cd)pyrene	1,020	37.9	1,895	0	54.0	40.2	109				
Dibenz(a,h)anthracene	1,050	37.9	1,895	0	55.2	31.4	126				
Surr: 2-Fluorobiphenyl	686		947.4		72.4	27.9	129				
Surr: Terphenyl-d14 (surr)	628		947.4		66.3	39.1	145				

Sample ID: 2109038-001AMSD	SampType: MSD			Units: µg/K	g-dry	Prep Da	te: 9/3/202	21	RunNo: 697	751	
Client ID: BATCH	Batch ID: 33603					Analysis Da	te: 9/3/202	21	SeqNo: 141	13890	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benz(a)anthracene	1,410	17.7	1,769	11.45	79.0	45	110	1,190	16.8	30	
Chrysene	1,320	35.4	1,769	0	74.8	42.4	106	1,095	18.9	30	
Benzo(b)fluoranthene	1,330	17.7	1,769	0	75.0	43.7	108	1,136	15.5	30	
Benzo(k)fluoranthene	1,410	17.7	1,769	0	79.6	39.5	113	1,119	22.8	30	
Benzo(a)pyrene	1,450	17.7	1,769	7.844	81.4	44.1	122	1,194	19.2	30	
Indeno(1,2,3-cd)pyrene	1,300	35.4	1,769	0	73.6	40.2	109	1,022	24.0	30	
Dibenz(a,h)anthracene	1,350	35.4	1,769	0	76.5	31.4	126	1,046	25.5	30	
Surr: 2-Fluorobiphenyl	747		884.4		84.5	27.9	129		0		
Surr: Terphenyl-d14 (surr)	742		884.4		83.9	39.1	145		0		

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Work Order: 2109045

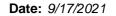
QC SUMMARY REPORT

CLIENT: Ayre

Polychlorinated Biphenyls (PCB) by EPA 8082

Sample ID: MB-33689	SampType: MBLK			Units: mg/Kg		Prep Dat	te: 9/14/2021	RunNo: 69 9	900	
Client ID: MBLKS	Batch ID: 33689					Analysis Dat	te: 9/14/2021	SeqNo: 14 1	17273	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit RPD Ref Val	%RPD	RPDLimit	Qua
Aroclor 1016	ND	0.0167								
Aroclor 1221	ND	0.0167								
Aroclor 1232	ND	0.0167								
Aroclor 1242	ND	0.0167								
Aroclor 1248	ND	0.0167								
Aroclor 1254	ND	0.0167								
Aroclor 1260	ND	0.0167								
Aroclor 1262	ND	0.0167								
Aroclor 1268	ND	0.0167								
Total PCBs	ND	0.0167								
Surr: Decachlorobiphenyl	45.9		66.98		68.6	20.6	142			
Surr: Tetrachloro-m-xylene	49.9		66.98		74.6	22	157			
Sample ID: LCS1-33689	SampType: LCS			Units: mg/Kg		Prep Dat	te: 9/14/2021	RunNo: 699	900	
Client ID: LCSS	Batch ID: 33689					Analysis Dat	te: 9/14/2021	SeqNo: 14 1	17274	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit RPD Ref Val	%RPD	RPDLimit	Qua
Aroclor 1254	0.948	0.0500	1.000	0	94.8	48.1	147			
Surr: Decachlorobiphenyl	196		200.0		97.8	20.6	142			
Surr: Tetrachloro-m-xylene	222		200.0		111	22	157			
Sample ID: LCS2-33689	SampType: LCS			Units: mg/Kg		Prep Dat	te: 9/14/2021	RunNo: 699	900	
Client ID: LCSS	Batch ID: 33689					Analysis Dat	te: 9/14/2021	SeqNo: 14 1	17275	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit RPD Ref Val	%RPD	RPDLimit	Qua
A I 4040	0.850	0.0500	1.000	0	85.0	52.2	136			
Arocior 1016			4 000	0	00.0	50.5	150			
	0.926	0.0500	1.000	0	92.6	30.3	130			
Aroclor 1016 Aroclor 1260 Surr: Decachlorobiphenyl	0.926 179	0.0500	200.0	U	92.6 89.4	20.6	142			

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QC SUMMARY REPORT

CLIENT: Ayre

Polychlorinated Biphenyls (PCB) by EPA 8082

Project: MM Grab 2021

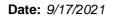
Sample ID: **LCS2-33689** SampType: **LCS** Units: **mg/Kg** Prep Date: **9/14/2021** RunNo: **69900**

Client ID: LCSS Batch ID: 33689 Analysis Date: 9/14/2021 SeqNo: 1417275

Analyte Result RL SPK value SPK Ref Val %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sample ID: 2109045-001AMS	SampType: MS			Units: mg/k	(g-dry	Prep Da	te: 9/14/2 0)21	RunNo: 699	900	
Client ID: G01	Batch ID: 33689					Analysis Da	te: 9/14/2 0)21	SeqNo: 14 1	17277	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1254	0.320	0.0170	0.3393	0	94.4	50	150				
Surr: Decachlorobiphenyl	62.8		67.86		92.5	20.6	142				
Surr: Tetrachloro-m-xylene	57.8		67.86		85.2	22	157				
Sample ID: 2109045-001AMSD	SampType: MSD			Units: mg/k	(g-dry	Prep Da	te: 9/14/2 0)21	RunNo: 699	900	
Client ID: G01	Batch ID: 33689					Analysis Da	te: 9/14/2 0)21	SeqNo: 141	17278	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1254	0.318	0.0170	0.3391	0	93.7	50	150	0.3203	0.841		
A10001 1204											
Surr: Decachlorobiphenyl	58.7		67.82		86.5	20.6	142		0		

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Work Order: 2109045

QC SUMMARY REPORT

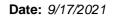
CLIENT: Ayre

Project:

Semivolatile Organic Compounds by EPA Method 8270

Sample ID: MB-33602	SampType: MBLK			Units: µg/Kg		Prep Da	ite: 9/3/202	21	RunNo: 697	749	
Client ID: MBLKS	Batch ID: 33602					Analysis Da	ate: 9/7/20 2	21	SeqNo: 14 1	3991	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phenol	ND	75.0									
Bis(2-chloroethyl) ether	ND	100									
2-Chlorophenol	ND	50.0									
1,3-Dichlorobenzene	ND	50.0									
1,4-Dichlorobenzene	ND	40.0									
1,2-Dichlorobenzene	ND	40.0									
Benzyl alcohol	ND	70.0									
2-Methylphenol (o-cresol)	ND	60.0									
Hexachloroethane	ND	75.0									
N-Nitrosodi-n-propylamine	ND	100									
3&4-Methylphenol (m, p-cresol)	ND	50.0									
Nitrobenzene	ND	75.0									
Isophorone	ND	40.0									
2-Nitrophenol	ND	100									
2,4-Dimethylphenol	ND	40.0									
Bis(2-chloroethoxy)methane	ND	75.0									
2,4-Dichlorophenol	ND	100									
1,2,4-Trichlorobenzene	ND	40.0									
Naphthalene	ND	50.0									
4-Chloroaniline	ND	75.0									
Hexachlorobutadiene	ND	40.0									
4-Chloro-3-methylphenol	ND	100									
2-Methylnaphthalene	ND	40.0									
1-Methylnaphthalene	ND	40.0									
Hexachlorocyclopentadiene	ND	100									
2,4,6-Trichlorophenol	ND	75.0									
2,4,5-Trichlorophenol	ND	75.0									
2-Chloronaphthalene	ND	40.0									
2-Nitroaniline	ND	100									
Acenaphthene	ND	40.0									
,											

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Work Order: 2109045

QC SUMMARY REPORT

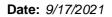
CLIENT: Ayre

Project:

Semivolatile Organic Compounds by EPA Method 8270

Sample ID: MB-33602	SampType: MBLK			Units: µg/Kg		Prep Da	ate: 9/3/20 2	21	RunNo: 697	749	
Client ID: MBLKS	Batch ID: 33602					Analysis Da	ate: 9/7/20 2	21	SeqNo: 14	13991	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dimethylphthalate	ND	60.0							-		
2,6-Dinitrotoluene	ND	50.0									
Acenaphthylene	ND	40.0									
2,4-Dinitrophenol	ND	50.0									
Dibenzofuran	ND	40.0									
2,4-Dinitrotoluene	ND	100									
4-Nitrophenol	ND	500									
Fluorene	ND	40.0									
4-Chlorophenyl phenyl ether	ND	40.0									
Diethylphthalate	ND	75.0									
4,6-Dinitro-2-methylphenol	ND	200									
4-Bromophenyl phenyl ether	ND	75.0									
Hexachlorobenzene	ND	50.0									
Pentachlorophenol	ND	100									
Phenanthrene	ND	40.0									
Anthracene	ND	40.0									
Carbazole	ND	40.0									
Di-n-butylphthalate	12.4	40.0									J
Fluoranthene	ND	40.0									
Pyrene	33.3	40.0									J
Butyl Benzylphthalate	ND	50.0									
bis(2-Ethylhexyl)adipate	ND	100									
Benz(a)anthracene	ND	40.0									
Chrysene	ND	50.0									
bis (2-Ethylhexyl) phthalate	ND	40.0									
Di-n-octyl phthalate	ND	75.0									
Benzo(b)fluoranthene	ND	40.0									
Benzo(k)fluoranthene	ND	40.0									
Benzo(a)pyrene	ND	40.0									
	ND	75.0									
Indeno(1,2,3-cd)pyrene											

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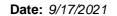
QC SUMMARY REPORT

CLIENT: Ayre

Semivolatile Organic Compounds by EPA Method 8270

Project: MM Grab 2	2021				Se	mivolatil	e Organ	ic Compou	nds by EP	PA Metho	d 827
Sample ID: MB-33602	SampType: MBLK			Units: µg/Kg		Prep Da	te: 9/3/202	21	RunNo: 697	749	
Client ID: MBLKS	Batch ID: 33602					Analysis Da	te: 9/7/202	21	SeqNo: 14 1	13991	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dibenz(a,h)anthracene	ND	100									
Benzo(g,h,i)perylene	ND	75.0									
Surr: 2,4,6-Tribromophenol	1,900		2,000		94.8	18.4	156				
Surr: 2-Fluorobiphenyl	1,120		1,000		112	17.6	135				
Surr: Nitrobenzene-d5	871		1,000		87.1	8.6	139				
Surr: Phenol-d6	1,860		2,000		93.0	17.2	136				
Surr: p-Terphenyl	1,200		1,000		120	35.1	146				
Sample ID: LCS-33602	SampType: LCS			Units: µg/Kg		Prep Dat	te: 9/3/202	<u> </u>	RunNo: 697	749	
Client ID: LCSS	Batch ID: 33602					Analysis Da	te: 9/7/202	21	SeqNo: 141	13992	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phenol	1,850	75.0	2,000	0	92.7	53.3	121				
Bis(2-chloroethyl) ether	1,710	100	2,000	0	85.4	55.4	126				
2-Chlorophenol	2,070	50.0	2,000	0	104	60.2	118				
1,3-Dichlorobenzene	1,980	50.0	2,000	0	99.0	54.9	115				
1,4-Dichlorobenzene	1,910	40.0	2,000	0	95.6	50.2	118				
1,2-Dichlorobenzene	2,040	40.0	2,000	0	102	50.9	120				
Benzyl alcohol	2,050	70.0	2,000	0	102	5	159				
2-Methylphenol (o-cresol)	2,080	60.0	2,000	0	104	57.3	121				
Hexachloroethane	1,740	75.0	2,000	0	86.9	47.9	125				
N-Nitrosodi-n-propylamine	1,870	100	2,000	0	93.4	57.3	124				
3&4-Methylphenol (m, p-cresol)	2,000	50.0	2,000	0	99.8	56.6	128				
Nitrobenzene	1,720	75.0	2,000	0	85.9	59.4	122				
Isophorone	1,970	40.0	2,000	0	98.6	58.5	116				
2-Nitrophenol	2,200	100	2,000	0	110	57	128				
2,4-Dimethylphenol	2,020	40.0	2,000	0	101	57.2	119				
Bis(2-chloroethoxy)methane	1,900	75.0	2,000	0	94.8	59.9	117				
2,4-Dichlorophenol	2,230	100	2,000	0	112	60.3	115				
1,2,4-Trichlorobenzene	2,150	40.0	2,000	0	108	60.1	117				

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Work Order: 2109045

QC SUMMARY REPORT

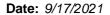
CLIENT: Ayre

Project:

Semivolatile Organic Compounds by EPA Method 8270

Sample ID: LCS-33602	SampType: LCS			Units: µg/Kg		Prep Da	te: 9/3/202	:1	RunNo: 697	749	
Client ID: LCSS	Batch ID: 33602					Analysis Da	te: 9/7/202	21	SeqNo: 141	13992	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	2,020	50.0	2,000	0	101	58.9	117				
4-Chloroaniline	1,960	75.0	2,000	0	98.2	60	108				
Hexachlorobutadiene	2,040	40.0	2,000	0	102	60	117				
4-Chloro-3-methylphenol	2,170	100	2,000	0	108	54.2	125				
2-Methylnaphthalene	2,030	40.0	2,000	0	102	60.3	121				
1-Methylnaphthalene	2,130	40.0	2,000	0	106	60.4	119				
Hexachlorocyclopentadiene	1,770	100	2,000	0	88.7	45.5	151				
2,4,6-Trichlorophenol	2,470	75.0	2,000	0	123	62.2	125				
2,4,5-Trichlorophenol	2,420	75.0	2,000	0	121	60.3	119				S
2-Chloronaphthalene	2,100	40.0	2,000	0	105	61.7	118				
2-Nitroaniline	1,890	100	2,000	0	94.5	60.6	124				
Acenaphthene	2,010	40.0	2,000	0	100	58.2	116				
Dimethylphthalate	2,160	60.0	2,000	0	108	57.9	136				
2,6-Dinitrotoluene	2,290	50.0	2,000	0	115	62.5	126				
Acenaphthylene	2,160	40.0	2,000	0	108	60.8	112				
2,4-Dinitrophenol	2,450	50.0	4,000	0	61.3	5	117				
Dibenzofuran	2,070	40.0	2,000	0	103	60.8	117				
2,4-Dinitrotoluene	2,200	100	2,000	0	110	62.4	127				
4-Nitrophenol	2,220	500	2,000	0	111	35.3	123				
Fluorene	2,150	40.0	2,000	0	107	60.6	117				
4-Chlorophenyl phenyl ether	2,210	40.0	2,000	0	110	59.7	121				
Diethylphthalate	2,190	75.0	2,000	0	109	60.7	120				
4,6-Dinitro-2-methylphenol	1,960	200	2,000	0	98.0	19.6	140				
4-Bromophenyl phenyl ether	2,230	75.0	2,000	0	112	58.7	123				
Hexachlorobenzene	2,150	50.0	2,000	0	108	60.1	124				
Pentachlorophenol	2,570	100	2,000	0	129	28.5	131				
Phenanthrene	2,100	40.0	2,000	0	105	57.6	119				
Anthracene	2,190	40.0	2,000	0	110	60.2	117				
Carbazole	2,240	40.0	2,000	0	112	59.9	120				
Di-n-butylphthalate	2,320	40.0	2,000	0	116	60	125				

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Work Order: 2109045

QC SUMMARY REPORT

CLIENT: Ayre

Project:

Semivolatile Organic Compounds by EPA Method 8270

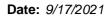
Sample ID: LCS-33602	SampType: LCS			Units: µg/Kg		Prep Date	e: 9/3/202	21	RunNo: 69	749	
Client ID: LCSS	Batch ID: 33602					Analysis Date	e: 9/7/202	21	SeqNo: 14	13992	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoranthene	2,350	40.0	2,000	0	118	60.6	120				
Pyrene	2,330	40.0	2,000	0	116	61.1	117				
Butyl Benzylphthalate	2,690	50.0	2,000	0	135	56	137				
bis(2-Ethylhexyl)adipate	2,710	100	2,000	0	136	54.7	138				
Chrysene	2,100	50.0	2,000	0	105	62.1	119				
bis (2-Ethylhexyl) phthalate	2,590	40.0	2,000	0	129	55	141				
Di-n-octyl phthalate	2,970	75.0	2,000	0	149	49.7	150				
Benzo(b)fluoranthene	2,170	40.0	2,000	0	109	62.6	126				
Benzo(k)fluoranthene	2,100	40.0	2,000	0	105	62.3	123				
Benzo(a)pyrene	2,550	40.0	2,000	0	128	68.6	133				
Benzo(g,h,i)perylene	2,430	75.0	2,000	0	122	51.7	124				
Surr: 2,4,6-Tribromophenol	2,570		2,000		128	18.4	156				
Surr: 2-Fluorobiphenyl	1,040		1,000		104	17.6	135				
Surr: Nitrobenzene-d5	814		1,000		81.4	8.6	139				
Surr: Phenol-d6	1,840		2,000		91.9	17.2	136				
Surr: p-Terphenyl	1,130		1,000		113	35.1	146				
NOTES:											

NOTES:

S - Outlying spike recovery observed (high bias). Detections will be qualified with a *.

Sample ID: LCS-33602	SampType: LCS			Units: µg/Kg		Prep Da	te: 9/3/202	1	RunNo: 697	749	
Client ID: LCSS	Batch ID: 33602					Analysis Da	te: 9/7/202	1	SeqNo: 14 1	14002	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benz(a)anthracene	2,080	40.0	2,000	0	104	55.2	119				
Surr: 2,4,6-Tribromophenol	2,630		2,000		132	18.4	156				
Surr: 2-Fluorobiphenyl	1,060		1,000		106	17.6	135				
Surr: Nitrobenzene-d5	900		1,000		90.0	8.6	139				
Surr: Phenol-d6	1,890		2,000		94.4	17.2	136				
Surr: p-Terphenyl	1,200		1,000		120	35.1	146				

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1,110

Work Order: 2109045

QC SUMMARY REPORT

CLIENT: Ayre

Surr: p-Terphenyl

Semivolatile Organic Compounds by EPA Method 8270

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Sample ID: LCS-33602	SampType: LCS			Units: µg/Kg		Prep Da	te: 9/3/202	1	RunNo: 697	749	
Client ID: LCSS	Batch ID: 33602					Analysis Da	te: 9/7/202	1	SeqNo: 14 1	14449	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Indeno(1,2,3-cd)pyrene	2,130	75.0	2,000	0	107	57.1	121				
Dibenz(a,h)anthracene	2,400	100	2,000	0	120	53.1	126				
Surr: 2,4,6-Tribromophenol	2,450		2,000		123	18.4	156				
Surr: 2-Fluorobiphenyl	1,010		1,000		101	17.6	135				
Surr: Nitrobenzene-d5	919		1,000		91.9	8.6	139				
Surr: Phenol-d6	2,000		2,000		100	17.2	136				

1,000

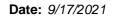
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35.1

146

Sample ID: 2109049-021AMS	SampType: MS			Units: µg/K	g-dry	Prep Da	te: 9/3/202	21	RunNo: 697	749	
Client ID: BATCH	Batch ID: 33602					Analysis Da	te: 9/7/202	21	SeqNo: 14 1	14450	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phenol	1,690	84.6	2,255	0	74.9	42.6	107				
Bis(2-chloroethyl) ether	1,540	113	2,255	0	68.4	25.3	125				
2-Chlorophenol	1,820	56.4	2,255	0	80.8	22.9	117				
1,3-Dichlorobenzene	1,780	56.4	2,255	0	79.1	11	118				
1,4-Dichlorobenzene	1,730	45.1	2,255	0	76.7	12.4	118				
1,2-Dichlorobenzene	1,640	45.1	2,255	0	72.6	14.9	118				
Benzyl alcohol	1,880	78.9	2,255	0	83.2	5	126				
2-Methylphenol (o-cresol)	1,670	67.7	2,255	0	74.1	40	114				
Hexachloroethane	1,530	84.6	2,255	0	67.7	12.1	124				
N-Nitrosodi-n-propylamine	1,600	113	2,255	0	70.9	33.3	120				
3&4-Methylphenol (m, p-cresol)	1,830	56.4	2,255	0	81.3	39.4	120				
Nitrobenzene	1,610	84.6	2,255	0	71.2	37.5	115				
Isophorone	1,730	45.1	2,255	0	76.9	44.8	109				
2-Nitrophenol	1,750	113	2,255	0	77.8	44.5	116				
2,4-Dimethylphenol	1,670	45.1	2,255	0	73.9	39.5	107				
Bis(2-chloroethoxy)methane	1,530	84.6	2,255	0	67.8	41.4	110				
2,4-Dichlorophenol	1,900	113	2,255	0	84.2	44.2	105				
1,2,4-Trichlorobenzene	1,800	45.1	2,255	0	79.8	34	111				

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Work Order: 2109045

QC SUMMARY REPORT

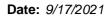
CLIENT: Ayre

Project:

Semivolatile Organic Compounds by EPA Method 8270

Sample ID: 2109049-021AMS	SampType: MS			Units: µg/K	g-dry	Prep Date: 9/3/2		21	RunNo: 697	749	
Client ID: BATCH	Batch ID: 33602					Analysis Da	te: 9/7/202	21	SeqNo: 14 1	14450	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	1,840	56.4	2,255	0	81.5	43	108				
4-Chloroaniline	1,660	84.6	2,255	0	73.8	19.5	98.4				
Hexachlorobutadiene	1,990	45.1	2,255	0	88.2	30.2	114				
4-Chloro-3-methylphenol	1,890	113	2,255	0	83.7	47.3	114				
2-Methylnaphthalene	1,750	45.1	2,255	0	77.5	49.6	107				
1-Methylnaphthalene	1,910	45.1	2,255	0	84.6	49.8	105				
Hexachlorocyclopentadiene	1,270	113	2,255	0	56.2	5	142				
2,4,6-Trichlorophenol	2,240	84.6	2,255	0	99.4	44.2	117				
2,4,5-Trichlorophenol	2,230	84.6	2,255	0	98.8	43.8	109				
2-Chloronaphthalene	1,860	45.1	2,255	0	82.5	41.6	108				
2-Nitroaniline	1,690	113	2,255	0	75.0	51.4	118				
Acenaphthene	1,810	45.1	2,255	0	80.1	41.3	106				
Dimethylphthalate	1,940	67.7	2,255	0	86.0	46.3	113				
2,6-Dinitrotoluene	1,990	56.4	2,255	0	88.3	49.5	115				
Acenaphthylene	1,950	45.1	2,255	0	86.3	43.5	101				
2,4-Dinitrophenol	2,720	56.4	4,510	0	60.3	5	133				
Dibenzofuran	1,860	45.1	2,255	7.508	82.1	43.4	107				
2,4-Dinitrotoluene	1,940	113	2,255	0	86.1	50.2	115				
4-Nitrophenol	2,310	564	2,255	0	102	30.7	119				
Fluorene	1,850	45.1	2,255	0	81.9	42.4	109				
4-Chlorophenyl phenyl ether	1,950	45.1	2,255	0	86.4	46	110				
Diethylphthalate	1,830	84.6	2,255	0	81.1	47	112				
4,6-Dinitro-2-methylphenol	1,910	226	2,255	0	84.7	5	157				
4-Bromophenyl phenyl ether	1,920	84.6	2,255	0	85.2	46	111				
Hexachlorobenzene	1,980	56.4	2,255	0	87.6	45.6	110				
Pentachlorophenol	2,180	113	2,255	0	96.9	10.4	151				
Phenanthrene	1,940	45.1	2,255	88.29	82.2	33.3	117				
Anthracene	1,950	45.1	2,255	19.41	85.5	35.9	114				
Carbazole	1,990	45.1	2,255	0	88.2	38.6	117				
Di-n-butylphthalate	2,090	45.1	2,255	0	92.8	44.5	123				

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Work Order: 2109045

QC SUMMARY REPORT

CLIENT: Ayre

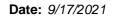
Project:

Semivolatile Organic Compounds by EPA Method 8270

Sample ID: 2109049-021AMS	SampType	e: MS			Units: µg/l	Kg-dry	Prep Dat	te: 9/3/202	21	RunNo: 697	749	
Client ID: BATCH	Batch ID:	33602					Analysis Da	te: 9/7/202	21	SeqNo: 141	14450	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoranthene		2,210	45.1	2,255	139.5	91.8	29.9	125				
Pyrene		2,250	45.1	2,255	206.3	90.6	31.8	120				
Butyl Benzylphthalate		2,320	56.4	2,255	0	103	48.1	133				
bis(2-Ethylhexyl)adipate		2,550	113	2,255	0	113	52.1	134				
Benz(a)anthracene		2,160	45.1	2,255	84.24	91.9	29.6	121				
Chrysene		1,880	56.4	2,255	85.91	79.7	27.8	120				
bis (2-Ethylhexyl) phthalate		2,360	45.1	2,255	0	105	35.2	146				
Di-n-octyl phthalate		2,800	84.6	2,255	0	124	58.2	143				
Benzo(b)fluoranthene		2,140	45.1	2,255	90.21	90.7	24.3	130				
Benzo(k)fluoranthene		2,100	45.1	2,255	74.13	89.9	6.58	150				
Benzo(a)pyrene		2,500	45.1	2,255	136.8	105	21.7	148				
Indeno(1,2,3-cd)pyrene		2,030	84.6	2,255	96.36	85.6	28.7	126				
Dibenz(a,h)anthracene		2,260	113	2,255	51.02	98.1	31.8	129				
Benzo(g,h,i)perylene		2,020	84.6	2,255	110.3	84.8	4.72	138				
Surr: 2,4,6-Tribromophenol		2,260		2,255		100	18.4	156				
Surr: 2-Fluorobiphenyl		991		1,128		87.9	17.6	135				
Surr: Nitrobenzene-d5		794		1,128		70.4	8.6	139				
Surr: Phenol-d6		1,800		2,255		80.0	17.2	136				
Surr: p-Terphenyl		994		1,128		88.2	35.1	146				

Sample ID: 2109049-021AMSD	SampType: MSD		Units: µg/Kg-dry			Prep Date: 9/3/2021			RunNo: 69749		
Client ID: BATCH	Batch ID: 33602					Analysis Da	te: 9/7/202	21	SeqNo: 14 1	14531	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phenol	1,790	83.9	2,239	0	79.9	42.6	107	1,689	5.70	50	
Bis(2-chloroethyl) ether	1,630	112	2,239	0	72.6	25.3	125	1,542	5.28	50	
2-Chlorophenol	1,980	56.0	2,239	0	88.5	22.9	117	1,823	8.30	50	
1,3-Dichlorobenzene	1,880	56.0	2,239	0	84.1	11	118	1,784	5.34	50	
1,4-Dichlorobenzene	1,890	44.8	2,239	0	84.3	12.4	118	1,729	8.71	50	
1,2-Dichlorobenzene	1,920	44.8	2,239	0	85.8	14.9	118	1,638	15.9	50	

Original Page 25 of 30





Work Order: 2109045

QC SUMMARY REPORT

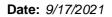
CLIENT: Ayre

Project:

Semivolatile Organic Compounds by EPA Method 8270

Sample ID: 2109049-021AMSD	SampType: MSD			Units: µg/K	g-dry	Prep Da	te: 9/3/202	21	RunNo: 697	749	
Client ID: BATCH	Batch ID: 33602					Analysis Da	te: 9/7/202	21	SeqNo: 14 1	14531	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzyl alcohol	2,170	78.3	2,239	0	97.2	5	126	1,876	14.8	50	
2-Methylphenol (o-cresol)	2,000	67.2	2,239	0	89.1	40	114	1,670	17.7	50	
Hexachloroethane	1,640	83.9	2,239	0	73.4	12.1	124	1,527	7.31	50	
N-Nitrosodi-n-propylamine	1,700	112	2,239	0	75.8	33.3	120	1,599	5.97	50	
3&4-Methylphenol (m, p-cresol)	1,900	56.0	2,239	0	84.9	39.4	120	1,834	3.56	50	
Nitrobenzene	1,630	83.9	2,239	0	72.7	37.5	115	1,605	1.39	50	
Isophorone	1,920	44.8	2,239	0	85.9	44.8	109	1,734	10.3	50	
2-Nitrophenol	2,130	112	2,239	0	95.2	44.5	116	1,754	19.4	50	
2,4-Dimethylphenol	2,020	44.8	2,239	0	90.3	39.5	107	1,667	19.2	50	
Bis(2-chloroethoxy)methane	1,800	83.9	2,239	0	80.6	41.4	110	1,528	16.5	50	
2,4-Dichlorophenol	2,150	112	2,239	0	96.1	44.2	105	1,899	12.4	50	
1,2,4-Trichlorobenzene	1,930	44.8	2,239	0	86.2	34	111	1,800	6.97	50	
Naphthalene	1,950	56.0	2,239	0	87.0	43	108	1,837	5.82	50	
4-Chloroaniline	1,760	83.9	2,239	0	78.5	19.5	98.4	1,665	5.42	50	
Hexachlorobutadiene	2,060	44.8	2,239	0	91.9	30.2	114	1,989	3.38	50	
4-Chloro-3-methylphenol	2,130	112	2,239	0	95.2	47.3	114	1,889	12.1	50	
2-Methylnaphthalene	1,910	44.8	2,239	0	85.3	49.6	107	1,747	8.87	50	
1-Methylnaphthalene	2,000	44.8	2,239	0	89.4	49.8	105	1,908	4.77	50	
Hexachlorocyclopentadiene	1,420	112	2,239	0	63.3	5	142	1,267	11.3	50	
2,4,6-Trichlorophenol	2,360	83.9	2,239	0	105	44.2	117	2,241	5.05	50	
2,4,5-Trichlorophenol	2,410	83.9	2,239	0	108	43.8	109	2,228	7.86	50	
2-Chloronaphthalene	2,130	44.8	2,239	0	95.1	41.6	108	1,861	13.4	50	
2-Nitroaniline	2,040	112	2,239	0	91.4	51.4	118	1,692	18.9	50	
Acenaphthene	1,990	44.8	2,239	0	89.1	41.3	106	1,806	9.92	50	
Dimethylphthalate	2,130	67.2	2,239	0	95.1	46.3	113	1,938	9.36	50	
2,6-Dinitrotoluene	2,130	56.0	2,239	0	95.0	49.5	115	1,990	6.65	50	
Acenaphthylene	2,090	44.8	2,239	0	93.4	43.5	101	1,946	7.16	50	
2,4-Dinitrophenol	2,830	56.0	4,477	0	63.1	5	133	2,721	3.77	50	
Dibenzofuran	2,030	44.8	2,239	7.508	90.2	43.4	107	1,860	8.63	50	
2,4-Dinitrotoluene	2,020	112	2,239	0	90.4	50.2	115	1,943	4.06	50	

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QC SUMMARY REPORT

CLIENT: Ayre

Semivolatile Organic Compounds by EPA Method 8270

Project: MM Grab 2021

Sample ID: 2109049-021AMSD	SampType: MSD	Units: µg/Kg-dry			Prep Da	te: 9/3/202	21	RunNo: 69749			
Client ID: BATCH	Batch ID: 33602					Analysis Da	te: 9/7/202	21	SeqNo: 14 1	14531	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
4-Nitrophenol	2,420	560	2,239	0	108	30.7	119	2,305	5.01	50	
Fluorene	2,090	44.8	2,239	0	93.1	42.4	109	1,846	12.1	50	
4-Chlorophenyl phenyl ether	2,060	44.8	2,239	0	91.8	46	110	1,949	5.31	50	
Diethylphthalate	2,110	83.9	2,239	0	94.4	47	112	1,830	14.4	50	
4,6-Dinitro-2-methylphenol	1,970	224	2,239	0	88.1	5	157	1,909	3.23	50	
4-Bromophenyl phenyl ether	2,040	83.9	2,239	0	91.3	46	111	1,921	6.20	50	
Hexachlorobenzene	2,180	56.0	2,239	0	97.5	45.6	110	1,976	9.94	50	
Pentachlorophenol	2,320	112	2,239	0	104	10.4	151	2,184	5.94	50	
Phenanthrene	2,050	44.8	2,239	88.29	87.9	33.3	117	1,943	5.59	50	
Anthracene	2,010	44.8	2,239	19.41	89.1	35.9	114	1,947	3.34	50	
Carbazole	2,060	44.8	2,239	0	92.0	38.6	117	1,989	3.46	50	
Di-n-butylphthalate	2,250	44.8	2,239	0	100	44.5	123	2,093	7.11	50	
Fluoranthene	2,170	44.8	2,239	139.5	90.6	29.9	125	2,210	1.89	50	
Pyrene	2,260	44.8	2,239	206.3	91.9	31.8	120	2,250	0.584	50	
Butyl Benzylphthalate	2,370	56.0	2,239	0	106	48.1	133	2,323	2.11	50	
bis(2-Ethylhexyl)adipate	2,620	112	2,239	0	117	52.1	134	2,552	2.56	50	
Benz(a)anthracene	2,290	44.8	2,239	84.24	98.4	29.6	121	2,158	5.79	50	
Chrysene	2,080	56.0	2,239	85.91	89.1	27.8	120	1,882	9.95	50	
bis (2-Ethylhexyl) phthalate	2,590	44.8	2,239	0	116	35.2	146	2,362	9.17	50	
Di-n-octyl phthalate	2,810	83.9	2,239	0	126	58.2	143	2,800	0.343	50	
Benzo(b)fluoranthene	2,310	44.8	2,239	90.21	99.0	24.3	130	2,136	7.68	50	
Benzo(k)fluoranthene	2,210	44.8	2,239	74.13	95.4	6.58	150	2,101	5.06	50	
Benzo(a)pyrene	2,540	44.8	2,239	136.8	107	21.7	148	2,497	1.55	50	
Indeno(1,2,3-cd)pyrene	2,360	83.9	2,239	96.36	101	28.7	126	2,026	15.2	50	
Dibenz(a,h)anthracene	2,610	112	2,239	51.02	115	31.8	129	2,263	14.4	50	
Benzo(g,h,i)perylene	2,200	83.9	2,239	110.3	93.2	4.72	138	2,023	8.27	50	
Surr: 2,4,6-Tribromophenol	2,220		2,239		99.1	18.4	156		0		
Surr: 2-Fluorobiphenyl	1,030		1,119		91.9	17.6	135		0		
Surr: Nitrobenzene-d5	825		1,119		73.7	8.6	139		0		
Surr: Phenol-d6	1,820		2,239		81.5	17.2	136		0		

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Date: 9/17/2021



MM Grab 2021

Work Order: 2109045

QC SUMMARY REPORT

CLIENT: Ayre

Project:

Semivolatile Organic Compounds by EPA Method 8270

Sample ID: 2109049-021AMSD SampType: MSD Units: μg/Kg-dry Prep Date: 9/3/2021 RunNo: 69749

Client ID: **BATCH** Batch ID: **33602** Analysis Date: **9/7/2021** SeqNo: **1414531**

Analyte Result RL SPK value SPK Ref Val %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Surr: p-Terphenyl 1,030 1,119 92.1 35.1 146 0

Original Page 28 of 30



Sample Log-In Check List

С	lient Name:	CALPO		Work O	rder Nun	mber: 2109045		
Lo	ogged by:	Gabrielle (Coeuille	Date Re	eceived:	9/2/2021 1	:16:00 PM	
Cha	nin of Custo	ody						
	Is Chain of C	-	olete?	Yes	✓	No 🗌	Not Present	
2.	How was the	sample deli	vered?	Clier	<u>nt</u>			
Log	ı İn							
_	Coolers are p	resent?		Yes	✓	No 🗌	na 🗆	
٥.	occioio aio p							
4.	Shipping conf	tainer/coole	in good condition?	Yes	✓	No \square		
5.			n shipping container/cooler? custody Seals not intact)	Yes		No 🗆	Not Present ✓	
6.	Was an atten	npt made to	cool the samples?	Yes		No 🗸	NA 🗌	
				Unknown	prior to	<u>receipt</u>		
7.	Were all item	s received a	at a temperature of >2°C to 6°C	* Yes		No \square	NA 🗸	
8	Sample(s) in	proper cont	ainer(s)?	Yes	✓	No 🗆		
			for indicated test(s)?	Yes	✓	No 🗆		
10.	Are samples	properly pre	served?	Yes	✓	No 🗌		
11.	Was preserva	ative added	to bottles?	Yes		No 🗹	NA \square	
12.	Is there head	space in the	e VOA vials?	Yes		No 🗆	NA 🗸	
			s arrive in good condition(unbroke	en)? Yes	✓	No \square		
14.	Does paperw	ork match b	ottle labels?	Yes	✓	No 🗌		
15.	Are matrices	correctly ide	entified on Chain of Custody?	Yes	✓	No 🗌		
16.	Is it clear wha	at analyses	were requested?	Yes	✓	No \square		
17.	Were all hold	ing times ab	ole to be met?	Yes	✓	No \square		
Spe	cial Handli	ing (if apı	olicable)					
-		•	discrepancies with this order?	Yes	✓	No 🗌	NA 🗌	
	Person	Notified:	Anne Avre	Date:		9/2/2021		
	By Who		Gabrielle Coeuille	Via: ✓ eMa	nil \square P		In Person	
	Regardi		Do redundant compounds need t					
	_	structions:	Yes. Report redundant compound					
19	Additional ren	narks:						
item	<u>Information</u>							

Item #	Temp ⁰C
Sample 1	23.9

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

交直	3600 Fremont Ave N.	Chain of Custody Record & Labo	aboratory Services Agreement
Analytical	Tel: 206-352-3790 Fax: 206-352-7178	Project Name: MM Rymh 2021	Special Remarks:
Hent: Amnie Aure		Project No:	
s: 59	nal ways	Collected by: AUVE	The state of the s
e, Zip:	r98134	Location: SMILTON, WAT	
	PO11	REPORT TO (PM): ANNI PALYS	Sample Disposal: Return to client Disposal by lab (after 30 days)
	d _e . Description of the second of the seco	gay	
		Service Constitution	
Sample Name	Sample Sample Type Date Time (Matrix)*	# of 10 4 50 1 10 10 10 10 10 10 10 10 10 10 10 10	Comments
907	1105 MOON 2011	3 XXXX X	Please see attached
			Spec - aux
			anolyzed -
			reporting limits
			and low so share
			report to MP
0			
ous, B=Bulk, (W = Water, DW = Drinking Water, GW = Ground Water,	SW = Storm Water, WW = Waste Water bb ch ca cc co TI TI V 70 Standard Next Day
MICA-5 KCKA-6	INTERIOR INTERIOR	- Ng Al As a sea sea sea sea sea sea sea sea sea	
Anions (Circle): Nitrate Nitrite	Chloride Sulfate Bromide	nge O-mosphate Fluoride Nitratesmurite	Same Day
I represent that I am authorized to enter into this Agreement wit to each of the terms on the front and backside of this Agreement	er into this Agreement wit ackside of this Agreement	h Fremont Analytical on behalf of the Client named above, that	d Chent's agreeme
relinquished (Signature)	- ONME ONLE 11	Date/Time Received/Signature) **The Time Part ustine Mantz 9/2 13:16	
telinquished (Signature)	Print Name	Date/Time Redevoed (Signature)	Print Name Date/Time

Page 1 of 2

SUBMITTAL REVIEW COMMENT FORM

Submittal Title:	Gravel Borrow – Second submittal	Submittal Identification Number	0A.2		
Project Title: Project Number:	Time Oil Company - Seattle	Daviaura/a).	CRETE- Reid Carscadden		
Cantera Project Manager:	Kim Hempel	Reviewer(s):	(RC)/Jamie Stevens(JCS)		
Dated Submitted:	10/07/2021	Final Review Date:	10/07/2021		

Submittal Item No.	Reviewer Name	Review Date	Reviewer Comment with Contract Document Reference	Receipt Acknowledged	1 Accepted	Accepted as Noted	Revise and Resubmit	(Substitution Requests Only) Not Accepted
A.1	JCS	10/7/21	Gravel borrow – second approval for material from CalPortland Seattle Yard. Pervious approval was for CalPorltand Kenmore Yard. Gravel borrow can be received from either the Seattle or Kenmore CalPortland yards.		х			



3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Ayre Anne Ayre 5975 E Marginal Ways Seattle, WA 98134

RE: MM Grab 2021

Work Order Number: 2109045

September 17, 2021

Attention Anne Ayre:

Fremont Analytical, Inc. received 1 sample(s) on 9/2/2021 for the analyses presented in the following report.

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Mercury by EPA Method 7471B

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Polychlorinated Biphenyls (PCB) by EPA 8082

Sample Moisture (Percent Moisture)

Semivolatile Organic Compounds by EPA Method 8270

Total Metals by EPA Method 6020B

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

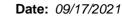
All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes Project Manager

DoD-ELAP Accreditation #79636 by PJLA, ISO/IEC 17025:2017 and QSM 5.3 for Environmental Testing ORELAP Certification: WA 100009 (NELAP Recognized) for Environmental Testing Washington State Department of Ecology Accredited for Environmental Testing, Lab ID C910





CLIENT: Ayre Work Order Sample Summary

Project: MM Grab 2021 Work Order: 2109045

Lab Sample ID Client Sample ID Date/Time Collected Date/Time Received

2109045-001 G01 09/02/2021 10:00 AM 09/02/2021 1:16 PM



Case Narrative

WO#: **2109045**Date: **9/17/2021**

CLIENT: Ayre

Project: MM Grab 2021

I. SAMPLE RECEIPT:

Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.



Qualifiers & Acronyms

WO#: **2109045**

Date Reported: 9/17/2021

Qualifiers:

- * Associated LCS is outside of control limits
- B Analyte detected in the associated Method Blank
- D Dilution was required
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- I Analyte with an internal standard that does not meet established acceptance criteria
- J Analyte detected below Reporting Limit
- N Tentatively Identified Compound (TIC)
- Q Analyte with an initial or continuing calibration that does not meet established acceptance criteria
- S Spike recovery outside accepted recovery limits
- ND Not detected at the Method Detection Limit
- R High relative percent difference observed

Acronyms:

%Rec - Percent Recovery

CCB - Continued Calibration Blank

CCV - Continued Calibration Verification

DF - Dilution Factor

DUP - Sample Duplicate

HEM - Hexane Extractable Material

ICV - Initial Calibration Verification

LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate

MCL - Maximum Contaminant Level

MB or MBLANK - Method Blank

MDL - Method Detection Limit

MS/MSD - Matrix Spike / Matrix Spike Duplicate

PDS - Post Digestion Spike

Ref Val - Reference Value

REP - Sample Replicate

RL - Reporting Limit

RPD - Relative Percent Difference

SD - Serial Dilution

SGT - Silica Gel Treatment

SPK - Spike

Surr - Surrogate



Work Order: **2109045**Date Reported: **9/17/2021**

Client: Ayre **Collection Date:** 9/2/2021 10:00:00 AM

Project: MM Grab 2021

Lab ID: 2109045-001 **Matrix:** Soil

Analyses	Result	RL	MDL	Qual Units	DF	Date Analyzed
Polychlorinated Biphenyls (PCE	3) by EPA 8082	2		Batch ID: 33689	9	Analyst: SB
Aroclor 1016	ND	0.0166	0.00267	mg/Kg-dry	1	09/14/21 11:45:50
Aroclor 1221	ND	0.0166	0.00267	mg/Kg-dry	1	09/14/21 11:45:50
Aroclor 1232	ND	0.0166	0.00267	mg/Kg-dry	1	09/14/21 11:45:50
Aroclor 1242	ND	0.0166	0.00267	mg/Kg-dry	1	09/14/21 11:45:50
Aroclor 1248	ND	0.0166	0.00330	mg/Kg-dry	1	09/14/21 11:45:50
Aroclor 1254	ND	0.0166	0.00330	mg/Kg-dry	1	09/14/21 11:45:50
Aroclor 1260	ND	0.0166	0.00330	mg/Kg-dry	1	09/14/21 11:45:50
Aroclor 1262	ND	0.0166	0.00330	mg/Kg-dry	1	09/14/21 11:45:50
Aroclor 1268	ND	0.0166	0.00330	mg/Kg-dry	1	09/14/21 11:45:50
Total PCBs	ND	0.0166	0.00330	mg/Kg-dry	1	09/14/21 11:45:50
Surr: Decachlorobiphenyl	82.5	20.6 - 142		%Rec	1	09/14/21 11:45:50
Surr: Tetrachloro-m-xylene	89.4	22 - 157		%Rec	1	09/14/21 11:45:50
Diesel and Heavy Oil by NWTPI	I-Dx/Dx Ext.			Batch ID: 33649	9	Analyst: IH
Diesel (Fuel Oil)	ND	16.9	3.81	mg/Kg-dry	1	09/09/21 16:46:24
Heavy Oil	ND	33.8	7.36	mg/Kg-dry	1	09/09/21 16:46:24
Total Petroleum Hydrocarbons	ND	50.6	11.2	mg/Kg-dry	1	09/09/21 16:46:24
Surr: 2-Fluorobiphenyl	86.3	50 - 150		%Rec	1	09/09/21 16:46:24
Surr: o-Terphenyl	90.8	50 - 150		%Rec	1	09/09/21 16:46:24
Polyaromatic Hydrocarbons by	EPA Method 8	270 (SIM)		Batch ID: 33603	3	Analyst: SB
Benz(a)anthracene	ND	19.0	2.39	μg/Kg-dry	1	09/03/21 18:57:43
Chrysene	ND	38.0	6.88	μg/Kg-dry	1	09/03/21 18:57:43
Benzo(b)fluoranthene	ND	19.0	2.05	μg/Kg-dry	1	09/03/21 18:57:43
Benzo(k)fluoranthene	ND	19.0	2.57	μg/Kg-dry	1	09/03/21 18:57:43
Benzo(a)pyrene	ND	19.0	2.14	μg/Kg-dry	1	09/03/21 18:57:43
Indeno(1,2,3-cd)pyrene	ND	38.0	6.78	μg/Kg-dry	1	09/03/21 18:57:43
Dibenz(a,h)anthracene	ND	38.0	8.30	μg/Kg-dry	1	09/03/21 18:57:43
Surr: 2-Fluorobiphenyl	79.4	27.9 - 129		%Rec	1	09/03/21 18:57:43
Surr: Terphenyl-d14 (surr)	85.8	39.1 - 145	0	%Rec	1	09/03/21 18:57:43



Work Order: **2109045**Date Reported: **9/17/2021**

Client: Ayre **Collection Date:** 9/2/2021 10:00:00 AM

Project: MM Grab 2021

Lab ID: 2109045-001 **Matrix:** Soil

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
Semivolatile Organic Compound	ds by EPA Metho	od 8270		Batch	ID: 3360	2	Analyst: SB
Phenol	ND	69.9	19.5		μg/Kg-dry	1	09/07/21 18:18:54
Bis(2-chloroethyl) ether	ND	93.2	32.4		μg/Kg-dry	1	09/07/21 18:18:54
2-Chlorophenol	ND	46.6	14.0		μg/Kg-dry	1	09/07/21 18:18:54
1,3-Dichlorobenzene	ND	46.6	15.3		μg/Kg-dry	1	09/07/21 18:18:54
1,4-Dichlorobenzene	ND	37.3	12.0		μg/Kg-dry	1	09/07/21 18:18:54
1,2-Dichlorobenzene	ND	37.3	12.3		μg/Kg-dry	1	09/07/21 18:18:54
Benzyl alcohol	ND	65.2	14.2		μg/Kg-dry	1	09/07/21 18:18:54
2-Methylphenol (o-cresol)	ND	55.9	23.9		μg/Kg-dry	1	09/07/21 18:18:54
Hexachloroethane	ND	69.9	19.0		μg/Kg-dry	1	09/07/21 18:18:54
N-Nitrosodi-n-propylamine	ND	93.2	44.2		μg/Kg-dry	1	09/07/21 18:18:54
3&4-Methylphenol (m, p-cresol)	ND	46.6	13.4		μg/Kg-dry	1	09/07/21 18:18:54
Nitrobenzene	ND	69.9	18.4		μg/Kg-dry	1	09/07/21 18:18:54
Isophorone	ND	37.3	12.2		μg/Kg-dry	1	09/07/21 18:18:54
2-Nitrophenol	ND	93.2	26.9		μg/Kg-dry	1	09/07/21 18:18:54
2,4-Dimethylphenol	ND	37.3	5.46		μg/Kg-dry	1	09/07/21 18:18:54
Bis(2-chloroethoxy)methane	ND	69.9	21.7		μg/Kg-dry	1	09/07/21 18:18:54
2,4-Dichlorophenol	ND	93.2	4.11		μg/Kg-dry	1	09/07/21 18:18:54
1,2,4-Trichlorobenzene	ND	37.3	11.5		μg/Kg-dry	1	09/07/21 18:18:54
Naphthalene	ND	46.6	14.1		μg/Kg-dry	1	09/07/21 18:18:54
4-Chloroaniline	ND	69.9	21.2		μg/Kg-dry	1	09/07/21 18:18:54
Hexachlorobutadiene	ND	37.3	8.54		μg/Kg-dry	1	09/07/21 18:18:54
4-Chloro-3-methylphenol	ND	93.2	34.3		μg/Kg-dry	1	09/07/21 18:18:54
2-Methylnaphthalene	ND	37.3	6.85		μg/Kg-dry	1	09/07/21 18:18:54
1-Methylnaphthalene	ND	37.3	11.0		μg/Kg-dry	1	09/07/21 18:18:54
Hexachlorocyclopentadiene	ND	93.2	20.7	Q	μg/Kg-dry	1	09/07/21 18:18:54
2,4,6-Trichlorophenol	ND	69.9	20.4		μg/Kg-dry	1	09/07/21 18:18:54
2,4,5-Trichlorophenol	ND	69.9	23.8		μg/Kg-dry	1	09/07/21 18:18:54
2-Chloronaphthalene	ND	37.3	6.62		μg/Kg-dry	1	09/07/21 18:18:54
2-Nitroaniline	ND	93.2	39.3		μg/Kg-dry	1	09/07/21 18:18:54
Acenaphthene	ND	37.3	6.51		μg/Kg-dry	1	09/07/21 18:18:54
Dimethylphthalate	ND	55.9	9.64		μg/Kg-dry	1	09/07/21 18:18:54



Work Order: **2109045**Date Reported: **9/17/2021**

Client: Ayre **Collection Date:** 9/2/2021 10:00:00 AM

Project: MM Grab 2021

Lab ID: 2109045-001 **Matrix:** Soil

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
Semivolatile Organic Compou	nds by EPA Metho	od 8270		Batch	ID: 33602	2	Analyst: SB
2,6-Dinitrotoluene	ND	46.6	16.0		μg/Kg-dry	1	09/07/21 18:18:54
Acenaphthylene	ND	37.3	5.84		μg/Kg-dry	1	09/07/21 18:18:54
2,4-Dinitrophenol	ND	46.6	16.0	Q	μg/Kg-dry	1	09/07/21 18:18:54
Dibenzofuran	ND	37.3	5.57		μg/Kg-dry	1	09/07/21 18:18:54
2,4-Dinitrotoluene	ND	93.2	30.8		μg/Kg-dry	1	09/07/21 18:18:54
4-Nitrophenol	ND	466	13.5		μg/Kg-dry	1	09/07/21 18:18:54
Fluorene	ND	37.3	4.66		μg/Kg-dry	1	09/07/21 18:18:54
4-Chlorophenyl phenyl ether	ND	37.3	7.56		μg/Kg-dry	1	09/07/21 18:18:54
Diethylphthalate	34.5	69.9	21.1	J	μg/Kg-dry	1	09/07/21 18:18:54
4,6-Dinitro-2-methylphenol	ND	186	21.4		μg/Kg-dry	1	09/07/21 18:18:54
4-Bromophenyl phenyl ether	ND	69.9	25.2		μg/Kg-dry	1	09/07/21 18:18:54
Hexachlorobenzene	ND	46.6	14.4		μg/Kg-dry	1	09/07/21 18:18:54
Pentachlorophenol	ND	93.2	10.9		μg/Kg-dry	1	09/07/21 18:18:54
Phenanthrene	ND	37.3	8.08		μg/Kg-dry	1	09/07/21 18:18:54
Anthracene	ND	37.3	5.17		μg/Kg-dry	1	09/07/21 18:18:54
Carbazole	ND	37.3	13.0		μg/Kg-dry	1	09/07/21 18:18:54
Di-n-butylphthalate	ND	37.3	10.1		μg/Kg-dry	1	09/07/21 18:18:54
Fluoranthene	10.9	37.3	8.22	J	μg/Kg-dry	1	09/07/21 18:18:54
Pyrene	25.0	37.3	9.23	J	μg/Kg-dry	1	09/07/21 18:18:54
Butyl Benzylphthalate	ND	46.6	13.7		μg/Kg-dry	1	09/07/21 18:18:54
bis(2-Ethylhexyl)adipate	ND	93.2	18.5		μg/Kg-dry	1	09/07/21 18:18:54
Benz(a)anthracene	ND	37.3	11.2		μg/Kg-dry	1	09/07/21 18:18:54
Chrysene	ND	46.6	20.4		μg/Kg-dry	1	09/07/21 18:18:54
bis (2-Ethylhexyl) phthalate	ND	37.3	10.5		μg/Kg-dry	1	09/07/21 18:18:54
Di-n-octyl phthalate	ND	69.9	24.3		μg/Kg-dry	1	09/07/21 18:18:54
Benzo(b)fluoranthene	ND	37.3	9.86		μg/Kg-dry	1	09/07/21 18:18:54
Benzo(k)fluoranthene	ND	37.3	9.34		μg/Kg-dry	1	09/07/21 18:18:54
Benzo(a)pyrene	ND	37.3	13.5		μg/Kg-dry	1	09/07/21 18:18:54
Indeno(1,2,3-cd)pyrene	ND	69.9	24.3		μg/Kg-dry	1	09/07/21 18:18:54
Dibenz(a,h)anthracene	ND	93.2	36.3		μg/Kg-dry	1	09/07/21 18:18:54
Benzo(g,h,i)perylene	ND	69.9	27.0		μg/Kg-dry	1	09/07/21 18:18:54



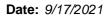
Work Order: **2109045**Date Reported: **9/17/2021**

Client: Ayre **Collection Date:** 9/2/2021 10:00:00 AM

Project: MM Grab 2021

Lab ID: 2109045-001 **Matrix:** Soil

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
Semivolatile Organic Compounds	by EPA Met	hod 8270		Batch	ID: 3360	2	Analyst: SB
Surr: 2,4,6-Tribromophenol	111	18.4 - 156	0		%Rec	1	09/07/21 18:18:54
Surr: 2-Fluorobiphenyl	99.1	17.6 - 135	0		%Rec	1	09/07/21 18:18:54
Surr: Nitrobenzene-d5	80.5	8.6 - 139	0		%Rec	1	09/07/21 18:18:54
Surr: Phenol-d6	83.8	17.2 - 136	0		%Rec	1	09/07/21 18:18:54
Surr: p-Terphenyl	115	35.1 - 146	0		%Rec	1	09/07/21 18:18:54
NOTES: Q - Indicates an analyte with a continuing calib	oration that does	s not meet acce	otance criteria				
Mercury by EPA Method 7471B				Batch	ID: 3363	2	Analyst: CH
Mercury	ND	0.256	0.00517		mg/Kg-dry	[,] 1	09/09/21 12:15:06
Total Metals by EPA Method 6020E	<u>3</u>			Batch	ID: 3361	4	Analyst: EH
Arsenic	0.643	0.0922	0.0309		mg/Kg-dry	, 1	09/09/21 17:41:09
Cadmium	0.0557	0.154	0.00254	J	mg/Kg-dry	<i>'</i> 1	09/08/21 19:55:03
Chromium	26.2	0.307	0.100		mg/Kg-dry	<i>'</i> 1	09/08/21 19:55:03
Copper	35.0	0.769	0.144		mg/Kg-dry	<i>'</i> 1	09/08/21 19:55:03
Lead	0.946	0.154	0.0320		mg/Kg-dry	<i>'</i> 1	09/08/21 19:55:03
Silver	0.0486	0.115	0.0325	J	mg/Kg-dry	<i>'</i> 1	09/08/21 19:55:03
Zinc	36.1	1.35	0.469		mg/Kg-dry	1	09/08/21 19:55:03
Sample Moisture (Percent Moisture	<u>e)</u>			Batch	ID: R696	99	Analyst: cb
Percent Moisture	2.19	0.500	0.100		wt%	1	09/03/21 11:44:10





QC SUMMARY REPORT

CLIENT: Ayre

Total Metals by EPA Method 6020B

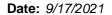
Project: MM Grab 2021

Sample ID: MB-33614	SampType: MBLK					Prep Date	e: 9/7/2021	RunNo: 697	RunNo: 69768		
Client ID: MBLKS	Batch ID: 33614					Analysis Date	e: 9/7/2021	SeqNo: 141	4499		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit RPD Ref	/al %RPD	RPDLimit	Qual	
Arsenic	ND	0.0902									
Cadmium	ND	0.150									
Chromium	ND	0.301									
Copper	ND	0.752									
Lead	ND	0.150									
Silver	ND	0.113									
Zinc	ND	1.32									

Sample ID: LCS-33614	SampType: LCS	SampType: LCS			Units: mg/Kg Prep Date:			1	RunNo: 697	768	
Client ID: LCSS	Batch ID: 33614					Analysis Da	te: 9/7/202	SeqNo: 1414500			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cadmium	1.88	0.160	2.000	0	93.8	80	120				
Chromium	41.7	0.320	40.00	0	104	80	120				
Copper	40.1	0.800	40.00	0	100	80	120				
Lead	20.8	0.160	20.00	0	104	80	120				
Silver	2.02	0.120	2.000	0	101	80	120				

Sample ID: 2108296-011AMS	SampType: MS		Units: mg/Kg-dry			Prep Date: 9/7/2021			RunNo: 697		
Client ID: BATCH	Batch ID: 33614					Analysis Da	te: 9/7/202	.1	SeqNo: 14 1	4503	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	45.1	0.101	42.00	1.362	104	75	125				
Cadmium	2.06	0.168	2.100	0.04000	96.4	75	125				
Chromium	64.4	0.336	42.00	17.92	111	75	125				
Copper	49.6	0.840	42.00	7.491	100	75	125				
Lead	21.3	0.168	21.00	1.160	96.1	75	125				
Silver	1.95	0.126	2.100	0	93.0	75	125				
Zinc	67.5	1.47	42.00	22.77	106	75	125				

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QC SUMMARY REPORT

CLIENT: Ayre

Total Metals by EPA Method 6020B

Project: MM Grab 2021

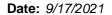
Sample ID: 2108296-011AMS SampType: MS Units: mg/Kg-dry Prep Date: 9/7/2021 RunNo: 69768 Client ID: BATCH Batch ID: 33614

Analysis Date: 9/7/2021 SeqNo: 1414503

%REC LowLimit HighLimit RPD Ref Val Analyte Result RL SPK value SPK Ref Val %RPD RPDLimit Qual

Sample ID: 2108296-011AMSD	SampType: MSD			Units: mg/Kg-	dry	Prep Date	e: 9/7/202	1	RunNo: 697		
Client ID: BATCH	Batch ID: 33614					Analysis Date	e: 9/7/202	1	SeqNo: 141	14504	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	46.0	0.103	42.96	1.362	104	75	125	45.14	1.82	20	
Cadmium	1.99	0.172	2.148	0.04000	90.8	75	125	2.064	3.61	20	
Chromium	61.6	0.344	42.96	17.92	102	75	125	64.43	4.48	20	
Copper	46.9	0.859	42.96	7.491	91.7	75	125	49.65	5.75	20	
Lead	20.9	0.172	21.48	1.160	91.7	75	125	21.35	2.32	20	
Silver	1.89	0.129	2.148	0	88.0	75	125	1.953	3.23	20	
Zinc	67.3	1.50	42.96	22.77	104	75	125	67.48	0.299	20	
Sample ID: LCS-33614	SampType: LCS			Units: mg/Kg		Prep Date	e: 9/7/202	1	RunNo: 697	768	
Client ID: LCSS	Batch ID: 33614					Analysis Date	e: 9/8/202	1	SeqNo: 141	14611	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qua
Arsenic	40.6	0.0960	40.00	0	101	80	120				
Zinc	41.0	1.40	40.00	0	103	80	120				

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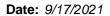
CLIENT: Ayre

Dua!aa4. MM Grah 2021 **QC SUMMARY REPORT**

Mercury by EPA Method 7471B

		21										
Sample ID: MB-33	3632	SampType: MBLK			Units: mg/Kg		Prep Date	9/8/202	1	RunNo: 69	807	
Client ID: MBLK	(S	Batch ID: 33632					Analysis Date	: 9/9/202	1	SeqNo: 14	15415	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit I	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury		ND	0.250									
Sample ID: LCS-3	33632	SampType: LCS			Units: mg/Kg		Prep Date	9/8/202	.1	RunNo: 69	807	
Client ID: LCSS		Batch ID: 33632					Analysis Date	: 9/9/202	:1	SeqNo: 14	15416	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit I	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury		0.446	0.250	0.5000	0	89.2	80	120				
Sample ID: 21082	96-001ADUP	SampType: DUP			Units: mg/Kg-	dry	Prep Date	: 9/8/202	.1	RunNo: 69	807	
Client ID: BATC	Н	Batch ID: 33632					Analysis Date	: 9/9/202	:1	SeqNo: 14	15418	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit I	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury		0.0140	0.248						0.01277	9.26	20	J
Sample ID: 21082	96-001AMS	SampType: MS			Units: mg/Kg-	dry	Prep Date	9/8/202	1	RunNo: 69	807	
Client ID: BATC	Н	Batch ID: 33632					Analysis Date	: 9/9/202	1	SeqNo: 14	15419	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit I	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury		0.546	0.268	0.5367	0.01277	99.4	70	130				
Sample ID: 21082	96-001AMSD	SampType: MSD			Units: mg/Kg-	dry	Prep Date	9/8/202	1	RunNo: 69	807	
Client ID: BATC	Н	Batch ID: 33632					Analysis Date	9/9/202	1	SeqNo: 14	15420	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit I	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury		0.545	0.258	0.5161	0.01277	103	70	130	0.5464	0.257	20	

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QC SUMMARY REPORT

CLIENT: Ayre

Project: MM Grab 2	021						Diesel	and Heavy	Oil by NW	TPH-Dx/I	Dx Ex
Sample ID: MB-33649	SampType: MBLK			Units: mg/k	(g	Prep Da	te: 9/9/202	21	RunNo: 698	359	
Client ID: MBLKS	Batch ID: 33649					Analysis Da	te: 9/9/202	21	SeqNo: 14	16438	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	16.7									
Heavy Oil	ND	33.3									
Total Petroleum Hydrocarbons	ND	50.0									
Surr: 2-Fluorobiphenyl	3.00		3.333		90.0	50	150				
Surr: o-Terphenyl	3.08		3.333		92.5	50	150				
Sample ID: LCS-33649	SampType: LCS			Units: mg/k		Prep Da	te: 9/9/202	21	RunNo: 698	359	
Client ID: LCSS	Batch ID: 33649					Analysis Da	te: 9/9/202	21	SeqNo: 14	16439	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	517	150	500.0	0	103	77.2	122				
Surr: 2-Fluorobiphenyl	10.2		10.00		102	50	150				
Surr: o-Terphenyl	10.3		10.00		103	50	150				
Sample ID: 2109045-001AMS	SampType: MS			Units: mg/k	(g-dry	Prep Da	te: 9/9/202	21	RunNo: 698	359	
Client ID: G01	Batch ID: 33649					Analysis Da	te: 9/9/202	21	SeqNo: 14	16441	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	181	50.9	169.7	0	106	68	132				
Surr: 2-Fluorobiphenyl	3.19		3.393		94.0	50	150				
Surr: o-Terphenyl	4.06		3.393		120	50	150				
Sample ID: 2109045-001AMSD	SampType: MSD			Units: mg/k	(g-dry	Prep Da	te: 9/9/202	 21	RunNo: 698	359	
Client ID: G01	Batch ID: 33649					Analysis Da	te: 9/9/202	21	SeqNo: 14	16442	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	180	49.7	165.6	0	109	68	132	180.6	0.0567	30	
Surr: 2-Fluorobiphenyl	2.73		3.312		82.5	50	150		0		
Surr: o-Terphenyl	3.57		3.312		108	50	150		0		

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Date: 9/17/2021



Work Order: 2109045

QC SUMMARY REPORT

CLIENT: Ayre
Project: MM Grab 2021

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: 2109045-001AMSD

SampType: MSD

Units: mg/Kg-dry

Prep Date: 9/9/2021

RunNo: 69859

Client ID: G01

Batch ID: 33649

5 5 7

Analysis Date: 9/9/2021

SeqNo: 1416442

Analyte

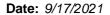
Result

RL SPK value SPK Ref Val

%REC LowLimit HighLimit RPD Ref Val

%RPD RPDLimit Qual

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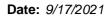
QC SUMMARY REPORT

CLIENT: Ayre

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Project: MM Grab 2	021				PO	iyaroman	c nyurocarbons b	by EPA Method 8270	(3114)
Sample ID: MB-33603	SampType: MBLK			Units: µg/Kg		Prep Date	9/3/2021	RunNo: 69751	
Client ID: MBLKS	Batch ID: 33603					Analysis Date	e: 9/3/2021	SeqNo: 1413886	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit RPD Ref Val	%RPD RPDLimit	Qual
Benz(a)anthracene	ND	20.0							
Chrysene	ND	40.0							
Benzo(b)fluoranthene	ND	20.0							
Benzo(k)fluoranthene	ND	20.0							
Benzo(a)pyrene	ND	20.0							
Indeno(1,2,3-cd)pyrene	ND	40.0							
Dibenz(a,h)anthracene	ND	40.0							
Surr: 2-Fluorobiphenyl	892		1,000		89.2	27.9	129		
Surr: Terphenyl-d14 (surr)	888		1,000		88.8	39.1	145		
Sample ID: LCS-33603	SampType: LCS			Units: µg/Kg		Prep Date	e: 9/3/2021	RunNo: 69751	
Client ID: LCSS	Batch ID: 33603					Analysis Date	e: 9/3/2021	SeqNo: 1413887	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit RPD Ref Val	%RPD RPDLimit	Qual
Benz(a)anthracene	1,560	20.0	2,000	0	77.9	64.4	113		
Chrysene	1,420	40.0	2,000	0	70.8	57.3	113		
Benzo(b)fluoranthene	1,470	20.0	2,000	0	73.6	58.2	115		
Benzo(k)fluoranthene	1,470	20.0	2,000	0	73.5	53.4	121		
Benzo(a)pyrene	1,560	20.0	2,000	0	78.2	64.7	125		
Indeno(1,2,3-cd)pyrene	1,430	40.0	2,000	0	71.6	61.6	113		
Dibenz(a,h)anthracene	1,490	40.0	2,000	0	74.7	62.1	116		
Surr: 2-Fluorobiphenyl	849		1,000		84.9	27.9	129		
Surr: Terphenyl-d14 (surr)	856		1,000		85.6	39.1	145		
Sample ID: 2109038-001AMS	SampType: MS			Units: µg/Kg-c	lry	Prep Date	e: 9/3/2021	RunNo: 69751	
Client ID: BATCH	Batch ID: 33603					Analysis Date	e: 9/3/2021	SeqNo: 1413889	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit RPD Ref Val	%RPD RPDLimit	Qual
Benz(a)anthracene	1,190	18.9	1,895	11.45	62.2	45	110		

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Work Order: 2109045

QC SUMMARY REPORT

CLIENT: Ayre

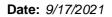
Project:

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: 2109038-001AMS	SampType: MS			Units: µg/K	g-dry	Prep Da	te: 9/3/2021		RunNo: 697	751	
Client ID: BATCH	Batch ID: 33603				Analysis Date: 9/3/2021				SeqNo: 14 1	13889	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chrysene	1,090	37.9	1,895	0	57.8	42.4	106				
Benzo(b)fluoranthene	1,140	18.9	1,895	0	60.0	43.7	108				
Benzo(k)fluoranthene	1,120	18.9	1,895	0	59.0	39.5	113				
Benzo(a)pyrene	1,190	18.9	1,895	7.844	62.6	44.1	122				
Indeno(1,2,3-cd)pyrene	1,020	37.9	1,895	0	54.0	40.2	109				
Dibenz(a,h)anthracene	1,050	37.9	1,895	0	55.2	31.4	126				
Surr: 2-Fluorobiphenyl	686		947.4		72.4	27.9	129				
Surr: Terphenyl-d14 (surr)	628		947.4		66.3	39.1	145				

Sample ID: 2109038-001AMSD	SampType: MSD			Units: µg/K	g-dry	Prep Da	te: 9/3/202	21	RunNo: 697	751	
Client ID: BATCH	Batch ID: 33603					Analysis Da	te: 9/3/202	21	SeqNo: 141	13890	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benz(a)anthracene	1,410	17.7	1,769	11.45	79.0	45	110	1,190	16.8	30	
Chrysene	1,320	35.4	1,769	0	74.8	42.4	106	1,095	18.9	30	
Benzo(b)fluoranthene	1,330	17.7	1,769	0	75.0	43.7	108	1,136	15.5	30	
Benzo(k)fluoranthene	1,410	17.7	1,769	0	79.6	39.5	113	1,119	22.8	30	
Benzo(a)pyrene	1,450	17.7	1,769	7.844	81.4	44.1	122	1,194	19.2	30	
Indeno(1,2,3-cd)pyrene	1,300	35.4	1,769	0	73.6	40.2	109	1,022	24.0	30	
Dibenz(a,h)anthracene	1,350	35.4	1,769	0	76.5	31.4	126	1,046	25.5	30	
Surr: 2-Fluorobiphenyl	747		884.4		84.5	27.9	129		0		
Surr: Terphenyl-d14 (surr)	742		884.4		83.9	39.1	145		0		

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Work Order: 2109045

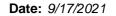
QC SUMMARY REPORT

CLIENT: Ayre

Polychlorinated Biphenyls (PCB) by EPA 8082

Sample ID: MB-33689	SampType: MBLK			Units: mg/Kg		Prep Dat	te: 9/14/2021	RunNo: 69 9	900	
Client ID: MBLKS	Batch ID: 33689					Analysis Dat	te: 9/14/2021	SeqNo: 14 1	17273	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit RPD Ref Val	%RPD	RPDLimit	Qua
Aroclor 1016	ND	0.0167								
Aroclor 1221	ND	0.0167								
Aroclor 1232	ND	0.0167								
Aroclor 1242	ND	0.0167								
Aroclor 1248	ND	0.0167								
Aroclor 1254	ND	0.0167								
Aroclor 1260	ND	0.0167								
Aroclor 1262	ND	0.0167								
Aroclor 1268	ND	0.0167								
Total PCBs	ND	0.0167								
Surr: Decachlorobiphenyl	45.9		66.98		68.6	20.6	142			
Surr: Tetrachloro-m-xylene	49.9		66.98		74.6	22	157			
Sample ID: LCS1-33689	SampType: LCS			Units: mg/Kg		Prep Dat	te: 9/14/2021	RunNo: 699	900	
Client ID: LCSS	Batch ID: 33689					Analysis Dat	te: 9/14/2021	SeqNo: 14 1	17274	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit RPD Ref Val	%RPD	RPDLimit	Qua
Aroclor 1254	0.948	0.0500	1.000	0	94.8	48.1	147			
Surr: Decachlorobiphenyl	196		200.0		97.8	20.6	142			
Surr: Tetrachloro-m-xylene	222		200.0		111	22	157			
Sample ID: LCS2-33689	SampType: LCS			Units: mg/Kg		Prep Dat	te: 9/14/2021	RunNo: 699	900	
Client ID: LCSS	Batch ID: 33689					Analysis Dat	te: 9/14/2021	SeqNo: 14 1	17275	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit RPD Ref Val	%RPD	RPDLimit	Qua
A I 4040	0.850	0.0500	1.000	0	85.0	52.2	136			
Arocior 1016			4 000	0	00.0	50.5	150			
	0.926	0.0500	1.000	0	92.6	30.3	130			
Aroclor 1016 Aroclor 1260 Surr: Decachlorobiphenyl	0.926 179	0.0500	200.0	U	92.6 89.4	20.6	142			

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QC SUMMARY REPORT

CLIENT: Ayre

Polychlorinated Biphenyls (PCB) by EPA 8082

Project: MM Grab 2021

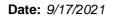
Sample ID: **LCS2-33689** SampType: **LCS** Units: **mg/Kg** Prep Date: **9/14/2021** RunNo: **69900**

Client ID: LCSS Batch ID: 33689 Analysis Date: 9/14/2021 SeqNo: 1417275

Analyte Result RL SPK value SPK Ref Val %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sample ID: 2109045-001AMS	SampType: MS			Units: mg/k	(g-dry	Prep Da	te: 9/14/2 0)21	RunNo: 699	900	
Client ID: G01	Batch ID: 33689					Analysis Da	te: 9/14/2 0)21	SeqNo: 14 1	17277	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1254	0.320	0.0170	0.3393	0	94.4	50	150				
Surr: Decachlorobiphenyl	62.8		67.86		92.5	20.6	142				
Surr: Tetrachloro-m-xylene	57.8		67.86		85.2	22	157				
Sample ID: 2109045-001AMSD	SampType: MSD			Units: mg/k	(g-dry	Prep Da	te: 9/14/2 0)21	RunNo: 699	900	
Client ID: G01	Batch ID: 33689					Analysis Da	te: 9/14/2 0)21	SeqNo: 141	17278	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1254	0.318	0.0170	0.3391	0	93.7	50	150	0.3203	0.841		
A10001 1204											
Surr: Decachlorobiphenyl	58.7		67.82		86.5	20.6	142		0		

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Work Order: 2109045

QC SUMMARY REPORT

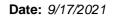
CLIENT: Ayre

Project:

Semivolatile Organic Compounds by EPA Method 8270

Sample ID: MB-33602	SampType: MBLK			Units: µg/Kg		Prep Da	ite: 9/3/202	21	RunNo: 697	749	
Client ID: MBLKS	Batch ID: 33602					Analysis Da	ate: 9/7/20 2	21	SeqNo: 14 1	3991	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phenol	ND	75.0									
Bis(2-chloroethyl) ether	ND	100									
2-Chlorophenol	ND	50.0									
1,3-Dichlorobenzene	ND	50.0									
1,4-Dichlorobenzene	ND	40.0									
1,2-Dichlorobenzene	ND	40.0									
Benzyl alcohol	ND	70.0									
2-Methylphenol (o-cresol)	ND	60.0									
Hexachloroethane	ND	75.0									
N-Nitrosodi-n-propylamine	ND	100									
3&4-Methylphenol (m, p-cresol)	ND	50.0									
Nitrobenzene	ND	75.0									
Isophorone	ND	40.0									
2-Nitrophenol	ND	100									
2,4-Dimethylphenol	ND	40.0									
Bis(2-chloroethoxy)methane	ND	75.0									
2,4-Dichlorophenol	ND	100									
1,2,4-Trichlorobenzene	ND	40.0									
Naphthalene	ND	50.0									
4-Chloroaniline	ND	75.0									
Hexachlorobutadiene	ND	40.0									
4-Chloro-3-methylphenol	ND	100									
2-Methylnaphthalene	ND	40.0									
1-Methylnaphthalene	ND	40.0									
Hexachlorocyclopentadiene	ND	100									
2,4,6-Trichlorophenol	ND	75.0									
2,4,5-Trichlorophenol	ND	75.0									
2-Chloronaphthalene	ND	40.0									
2-Nitroaniline	ND	100									
Acenaphthene	ND	40.0									
,											

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Work Order: 2109045

QC SUMMARY REPORT

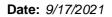
CLIENT: Ayre

Project:

Semivolatile Organic Compounds by EPA Method 8270

Sample ID: MB-33602	SampType: MBLK			Units: µg/Kg		Prep Da	ate: 9/3/20 2	21	RunNo: 697	749	
Client ID: MBLKS	Batch ID: 33602					Analysis Da	ate: 9/7/20 2	21	SeqNo: 14	13991	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dimethylphthalate	ND	60.0							-		
2,6-Dinitrotoluene	ND	50.0									
Acenaphthylene	ND	40.0									
2,4-Dinitrophenol	ND	50.0									
Dibenzofuran	ND	40.0									
2,4-Dinitrotoluene	ND	100									
4-Nitrophenol	ND	500									
Fluorene	ND	40.0									
4-Chlorophenyl phenyl ether	ND	40.0									
Diethylphthalate	ND	75.0									
4,6-Dinitro-2-methylphenol	ND	200									
4-Bromophenyl phenyl ether	ND	75.0									
Hexachlorobenzene	ND	50.0									
Pentachlorophenol	ND	100									
Phenanthrene	ND	40.0									
Anthracene	ND	40.0									
Carbazole	ND	40.0									
Di-n-butylphthalate	12.4	40.0									J
Fluoranthene	ND	40.0									
Pyrene	33.3	40.0									J
Butyl Benzylphthalate	ND	50.0									
bis(2-Ethylhexyl)adipate	ND	100									
Benz(a)anthracene	ND	40.0									
Chrysene	ND	50.0									
bis (2-Ethylhexyl) phthalate	ND	40.0									
Di-n-octyl phthalate	ND	75.0									
Benzo(b)fluoranthene	ND	40.0									
Benzo(k)fluoranthene	ND	40.0									
Benzo(a)pyrene	ND	40.0									
	ND	75.0									
Indeno(1,2,3-cd)pyrene											

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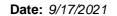
QC SUMMARY REPORT

CLIENT: Ayre

Semivolatile Organic Compounds by EPA Method 8270

Project: MM Grab 2	2021				Se	mivolatil	e Organ	ic Compou	nds by EP	PA Metho	d 827
Sample ID: MB-33602	SampType: MBLK			Units: µg/Kg		Prep Da	te: 9/3/202	21	RunNo: 697	749	
Client ID: MBLKS	Batch ID: 33602					Analysis Da	te: 9/7/202	21	SeqNo: 14 1	13991	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dibenz(a,h)anthracene	ND	100									
Benzo(g,h,i)perylene	ND	75.0									
Surr: 2,4,6-Tribromophenol	1,900		2,000		94.8	18.4	156				
Surr: 2-Fluorobiphenyl	1,120		1,000		112	17.6	135				
Surr: Nitrobenzene-d5	871		1,000		87.1	8.6	139				
Surr: Phenol-d6	1,860		2,000		93.0	17.2	136				
Surr: p-Terphenyl	1,200		1,000		120	35.1	146				
Sample ID: LCS-33602	SampType: LCS			Units: µg/Kg		Prep Dat	te: 9/3/202	<u> </u>	RunNo: 697	749	
Client ID: LCSS	Batch ID: 33602					Analysis Da	te: 9/7/202	21	SeqNo: 141	13992	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phenol	1,850	75.0	2,000	0	92.7	53.3	121				
Bis(2-chloroethyl) ether	1,710	100	2,000	0	85.4	55.4	126				
2-Chlorophenol	2,070	50.0	2,000	0	104	60.2	118				
1,3-Dichlorobenzene	1,980	50.0	2,000	0	99.0	54.9	115				
1,4-Dichlorobenzene	1,910	40.0	2,000	0	95.6	50.2	118				
1,2-Dichlorobenzene	2,040	40.0	2,000	0	102	50.9	120				
Benzyl alcohol	2,050	70.0	2,000	0	102	5	159				
2-Methylphenol (o-cresol)	2,080	60.0	2,000	0	104	57.3	121				
Hexachloroethane	1,740	75.0	2,000	0	86.9	47.9	125				
N-Nitrosodi-n-propylamine	1,870	100	2,000	0	93.4	57.3	124				
3&4-Methylphenol (m, p-cresol)	2,000	50.0	2,000	0	99.8	56.6	128				
Nitrobenzene	1,720	75.0	2,000	0	85.9	59.4	122				
Isophorone	1,970	40.0	2,000	0	98.6	58.5	116				
2-Nitrophenol	2,200	100	2,000	0	110	57	128				
2,4-Dimethylphenol	2,020	40.0	2,000	0	101	57.2	119				
Bis(2-chloroethoxy)methane	1,900	75.0	2,000	0	94.8	59.9	117				
2,4-Dichlorophenol	2,230	100	2,000	0	112	60.3	115				
1,2,4-Trichlorobenzene	2,150	40.0	2,000	0	108	60.1	117				

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Work Order: 2109045

QC SUMMARY REPORT

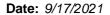
CLIENT: Ayre

Project:

Semivolatile Organic Compounds by EPA Method 8270

Sample ID: LCS-33602	SampType: LCS			Units: µg/Kg		Prep Da	te: 9/3/202	:1	RunNo: 697	749	
Client ID: LCSS	Batch ID: 33602					Analysis Da	te: 9/7/202	21	SeqNo: 141	13992	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	2,020	50.0	2,000	0	101	58.9	117				
4-Chloroaniline	1,960	75.0	2,000	0	98.2	60	108				
Hexachlorobutadiene	2,040	40.0	2,000	0	102	60	117				
4-Chloro-3-methylphenol	2,170	100	2,000	0	108	54.2	125				
2-Methylnaphthalene	2,030	40.0	2,000	0	102	60.3	121				
1-Methylnaphthalene	2,130	40.0	2,000	0	106	60.4	119				
Hexachlorocyclopentadiene	1,770	100	2,000	0	88.7	45.5	151				
2,4,6-Trichlorophenol	2,470	75.0	2,000	0	123	62.2	125				
2,4,5-Trichlorophenol	2,420	75.0	2,000	0	121	60.3	119				S
2-Chloronaphthalene	2,100	40.0	2,000	0	105	61.7	118				
2-Nitroaniline	1,890	100	2,000	0	94.5	60.6	124				
Acenaphthene	2,010	40.0	2,000	0	100	58.2	116				
Dimethylphthalate	2,160	60.0	2,000	0	108	57.9	136				
2,6-Dinitrotoluene	2,290	50.0	2,000	0	115	62.5	126				
Acenaphthylene	2,160	40.0	2,000	0	108	60.8	112				
2,4-Dinitrophenol	2,450	50.0	4,000	0	61.3	5	117				
Dibenzofuran	2,070	40.0	2,000	0	103	60.8	117				
2,4-Dinitrotoluene	2,200	100	2,000	0	110	62.4	127				
4-Nitrophenol	2,220	500	2,000	0	111	35.3	123				
Fluorene	2,150	40.0	2,000	0	107	60.6	117				
4-Chlorophenyl phenyl ether	2,210	40.0	2,000	0	110	59.7	121				
Diethylphthalate	2,190	75.0	2,000	0	109	60.7	120				
4,6-Dinitro-2-methylphenol	1,960	200	2,000	0	98.0	19.6	140				
4-Bromophenyl phenyl ether	2,230	75.0	2,000	0	112	58.7	123				
Hexachlorobenzene	2,150	50.0	2,000	0	108	60.1	124				
Pentachlorophenol	2,570	100	2,000	0	129	28.5	131				
Phenanthrene	2,100	40.0	2,000	0	105	57.6	119				
Anthracene	2,190	40.0	2,000	0	110	60.2	117				
Carbazole	2,240	40.0	2,000	0	112	59.9	120				
Di-n-butylphthalate	2,320	40.0	2,000	0	116	60	125				

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Work Order: 2109045

QC SUMMARY REPORT

CLIENT: Ayre

Project:

Semivolatile Organic Compounds by EPA Method 8270

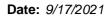
Sample ID: LCS-33602	SampType: LCS			Units: µg/Kg		Prep Date	e: 9/3/202	21	RunNo: 69	749	
Client ID: LCSS	Batch ID: 33602					Analysis Date	e: 9/7/202	21	SeqNo: 14	13992	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoranthene	2,350	40.0	2,000	0	118	60.6	120				
Pyrene	2,330	40.0	2,000	0	116	61.1	117				
Butyl Benzylphthalate	2,690	50.0	2,000	0	135	56	137				
bis(2-Ethylhexyl)adipate	2,710	100	2,000	0	136	54.7	138				
Chrysene	2,100	50.0	2,000	0	105	62.1	119				
bis (2-Ethylhexyl) phthalate	2,590	40.0	2,000	0	129	55	141				
Di-n-octyl phthalate	2,970	75.0	2,000	0	149	49.7	150				
Benzo(b)fluoranthene	2,170	40.0	2,000	0	109	62.6	126				
Benzo(k)fluoranthene	2,100	40.0	2,000	0	105	62.3	123				
Benzo(a)pyrene	2,550	40.0	2,000	0	128	68.6	133				
Benzo(g,h,i)perylene	2,430	75.0	2,000	0	122	51.7	124				
Surr: 2,4,6-Tribromophenol	2,570		2,000		128	18.4	156				
Surr: 2-Fluorobiphenyl	1,040		1,000		104	17.6	135				
Surr: Nitrobenzene-d5	814		1,000		81.4	8.6	139				
Surr: Phenol-d6	1,840		2,000		91.9	17.2	136				
Surr: p-Terphenyl	1,130		1,000		113	35.1	146				
NOTES:											

NOTES:

S - Outlying spike recovery observed (high bias). Detections will be qualified with a *.

Sample ID: LCS-33602	SampType: LCS			Units: µg/Kg		Prep Da	te: 9/3/202	1	RunNo: 697	749	
Client ID: LCSS	Batch ID: 33602					Analysis Da	te: 9/7/202	1	SeqNo: 14 1	14002	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benz(a)anthracene	2,080	40.0	2,000	0	104	55.2	119				
Surr: 2,4,6-Tribromophenol	2,630		2,000		132	18.4	156				
Surr: 2-Fluorobiphenyl	1,060		1,000		106	17.6	135				
Surr: Nitrobenzene-d5	900		1,000		90.0	8.6	139				
Surr: Phenol-d6	1,890		2,000		94.4	17.2	136				
Surr: p-Terphenyl	1,200		1,000		120	35.1	146				

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1,110

Work Order: 2109045

QC SUMMARY REPORT

CLIENT: Ayre

Surr: p-Terphenyl

Semivolatile Organic Compounds by EPA Method 8270

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Sample ID: LCS-33602	SampType: LCS			Units: µg/Kg		Prep Da	te: 9/3/202	1	RunNo: 697	749	
Client ID: LCSS	Batch ID: 33602					Analysis Da	te: 9/7/202	1	SeqNo: 14 1	14449	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Indeno(1,2,3-cd)pyrene	2,130	75.0	2,000	0	107	57.1	121				
Dibenz(a,h)anthracene	2,400	100	2,000	0	120	53.1	126				
Surr: 2,4,6-Tribromophenol	2,450		2,000		123	18.4	156				
Surr: 2-Fluorobiphenyl	1,010		1,000		101	17.6	135				
Surr: Nitrobenzene-d5	919		1,000		91.9	8.6	139				
Surr: Phenol-d6	2,000		2,000		100	17.2	136				

1,000

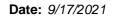
111

35.1

146

Sample ID: 2109049-021AMS	SampType: MS			Units: µg/K	g-dry	Prep Da	te: 9/3/202	21	RunNo: 697	749	
Client ID: BATCH	Batch ID: 33602					Analysis Da	te: 9/7/202	21	SeqNo: 14 1	14450	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phenol	1,690	84.6	2,255	0	74.9	42.6	107				
Bis(2-chloroethyl) ether	1,540	113	2,255	0	68.4	25.3	125				
2-Chlorophenol	1,820	56.4	2,255	0	80.8	22.9	117				
1,3-Dichlorobenzene	1,780	56.4	2,255	0	79.1	11	118				
1,4-Dichlorobenzene	1,730	45.1	2,255	0	76.7	12.4	118				
1,2-Dichlorobenzene	1,640	45.1	2,255	0	72.6	14.9	118				
Benzyl alcohol	1,880	78.9	2,255	0	83.2	5	126				
2-Methylphenol (o-cresol)	1,670	67.7	2,255	0	74.1	40	114				
Hexachloroethane	1,530	84.6	2,255	0	67.7	12.1	124				
N-Nitrosodi-n-propylamine	1,600	113	2,255	0	70.9	33.3	120				
3&4-Methylphenol (m, p-cresol)	1,830	56.4	2,255	0	81.3	39.4	120				
Nitrobenzene	1,610	84.6	2,255	0	71.2	37.5	115				
Isophorone	1,730	45.1	2,255	0	76.9	44.8	109				
2-Nitrophenol	1,750	113	2,255	0	77.8	44.5	116				
2,4-Dimethylphenol	1,670	45.1	2,255	0	73.9	39.5	107				
Bis(2-chloroethoxy)methane	1,530	84.6	2,255	0	67.8	41.4	110				
2,4-Dichlorophenol	1,900	113	2,255	0	84.2	44.2	105				
1,2,4-Trichlorobenzene	1,800	45.1	2,255	0	79.8	34	111				

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Work Order: 2109045

QC SUMMARY REPORT

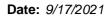
CLIENT: Ayre

Project:

Semivolatile Organic Compounds by EPA Method 8270

Sample ID: 2109049-021AMS	SampType: MS			Units: µg/K	g-dry	Prep Da	te: 9/3/202	21	RunNo: 697	749	
Client ID: BATCH	Batch ID: 33602					Analysis Da	te: 9/7/202	21	SeqNo: 14 1	14450	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	1,840	56.4	2,255	0	81.5	43	108				
4-Chloroaniline	1,660	84.6	2,255	0	73.8	19.5	98.4				
Hexachlorobutadiene	1,990	45.1	2,255	0	88.2	30.2	114				
4-Chloro-3-methylphenol	1,890	113	2,255	0	83.7	47.3	114				
2-Methylnaphthalene	1,750	45.1	2,255	0	77.5	49.6	107				
1-Methylnaphthalene	1,910	45.1	2,255	0	84.6	49.8	105				
Hexachlorocyclopentadiene	1,270	113	2,255	0	56.2	5	142				
2,4,6-Trichlorophenol	2,240	84.6	2,255	0	99.4	44.2	117				
2,4,5-Trichlorophenol	2,230	84.6	2,255	0	98.8	43.8	109				
2-Chloronaphthalene	1,860	45.1	2,255	0	82.5	41.6	108				
2-Nitroaniline	1,690	113	2,255	0	75.0	51.4	118				
Acenaphthene	1,810	45.1	2,255	0	80.1	41.3	106				
Dimethylphthalate	1,940	67.7	2,255	0	86.0	46.3	113				
2,6-Dinitrotoluene	1,990	56.4	2,255	0	88.3	49.5	115				
Acenaphthylene	1,950	45.1	2,255	0	86.3	43.5	101				
2,4-Dinitrophenol	2,720	56.4	4,510	0	60.3	5	133				
Dibenzofuran	1,860	45.1	2,255	7.508	82.1	43.4	107				
2,4-Dinitrotoluene	1,940	113	2,255	0	86.1	50.2	115				
4-Nitrophenol	2,310	564	2,255	0	102	30.7	119				
Fluorene	1,850	45.1	2,255	0	81.9	42.4	109				
4-Chlorophenyl phenyl ether	1,950	45.1	2,255	0	86.4	46	110				
Diethylphthalate	1,830	84.6	2,255	0	81.1	47	112				
4,6-Dinitro-2-methylphenol	1,910	226	2,255	0	84.7	5	157				
4-Bromophenyl phenyl ether	1,920	84.6	2,255	0	85.2	46	111				
Hexachlorobenzene	1,980	56.4	2,255	0	87.6	45.6	110				
Pentachlorophenol	2,180	113	2,255	0	96.9	10.4	151				
Phenanthrene	1,940	45.1	2,255	88.29	82.2	33.3	117				
Anthracene	1,950	45.1	2,255	19.41	85.5	35.9	114				
Carbazole	1,990	45.1	2,255	0	88.2	38.6	117				
Di-n-butylphthalate	2,090	45.1	2,255	0	92.8	44.5	123				

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Work Order: 2109045

QC SUMMARY REPORT

CLIENT: Ayre

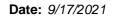
Project:

Semivolatile Organic Compounds by EPA Method 8270

Sample ID: 2109049-021AMS	SampType	e: MS			Units: µg/l	Kg-dry	Prep Dat	te: 9/3/202	21	RunNo: 697	749	
Client ID: BATCH	Batch ID:	33602					Analysis Da	te: 9/7/202	.1	SeqNo: 14 1	4450	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoranthene		2,210	45.1	2,255	139.5	91.8	29.9	125				
Pyrene		2,250	45.1	2,255	206.3	90.6	31.8	120				
Butyl Benzylphthalate		2,320	56.4	2,255	0	103	48.1	133				
bis(2-Ethylhexyl)adipate		2,550	113	2,255	0	113	52.1	134				
Benz(a)anthracene		2,160	45.1	2,255	84.24	91.9	29.6	121				
Chrysene		1,880	56.4	2,255	85.91	79.7	27.8	120				
bis (2-Ethylhexyl) phthalate		2,360	45.1	2,255	0	105	35.2	146				
Di-n-octyl phthalate		2,800	84.6	2,255	0	124	58.2	143				
Benzo(b)fluoranthene		2,140	45.1	2,255	90.21	90.7	24.3	130				
Benzo(k)fluoranthene		2,100	45.1	2,255	74.13	89.9	6.58	150				
Benzo(a)pyrene		2,500	45.1	2,255	136.8	105	21.7	148				
Indeno(1,2,3-cd)pyrene		2,030	84.6	2,255	96.36	85.6	28.7	126				
Dibenz(a,h)anthracene		2,260	113	2,255	51.02	98.1	31.8	129				
Benzo(g,h,i)perylene		2,020	84.6	2,255	110.3	84.8	4.72	138				
Surr: 2,4,6-Tribromophenol		2,260		2,255		100	18.4	156				
Surr: 2-Fluorobiphenyl		991		1,128		87.9	17.6	135				
Surr: Nitrobenzene-d5		794		1,128		70.4	8.6	139				
Surr: Phenol-d6		1,800		2,255		80.0	17.2	136				
Surr: p-Terphenyl		994		1,128		88.2	35.1	146				

Sample ID: 2109049-021AMSD	SampType: MSD			Units: µg/Kç	j-dry	Prep Da	te: 9/3/202	21	RunNo: 697	749	
Client ID: BATCH	Batch ID: 33602					Analysis Da	te: 9/7/202	21	SeqNo: 14 1	14531	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phenol	1,790	83.9	2,239	0	79.9	42.6	107	1,689	5.70	50	
Bis(2-chloroethyl) ether	1,630	112	2,239	0	72.6	25.3	125	1,542	5.28	50	
2-Chlorophenol	1,980	56.0	2,239	0	88.5	22.9	117	1,823	8.30	50	
1,3-Dichlorobenzene	1,880	56.0	2,239	0	84.1	11	118	1,784	5.34	50	
1,4-Dichlorobenzene	1,890	44.8	2,239	0	84.3	12.4	118	1,729	8.71	50	
1,2-Dichlorobenzene	1,920	44.8	2,239	0	85.8	14.9	118	1,638	15.9	50	

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Work Order: 2109045

QC SUMMARY REPORT

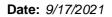
CLIENT: Ayre

Project:

Semivolatile Organic Compounds by EPA Method 8270

Sample ID: 2109049-021AMSD	SampType: MSD			Units: µg/K	g-dry	Prep Da	te: 9/3/202	21	RunNo: 697	749	
Client ID: BATCH	Batch ID: 33602					Analysis Da	te: 9/7/202	21	SeqNo: 141	14531	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzyl alcohol	2,170	78.3	2,239	0	97.2	5	126	1,876	14.8	50	
2-Methylphenol (o-cresol)	2,000	67.2	2,239	0	89.1	40	114	1,670	17.7	50	
Hexachloroethane	1,640	83.9	2,239	0	73.4	12.1	124	1,527	7.31	50	
N-Nitrosodi-n-propylamine	1,700	112	2,239	0	75.8	33.3	120	1,599	5.97	50	
3&4-Methylphenol (m, p-cresol)	1,900	56.0	2,239	0	84.9	39.4	120	1,834	3.56	50	
Nitrobenzene	1,630	83.9	2,239	0	72.7	37.5	115	1,605	1.39	50	
Isophorone	1,920	44.8	2,239	0	85.9	44.8	109	1,734	10.3	50	
2-Nitrophenol	2,130	112	2,239	0	95.2	44.5	116	1,754	19.4	50	
2,4-Dimethylphenol	2,020	44.8	2,239	0	90.3	39.5	107	1,667	19.2	50	
Bis(2-chloroethoxy)methane	1,800	83.9	2,239	0	80.6	41.4	110	1,528	16.5	50	
2,4-Dichlorophenol	2,150	112	2,239	0	96.1	44.2	105	1,899	12.4	50	
1,2,4-Trichlorobenzene	1,930	44.8	2,239	0	86.2	34	111	1,800	6.97	50	
Naphthalene	1,950	56.0	2,239	0	87.0	43	108	1,837	5.82	50	
4-Chloroaniline	1,760	83.9	2,239	0	78.5	19.5	98.4	1,665	5.42	50	
Hexachlorobutadiene	2,060	44.8	2,239	0	91.9	30.2	114	1,989	3.38	50	
4-Chloro-3-methylphenol	2,130	112	2,239	0	95.2	47.3	114	1,889	12.1	50	
2-Methylnaphthalene	1,910	44.8	2,239	0	85.3	49.6	107	1,747	8.87	50	
1-Methylnaphthalene	2,000	44.8	2,239	0	89.4	49.8	105	1,908	4.77	50	
Hexachlorocyclopentadiene	1,420	112	2,239	0	63.3	5	142	1,267	11.3	50	
2,4,6-Trichlorophenol	2,360	83.9	2,239	0	105	44.2	117	2,241	5.05	50	
2,4,5-Trichlorophenol	2,410	83.9	2,239	0	108	43.8	109	2,228	7.86	50	
2-Chloronaphthalene	2,130	44.8	2,239	0	95.1	41.6	108	1,861	13.4	50	
2-Nitroaniline	2,040	112	2,239	0	91.4	51.4	118	1,692	18.9	50	
Acenaphthene	1,990	44.8	2,239	0	89.1	41.3	106	1,806	9.92	50	
Dimethylphthalate	2,130	67.2	2,239	0	95.1	46.3	113	1,938	9.36	50	
2,6-Dinitrotoluene	2,130	56.0	2,239	0	95.0	49.5	115	1,990	6.65	50	
Acenaphthylene	2,090	44.8	2,239	0	93.4	43.5	101	1,946	7.16	50	
2,4-Dinitrophenol	2,830	56.0	4,477	0	63.1	5	133	2,721	3.77	50	
Dibenzofuran	2,030	44.8	2,239	7.508	90.2	43.4	107	1,860	8.63	50	
2,4-Dinitrotoluene	2,020	112	2,239	0	90.4	50.2	115	1,943	4.06	50	

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QC SUMMARY REPORT

CLIENT: Ayre

Semivolatile Organic Compounds by EPA Method 8270

Project: MM Grab 2021

Sample ID: 2109049-021AMSD	SampType: MSD			Units: µg/K	g-dry	Prep Da	te: 9/3/202	21	RunNo: 697	749	
Client ID: BATCH	Batch ID: 33602					Analysis Da	te: 9/7/202	21	SeqNo: 14 1	14531	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
4-Nitrophenol	2,420	560	2,239	0	108	30.7	119	2,305	5.01	50	
Fluorene	2,090	44.8	2,239	0	93.1	42.4	109	1,846	12.1	50	
4-Chlorophenyl phenyl ether	2,060	44.8	2,239	0	91.8	46	110	1,949	5.31	50	
Diethylphthalate	2,110	83.9	2,239	0	94.4	47	112	1,830	14.4	50	
4,6-Dinitro-2-methylphenol	1,970	224	2,239	0	88.1	5	157	1,909	3.23	50	
4-Bromophenyl phenyl ether	2,040	83.9	2,239	0	91.3	46	111	1,921	6.20	50	
Hexachlorobenzene	2,180	56.0	2,239	0	97.5	45.6	110	1,976	9.94	50	
Pentachlorophenol	2,320	112	2,239	0	104	10.4	151	2,184	5.94	50	
Phenanthrene	2,050	44.8	2,239	88.29	87.9	33.3	117	1,943	5.59	50	
Anthracene	2,010	44.8	2,239	19.41	89.1	35.9	114	1,947	3.34	50	
Carbazole	2,060	44.8	2,239	0	92.0	38.6	117	1,989	3.46	50	
Di-n-butylphthalate	2,250	44.8	2,239	0	100	44.5	123	2,093	7.11	50	
Fluoranthene	2,170	44.8	2,239	139.5	90.6	29.9	125	2,210	1.89	50	
Pyrene	2,260	44.8	2,239	206.3	91.9	31.8	120	2,250	0.584	50	
Butyl Benzylphthalate	2,370	56.0	2,239	0	106	48.1	133	2,323	2.11	50	
bis(2-Ethylhexyl)adipate	2,620	112	2,239	0	117	52.1	134	2,552	2.56	50	
Benz(a)anthracene	2,290	44.8	2,239	84.24	98.4	29.6	121	2,158	5.79	50	
Chrysene	2,080	56.0	2,239	85.91	89.1	27.8	120	1,882	9.95	50	
bis (2-Ethylhexyl) phthalate	2,590	44.8	2,239	0	116	35.2	146	2,362	9.17	50	
Di-n-octyl phthalate	2,810	83.9	2,239	0	126	58.2	143	2,800	0.343	50	
Benzo(b)fluoranthene	2,310	44.8	2,239	90.21	99.0	24.3	130	2,136	7.68	50	
Benzo(k)fluoranthene	2,210	44.8	2,239	74.13	95.4	6.58	150	2,101	5.06	50	
Benzo(a)pyrene	2,540	44.8	2,239	136.8	107	21.7	148	2,497	1.55	50	
Indeno(1,2,3-cd)pyrene	2,360	83.9	2,239	96.36	101	28.7	126	2,026	15.2	50	
Dibenz(a,h)anthracene	2,610	112	2,239	51.02	115	31.8	129	2,263	14.4	50	
Benzo(g,h,i)perylene	2,200	83.9	2,239	110.3	93.2	4.72	138	2,023	8.27	50	
Surr: 2,4,6-Tribromophenol	2,220		2,239		99.1	18.4	156		0		
Surr: 2-Fluorobiphenyl	1,030		1,119		91.9	17.6	135		0		
Surr: Nitrobenzene-d5	825		1,119		73.7	8.6	139		0		
Surr: Phenol-d6	1,820		2,239		81.5	17.2	136		0		

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Date: 9/17/2021



MM Grab 2021

Work Order: 2109045

QC SUMMARY REPORT

CLIENT: Ayre

Project:

Semivolatile Organic Compounds by EPA Method 8270

Sample ID: 2109049-021AMSD SampType: MSD Units: μg/Kg-dry Prep Date: 9/3/2021 RunNo: 69749

Client ID: **BATCH** Batch ID: **33602** Analysis Date: **9/7/2021** SeqNo: **1414531**

Analyte Result RL SPK value SPK Ref Val %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Surr: p-Terphenyl 1,030 1,119 92.1 35.1 146 0

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Sample Log-In Check List

С	lient Name:	CALPO		Work O	rder Nun	mber: 2109045		
Lo	ogged by:	Gabrielle Co	euille	Date Re	ceived:	9/2/2021 1	1:16:00 PM	
Cha	nin of Custo	ody						
	Is Chain of C	-	ete?	Yes	✓	No 🗌	Not Present	
2.	How was the	sample delive	red?	Clier	<u>nt</u>			
Log	ı İn							
_	Coolers are p	resent?		Yes	✓	No 🗌	na 🗆	
٥.	000.0.0 a.o p			. 55				
4.	Shipping conf	tainer/cooler ir	n good condition?	Yes	✓	No 🗌		
5.			shipping container/cooler? stody Seals not intact)	Yes		No \square	Not Present ✓	
6.	Was an atten	npt made to co	ool the samples?	Yes		No 🗸	NA 🗌	
				<u>Unknown</u>	orior to	receipt		
7.	Were all item	s received at a	a temperature of >2°C to 6°C	* Yes		No 🗆	NA 🗸	
8	Sample(s) in	proper contair	ner(s)?	Yes	✓	No 🗆		
			or indicated test(s)?	Yes	✓	No 🗆		
10.	Are samples	properly prese	erved?	Yes	✓	No 🗌		
11.	Was preserva	ative added to	bottles?	Yes		No 🗸	NA \square	
12.	Is there head	space in the V	'OA vials?	Yes		No 🗌	NA 🗹	
			arrive in good condition(unbroke	en)? Yes	✓	No 🗌		
14.	Does paperw	ork match bot	tle labels?	Yes	✓	No 🗌		
15.	Are matrices	correctly ident	tified on Chain of Custody?	Yes	✓	No 🗌		
16.	Is it clear wha	at analyses we	ere requested?	Yes	✓	No 🗌		
17.	Were all hold	ing times able	to be met?	Yes	✓	No \square		
Spe	cial Handli	ing (if appl	icable)					
-		•	crepancies with this order?	Yes	✓	No 🗌	NA 🗌	
			nne Avre	Date:		9/2/2021		
	By Who		Sabrielle Coeuille	Via: ✓ eMa	il \square P	Phone Fax	In Person	
	Regardi		o redundant compounds need to					
	_	- =	es. Report redundant compoun		7 00111 0	511VI GITG 0270.		
19	Additional rer							
<u>item</u>	<u>Information</u>							

Item #	Temp ⁰C
Sample 1	23.9

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

	3600 Fremont Ave N.	Chain of Custody Record & Labo	aboratory Services Agreement
Analytical	Tel: 206-352-3790 Fax: 206-352-7178	Date: 922 Page: of:	Special Remarks:
Hent AMNIR AUX		Project No:	
s: 59	mal ways	Collected by: AUVE	
e, Zip:	Katto WA 98134	Location: SWITTIN WT	
	19014.0	REPORT TO (PM): ANNIE ALVE	Sample Disposal: Return to client Disposal by lab (after 30 days)
	,	aay	
		Re Classic Col. (Sept. Col.) Re Classic Col. (Sept. Col.) Re Col. (Sept. Col.)	
Sample Name	Sample Sample Type Date Time (Matrix)*	and Soliton Carlo	Comments
901	12/21 10:00A Soil	3 XXXX	Please see attached
			Speci - all
	+		par of the later
			Ve porting limits
			are low so sugge
			report to HIPL
			it is cessown possible
0			
ous, B=Bulk, C		S = Soil, SD = Sediment, SL = Soild, W = Water, DW = Drinking Water, GW = Ground Water, SW = St	SW = Storm Water, WW = Waste Water Pb Sb Se Sr Sn Ti Ti V Zn Pb Sb Se Sr Sn Ti Ti V Zn Pb Sb Se Sr Sn Ti Ti V Zn Pb Standard Next Day
Nikait		Eliopido Nitrate+Nitrito	
I represent that I am authorized to	enter into this Agreement w	th Fremont Analytical on behalf of the Client named above, that I hav	I have verified Client's agreement
to each of the terms on the front and backside of this Agreement	d backside of this Agreemen	H. F. I. CHIOTH. Allindy the details of the Carette manage above, same	2 Day (specify)
telinguished (Signature)	Print Name	Date/Time Received/Signature	ustine Mantz 9/2 13:16
telinquished (Signature)	Print Name	Date/Time Redeved (Signature)	Print Name Date/Time
		· ·	

Page 1 of 2

CalPortland - Aggregate Submittal

Date: September 17, 2021

Product Number: 8128

Product Description: Gravel Borrow
Specification Number: WSDOT, 9-03.14(1)

Source: Johns Prairie Pit Location: Shelton, WA

WSDOT Pit Number: X-125

Specification:

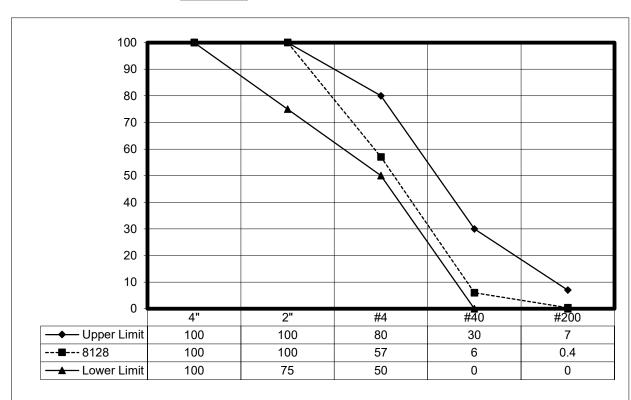
4"square	100%passing	% Fracture	-
2"square	75-100	Sand Equivalent	50min
U.S. No. 4	50-80	L.A. Wear	-
U.S. No.40	30max.	Degradation:	-
U.S. No. 200	7.0max	Dust Ratio	-

Specific Gravity:2.754Absorption:1.34L.A. Abrasion:14.0%Degradation:75

% Fracture: Sand Equivalent: Dust Ratio:

0%
56
0

CALPORTLAND





To Whom it May Concern,

Sample ID "Grab 01" collected September 2nd, 2021 was taken from the same area at the Manke Family Resources Shelton Mine as material that will supply the project. Please reach out to me with any additional questions at 206-764-3026.

Thank you,

Annie Ayre

Environmental Manager

CalPortland

SUBMITTAL REVIEW COMMENT FORM

Submittal Title:	Gravel Borrow Sieve and Chemistry	Submittal Identification Number			
Project Title: Project Number:	Time Oil Company - Seattle	Daviaura/a).	CRETE- Reid Carscadden (RC) /Jamie Stevens(JCS)		
Cantera Project Manager:	Kim Hempel	Reviewer(s):			
Dated Submitted:	07/20/2021	Final Review Date:	8/23/2021		

Submittal Item No.	Reviewer Name	Review Date	Reviewer Comment with Contract Document Reference	Receipt Acknowledged	1 Accepted	Accepted as Noted	Revise and Resubmit	(Substitution Requests Only) Not Accepted
	RC	8/23/21	Gravel Borrow Sieve and chemistry product data		х			

CalPortland - Aggregate Submittal

Date: July 27,2021

Product Number: 8128

Product Description: Gravel Borrow
Specification Number: WSDOT, 9-03.14(1)

Source: Pioneer Aggregates Location: DuPont, WA

WSDOT Pit Number: B-335

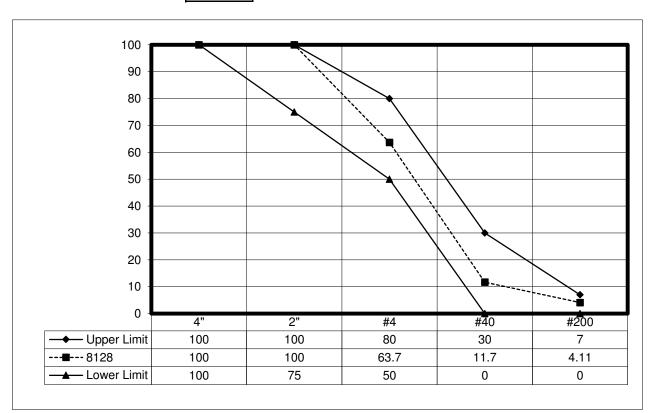
Specification:

4"square	100%passing	% Fracture	-
2"square	75-100	Sand Equivalent	50min.
U.S. No. 4	50-80	L.A. Wear	-
U.S. No. 40	30max.	Degradation:	-
U.S. No. 200	7.0max	Dust Ratio	-

Specific Gravity:2.701Absorption:1.34L.A. Abrasion:14.0%Degradation:63

% Fracture: 0%
Sand Equivalent: 56
Dust Ratio: 0

CALPORTLAND



2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

08/13/2021 P.O.#: 4501095667 Project: DP Agg

Client ID: DP Agg 72021

Sample Matrix: Soil

Cal Portland - Pioneer Aggregates Date Sampled: 07/29/2021

 4301 Pioneer Avenue
 Date Received: 07/29/2021

 DuPont, WA 98327
 Spectra Project: 2021070720

Attn: Jim Tweedy or Louie Bayless Spectra Number: 1

Rush

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Benzo(a)AnthraceneSIM	< 0.005	mg/Kg	8270E SIM	1,2-Dichlorobenzene	< 0.017	mg/Kg	SW846 8270E
Benzo(a)PyreneSIM	< 0.005	mg/Kg	8270E SIM	1,3-Dichlorobenzene	< 0.017	mg/Kg	SW846 8270E
Benzo(b)FluorantheneSIM	0.0056	mg/Kg	8270E SIM	1,4-Dichlorobenzene	< 0.017	mg/Kg	SW846 8270E
Benzo(k)FluorantheneSIM	0.0059	mg/Kg	8270E SIM	2,3,4,6-Tetrachlorophenol	< 0.017	mg/Kg	SW846 8270E
ChryseneSIM	< 0.005	mg/Kg	8270E SIM	2,3,5,6-Tetrachlorophenol	< 0.017	mg/Kg	SW846 8270E
Dibenz(a,h)AnthraceneSIM	< 0.005	mg/Kg	8270E SIM	2,4,5-Trichlorophenol	< 0.017	mg/Kg	SW846 8270E
Indeno(1,2,3-cd)PyreneSIM	< 0.005	mg/Kg	8270E SIM	2,4,6-Trichlorophenol	< 0.017	mg/Kg	SW846 8270E
Diesel	< 5.00	mg/Kg	NWTPH-Dx	2,4-Dichlorophenol	< 0.017	mg/Kg	SW846 8270E
Oil	<10.00	mg/Kg	NWTPH-Dx	2,4-Dimethylphenol	< 0.017	mg/Kg	SW846 8270E
Total Arsenic	< 2.5	mg/Kg	SW846 6010D	2,4-Dinitrophenol	< 0.017	mg/Kg	SW846 8270E
Total Barium	24.2	mg/Kg	SW846 6010D	2,4-Dinitrotoluene	< 0.017	mg/Kg	SW846 8270E
Total Cadmium	< 0.3	mg/Kg	SW846 6010D	2,6-Dinitrotoluene	< 0.017	mg/Kg	SW846 8270E
Total Chromium	15.0	mg/Kg	SW846 6010D	2-Chloronaphthalene	< 0.017	mg/Kg	SW846 8270E
Total Copper	6.8	mg/Kg	SW846 6010D	2-Chlorophenol	< 0.017	mg/Kg	SW846 8270E
Total Lead	< 2.5	mg/Kg	SW846 6010D	2-Methylnaphthalene	< 0.007	mg/Kg	SW846 8270E
Total Selenium	< 2.5	mg/Kg	SW846 6010D	2-Methylphenol	< 0.017	mg/Kg	SW846 8270E
Total Silver	< 0.7	mg/Kg	SW846 6010D	2-Nitroaniline	< 0.017	mg/Kg	SW846 8270E
Total Zinc	30.9	mg/Kg	SW846 6010D	2-Nitrophenol	< 0.017	mg/Kg	SW846 8270E
Total Silver	0.0347*	mg/Kg	SW846 6020B	3,3-Dichlorobenzidine	< 0.033	mg/Kg	SW846 8270E
Total Mercury	< 0.025	mg/Kg	SW846 7471B	3-Nitroaniline	< 0.033	mg/Kg	SW846 8270E
1,2,4-Trichlorobenzene	< 0.017	mg/Kg	SW846 8270E	4,6-Dinitro-2-Methylphenol	< 0.017	mg/Kg	SW846 8270E

^{*}Analyzed by Fremont Analytical. See complete report attached.

PARTIAL RESULTS

Final report will follow as soon as complete.

86 124	8270E SIM 8270E SIM SW846 8082A	2-Fluorophenol Phenol-d6	54 56	SW846 8270E SW846 8270E
124			56	SW846 8270E
	C11/0/46 0000 A			
	3 W 040 0082A	2,4,6-Tribromophenol	50	SW846 8270E
74	NWTPH-Dx			
49	SW846 8270E			
55	SW846 8270E			
91	SW846 8270E			
	49 55	49 SW846 8270E 55 SW846 8270E 91 SW846 8270E	49 SW846 8270E 55 SW846 8270E 91 SW846 8270E	49 SW846 8270E 55 SW846 8270E 91 SW846 8270E

SPECTRA LABORATORIES

Marie Holt, Customer Support & Proj. Manager

Page 1 of 3 a14exsur/mlh 2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

08/13/2021 P.O.#: 4501095667 Project: DP Agg

Client ID: DP Agg 72021

Sample Matrix: Soil

Cal Portland - Pioneer Aggregates Date Sampled: 07/29/2021

4301 Pioneer Avenue Date Received: 07/29/2021 DuPont, WA 98327 Spectra Project: 2021070720

Attn: Jim Tweedy or Louie Bayless Spectra Number: 1

Rush

Analyte	Result	Units	Method	Analyte	Result	Units	Method
4-Bromophenyl-phenylether	< 0.017	mg/Kg	SW846 8270E	Bis(2-Chloroethyl)Ether	< 0.017	mg/Kg	SW846 8270E
4-Chloro-3-Methylphenol	< 0.017	mg/Kg	SW846 8270E	Butylbenzylphthalate	< 0.017	mg/Kg	SW846 8270E
4-Chloroaniline	< 0.033	mg/Kg	SW846 8270E	Carbazole	< 0.017	mg/Kg	SW846 8270E
4-Chlorophenyl-phenylether	< 0.017	mg/Kg	SW846 8270E	Chrysene	< 0.017	mg/Kg	SW846 8270E
4-Methylphenol	< 0.017	mg/Kg	SW846 8270E	Di-n-Butylphthalate	< 0.017	mg/Kg	SW846 8270E
4-Nitroaniline	< 0.033	mg/Kg	SW846 8270E	Di-n-Octyl Phthalate	< 0.017	mg/Kg	SW846 8270E
4-Nitrophenol	< 0.017	mg/Kg	SW846 8270E	Dibenz(a,h)Anthracene	< 0.017	mg/Kg	SW846 8270E
Acenaphthene	< 0.007	mg/Kg	SW846 8270E	Dibenzofuran	< 0.017	mg/Kg	SW846 8270E
Acenaphthylene	< 0.007	mg/Kg	SW846 8270E	Dibenzothiophene	< 0.017	mg/Kg	SW846 8270E
Aniline	< 0.033	mg/Kg	SW846 8270E	Diethylphthalate	< 0.017	mg/Kg	SW846 8270E
Anthracene	< 0.007	mg/Kg	SW846 8270E	Dimethyl Phthalate	< 0.017	mg/Kg	SW846 8270E
Azobenzene	< 0.017	mg/Kg	SW846 8270E	Fluoranthene	< 0.007	mg/Kg	SW846 8270E
Benzidine	< 0.033	mg/Kg	SW846 8270E	Fluorene	< 0.007	mg/Kg	SW846 8270E
Benzo(a)Anthracene	< 0.017	mg/Kg	SW846 8270E	Hexachlorobenzene	< 0.017	mg/Kg	SW846 8270E
Benzo(a)Pyrene	< 0.017	mg/Kg	SW846 8270E	Hexachlorobutadiene	< 0.017	mg/Kg	SW846 8270E
Benzo(b)Fluoranthene	< 0.017	mg/Kg	SW846 8270E	Hexachlorocyclopentadiene	< 0.017	mg/Kg	SW846 8270E
Benzo(ghi)Perylene	< 0.017	mg/Kg	SW846 8270E	Hexachloroethane	< 0.017	mg/Kg	SW846 8270E
Benzo(k)Fluoranthene	< 0.017	mg/Kg	SW846 8270E	Indeno(1,2,3-cd)Pyrene	< 0.017	mg/Kg	SW846 8270E
Benzoic Acid	< 0.033	mg/Kg	SW846 8270E	Isophorone	< 0.017	mg/Kg	SW846 8270E
Benzyl Alcohol	< 0.017	mg/Kg	SW846 8270E	N-Nitroso-Di-n-Propylamine	< 0.017	mg/Kg	SW846 8270E
Biphenyl	< 0.017	mg/Kg	SW846 8270E	N-Nitrosodiphenylamine	< 0.017	mg/Kg	SW846 8270E

^{*}Analyzed by Fremont Analytical. See complete report attached.

PARTIAL RESULTS

Final report will follow as soon as complete.

Recovery	Method	Surrogate	Recovery	Method
86	8270E SIM	2-Fluorophenol	54	SW846 8270E
124	8270E SIM	Phenol-d6	56	SW846 8270E
	SW846 8082A	2,4,6-Tribromophenol	50	SW846 8270E
74	NWTPH-Dx			
49	SW846 8270E			
55	SW846 8270E			
91	SW846 8270E			
	86 124 74 49 55	86 8270E SIM 124 8270E SIM SW846 8082A 74 NWTPH-Dx 49 SW846 8270E 55 SW846 8270E	86 8270E SIM 2-Fluorophenol 124 8270E SIM Phenol-d6 SW846 8082A 2,4,6-Tribromophenol 74 NWTPH-Dx 49 SW846 8270E 55 SW846 8270E	86 8270E SIM 2-Fluorophenol 54 124 8270E SIM Phenol-d6 56 SW846 8082A 2,4,6-Tribromophenol 50 74 NWTPH-Dx 49 SW846 8270E 55 SW846 8270E

SPECTRA LABORATORIES

Marie Holt, Customer Support & Proj. Manager

Page 2 of 3

SPECTRA Laboratories

...Where experience matters

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08/13/2021

Cal Portland - Pioneer Aggregates

Attn: Jim Tweedy or Louie Bayless

4301 Pioneer Avenue

DuPont, WA 98327

P.O.#:

4501095667

Project:

DP Agg

Client ID:

DP Agg 72021

Sample Matrix:

Date Sampled:

07/29/2021

Date Received:

07/29/2021

Spectra Project:

2021070720

Spectra Number: 1

Rush

Soil

Analyte	Result	Units	Method	Analyte	Result	Units	Method
N-nitrosodimethylamine	< 0.017	mg/Kg	SW846 8270E				
Naphthalene	< 0.007	mg/Kg	SW846 8270E				
Nitrobenzene	< 0.017	mg/Kg	SW846 8270E				
Pentachlorophenol	< 0.017	mg/Kg	SW846 8270E				
Phenanthrene	< 0.007	mg/Kg	SW846 8270E				
Phenol	< 0.017	mg/Kg	SW846 8270E				
Pyrene	< 0.007	mg/Kg	SW846 8270E				
Pyridine	< 0.017	mg/Kg	SW846 8270E				
bis(2-Chloroethoxy)Methane	< 0.017	mg/Kg	SW846 8270E				
bis(2-Ethylhexyl)Phthalate	< 0.017	mg/Kg	SW846 8270E				
bis(2-chloroisopropyl)Ether	< 0.017	mg/Kg	SW846 8270E				

PARTIAL RESULTS
Final report will follow as soon as complete.

Recovery

56

Method

SW846 8270E

SW846 8270E SW846 8270E

Surrogate	Recovery	Method	Surrogate	
Nitrobenzene-d5SIM	86	8270E SIM	2-Fluorophenol	
p-Terphenyl-d14SIM	124	8270E SIM	Phenol-d6	
Decachlorobiphenyl		SW846 8082A	2,4,6-Tribromophenol	
p-Terphenyl	74	NWTPH-Dx		
Nitrobenzene-d5	49	SW846 8270E		
2-Fluorobiphenyl	55	SW846 8270E		
p-Terphenyl-d14	91	SW846 8270E		

Marce Nolt

SPECTRA LABORATORIES

Marie Holt, Customer Support & Proj. Manager

Page 3 of 3

^{*}Analyzed by Fremont Analytical. See complete report attached.



3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Spectra Laboratories Marie Holt 2221 Ross Way Tacoma, WA 98421

RE: 2021070720

Work Order Number: 2108132

August 12, 2021

Attention Marie Holt:

Fremont Analytical, Inc. received 1 sample(s) on 8/10/2021 for the analyses presented in the following report.

Sample Moisture (Percent Moisture) Total Metals by EPA Method 6020B

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes Project Manager

DoD-ELAP Accreditation #79636 by PJLA, ISO/IEC 17025:2017 and QSM 5.3 for Environmental Testing ORELAP Certification: WA 100009 (NELAP Recognized) for Environmental Testing Washington State Department of Ecology Accredited for Environmental Testing, Lab ID C910



Date: 08/12/2021

CLIENT:

Spectra Laboratories

Project: Work Order: 2021070720 2108132

Lab Sample ID

2108132-001

Client Sample ID

070720-1

Work Order Sample Summary

Date/Time Collected

Date/Time Received

07/29/2021 12:00 AM

08/10/2021 9:10 AM



Case Narrative

WO#: **2108132**Date: **8/12/2021**

CLIENT:

Spectra Laboratories

Project:

2021070720

I. SAMPLE RECEIPT:

Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.



Qualifiers & Acronyms

WO#:

2108132

Date Reported:

8/12/2021

Qualifiers:

- * Flagged value is not within established control limits
- B Analyte detected in the associated Method Blank
- D Dilution was required
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- I Analyte with an internal standard that does not meet established acceptance criteria
- J Analyte detected below Reporting Limit
- N Tentatively Identified Compound (TIC)
- Q Analyte with an initial or continuing calibration that does not meet established acceptance criteria
- S Spike recovery outside accepted recovery limits
- ND Not detected at the Reporting Limit
- R High relative percent difference observed

Acronyms:

%Rec - Percent Recovery

CCB - Continued Calibration Blank

CCV - Continued Calibration Verification

DF - Dilution Factor

DUP - Sample Duplicate

HEM - Hexane Extractable Material

ICV - Initial Calibration Verification

LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate

MCL - Maximum Contaminant Level

MB or MBLANK - Method Blank

MDL - Method Detection Limit

MS/MSD - Matrix Spike / Matrix Spike Duplicate

PDS - Post Digestion Spike

Ref Val - Reference Value

REP - Sample Replicate

RL - Reporting Limit

RPD - Relative Percent Difference

SD - Serial Dilution

SGT - Silica Gel Treatment

SPK - Spike

Surr - Surrogate



Analytical Report

Work Order: 2108132 Date Reported: 8/12/2021

Client: Spectra Laboratories

Project: 2021070720 Lab ID: 2108132-001

Client Sample ID: 070720-1

Collection Date: 7/29/2021

Matrix: Soil

Analyses	Result	RL	MDL	Qual Units DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 33294	Analyst: TN
Silver	0.0347	0.119	0.0336	J mg/Kg-dry 1	08/10/21 18:09:22
Sample Moisture (Percent Moisture)				Batch ID: R69167	Analyst: ALB
Percent Moisture	2.46	0.500	0.100	wt% 1	08/11/21 11:34:33

Date: 8/12/2021



Work Order: 21

2108132

CLIENT: Spectra Laboratories

Project:

2021070720

1.93

0.121

2.016

QC SUMMARY REPORT

Total Metals by EPA Method 6020B

Project: 2021070720	A = 2			V. 40			
Sample ID: MB-33294	SampType: MBLK			Units: mg/Kg		Prep Date: 8/10/2021	RunNo: 69151
Client ID: MBLKS	Batch ID: 33294					Analysis Date: 8/10/2021	SeqNo: 1400121
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val	%RPD RPDLimit Qual
Silver	ND	0.118					
Sample ID: LCS-33294	SampType: LCS			Units: mg/Kg		Prep Date: 8/10/2021	RunNo: 69151
Client ID: LCSS	Batch ID: 33294					Analysis Date: 8/10/2021	SeqNo: 1400122
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val	%RPD RPDLimit Qua
Silver	1.95	0.120	2.000	0	97.4	80 120	
Sample ID: 2108124-001AMS	SampType: MS			Units: mg/Kg		Prep Date: 8/10/2021	RunNo: 69151
Client ID: BATCH	Batch ID: 33294					Analysis Date: 8/10/2021	SeqNo: 1400125
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val	%RPD RPDLimit Qua
Silver	1.98	0.119	1.984	0.04678	97.3	75 125	
Sample ID: 2108124-001AMSD	SampType: MSD			Units: mg/Kg		Prep Date: 8/10/2021	RunNo: 69151
Client ID: BATCH	Batch ID: 33294					Analysis Date: 8/10/2021	SeqNo: 1400126
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val	%RPD RPDLimit Qua

0.04678

75

125

1.978

2.60

20

93.3

Silver



Sample Log-In Check List

С	lient Name:	SPECTR	Work O	rder Numb	per: 2108132	
L	ogged by:	Clare Griggs	Date Re	eceived:	8/10/202	9:10:00 AM
Cha	in of Cust	odv				
		ustody complete?	Yes	✓	No 🗆	Not Present
		sample delivered?	UPS			
100	ı In					
Log					N. 🗆	A1A [
3.	Coolers are p	oresent?	Yes	V	No 🗌	NA 🗆
4.	Shipping con	tainer/cooler in good condition?	Yes	✓	No 🗆	
5.		ls present on shipping container/cooler? nments for Custody Seals not intact)	Yes		No 🗌	Not Present
6.	Was an atten	npt made to cool the samples?	Yes	✓	No 🗌	NA \square
7.	Were all item	s received at a temperature of >2°C to 6°C *	Yes	✓	N。 🗆	NA 🗆
8.	Sample(s) in	proper container(s)?	Yes	✓	No 🗆	
9.	Sufficient san	nple volume for indicated test(s)?	Yes	✓	No 🗆	
10.	Are samples	properly preserved?	Yes	✓	No 🗆	
11.	Was preserva	ative added to bottles?	Yes		No 🗹	NA 🗆
12.	Is there head	space in the VOA vials?	Yes		No 🗆	NA 🗹
13.	Did all sample	es containers arrive in good condition(unbroken)?	Yes	•	No 🗆	
14.	Does paperw	ork match bottle labels?	Yes	✓	No 🗆	
15.	Are matrices	correctly identified on Chain of Custody?	Yes	•	No 🗆	
16.	Is it clear wha	at analyses were requested?	Yes	✓	No 🗆	
17.	Were all hold	ing times able to be met?	Yes	✓	No 🗌	
Spe	cial Handli	ing (if applicable)				
		otified of all discrepancies with this order?	Yes		No 🗆	NA 🗹
	Person	Notified: Date				
	By Who	m: Via:	· D eMa	ii 🗌 Pho	ne Fax	In Person
	Regardi	ng:				
	Client In	structions:				-
19.	Additional ren	narks:				
tem I	nformation	Item # Temp ℃				
	Sample	item # Temp *C				

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

SPECTRA Laboratories

(22) Ross Way, Tucoma, WA 98421 (253) 273 4850 Fax (253) 572-9838 www.spectra.fab.com info@spectra.fab.com SPECIAL INSTRUCTIONS COMMENTS

Total Silver by 6020 Report to MDL -Req. 0.10mg/kg CHAIN of CUSTODY

2-Day TAT please

8 of 8

Return Samples Y

N x Page

of

STANDARD

RUSH

Висх	BTEX NWTPH-G		EWITPH			NTS	GAI	NICS	5		FY	TAL							OTHE	ER		
BTEX	IEX NWTPH-G	O.H.d	ST HEW (TPH)	(06)		VENTS	A			W 8	CCIFY	60	(4.4)									
ВТЕХ	FEX NWTPH-G	O.Hd	ST HEW (TPH)	(90)		LVENTS	4			8 A 8	COFY	60	(44)									
втех	TEX NWTPH-G	C H	ST HEW (TPH)	190		VENTS	4			8 8	CF	00	4		1					1 h		
BTEX	TEX NWTPH-G	DHO.	ST HEW ITE	190		2				1 to 1	0	\$ 1	ונ									
втех	TEX NWT	DH.D	E		8	R SO	8270/825 SEMI VOA	CB CB		TOTAL METALS RCRA	TOTAL METALS (SPECIFY)	TCLP METALS RCRA 8	ICLP ME (ALS (SPECIFY)	14.5	9/		N.		SOUDS (SPECIFY)	OBDA		
BTEX	EX EX	- 1 60	1 8	1964 HEM (FOG)	200 624 VOA	СНГО	826 S	ROBZIGGR PCB		M	1 ME	MET,	ME	\$24090468	1X/10X 8076	TURBIDITY	FLASH POINT		S (SI	IDI FPA SCEDA		11
1	00 2	3	1564	1464	9500	8260	8270	8082		TOTA	TOTA	TCLP	2	26 Hz	TXT	TURB	FLAS	BOD	SCI	TO.		
					T						Х											
					1																	
			1																			
		1																				
					-			1	_			1										11
		1	1	1				1		Ц		4										11
		1	1				4		1			1	-			Ц						
		1																				
-	- sale	-					PF	RINTE	D NAM	AL		-		COM	PANY	1			DAT	E		IME
M	1)V7	N	en	Η,	_	Je	n D	rave	en		-				a						00 PM
du	Mo	end	7		- 6	Jus	stin	e	Ma	ent.	2	-	FA	I				8	10	/21	9:	10
		Jun June Ma	Im Dra	Seve Manty	Im Draven fine Monty	Impraven fine Monty	Impraven fine Marty Jus	Impraven se treparts Justin	Impraven Jen D treplanty Justine	Impraven Jen Drave fine Manty Justine Ma	Impraven Jen Draven fine Mante	Impraven Jen Draven fine Mantz	Impraven Jen Draven fine Mantz	Impraven Jen Draven : three Martz FA	Impraven Jen Draven Spe fine Mantz FAI	Impraven Jen Draven Spectra fine Mantz FAI	Impraven Jen Draven Spectra fine Mantz FAI	Justine Mantz FAI	Jun Draven Jen Draven Spectra Of five Martz FAI \$	Jen Draven Spectra 08/09	Impraven Jen Draven Spectra 08/09/21 FAI \$/10/21	Jen Draven Spectra 08/09/21 30

SPECTRA Laboratories

2221 Ross Way, Tacoma, WA 98421 (253) 272-4850 Fax (253) 572-9838 www.spectra-lab.com info@spectra-lab.com SPECIAL INSTRUCTIONS/COMMENTS:

CHAIN OF CUSTODY

SPECTRA PROJECT #

Return Samples: Y N Page

STANDARD RUSH **ADDRESS** aportand CLIENT: ADDRESS: CHANGE PROJECT: **HYDROCARBONS ORGANICS METALS** OTHER TOTAL METALS RCRA 8 + Co. PEY CONTACT: 8270 NUMBER OF CONTAINERS SAMPLED BY: TOTAL METALS (SPECIFY) TCLP METALS (SPECIFY) 8260 CHLOR SOLVENTS TCLP METALS RCRA 8 PHONE: 704-404 1664 SGT-HEM (TPH) 8270-625 SEMI VOA SOLIDS (SPECIFY) Prefer FAX e-MAIL: Cause a cal portland corpore-MAIL BTEX/NWTPH-G 1664 HEM (FOG) 8270 PAH/PNA NWTPH-HCID 8082/608 PCB 8260/624 VOA PH 9040/9045 FLASH POINT TX/TOX/EOX NWTPH-Dx TURBIDITY NWTPH-G PURCHASE ORDER # DATE TIME SAMPLE ID MATRIX SAMPLED SAMPLED 7.29 1:00 pm 5011 DP Agg & 7 7071 3 5 6 9 10 LAB USE ONLY SIGNATURE PRINTED NAME COMPANY DATE TIME RELINQUISHED BY RECEIVED BY T: 2664 niele 7/29 RELINQUISHED BY RECEIVED BY Payment Terms: Net 30 days. Past due accounts subject to 1 1/2% per month interest. Customer agrees to pay all costs of collection including reasonable attorney's fees and all other costs of collection regardless of whether suit is filed in Pierce Co., WA venue. Spectra Laboratories, LLC



3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Ayre Anne Ayre 5975 E Marginal Ways Seattle, WA 98134

RE: DP Agg

Work Order Number: 2108236

August 18, 2021

Attention Anne Ayre:

Fremont Analytical, Inc. received 1 sample(s) on 8/17/2021 for the analyses presented in the following report.

Polychlorinated Biphenyls (PCB) by EPA 8082

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes Project Manager

DoD-ELAP Accreditation #79636 by PJLA, ISO/IEC 17025:2017 and QSM 5.3 for Environmental Testing ORELAP Certification: WA 100009 (NELAP Recognized) for Environmental Testing Washington State Department of Ecology Accredited for Environmental Testing, Lab ID C910



Date: 08/19/2021

CLIENT: Ayre Work Order Sample Summary

Project: DP Agg **Work Order:** 2108236

Lab Sample ID Client Sample ID Date/Time Collected Date/Time Received

2108236-001 DP Grab 02 08/17/2021 11:15 AM 08/17/2021 12:56 PM



Case Narrative

WO#: **2108236**Date: **8/18/2021**

CLIENT: Ayre
Project: DP Agg

I. SAMPLE RECEIPT:

Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Prep Comments for METHOD (PREP-PCB-S), SAMPLE (2108236-001A) required Acid Cleanup Procedure (Using Method No 3665A).

Prep Comments for METHOD (PREP-PCB-S), SAMPLE (2108236-001A) required Florisil Cleanup Procedure (Using Method No 3620C).

Rev 1: Report has been revised to clarify that no PCBs were detected at or above the level of the MDL (i.e. <0.004 mg/kg).



Qualifiers & Acronyms

WO#: **2108236**

Date Reported: **8/18/2021**

Qualifiers:

- * Flagged value is not within established control limits
- B Analyte detected in the associated Method Blank
- D Dilution was required
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- I Analyte with an internal standard that does not meet established acceptance criteria
- J Analyte detected below Reporting Limit
- N Tentatively Identified Compound (TIC)
- Q Analyte with an initial or continuing calibration that does not meet established acceptance criteria
- S Spike recovery outside accepted recovery limits
- ND Not detected at the Reporting Limit
- R High relative percent difference observed

Acronyms:

%Rec - Percent Recovery

CCB - Continued Calibration Blank

CCV - Continued Calibration Verification

DF - Dilution Factor

DUP - Sample Duplicate

HEM - Hexane Extractable Material

ICV - Initial Calibration Verification

LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate

MCL - Maximum Contaminant Level

MB or MBLANK - Method Blank

MDL - Method Detection Limit

MS/MSD - Matrix Spike / Matrix Spike Duplicate

PDS - Post Digestion Spike

Ref Val - Reference Value

REP - Sample Replicate

RL - Reporting Limit

RPD - Relative Percent Difference

SD - Serial Dilution

SGT - Silica Gel Treatment

SPK - Spike

Surr - Surrogate



Analytical Report

Work Order: **2108236**Date Reported: **8/18/2021**

Client: Ayre **Collection Date:** 8/17/2021 11:15:00 AM

Project: DP Agg

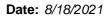
Lab ID: 2108236-001 **Matrix:** Solid

Client Sample ID: DP Grab 02

Analyses	Result	RL	MDL	Qual Units D	OF Date Analyzed
Polychlorinated Biphenyls (PC	B) by EPA 8082			Batch ID: 33386	Analyst: SB
Aroclor 1016	ND	0.0198	0.00319	mg/Kg-dry	1 08/17/21 16:52:48
Aroclor 1221	ND	0.0198	0.00319	mg/Kg-dry	1 08/17/21 16:52:48
Aroclor 1232	ND	0.0198	0.00319	mg/Kg-dry	1 08/17/21 16:52:48
Aroclor 1242	ND	0.0198	0.00319	mg/Kg-dry	1 08/17/21 16:52:48
Aroclor 1248	ND	0.0198	0.00394	mg/Kg-dry	1 08/17/21 16:52:48
Aroclor 1254	ND	0.0198	0.00394	mg/Kg-dry	1 08/17/21 16:52:48
Aroclor 1260	ND	0.0198	0.00394	mg/Kg-dry	1 08/17/21 16:52:48
Aroclor 1262	ND	0.0198	0.00394	mg/Kg-dry	1 08/17/21 16:52:48
Aroclor 1268	ND	0.0198	0.00394	mg/Kg-dry	1 08/17/21 16:52:48
Total PCBs	ND	0.0198	0.00394	mg/Kg-dry	1 08/17/21 16:52:48
Surr: Decachlorobiphenyl	97.4	20.6 - 142		%Rec	1 08/17/21 16:52:48
Surr: Tetrachloro-m-xylene	104	22 - 157		%Rec	1 08/17/21 16:52:48

NOTES:

ND - Sample is non-detect evaluated to the method detection limit (MDL). Any detections betweeen the MDL and the RL would be presented as a number qualified with a J.





Work Order: 2108236

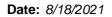
QC SUMMARY REPORT

CLIENT: Ayre

Polychlorinated Biphenyls (PCB) by EPA 8082

Sample ID: MB-33386	SampType: MBLK			Units: mg/Kg		Prep Da	ite: 8/17/20	021	RunNo: 693	321	
Client ID: MBLKS	Batch ID: 33386					Analysis Da	ite: 8/17/2 0	021	SeqNo: 140	04598	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qua
Aroclor 1016	ND	0.0500									
Aroclor 1221	ND	0.0500									
Aroclor 1232	ND	0.0500									
Aroclor 1242	ND	0.0500									
Aroclor 1248	ND	0.0500									
Aroclor 1254	ND	0.0500									
Aroclor 1260	ND	0.0500									
Aroclor 1262	ND	0.0500									
Aroclor 1268	ND	0.0500									
Total PCBs	ND	0.0500									
Surr: Decachlorobiphenyl	238		200.0		119	20.6	142				
Surr: Tetrachloro-m-xylene	214		200.0		107	22	157				
Sample ID: LCS1-33386	SampType: LCS			Units: mg/Kg		Prep Da	ite: 8/17/2 0	021	RunNo: 693	321	
Client ID: LCSS	Batch ID: 33386					Analysis Da	ite: 8/17/2 0	021	SeqNo: 140	04599	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qua
Aroclor 1016	0.918	0.0500	1.000	0	91.8	52.2	136				
Aroclor 1260	0.865	0.0500	1.000	0	86.5	50.5	150				
Surr: Decachlorobiphenyl	216		200.0		108	20.6	142				
Surr: Tetrachloro-m-xylene	218		200.0		109	22	157				
Sample ID: 2108236-001AMS	SampType: MS			Units: mg/Kg-	dry	Prep Da	ite: 8/17/2 0	021	RunNo: 693	321	
Client ID: DP Grab 02	Batch ID: 33386					Analysis Da	ite: 8/17/2 0	021	SeqNo: 140	04601	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qua
Aroclor 1016	0.393	0.0196	0.3912	0	100	38.6	146				
Aroclor 1260	0.367	0.0196	0.3912	0	93.8	24.6	161				
Surr: Decachlorobiphenyl	81.4		78.25		104	20.6	142				

Revision v1 Page 6 of 10





Work Order: 2108236

Surr: Tetrachloro-m-xylene

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QC SUMMARY REPORT

CLIENT: Avre

Project: Ayre Project: DP Agg						Ро	lychlori	nated Biph	enyls (PC	B) by EP	308 A
Sample ID: 2108236-001AMS	SampType: MS			Units: mg/Kg	g-dry	Prep Date	e: 8/17/20	21	RunNo: 693	321	
Client ID: DP Grab 02	Batch ID: 33386					Analysis Date	e: 8/17/20	21	SeqNo: 140	14601	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qua
Surr: Tetrachloro-m-xylene	82.7		78.25		106	22	157				
Sample ID: 2108236-001AMSD	SampType: MSD			Units: mg/K	g-dry	Prep Date	e: 8/17/20	21	RunNo: 693	321	
Client ID: DP Grab 02	Batch ID: 33386					Analysis Date	e: 8/17/20	21	SeqNo: 140	14602	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	0.374	0.0195	0.3897	0	96.1	38.6	146	0.3931	4.87	30	
Aroclor 1260	0.366	0.0195	0.3897	0	93.8	24.6	161	0.3671	0.407	30	
Surr: Decachlorobiphenyl	83.1		77.94		107	20.6	142		0		
Surr: Tetrachloro-m-xylene	82.6		77.94		106	22	157		0		
Sample ID: LCS2-33386	SampType: LCS			Units: mg/K		Prep Date	e: 8/17/20	21	RunNo: 693	321	
Client ID: LCSS	Batch ID: 33386					Analysis Date	e: 8/18/20	21	SeqNo: 140	14605	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qua
Aroclor 1254	1.31	0.0500	1.000	0	131	48.1	147				
Surr: Decachlorobiphenyl	238		200.0		119	20.6	142				

200.0

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Sample Log-In Check List

С	lient Name:	CALPO	Work Order Nu	mber: 2108236		
Lo	ogged by:	Gabrielle Coeuille	Date Received:	8/17/2021	12:56:53 PM	
Cha	nin of Custo	<u>ody</u>				
1.	Is Chain of Co	ustody complete?	Yes 🗸	No 🗌	Not Present	
2.	How was the	sample delivered?	Client			
Log	ıIn					
_	Coolers are p	resent?	Yes	No 🗸	na 🗆	
ა.	Oddicis are p	resent:	No cooler pre		NA 🗀	
4.	Shipping cont	ainer/cooler in good condition?	Yes 🗸	No 🗆		
5.		s present on shipping container/cooler? ments for Custody Seals not intact)	Yes	No 🗌	Not Present 🗹	
6.	Was an attem	npt made to cool the samples?	Yes	No 🗸	NA 🗌	
			Unknown prior to	receipt		
7.	Were all item	s received at a temperature of >2°C to 6°C *	Yes	No \square	NA 🗹	
0	Comple(a) in	proper container(e)?	Yes 🗹	No. 🗆		
		proper container(s)? nple volume for indicated test(s)?	Yes 🗹	No □ No □		
٠.		properly preserved?	res ✓ Yes ✓	No \square		
		ative added to bottles?	Yes \square	No ✓	NA 🗆	
			. 33			
12.	Is there head	space in the VOA vials?	Yes	No 🗌	NA 🗹	
13.	Did all sample	es containers arrive in good condition(unbroken)?	Yes 🗸	No 🗆		
14.	Does paperw	ork match bottle labels?	Yes 🗸	No 🗌		
15	Are matrices	correctly identified on Chain of Custody?	Yes 🗸	No 🗌		
_		at analyses were requested?	Yes 🗸	No 🗌		
17.	Were all hold	ing times able to be met?	Yes 🗸	No \square		
Sno	oial Handli	ing (if applicable)				
-		ing (if applicable)	Yes 🗸	No 🗆	na 🗆	
18.	vvas client no	tified of all discrepancies with this order?	Yes 💌	No □	NA L	7
	Person I	,	,	8/17/2021		
	By Who			Phone Fax	In Person	
	Regardii		mits.			
	Client In	structions:				
19.	Additional ren	narks:				
ltem	<u>Information</u>					
		Item # Temp °C				

Sample 1

^{*} Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

COC 1.3 - 11.06.20



To Whom it May Concern,

Sample IDs "DP Agg 72021" and "DP Grab 02" collected July 29th and August 18th of 2021 respectively, were both taken from the same area of the Steilacoom Deposit at CalPortland's Pioneer Aggregates Mine. Both samples are representative of the material that will supply the project. Please reach out to me with any additional questions at 206-764-3026.

Thank you,

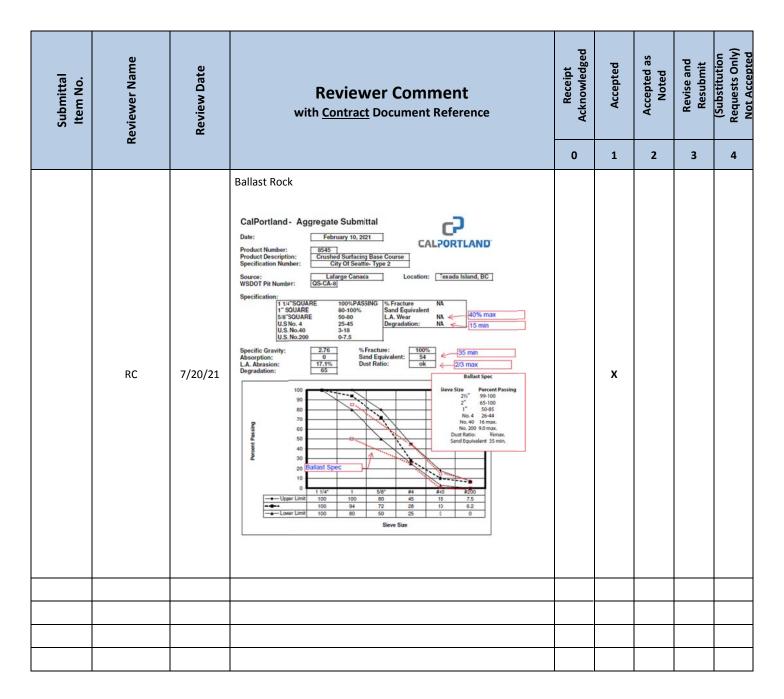
Annie Ayre

Environmental Manager

CalPortland

SUBMITTAL REVIEW COMMENT FORM

Submittal Title:	Crushed Surfacing Base Course – City of Seattle Type 2	Submittal Identification Number	
Project Title: Project Number:	Time Oil Company - Seattle	Daviouar/a).	CRETE- Reid Carscadden (RC)
Cantera Project Manager:	Kim Hempel	Reviewer(s):	/Jamie Stevens(JCS)
Dated Submitted:	07/20/2021	Final Review Date:	7/21/2021



CalPortland - Aggregate Submittal

Date: February 10, 2021

Product Number: 8545

Product Description: Crushed Surfacing Base Course
Specification Number: City Of Seattle-Type 2

Source: Lafarge Canada Location: Texada Island, BC

WSDOT Pit Number: QS-CA-8

Specification:

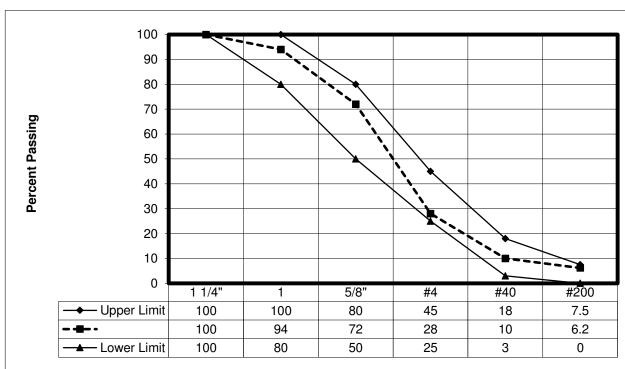
•	•				
	1 1/4"SQUARE	100%PASSING	% Fracture	NA	
	1" SQUARE	80-100%	Sand Equivalent		
	5/8"SQUARE	50-80	L.A. Wear	NA	
	U.S No. 4	25-45	Degradation:	NA	
	U.S. No.40	3-18			
	U.S. No.200	0-7.5			

Specific Gravity: 2.76
Absorption: 0
L.A. Abrasion: 17.1%
Degradation: 65

% Fracture:
Sand Equivalent:
Dust Ratio:

100% 54 ok

CALPORTLAND



Sieve Size

Appendix G Final Compaction Acceptance



December 30, 2021

File No. 20-361.500

Ms. Kim Hempel **TOC Seattle Terminal LLP** 2753 West 31st Street Chicago, IL 60608

Subject: Final Letter - Geotechnical Construction Observations

Site Grading and Remediation

2737 W Commodore Way, Seattle, Washington

SDCI Permit No. 6819513-CN

Dear Ms. Hempel:

PanGEO, Inc. has completed geotechnical construction support services for the subject project as required by the City of Seattle Department of Construction and Inspections (SDCI). This final letter summarizes our observations and was prepared to assist you in closing out your grading permit. The scope of the construction support services performed was in accordance with the geotechnical inspection items outlined in the SDCI letter dated July 6, 2021.

Our construction support services were performed between July 15th and December 21st, 2021. Observations from our site visits were documented in 22 field reports which were transmitted to the project team and the City.

OBSERVATIONS AND CONCLUSIONS

The following items were identified in the SDCI permit as requiring geotechnical inspection. Details of our observations are contained in our field reports. The following summarizes our observations:

Tel: (206) 262-0370

- **1. Preconstruction Meeting** We attended a preconstruction meeting on August 11, 2021, which was attended by the contractor and representative of the City to discuss reporting requirements of the City.
- 2. Temporary Erosion Control Temporary erosion control consisting of silt fencing and straw rolls along W Commodore Way was completed prior to site grading. Equipment access was through the paved area of the site. Erosion control was maintained throughout the grading activities. We did not observe off-site sediment transport during grading work.
- **3. Permanent Erosion Control** Following the ISS treatments, excavation, backfill and compaction of excavated areas, treatment areas CAA-2, CAA-3, CAA-4, CAA-5 and part of CAA-1 were covered with a layer of clean ballast rock as permanent erosion control. The ballast was placed over geotextile filter fabric. The Swell Management Area, including part of CAA-1, was covered with geotextile filter fabric, per plan, as final erosion control.
- **4. Monitor Grading Season Restriction** Two Dry Season Grading extensions were applied for and granted. The first extension was effective from October 18, 2021, extended through December 7, 2021. The second extension was effective from December 10, 2021, through January 31, 2022. All grading activities were completed by December 21, 2021.
- **5. Observed and Monitored Excavations** PanGEO was on site during excavation and removal of contaminated soil and periodically during backfill placement. The various excavations remained stable throughout the grading work.
- 6. Other Geotechnical: Excavation Mixing Grid Cells PanGEO was on site periodically to observe the ISS mixing grid cell work. Two mixing methods were used. The first entailed in-situ mixing of soil and cement to contain and neutralize contaminated soil and thereby minimize off-site disposal of contaminated material. The second involved excavation and temporary stockpiling of soil materials, mixing at the surface, and replacement of mixed materials. No excavation remained open for any extended period, and all excavations remained stable during mixing.
- **7.** Other Geotechnical: Interceptor Trench The Interceptor trench was located within cell CAA-4, and was constructed concurrently with the backfilling operation. No separate excavation was done.

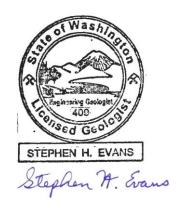
- **8.** Other Geotechnical: In Situ Stabilization/Solidification See note 6 above. In situ stabilization was used in cell CAA-2, near W Commodore Way, and in much of CAA-4, especially next to the temporary shoring wall along the BNSF right-of-way. All stabilized soil had an unconfined compressive strength of at least 50 psi.
- 9. Shoring Installation/Performance Monitoring Two temporary cantilever soldier pile shoring walls were constructed to facilitated soil removal, one adjacent to W Commodore Way in CAA-2b, and one along the BNSF right-of-way in CAA-4. PanGEO was on site continually during the construction of both walls. Following construction, the area of CAA-2b between W Commodore Way and ISS cell CAA-2a was excavated and replaced with clean backfill. Following construction of the BNSF wall in CAA-4, the area in front of the wall was excavated to allow deep, in situ mixing. After deep mixing was completed, the area in front of the wall was backfilled with the previously excavated soil, mixed with cement grout. Both walls were surveyed twice weekly for lateral movement by Axis Survey & Mapping. PanGEO reviewed all survey data. The wall along W Commodore Way exhibited less than 0.4 inches of lateral movement. Movements of the the BNSF wall were typically about 1 inch or less. No significant soil distress was observed behind the wall. As of November 19, the area below the wall was backfilled.
- **10. Soldier Pile Wall Installation** PanGEO was on site continuously during the construction of both soldier piles walls. Both walls were built in accordance with the approved plans.
- 11. Verify Backfill and Compaction The area where excavation and replacement were conducted included CAA-1, CAA-2b, CAA-3 and CAA-5. CAA-5 was the first area to be backfilled, and it was backfilled with ballast rock, which required no compaction. CAA-1 was excavated and CAA-1a was backfilled with gravel borrow compacted with a smooth drum roller (see Field Report 03). CAA-1b was initially backfilled with quarry spalls, followed by gravel borrow (see Field Report 06 and 07), also compacted with a vibratory drum roller. Density testing was conducted by Mayes and the reports submitted to PanGEO for review. All compaction tests met the specified level of compaction per plan. Backfill of CAA-6b also consisted of a bottom layer of quarry spalls, followed by gravel borrow, compacted with the same equipment (see Field Reports 11 and 12). Lifts were tested periodically by Mayes Testing, and all backfill tests met the required 95% compaction. Excavation and backfill of CAA-3 occurred between November 12 and 15, 2021 (see Field Report 17). The excavation was backfilled with ballast rock and compacted with a drum roller.

In summary, to the best our knowledge, the above-discussed geotechnical elements of the project have been accomplished in general accordance with our recommendations and the SDCI approved plans and specifications.

LIMITATIONS

The geotechnical observation services were performed in accordance with generally accepted standards of the profession in this geographic area. Except during wall construction, PanGEO was on site on an as-needed basis. Our conclusions and opinions as to whether the work essentially complies with the project requirements are based on our observations and experience. The conclusions contained herein apply only to our observations at the time of our site visits. We cannot provide advice, opinions, or conclusions relative to site work that we have not observed.

We appreciate the opportunity to be of service. Sincerely,



Stephen H Evans, L.E.G. Senior Engineering Geologist

W. Paul Grant, P.E. Principal Geotechnical Engineer

cc: SDCI (portal)

Kim Hempel khempel@pioneerees.com,
Jamie Stevens jamie.stevens@creteconsulting.com,
Rusty Jones rusty.jones@creteconsulting.com,
Kenny Martinez kmartinez@forgen.com>

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1	N	c	0	R	P	0	R	A	т	E	D

Cooled and Earthquake Engineering Consultant		
3213 Eastlake Avenue E, Suite B	Project No.	Page No.
Seattle, WA 98102	20-361.500	1 of 2
Tel: (206) 262-0370 Fax: (206) 262-0374	Report No.	Date / Day of Week 12/21/21 (Tuesday)
Project Name	Location or Address	
Salmon Bay Redevelopment	2737 W. Commodore Way, Seattle	
Owner's Representative		Weather
Kim Hempel	DPD Permit No. 6819513-CN	Overcast, cool
Client	Contractor	PanGEO Field Rep.
TOC Seattle Terminal LLC	Forgen Construction	Steve Evans

A representative from PanGEO visited the site on December 21, 2021, to observe site grading work.

Site Grading: All site grading work was completed as of December 21, 2021.

Temporary Erosion Control: Temporary erosion control was in place through December. Bare soil areas were covered with clean ballast rock or geotextile as of December 21, 2021 (see Plates 1 and 2), per plan. This constitutes permanent erosion control under this permit, and temporary erosion control is no longer required.



Plate 1: CAA-3 and 4 with permanent erosion control.



Plate 2: ISS swell management area covered with geotextile.

Signed:

Stephen H. Evans

CC: City of Seattle

Kim Hempel <u>khempel@pioneerees.com</u>, Jamie Stevens <jamie.stevens@creteconsulting.com, Rusty Jones <u>rusty.jones@creteconsulting.com</u>, Kenny Martinez <kmartinez@forgen.com>

Appendix H Well Log

Recourse Protection Well Rep	ort	Notice of Intent N	0.	RE21996
Type of Work:		Type of Well:		
X Construction		X Resource Protecti	on W	ell Injection Point
Decommission → Original NOI No.		Remediation Well		Grounding Well
Ecology Well ID Tag No. BNO	C 553	Geotechnical Soil	Borin	g Ground Source Heat Pump
Site Well Name		Environmental Bo	ring	Other
Consulting Firm Forger		Soil Vapor	r	Water Sampling
Was a variance approved for this well/boring?	Yes X No	Property Owner		TOC Seattle Terminal 1 LLC
If yes, what was the variance for?		Well Street Address	_	2805 West Commodore Way
		City Sear	ttle	County King
	_	Tax Parcel No.		423790-0405
WELL CONSTRUCTION CERTIFICATION: I corresponsibility for construction of this well, and its comp	*	Location (see instruction	ons):	WWM EWM
well construction standards. Materials used and the inf	formation reported are true	¹ / ₄ - ¹ / ₄ SW ¹ / ₄	SW	Sec 11 Twn 25N R 3E
to my best knowledge X Driller Trainee	and belief.	Latitude (Example: 4	7.123	45) <u>x</u>
Name (Print Last, First Name) We	es Kennedy	Longitude (Example:	-120	
Driller/Trainee Signature		Borehole Diameter	12'	inches Casing Diameter inches
License No. 3244		Static Water Level	23	ft below top of casing
Company Name Cascade Drillin	g - Seattle	Above-ground com	pletion	w/bollards X Flush Monument
If trainee box is checked, sponsor's license number	::	Stick-up of top of	well	casingft above ground surface
Sponsor's signature				221 Completed Date 11/12/2021
Construction Design	Well	Data 103-21-1380		Formation Description
	Concrete Surface Seal Depth	3'	FT	Fine to medium black sands
	Blank Casing (dia x dep)	6" x 12'		
	Material	PVC		
	Backfill		FT	
	Туре			
	Seal	7'		10 - 25 FT
	Material	Bentonite Chips		Light gray sands to sandy silts
	Gravel Pack	17'	FT	
	_			
	Material	2/12 Sand	.	
	Screen (dia x dep)	6" x 15'	.	25 - 30 FT
	Slot Size	.030		Sandy silts to dense sandy silts
	Material	PVC	.	Easting: 245439.007
4	Well Depth	27'	FT	Northing: 1255853.038
	Backfill	1.5' 2/12 Sand		Top of Well Elevation FT
	_		.	NAVD88: 46.167
	Material	1.5' Bentonite Chips	.	
	Total Hole Depth	30'	FT	
Scale 1" =	Page	of		ECY050-12 (07/2018)

Appendix I ISS Confirmation Sampling Analytical Laboratory Reports and Backup



TIMELY Engineering $\mathbf{S}_{\mathrm{OIL}}$

Tests, llc

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Phone: 770-938-8233

Fax: 770-923-8973



Tested By Date

Checked By

KP/IH

10/07/21	
18	

	TESTS, L	LC	Web: www.te		ASHIO	
Client Pr. #		200016			Lab. PR. #	<i>‡</i>
Pr. Name	Ti	ime Oil Termir	nal		S. Type	Mold
Sample ID	39047/2-20		Subsample	1	Location	1
Add. Info	-	Mixing/Mo	Iding Date	09/27/21		Curing

21136-02-3 Depth/Elev. Seattle, WA

Add. Info	-	Mixing/Molding Date	09/27/21		Curing Age, Days	10
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	oil-Cement Cylinders	
		METHOD	В			
Initial Height Initial Diame Height-to-Dia Area, in ² Volume, in ³ Mass of Sam Wet Density, Dry Density, Machine Spe Strain rate, 9	ter, in ameter Ratio nple, g , pcf pcf eed, in/min	5.633 2.977 1.89 6.96 39.21 1187.9 115.4 87.9 0.050 0.89	WATER CONTE Mass of Wet Sar Mass of Dry San Mass of Tare, g Moisture, %	mple and Ta	re, g 1485.6	
		TEST	DATA			
	Load Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037			al Caliper ID # 17/583 ut Device ID # 10/1016 Oven ID # 758/496	I
Specimen Compressive Conversion F	oad at Failure, lbf ross-sectional Area, in ² e Strength at Failure, psi Factor for Height to Diametel compressive Strength at Fai		896 6.96 129 1.00 129		Failure Code 3 Failure Sket	ch
Note 2: * - A c	onversion factor based on H/D=	1.15 (C.F908 as 100% an DESCRIPTION	nd add. correction p	per ASTM C42	Failure Type:	Shear
	U.	SCS (ASTM D2487: D24	88)		T Golie and G	ПСА
		REMARKS				



TIMELY Engineering Soil

1874 Forge Street Tucker, GA 30084

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Fax: 770-923-8973



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KP/IH

Date

10/25/21 10

	1 ESTS, L	Web: www.te		REDITED		Checked By	16
Client Pr. #		200016		Lab. PR. #		21136-02-3	
Pr. Name	Т	ime Oil Terminal		S. Type	Mold	Depth/Elev.	-
Sample ID	39047/2-20	Subsample	2	Location		Seattle, WA	
Add. Info	•	Mixing/Molding Date	09/27/21		Curing A	ge, Days	28

Sample ID	39047/2-20	Subsample	2	Location	Seattle, WA	
Add. Info	-	Mixing/Molding Date	09/27/21		Curing Age, Days	28
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	il-Cement Cylinders	
				ľ		
		METHOD	В			
	SAMPLE DATA		WATER CONTE	NT DETERM	IINATION	
Initial Height,		5.594	Mass of Wet Sar			
Initial Diamet		2.980	Mass of Dry Sam	-		
Height-to-Dia		1.88	Mass of Tare, g	•	302.0	
Area, in ²		6.97	Moisture, %		31.6	
Volume, in ³		39.02				
Mass of Sam	ple, g	1175.7				
Wet Density,	-	114.8				
Dry Density,		87.2				
Machine Spe		0.050				
Strain rate, %	0 / 111111	0.89				
		TEST	DATA			
	Load Cell ID #	11/1015		Digito	I Caliper ID # 17/583	1
	Compression Device ID #	10/1014			I Caliper ID # 17/583 t Device ID # 10/1016	
	Balance ID #	1036/1037		readou	Oven ID # 758/496	
	Dalarioo ID II				0.000.100	l
Maximum Lo	ad at Failure, lbf		2742			
	oss-sectional Area, in ²		6.97		Failure Code 3	1
Compressive	Strength at Failure, psi		393			1
Conversion F	actor for Height to Diameter	· Ratio	1.00	'		
Reported Co	ompressive Strength at Fai	lure, psi	393		Failure Sket	ch
Note 2: * - A c	onversion factor based on H/D=	-1.15 (C.F908 as 100% ai	nd add. correction p	per ASTM C42,)	
		DESCRIPTION	·	ŕ		
					Failure Type:	1
					Cone and S	Shear
	U	SCS (ASTM <u>D2487: D24</u>	88)			
		REMARKS				
ſ		KLWAKKO				
Ĺ						



Client Pr. #

TIMELY

Engineering Soil

200016

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Lab. PR. #

Tested By

Checked By

21136-02-3

10/0

Date

10/07/21

EB/KP

0					=000.0							=		
Pr. Name					Time Oil Terr	minal				S. Type	Mold	Depth/Elevation	-	
Sample ID			39047	/2-20		Subs	ample ID	3		Location		Seattle, W.	A	
Add. Info		-		Mi	xing/Molding D	ate		09/27/21]	(Curing Age, Days	10	
				ASTM D	5084; Stand	ard Test I	Method for	Measuremo	ent of Hy	/draulic Co	nductivity of S	Saturated Porous		
					Materials	Using a F	lexible Wal	I Permeam	eter (Me	thod D, Cor	stant Rate of	Flow)		
Ir	nitial Sar	nple Dat	a (Before	e Test)			Test Dat	а		Final Data (After Test)				
Height		3.005	in	7.63	cm Speed			10	1					
Diameter		2.969	in		cm Board N	lumber		9		Average Hei	ght of Sample	3.006 in	7.64 cm	
Area		0.02	in ²		cm ² Cell Nur	mber		41		Average Dia	meter of Sample		7.54 cm	
Volume			cm ³	0.0120		ımp Numbe	r	2A]	Area	6.93 in ²	44.70 cm ²		
Mass		629.4	g		b Flow Pu	mp Rate*		2.24E-04	cm ³ /sec	Volume	341.27 cm		Dry Density 87.6 pcf	
Specific Gra	-		(Assume	d)	B - Valu			0.95	<u> </u>	Mass	642.7 g	1.42 lb	Vol. of Voids 163.80 cm ³	
Dry Density		87.7	pcf		Cell Pre			95.0	psi				Vol. of Solids 177.46 cm ³	
	Maia	·····-			Back Pr		` -	90.0	psi		Maiatuu	- Contont	Void Ratio 0.92 Saturation 99.8 %	
Mass of wat	Moisture Content Mass of wet sample & tare 629.4 g					Confining (Effective) Pressure Max Head			psi	Mass of wat		Moisture Content Saturation mple & tare 724.0 g		
Mass of dry	'		629.4 479.0	g					cm		sample & tare	724.0 g 560.5 g		
Mass of tare		laie	0.0	9		au m Gradient		16.88 2.30	CIII	Mass of tare		81.5 g		
% Moisture			31.4	9		n Gradient		2.21	1	% Moisture		34.1		
	FUNCTI	ION	Δt	READING		Gradient	Temp.	1	ABILITY	(cm/sec)	No	te: Deaired Water Used for F	Permeability Test.	
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R _T	@ 20 °C		DESCRIPTION	·	
10/07/21	8	5	-	0.25	17.59	2.30	23.1	-	-	-	NA	1	USCS	
10/07/21	8	15	600	0.24	16.88	2.21	23.1	2.22E-06	0.929	2.06E-06			(ASTM D2487;2488)	
10/07/21	8	25	600	0.25	17.59	2.30	23.1	2.22E-06	0.929	2.06E-06			NA	
10/07/21	8	35	600	0.24	16.88	2.21	23.1	2.22E-06	0.929	2.06E-06	*	REMAR		
10/07/21	8	45	600	0.25	17.59	2.30	23.1	2.22E-06	0.929	2.06E-06	* Bo	ttom Half of the mold was use	ed for testing.	
10/07/21	8	55	600	0.24	16.88	2.21	23.1	2.22E-06	0.929	2.06E-06	*			
10/07/21	9	5	600	0.25	17.59	2.30	23.1	2.22E-06	0.929	2.06E-06	*			
					Reporte	d Average I	Hydraulic Co	nductivity*		2.1E-06	cm/sec			
Flow pump	ID#	24	44	E	Balance ID#	1035/1036		Differential F	Pressure I	Meter ID #		346		
Thermomete	ermometer ID # 796/985 C				Oven ID#	en ID # 496/758 Board Pressure Meter IE			r ID#		571			
Syringe ID #	<i>‡</i>	24	45					Pore Pressu	ure Meter	ID#		29		
				-										

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate is used for calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



Client Pr.

Pr. Name

TIMELY

Engineering Soil

200016

Time Oil Terminal

Tests, llc

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Web: www.test-llc.com



Mold

Lab. PR. #

S. Type

Tested By

Date

21136-02-3

Depth/Elevation

EB/KP

Checked By

10/25/21

Sample ID						Subsample ID 4			Location	ation Seattle, WA						
Add. Info		-		Mi	xing/Molding Da	ate		09/27/21			Curin	ng Age, Days			28	
				ASTM D	-				-		nductivity of Satu					
li	nitial Sar	nple Dat	a (Befor	e Test)			Test Dat	a		Final Data (After Test)						
Height Diameter Area Volume Mass Specific Gra Dry Density Mass of we Mass of dry Mass of tare % Moisture	Moist t sample & r sample & e	2.967 6.91 343.86 635.1 2.700 87.4	in in in in 2 cm³ g (Assume pcf eent 635.1 481.8 0.0 31.8	7.54 d 44.61 d 0.0121 f 1.40 l	Flow Pur B - Value Cell Pres Back Pre Confinin Max Hea Min Head Maximur	nber mp Numbe mp Rate* e ssure essure g (Effective	e) Pressure	10 14 14 2a 2.24E-04 0.95 95.0 90.0 5.0 205.39 203.99 26.63 26.45	cm³/sec psi psi psi cm cm	Average Dia Area Volume Mass	ght of Sample meter of Sample 6.92 in² 344.21 cm³ 645.4 g Moisture Co sample & tare sample & tare	3.036 in 2.968 in 44.64 cm² 0.0122 ft³ 1.42 lb content 725.8 g 562.3 g 80.5 g 33.9	7.5 Dry Vol. Vol.	cm 54 cm Density of Voids of Solids d Ratio uration	165.74 178.47 0.93	pcf cm ³ cm ³
	FUNCTI		Δt	READING	Head	Gradient	Temp.			(cm/sec)	Note: I	Deaired Water Used	for Perme	ability Test		
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R _T	@ 20 °C	<u> </u>	DESCRIPTION				
10/25/21	7	0	-	2.91	204.69	26.54	24.7	-	-	-	NA			l	USCS	
10/25/21	7	10	600	2.90	203.99	26.45	24.7	1.89E-07	0.895	1.69E-07]			(ASTM	D2487;2488)	_
10/25/21	7	20	600	2.92	205.39	26.63	24.7	1.89E-07	0.895	1.69E-07					NA	
10/25/21	7	30	600	2.92	205.39	26.63	24.7	1.88E-07	0.895	1.69E-07	*		MARKS			_
10/25/21	7	40	600	2.90	203.99	26.45	24.7	1.89E-07	0.895	1.69E-07	* Bottom	Half of the mold was	s used for t	esting.		
10/25/21	7	50	600	2.92	205.39	26.63	24.7	1.89E-07	0.895	1.69E-07	*					
10/25/21	8	0	600	2.91	204.69	26.54	24.7	1.89E-07	0.895	1.69E-07	*					
					Reported	d Average	Hydraulic Co	nductivity*		1.7E-07	cm/sec					
Flow pump	ID#	2	44	E	Balance ID #	1035/1036		Differential I	Pressure I	Meter ID #		346				
Thermomet	er ID#	796	/985] (Oven ID #	496/758		Board Press	sure Mete	r ID#		694/459				
Syringe ID	#	2	45				-	Pore Pressu	ure Meter	ID#		372				

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for

calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



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KP/IH

Date

10/08/21 10

	1E515, L	Web: www	v.test-llc.com		REDITED		Checked By	16
Client Pr. #		200016			Lab. PR. #		21136-02-4	
Pr. Name	Т	ime Oil Terminal			S. Type	Mold	Depth/Elev.	-
Sample ID	39092/2-27	Subsamp	ole 1		Location		Seattle, WA	
Add. Info	1	Mixing/Molding Date	09/28/2	21		Curing A	ge, Days	10
					•			

FI. INAIIIE		illie Oil Tellilliai		S. Type	IVIOIU	Deptil/Liev.	
Sample ID	39092/2-27	Subsample	1	Location		Seattle, WA	
Add. Info	-	Mixing/Molding Date	09/28/21]	Curing A	ge, Days	10
	ASTM D 1633: Standa	ard Test Methods for Con	npressive Strength	of Molded S	oil-Cement Cy	ylinders	
		METHOD	В	1			
		METHOD	В	1			
	SAMPLE DATA		WATER CONTE	NT DETER	MINATION		
Initial Heigl	ht, in	5.677	Mass of Wet Sa	mple and Ta	re, g	1541.2	
Initial Diam	neter, in	2.980	Mass of Dry Sar	nple and Tar	e, g	1245.3	
	Diameter Ratio	1.91	Mass of Tare, g			336.9	
Area, in ²		6.97	Moisture, %			32.6	
Volume, in	3	39.60					
Mass of Sa		1206.6					
Wet Densit	. •	116.1					
Dry Density		87.5					
	peed, in/min	0.050					
Strain rate,		0.88					
		TES	T DATA				
	Load Cell ID #	11/1015		Digit	al Caliper ID a	# 17/583	
	Compression Device ID #	10/1014		•	ut Device ID a		
	Balance ID #	1036/1037		reado	Oven ID		
	Balance 15 "	1000/1001			O VOIT ID 7	7 337 133	
	Load at Failure, lbf		489]			
Specimen	Cross-sectional Area, in ²		6.97	1	Failure Code	∋ 3	
Compressi	ve Strength at Failure, psi		70				
Conversion	n Factor for Height to Diamete	r Ratio	1.00	[
I -	Compressive Strength at Fa	· · · · · ·	70	<u> </u>		Failure Sketch	
Note 2: * - A	A conversion factor based on H/D	=1.15 (C.F908 as 100% a DESCRIPTION	and add. correction	per ASTM C42	2)		
		DESCRIPTION			T		
						1/	
					Failure Type	: Cone and She	oor
		SCS (ASTM D2487: D2	488)		<u>[</u>	Cone and Sne	aı
]				
		REMARKS					
					Ī		



Timely Engineering Soil

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AASHIO

Tested By

KP/IH

Date Checked By 10/26/21

Client Pr. # 200016 21136-02-4 Lab. PR. # Pr. Name Time Oil Terminal Depth/Elev. Mold S. Type Sample ID 39092/2-27 Subsample 2 Location Seattle, WA Add. Info Mixing/Molding Date 09/28/21 28 Curing Age, Days ASTM D 1633: Standard Test Methods for Compressive Strength of Molded Soil-Cement Cylinders METHOD В SAMPLE DATA WATER CONTENT DETERMINATION Initial Height, in 5.662 Mass of Wet Sample and Tare, g 1493.5 Initial Diameter, in 2.973 Mass of Dry Sample and Tare, g 1199.2 Height-to-Diameter Ratio 1.90 299.7 Mass of Tare, g Area, in² 6.94 Moisture, % 32.7 Volume, in³ 39.31 Mass of Sample, g 1196.0 Wet Density, pcf 115.9 Dry Density, pcf 87.3 Machine Speed, in/min 0.050 Strain rate, % / min 0.88 **TEST DATA** Load Cell ID # 11/1015 Digital Caliper ID # 17/583 Compression Device ID # 10/1014 Readout Device ID # 10/1016 Balance ID# 1036/1037 Oven ID# 758/496 Maximum Load at Failure, lbf 3126 Specimen Cross-sectional Area, in² Failure Code 3 6.94 Compressive Strength at Failure, psi 450 Conversion Factor for Height to Diameter Ratio 1.00 Reported Compressive Strength at Failure, psi 450 Failure Sketch Note 2: * - A conversion factor based on H/D=1.15 (C.F.-.908 as 100% and add. correction per ASTM C42) **DESCRIPTION** Failure Type: Cone and Shear USCS (ASTM D2487: D2488)

REMARKS



Client Pr.

Pr. Name

TIMELY

Engineering Soil

200016

Time Oil Terminal

Tests, llc

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Phone: 770-938-8233

Fax: 770-923-8973

Web: www.test-llc.com



Mold

Lab. PR. #

S. Type

Tested By

21136-02-4

Depth/Elevation

Date

EB/KP 10/09/21

Checked By

10/09/21 **IB**

i i. italiio					Time On Tom	1		ı		О. Туро	1010		L
Sample ID			39092	1			ample ID	3		Location		Seattle, V	VA
Add. Info		-		Mi	xing/Molding Da	ite		09/28/21]		Curing Age, Days	11
				ASTM D	-				_	draulic Cor thod D, Cor	-	of Saturated Porous e of Flow)	
ı	nitial Sar	nple Data	a (Before	e Test)			Test Data	а				Final Data (After Te	st)
Height		3.066	in	7.79	cm Speed			9	1				
Diameter		2.954	in	7.50	cm Board Nu	umber		7	1	Average Hei	ght of Samp	ole 3.067 in	7.79 cm
Area		6.85	in ²		cm ² Cell Num	nber		14		Average Dia	meter of Sa		7.50 cm
Volume		344.34	cm ³	0.0122 f	ft ³ Flow Pur	mp Numbe	r	4B		Area	6.85	in ² 44.22 cm ²	
Mass		643.1	g	1.42 I	b Flow Pur	-			cm ³ /sec	Volume	344.45	cm ³ 0.0122 ft ³	Dry Density 88.0 pcf
Specific Gr	-	2.700	(Assume	d)	B - Value			0.95	ļ	Mass	651.5	g 1.44 lb	Vol. of Voids 164.59 cm ³
Dry Density	′	88.0	pcf		Cell Pres			95.0	psi				Vol. of Solids 179.86 cm ³
	Mois	ture Cont	ont		Back Pre		.\ D=======	90.0	psi		Mai	isture Content	Void Ratio 0.92
Mass of we				l g	Max Hea		e) Pressure	5.0 21.81	psi cm	Mass of wet			Saturation 100.8 %
Mass of dry			485.7	g g	Min Head			21.10	cm	Mass of dry			
Mass of tar		taro	0.0	g		n Gradient		2.80	0	Mass of tare		82.9 g	
% Moisture			32.4	ľ	Minimum	Gradient		2.71	1	% Moisture		34.2	
TIME	FUNCTI	ON	Δt	READING	Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)		Note: Deaired Water Used for	Permeability Test.
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R_T	@ 20 °C		DESCRIPTION	
10/09/21	6	20	-	0.30	21.10	2.71	23.2	-	-	-		NA	USCS
10/09/21	6	30	600	0.31	21.81	2.80	23.2	3.68E-06	0.927	3.41E-06			(ASTM D2487;2488)
10/09/21	6	40	600	0.31	21.81	2.80	23.2	3.62E-06	0.927	3.35E-06			NA
10/09/21	6	50	600	0.30	21.10	2.71	23.2	3.68E-06	0.927	3.41E-06	*	REMA	RKS
10/09/21	7	0	600	0.30	21.10	2.71	23.2	3.74E-06	0.927	3.47E-06	*	Bottom Half of the mold was us	sed for testing.
10/09/21	7	10	600	0.31	21.81	2.80	23.2	3.68E-06	0.927	3.41E-06	*		
10/09/21	7	20	600	0.30	21.10	2.71	23.2	3.68E-06	0.927	3.41E-06	*		
	-			-	Reported	d Average	Hydraulic Co	nductivity*	•	3.4E-06	cm/sec		•
Flow pump	ID#	10	43	E	Balance ID #	1035/1036		Differential F	Pressure I	Meter ID #	_	1045/1049	
Thermome	ter ID #	796	/985	(Oven ID#	496/758		Board Press	sure Mete	r ID#		290	
Syringe ID	#	10	46				-	Pore Pressu	ıre Meter	ID#		216	
				-									

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for

calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



Client Pr. #

Pr. Name

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200016

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Mold

Lab. PR. #

S. Type

Tested By Date EB/KP 10/26/21

Checked By

21136-02-4

Depth/Elevation

10/26/21

Sample ID			39092	2/2-27		Subsample ID			4		1			Seattle, WA				
Add. Info -				M	ixing/Molding Da	Nolding Date		09/28/21				Curing Age, Days			28			
				ASTM [5084; Stand Materials				-	/draulic Cor thod D, Cor	-			us				
Initial Sample Data (Before Test)						Test Data					Final Data (After Test)							
Height	ĺ	3.032	in	7.70	cm Speed			10	1									
2.0.0		in			Board Number			3		Average Height of Sample			in	7.70 cm				
7 0 0.00		in ²			Cell Number		55		Average Dia	meter of Sa		2.977	in	7.56 cm				
Volume 345.61		cm ³	0.0122	ft ³ Flow Pu	Flow Pump Number		4B]	Area	6.96	in ²							
Mass 634.5		g	1.40	lb Flow Pu	Flow Pump Rate*		2.24E-04	cm ³ /sec	Volume	345.73	cm ³	0.0122	ft ³	Dry Density		pcf		
			(Assume	d)	B - Valu	B - Value				Mass 645.2			1.42	lb	Vol. of Voids		cm ³	
Dry Density 86.4		pcf		Cell Pre				psi						Vol. of Solids		cm ³		
					Back Pr			90.0	psi						Void Ratio	0.95		
Moisture Content					Confining (Effective) Pressure			psi			isture Co		=	Saturation	99.0	%		
Mass of wet sample & tare 634.5 g				g	Max Head			116.76 115.36	cm	Mass of wet	•		718.1	g				
Mass of dry sample & tare			478.3	g		Min Head			cm	Mass of dry	•	are	551.2	g				
Mass of tare			0.0	g		Maximum Gradient			1	Mass of tare	1		72.9	g				
% Moisture			32.7		Minimur	Minimum Gradient				% Moisture	_		34.9					
TIME FUNCTION		Δt	READING	Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)		Note: Deaired Water Used for Permeability Test.			st.				
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R _T	@ 20 °C		DESCRIPTION						
10/26/21	7	5	-	1.65	116.06	15.08	24.5	-	-	-		NA				USCS		
10/26/21	7	15	600	1.66	116.76	15.17	24.5	3.30E-07	0.899	2.97E-07					(ASTI	M D2487;2488)		
10/26/21	7	25	600	1.64	115.36	14.98	24.5	3.31E-07	0.899	2.98E-07						NA		
10/26/21	7	35	600	1.64	115.36	14.98	24.5	3.33E-07	0.899	2.99E-07	*	REMARKS						
10/26/21	7	45	600	1.65	116.06	15.08	24.5	3.32E-07	0.899	2.99E-07	*	Bottom Half of the mold was used for testing.						
10/26/21	7	55	600	1.66	116.76	15.17	24.5	3.30E-07	0.899	2.97E-07	*							
10/26/21	8	5	600	1.65	116.06	15.08	24.5	3.30E-07	0.899	2.97E-07	*							
					Reporte	d Average	Hydraulic Co	nductivity*		3.0E-07	cm/sec							
Flow pump	ID#	1043			Balance ID #	1035/1036		Differential Pressure N		Meter ID #			1045/1049					
Thermometer ID #		796/985			Oven ID#	496/758		Board Press	sure Mete	r ID#			1041					
Syringe ID #		1046					-	Pore Pressu	ore Pressure Meter ID #				26/27					

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for

calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



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KP/IH

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10/08/21 12

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Client Pr. #		200016				Lab. PR. #		21136-02-4	
Pr. Name	Т	ime Oil Terminal				S. Type	Mold	Depth/Elev.	ı
Sample ID	39093/CAA-4 Ex-Situ	(5) Su	ubsample	1		Location		Seattle, WA	
Add. Info	-	Mixing/Moldin	g Date	09/28/2	:1		Curing A	ge, Days	10
						•			

Sample ID	39093/CAA-4 Ex-Sit	u (5)	Subsample	1	Location	Seattle, WA	
Add. Info	-	Mixing/Mo	olding Date	09/28/21		Curing Age, Days	10
	ASTM D 1633: Standa	rd Test Metl	nods for Com	pressive Strength	of Molded So	oil-Cement Cylinders	
					•	•	
			METHOD	В			
	0440150474				NT DETERM		
Initial Heigh	SAMPLE DATA	5.672	7	WATER CONTE Mass of Wet Sar			
Initial Diame		2.978		Mass of Dry Sam			
	iameter Ratio	1.90	1	Mass of Tare, g	ipio ana raic	365.7	
Area, in ²		6.97		Moisture, %		38.4	
Volume, in ³		39.51					
Mass of Sai	mple, g	1166.0					
Wet Density		112.4					
Dry Density		81.2	1				
Strain rate,	peed, in/min % / min	0.050 0.88					
Otrain rato,	70 / 111111	0.00	1				
			TEST	DATA			
	Load Cell ID #	11/1015	1		Digito	l Caliper ID # 17/583	
	Compression Device ID #	11/1015 10/1014				Il Caliper ID # 17/583 It Device ID # 10/1016	
	Balance ID #	1036/1037	1		rtoddod	Oven ID # 758/496	
			1				
Maximum L	oad at Failure, lbf			1952			
Specimen C	Cross-sectional Area, in ²			6.97		Failure Code 3	
Compressiv	e Strength at Failure, psi			280	i		
Conversion	Factor for Height to Diamete	r Ratio	1	1.00			
Reported C	Compressive Strength at Fa	ilure, psi		280		Failure Sket	ch
Note 2: * - A	conversion factor based on H/D			nd add. correction p	per ASTM C42) [
		DESC	RIPTION				
						Failure Type: Cone and S	hoor
	L	SCS (ASTM	D2487: D24	88)		Cone and S	IICai
	_	(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					
		REM	1ARKS				



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10/26/21 18

L	TESTS, L	LC	Web: www.te	st-llc.com	ADDE
Client Pr. #		200016			
Pr. Name	Ti	ime Oil Termi	nal		
Sample ID	39093/CAA-4 Ex-Situ	(5)	Subsample	2	
Add. Info	-	Mixing/Mo	Iding Date	09/28/2	21

21136-02-4 Lab. PR. # S. Type Depth/Elev. Mold -Location Seattle, WA

Add. Info	-	Mixing/Molding Date	09/28/21		Curing Age, Days	28
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded S	oil-Cement Cylinders	
		METHOD	В			
Initial Height Initial Diame Height-to-Dia Area, in ² Volume, in ³ Mass of Sam Wet Density, Dry Density, Machine Spe Strain rate, 9	ter, in ameter Ratio nple, g , pcf pcf eed, in/min	5.722 2.981 1.92 6.98 39.94 1176.7 112.2 81.3 0.050 0.87	WATER CONTE Mass of Wet Sar Mass of Dry San Mass of Tare, g Moisture, %	mple and Ta	re, g 1471.5	
		TEST	DATA			
	Load Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037			al Caliper ID # 17/583 ut Device ID # 10/1016 Oven ID # 758/496	
Specimen Compressive Conversion I	oad at Failure, lbf ross-sectional Area, in ² e Strength at Failure, psi Factor for Height to Diamete ompressive Strength at Fa	İ	5363 6.98 768 1.00 768		Failure Code 3 Failure Ske]
-	conversion factor based on H/D=			per ASTM C42		
	U	SCS (ASTM D2487: D24	88)		•	
		REMARKS			_	



Pr. Name

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Mold

Lab. PR. #

S. Type

Tested By Date EB/KP 10/09/21

Checked By

21136-02-4

Depth/Elevation

10/09/21

Sample ID	· · · · · · · · · · · · · · · · ·				3 Location Seattle, WA			VA							
Add. Info		-		М	ixing/Molding Da	ate		09/28/21			Cur	ing Age, Days		11	
				ASTM D	•				-		nductivity of Sat				
ı	nitial Sar	nple Dat	a (Befor	e Test)			Test Dat	а				Final Data (After Te	st)		
Height		3.036	in	7.71	cm Speed			9]						
Diameter		2.962	in		cm Board N	umber		8	1	Average Hei	ight of Sample	3.038 in	7.72 cm		
Area		6.89	in ²	44.46	cm ² Cell Num	nber		33		Average Dia	meter of Sample	2.963 in	7.53 cm		
Volume		342.82	cm ³	0.0121	ft ³ Flow Pur	mp Numbe	r	4A		Area	6.90 in ²	44.49 cm ²			
Mass		618.8	g	1.36	b Flow Pur	mp Rate*		4.48E-04	cm ³ /sec	Volume	343.27 cm ³	0.0121 ft ³	Dry Density	81.5 p	
Specific Gr	avity	2.700	(Assume	d)	B - Value			0.95		Mass	624.0 g	1.38 lb	Vol. of Voids		m ³
Dry Density	′	81.6	pcf		Cell Pres			95.0	psi				Vol. of Solids		m ³
					Back Pre			90.0	psi				Void Ratio	1.07	
		ture Cont		1			e) Pressure	5.0	psi		Moisture C		Saturation	99.1	ó
Mass of we			618.8	g	Max Hea			95.66	cm		sample & tare	707.9 g			
Mass of dry Mass of tar	•	tare	448.3 0.0	9	Min Head	a n Gradient		94.26 12.40	cm	Mass of dry Mass of tare	sample & tare	532.3 g 84.0 g			
% Moisture			38.0	9		n Gradient n Gradient		12.40		% Moisture		39.2			
	FUNCTI	ON	Δt	DEADING	T	T	Tomp		ADILITY		Nete		. Dames a ability . Ta		
			-	READING		Gradient	Temp.	-		(cm/sec) @ 20 °C	Note:	Deaired Water Used for	Permeability Te	St.	
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R _T	@ 20 C	DIA.	DESCRIPTION	_		
10/09/21	6	20	-	1.35	94.96	12.31	23.2	-	-	-	NA			USCS	
10/09/21	6	30	600	1.36	95.66	12.40	23.2	8.15E-07	0.927	7.56E-07			(AST	M D2487;2488)	
10/09/21	6	40	600	1.36	95.66	12.40	23.2	8.12E-07	0.927	7.53E-07				NA	
10/09/21	6	50	600	1.34	94.26	12.21	23.2	8.18E-07	0.927	7.58E-07	*	REMA	RKS		
10/09/21	7	0	600	1.36	95.66	12.40	23.2	8.18E-07	0.927	7.58E-07	* Botton	m Half of the mold was us	sed for testing.		
10/09/21	7	10	600	1.36	95.66	12.40	23.2	8.12E-07	0.927	7.53E-07	*				
10/09/21	7	20	600	1.35	94.96	12.31	23.2	8.15E-07	0.927	7.56E-07	*				
					Reported	d Average	Hydraulic Co	nductivity*		7.6E-07	cm/sec				
Flow pump	ID#	10)43] ,	Balance ID #	1035/1036		Differential I	Pressure I	Meter ID #		1044/1048			
Thermome	ter ID #	796	/985		Oven ID#	496/758		Board Press	sure Mete	r ID#		290			
Syringe ID	#	10)47				•	Pore Pressu	ıre Meter	ID#		216			

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for



Pr. Name

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Engineering Soil

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Mold

Lab. PR. #

S. Type

Tested By

21136-02-4

Depth/Elevation

Date

10/26/21

EB/KP

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Checked By

Sample ID	39093/CAA-4 Ex-Situ (5) Subsample ID						ample ID	4		Location	n Seattle, WA
Add. Info		-		Mix	king/Molding Da	te		09/28/21]	Curing Age, Days 28
				ASTM D	•				-		onductivity of Saturated Porous onstant Rate of Flow)
lı	nitial San	nple Dat	a (Before	e Test)			Test Data	a			Final Data (After Test)
Height		3.049	in	7.74 c	m Speed			10	1		
Diameter			in		m Board Nu	ımber		4		Average Hei	eight of Sample 3.048 in 7.74 cm
Area		0.	in ²	44.76 C	m ² Cell Num	ber		41		Average Dia	ameter of Sample 2.973 in 7.55 cm
Volume		346.61	cm ³	0.0122 ft	Flow Pun	np Numbe	r	4A		Area	6.94 in ² 44.79 cm ²
Mass		620.1	g	1.37 lb		'		2.24E-04	cm ³ /sec	Volume	346.73 cm ³ 0.0122 ft ³ Dry Density 80.8 pc
Specific Gra	-		(Assume	d)	B - Value			0.95		Mass	628.5 g 1.39 lb Vol. of Voids 180.44 cm
Dry Density	'	8.08	pcf		Cell Pres			95.0	psi		Vol. of Solids 166.30 cm
	Maia	ture Cont	ont.		Back Pre		` .	90.0	psi		Void Ratio 1.09 Moisture Content Saturation 99.5 %
Mass of we			620.1	l.,	Max Hea) Pressure	5.0 202.58	psi cm	Mana of wet	Catalation Gold 70
Mass of dry	-		449.0	g	Min Head			199.77	cm		t sample & tare 702.8 g sample & tare 523.3 g
Mass of tare	•	laic	0.0	9		i Gradient		26.17	Cili	Mass of tare	· · · · · · · · · · · · · · · · · · ·
% Moisture			38.1	9		Gradient		25.80	1	% Moisture	~
TIME	FUNCTI	ON	Δt	READING	Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)	Note: Deaired Water Used for Permeability Test.
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R _T	@ 20 °C	DESCRIPTION
10/26/21	7	5	-	2.88	202.58	26.17	24.5	-	-	-	NA USCS
10/26/21	7	15	600	2.84	199.77	25.80	24.5	1.92E-07	0.899	1.73E-07	(ASTM D2487;2488)
10/26/21	7	25	600	2.86	201.17	25.98	24.5	1.93E-07	0.899	1.74E-07	, NA
10/26/21	7	35	600	2.86	201.17	25.98	24.5	1.92E-07	0.899	1.73E-07	* REMARKS
10/26/21	7	45	600	2.88	202.58	26.17	24.5	1.92E-07	0.899	1.73E-07	* Bottom Half of the mold was used for testing.
10/26/21	7	55	600	2.86	201.17	25.98	24.5	1.92E-07	0.899	1.73E-07	,
10/26/21	8	5	600	2.87	201.88	26.08	24.5	1.92E-07	0.899	1.73E-07	*
					Reported	Average I	Hydraulic Co	nductivity*		1.7E-07	cm/sec
Flow pump	ID#	10	43	В	alance ID#	1035/1036		Differential I	Pressure N	Meter ID #	1044/1048
Thermomet	er ID#	796	/985	С	ven ID#	496/758		Board Press	sure Mete	· ID#	1041
Syringe ID #	#	10	47					Pore Pressu	ıre Meter	ID#	26/27

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for



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Date

10/09/21

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	200016				Lab. PR. #		21136-02-4	
Т	ime Oil Termi	inal			S. Type	Mold	Depth/Elev.	-
39094/4-72		Subsample	1		Location		Seattle, WA	
-	Mixing/Mo	olding Date	09/29/	21		Curing A	Age, Days	10
SAMPLE DATA in er, in meter Ratio ple, g pcf pcf ed, in/min	5.671 2.975 1.91 6.95 39.42 1152.0 111.3 78.9 0.050 0.88	METHOD	WATER O Mass of W Mass of D Mass of T	ONTE /et Sarry San are, g	INT DETERM mple and Tar	MINATION re, g	1457.8 1130.0 331.9 41.1	
	T 39094/4-72 -	Time Oil Termi 39094/4-72 - Mixing/Mo ASTM D 1633: Standard Test Meth SAMPLE DATA in 5.671 er, in 2.975 meter Ratio 1.91 6.95 39.42 ple, g 1152.0 pcf 111.3 pcf 28.9 ed, in/min 0.050	200016 Time Oil Terminal 39094/4-72 Subsample	200016 Time Oil Terminal 39094/4-72 Subsample 1 09/29/5	200016 Time Oil Terminal 39094/4-72 Subsample 1	200016 Lab. PR. # S. Type 39094/4-72 Subsample 1 Location	Curing # Curing #	200016

TEST DATA

Compression Device ID # Balance ID#

11/1015 10/1014 1036/1037

Digital Caliper ID # 17/583 Readout Device ID # 10/1016 Oven ID# 758/496

Maximum Load at Failure, lbf Specimen Cross-sectional Area, in² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi

Load Cell ID #

610 6.95 88 1.00 88

Failure Code 3

Note 2: * - A conversion factor based on H/D=1.15 (C.F.-.908 as 100% and add. correction per ASTM C42) **DESCRIPTION**

Failure Sketch

Failure Type:

Cone and Shear

USCS (ASTM D2487: D2488)

REMARKS



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10/27/21 18

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Client Pr. #	#	200016		Lab. PR. #		21136-02-4	
Pr. Name	-	Time Oil Terminal		S. Type	Mold	Depth/Elev.	-
Sample ID	39094/4-72	Subsample	2	Location		Seattle, WA	
Add. Info	-	Mixing/Molding Date	09/29/21		Curing /	Age, Days	28

Add. Info	-	Mixing/Molding Date	09/29/21	L	Curing Age, Days	28
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded Soil	l-Cement Cylinders	
		METHOD	В]		
Initial Height Initial Diame Height-to-Di Area, in ² Volume, in ³ Mass of Sar Wet Density, Dry Density, Machine Sp Strain rate, ⁶	eter, in ameter Ratio nple, g 7, pcf pcf eed, in/min	5.706 2.978 1.92 6.97 39.74 1158.9 111.1 78.6 0.050 0.88	WATER CONTE Mass of Wet Sa Mass of Dry Sar Mass of Tare, g Moisture, %	mple and Tare	e, g 1460.8	
		TEST	DATA			
	Load Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037			Caliper ID # 17/583 Device ID # 10/1016 Oven ID # 758/496	
Specimen C Compressiv Conversion	pad at Failure, lbf cross-sectional Area, in ² e Strength at Failure, psi Factor for Height to Diamete compressive Strength at Fa		2334 6.97 335 1.00 335	F	Failure Code 3	ch
1	conversion factor based on H/D=	· •			Failure Type:	
	U	SCS (ASTM D2487: D24	l88)]			
		REMARKS				



Pr. Name

Sample ID

TIMELY

Engineering Soil

200016

Time Oil Terminal

 $Tests, \\ \text{llc}$

39094/4-72

1874 Forge Street Tucker, GA 30084

Phone: 770-938-8233

Fax: 770-923-8973

Web: www.test-llc.com

Subsample ID



Mold

Lab. PR. #

S. Type

Location

Tested By Date EB/KP 10/09/21

Checked By

21136-02-4

Seattle, WA

Depth/Elevation

10/09/21

Add. Info	Add. Info - Mixing/Molding Date						е	09/29/21				Curing Age, Days			1	10			
				ASTM [•					•	draulic Cor thod D, Con	•			ous				
lı	nitial San	nple Dat	a (Befor	e Test)				Test Data	а					Final Data	(After Test))			
Height		3.013	in	7.65	cm Spe	eed			10	1									
Diameter		2.965	in			ard Nur	mber		5	1	Average Hei	ght of Samp	le	3.017	in	7.66	cm		
Area		6.90	in ²	44.55	cm ² Cel	II Numb	oer		55		Average Dia	meter of Sa	mple	2.955	in	7.51	cm		
Volume		340.91	cm ³	0.0120	ft ³ Flo	w Pum	p Number	r	4B		Area	6.86	in ²	44.25	cm ²		_		_
Mass		604.4	g	1.33	lb Flo	w Pum	p Rate*		2.24E-04	cm ³ /sec	Volume	339.06	cm ³	0.0120	ft ³	Dry Der	nsity		pcf
Specific Gra	avity	2.700	(Assume	d)	В -	Value			0.95]	Mass	611.0	g	1.35	lb	Vol. of \	√oids		cm ³
Dry Density		78.3	pcf			II Press			95.0	psi						Vol. of S			cm ³
					-	ack Pressure			90.0	psi						Void Ra		1.14	1
							•) Pressure	5.0	psi			sture Co		7	Saturati	ion	101.4	%
	<u> </u>					Max Head			97.77	cm	Mass of wet	•		693.3	g				
	, , , <u> </u>						Out diam		95.66 12.76	cm	Mass of dry sample & tare 510.2 g Mass of tare 82.4 g								
% Moisture						Gradient		12.76	1	% Moisture			42.8	9					
	FUNCTI	ION	41.3 Δt	DEADING				T		A DIL ITY			NI-1 I			l- 'll'	T t		
	FUNCTI	1	-	READING			Gradient	Temp.	-	1	(cm/sec) @ 20 °C		Note: I		er Used for P	ermeabili	ty rest.		
DATE	HOUR	MIN	(sec)	DP, (psi)	-	′		T _x (°C)	@ T _x	R _T	@ 20 C		D. 1.0	DESCRIPT	TION	7			
10/09/21	7	55	-	1.38	97.0)7	12.67	23.2	-	-	-		NA				U	SCS	
10/09/21	8	5	600	1.36	95.6	66	12.48	23.2	4.03E-07	0.927	3.73E-07					_	(ASTM	D2487;2488)	_
10/09/21	8	15	600	1.39	97.7	77	12.76	23.2	4.01E-07	0.927	3.72E-07							NA	
10/09/21	8	25	600	1.37	96.3	37	12.58	23.2	4.00E-07	0.927	3.70E-07	*			REMARK	KS .			
10/09/21	8	35	600	1.38	97.0)7	12.67	23.2	4.01E-07	0.927	3.72E-07	*	Bottom	Half of the n	nold was used	d for testi	ng.		
10/09/21	8	45	600	1.36	95.6	66	12.48	23.2	4.03E-07	0.927	3.73E-07	*							
10/09/21	8	55	600	1.37	96.3	37	12.58	23.2	4.04E-07	0.927	3.74E-07	*							
					Re	ported.	Average I	Hydraulic Cor	nductivity*		3.7E-07	cm/sec							
Flow pump	ID#	10)43		Balance ID) #	1035/1036		Differential I	Pressure I	Meter ID #	_		1045/1049					
Thermomet	er ID#	796	/985		Oven ID#		496/758		Board Press	sure Mete	r ID#			1042	_				
Syringe ID # 1046							Pore Pressu	ure Meter	ID#			779/780	_						
*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated								d Pipette for outf	flow) is capable t	o maintain a	constant rate of in	flow & outflow	through the	fully saturated	sample with accu	ıracy +/-5%.	Flow Pur	np Rate isuse	d for

calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.

3



TIMELY

Engineering Soil.

TESTS, LLC

1874 Forge Street Tucker, GA 30084

Phone: 770-938-8233

Fax: 770-923-8973

Web: www.test-llc.com



Tested By

Date

10/27/21

EB/KP

Checked By

		I LOID, LLC	web. www.te	est-lic.com	<u>I</u>	ACC	REDITED		Checked by	20	
Client Pr. #		200016				Lab. PR. #		21136-02-4			
Pr. Name		Time Oil Term	inal			S. Type	Mold	Depth/Elevation	-	-	
Sample ID	3909	94/4-72	Subsamp	ple ID	4	Location	Seattle, WA				
Add. Info	=	Mixing/Molding Da	te		09/29/21		Cı	uring Age, Days	2	8	
	ASTM D 5094: Standard Test Method for Messurement of					draulia Can	dustivity of S	aturated Paraus			

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow) **Initial Sample Data (Before Test) Test Data** Final Data (After Test) Height 3.017 7.66 cm Speed 12 Diameter 2.966 in 7.53 Board Number Average Height of Sample 3.018 7.67 cm 1 cm in² cm² 6.91 44.58 Cell Number 15 2.967 7.54 cm Area Average Diameter of Sample cm³ in² cm² Volume 341.59 0.0121 Flow Pump Number 1B Area 6.91 44.61 cm³/sec cm³ 604.3 1.33 Flow Pump Rate* 5.60E-05 Volume 341.94 0.0121 Dry Density 78.1 Mass pcf cm^3 Specific Gravity 2.700 (Assumed) B - Value 0.95 Mass 616.4 1.36 Vol. of Voids 183.53 cm³ Dry Density 78.1 pcf Cell Pressure 95.0 psi Vol. of Solids 158.41 90.0 Back Pressure psi Void Ratio 1.16 **Moisture Content Moisture Content** 5.0 Confining (Effective) Pressure psi Saturation 102.8 Max Head 150.53 Mass of wet sample & tare 604.3 cm Mass of wet sample & tare 699.1 427.7 Min Head 147.71 Mass of dry sample & tare 510.4 Mass of dry sample & tare cm Maximum Gradient Mass of tare 0.0 19.64 Mass of tare 82.7 % Moisture 41.3 Minimum Gradient 19.27 % Moisture 44.1 TIME FUNCTION Δt READING Head Gradient Temp. PERMEABILITY (cm/sec) Note: Deaired Water Used for Permeability Test. $T_x(^{\circ}C)$ @ 20 °C DATE **HOUR** @ T, R_{T} MIN (sec) DP, (psi) (cm) DESCRIPTION NΑ 19.27 23.7 6 30 2.10 147.71 10/27/21 USCS 6 40 600 2.12 149.12 19.45 23.7 6.48E-08 0.916 5.94E-08 (ASTM D2487;2488) 10/27/21 10/27/21 50 600 2.11 148.42 19.36 23.7 6.47E-08 0.916 5.93E-08 NA 7 0 600 2.14 150.53 19.64 23.7 6.44E-08 0.916 5.90E-08 10/27/21 REMARKS Bottom Half of the mold was used for testing. 10/27/21 7 10 600 2.13 149.82 19.54 23.7 6.41E-08 0.916 5.87E-08 10/27/21 7 20 600 2.13 149.82 19.54 23.7 6.42E-08 0.916 5.88E-08 10/27/21 30 600 2.12 149.12 19.45 23.7 6.44E-08 0.916 5.90E-08 Reported Average Hydraulic Conductivity* 5.9E-08 cm/sec Flow pump ID # 22 Balance ID # Differential Pressure Meter ID # 942 1035/1036 Thermometer ID # 796/985 Oven ID# 496/758 Board Pressure Meter ID # 64 Syringe ID # 141 Pore Pressure Meter ID # 26/27

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



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Tested By

Date

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KP/IH 10/28/21

18

					ALL
Client Pr. #		200016			
Pr. Name	Т	ime Oil Termii	nal		
Sample ID	39095/CAA-4 SP		Subsample	2	
Add. Info	-	Mixing/Mo	lding Date	09/30/21	

Lab. PR. #
S. Type Mold
Location

21136-02-4

Mold Depth/Elev.
Seattle, WA

Curing Age, Days 28

h of Molded Soil-Cement Cylinders
TENT DETERMINATION ample and Tare, g ample and Tare, g g 1456.0 1127.6 299.1 39.6
Digital Caliper ID # 17/583 Readout Device ID # 10/1016 Oven ID # 758/496
Failure Code 3
Failure Sketch
Failure Type: Cone and Shear



Pr. Name

Sample ID

TIMELY

39095/CAA-4 SP

Engineering Soil

200016

Time Oil Terminal

Tests, llc

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Subsample ID



Mold

Lab. PR. #

S. Type

Location

Tested By Date

Checked By

21136-02-4

Seattle, WA

Depth/Elevation

EB/KP 10/28/21

Add. Info		-		М	xing/Molding Da	te		09/30/21]		Curin	g Age, Days			28						
	ASTM D 5084; Standard Test Metho							-		-			ıs									
					Materials U	Jsing a F	lexible Wal	l Permeam	eter (Me	hod D, Cor	stant Rat	e of Flo	w)									
lı	nitial San	nple Data	a (Before	e Test)			Test Data	a				I	Final Data (After Test))							
Height		2.991	in	7.60	cm Speed			12														
Diameter		2.957	in		mBoard Nu	umber		15		Average Hei	ght of Samp	ole	2.992	in	7.60 cm							
Area		6.87	in ²		cm ² Cell Num	ber		5		Average Dia	meter of Sa	- ' ^		in	7.51 cm							
Volume		336.60	cm ³	0.0110	t ³ Flow Pur	np Numbe	r	2B		Area	6.87	in ²		cm ²								
Mass		606.1	g	1.34 I	b Flow Pur	np Rate*		5.60E-05	cm ³ /sec	Volume	336.94	cm ³	0.0119	ft ³	Dry Density	80.7 pcf						
Specific Gra	•	2.700	(Assume	d)	B - Value			0.95		Mass	611.4	g	1.35	lb	Vol. of Voids	175.64 cm ²						
Dry Density		80.7	pcf		Cell Pres			95.0	psi						Vol. of Solids							
Back Pressure					90.0	psi			_			Void Ratio	1.09									
		ture Cont		1		• •) Pressure	5.0	psi			sture Co			Saturation	100.1 %						
Mass of we	'			g	Max Hea	-		113.25	cm	Mass of wet	•		685.0	g								
Mass of dry	•	tare	435.5	g	Min Head			112.54	cm	Mass of dry		ire		g								
Mass of tar	9		0.0	g		n Gradient		14.90		Mass of tare				g								
% Moisture		211	39.2		Minimum	1		14.81		% Moisture	I		40.4									
	FUNCTI		Δt	READING	Head	Gradient	Temp.			(cm/sec)		Note: D	Deaired Water	Used for Pe	ermeability Te	st.						
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R_T	@ 20 °C			DESCRIPTION	NC	7							
10/28/21	8	20	-	1.60	112.54	14.81	23.3	-	-	-		NA				USCS						
10/28/21	8	30	600	1.61	113.25	14.90	23.3	8.50E-08	0.925	7.86E-08					(AST	M D2487;2488)						
10/28/21	8	40	600	1.60	112.54	14.81	23.3	8.50E-08	0.925	7.86E-08						NA						
10/28/21	8	50	600	1.61	113.25	14.90	23.3	8.50E-08	0.925	7.86E-08	*			REMARK	(S							
10/28/21	9	0	600	1.60	112.54	14.81	23.3	8.50E-08	0.925	7.86E-08	*	Bottom	Half of the mo	old was used	d for testing.							
10/28/21	9	10	600	1.61	113.25	14.90	23.3	8.50E-08	0.925	7.86E-08	*											
10/28/21	9	20	600	1.60	112.54	14.81	23.3	8.50E-08	0.925	7.86E-08	*											
				•	Reported	Average I	Hydraulic Cor	nductivity*		7.9E-08	cm/sec					•						
Flow pump	ID#	24	14	ı	Balance ID #	1035/1036		Differential I	Pressure N	/leter ID #			587									
Thermomet	er ID#	796	/985] (Oven ID#	496/758		Board Press	sure Meter	ID#			694/459									
Syringe ID	Syringe ID # 246 Pore Pressure Meter ID # 372																					
																legistrate Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate issued for						

calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.

4



Phone: 770-938-8233

Fax: 770-923-8973



Tested By

KP/IH

Date Checked By 10/30/21 18

L		TESTS, L	LC	Web: www.te	st-llc.com	AGG
Client Pr. #			200016			
Pr. Name		Т	ime Oil Termi	nal		
Sample ID		39130/4-9		Subsample	2	
Add. Info	-	-	Mixing/Mo	Iding Date	10/02/2	21

Lab. PR. # 21136-02-4 Depth/Elev. S. Type Mold -Seattle, WA

Campic ID	33130/4 3	Oubsampic		Location		ocattic, vv		
Add. Info	-	Mixing/Molding Date	10/02/21		Curing A	ge, Days	28	
	ASTM D 1633: Standar	d Test Methods for Com	pressive Strength	of Molded S	oil-Cement Cy	linders		
		METHOD	В	Ī				
		WILTHOD						
	SAMPLE DATA		WATER CONTE	NT DETER	MINATION			
Initial Heigh	The state of the s	5.656	Mass of Wet Sar	mple and Ta	re, g	1511.7		
Initial Diam	*	2.969	Mass of Dry San	nple and Tar	e, g	1179.3		
	Diameter Ratio	1.91	Mass of Tare, g			358.9		
Area, in ²		6.92	Moisture, %			40.5		
Volume, in		39.16						
Mass of Sa	-	1154.2						
Wet Density Dry Density		112.3 79.9						
	peed, in/min	0.050						
Strain rate,		0.88						
		TEQ	DATA					
		1231	DATA					
	Load Cell ID #	11/1015		Digita	al Caliper ID #	[#] 17/583		
	Compression Device ID #	10/1014		Reado	ut Device ID #			
	Balance ID #	1036/1037			Oven ID #	758/496		
Maximum L	∟oad at Failure, lbf		913					
	Cross-sectional Area, in ²		6.92		Failure Code	3		
•	ve Strength at Failure, psi		132					
Conversion	Factor for Height to Diameter	Ratio	1.00					
Reported (Compressive Strength at Fai	lure, psi	132			Failure Sketch		
Note 2: * - A	conversion factor based on H/D=		nd add. correction p	oer ASTM C42	2)			
		DESCRIPTION			7			
Failure Type:							ar	
	USCS (ASTM D2487: D2488) Cone and Shear							
		,] ´					
	REMARKS							
		TCLIM ITTO]			
					-			



Pr. Name

TIMELY

Engineering Soil

200016

Time Oil Terminal

Tests, llc

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Mold

Lab. PR. #

S. Type

Tested By Date

21136-02-4

Depth/Elevation

Checked By

10/30/21

EB/KP

Sample ID			39130	0/4-9			Subsa	ample ID	4		Location	1	Seattle, V	WA		
Add. Info		-		N	/lixing/Moldir	ng Date	е		10/02/21			Curii	ng Age, Days		28	
	ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)															
l	nitial San	nple Dat	a (Befor	Before Test) Test Data			a				Final Data (After Te	est)				
Height Diameter		3.014 2.966	in in		cm Spe	eed ard Nur	mber		10 16]	Average Hei	ght of Sample	3.015 in	7.66	7 _{cm}	
Area			in ²	44.58	cm ² Cell	II Numb			55		_	meter of Sample	2.967 in	7.54	_	
Volume		341.25	cm ³	0.0121	ft ³ Flov	w Pum	p Number	•	2B		Area	6.91 in ²	44.61 cm ²	<u>-</u>	_	
Mass		612.0	g	1.35			p Rate*		2.24E-04	cm ³ /sec	Volume	341.60 cm ³	0.0121 ft ³	Dry De	· · ·	
Specific Gra	-	2.700	(Assume	d)		Value			0.95	₫ .	Mass	616.7 g	1.36 lb		f Voids 180.0	,
Dry Density	'	79.8	pcf			II Press			95.0	psi					f Solids 161.5	
	Moist	ture Cont	ent			ck Pres) Pressure	90.0	psi psi		Moisture C	ontent	Void F Satura	-	
Mass of we			612.0	g		x Head) 1 1000u10	130.83	cm	Mass of wet	sample & tare	697.9 g	Outure	100.	70
Mass of dry	sample &	tare	436.2	g	Min	n Head			129.43	cm	Mass of dry s	sample & tare	517.2 g			
Mass of tar	е		0.0	g	Max	ximum	Gradient		17.08		Mass of tare		81.0 g			
% Moisture			40.3		Min	nimum (Gradient		16.90		% Moisture		41.4			
TIME	FUNCTI	ON	Δt	READING	G Head	ıd	Gradient	Temp.	PERME	ABILITY	(cm/sec)	Note:	Deaired Water Used fo	r Permeab	ility Test.	
DATE	HOUR	MIN	(sec)	DP, (psi) (cm)	1)		T _x (°C)	@ T _x	R _T	@ 20 °C	<u> </u>	DESCRIPTION			
10/30/21	6	35	-	1.85	130.1	13	16.99	22.7	-	-	-	NA			USCS	
10/30/21	6	45	600	1.84	129.4	43	16.90	22.7	2.96E-07	0.938	2.78E-07				(ASTM D2487;24	488)
10/30/21	6	55	600	1.85	130.1	13	16.99	22.7	2.96E-07	0.938	2.78E-07				NA	
10/30/21	7	5	600	1.86	130.8	83	17.08	22.7	2.95E-07	0.938	2.76E-07	*		ARKS		
10/30/21	7	15	600	1.85	130.1	13	16.99	22.7	2.95E-07	0.938	2.76E-07	* Bottom	n Half of the mold was u	used for tes	iting.	
10/30/21	7	25	600	1.85	130.1	13	16.99	22.7	2.96E-07	0.938	2.77E-07	*				
10/30/21	7	35	600	1.84	129.4	43	16.90	22.7	2.96E-07	0.938	2.78E-07	*				
				_	Rep	ported	Average I	Hydraulic Co	nductivity*		2.8E-07	cm/sec				
		Differential I	Pressure I	Meter ID #		587										
Thermomet	er ID#	796	/985		Oven ID#		496/758		Board Press	sure Mete	r ID#		694/459			
Syringe ID	#	24	46						Pore Pressu	ure Meter	ID#		1104			

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for



TIMELY Engineering \mathbf{S} OIL

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Phone: 770-938-8233 Fax: 770-923-8973

Tested By

KP/IH

Date

11/01/21

L		TESTS, L	LC	Web: www.tes	st-llc.com		SHIO		Checked By	18
Client Pr. #			200016				Lab. PR. #		21136-02-4	
Pr. Name	Time Oil Terminal					S. Type	Mold	Depth/Elev.	-	
Sample ID		39131/4-73		Subsample	2		Location		Seattle, WA	
Add. Info		-	Mixing/Mo	lding Date	10/04/	21		Curing A	ige, Days	28

Sample ID	39131/4-73	Subsample	2	Location	Seattle, WA	
Add. Info	-	Mixing/Molding Date	10/04/21		Curing Age, Days	28
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	il-Cement Cylinders	
		METHOD	В	Ī		
		METHOD	В			
	SAMPLE DATA		WATER CONTE	NT DETERM	INATION	
Initial Heigl	nt, in	5.555	Mass of Wet Sar	mple and Tar	e, g 1438.8	
Initial Diam		2.941	Mass of Dry San	nple and Tare		
	Diameter Ratio	1.89	Mass of Tare, g		261.8	
Area, in ²		6.79	Moisture, %		30.6	
Volume, in		37.74				
Mass of Sa Wet Densit	. •	1179.6 119.1				
Dry Density	• • •	91.1				
	peed, in/min	0.050				
Strain rate,		0.90				
		TEST	DATA			
						
	Load Cell ID #	11/1015		_	I Caliper ID # 17/583	
	Compression Device ID # Balance ID #	10/1014 1036/1037		Readou	t Device ID # 10/1016	
	Balance ID #	1036/1037			Oven ID # 758/496	
Maximum L	_oad at Failure, lbf		52			
Specimen (Cross-sectional Area, in ²		6.79		Failure Code 3	
Compressi	ve Strength at Failure, psi		8			
Conversion	Factor for Height to Diamete	r Ratio	1.00			
Reported (Compressive Strength at Fa	ilure, psi	8		Failure Sketch	
Note 2: * - A	conversion factor based on H/D=	=1.15 (C.F908 as 100% ai	nd add. correction p	oer ASTM C42)		
		DESCRIPTION				
					Failure Type: Cone and Shea	or
	U	SCS (ASTM D2487: D24	88)		Cone and Snea	וג
			,			
		REMARKS				



Pr. Name

TIMELY

Engineering Soil

200016

Time Oil Terminal

 $Tests, \\ \text{llc}$

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Mold

Lab. PR. #

S. Type

Tested By Date

EB/KP 11/01/21

Checked By

21136-02-4

Depth/Elevation

18

Specific Gravity Dry Density 90.4 pcf Cell Pressure Back Pressure Confining (Effective) Pressure Back Pressure Dry Density Dry Description Dry Density Dry Den	varric					Time On Tem	III Iai				O. Type	Mola	Dcptil/Licvation	
ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Initial Sample Data (Before Test)	ple ID			39131	/4-73		Subs	ample ID	4		Location		Seattle, W	/A
Note Para	Info		-		Mi	xing/Molding Da	ate		10/04/21				Curing Age, Days	28
Height Diameter														
Diameter Columber	Initial Sample Data (Before Test) Test Data									Final Data (After Tes	st)			
Diameter Columber	ht		3.005	in	7.63	m Speed			8	1				
Area				in	7.44		umber		18	1	Average Hei	ght of Sample	3.006 in	7.64 cm
Volume Mass Gaza	1		6.75	in ²	43.53	cm ² Cell Num	nber		4		_			7.45 cm
Specific Gravity Dry Density Dry Densi	me		332.25	cm ³	0.0117 f	t ³ Flow Pur	mp Numbe	r	2A	1	Area	6.75 ir	n ² 43.56 cm ²	
Dry Density 90.4 pcf Cell Pressure 85.0 psi 90.0 psi	S		627.3	g	1.38	b Flow Pur	mp Rate*		8.96E-04	cm ³ /sec	Volume	332.59	m ³ 0.0117 ft ³	Dry Density 90.3 p
Back Pressure 90.0 psi Moisture Content Saturation	cific Gravit	/ity	2.700	(Assume	d)	B - Value	Э		0.95	1	Mass	630.3 g	1.39 lb	Vol. of Voids 154.29 C
Mass of wet sample & tare Mass of tare Mass	Density		90.4	pcf		Cell Pres	ssure		95.0	psi				Vol. of Solids 178.30 C
Mass of wet sample & tare		'		•		Back Pre	essure		90.0	psi				Void Ratio 0.87
Mass of dry sample & tare 481.4 g mass of tare Min Head maximum Gradient Maximum Gradient 23.92 maximum Gradient Mass of tare Mass of dry sample & tare maximum Gradient Mass of tare 561.5 g maximum Gradient Mass of tare 80.1 g maximum Gradient 30.9 maximum Gradient 3.32 maximum Gradient Mass of dry sample & tare Mass of tare Mass of tare 80.1 g maximum Gradient 80.1 g maximum Gradient 9 maximum Gradient 7 maximum Gradient 7 maximum Gradient 7 maximum Gradient 7 maximum Gradient 7 maximum Gradient 7 maximum Gradient 7 maximum Gradient 9 maximum Gradient	Moisture Content Confining (Effective) Pressure 5.0 psi				psi		Moist	ure Content	Saturation 96.5 %					
Mass of tare % Moisture 0.0 g Maximum Gradient % Moisture 3.32 Maximum Gradient % Moisture Mass of tare % Moisture 80.1 g Mass of	Mass of wet sample & tare 627.3 g Max Head				25.32	cm	Mass of wet	sample & tare	710.4 g					
% Moisture 30.3 Minimum Gradient 3.13 % Moisture 30.9 TIME FUNCTION Δ t READING DATE Head (cm) Gradient Temp. T _x (°C) PERMEABILITY (cm/sec) Note: Deaired Water Used for Permeability Test. DATE HOUR MIN (sec) DP, (psi) (cm) T _x (°C) @ T _x R _T @ 20 °C DESCRIPTION 11/01/21 7 5 - 0.35 24.62 3.22 21.5 - - - 11/01/21 7 15 600 0.34 23.92 3.13 21.5 6.47E-06 0.965 6.24E-06 11/01/21 7 25 600 0.35 24.62 3.22 21.5 6.47E-06 0.965 6.24E-06	3			d		23.92	cm	Mass of dry s	sample & tare	561.5 g				
TIME FUNCTION Δ t READING Head Gradient Temp. PERMEABILITY (cm/sec) Note: Deaired Water Used for Permeability Test. DATE HOUR MIN (sec) DP, (psi) (cm) T _x (°C) @ T _x R _T @ 20 °C DESCRIPTION 11/01/21 7 5 - 0.35 24.62 3.22 21.5 - - - 11/01/21 7 15 600 0.34 23.92 3.13 21.5 6.47E-06 0.965 6.24E-06 NA 11/01/21 7 25 600 0.35 24.62 3.22 21.5 6.47E-06 0.965 6.24E-06	Mass of tare 0.0 g Maximum Gradient			3.32		Mass of tare		80.1 g						
DATE HOUR MIN (sec) DP, (psi) (cm) T _x (°C) @ T _x R _T @ 20 °C DESCRIPTION 11/01/21 7 5 - 0.35 24.62 3.22 21.5 - - - - NA USC 11/01/21 7 15 600 0.34 23.92 3.13 21.5 6.47E-06 0.965 6.24E-06 - NA (ASTM D24/1) 11/01/21 7 25 600 0.35 24.62 3.22 21.5 6.47E-06 0.965 6.24E-06 - NA	oisture			30.3		Minimum	Gradient		3.13		% Moisture		30.9	
11/01/21 7 5 - 0.35 24.62 3.22 21.5 - - - - NA NA 11/01/21 7 15 600 0.34 23.92 3.13 21.5 6.47E-06 0.965 6.24E-06 6.24E-06 NA 11/01/21 7 25 600 0.35 24.62 3.22 21.5 6.47E-06 0.965 6.24E-06 NA	TIME F	FUNCTI	ON	Δt	READING	Head	Gradient		PERME	ABILITY	, ,	١	Note: Deaired Water Used for	Permeability Test.
11/01/21 7 15 600 0.34 23.92 3.13 21.5 6.47E-06 0.965 6.24E-06 11/01/21 7 25 600 0.35 24.62 3.22 21.5 6.47E-06 0.965 6.24E-06 NA	ATE H	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R _T	@ 20 °C	_		<u></u>
11/01/21 7 25 600 0.35 24.62 3.22 21.5 6.47E-06 0.965 6.24E-06	01/21	7	5	-	0.35	24.62	3.22	21.5	-	-	-	١	NA	USCS
	01/21	7	15	600	0.34	23.92	3.13	21.5	6.47E-06	0.965	6.24E-06			(ASTM D2487;2488)
11/01/21 7 35 600 0.35 24.62 3.22 21.5 6.39E.06 0.065 6.15E.06 *	01/21	7	25	600	0.35	24.62	3.22	21.5	6.47E-06	0.965	6.24E-06	1		NA
11/01/21 7 35 000 0.35 24.02 3.22 21.3 0.36L-00 0.905 0.15L-00 REMARKS	01/21	7	35	600	0.35	24.62	3.22	21.5	6.38E-06	0.965	6.15E-06	*	REMA	RKS
11/01/21 7 45 600 0.36 25.32 3.32 21.5 6.29E-06 0.965 6.07E-06 * Bottom Half of the mold was used for testing.	01/21	7	45	600	0.36	25.32	3.32	21.5	6.29E-06	0.965	6.07E-06	* E	Bottom Half of the mold was us	sed for testing.
11/01/21 7 55 600 0.35 24.62 3.22 21.5 6.29E-06 0.965 6.07E-06 *	01/21	7	55	600	0.35	24.62	3.22	21.5	6.29E-06	0.965	6.07E-06	*		
11/01/21 8 5 600 0.34 23.92 3.13 21.5 6.47E-06 0.965 6.24E-06 *	01/21	8	5	600	0.34	23.92	3.13	21.5	6.47E-06	0.965	6.24E-06	*		
Reported Average Hydraulic Conductivity* 6.1E-06 cm/sec						Reported	d Average	Hydraulic Co	nductivity*		6.1E-06	cm/sec		
Flow pump ID # 244 Balance ID # 1035/1036 Differential Pressure Meter ID # 346	Flow pump ID # 244 Balance ID # 1035/1036 Differential Pres				Pressure I	Meter ID #		346						
Thermometer ID # 796/985 Oven ID # 496/758 Board Pressure Meter ID # 570	mometer	r ID #	796	/985] (Oven ID#	496/758		Board Press	sure Mete	· ID#		570	
Syringe ID # 245 Pore Pressure Meter ID # 779/780	Syringe ID # 245 Pore Pressure Met					ıre Meter	D#		779/780					
*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Resolutions of U.S. (ASTM STD 077) could be insificant surveyed as designed the country of the country o														



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KP/IH 11/06/21

Client Pr. # Pr. Name Sample ID Add. Info

AASHIO 200016 Time Oil Terminal 39486/4-12 Subsample Mixing/Molding Date 10/09/21

21136-02-4						
Mold	Depth/Elev.	•				
Seattle, WA						
Curing Ag	28					

	J			<u> </u>
ASTM D 1633: Standard Test Met	hods for Com	pressive Strength	of Molded Soil-Cement Cyli	nders
	METHOD	В]	
SAMPLE DATA		WATER CONTE	NT DETERMINATION	
Initial Height, in Initial Diameter, in Height-to-Diameter Ratio Area, in ² Volume, in ³ Mass of Sample, g Wet Density, pcf Dry Density, pcf Machine Speed, in/min Strain rate, % / min 5.604 1.88 6.95 1.88 4.95 1.80 1		Mass of Wet Sar Mass of Dry Sam Mass of Tare, g Moisture, %	mple and Tare, g	1527.6 1211.3 363.4 37.3
	TEST	DATA		
Load Cell ID # 11/1015 Compression Device ID # 10/1014 Balance ID # 1036/1037			Digital Caliper ID # Readout Device ID # Oven ID #	17/583 10/1016 758/496
Maximum Load at Failure, lbf		868	Failure Code	3
Specimen Cross-sectional Area, in ²		6.95	i alluic dode	3
Compressive Strength at Failure, psi		125		
Conversion Factor for Height to Diameter Ratio	1	1.00		
Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.FS DESC	908 as 100% ai	125 nd add. correction p	<u>'</u>	Failure Sketch
				Cone and Shear
USCS (ASTM	1 D2487: D24	88)		
REM	MARKS			



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Tested By Date

EB/KP 11/06/21

Tests, Llc 18 Checked By Web: www.test-llc.com ACCREDITED Client Pr. 200016 Lab. PR. # 21136-02-4 Time Oil Terminal S. Type Depth/Elevation Pr. Name Mold 39486/4-12 Subsample ID 2 Seattle, WA Sample ID Location Mixing/Molding Date 10/09/21 Add. Info Curing Age, Days 28

ASTM D 5084: Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow) **Initial Sample Data (Before Test) Test Data** Final Data (After Test) 3.005 11 Height 7.63 Speed cm Diameter 7.54 7 3.006 2.968 cm **Board Number** Average Height of Sample cm² 6.92 44.64 Cell Number 9 Average Diameter of Sample 2.968 Area cm³ cm² 340.69 0.0120 4B 6.92 44.64 Volume Flow Pump Number Area cm³/sec cm³ 622.7 1.12E-04 340.81 0.0120 82.9 Mass 1.37 Flow Pump Rate* Volume Dry Density pcf Specific Gravity 2.700 (Assumed) B - Value 0.95 Mass 627.2 1.38 Vol. of Voids 173.10 lcm³ Dry Density 82.9 pcf Cell Pressure 95.0 Vol. of Solids 167.70 psi Back Pressure 90.0 psi Void Ratio 1.03 **Moisture Content** Moisture Content 100.7 Confining (Effective) Pressure 5.0 psi Saturation Mass of wet sample & tare Max Head 104.81 Mass of wet sample & tare 711.2 622.7 cm 536.8 Mass of dry sample & tare 452.8 Min Head 103.40 Mass of dry sample & tare Maximum Gradient 13.73 Mass of tare 0.0 Mass of tare 84.0 % Moisture 37.5 Minimum Gradient 13.54 % Moisture 38.5 TIME FUNCTION Δt READING Head Gradient Temp. PERMEABILITY (cm/sec) Note: Deaired Water Used for Permeability Test. T_v(°C) @ 20 °C DATE **HOUR** MIN DP. (psi) (cm) @ T. R_{T} (sec) DESCRIPTION NA 6 30 20.9 11/06/21 1.48 104.10 13.63 USCS 6 40 600 1.47 103.40 13.54 20.9 1.85E-07 0.979 1.81E-07 (ASTM D2487:2488) 11/06/21 6 50 600 1.49 104.81 13.73 20.9 1.84E-07 0.979 1.80E-07 11/06/21 NA 7 0 600 1.49 13.73 20.9 1.83E-07 0.979 1.79E-07 11/06/21 104.81 **REMARKS** Bottom Half of the mold was used for testing 7 10 13.63 20.9 1.83E-07 0.979 1.79E-07 11/06/21 600 1.48 104.10 7 20 600 1.49 104.81 13.73 20.9 1.83E-07 0.979 1.79E-07 11/06/21 11/06/21 30 600 1.47 103.40 13.54 20.9 1.84E-07 0.979 1.80E-07 Reported Average Hydraulic Conductivity* 1.8E-07 cm/sec Differential Pressure Meter ID # 1045/1049 Flow pump ID # 1043 Balance ID # 1035/1036 290 Thermometer ID # 796/985 Oven ID# 496/758 Board Pressure Meter ID # Syringe ID # 1046 Pore Pressure Meter ID # 216

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



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Tested By Date

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11/08/21 18

 $Tests, \verb|llc|$ AASHIO Web: www.test-llc.com Client Pr. # 200016 Time Oil Terminal Pr. Name 39487/4-2 Subsample Sample ID Mixing/Molding Date 10/11/21 Add. Info

#	21136-02-4							
е	Mold	Depth/Elev.	•					
n	Seattle, WA							
	Curing Ag	28						

ASTM D 1633: Standard Test Me	thods for Compressive Strength of Molded Soil-Cement Cylinders
	METHOD B
SAMPLE DATA Initial Height, in Initial Diameter, in Height-to-Diameter Ratio Area, in² Volume, in³ Mass of Sample, g Wet Density, pcf Dry Density, pcf Machine Speed, in/min Strain rate, % / min 5.581 2.969 4.989 4.990 4.990 5.581 5.581 5.581 5.581 5.581 5.581 5.581 5.581 5.581 5.581 5.581 5.581 5.581 5.990 5.900 5.900	WATER CONTENT DETERMINATION Mass of Wet Sample and Tare, g Mass of Dry Sample and Tare, g Mass of Tare, g Moisture, % 1496.1 1210.0 298.8 31.4
	TEST DATA
Load Cell ID # 11/1015 Compression Device ID # 10/1014 Balance ID # 1036/103	Readout Device ID # 10/1016
Maximum Load at Failure, lbf Specimen Cross-sectional Area, in ² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi	521 6.92 75 1.00 75 Failure Code 3 Failure Sketch
Note 2: * - A conversion factor based on H/D=1.15 (C.F	
USCS (AST	M D2487: D2488)
RE	MARKS



TIMELY Engineering Soil Tests, llc

200016

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ACCREDITED

Lab. PR. #

Tested By Date

21136-02-4

EB/KP 11/08/21

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18

Pr. Name						ne Oil Terminal					Mo	ld	Depth/E	Elevation		-	
Sample ID			39487	7/4-2		Subs	ample ID	2		Location		Seattle, WA					
Add. Info		-		М	ixing/Molding Da	ite		10/11/21]		Curin	g Age, Days			28	
				ASTM D	5084; Standa Materials I				_	draulic Cor	-			us			
li	nitial Sar	nple Dat	a (Before	e Test)			Final Data (After Test)										
Height	ĺ	3.056	in	7.76	cm Speed			9	1								
Diameter		2.960	in		cm Board N	umber		3		Average Hei	ght of Samp	ole	3.057	in	7.76 cm		
Area		6.88	in ²		cm ² Cell Nun	nber		11		Average Dia	meter of Sa		2.961	in	7.52 cm		
Volume		344.61	cm ³	0.0122	ft ³ Flow Pui	Flow Pump Number		1B]			in ²	44.43	cm ²			_
Mass		653.5	g		1.44 lb Flow Pump Rate*		4.48E-04	cm ³ /sec	Volume	344.96	cm ³	0.0122	ft ³	Dry Density		pcf	
`			(Assume	d)	B - Value			0.95		Mass	659.8	g	1.45	lb	Vol. of Voids		cm ³
Dry Density 89.7 pcf			pcf		Cell Pres	95.0	psi						Vol. of Solids		cm ³		
Maiotura Contont			Back Pre			90.0	psi						Void Ratio	0.88	4		
Moss of wat comple & tors 652.5					• .	e) Pressure	5.0	psi			sture Co		1	Saturation	101.7	%	
Mass of wet sample & tare 653.5 g Mass of dry sample & tare 495.6 g			g	Max Hea			44.31	cm	Mass of wet	•		734.1	g				
-	•	tare	495.6	g	Min Hea			43.61	cm	Mass of dry		re	569.9	g			
Mass of tare			0.0	g		n Gradient		5.71	4	Mass of tare			74.3	9			
% Moisture			31.9			Gradient		5.62		% Moisture	Ī		33.1				
	FUNCTI		Δt	READING	Head	Gradient	Temp.			(cm/sec)		Note: Deaired Water Used for Permeability Test.			st.		
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R_T	@ 20 °C			DESCRIPT	ION	-		
11/08/21	6	40	-	0.62	43.61	5.62	21.2	-	-	-		NA				USCS	
11/08/21	6	50	600	0.63	44.31	5.71	21.2	1.78E-06	0.972	1.73E-06					(AST	M D2487;2488)	_
11/08/21	7	0	600	0.62	43.61	5.62	21.2	1.78E-06	0.972	1.73E-06						NA	
11/08/21	7	10	600	0.63	44.31	5.71	21.2	1.78E-06	0.972	1.73E-06	*			REMARK	S		_
11/08/21	7	20	600	0.62	43.61	5.62	21.2	1.78E-06	0.972	1.73E-06	*	Bottom	Half of the m	old was used	for testing.		
11/08/21	7	30	600	0.63	44.31	5.71	21.2	1.78E-06	0.972	1.73E-06	*						
11/08/21	7	40	600	0.62	43.61	5.62	21.2	1.78E-06	0.972	1.73E-06	*						
				_	Reported	d Average I	Hydraulic Cor	nductivity*		1.7E-06	cm/sec						
Flow pump	ID#	2	22] 1	Balance ID #	1035/1036	035/1036 Differential Pressure Me						942				
Thermomet	er ID#	796	/985		Oven ID #	496/758		Board Press	· ID#			1041					
Syringe ID	#	14	41]			=	Pore Pressu	ıre Meter I	D #			26/27				

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate is used for calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



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Mass of dry sample & tare

Mass of tare

Tested By Date

EB/KP 11/22/21

		T	EST	S, LL	C Web: www.test-llc.com	<u>1</u>			EDITED			Checked By	18	
Client Pr. #					200016			Lab. PR. #			21136-02-4	ļ	,	
Pr. Name				Tim	e Oil Terminal			S. Type	Mold	Mold Depth/Elevation				
Sample ID		39487/4-2	2		Subsample ID	4		Location	Seattle, W			4		
Add. Info	-		٨	/lixing/N	Nolding Date	10/11/21 Curing Age, Days						42		
		Α	ASTM		; Standard Test Method for		-		•		us			
				Ma	aterials Using a Flexible Wal	i Permeam	eter (Mei	hod D, Const	ant Rate of Flo	W)				
Initial S	est)		Test Dat	a Final Data (After Test)						:)				
Height	3.035 in	-	7.71	cm	Speed	10								
Diameter	2.966 in	-	7.53	cm	Board Number	6		Average Heigh	t of Sample	3.036	in	7.71 cm		
Area	6.91 in ²	2 4	44.58	cm ²	Cell Number	2		Average Diame	eter of Sample	2.967	in	7.54 cm		
Volume	343.63 cm	n ³ 0.	.0121	ft ³	Flow Pump Number	3B		Area	6.91 in ²	44.61	cm ²			
Mass	642.6 g		1.42	lb	Flow Pump Rate*	2.24E-04	cm ³ /sec	Volume	343.98 cm ³	0.0121	ft ³	Dry Density	88.8 pc	
Specific Gravity	2.700 (A	ssumed)		_	B - Value	0.95		Mass	652.3 g	1.44	lb	Vol. of Voids	162.72 cr	
Dry Density	· · · · · · · · · · · · · · · · · · ·				Cell Pressure	95.0	psi				- -	Vol. of Solids	181.26 cr	
					Back Pressure	90.0	psi					Void Ratio	0.90	
Mo	Moisture Content Confining (Effective) Pressure						psi		Moisture Co	ontent	_	Saturation	100.1 %	
Mass of wet sample & tare 642.6 g					Max Head	63.31	cm	Mass of wet sample & tare 734.8 g						

62.60

cm

Mass of tall	-		0.0	9	Maximu	ii Gradieni	0.21		Mass of tale		
% Moisture			31.3		Minimum	Gradient		8.12			
TIME	FUNCTI	ON	Δt	READING Head Grad			Temp.	PERME	ABILITY	(cm/sec)	
DATE HOUR MIN		MIN	(sec)	DP, (psi)	r, (psi) (cm)		T _x (°C)	@ T _x	R_T	@ 20 °C	
11/22/21	7	5	-	0.90	63.31	8.21	18.3	-	-	-	
11/22/21	7	15	600	0.89	62.60	8.12	18.3	6.15E-07	1.043	6.42E-07	
11/22/21	7	25	600	0.90	63.31	8.21	18.3	6.15E-07	1.043	6.42E-07	
11/22/21	7	35	600	0.89	62.60	8.12	18.3	6.15E-07	1.043	6.42E-07	*
11/22/21	7	45	600	0.90	63.31	8.21	18.3	6.15E-07	1.043	6.42E-07	*
11/22/21	7	55	600	0.89	62.60	8.12	18.3	6.15E-07	1.043	6.42E-07	*
11/22/21 8 5			600	0.90	63.31	8.21	18.3	6.15E-07	1.043	6.42E-07	*
					Reported	d Average H	Hydraulic Cor	nductivity*		6.4E-07	cm/sec

Min Head

Maximum Gradient

Note: Deaired Water Used for Permeability Test. DESCRIPTION

NA	USCS
	(ASTM D2487;2
	NA
REMARKS	<u></u>

Bottom Half of the mold was used for testing.

Flow pump ID # 475 Thermometer ID # 796/985 490 Syringe ID #

Mass of dry sample & tare

Mass of tare

Balance ID # 1035/1036 Oven ID# 496/758 Differential Pressure Meter ID # Board Pressure Meter ID #

Pore Pressure Meter ID #

262 1042 779/780

571.9

82.5 33.3

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



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Date

KP/IH 11/09/21

Checked By

11/09/21

#		21136-02-4	
е	Mold	Depth/Elev.	•
n		Seattle, WA	
	Curing Ag	28	

ASTM D 1633: Standard Test N	Methods for Compressive Strength of Molded Soil-Cement Cylinders
	METHOD B
SAMPLE DATA Initial Height, in Initial Diameter, in Height-to-Diameter Ratio Area, in ² Volume, in ³ Mass of Sample, g Wet Density, pcf Dry Density, pcf Machine Speed, in/min Strain rate, % / min 5.65 6.94 7.97 7.97 7.98 7.99 7	Mass of Dry Sample and Tare, g Mass of Tare, g Moisture, % Moisture, % 36.8
	TEST DATA
Load Cell ID # 11/10 Compression Device ID # 10/10 Balance ID # 1036/1	Readout Device ID # 10/1016
Maximum Load at Failure, lbf Specimen Cross-sectional Area, in ² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, ps	455 6.94 66 1.00 i
Note 2: * - A conversion factor based on H/D=1.15 (C.I	
USCS (AS	STM D2487: D2488)
F	REMARKS



Pr. Name

Timely
Engineering
Soil
Tests, llc

200016

Time Oil Terminal

1874 Forge Street Tucker, GA 30084

Phone: 770-938-8233

Fax: 770-923-8973

Web: www.test-llc.com



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Mold

Lab. PR. #

S. Type

Tested By

Date

21136-02-4

Depth/Elevation

EB/KP 11/09/21

Checked By

11/09/21

Sample ID 39488/4-7				Subsample ID 2			Location	on Seattle, WA									
Add. Info		-		Mi	xing/Molding Da	nte		10/12/21]		Curin	g Age, Days			28	
				ASTM D	5084; Standa	ard Test N	Method for	Measureme	ent of Hy	draulic Cor	nductivity	of Satu	rated Poro	ıs			
					-				-	hod D, Con	-						
li	nitial San	nple Dat	a (Befor	e Test)			Test Dat	a		Final Data (After Test)							
Height		3.079	in	7.82	m Speed			10	1								
Diameter			in		m Board N	umber		4		Average Hei	ght of Samp	ole	3.080	in	7.82 cm		
Area			in ²			Cell Number				Average Diameter of Sample 2.958 in				1	7.51 cm		
Volume		346.50	cm ³	0.0122 f	t ³ Flow Pur	low Pump Number				Area 6.87 in ² 44.34 cm ²							_
Mass 635.6		635.6	g	1.40 II	o Flow Pur	mp Rate*		2.24E-04	cm ³ /sec	Volume	346.85	cm ³	0.0122	ft ³	Dry Density	83.5	pcf
Specific Gravity 2.700		2.700	(Assume	d)	B - Value	Э		0.95]	Mass	642.0	g	1.42	lb	Vol. of Void	s 174.86	cm ³
Dry Density 83.6		83.6	pcf		Cell Pres	ssure		95.0	psi						Vol. of Solid	ds 171.99	cm ³
					Back Pre	essure		90.0	psi						Void Ratio	1.02	
Moisture Content			Confining	g (Effective	e) Pressure	5.0	psi	Moisture Content				•	Saturation	101.6	%		
Mass of wet sample & tare 635.6 g			Max Hea			42.20	cm	Mass of wet sample & tare 727.4 g			g						
Mass of dry sample & tare 464.3 g			Min Hea	- -		41.50	cm	Mass of dry		re	549.8	g					
Mass of tare	Э		0.0	g		n Gradient		5.39		Mass of tare			85.5	g			
% Moisture			36.9		Minimum	Gradient		5.30		% Moisture			38.3				
TIME	FUNCTI	ON	Δt	READING	Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)		Note: Deaired Water Used for Permeabilit			ermeability T	est.	
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R _T	@ 20 °C DESCRIPTION		ON	7				
11/09/21	8	5	-	0.60	42.20	5.39	20.5	-	-	-		NA				USCS	
11/09/21	8	15	600	0.59	41.50	5.30	20.5	9.44E-07	0.988	9.33E-07					(AS	TM D2487;2488))
11/09/21	8	25	600	0.60	42.20	5.39	20.5	9.44E-07	0.988	9.33E-07						NA	
11/09/21	8	35	600	0.59	41.50	5.30	20.5	9.44E-07	0.988	9.33E-07	*			REMARK	(S		
11/09/21	8	45	600	0.60	42.20	5.39	20.5	9.44E-07	0.988	9.33E-07	*	Bottom	Half of the m	old was used	d for testing.		
11/09/21	8	55	600	0.59	41.50	5.30	20.5	9.44E-07	0.988	9.33E-07	*						
11/09/21	9	5	600	0.60	42.20	5.39	20.5	9.44E-07	0.988	9.33E-07	*						
	_			_	Reported	d Average I	Hydraulic Co	nductivity*		9.3E-07	cm/sec						
Flow pump	ID#	4	75	E	Balance ID #	1035/1036		Differential F	Pressure N	Meter ID #			469				
Thermomet	er ID #	796	/985		Oven ID#	496/758		Board Press	sure Mete	· ID#			1041				
Syringe ID # 4		49	91				='	Pore Pressu	ıre Meter	D #			26/27				
*Constant Rate	of Flow Syste	em (Flow Pu	mp with Calib	- orated Syringe f	or Inflow and Calibra	ated Graduate	d Dinatta for outf	low) is capable to	maintain a	constant rate of inf	flow & outflow	through the	fully saturated sa	mple with accur	acv ±/-5% Flow	Pump Rate isus	ad for



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Tested By Date

KP/IH 11/10/21

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Checked By

Client Pr. # Pr. Name Sample ID Add. Info

200016 Time Oil Terminal Subsample 39489/4-1 1 Mixing/Molding Date 10/13/21

21136-02-4											
Mold	Depth/Elev.	-									
	Seattle, WA										
Curing A	ge, Days	28									

ASTM D 1633: Standard Test Meth	nods for Compressive Strength of Molded Soil-Cement Cylinders
	METHOD B
SAMPLE DATA Initial Height, in Initial Diameter, in Height-to-Diameter Ratio Area, in² Volume, in³ Mass of Sample, g Wet Density, pcf Dry Density, pcf Machine Speed, in/min Strain rate, % / min 5.570 1.87 6.94 1.87 38.64 1.87 1.87 1.87 1.87 1.87 1.87 1.87 1.87	WATER CONTENT DETERMINATION Mass of Wet Sample and Tare, g Mass of Dry Sample and Tare, g Mass of Tare, g Moisture, % 1443.5 1104.5 299.3 42.1
	TEST DATA
Load Cell ID # 11/1015 Compression Device ID # 10/1014 Balance ID # 1036/1037	Digital Caliper ID # 17/583 Readout Device ID # 10/1016 Oven ID # 758/496
Maximum Load at Failure, lbf Specimen Cross-sectional Area, in ² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.F9)	Failure Code 3 6.94 34 1.00 34 Failure Sketch
USCS (ASTM	Failure Type: Cone and Shear
REM	MARKS



Pr. Name

Sample ID

TIMELY Engineering Soil $Tests, \verb|llc|$

39489/4-1

200016

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Tested By Date

KP/IH 11/24/21

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Subsample

AASHIO

		Checked By	18
#		21136-02-4	
9	Mold	Depth/Elev.	•
1		Seattle, WA	
	Curing Ag	e, Days	42

Add. Info	-	Mixing/Molding Date	10/13/21		Curing Age	e, Days	42
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	oil-Cement Cyl	inders	
		METHOD	В				
Initial Height, Initial Diamete Height-to-Diar Area, in ² Volume, in ³ Mass of Samp Wet Density, pury Density, p	er, in meter Ratio ple, g pcf pcf ed, in/min	5.557 2.969 1.87 6.92 38.47 1139.8 112.9 79.2 0.050 0.90	WATER CONTE Mass of Wet Sar Mass of Dry Sar Mass of Tare, g Moisture, %	nple and Ta	re, g	1436.8 1098.0 298.4 42.4	
		TEST	DATA				
(Load Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037			al Caliper ID # ut Device ID # Oven ID #	17/583 10/1016 758/496	
Specimen Cro Compressive Conversion Fa Reported Con	ad at Failure, lbf oss-sectional Area, in ² Strength at Failure, psi actor for Height to Diamete mpressive Strength at Fa	ilure, psi	505 6.92 73 1.00 73	oor ASTM Cd'	F	3 Failure Sketo	ch
Note 2: ^ - A co	nversion factor based on H/D=	SCS (ASTM D2487: D24		er ASTM C42	Failure Type:	Cone and S	hear



Pr. Name

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Mold

Lab. PR. #

S. Type

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Date

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21136-02-4

Depth/Elevation

11/10/21

Sample ID			39489	9/4-1			Subsa	ample ID	2		Location				Seattle, WA	1		
Add. Info		-		N	/lixing/M	lolding Da	te		10/13/21				Curi	ng Age, Days			28	
				ASTM							ydraulic Co		-		ous			
					Ма	terials L	Jsing a F	lexible Wal	I Permeam	eter (Me	thod D, Cor	stant Ra	te of Fl	ow)				
lı	nitial San	nple Dat	a (Befor	e Test)				Test Dat	а				Final Data (After Test)					
Height		3.020	in	7.67	cm	Speed			8						_			
Diameter		2.962	in		cm	Board Nu	ımber		2		Average Hei	ght of Sam	ple	3.021	in	7.67	m	
Area		6.89	in ²		cm ²	Cell Num	ber		17		Average Dia	meter of S	er of Sample 2.963 in				cm	
Volume		341.01	cm ³		4	Flow Pump Number		1B		Area	6.90	in ² 44.49 cm ²						
Mass		618.8	g				np Rate*		8.96E-04	cm ³ /sec	Volume	341.35	cm ³	0.0121	ft ³	Dry Den	•	9.7 pcf
Specific Gra	•	2.700	(Assume	ed)		B - Value			0.95	_	Mass	623.4	g	1.37	lb	Vol. of V		9.93 cm ³
Dry Density 79.7 pcf		pcf			Cell Pres			95.0	psi						Vol. of S	-	1.42 cm ³	
Moisture Content				Back Pre			90.0	psi		NA -	.: 0			Void Rational		.11		
) Pressure	5.0	psi	Mana of west		isture C		n 10)4.2 %			
Mass of wet sample & tare 618.8 g				Max Head Min Head			26.73 26.03	cm	Mass of wet sample & tare 714.8 Mass of dry sample & tare 527.3			714.8	9					
Mass of tar	Mass of dry sample & tare 435.7 g Mass of tare 0.0 g					n Gradient		3.48	CIII	Mass of tare		aie	91.6	9				
% Moisture			42.0	9		Minimum			3.39	1	% Moisture			43.0	9			
TIME	FUNCTI	ION	Δt	READING	G I	Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)		Note:	Deaired Wate	er Used for P	ermeabilit	y Test.	
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R _T	@ 20 °C	1		DESCRIPT	ION			
11/10/21	6	40	-	0.38	2	26.73	3.48	20.3	-	-	-		NA				USCS	
11/10/21	6	50	600	0.37	2	26.03	3.39	20.3	5.86E-06	0.993	5.82E-06					_	(ASTM D2487	' ;2488)
11/10/21	7	0	600	0.38	2	26.73	3.48	20.3	5.86E-06	0.993	5.82E-06						NA	
11/10/21	7	10	600	0.38	2	26.73	3.48	20.3	5.78E-06	0.993	5.74E-06	*			REMARK	_		
11/10/21	7	20	600	0.37	2	26.03	3.39	20.3	5.86E-06	0.993	5.82E-06	*	Botton	n Half of the m	nold was use	d for testir	ıg.	
11/10/21	7	30	600	0.38	2	26.73	3.48	20.3	5.86E-06	0.993	5.82E-06	*						
11/10/21	7	40	600	0.37	2	26.03	3.39	20.3	5.86E-06	0.993	5.82E-06	*						
				_		Reported	Average I	Hydraulic Co	nductivity*		5.8E-06	cm/sec						
Flow pump	ID#	2	22		Balanc	e ID#	1035/1036		Differential	Pressure	Meter ID #			942				
Thermomet	er ID#	796	8/985]	Oven I	D #	496/758		Board Press	sure Mete	r ID#			64				
Syringe ID	#	1	41	_					Pore Pressu	ure Meter	ID#			26/27				
*Constant Rate	of Flow Syst	tem (Flow Pu	ump with Cal	ibrated Syring	ge for Inflo	w and Calibra	ated Graduate	ed Pipette for ou	tflow) is capable	to maintain a	a constant rate of i	nflow & outflo	w through	the fully saturated	sample with acc	uracy +/-5%.	Flow Pump R	ate isused for



Pr. Name

TIMELY Engineering Soil

200016

Time Oil Terminal

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Mold

Lab. PR. #

S. Type

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21136-02-4

Depth/Elevation

Date 11/24/21 18

Sample ID			39489	9/4-1		Subs	ample ID	4		Location		Seatt	le, WA			
Add. Info		-		Mi	xing/Molding Da	ite		10/13/21]	Cı	uring Age, Days			42	
				ASTM D	5084; Standa	ard Test I	Method for	Measurem	ent of Hy	draulic Cor	nductivity of S	aturated Porous				
					Materials l	Jsing a F	lexible Wal	I Permeam	eter (Me	thod D, Con	nstant Rate of	Flow)				
Ir	itial San	nple Data	a (Befor	e Test)			Test Data	a		Final Data (After Test)						
Height		3.100	in	7.87	cm Speed			10								
Diameter		2.970	in		m Board No	umber		20		Average Heig	ght of Sample	3.103 in	7	.88 cm		
Area		6.93	in ²		cm ² Cell Num	nber		13		Average Diar	meter of Sample	2.972 in	7	.55 cm		
Volume		351.94	cm ³	0.0124 f	t ³ Flow Pur	np Numbe	r	3B		Area	6.94 in ²	44.76 cm ²				_
Mass		636.4	g	1.40 II		•		2.24E-04	cm ³ /sec	Volume	352.75 cm ³	0.0125 ft ³		y Density		pcf
Specific Gra		2.700	(Assume	d)	B - Value			0.95		Mass	641.5 g	1.41 lb		ol. of Voids		cm ³
Dry Density	ļ	79.1	pcf		Cell Pres			95.0	psi					ol. of Solids	165.19	cm ³
					Back Pre			90.0	psi			_		oid Ratio	1.14	
Moisture Content					Confining (Effective) Pressure		5.0 45.02	psi		Moisture Content		Sa	aturation	104.2	%	
Mass of wet sample & tare 636.4 g			Max Hea	мах неаd Min Head			cm		sample & tare	762.0 g						
Mass of dry sample & tare 446.0 g				a n Gradient		40.80	cm	Mass of dry s	sample & tare	566.5 g						
Mass of tare)		0.0 42.7	9				5.71 5.18		% Moisture		120.5 g 43.8				
% Moisture						Gradient	I _				1					
	FUNCTI		Δt	READING	Head	Gradient	Temp.			(cm/sec)	Note	e: Deaired Water Use	d for Perm	eability Tes	t.	
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R _T	@ 20 °C		DESCRIPTION	-			
11/24/21	8	45	-	0.62	43.61	5.53	18.3	-	-	-	NA				USCS	
11/24/21	8	55	600	0.60	42.20	5.35	18.3	9.19E-07	1.043	9.59E-07]			(ASTN	1 D2487;2488)	_
11/24/21	9	5	600	0.64	45.02	5.71	18.3	9.05E-07	1.043	9.44E-07					NA	
11/24/21	9	15	600	0.58	40.80	5.18	18.3	9.19E-07	1.043	9.59E-07	*		EMARKS			
11/24/21	9	25	600	0.60	42.20	5.35	18.3	9.51E-07	1.043	9.92E-07	* Botte	om Half of the mold wa	as used for	r testing.		-
11/24/21	9	35	600	0.59	41.50	5.27	18.3	9.43E-07	1.043	9.83E-07	*					
11/24/21	9	45	600	0.59	41.50	5.27	18.3	9.51E-07	1.043	9.92E-07	*					
					Reported	d Average	Hydraulic Co	nductivity*		9.8E-07	cm/sec					
Flow pump	ID#	47	75] [Balance ID #	1035/1036		Differential F	Pressure I	Meter ID #	_	262				
Thermomet	er ID#	796	/985] (Oven ID #	496/758		Board Press	sure Mete	r ID#		783				
Syringe ID # 490]		Pore Pressure Meter ID				ID#		1054						

Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for



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Tested By Date

KP/IH

Checked By

11/11/21 18

 $Tests, \verb|llc|$ AASHO Web: www.test-llc.com Client Pr. # 200016 Time Oil Terminal Pr. Name 39490/4-63 Subsample Sample ID Mixing/Molding Date Add. Info 10/14/21

#		21136-02-4	
е	Mold	Depth/Elev.	•
n		Seattle, WA	
	Curing Ag	28	

	Ü		<u> </u>	· · · · · · · · · · · · · · · · · · ·
ASTM D 1633: Standard Test Met	hods for Com	pressive Strength	of Molded Soil-Cement Cy	linders
	METHOD	В		
SAMPLE DATA		WATER CONTE	NT DETERMINATION	
Initial Height, in 5.577	7	Mass of Wet Sar	nple and Tare, g	1560.9
Initial Diameter, in 2.977		Mass of Dry Sam	ple and Tare, g	1280.3
Height-to-Diameter Ratio 1.87		Mass of Tare, g		360.1
Area, in ² 6.96		Moisture, %		30.5
Volume, in ³ 38.82				
Mass of Sample, g 1202.1				
Wet Density, pcf 118.0				
Dry Density, pcf 90.4				
Machine Speed, in/min 0.050				
Strain rate, % / min 0.90	_			
	TEST	DATA		
Load Cell ID # 11/1015			Digital Caliper ID #	17/583
Compression Device ID # 10/1014			Readout Device ID #	10/1016
Balance ID # 1036/1037	7		Oven ID #	758/496
Maximum Load at Failure, lbf		551		
Specimen Cross-sectional Area, in ²		6.06	Failure Code	3
Compressive Strength at Failure, psi		6.96 79		
Conversion Factor for Height to Diameter Ratio		1.00		
Reported Compressive Strength at Failure, psi		79		Failure Sketch
Note 2: * - A conversion factor based on H/D=1.15 (C.F]]]			T andre okcien
	RIPTION	na add. correction p	iei ASTIVI C42)	/
5230	11011			🗶
			Failure Type:	
				Cone and Shear
USCS (ASTN	И <u>D2487: D24</u>	88)		
REI	MARKS			
	-			



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Tested By Date

EB/KP 11/11/21

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21136-02-4

18

Time Oil Terminal S. Type Depth/Elevation Pr. Name Mold 39490/4-63 Subsample ID 2 Seattle, WA Sample ID Location Mixing/Molding Date 10/14/21 Add. Info Curing Age, Days 28 ASTM D 5084: Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow) **Initial Sample Data (Before Test) Test Data** Final Data (After Test) 3.070 lin 10 Height 7.80 Speed cm Diameter 2.954 7.50 5 3.071 cm **Board Number** Average Height of Sample cm² 6.85 44.22 Cell Number 2 Average Diameter of Sample 2.955 7.51 cm Area cm³ ft³ cm² 344.79 0.0122 6.86 44.25 Volume Flow Pump Number 3A Area cm³/sec cm³ 658.8 2.24E-04 345.13 0.0122 Mass 1.45 Flow Pump Rate* Volume Dry Density 91.4 pcf Specific Gravity 2.700 (Assumed) B - Value 0.95 Mass 669.5 1.48 Vol. of Voids 157.82 lcm³ Dry Density 91.5 pcf Cell Pressure 95.0 Vol. of Solids 187.32 psi 90.0 psi Void Ratio Back Pressure 0.84 **Moisture Content Moisture Content** Confining (Effective) Pressure 5.0 psi Saturation 103.8 Mass of wet sample & tare Max Head 59.79 Mass of wet sample & tare 751.4 658.8 cm 59.09 587.7 Mass of dry sample & tare 505.6 Min Head Mass of dry sample & tare cm Maximum Gradient 7.66 Mass of tare 0.0 Mass of tare 82.1 % Moisture 30.3 Minimum Gradient 7.57 % Moisture 32.4 TIME FUNCTION Δt READING Head Gradient Temp. PERMEABILITY (cm/sec) Note: Deaired Water Used for Permeability Test. T_v(°C) @ 20 °C DATE **HOUR** MIN DP. (psi) (cm) @ T. R_{T} (sec) DESCRIPTION NA 9 5 59.79 20.3 11/11/21 0.85 7.66 USCS 9 15 600 0.84 59.09 7.57 20.3 6.64E-07 0.993 6.60E-07 (ASTM D2487:2488) 11/11/21 9 25 600 0.85 59.79 7.66 20.3 6.64E-07 0.993 6.60E-07 11/11/21 NA 9 35 600 0.84 59.09 7.57 20.3 6.64E-07 0.993 6.60E-07 11/11/21 **REMARKS** Bottom Half of the mold was used for testing 9 45 0.85 59.79 7.66 20.3 6.64E-07 0.993 6.60E-07 11/11/21 600 9 55 600 0.84 59.09 7.57 20.3 6.64E-07 0.993 6.60E-07 11/11/21 5 11/11/21 10 600 0.85 59.79 7.66 20.3 6.64E-07 0.993 6.60E-07 Reported Average Hydraulic Conductivity* 6.6E-07 cm/sec 475 Differential Pressure Meter ID # Flow pump ID # Balance ID # 1035/1036 469 Thermometer ID # 796/985 Oven ID# 496/758 Board Pressure Meter ID # 1042 491 779/780 Syringe ID # Pore Pressure Meter ID #

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for



TIMELY Engineering Soil $T{\hbox{\footnotesize\rm ESTS}}, {\hbox{\footnotesize\rm LLC}}$

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Fax: 770-923-8973

Tested By Date

KP/IH 11/12/21

18

Web: www.test-llc.com

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Checked By Lab. PR. # 21136-02-4 Mold Depth/Elev. S. Type -Location Seattle, WA

Client Pr. # 200016 Time Oil Terminal Pr. Name Sample ID 39491/4-58 Subsample

Add. Info	-	Mixing/Molding Date	10/15/21		Curing Age, Days	28
	ASTM D 1633: Standa	ard Test Methods for Com	pressive Strength	of Molded So	oil-Cement Cylinders	
		METHOD	В			
Initial Height Initial Diame Height-to-Dia Area, in ² Volume, in ³ Mass of Sam Wet Density, Dry Density, Machine Spe	ter, in ameter Ratio nple, g , pcf pcf	5.673 2.980 1.90 6.97 39.57 1231.5 118.6 90.7 0.050	B WATER CONTE Mass of Wet Sar Mass of Dry Sar Mass of Tare, g Moisture, %	mple and Tar	re, g 1591.1	
Strain rate, %	% / min	0.88				
		TEST	DATA			
	Load Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037			al Caliper ID # 17/583 ut Device ID # 10/1016 Oven ID # 758/496	
Maximum Lo	oad at Failure, lbf		641		Failure Code 3	\neg
Compressive Conversion I Reported Co	ross-sectional Area, in ² e Strength at Failure, psi Factor for Height to Diamete ompressive Strength at Fa conversion factor based on H/De	ilure, psi	6.97 92 1.00 92		Failure Sk	etch
Note 2 A C	onversion factor based on Fixe-	DESCRIPTION	nd add. correction p		Failure Type:	Shear
	U	SCS (ASTM D2487: D24	88)			
		REMARKS			_	



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Tested By Date

EB/KP 11/12/21

		TESTS, LLC	Web: www.test-llc.com	<u>1</u>		REDITED		Checked By	18	
Client Pr. #		200016 Lab. PR. # 21136-02-4								
r. Name		Time Oil Term	inal		S. Type	Mold Depth/Elevation -				
Sample ID		39491/4-58	Subsample ID	2	Location Seattle, W.					
dd. Info	-	Mixing/Molding Dat	te	10/15/21		Curing Age, Days			28	
	ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)									

	Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)															
li	nitial Sar	nple Dat	a (Befor	e Test)			Test Data	a				i	Final Data (After Test)	
Height		3.070	in	7.80 cr	m Speed			10	1							
Diameter		2.968	in	7.54 cr	m Board Nu	umber		9		Average Hei	ght of Sami	ole	3.071	in	7.80 cm	
Area			in ²	44.64 cr	m² Cell Num	ber		37		Average Dia			2.969	in	7.54 cm	
Volume		348.06	cm ³	0.0123 ft ²	Flow Pur	np Numbei		1A		Area	6.92	in ²		cm ²	<u> </u>	
Mass		656.0	g	1.45 lb		•		2.24E-04	cm ³ /sec	Volume	348.41	cm ³	0.0123	ft ³	Dry Density	90.1 pcf
Specific Gra	avity	2.700	(Assume	d)	B - Value			0.95	1	Mass	662.8	g	1.46	lb	Vol. of Voids 1	61.98 cm ³
Dry Density	,	90.2	pcf		Cell Pres	sure		95.0	psi			_		•	Vol. of Solids 1	86.43 cm ³
			Back Pre	ssure		90.0	psi						Void Ratio	0.87		
	Moisture Content Confining (Effective) Press) Pressure	5.0	psi		Moi	sture Co	ntent	_	Saturation	98.4 %
				Max Hea	d		52.76	cm	Mass of wet	sample & ta	are	729.9	g			
Mass of dry sample & tare 503.2 g			Min Head	b		52.05	52.05 cm Mass of dry sample & t		sample & ta	ıre	570.5	g				
Mass of tare	е		0.0	g	Maximun	n Gradient		6.76		Mass of tare			67.3	g		
% Moisture			30.4		Minimum	Gradient		6.67		% Moisture			31.7			
TIME	FUNCT	ION	Δt	READING	Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)		Note: D	eaired Wate	r Used for P	ermeability Test.	
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R_T	@ 20 °C			DESCRIPTI	ON	_	
11/12/21	6	10	-	0.75	52.76	6.76	21.0	-	-	-		NA			USC	S
11/12/21	6	20	600	0.74	52.05	6.67	21.0	7.46E-07	0.976	7.29E-07					(ASTM D24	87;2488)
11/12/21	6	30	600	0.75	52.76	6.76	21.0	7.46E-07	0.976	7.29E-07					NA	
11/12/21	6	40	600	0.74	52.05	6.67	21.0	7.46E-07	0.976	7.29E-07	*			REMARI	KS	
11/12/21	6	50	600	0.75	52.76	6.76	21.0	7.46E-07	0.976	7.29E-07	*	Bottom	Half of the m	old was use	d for testing.	
11/12/21	7	0	600	0.74	52.05	6.67	21.0	7.46E-07	0.976	7.29E-07	*					
11/12/21	7	10	600	0.75	52.76	6.76	21.0	7.46E-07	0.976	7.29E-07	*					
		•	•		Reported	l Average I	Hydraulic Cor	nductivity*	•	7.3E-07	cm/sec					•
Flow pump	ID#	2	22	В	alance ID#	1035/1036		Differential I	Pressure N	Meter ID #	•		1107			
Thermomet	er ID#	796	/985	0	ven ID#	496/758		Board Press	sure Meter	· ID#			571			
Syringe ID	#	1	40					Pore Pressu	ıre Meter I	D #			29			

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



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Tested By Date

Seattle, WA

KP/IH 11/13/21

-

Lab. PR. #

Mold

18 Checked By 21136-02-4 Depth/Elev.

Client Pr. # 200016 Pr. Name Time Oil Terminal 39492/4-44 Sample ID Add Info

S. Type Subsample Location 10/16/21

Sample ID	39492/4-44	Subsample	1	Location	Seattle, WA	
Add. Info	-	Mixing/Molding Date	10/16/21		Curing Age, Days	28
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded S	oil-Cement Cylinders	
		METHOD	В]		
		WETHOD	В	J		
	SAMPLE DATA		WATER CONTE	NT DETERM	MINATION	
Initial Heigh	t, in	5.604	Mass of Wet Sar	mple and Ta	re, g 1544.1	I
Initial Diame		2.970	Mass of Dry San			I
Height-to-Di	ameter Ratio	1.89	Mass of Tare, g		334.5	I
Area, in ²		6.93	Moisture, %		31.4	I
Volume, in ³		38.82				
Mass of Sar	nple, g	1211.3				
Wet Density		118.9				
Dry Density,	, pcf	90.4				
Machine Sp		0.050				
Strain rate, 6	% / min	0.89				
		TEST	DATA			
						1
	Load Cell ID #	11/1015			al Caliper ID # 17/583	1
	Compression Device ID #	10/1014		Reado	ut Device ID # 10/1016	1
	Balance ID #	1036/1037			Oven ID # 758/496	
Maximum Lo	oad at Failure, lbf		365			
	2				Failure Code 3	I
	Cross-sectional Area, in ²		6.93			I
-	e Strength at Failure, psi		53			
	Factor for Height to Diameter		1.00			
Reported C	compressive Strength at Fa	ilure, psi	53		Failure Sket	ch
Note 2: * - A	conversion factor based on H/D=	The state of the s	nd add. correction μ	oer ASTM C42	2)	
		DESCRIPTION			. /	I
						I
						1
					Failure Type:	vi
		SCS (ASTM D2487: D24	188)		Cone and S	near
	U.	DZ401. DZ4]			
			J			
		REMARKS			_	



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Pr. Name	ame		Time Oil Ter	ne Oil Terminal			S. Type	Mo	ld	Depth/E	levation		-				
Sample ID			39492	/4-44		Subs	ample ID	2		Location	ı	Seattle, WA					
Add. Info		-		N	ixing/Molding D	ate		10/16/21]		Curinç	g Age, Days			28	
				ASTM I	0 5084; Stand Materials				•	draulic Cor	•			ıs			
I	nitial Sar	nple Dat	a (Before	e Test)			Test Dat	а				F	inal Data (After Test)			
Height		3.038	in	7.72	cm Speed			10	1								
Diameter		2.961	in	7.52	cm Board N	lumber		4	1	Average Hei	ght of Samp	ole	3.039	in	7.72 cm		
Area		6.89	in ²	44.43	cm ² Cell Nu	mber		37	1	Average Dia	meter of Sa	mple		in	7.52 cm		
Volume		342.81	cm ³	0.0121	ft ³ Flow Pu	ımp Numbe	r	2B		Area	6.89	in ²		cm ²			_
Mass		647.1	g	1.43	lb Flow Pu	ımp Rate*		2.24E-04	cm ³ /sec	Volume	343.16	cm ³	0.0121	ft ³	Dry Density	89.8	pcf
Specific Gra	avity	2.700	(Assume	d)	B - Valu	ie		0.95		Mass	654.3	g	1.44	lb	Vol. of Voids	160.24	cm ³
Dry Density	•	89.9	pcf		Cell Pre	essure		95.0	psi						Vol. of Solids	182.92	cm ³
				Back Pressure			psi				Void Ratio	0.88	_				
Moss of wat comple 8 tars 647.4					ng (Effective	e) Pressure	5.0	psi					Saturation	100.1	%		
Mass of wet sample & tare 647.1 g			Max He			66.82	cm	Mass of wet				g					
Mass of dry sample & tare 493.8 g			Min Hea			66.12	cm	Mass of dry		re	578.2	g					
Mass of tar	е		0.0	g		m Gradient		8.66		Mass of tare				g			
% Moisture			31.0			Minimum Gradient		8.57		% Moisture	1		32.5				
TIME	FUNCTI	ION	Δt	READING	Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)		Note: D	eaired Water	r Used for Pe	ermeability Test	t.	
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R_T	@ 20 °C			DESCRIPTION	ON	•		
11/13/21	7	5	-	0.95	66.82	8.66	20.5	-	-	-		NA			į	USCS	
11/13/21	7	15	600	0.94	66.12	8.57	20.5	5.85E-07	0.988	5.78E-07					(ASTM	I D2487;2488)	<u> </u>
11/13/21	7	25	600	0.95	66.82	8.66	20.5	5.85E-07	0.988	5.78E-07						NA	
11/13/21	7	35	600	0.95	66.82	8.66	20.5	5.82E-07	0.988	5.75E-07	*			REMARK			_
11/13/21	7	45	600	0.94	66.12	8.57	20.5	5.85E-07	0.988	5.78E-07	*	Bottom	Half of the mo	old was used	I for testing.		
11/13/21	7	55	600	0.95	66.82	8.66	20.5	5.85E-07	0.988	5.78E-07	*						
11/13/21	8	5	600	0.94	66.12	8.57	20.5	5.85E-07	0.988	5.78E-07	*						
					Reporte	ed Average I	Hydraulic Co	nductivity*		5.8E-07	cm/sec						
Flow pump ID # 244 Balance ID # 1035/10			1035/1036		Differential F	Pressure N	Meter ID #			587							
Thermometer ID # 796/985 Oven ID #		496/758		Board Press	ure Meter	· ID#			1041								
Syringe ID # 246				-	Pore Pressu	ıre Meter I	D #			26/27							

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for



Timely Engineering Soil

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Date

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Client Pr. #

Pr. Name

Sample ID

Add. Info

Time Oil Terminal

Subsample 1

Mixing/Molding Date

10/18/21

. #		21136-02-4	
ре	Mold	Depth/Elev.	•
on		Seattle, WA	
	Curing Ag	e, Days	28

Add. Info	-	Mixing/Molding Date	10/18/21		Curing Ag	ge, Days	28
	ASTM D 1633: Standa	ard Test Methods for Com	pressive Strength	of Molded S	oil-Cement Cy	linders	
		METHOD	В				
Initial Height Initial Diame Height-to-Dia Area, in ² Volume, in ³ Mass of San Wet Density, Dry Density, Machine Spe	ter, in ameter Ratio nple, g , pcf pcf	5.658 2.970 1.91 6.93 39.20 1201.4 116.8 88.1 0.050	WATER CONTE Mass of Wet Sar Mass of Dry Sar Mass of Tare, g Moisture, %	nple and Ta	re, g	1502.7 1208.3 303.6 32.5	
Strain rate, %		0.88					
		TEST	T DATA				
	Load Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037			al Caliper ID # ut Device ID # Oven ID #	10/1016	
Specimen C Compressive	oad at Failure, lbf ross-sectional Area, in ² e Strength at Failure, psi Factor for Height to Diamete	er Ratio	531 6.93 77 1.00		Failure Code	3	
Reported Co	ompressive Strength at Fa	ilure, psi	77	oer ASTM C42	2)	Failure Sketc	h
		JSCS (ASTM D2487: D24	100)		Failure Type:	Cone and Sh	near
	C	03C3 (A3TW D2467. D24]				
		REMARKS	-				



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21136-02-4

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Time Oil Terminal S. Type Depth/Elevation Pr. Name Mold 39493/4-60 Subsample ID 2 Seattle, WA Sample ID Location Mixing/Molding Date 10/18/21 Add. Info Curing Age, Days 28 ASTM D 5084: Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow) **Initial Sample Data (Before Test) Test Data** Final Data (After Test) 3.043 7.73 10 Height Speed cm Diameter 2.967 7.54 3 3.044 cm **Board Number** Average Height of Sample 44.61 cm² 6.91 Cell Number 2 Average Diameter of Sample 2.968 Area cm³ cm² 344.77 0.0122 1B 6.92 44.64 Volume Flow Pump Number Area cm³/sec cm³ 638.3 2.24E-04 0.0122 Mass 1.41 Flow Pump Rate* Volume 345.11 Dry Density 87.4 pcf Specific Gravity 2.700 (Assumed) B - Value 0.95 Mass 649.4 1.43 Vol. of Voids 166.10 lcm³ Dry Density 87.5 pcf Cell Pressure 95.0 Vol. of Solids 179.02 psi Back Pressure 90.0 psi Void Ratio 0.93 **Moisture Content Moisture Content** Confining (Effective) Pressure 5.0 psi Saturation 100.0 Mass of wet sample & tare Max Head 77.37 Mass of wet sample & tare 733.6 638.3 cm Mass of dry sample & tare 483.2 Min Head 76.67 Mass of dry sample & tare 567.6 cm Maximum Gradient 10.01 Mass of tare 0.0 Mass of tare 84.4 % Moisture 32.1 Minimum Gradient 9.92 % Moisture 34.4 TIME FUNCTION Δt READING Head Gradient Temp. PERMEABILITY (cm/sec) Note: Deaired Water Used for Permeability Test. T_v(°C) @ 20 °C DATE **HOUR** MIN DP. (psi) (cm) @ T. R_{T} (sec) DESCRIPTION NA 7 5 77.37 11/15/21 1.10 10.01 18.6 USCS 7 15 600 1.09 76.67 9.92 18.6 5.04E-07 1.036 5.22E-07 (ASTM D2487:2488) 11/15/21 7 25 600 77.37 10.01 18.6 5.04E-07 1.036 5.22E-07 11/15/21 1.10 NA 7 35 600 1.09 76.67 9.92 18.6 5.04E-07 1.036 5.22E-07 11/15/21 **REMARKS** Bottom Half of the mold was used for testing 7 45 1.09 9.92 18.6 5.06E-07 1.036 5.24E-07 11/15/21 600 76.67 7 55 600 1.10 77.37 10.01 18.6 5.04E-07 1.036 5.22E-07 11/15/21 5 11/15/21 8 600 1.10 77.37 10.01 18.6 5.01E-07 1.036 5.19E-07 Reported Average Hydraulic Conductivity* 5.2E-07 cm/sec Differential Pressure Meter ID # Flow pump ID # 22 Balance ID # 1035/1036 942 Thermometer ID # 796/985 Oven ID# 496/758 Board Pressure Meter ID # 1041 Pore Pressure Meter ID # 26/27 Syringe ID # 141

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for



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Client Pr. # Pr. Name Sample ID 200016

Time Oil Terminal

39494/4-53 Subsample 1

Mixing/Molding Date 10/19/21

	21136-02-4	
Mold	Depth/Elev.	•
Curing Ag	e, Days	28

Add. Info	-	Mixing/Molding Date	10/19/21		Curing Age, Days	28
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	oil-Cement Cylinders	
		METHOD	В			
Area, in ² Volume, in ³ Mass of Sar Wet Density Dry Density, Machine Sp	eter, in ameter Ratio mple, g y, pcf pcf eed, in/min	5.588 2.973 1.88 6.94 38.79 1179.7 115.9 87.2 0.050	MATER CONTE Mass of Wet Sar Mass of Dry Sam Mass of Tare, g Moisture, %	mple and Ta	re, g 1484.3]
Strain rate, ^c	% / min	0.89				
		TEST	T DATA			
	Load Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037			al Caliper ID # 17/583 ut Device ID # 10/1016 Oven ID # 758/496]
Specimen C	oad at Failure, lbf cross-sectional Area, in ² e Strength at Failure, psi	. Desir	6.94 118		Failure Code 3]
	Factor for Height to Diameter compressive Strength at Fai		1.00 118		Failure Ske	etch
_	conversion factor based on H/D=	· -				
	U	SCS (ASTM D2487: D24	188)		-	
			J			
		REMARKS				



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18 Checked By ACCREDITED Lab. PR. # 21136-02-4 S. Type Depth/Elevation Mold

Client Pr. 200016 Time Oil Terminal Pr. Name 39494/4-53 Subsample ID 2 Seattle, WA Sample ID Location Mixing/Molding Date 10/19/21 Add. Info Curing Age, Days 28 ASTM D 5084: Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow) **Initial Sample Data (Before Test) Test Data Final Data (After Test)** 3.005 10 Height 7.63 Speed cm Diameter 2.957 7.51 3 3.006 cm **Board Number** Average Height of Sample 6.87 44.31 cm² Cell Number 17 Average Diameter of Sample 2.958 Area 0.0119 ft³ cm³ cm² 2A 6.87 44.34 Volume 338.17 Flow Pump Number Area cm³/sec cm³ 632.4 2.24E-04 338.51 0.0120 Mass 1.39 Flow Pump Rate* Volume Dry Density 88.1 pcf Specific Gravity 2.700 (Assumed) B - Value 0.95 Mass 643.1 1.42 Vol. of Voids 161.58 lcm³ Dry Density 88.1 pcf Cell Pressure 95.0 Vol. of Solids 176.93 psi Back Pressure 90.0 psi Void Ratio 0.91 **Moisture Content Moisture Content** Confining (Effective) Pressure 5.0 psi Saturation 102.4 Mass of wet sample & tare Max Head 49.94 Mass of wet sample & tare 727.1 632.4 cm 49.24 Mass of dry sample & tare 477.5 Min Head Mass of dry sample & tare 561.8 cm Maximum Gradient 6.54 Mass of tare 0.0 Mass of tare 84.3 % Moisture 32.4 Minimum Gradient 6.45 % Moisture 34.6 TIME FUNCTION Δt READING Head Gradient Temp. PERMEABILITY (cm/sec) Note: Deaired Water Used for Permeability Test. T_v(°C) @ 20 °C DATE **HOUR** MIN DP, (psi) (cm) @ T. R_{T} (sec) DESCRIPTION NA 8 5 49.24 6.45 19.6 11/16/21 0.70 USCS 8 15 600 0.71 49.94 6.54 19.6 7.78E-07 1.010 7.86E-07 (ASTM D2487:2488) 11/16/21 8 25 600 0.70 49.24 6.45 19.6 7.78E-07 1.010 7.86E-07 11/16/21 NA 8 35 600 0.71 49.94 6.54 19.6 7.78E-07 7.86E-07 11/16/21 1.010 **REMARKS** Bottom Half of the mold was used for testing 8 45 0.70 49.24 6.45 19.6 7.78E-07 7.86E-07 11/16/21 600 1.010 8 55 600 0.71 49.94 6.54 19.6 7.78E-07 1.010 7.86E-07 11/16/21 5 11/16/21 600 0.70 49.24 6.45 19.6 7.78E-07 1.010 7.86E-07 Reported Average Hydraulic Conductivity* 7.9E-07 cm/sec Differential Pressure Meter ID # Flow pump ID # 244 Balance ID # 1035/1036 346 Thermometer ID # 796/985 Oven ID# 496/758 Board Pressure Meter ID # 1041 245 Pore Pressure Meter ID # 26/27 Syringe ID

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



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Client Pr. # Pr. Name Sample ID Add. Info

21136-02-5		
Mold	Depth/Elev.	•
Seattle, WA		
Curing Age, Days		28

ASTM D 1633: Standard Test Me	thods for Compressive Strength of Molded Soil-Cement Cylinders
	METHOD B
SAMPLE DATA Initial Height, in Initial Diameter, in Height-to-Diameter Ratio Area, in² Volume, in³ Mass of Sample, g Wet Density, pcf Dry Density, pcf Machine Speed, in/min Strain rate, % / min 5.658 5.658 1.92 2.968 4.92 2.968 4.91 1.91 2.968 4.92 4.92 4.92 4.93 5.93 6.92 4.92 6.92 4.92 6.92 6.92 6.92 6.92 6.92 6.92 6.92 6	WATER CONTENT DETERMINATION Mass of Wet Sample and Tare, g Mass of Dry Sample and Tare, g Mass of Tare, g Moisture, % 1527.5 1262.5 1262.5 27.6
	TEST DATA
Load Cell ID # 11/1015 Compression Device ID # 10/1014 Balance ID # 1036/103	Readout Device ID # 10/1016
Maximum Load at Failure, lbf Specimen Cross-sectional Area, in ² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi	683 Failure Code 3 99 1.00 99 Failure Sketch
USCS (AST	Poss as 100% and add. correction per ASTM C42) CRIPTION Failure Type: Cone and Shear MARKS



Client Pr. #

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18

Pr. Name		Time Oil Terminal					S. Type	Мо	ld	Depth/l	Elevation		-				
Sample ID			39560	/4-46		Subs	ample ID	2		Location				Seattle, WA			
Add. Info		-		М	ixing/Molding [ate		10/20/21]		Curing	g Age, Days			28	
				ASTM D	5084; Stand Materials				-	draulic Cor	-			us			
lı	nitial San	nple Dat	a (Before	e Test)			Test Data	a				F	inal Data	(After Test)		•	
Height		3.010 in 7.65 cm Speed 10				10	1										
Diameter		2.965	in	7.53	cm Board I	Number		4	1	Average Hei	ght of Samp	ole	3.011	in	7.65 cm		
Area			in ²	44.55	cm ² Cell Nu	mber		41		Average Dia			2.966	in	7.53 cm		
Volume		340.57	cm ³	0.0120	ft ³ Flow P	ump Numbe	r	2B		Area	6.91	in ²		cm ²			_
Mass		648.1	g	1.43	b Flow P	ump Rate*		2.24E-04	cm ³ /sec	Volume	340.91	cm ³	0.0120	ft ³	Dry Density	92.9	pcf
Specific Gra		2.700	(Assume	d)	B - Val			0.95		Mass	661.7	g	1.46	lb	Vol. of Voids	152.85	
Dry Density		93.0	pcf		Cell Pr			95.0	psi						Vol. of Solids		cm ³
Moisture Content			Back P			90.0 5.0	psi						Void Ratio	0.81	_		
				1		Confining (Effective) Pressure			psi						Saturation	100.7	%
Mass of wet sample & tare 648.1 g			Max He			82.30	cm	Mass of wet	•		744.0	g					
Mass of dry sample & tare 507.4 g			Min He			81.59	cm	Mass of dry	•	re	590.2	9					
Mass of tare 0.0 g				ım Gradient		10.76	ł	Mass of tare			82.8	g					
% Moisture			27.7		T	m Gradient	_	10.67		% Moisture	1		30.3				
	FUNCTI		Δt	READING	Head	Gradient	Temp.		1	(cm/sec)	_	Note: D	eaired Wate	er Used for Pe	ermeability Tes	t.	
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R_T	@ 20 °C	_		DESCRIPT	ION	7		
11/17/21	8	5	-	1.17	82.30	10.76	19.6	-	-	-		NA				USCS	
11/17/21	8	15	600	1.16	81.59	10.67	19.6	4.69E-07	1.010	4.74E-07					(ASTN	M D2487;2488	.)
11/17/21	8	25	600	1.17	82.30	10.76	19.6	4.69E-07	1.010	4.74E-07						NA	
11/17/21	8	35	600	1.16	81.59	10.67	19.6	4.69E-07	1.010	4.74E-07	*	REMARKS			_		
11/17/21	8	45	600	1.17	82.30	10.76	19.6	4.69E-07	1.010	4.74E-07	*	Bottom Half of the mold was used for testing.					
11/17/21	8	55	600	1.16	81.59	10.67	19.6	4.69E-07	1.010	4.74E-07	*						
11/17/21	9	5	600	1.17	82.30	10.76	19.6	4.69E-07	1.010	4.74E-07	*						
					Report	ed Average I	Hydraulic Cor	nductivity*		4.7E-07	cm/sec						
Flow pump	ID#	24	44]	Balance ID#	1035/1036		Differential F	Pressure N	/leter ID #	_		587				
Thermomet	er ID#	796	/985] (Oven ID#	496/758		Board Press	sure Meter	· ID#			1041				
Syringe ID	#	24	46]			•	Pore Pressu	ıre Meter I	D #		26/27					

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for

calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



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KP/IH 11/18/21

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18 Checked By 21136-02-4 Depth/Elev. -Seattle, WA

Client Pr. # 200016 Pr. Name Time Oil Terminal Sample ID 39561/4-20 Subsample

Lab. PR. # S. Type Location

Mold

Add. Info -	Mixing/Molding Date	10/21/21	Cur	ing Age, Days	28
ASTM D 1633: S	Standard Test Methods for Com	pressive Strength	of Molded Soil-Ceme	nt Cylinders	
	METHOD	В			
SAMPLE DATA Initial Height, in Initial Diameter, in Height-to-Diameter Ratio Area, in ² Volume, in ³ Mass of Sample, g Wet Density, pcf Dry Density, pcf Machine Speed, in/min Strain rate, % / min	5.611 2.981 1.88 6.98 39.16 1179.2 114.7 85.3 0.050 0.89			1438.0 1135.9 259.9 34.5	
	TES	DATA			
Load Cell ID # Compression Device Balance ID #	ID # 10/1014 1036/1037		Digital Calipe Readout Device Over		
Maximum Load at Failure, lbf Specimen Cross-sectional Area, in Compressive Strength at Failure, p Conversion Factor for Height to Dia Reported Compressive Strength	osi ameter Ratio	1602 6.98 230 1.00 230	Failure (Code 3 Failure Sket	ch
Note 2: * - A conversion factor based o	· · · · · · · · · · · · · · · · · · ·	nd add. correction p	per ASTM C42) Failure		
	REMARKS				
	KEWAKKS				



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Date

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Client Pr. 200016 Lab. PR. # 21136-02-4 Time Oil Terminal S. Type Depth/Elevation Pr. Name Mold 39561/4-20 Subsample ID 2 Seattle, WA Sample ID Location Mixing/Molding Date 10/21/21 Add. Info Curing Age, Days 28 ASTM D 5084: Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow) **Initial Sample Data (Before Test) Test Data** Final Data (After Test) 3.065 12 Height 7.79 Speed cm Diameter 7.53 12 3.066 2.963 cm **Board Number** Average Height of Sample 6.90 44.49 cm² Cell Number 13 Average Diameter of Sample 2.964 7.53 cm Area cm³ cm² 346.33 0.0122 2A 6.90 44.52 Volume Flow Pump Number Area cm³/sec cm³ 642.5 5.60E-05 0.0122 85.9 Mass 1.42 Flow Pump Rate* Volume 346.67 Dry Density pcf Specific Gravity 2.700 (Assumed) B - Value 0.95 Mass 649.5 1.43 Vol. of Voids 169.88 lcm³ Dry Density 86.0 pcf Cell Pressure 95.0 Vol. of Solids 176.80 psi Back Pressure 90.0 psi Void Ratio 0.96 **Moisture Content Moisture Content** Confining (Effective) Pressure 5.0 psi Saturation 101.3 Mass of wet sample & tare 642.5 Max Head 52.76 Mass of wet sample & tare 731.9 cm 52.05 559.8 Mass of dry sample & tare 477.2 Min Head Mass of dry sample & tare cm Maximum Gradient Mass of tare 0.0 6.77 Mass of tare 82.6 % Moisture 34.6 Minimum Gradient 6.68 % Moisture 36.1 TIME FUNCTION Δt READING Head Gradient Temp. PERMEABILITY (cm/sec) Note: Deaired Water Used for Permeability Test. T_v(°C) @ 20 °C DATE **HOUR** MIN DP. (psi) (cm) @ T. R_{T} (sec) DESCRIPTION NA 9 5 52.05 20.0 11/18/21 0.74 6.68 USCS 9 15 600 0.75 52.76 6.77 20.0 1.87E-07 1.000 1.87E-07 (ASTM D2487:2488) 11/18/21 9 25 600 0.74 52.05 6.68 20.0 1.87E-07 1.000 1.87E-07 11/18/21 NA 9 35 600 0.75 52.76 6.77 20.0 1.87E-07 1.000 1.87E-07 11/18/21 **REMARKS** Bottom Half of the mold was used for testing 9 45 0.74 52.05 6.68 20.0 1.87E-07 1.000 1.87E-07 11/18/21 600 9 55 600 0.75 52.76 6.77 20.0 1.87E-07 1.000 1.87E-07 11/18/21 5 11/18/21 10 600 0.74 52.05 6.68 20.0 1.87E-07 1.000 1.87E-07 Reported Average Hydraulic Conductivity* 1.9E-07 cm/sec Differential Pressure Meter ID # Flow pump ID # 244 Balance ID # 1035/1036 346 776 Thermometer ID # 796/985 Oven ID# 496/758 Board Pressure Meter ID # 245 26/27 Syringe ID # Pore Pressure Meter ID #

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for

calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



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KP/IH 11/19/21

Client Pr. # Pr. Name Sample ID Add. Info

200016								
Т	ime Oil Termi	nal						
39562/4-22		1						
-	Mixing/Mo	10/22/21						

Lab. PR. # S. Type Location

21136-02-5								
Mold Depth/Elev								
Seattle, WA								
Curing Age, Days 28								

ASTM D 1633: Standard Test Methods for Compressive Strength of Molded Soil-Cement Cylinders								
	METHOD B							
SAMPLE DATA Initial Height, in Initial Diameter, in Height-to-Diameter Ratio Area, in² Volume, in³ Mass of Sample, g Wet Density, pcf Dry Density, pcf Machine Speed, in/min Strain rate, % / min S.674 1.91 6.94 1.91 39.36 1202.2 116.4 87.2 Machine Speed, in/min 0.88	WATER CONTENT DETERMINATION Mass of Wet Sample and Tare, g Mass of Dry Sample and Tare, g Mass of Tare, g Moisture, % 1408.8 1108.6 208.6 33.4							
	TEST DATA							
Load Cell ID # 11/1015 Compression Device ID # 10/1014 Balance ID # 1036/1037	Digital Caliper ID # 17/583 Readout Device ID # 10/1016 Oven ID # 758/496							
Maximum Load at Failure, lbf Specimen Cross-sectional Area, in ² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi	2332 6.94 336 1.00 336 Failure Code 3 Failure Sketch							
Note 2: * - A conversion factor based on H/D=1.15 (C.F9 DESCI								
<u>L</u>								



Client Pr. #

Pr. Name

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200016

Time Oil Terminal

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Mold

Lab. PR. #

S. Type

Tested By
Date

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21136-02-5

Depth/Elevation

11/19/21

Sample ID			39562	/4-22			Subsa	ample ID	2		Location			-	Seattle, WA			
Add. Info		-		N	/lixing/Mo	lding Dat	e		10/22/21]		Curin	ig Age, Days			28	
				ASTM	D 5084;	Standa	rd Test N	lethod for	Measureme	ent of Hy	draulic Cor	nductivity	of Satu	rated Poro	ıs			
										•	thod D, Con	•						
li	nitial San	nple Dat	a (Befor	e Test)				Test Data	a		Final Data (After Test)							
Height		2.964	in	7.53	cm S	Speed			10]								
Diameter		2.963	in			Board Nu	mber		4		Average Hei	ght of Sam	ple	2.965	in	7.53 cr	n	
Area		6.90	in ²	44.49	cm ²	Cell Numl	ber		2		Average Dia	meter of Sa	ample	2.964	in	7.53 cr	n	
Volume		334.91	cm ³	0.0118	ft ³ F	Flow Pum	np Number		4A]	Area	6.90	in ²		cm ²			
Mass		625.1	g	1.38		Flow Pum	np Rate*		2.24E-04	cm ³ /sec	Volume	335.25	cm ³	0.01.0	ft ³	Dry Dens		
Specific Gra		2.700	(Assume	d)		3 - Value			0.95		Mass	632.6	g	1.39	lb	Vol. of Vo		_
Dry Density		87.1	pcf			Cell Press			95.0	psi						Vol. of Sc		
				Back Pres			90.0	psi						Void Ration				
	Moisture Content				_	•) Pressure	5.0	psi			isture Co		1	Saturation	n 101	.9 %	
Mass of wet sample & tare 625.1 g				Max Head			182.88	cm	Mass of wet sample & tare 705.5 g			g						
Mass of dry sample & tare 467.4 g Mass of tare 0.0 g			F .	Min Head			181.48	cm	Mass of dry		are	540.2	g					
	9		0.0	g			Gradient		24.28		Mass of tare			72.8	g			
% Moisture 33.7					Gradient		24.10		% Moisture			35.4						
	FUNCTI	_	Δt	READING	G H	ead	Gradient	Temp.		1	(cm/sec)		Note: I	Deaired Wate	r Used for Pe	rmeability	Test.	
DATE	HOUR	MIN	(sec)	DP, (psi) (c	cm)		$T_x(^{\circ}C)$	@ T _x	R _T	@ 20 °C			DESCRIPT	ON	•		
11/19/21	9	50	-	2.59	18	2.18	24.19	22.1	-	-	-		NA				USCS	
11/19/21	10	0	600	2.60	18	2.88	24.28	22.1	2.08E-07	0.951	1.97E-07					(.	ASTM D2487;2	488)
11/19/21	10	10	600	2.60	18	2.88	24.28	22.1	2.07E-07	0.951	1.97E-07						NA	
11/19/21	10	20	600	2.59	18	2.18	24.19	22.1	2.08E-07	0.951	1.97E-07	*			REMARK	s		
11/19/21	10	30	600	2.58	18	1.48	24.10	22.1	2.08E-07	0.951	1.98E-07	*	Bottom	Half of the m	old was used	for testing] .	
11/19/21	10	40	600	2.59	18	2.18	24.19	22.1	2.08E-07	0.951	1.98E-07	*						
11/19/21	10	50	600	2.59	18	2.18	24.19	22.1	2.08E-07	0.951	1.98E-07	*						
	_			_	F	Reported	Average H	Hydraulic Cor	nductivity*		2.0E-07	cm/sec						
Flow pump	pump ID # 1043 Balance ID # 1035/1036 Different			Differential I	Pressure N	Meter ID #			1044/1048									
Thermomet	er ID#	796	/985		Oven ID	#	496/758		Board Press	sure Meter	· ID#			1041				
Syringe ID #	#	10)47			!			Pore Pressure Meter					26/27				
											constant rate of in						ow Pump Rate i	sused for



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18 Checked By 21136-02-5 Depth/Elev. -

Client Pr. # 200016 Time Oil Terminal Pr. Name Sample ID 39563/4-24 Subsample

Lab. PR. # S. Type Location

Mold

Sample ID	39563/4-24	Subsample	1	Location	Seattle, WA	
Add. Info	-	Mixing/Molding Date	10/23/21] [Curing Age, Days	28
	ASTM D 1633: Standa	ard Test Methods for Com	pressive Strength	of Molded So	oil-Cement Cylinders	
		METHOD	В	1		
		WEIROD	Ь			
	SAMPLE DATA		WATER CONTE	NT DETERM	IINATION	
Initial Height		5.628	Mass of Wet Sar			
Initial Diame	•	2.976	Mass of Dry Sam	nple and Tare		
-	ameter Ratio	1.89	Mass of Tare, g		298.4	
Area, in ²		6.96	Moisture, %		32.1	
Volume, in ³		39.15				
Mass of Sam		1177.9				
Wet Density, Dry Density,		114.6 86.7				
Machine Spe		0.050				
Strain rate, %		0.89				
,						
		TEST	DATA			
	Load Cell ID #	11/1015		Digita	Il Caliper ID # 17/583	
	Compression Device ID #	10/1014			It Device ID # 10/1016	
	Balance ID #	1036/1037			Oven ID # 758/496	
Marilania I.a	and at Earlinean Hot		0707	1		
viaximum Lo	oad at Failure, lbf		2797		Failure Code 3	
Specimen C	ross-sectional Area, in ²		6.96		i allule code 5	
•	e Strength at Failure, psi		402			
-	Factor for Height to Diamete	r Ratio	1.00			
Reported Co	ompressive Strength at Fa	ilure, psi	402		Failure Sketo	ch
Note 2: * - A c	conversion factor based on H/D	=1.15 (C.F908 as 100% a	nd add. correction p	per ASTM C42		
		DESCRIPTION				
					Failure Type:	L
		SCS (ASTM D2487: D24	00/		Cone and S	near
	O	303 (A31W D2407. D24	(100)			
		REMARKS				



Client Pr. #

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Lab. PR. #

Tested By

Date

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AASHID ADDREDITED Checked By PR. # 21136-02-5

Olicite 1 1. 7					200010					Lab. 1 IV. #			21190 0	,, ,	
Pr. Name					Time Oil Term			_		S. Type	Me	old	Depth/Elevation		-
Sample ID			39563	/4-24		Subs	ample ID	2		Location			Seattle,	WA	
Add. Info		-		Mix	king/Molding Da	te		10/23/21]		Curin	g Age, Days		28
				ASTM D	5084; Standa	rd Test I	Method for	Measureme	ent of Hy	draulic Con	ductivity	of Satu	rated Porous		
					Materials U	Jsing a F	lexible Wal	I Permeam	eter (Me	hod D, Con	stant Rat	te of Flo	w)		
lı	nitial Sar	nple Dat	a (Befor	e Test)			Test Dat	а		Final Data (After Test)					
Height		3.026	in	7.69 cı	m Speed			11							
Diameter	2.967 in 7.54 cm				ımber		18		Average Hei	ght of Sam	ple	3.027 in	cm		
Area	6.91 in ² 44.61 cm			m ² Cell Num	ber		55		Average Dia	meter of Sa	ample	2.968 in	7.54	1 cm	
Volume	342.84 cm ³ 0.01		0.0121 ft	³ Flow Pun	np Numbe	r	3A		Area	6.92	in ²	44.64 cm ²			
Mass		632.1	g	1.39 lb	Flow Pun	np Rate*		1.12E-04	cm ³ /sec	Volume	343.19	cm ³	0.0121 ft ³	Dry [Density 87.0 pcf
Specific Gra	avity	2.700	(Assume	d)	B - Value	:		0.95		Mass	644.0	g	1.42 lb	Vol. o	of Voids 166.01 cm ³
Dry Density		87.1	pcf		Cell Pres	sure		95.0	psi					Vol. o	of Solids 177.18 cm ³
			Back Pre			90.0	psi			Ratio 0.94					
		ture Cont		•	_		e) Pressure	5.0	psi		Moisture Content Saturation				
Mass of wet sample & tare 632.1 g			Max Hea			184.29	cm	Mass of wet			725.6 g				
Mass of dry sample & tare 478.3 g			g	Min Head			183.59	cm	Mass of dry s	sample & ta	are	560.0 g			
Mass of tare	Э		0.0	g		n Gradient		23.97		Mass of tare			81.7 g		
% Moisture			32.2		Minimum	Gradient	•	23.88		% Moisture	T		34.6		
TIME	FUNCT	ION	Δt	READING	Head	Gradient	Temp.			(cm/sec)		Note: I	Deaired Water Used for	or Permea	bility Test.
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R _T	@ 20 °C			DESCRIPTION		
11/20/21	8	5	-	2.62	184.29	23.97	21.1	-	-	-		NA			USCS
11/20/21	8	15	600	2.61	183.59	23.88	21.1	1.05E-07	0.974	1.02E-07					(ASTM D2487;2488)
11/20/21	8	25	600	2.62	184.29	23.97	21.1	1.05E-07	0.974	1.02E-07					NA
11/20/21	8	35	600	2.61	183.59	23.88	21.1	1.05E-07	0.974	1.02E-07	*		REM	IARKS	
11/20/21	8	45	600	2.62	184.29	23.97	21.1	1.05E-07	0.974	1.02E-07	*	Bottom Half of the mold was used for testing.			sting.
11/20/21	8	55	600	2.61	183.59	23.88	21.1	1.05E-07	0.974	1.02E-07	*				
11/20/21	9	5	600	2.62	184.29	23.97	21.1	1.05E-07	0.974	1.02E-07	*				
					Reported	Average	Hydraulic Co	nductivity*		1.0E-07	cm/sec	<u></u>			
Flow pump	ID#	4	75	В	alance ID#	1035/1036		Differential I	Pressure N	Neter ID #			469		
Thermomet	er ID #	796	/985	0	ven ID#	496/758		Board Press	sure Mete	· ID#			570		
Syringe ID #	#	4	91				=	Pore Pressu	ıre Meter	D #		779/780			
				_											

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



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Client Pr. # Pr. Name Sample ID 200016

Time Oil Terminal

39564/4-26

Subsample

1 0/25/21

Lab. PR. # S. Type Location

	21136-02-5							
Mold	Depth/Elev.	-						
Seattle, WA								
Curing Ag	je, Days	28						

Add. IIIIO		Mixing/Molding Date	10/23/21	Culli	y Aye, Days 20
	ASTM D 1633: Standa	ard Test Methods for Con	pressive Strength	of Molded Soil-Cement	t Cylinders
		METHOD	В		
Initial Heigh Initial Diame Height-to-Di Area, in ² Volume, in ³ Mass of Sar Wet Density Dry Density Machine Sp Strain rate,	eter, in iameter Ratio mple, g y, pcf , pcf peed, in/min	5.637 2.971 1.90 6.93 39.08 1201.4 117.1 88.8 0.050 0.89	WATER CONTE Mass of Wet Sar Mass of Dry Sam Mass of Tare, g Moisture, %	-	1500.8 1211.6 301.0 31.8
		TES	T DATA		
	Load Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037		Digital Caliper Readout Device Oven I	ID # 10/1016
Specimen C Compressiv Conversion Reported C	oad at Failure, lbf Cross-sectional Area, in ² re Strength at Failure, psi Factor for Height to Diamete Compressive Strength at Fa conversion factor based on H/D	ilure, psi	2367 6.93 341 1.00 341 and add. correction p	Failure Co Der ASTM C42)	Failure Sketch
		DESCRIPTION		Failure Ty	/pe: Cone and Shear
	L	JSCS (ASTM D2487: D24	488)]		Conc and Choa
		REMARKS			



Client Pr. #

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Lab. PR. #

Tested By Date

21136-02-5

EB/KP 11/22/21

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Pr. Name					Time Oil Te	erminai				S. Type	IVIC	ola	Deptn/E	evation			
Sample ID			39564				ample ID	2		Location				Seattle, WA			
Add. Info		-		N	lixing/Molding	Date		10/25/21]		Curin	g Age, Days		<u></u>	28	
				ASTM	D 5084; Stan Material				-	draulic Cor	-			ıs			
li	nitial Sar	nple Dat	a (Befor	e Test)			Test Dat	а					Final Data ((After Test)			
Height		3.039	in	7.72	cm Speed	I		10]					_			
Diameter		2.963	in	7.53	cm Board	Number		19		Average Hei	ght of Sam	ole	3.040	in	7.72 cm		
Area		6.90	in ²	44.49	cm ² Cell N				Average Dia	-		2.964	in	7.53 cm			
Volume		343.39	cm ³	0.0121	ft ³ Flow F	Pump Numbe	r	3B		Area	6.90	in ²	44.52	cm ²			_
Mass		639.2	g	1.41	lb Flow F	Pump Rate*		2.24E-04	cm ³ /sec	Volume	343.73	cm ³	0.0121	ft ³	Dry Density		pcf
Specific Gra	avity	2.700 (Assumed) B - Value 0.95				Mass	651.1	g	1.44	lb	Vol. of Voids	s 163.31	cm ³				
Dry Density	· · · ·				-	psi						Vol. of Solid		cm ³			
Back Pressure						90.0	psi						Void Ratio	0.91	_		
						ning (Effective	e) Pressure	5.0 145.60	psi			isture Co		1	Saturation	100.4	%
Mass of wet sample & tare 639.2 g				Max Head			cm	Mass of wet sample & tare 736.3 g			g						
Mass of dry sample & tare 487.0 g			Min H			144.90	cm	Mass of dry		ire	572.4	g					
Mass of tare 0.0 g				num Gradient		18.86	_	Mass of tare			85.4	g					
% Moisture			31.3		Minim	um Gradient		18.77		% Moisture			33.7				
TIME	FUNCTI	ON	Δt	READING	Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)		Note: [Deaired Wate	r Used for Pe	rmeability Te	∍st.	
DATE	HOUR	MIN	(sec)	DP, (psi) (cm)		T _x (°C)	@ T _x	R _T	@ 20 °C		J-	DESCRIPTI	ION	-		
11/22/21	8	5	-	2.07	145.60	18.86	19.6	-	-	-		NA				USCS	
11/22/21	8	15	600	2.06	144.90	18.77	19.6	2.67E-07	1.010	2.70E-07					(AST	TM D2487;2488)	_
11/22/21	8	25	600	2.07	145.60	18.86	19.6	2.67E-07	1.010	2.70E-07						NA	1
11/22/21	8	35	600	2.06	144.90	18.77	19.6	2.67E-07	1.010	2.70E-07	*			REMARK	S		_
11/22/21	8	45	600	2.07	145.60	18.86	19.6	2.67E-07	1.010	2.70E-07	*	Bottom	Half of the m	old was used	for testing.		1
11/22/21	8	55	600	2.06	144.90	18.77	19.6	2.67E-07	1.010	2.70E-07	*						
11/22/21	9	5	600	2.07	145.60	18.86	19.6	2.67E-07	1.010	2.70E-07	*						
					Repor	ted Average	Hydraulic Co	nductivity*		2.7E-07	cm/sec						
Flow pump ID # 475 Balance ID # 1035/1036 Differen				Differential I	Pressure N	Meter ID #			262								
Thermomet	mometer ID # 796/985 Oven ID # 496/758 Board Pressure			sure Mete	· ID#			570									
Syringe ID #	Syringe ID # 490 Pore Pressure M				ıre Meter	Meter ID # 779/780											
					e for Inflow and Ca ressure (DP) Read											oump Rate isuse	d for



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11/23/21 18

 $Tests, \verb|llc|$ Web: www.test-llc.com Client Pr. # 200016 Time Oil Terminal Pr. Name Subsample 39565/4-29 Sample ID Mixing/Molding Date Add. Info 10/26/21

Lab. PR. # S. Type Location

#	21136-02-5								
е	Mold Depth/Elev.	-							
n	Seattle, WA								
	Curing Age, Days	28							

ASTM D 1633: Standard Test Met	hods for Compressive Strength of Molded Soil-Cement Cylinders
	METHOD B
SAMPLE DATA Initial Height, in Initial Diameter, in Height-to-Diameter Ratio Area, in ² Volume, in ³ Mass of Sample, g Wet Density, pcf Dry Density, pcf Machine Speed, in/min Strain rate, % / min 5.608 5.608 1.88 2.976 4.96 7.90 1.88 39.01 1199.6 117.2 117.2 117.2 117.2 117.2 117.2 117.2 117.2 117.2	WATER CONTENT DETERMINATION Mass of Wet Sample and Tare, g Mass of Dry Sample and Tare, g Mass of Tare, g Moisture, % 1495.6 1200.0 298.5 32.8
	TEST DATA
Load Cell ID # 11/1015 Compression Device ID # 10/1014 Balance ID # 1036/1037	Digital Caliper ID # 17/583 Readout Device ID # 10/1016 Oven ID # 758/496
Maximum Load at Failure, lbf Specimen Cross-sectional Area, in ² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi	1408 6.96 202 1.00 202 Failure Code 3 Failure Sketch
Note 2: * - A conversion factor based on H/D=1.15 (C.F9	
USCS (ASTM	1 D2487: D2488)
REM	MARKS



Client Pr.

TIMELY Engineering Soil Tests, Llc

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21136-02-5

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Time Oil Terminal S. Type Depth/Elevation Pr. Name Mold 39565/4-29 Subsample ID 2 Seattle, WA Sample ID Location Mixing/Molding Date 10/26/21 Add. Info Curing Age, Days 28 ASTM D 5084: Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow) **Initial Sample Data (Before Test) Test Data** Final Data (After Test) 2.988 7.59 10 Height Speed cm Diameter 7.52 8 2.989 2.962 cm **Board Number** Average Height of Sample 6.89 44.46 cm² Cell Number 15 Average Diameter of Sample 2.963 7.53 cm Area cm³ ft³ cm² 337.40 0.0119 4A 6.90 44.49 Volume Flow Pump Number Area cm³/sec cm³ 633.4 2.24E-04 337.74 0.0119 Mass 1.40 Flow Pump Rate* Volume Dry Density 88.4 pcf cm³ Specific Gravity 2.700 (Assumed) B - Value 0.95 Mass 640.0 1.41 Vol. of Voids 160.44 Dry Density 88.5 pcf Cell Pressure 95.0 Vol. of Solids 177.30 psi Back Pressure 90.0 psi Void Ratio 0.90 **Moisture Content Moisture Content** Confining (Effective) Pressure 5.0 psi Saturation 100.5 147.01 Mass of wet sample & tare Max Head Mass of wet sample & tare 734.2 633.4 cm 572.9 Mass of dry sample & tare 478.7 Min Head 146.31 Mass of dry sample & tare cm Maximum Gradient 19.36 94.2 Mass of tare 0.0 Mass of tare % Moisture 32.3 Minimum Gradient 19.27 % Moisture 33.7 TIME FUNCTION Δt READING Head Gradient Temp. PERMEABILITY (cm/sec) Note: Deaired Water Used for Permeability Test. T_v(°C) @ 20 °C DATE **HOUR** MIN DP. (psi) (cm) @ T. R_{T} (sec) DESCRIPTION NA 7 30 147.01 11/23/21 2.09 19.36 18.3 USCS 7 40 600 2.08 146.31 19.27 18.3 2.61E-07 1.043 2.72E-07 (ASTM D2487:2488) 11/23/21 7 50 600 2.09 147.01 19.36 18.3 2.61E-07 1.043 2.72E-07 11/23/21 NA 8 0 600 2.08 146.31 19.27 18.3 2.61E-07 1.043 2.72E-07 11/23/21 **REMARKS** Bottom Half of the mold was used for testing 8 10 2.09 147.01 19.36 18.3 2.61E-07 1.043 2.72E-07 11/23/21 600 11/23/21 8 20 600 2.08 146.31 19.27 18.3 2.61E-07 1.043 2.72E-07 11/23/21 8 30 600 2.09 147.01 19.36 18.3 2.61E-07 1.043 2.72E-07 Reported Average Hydraulic Conductivity* 2.7E-07 cm/sec Differential Pressure Meter ID # 1044/1048 Flow pump ID # 1043 Balance ID # 1035/1036 290 Thermometer ID # 796/985 Oven ID# 496/758 Board Pressure Meter ID # 1047 Pore Pressure Meter ID # Syringe ID # 216

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for

calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



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Client Pr. # Pr. Name Sample ID Add. Info

200016									
Time Oil Terminal									
39566/4-33		Subsample	1						
-	Mixing/Mo	10/27/21							

Lab. PR. # ___ S. Type ___ Location ___

21136-02-5							
Mold Depth/Elev.							
Seattle, WA							
Curing Age, Days							

ASTM D 1633: Standard Test Mo	ethods for Compressive Strength of Molded Soil-Cement Cylinders
	METHOD B
SAMPLE DATA Initial Height, in Initial Diameter, in Height-to-Diameter Ratio Area, in² Volume, in³ Mass of Sample, g Wet Density, pcf Dry Density, pcf Machine Speed, in/min Strain rate, % / min 5.618 5.	WATER CONTENT DETERMINATION Mass of Wet Sample and Tare, g Mass of Dry Sample and Tare, g Mass of Tare, g Moisture, % Moisture, % MASS OF TARE, G MOISTURE, G M
	TEST DATA
Load Cell ID # 11/1015 Compression Device ID # 10/1014 Balance ID # 1036/103	Readout Device ID # 10/1016
Maximum Load at Failure, lbf Specimen Cross-sectional Area, in ² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi	1807 6.97 259 1.00 259 Failure Sketch
USCS (AST	Failure Type: Cone and Shear EMARKS



Client Pr. #

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Lab. PR. #

Tested By Date

21136-02-5

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Pr. Name					Time Oil Term	nal				S. Type	Mold		Depth/Elevation	-	
Sample ID			39566	/4-33		Subs	ample ID	2		Location	on Seattle, WA				
Add. Info		-		Mix	king/Molding Dat	е		10/27/21]		Curino	g Age, Days	28	
				ASTM D	5084; Standa	rd Test N	lethod for	Measureme	ent of Hy	draulic Con	ductivity o	f Satur	rated Porous		
					Materials U	sing a F	lexible Wal	l Permeam	eter (Me	hod D, Con	stant Rate	of Flov	w)		
lı lı	nitial Sar	mple Dat	a (Before	e Test)			Test Data	a	_	Final Data (After Test)					
Height		2.958	in		m Speed			10]						
Diameter		2.969	in		m Board Nu	mber		3		Average Hei			2.959 in	7.52 cm	
Area			in ²		m ² Cell Num	ber		37		Average Diar			2.970 in	7.54 cm	
Volume		335.59	cm ³	0.0119 ft	Flow Pum	ıp Numbeı	•	2B		Area		in ²	44.70 cm ²		_
Mass		616.2	g	1.36 lb		p Rate*		2.24E-04	cm ³ /sec	Volume		cm ³	0.0119 ft ³	Dry Density 85.5	pcf
Specific Gra	,		(Assume	d)	B - Value			0.95		Mass	625.5	g	1.38 lb	Vol. of Voids 165.38	cm ³
Dry Density		85.6	pcf		Cell Pres			95.0	psi					Vol. of Solids 170.55	cm ³
					Back Pres			90.0	psi			_		Void Ratio 0.97	
ļ., ,		ture Cont		1	_	•) Pressure	5.0	psi			ure Co		Saturation 99.8	%
Mass of wet				g	Max Head			166.71	cm	Mass of wet			705.5 g		
Mass of dry Mass of tare		tare	460.4 0.0	9	Min Head Maximum			166.00 22.18	cm	Mass of dry s Mass of tare	sample & tare)	540.5 g 80.1 g		
)			9											
% Moisture	FUNCT	1011	33.8		Minimum		T	22.09	A DU 173	% Moisture	Ι .		35.8	- I III	
	FUNCT		Δt	READING	Head	Gradient	Temp.			(cm/sec)	· ·	Note: L	Deaired Water Used for	Permeability Test.	
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R _T	@ 20 °C	6	NA	DESCRIPTION	\neg	
11/24/21	9	40	-	2.37	166.71	22.18	18.3	-	-	-		NA		USCS	
11/24/21	9	50	600	2.36	166.00	22.09	18.3	2.26E-07	1.043	2.36E-07				(ASTM D2487;2488))
11/24/21	10	0	600	2.37	166.71	22.18	18.3	2.26E-07	1.043	2.36E-07	<u> </u>			NA	
11/24/21	10	10	600	2.36	166.00	22.09	18.3	2.26E-07	1.043	2.36E-07	*		REMAR		
11/24/21	10	20	600	2.36	166.00	22.09	18.3	2.27E-07	1.043	2.37E-07	*	Bottom	Half of the mold was use	ed for testing.	
11/24/21	10	30	600	2.37	166.71	22.18	18.3	2.26E-07	1.043	2.36E-07	*				
11/24/21	10	40	600	2.36	166.00	22.09	18.3	2.26E-07	1.043	2.36E-07	*				
					Reported	Average I	Hydraulic Cor	nductivity*		2.4E-07	cm/sec				
Flow pump	Flow pump ID # 244 Balance ID # 1035/1036 Differentia				Differential F	Pressure N	Meter ID #			587					
Thermomet	er ID#	796	/985	С	ven ID#	496/758		Board Press	sure Mete	· ID#			1041		
Syringe ID #	Syringe ID # 246 Pore Pressure Meter						ıre Meter	D #			26/27				
													fully saturated sample with acc nificant upward or downward tre	uracy +/-5%. Flow Pump Rate isuseend.	∍d for



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KP/IH 11/25/21

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 Client Pr. #
 200016

 Pr. Name
 Time Oil Terminal

 Sample ID
 39567/4-42
 Subsample
 1

 Add. Info
 Mixing/Molding Date
 10/28/21

Lab. PR. # S. Type Location

21136-02-5

Mold Depth/Elev. Seattle, WA
Curing Age, Days 28

ASTM D 1633: Standard Test Meth	nods for Compressive Strength of Molded Soil-Cement Cylinders
	METHOD B
SAMPLE DATA Initial Height, in Initial Diameter, in Height-to-Diameter Ratio Area, in² Volume, in³ Mass of Sample, g Wet Density, pcf Dry Density, pcf Machine Speed, in/min Strain rate, % / min 5.589 1.88 6.95 1.88 4.88 1.89 1.91.4 5.589 1.88 6.95 6.95 6.95 6.95 6.95 6.95 6.95 6.95	WATER CONTENT DETERMINATION Mass of Wet Sample and Tare, g Mass of Dry Sample and Tare, g Mass of Tare, g Moisture, % Moisture, % Moisture, % Moisture, %
	TEST DATA
Load Cell ID # 11/1015 Compression Device ID # 10/1014 Balance ID # 1036/1037	Digital Caliper ID # 17/583 Readout Device ID # 10/1016 Oven ID # 758/496
Maximum Load at Failure, lbf Specimen Cross-sectional Area, in ² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi	629 6.95 90 1.00 90 Failure Code 3 Failure Sketch
Note 2: * - A conversion factor based on H/D=1.15 (C.F9)	
USCS (ASTM	Failure Type: Cone and Shear
REM	MARKS



Client Pr. 7

Pr. Name

Sample ID

TIMELY
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SOIL

200016

Time Oil Terminal

Tests, llc

39567/4-42

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Subsample ID



Mold

Lab. PR. #

S. Type

Location

Tested By
Date

Checked By

21136-02-5

Seattle, WA

Depth/Elevation

EB/KP 11/25/21

Add. Info		-		Mix	ring/Molding Da	te		10/28/21]		Curir	ng Age, Days			28	
				ASTM D	5084; Standa				-	*	-			us			
					Materials (Jsing a F	lexible Wal	l Permeam	eter (Me	thod D, Con	stant Rat	e of Fig	ow)				
Ir	nitial San	nple Dat	a (Before	e Test)			Test Data	a	Final Data (After Test)								
Height		2.958	in	7.51 cr	m Speed			9									
Diameter		2.959	in	7.52 cr		umber		4		Average Heig	ght of Samp	ole	2.959	in	7.52 c	m	
Area		6.88	in ²	44.37 cr	m ² Cell Num	ber		15		Average Diar	neter of Sa	mple	2.960	in	7.52 c	m	
Volume		333.33	cm ³	0.0118 ft ²	³ Flow Pur	np Numbe	r	4A		Area	6.88	in ²	44.40	cm ²			
Mass		624.8	g	1.38 lb	Flow Pur	np Rate*		4.48E-04	cm ³ /sec	Volume	333.67	cm ³	0.0118	ft ³	Dry Dens	sity 89	
Specific Gra	avity	2.700	(Assume	d)	B - Value)		0.95		Mass	635.9	g	1.40	lb	Vol. of V	oids 155	
Dry Density		89.8	pcf		Cell Pres	sure		95.0	psi						Vol. of S	olids 177	.69 cm ³
					Back Pre			90.0	psi						Void Rat	io 0.8	-
		ture Cont		7			e) Pressure	5.0	psi			sture Co			Saturation	on 100).1 %
Mass of wet				g	Max Hea			14.77	cm	Mass of wet s	•		709.4	g			
Mass of dry	•	tare	479.6	g	Min Head			14.07	cm	Mass of dry s	sample & ta	re	553.3	g			
Mass of tare	9		0.0	g		n Gradient		1.97		Mass of tare			73.7	g			
% Moisture			30.3		Minimum	Gradient		1.87		% Moisture	T		32.5				
TIME	FUNCTI	ON	Δt	READING	Head	Gradient	Temp.			(cm/sec)		Note:	Deaired Wate	r Used for Pe	rmeability	/ Test.	
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R _T	@ 20 °C			DESCRIPTI	ON			
11/25/21	5	30	-	0.20	14.07	1.87	18.8	-	-	-		NA				USCS	
11/25/21	5	40	600	0.20	14.07	1.87	18.8	5.39E-06	1.030	5.55E-06						(ASTM D2487;2	2488)
11/25/21	5	50	600	0.21	14.77	1.97	18.8	5.26E-06	1.030	5.42E-06						NA	
11/25/21	6	0	600	0.21	14.77	1.97	18.8	5.13E-06	1.030	5.29E-06	*			REMARKS	3		
11/25/21	6	10	600	0.20	14.07	1.87	18.8	5.26E-06	1.030	5.42E-06	*	Bottom	Half of the m	old was used	for testin	g.	
11/25/21	6	20	600	0.20	14.07	1.87	18.8	5.39E-06	1.030	5.55E-06	*						
11/25/21	6	30	600	0.20	14.07	1.87	18.8	5.39E-06	1.030	5.55E-06	*						
					Reported	l Average l	Hydraulic Cor	nductivity*		5.5E-06	cm/sec						
Flow pump	ID#	10)43	В	alance ID#	1035/1036		Differential F	Pressure I	Meter ID #	•		1044/1048				
Thermomet	er ID#	796	6/985	0	ven ID#	496/758		Board Press	sure Mete	r ID#			1041				
Syringe ID #	<i>‡</i>	10)47				1	Pore Pressu	ıre Meter	ID#			26/27				
					or Inflow and Calibra											Flow Pump Rate	e isused for

2



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Date

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KP/IH 11/26/21

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Client Pr. # Pr. Name Sample ID Add. Info | 200016 | | Time Oil Terminal | 39568/4-32 | Subsample | 1 | Mixing/Molding Date | 10/29/21 |

Lab. PR. #
S. Type
Location

ASTM D 1633: Standard Test M	ethods for Compressive Strength of Molded Soil-Cement Cylinders								
	METHOD B								
SAMPLE DATA Initial Height, in Initial Diameter, in Height-to-Diameter Ratio Area, in² Volume, in³ Mass of Sample, g Wet Density, pcf Dry Density, pcf Machine Speed, in/min Strain rate, % / min 5.558 5.558 1.89 6.83 7.94 1.89 6.83 7.94 1163.0 7.94 1163.0 87.4 0.050	WATER CONTENT DETERMINATION Mass of Wet Sample and Tare, g Mass of Dry Sample and Tare, g Mass of Tare, g Moisture, % 1444.2 1152.3 283.2 33.6								
	TEST DATA								
Load Cell ID # 11/1018 Compression Device ID # 10/1014 Balance ID # 1036/103	Readout Device ID # 10/1016								
Maximum Load at Failure, lbf Specimen Cross-sectional Area, in ² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio	236 Failure Code 3 6.83 35 1.00								
	Failure Type:								
USCS (ASTM D2487: D2488)									
RE	EMARKS								



Client Pr. :

TIMELY Engineering Soil

200016

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Lab. PR. #

Tested By Date

EB/KP

Checked By

21136-02-4

11/26/21 18

Pr. Name					Time Oil Ter	minal				S. Type	Mo	old	Depth/Elevation		=	
Sample ID			39568	/4-32		Subs	ample ID	2		Location			Seattle, V	/A		
Add. Info		-		М	ixing/Molding D	ate		10/29/21]		Curin	g Age, Days		28	
	ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)															
lı	nitial San	nple Dat	a (Befor	e Test)			Test Dat	а					Final Data (After Te	st)		
Height		2.991	in	7.60	cm Speed			8							-	
Diameter			in		cm Board N	Number		7		Average Hei	ght of Samp	ole	2.991 in	7.60		
Area			in ²	-	Cell Nu			37		Average Dia			2.947 in	7.49	cm	
Volume		334.10	cm³			ımp Numbe	r	4B		Area	6.82	in ²	44.01 cm ²		_	
Mass		619.3	g			ump Rate*		8.96E-04	cm ³ /sec	Volume	334.32	cm ³	0.0118 ft ³	Dry De		6.7 pcf
Specific Gra	-	2.700	(Assume	d)	B - Valu			0.95		Mass	627.8	g	1.38 lb			2.27 cm ³
Dry Density	'	86.7	pcf		Cell Pre			95.0	psi							2.05 cm ³
	Moist	ture Cont	ont		Back P	ressure ng (Effective) Drocouro	90.0 5.0	psi psi		Mai	sture Co	entont	Void F Satura		94 %
Mass of wet sample & tare 619.3 g			Max He	• .	e) Flessule	27.43	cm	Mass of wet			710.3 g	Salura	ation it	0.6 %		
Mass of dry sample & tare 464.4 g			Min He			26.73	cm	Mass of dry s			547.1 g					
Mass of tar			0.0	q	_	ım Gradient		3.61		Mass of tare		0	82.7 g			
% Moisture			33.4]	Minimu	m Gradient		3.52		% Moisture			35.1			
TIME	FUNCTI	ION	Δt	READING	Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)		Note: [Deaired Water Used for	Permeab	ility Test.	
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R_T	@ 20 °C			DESCRIPTION			
11/26/21	9	5	-	0.38	26.73	3.52	18.5	-	-	-		NA			USCS	
11/26/21	9	15	600	0.39	27.43	3.61	18.5	5.71E-06	1.038	5.93E-06					(ASTM D2487	;2488)
11/26/21	9	25	600	0.39	27.43	3.61	18.5	5.64E-06	1.038	5.85E-06					NA	
11/26/21	9	35	600	0.38	26.73	3.52	18.5	5.71E-06	1.038	5.93E-06	*		REMA	RKS		
11/26/21	9	45	600	0.38	26.73	3.52	18.5	5.79E-06	1.038	6.01E-06	*	Bottom	Half of the mold was us	sed for tes	sting.	
11/26/21	9	55	600	0.39	27.43	3.61	18.5	5.71E-06	1.038	5.93E-06	*					
11/26/21	10	5	600	0.38	26.73	3.52	18.5	5.71E-06	1.038	5.93E-06	*					
					Reporte	ed Average	Hydraulic Co	nductivity*		5.9E-06	cm/sec					
Flow pump	ID#	10)43] !	Balance ID#	1035/1036		Differential F	Pressure I	Meter ID #			1045/1049			
Thermomet	er ID#	796	/985		Oven ID #	496/758		Board Press	sure Mete	r ID#			290			
Syringe ID				ıre Meter	ID#			216								

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for

calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



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Client Pr. # Pr. Name Sample ID Add. Info | 200016 | | Time Oil Terminal | 39569/4-31 | Subsample | 1 | 10/30/21 |

Lab. PR. #
S. Type
Location

21136-02-4

Mold Depth/Elev.
Seattle, WA

Curing Age, Days 28

	<u> </u>			· •
ASTM D 1633: Standard Test Met	hods for Com	pressive Strength	of Molded Soil-Cement Cyl	inders
	METHOD	В		
SAMPLE DATA		WATER CONTE	NT DETERMINATION	
Initial Height, in 5.669 Initial Diameter, in 2.965 Height-to-Diameter Ratio 1.91 Area, in² 6.90 Volume, in³ 39.14 Mass of Sample, g 1207.5 Wet Density, pcf 117.5 Dry Density, pcf 89.3 Machine Speed, in/min 0.050 Strain rate, % / min 0.88		Mass of Wet Sar Mass of Dry San Mass of Tare, g Moisture, %	mple and Tare, g	1480.1 1190.7 275.0 31.6
	TEST	DATA		
Load Cell ID # 11/1015 Compression Device ID # 10/1014 Balance ID # 1036/1037	7		Digital Caliper ID # Readout Device ID # Oven ID #	10/1016
Maximum Load at Failure, lbf		923	Fa'll and Oa la	
Specimen Cross-sectional Area, in ² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio		6.90 134 1.00	Failure Code	3
Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.F SDESC	908 as 100% ai CRIPTION	134 nd add. correction p		Failure Sketch
			Failure Type:	Cone and Shear
USCS (ASTN	И D2487: D24	88)		
REI	MARKS			



Client Pr.

TIMELY Engineering Soil

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Date 11/27/21 18

Oliciti I.					200010					Lab. 1 IV. #			21100 02	7	
Pr. Name					Time Oil Term	inal				S. Type	Mo	old	Depth/Elevation		-
Sample ID			39569	/4-31		Subs	ample ID	2		Location			Seattle, V	/A	
Add. Info		-		Mix	ing/Molding Da	te		10/30/21				Curin	g Age, Days		28
				ASTM D	5084; Standa	ard Test I	Method for	Measurem	ent of H	ydraulic Coı	nductivity	of Satu	rated Porous		
	Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)														
li	Initial Sample Data (Before Test)						Test Dat	а				!	Final Data (After Te	st)	
Height		2.932	in	7.45 cr	m Speed			8	1						
Diameter		2.952	in	7.50 cr	m Board Nu	umber		8		Average Heig	ght of Sam	ple	2.933 in	7.45	cm
Area		6.84	in ²	44.16 cr	m ² Cell Num	ber		37		Average Dia	neter of Sa	ample	2.953 in	7.50	cm
Volume		328.84	cm ³	0.0116 ft ²	Flow Pur	np Numbe	r	4A		Area	6.85	in ²	44.19 cm ²		-
Mass		622.8	g	1.37 lb	Flow Pur	np Rate*		8.96E-04	cm ³ /sec	Volume	329.18	cm ³	0.0116 ft ³	Dry De	ensity 89.8 pcf
Specific Gra	avity	2.700	(Assume	d)	B - Value)		0.95		Mass	633.5	g	1.40 lb	Vol. of	Voids 153.75 cm ³
Dry Density	,	89.8	pcf		Cell Pres	sure		95.0	psi			_	-	Vol. of	Solids 175.43 cm ³
			_		Back Pre	essure		90.0	psi					Void R	atio 0.88
	Mois	ture Cont	ent	_	Confining	g (Effective	e) Pressure	5.0	psi		Мо	isture Co	ntent	Satura	tion 104.0 %
Mass of we	wet sample & tare 622.8 g			Max Hea	d		92.15	cm	Mass of wet	•		715.9 g			
Mass of dry	•	tare	473.5	g	Min Head			91.44	cm	Mass of dry s	sample & ta	are	556.1 g		
Mass of tar	е		0.0	g	Maximun	n Gradient		12.37		Mass of tare			82.6 g		
% Moisture			31.5		Minimum	Gradient		12.27		% Moisture			33.7		
TIME	FUNCT	ION	Δt	READING	Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)		Note: [Deaired Water Used for	Permeabi	lity Test.
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R _T	@ 20 °C			DESCRIPTION		
11/26/21	9	5	-	1.31	92.15	12.37	18.5	-	-	-		NA			USCS
11/26/21	9	15	600	1.30	91.44	12.27	18.5	1.65E-06	1.038	1.71E-06					(ASTM D2487;2488)
11/26/21	9	25	600	1.31	92.15	12.37	18.5	1.65E-06	1.038	1.71E-06					NA
11/26/21	9	35	600	1.31	92.15	12.37	18.5	1.64E-06	1.038	1.70E-06	*		REMA		
11/26/21	9	45	600	1.30	91.44	12.27	18.5	1.65E-06	1.038	1.71E-06	*	Bottom	Half of the mold was us	sed for test	ting.
11/26/21	9	55	600	1.31	92.15	12.37	18.5	1.65E-06	1.038	1.71E-06	*				
11/26/21	10	5	600	1.30	91.44	12.27	18.5	1.65E-06	1.038	1.71E-06	*				
		_		=	Reported	Average	Hydraulic Co	nductivity*		1.7E-06	cm/sec				
Flow pump	ID#	10)43	В	alance ID#	1035/1036		Differential	Pressure l	Meter ID #			1044/1048		
Thermomet	hermometer ID # 796/985 Oven IE			ven ID#	496/758 Board Pressure Meter				r ID#			290			
Syringe ID	Syringe ID # 1047				Pore Pressure Meter II							216			
1		-		_											

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate is used for calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



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11/29/21

Lab. PR. #
S. Type Mold
Location
Curing

L	21136-02-5								
	Mold	•							
	Seattle, WA								
	Curing A	28							

ASTM D 1633: Standard Test Met	thods for Compressive Strength of Molded Soil-Cement Cylinders
	METHOD B
SAMPLE DATA Initial Height, in 5.637 Initial Diameter, in 2.977 Height-to-Diameter Ratio 1.89 Area, in² 6.96 Volume, in³ 39.24 Mass of Sample, g 1213.9 Wet Density, pcf 117.9 Dry Density, pcf 91.0 Machine Speed, in/min 0.050 Strain rate, % / min 0.89	WATER CONTENT DETERMINATION Mass of Wet Sample and Tare, g Mass of Dry Sample and Tare, g Mass of Tare, g Moisture, % 1517.6 1241.6 1305.4 29.5
	TEST DATA
Load Cell ID # 11/1015 Compression Device ID # 10/1014 Balance ID # 1036/1037	Digital Caliper ID # 17/583 Readout Device ID # 10/1016 Oven ID # 758/496
Maximum Load at Failure, lbf Specimen Cross-sectional Area, in ² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi	1130 6.96 162 1.00 162 Failure Code 3 Failure Sketch
USCS (ASTN	Failure Type: Cone and Shear MARKS



Client Pr. #

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200016

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Pr. Name					Time O	il Termii	nal				S. Type	Mo	ld	Depth/E	levation			-	
Sample ID			39570	/4-35			Subs	ample ID	2		Location	1			Seattle, WA				
Add. Info		-		N	lixing/Mold	ding Date	е		11/01/21]		Curin	g Age, Days				28	
				ASTM	D 5084; S	Standar	rd Test N	lethod for	Measureme	ent of Hy	draulic Cor	nductivity	of Satu	rated Porou	ıs				
					Mate	rials U	sing a Fl	lexible Wal	l Permeam	eter (Met	hod D, Con	stant Rate	e of Flov	v)					
lı	nitial Sar	nple Dat	a (Before	e Test)				Test Data	a		Final Data (After Test)								
Height		2.995	in	7.61	cm Sp	peed			10										
Diameter		2.960	in		-	oard Nur	mber		7		Average Hei	ght of Samp	ole	2.996	in	7.61	cm		
Area		6.88	in ²			ell Numb	oer		2		Average Dia	meter of Sa	_ ` .		in	7.52	cm		
Volume		337.73	cm ³	0.0119			p Number	r	4A		Area	6.89	in ²		cm ²				_
Mass		641.0	g			ow Pum	p Rate*		2.24E-04	cm ³ /sec	Volume	338.07	cm ³	0.0119	ft ³	Dry Der	•		pcf
Specific Gra	•	2.700	(Assume	d)		- Value			0.95		Mass	657.0	g	1.45	lb	Vol. of '		153.49	cm ³
Dry Density	'	91.4	pcf			ell Press			95.0	psi						Vol. of		184.58	cm ³
						ack Pres			90.0	psi						Void Ra		0.83	4
		ture Cont		1		_	•) Pressure	5.0	psi	.		sture Co			Saturat	ion	103.3	%
Mass of we	•			g		ax Head	-		124.50	cm	Mass of wet	•		726.2	g				
Mass of dry Mass of tare		tare	494.5 0.0	9		in Head	Gradient		123.80 16.36	cm	Mass of dry		re	568.8 74.3	9				
% Moisture	Ð		29.6	g			Gradient		16.27		% Moisture			31.8	g				
	FUNCT	ON.						-	_			Ī			5				
	FUNCTI		Δt	READING			Gradient	Temp.			(cm/sec)	4	Note: L	Deaired Water		rmeabili	ty Lest		
DATE	HOUR	MIN	(sec)	DP, (psi)) (cr	m)		T _x (°C)	@ T _x	R _T	@ 20 °C	_		DESCRIPTION	ON	7			
11/29/21	7	5	-	1.77	124	.50	16.36	18.5	-	-	-		NA				ι	ISCS	
11/29/21	7	15	600	1.76	123	3.80	16.27	18.5	3.09E-07	1.038	3.21E-07						(ASTM	D2487;2488))
11/29/21	7	25	600	1.77	124	.50	16.36	18.5	3.09E-07	1.038	3.21E-07							NA	
11/29/21	7	35	600	1.76	123	3.80	16.27	18.5	3.09E-07	1.038	3.21E-07	*			REMARK	S			
11/29/21	7	45	600	1.77	124	.50	16.36	18.5	3.09E-07	1.038	3.21E-07	*	Bottom	Half of the mo	old was used	for testi	ng.		1
11/29/21	7	55	600	1.76	123	3.80	16.27	18.5	3.09E-07	1.038	3.21E-07	*							
11/29/21	8	5	600	1.77	124	1.50	16.36	18.5	3.09E-07	1.038	3.21E-07	*							
				_	Re	eported	Average H	Hydraulic Cor	nductivity*		3.2E-07	cm/sec							
Flow pump	ID#	10)43		Balance II	D#	1035/1036		Differential F	Pressure N	/leter ID #			1044/1048					
Thermomet	er ID #	796	/985		Oven ID #	‡	496/758		Board Press	ure Meter	· ID#			290					
Syringe ID	#	10)47			•		-	Pore Pressu	ıre Meter I	D #			216					
*Constant Rate	of Flow Syst	em (Flow Pu	mp with Calib	orated Syringe	e for Inflow and	nd Calibrate	ed Graduated	d Pipette for outfl	low) is capable to	maintain a c	constant rate of in	flow & outflow	through the	fully saturated sa	mple with accura	acy +/-5%.	Flow Pun	np Rate isuse	ed for

calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



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Lab. PR. #

S. Type

18 Checked By 21136-02-5 Mold Depth/Elev. -Seattle, WA

 $T{\hbox{\footnotesize\rm ESTS}}, {\hbox{\footnotesize\rm LLC}}$ Client Pr. # 200016 Time Oil Terminal Pr. Name Sample ID 39571/4-38 Subsample

Sample ID	39571/4-38	Subsample	1	Location	Seattle, WA
Add. Info	-	Mixing/Molding Date	11/02/21		Curing Age, Days 28
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	oil-Cement Cylinders
		METHOD	В		
		METHOD	В		
	SAMPLE DATA		WATER CONTE	NT DETERM	/INATION
Initial Heig		5.992	Mass of Wet Sar		
Initial Diam	neter, in	2.966	Mass of Dry Sam	ple and Tar	e, g 1161.3
Height-to-[Diameter Ratio	2.02	Mass of Tare, g		280.0
Area, in ²		6.91	Moisture, %		33.7
Volume, in	3	41.40			
Mass of Sa	. •	1179.6			
Wet Densi	- ·	108.5			
Dry Densit		81.2			
Strain rate	Speed, in/min	0.050 0.83			
Oliain rate	, 70 / 111111	0.03			
		TEST	DATA		
	Load Cell ID #	11/1015		Digita	al Caliper ID # 17/583
	Compression Device ID #	10/1014			ut Device ID # 10/1016
	Balance ID #	1036/1037			Oven ID # 758/496
Maximum	Load at Failure, lbf		427		
Cnasiman	Cross sectional Area in ²		0.04		Failure Code 3
•	Cross-sectional Area, in ² ive Strength at Failure, psi		6.91 62		
-	n Factor for Height to Diamete	r Patio	1.00		
	Compressive Strength at Fa		62		Failure Sketch
-	A conversion factor based on H/D=	· •		or ASTM CAS	
Note 2 F	A CONVERSION TACLOR DASECTION FINDS	DESCRIPTION	na ada. correction p	JEI ASTIVI C42	^{''} /
		DEGGIAN HOIV			
					Failure Type:
					Cone and Shear
	U	SCS (ASTM_ <u>D2487: D24</u>	88)		
		REMARKS			



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Tests, Llc 18 Checked By Web: www.test-llc.com ACCREDITED Client Pr. 200016 Lab. PR. # 21136-02-5 Time Oil Terminal S. Type Depth/Elevation Pr. Name Mold 39571/4-38 Subsample ID 2 Seattle, WA Sample ID Location Mixing/Molding Date 11/02/21 Add. Info Curing Age, Days 28

ASTM D 5084: Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow) **Initial Sample Data (Before Test) Test Data** Final Data (After Test) 2.969 10 Height 7.54 Speed cm Diameter 2.957 7.51 7 2.970 cm **Board Number** Average Height of Sample 6.87 44.31 cm² Cell Number 15 Average Diameter of Sample 2.958 Area 0.0118 ft³ cm³ cm² 6.87 44.34 Volume 334.12 Flow Pump Number 3A Area cm³/sec cm³ 620.1 2.24E-04 0.0118 Mass 1.37 Flow Pump Rate* Volume 334.46 Dry Density 86.8 pcf cm³ Specific Gravity 2.700 (Assumed) B - Value 0.95 Mass 625.7 1.38 Vol. of Voids 162.07 cm^3 Dry Density 86.9 pcf Cell Pressure 95.0 Vol. of Solids 172.39 psi Back Pressure 90.0 psi Void Ratio 0.94 **Moisture Content** Moisture Content Confining (Effective) Pressure 5.0 psi Saturation 98.9 Mass of wet sample & tare Max Head 47.13 Mass of wet sample & tare 699.8 620.1 cm 45.72 Mass of dry sample & tare 465.3 Min Head Mass of dry sample & tare 539.6 cm Maximum Gradient 6.25 Mass of tare 0.0 Mass of tare 74.3 % Moisture 33.3 Minimum Gradient 6.06 % Moisture 34.4 TIME FUNCTION Δt READING Head Gradient Temp. PERMEABILITY (cm/sec) Note: Deaired Water Used for Permeability Test. T_v(°C) @ 20 °C DATE **HOUR** MIN DP. (psi) (cm) @ T. R_{T} (sec) DESCRIPTION NA 7 5 46.42 6.15 11/30/21 0.66 18.8 USCS 7 15 600 0.65 45.72 6.06 18.8 8.27E-07 1.030 8.52E-07 (ASTM D2487:2488) 11/30/21 7 25 600 47.13 6.25 18.8 8.21E-07 1.030 8.46E-07 11/30/21 0.67 NA 7 35 600 46.42 6.15 18.8 8.15E-07 1.030 8.40E-07 11/30/21 0.66 **REMARKS** Bottom Half of the mold was used for testing 7 45 6.15 18.8 8.21E-07 1.030 8.46E-07 11/30/21 600 0.66 46.42 7 55 600 0.65 45.72 6.06 18.8 8.27E-07 1.030 8.52E-07 11/30/21 5 11/30/21 8 600 0.66 46.42 6.15 18.8 8.27E-07 1.030 8.52E-07 Reported Average Hydraulic Conductivity* 8.5E-07 cm/sec 475 Differential Pressure Meter ID # Flow pump ID # Balance ID # 1035/1036 469 290 Thermometer ID # 796/985 Oven ID# 496/758 Board Pressure Meter ID # 491 Pore Pressure Meter ID # Syringe ID # 216

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



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Client Pr. # 200016 21136-02-5 Lab. PR. # Pr. Name Time Oil Terminal S. Type Mold Depth/Elev. _ Sample ID 39572/4-73 Re-Mix Subsample 1 Location Seattle, WA 11/02/21 10 Add. Info Mixing/Molding Date Curing Age, Days ASTM D 1633: Standard Test Methods for Compressive Strength of Molded Soil-Cement Cylinders **METHOD** В **SAMPLE DATA** WATER CONTENT DETERMINATION 1483.3 Initial Height, in 5.645 Mass of Wet Sample and Tare, g Initial Diameter, in 2.961 Mass of Dry Sample and Tare, q 1153.5 Height-to-Diameter Ratio Mass of Tare, g 1.91 359.7 Area, in² 6.89 Moisture, % 41.5 Volume, in³ 38.87 Mass of Sample, g 1125.2 Wet Density, pcf 110.3 Dry Density, pcf 77.9 Machine Speed, in/min 0.050 Strain rate, % / min 0.89 **TEST DATA** Load Cell ID # 11/1015 Digital Caliper ID # 17/583 Readout Device ID # Compression Device ID # 10/1014 10/1016 Balance ID # 1036/1037 Oven ID# 758/496 Maximum Load at Failure, lbf 273 Failure Code 3 Specimen Cross-sectional Area, in² 6.89 Compressive Strength at Failure, psi 40 Conversion Factor for Height to Diameter Ratio 1.00 Reported Compressive Strength at Failure, psi 40 Failure Sketch Note 2: * - A conversion factor based on H/D=1.15 (C.F.-.908 as 100% and add. correction per ASTM C42) **DESCRIPTION** Failure Type: Cone and Shear USCS (ASTM D2487: D2488) **REMARKS**



Client Pr. #

Pr. Name

Sample ID Add. Info

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39572/4-73 Re-Mix

200016

Time Oil Terminal

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Subsample

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	SHO		18	
	Lab. PR. #			
	S. Type	Mold	Depth/Elev.	-
	Location			
21		Curing Ag	e, Days	28

Add. Info	-	Mixing/Molding Date	11/02/21]	Curing Age, Days	28
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded S	oil-Cement Cylinders	
		METHOD	В]		
Area, in ² Volume, in ³ Mass of Sa Wet Densit Dry Densit	neter, in Diameter Ratio ample, g ty, pcf y, pcf peed, in/min	5.600 2.962 1.89 6.89 38.59 1116.7 110.2 77.7 0.050 0.89	WATER CONTE Mass of Wet San Mass of Dry San Mass of Tare, g Moisture, %	mple and Ta	re, g 1395.9]
		TEST	T DATA			
	Load Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037			al Caliper ID # 17/583 ut Device ID # 10/1016 Oven ID # 758/496]
Specimen Compressi	Load at Failure, lbf Cross-sectional Area, in ² ve Strength at Failure, psi n Factor for Height to Diamete Compressive Strength at Fa		680 6.89 99 1.00		Failure Code 3	tch
Note 2: * - A	Conversion factor based on H/D=	=1.15 (C.F908 as 100% a DESCRIPTION SCS (ASTM D2487: D24		per ASTM C4:	Failure Type:	Shear
	S	000 (X011M <u>B2 101: B2</u>]			
		REMARKS			_	



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EB/KP 11/12/21

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Date 18

Client Pr. 200016 Lab. PR. # 21136-02-5 Time Oil Terminal S. Type Depth/Elevation Pr. Name Mold 39572/4-73 Re-Mix Subsample ID Seattle, WA Sample ID 3 Location Mixing/Molding Date 11/02/21 Add. Info _ Curing Age, Days 10 ASTM D 5084: Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow) **Initial Sample Data (Before Test) Test Data Final Data (After Test)** 3.016 lin 10 Height 7.66 Speed cm Diameter 2.966 7.53 3 3.017 cm **Board Number** Average Height of Sample cm² 6.91 44.58 Cell Number 41 Average Diameter of Sample 2.967 7.54 cm Area cm³ cm² 341.48 0.0121 2A 6.91 44.61 Volume Flow Pump Number Area cm³/sec cm³ 596.9 1.32 2.24E-04 341.82 0.0121 77.0 Mass Flow Pump Rate* Volume Dry Density pcf Specific Gravity 2.700 (Assumed) B - Value 0.95 Mass 604.7 1.33 Vol. of Voids 185.61 cm³ Dry Density 77.1 pcf Cell Pressure 95.0 Vol. of Solids 156.21 psi Back Pressure 90.0 psi Void Ratio 1.19 **Moisture Content** Moisture Content 98.6 Confining (Effective) Pressure 5.0 psi Saturation Mass of wet sample & tare Max Head 14.77 Mass of wet sample & tare 675.2 596.9 cm 492.3 Mass of dry sample & tare 421.7 Min Head 14.07 Mass of dry sample & tare cm Maximum Gradient 1.93 Mass of tare 0.0 Mass of tare 70.6 % Moisture 41.5 Minimum Gradient 1.84 % Moisture 43.4 TIME FUNCTION Δt READING Head Gradient Temp. PERMEABILITY (cm/sec) Note: Deaired Water Used for Permeability Test. T_v(°C) @ 20 °C DATE **HOUR** MIN DP. (psi) (cm) @ T. R_{T} (sec) DESCRIPTION NA 7 5 14.07 20.6 11/12/21 0.20 1.84 USCS 7 15 600 0.21 14.77 1.93 20.6 2.67E-06 0.986 2.63E-06 (ASTM D2487:2488) 11/12/21 7 25 600 0.20 14.07 1.84 20.6 2.67E-06 0.986 2.63E-06 11/12/21 NA 7 35 600 0.21 14.77 1.93 20.6 2.67E-06 0.986 2.63E-06 11/12/21 **REMARKS** Bottom Half of the mold was used for testing 7 45 0.20 14.07 1.84 20.6 2.67E-06 0.986 2.63E-06 11/12/21 600 7 55 600 0.21 14.77 1.93 20.6 2.67E-06 0.986 2.63E-06 11/12/21 5 11/12/21 8 600 0.20 14.07 1.84 20.6 2.67E-06 0.986 2.63E-06 Reported Average Hydraulic Conductivity* 2.6E-06 cm/sec Differential Pressure Meter ID # Flow pump ID # 244 Balance ID # 1035/1036 346 Thermometer ID # 796/985 Oven ID# 496/758 Board Pressure Meter ID # 1041 245 Pore Pressure Meter ID # 26/27 Syringe ID #

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for

calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



490

Syringe ID #

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28

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ab. PR. # 21136-02-5
S. Type Mold Depth/Elevation Location Seattle, WA

216

Client Pr. 200016 Lab. PR. # Time Oil Terminal Pr. Name 39572/4-73 Re-Mix Subsample ID Sample ID 4 Location Mixing/Molding Date 11/02/21 Add. Info _ Curing Age, Days ASTM D 5084: Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous

Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow) **Initial Sample Data (Before Test) Test Data** Final Data (After Test) 3.065 10 Height 7.79 Speed cm Diameter 2.958 7.51 8 3.066 cm **Board Number** Average Height of Sample 6.87 44.34 cm² Cell Number 4 Average Diameter of Sample 2.959 7.52 Area cm^3 cm² 0.0122 3B 6.88 44.37 Volume 345.16 Flow Pump Number Area cm³/sec cm³ 608.2 2.24E-04 345.50 0.0122 77.8 Mass 1.34 Flow Pump Rate* Volume Dry Density pcf Specific Gravity 2.700 (Assumed) B - Value 0.95 Mass 616.6 1.36 Vol. of Voids 186.06 lcm³ Dry Density 77.8 pcf Cell Pressure 95.0 Vol. of Solids 159.45 psi Back Pressure 90.0 psi Void Ratio 1.17 **Moisture Content** Moisture Content Confining (Effective) Pressure 5.0 psi Saturation 100.0 Mass of wet sample & tare Max Head 60.49 Mass of wet sample & tare 699.5 608.2 cm 59.79 Mass of dry sample & tare 430.3 Min Head Mass of dry sample & tare 513.5 cm Maximum Gradient 7.77 83.2 Mass of tare 0.0 Mass of tare % Moisture 41.3 Minimum Gradient 7.68 % Moisture 43.2 TIME FUNCTION Δt READING Head Gradient Temp. PERMEABILITY (cm/sec) Note: Deaired Water Used for Permeability Test. T_v(°C) @ 20 °C DATE **HOUR** MIN DP. (psi) (cm) @ T. R_{T} (sec) DESCRIPTION NA 7 5 11/30/21 0.86 60.49 7.77 18.8 USCS 7 15 600 0.85 59.79 7.68 18.8 6.54E-07 1.030 6.74E-07 (ASTM D2487:2488) 11/30/21 7 25 600 0.86 60.49 7.77 18.8 6.54E-07 1.030 6.74E-07 11/30/21 NA 7 35 600 0.85 59.79 7.68 18.8 6.54E-07 1.030 6.74E-07 11/30/21 **REMARKS** Bottom Half of the mold was used for testing 7 45 0.85 59.79 7.68 18.8 6.58E-07 1.030 6.78E-07 11/30/21 600 7 55 600 0.86 60.49 7.77 18.8 6.54E-07 1.030 6.74E-07 11/30/21 5 11/30/21 8 600 0.85 59.79 7.68 18.8 6.54E-07 1.030 6.74E-07 Reported Average Hydraulic Conductivity* 6.7E-07 cm/sec 475 Differential Pressure Meter ID # 262 Flow pump ID # Balance ID # 1035/1036 290 Thermometer ID # 796/985 Oven ID# 496/758 Board Pressure Meter ID #

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.

Pore Pressure Meter ID #



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08/24/21

	1E515, L	LC	Web: www.te	st-llc.com		REDITED		Checked By	16
Client Pr. #		200016				Lab. PR. #		21136-02-1	
Pr. Name	Т	ime Oil Termir	nal			S. Type	Mold	Depth/Elev.	-
Sample ID	38586/2-42		Subsample	1		Location		Seattle, WA	
Add. Info		Mixing/Mol	ding Date	08/18/2	21		Curing A	6	
				·		•		-	

Sample ID	38586/2-42	Subsample	1	Location	Seattle, WA	
Add. Info	-	Mixing/Molding Date	08/18/21]	Curing Age, Days	6
	ASTM D 1633: Standa	rd Test Methods for Con	pressive Strength	of Molded So	oil-Cement Cylinders	
				Т		
		METHOD	В]		
	SAMPLE DATA		WATER CONTE	NT DETERM	MINATION	
nitial Height	i	5.518	Mass of Wet Sai			
Initial Diame	-	3.025	Mass of Dry San	nple and Tar		
	ameter Ratio	1.82	Mass of Tare, g		299.1	
Area, in ²		7.19	Moisture, %		28.4	
Volume, in ³		39.66				
Mass of Sam	. •	1224.6				
Wet Density, Dry Density,		117.6 91.6				
Machine Spe		0.050				
Strain rate, %		0.91				
		TEQ-	Γ DATA			
		123	IDAIA			
	Load Cell ID #	11/1015		Digita	al Caliper ID # 17/583	
	Compression Device ID #	10/1014		Readou	ut Device ID # 10/1016	
	Balance ID #	1036/1037			Oven ID # 758/496	
Maximum I o	ad at Failure, lbf		411	7		
	ross-sectional Area, in ²		7.19		Failure Code 3	
-	Strength at Failure, psi		57	1		
-	Factor for Height to Diameter	Ratio	1.00			
	ompressive Strength at Fai		57		Failure Sketc	:h
-	onversion factor based on H/D=	· •	and add. correction i	∎ per ASTM C42		
		DESCRIPTION	•		´ /	
					Failure Type:	
	<u> </u>	SCS (ASTM D2487: D24	100)		Cone and Sh	near
	01	300 (AOTM D2407: D2-	1			
			_			
		REMARKS				



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08/28/21 18

Web: www.test-llc.com Client Pr. # 200016 Pr. Name Time Oil Terminal Subsample 38586/2-42 Sample ID

Lab. PR. # 21136-02-1 Depth/Elev. S. Type Mold -Seattle, WA

Campic 1D	30300/Z 1 Z	Oubsampic	_	Location		ocatile, war	
Add. Info	-	Mixing/Molding Date	08/18/21		Curing Ag	je, Days	10
	ASTM D 1633: Standar	rd Test Methods for Com	pressive Strength	of Molded So	oil-Cement Cy	linders	
				T.	•		
		METHOD	В	_			
	SAMPLE DATA		WATER CONTE	NT DETERM	IINATION		
Initial Height		5.566	Mass of Wet Sar			1534.7	
Initial Diame	ter, in	3.009	Mass of Dry Sam	nple and Tar	e, g	1264.3	
-	ameter Ratio	1.85	Mass of Tare, g			305.2	
Area, in ²		7.11	Moisture, %			28.2	
Volume, in ³		39.58					
Mass of Sam	. •	1231.5					
Wet Density,		118.5					
Dry Density, Machine Spe		92.4 0.050					
Strain rate, %		0.90					
otrain rato, ,	o /	0.00					
		TEST	DATA				
	Load Cell ID #	11/1015		Digita	al Caliper ID #	17/583	
	Compression Device ID #	10/1014		•	ut Device ID #		
	Balance ID #	1036/1037			Oven ID #		
	•			_			
Maximum Lo	ad at Failure, lbf		776				
Specimen Cı	ross-sectional Area, in ²		7.11		Failure Code	3	
Compressive	e Strength at Failure, psi		109				
Conversion F	Factor for Height to Diameter	Ratio	1.00				
Reported Co	ompressive Strength at Fai	lure, psi	109			Failure Sketo	ch
Note 2: * - A c	onversion factor based on H/D=	1.15 (C.F908 as 100% a	nd add. correction p	per ASTM C42	r)		
		DESCRIPTION				/	
					Failure Type:		_
	1.16	200 (ACTM D0407, D04	00)			Cone and S	hear
	U.	SCS (ASTM D2487: D24	00 <i>)</i> 				
		REMARKS					
					ı		



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	1E515, L	Web: www.t	est-llc.com	CREDITED		Checked By	10
Client Pr. #		200016		Lab. PR. #		21136-02-1	
Pr. Name	Т	ime Oil Terminal		S. Type	Mold	Depth/Elev.	-
Sample ID	38586/2-42	Subsample	3	Location		Seattle, WA	
Add. Info	•	Mixing/Molding Date	08/18/21		Curing Ag	ge, Days	21
							

Sample ID	38586/2-42	Subsample	3	Location	Seattle, WA	
Add. Info	-	Mixing/Molding Date	08/18/21		Curing Age, Days	21
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	il-Cement Cylinders	
				ī		
		METHOD	В			
	SAMPLE DATA		WATER CONTE	NT DETERM	IINATION	
Initial Height		5.489	Mass of Wet Sar			1
Initial Diame		3.014	Mass of Dry Sam	•		1
	ameter Ratio	1.82	Mass of Tare, g		298.8]
Area, in ²		7.13	Moisture, %		28.5	
Volume, in ³		39.16				-
Mass of Sam	nple, g	1221.5				
Wet Density,	•	118.8				
Dry Density,		92.4				
Machine Spe		0.050				
Strain rate, %	% / min	0.91				
		TEST	DATA			
						-
	Load Cell ID #	11/1015			I Caliper ID # 17/583	_
	Compression Device ID #	10/1014		Readou	t Device ID # 10/1016	4
	Balance ID #	1036/1037			Oven ID # 758/496]
Mavimum I o	oad at Failure, lbf		1377	Ī		
	ross-sectional Area, in ²		7.13	ł	Failure Code 3	1
-	e Strength at Failure, psi		193	•	T dilato codo	1
•	Factor for Height to Diameter	r Patio	1.00			
	ompressive Strength at Fa		193		Failure Ske	tob
-	•	· •		40744040		1011 1
Note 2: ^ - A c	onversion factor based on H/D=	=1.15 (C.F908 as 100% at DESCRIPTION	na aaa. correction p	per ASTM C42) /	
		DESCRIPTION				
					Failura Turas	,
					Failure Type: Cone and S	Shear
ļ	U	SCS (ASTM D2487: D24	.88)		Cono ana C	311041
	_]			
			1			
		REMARKS				



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Date

09/15/21 10

	TESIS, L	Web: www.te	est-lic.com 🙃	REDITED		Checked By	10
Client Pr. #		200016		Lab. PR. #		21136-02-1	
Pr. Name	Т	ime Oil Terminal		S. Type	Mold	Depth/Elev.	-
Sample ID	38586/2-42	Subsample	4	Location		Seattle, WA	
Add. Info	-	Mixing/Molding Date	08/18/21		Curing A	ge, Days	28
				-			

Sample ID	38586/2-42	Subsample	4	Location	Seattle, WA	
Add. Info	-	Mixing/Molding Date	08/18/21		Curing Age, Days	28
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	oil-Cement Cylinders	
		METHOD	В	"		
		METHOD	В	_		
;	SAMPLE DATA		WATER CONTE	NT DETERM	MINATION	
Initial Height,		5.601	Mass of Wet Sar			
Initial Diamete	•	3.012	Mass of Dry San	nple and Tare		
Height-to-Dia	meter Ratio	1.86	Mass of Tare, g		305.3	
Area, in ²		7.13	Moisture, %		28.5	
Volume, in ³		39.91				
Mass of Sam	_	1244.0				
Wet Density, Dry Density, p		118.7 92.4				
Machine Spe		0.050				
Strain rate, %		0.89				
		TEQT	DATA			
		ILSI	DATA			
I	Load Cell ID #	11/1015			al Caliper ID # 17/583	
	Compression Device ID #	10/1014		Readou	ut Device ID # 10/1016	
[Balance ID #	1036/1037			Oven ID # 758/496	
Maximum I oa	ad at Failure, lbf		1596	1		
	oss-sectional Area, in ²		7.13	i	Failure Code 3	
-	Strength at Failure, psi		224			
-	actor for Height to Diamete	r Ratio	1.00	ı		
Reported Co	mpressive Strength at Fa	ilure, psi	224		Failure Sketch	1
Note 2: * - A co	onversion factor based on H/D=	=1.15 (C.F908 as 100% ai	nd add. correction p	per ASTM C42	2)	
		DESCRIPTION				
					Failure Type:	
L		SCS (ASTM D2487: D24	99/		Cone and She	ear
	O	303 (A31W D2407. D24				
			l			
_		REMARKS				



Client Pr.

Pr. Name

Sample ID

TIMELY

38586/2-42

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Time Oil Terminal

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Subsample ID



Mold

Lab. PR. #

S. Type

Location

Tested By Date EB/KP 08/28/21

Checked By

21136-02-1

Seattle, WA

Depth/Elevation

08/28/21

Sample ID			30300	12-42		Subs	ample ib	J		Location			Seattle	, vv A	
Add. Info		-		M	ixing/Molding Da	ate		08/18/21]		Curin	ig Age, Days		10
	ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)														
					Materials I	Jsing a F	lexible Wal	I Permeam	eter (Me	thod D, Con	stant Rate	e of Flo	w)		
li	nitial San	nple Dat	a (Before	e Test)			Test Data	a		Final Data (After Test)					
Height		3.027	in	7.69	cm Speed			10	1						
Diameter		3.017	in		cm Board N	umber		9]	Average Hei	ght of Samp	ole	3.028 in		7.69 cm
Area		7.15	in ²	.0	cm ² Cell Nun	nber		13		Average Dia	meter of Sa	mple	3.018 in		7.67 cm
Volume		354.61	cm ³	0.0125	ft ³ Flow Pu	mp Numbe	r	4A		Area	7.15	in ²	46.15 cm ²		
Mass		670.0	g	1.48	b Flow Pu	mp Rate*		2.24E-04	cm ³ /sec	Volume	354.96	cm ³	0.0125 ft ³	I	Dry Density 91.5 pcf
Specific Gra	avity	2.700	(Assume	d)	B - Value	-		0.95		Mass	677.6	g	1.49 lb		Vol. of Voids 162.22 cm ³
Dry Density		91.6	pcf		Cell Pres			95.0	psi					'	Vol. of Solids 192.74 cm ³
					Back Pre			90.0	psi					'	Void Ratio 0.84
		ture Cont		1) Pressure	5.0	psi			sture Co		,	Saturation 96.9 %
Mass of we	'			g	Max Hea			36.58 35.87	cm	Mass of wet	•		760.2 g		
Mass of dry		tare	520.4	g	Min Hea				cm		Mass of dry sample & tare 603.0 g				
Mass of tare	Э		0.0	g		Maximum Gradient		4.76 4.66	1	Mass of tare			82.6 g		
% Moisture			28.7			Minimum Gradient				% Moisture	T		30.2		
TIME	FUNCTI	ON	Δt	READING	Head	Gradient	Temp.			(cm/sec)		Note: I	Deaired Water Used f	for Per	meability Test.
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R _T	@ 20 °C			DESCRIPTION		
08/28/21	7	30	-	0.51	35.87	4.66	25.6	-	-	-		NA			USCS
08/28/21	7	40	600	0.52	36.58	4.76	25.6	1.03E-06	0.877	9.04E-07					(ASTM D2487;2488)
08/28/21	7	50	600	0.51	35.87	4.66	25.6	1.03E-06	0.877	9.04E-07]				NA
08/28/21	8	0	600	0.52	36.58	4.76	25.6	1.03E-06	0.877	9.04E-07	*		REM	MARKS	3
08/28/21	8	10	600	0.52	36.58	4.76	25.6	1.02E-06	0.877	8.95E-07	*	Bottom	Half of the mold was	used f	for testing.
08/28/21	8	20	600	0.51	35.87	4.66	25.6	1.03E-06	0.877	9.04E-07	*				
08/28/21	8	30	600	0.52	36.58	4.76	25.6	1.03E-06	0.877	9.04E-07	*				
				_	Reported	d Average I	Hydraulic Co	nductivity*		9.0E-07	cm/sec				
Flow pump	ID#	10	143		Balance ID #	1035/1036		Differential I	Pressure I	Meter ID #	=		1044/1048		
Thermomet	er ID#	796	/985		Oven ID #	496/758		Board Press	sure Mete	r ID#			571		
Syringe ID	#	10)47]				Pore Pressu	ıre Meter	ID#			29		

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for

calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.

5



Client Pr.

Pr. Name

TIMELY

Engineering Soil

200016

Time Oil Terminal

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Mold

Lab. PR. #

S. Type

Tested By

21136-02-1

Depth/Elevation

Date

EB/KP 09/15/21

Checked By

09/15/21

Sample ID			38586	/2-42		Subs	ample ID	6		Location	Seattle, WA			
Add. Info		-		N	ixing/Molding D	ate		08/18/21			Curing Age, Days 28			
				ASTM I	5084; Stanc	lard Test I	Method for	Measurem	ent of Hy	/draulic Co	enductivity of Saturated Porous			
	Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)													
lı	nitial San	nple Data	a (Befor	e Test)		Test Data				Final Data (After Test)				
Height		2.978	in	7.56	cm Speed			12]					
Diameter		3.009	in	_	cm Board I	Number		5		Average Hei	eight of Sample 2.979 in 7.57 cm			
Area		7.11	in ²	45.88	cm ² Cell Nu	mber		2		Average Dia	ameter of Sample 3.010 in 7.65 cm			
Volume		347.02	cm ³	0.0123	ft ³ Flow Pu	ump Numbe	r	4A	1	Area	7.12 in ² 45.91 cm ²			
Mass		658.7	g	1.45	lb Flow Pu	ump Rate*		5.60E-05	cm ³ /sec	Volume	347.37 cm ³ 0.0123 ft ³ Dry Density 92.3 pcf			
Specific Gra	avity	2.700	(Assume	d)	B - Valu	ue		0.95	1	Mass	673.4 g 1.48 lb Vol. of Voids 157.04 cm ³			
Dry Density	,	92.4	pcf		Cell Pre	essure		95.0	psi		Vol. of Solids 190.34 cm ³			
	•		•		Back P	ressure		90.0	psi		Void Ratio 0.83			
	Mois	ture Cont	ent		Confini	ng (Effective) Pressure	5.0	psi		Moisture Content Saturation 101.6 %			
Mass of we	t sample &	tare	658.7	g	Max He	Max Head 52.76 cm Mass of wet sample &			cm	Mass of wet	t sample & tare 747.0 g			
Mass of dry	sample &	tare	513.6	g	Min He	Min Head			cm	Mass of dry	sample & tare 587.6 g			
Mass of tare	е		0.0	g	Maximu	Maximum Gradient		6.97	1	Mass of tare	e 74.0 g			
% Moisture			28.3		Minimu	m Gradient		6.88		% Moisture	31.0			
TIME	FUNCTI	ON	Δt	READING	Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)	Note: Deaired Water Used for Permeability Test.			
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R_T	@ 20 °C	DESCRIPTION			
09/15/21	8	5	-	0.75	52.76	6.97	24.8	-	-	-	NA USCS			
09/15/21	8	15	600	0.74	52.05	6.88	24.8	1.76E-07	0.893	1.57E-07	(ASTM D2487;2488)			
09/15/21	8	25	600	0.75	52.76	6.97	24.8	1.76E-07	0.893	1.57E-07	NA NA			
09/15/21	8	35	600	0.74	52.05	6.88	24.8	1.76E-07	0.893	1.57E-07	* REMARKS			
09/15/21	8	45	600	0.75	52.76	6.97	24.8	1.76E-07	0.893	1.57E-07	* Bottom Half of the mold was used for testing.			
09/15/21	8	55	600	0.74	52.05	6.88	24.8	1.76E-07	0.893	1.57E-07	*			
09/15/21	9	5	600	0.75	52.76	6.97	24.8	1.76E-07	0.893	1.57E-07	*			
				_	Reporte	ed Average I	Hydraulic Co	nductivity*		1.6E-07	cm/sec			
Flow pump	ID#	10	143		Balance ID #	1035/1036 Differential Pressure M			Pressure I	Meter ID #	1044/1048			
Thermomet	er ID#	796	/985		Oven ID #	496/758		Board Pressure Meter ID # 1042			1042			
Syringe ID	#	10	147]				Pore Pressu	ıre Meter	ID#	779/780			
i														

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for

calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



TIMELY Engineering Soil

Tests, Llc

1874 Forge Street Tucker, GA 30084

Phone: 770-938-8233

Fax: 770-923-8973



Tested By

KP/IH

Date

08/26/21 18

Web: www.test-llc.com Checked By Client Pr. # 200016 Lab. PR. # 21136-02-1 Pr. Name Time Oil Terminal Depth/Elev. S. Type Mold -Subsample Sample ID 38622/2-23 Location Seattle, WA

Add. Info	-	Mixing/Molding Date	08/20/21	Cı	uring Age, Days	6
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded Soil-Cem	ent Cylinders	
		METHOD	В	Ī		
		METHOD	В			
Initial Heigh Initial Diame Height-to-Di Area, in ² Volume, in ³ Mass of Sar Wet Density Dry Density	eter, in iameter Ratio mple, g /, pcf	5.590 2.970 1.88 6.93 38.73 1213.5 119.4 93.4	WATER CONTE Mass of Wet Sar Mass of Dry Sar Mass of Tare, g Moisture, %		1511.7 1248.5 299.3 27.7	
Machine Sp Strain rate,	eed, in/min	0.050 0.89				
		TEST	DATA			
	Load Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037		Digital Calip Readout Devid Ove		
Specimen C Compressiv	oad at Failure, lbf Cross-sectional Area, in ² re Strength at Failure, psi Factor for Height to Diametel	· Ratio	373 6.93 54 1.00	Failure	e Code 3	
Reported C	Compressive Strength at Fai conversion factor based on H/D=	lure, psi	54	per ASTM C42)	Failure Sketch	
				Failure	Type: Cone and She	ear
	U	SCS (ASTM D2487: D24	88)			
		REMARKS				
	·			I		



Timely Engineering Soil Tests, llc

RING Phone: 770-938-8233

Fax: 770-923-8973

1874 Forge Street Tucker, GA 30084



Tested By

Checked By

KP/IH

Date

08/30/21

L	T _E	ESTS, LLC	Web: www.te	st-llc.com			
Client Pr. #		2000	16				
Pr. Name		Time Oil Terminal					
Sample ID	3862	2/2-23	Subsample	2			
Add. Info	-	Mixir	Mixing/Molding Date 08/20/2				

Lab. PR. #
S. Type
Location

21136-02-1

Mold Depth/Elev.
Seattle, WA

Curing Age, Days 10

Add. IIIIO		Mixing/Molding Date	00/20/21	. <u>L</u>	Culling Age, Days	
	ASTM D 1633: Standa	ard Test Methods for Cor	npressive Strength	of Molded Soil-C	ement Cylinders	
		METHOD	В			
Initial Height Initial Diame Height-to-Dia Area, in ² Volume, in ³ Mass of San Wet Density, Dry Density, Machine Spe Strain rate, 9	ter, in ameter Ratio nple, g , pcf pcf eed, in/min	5.632 2.975 1.89 6.95 39.15 1216.8 118.4 92.8 0.050 0.89	WATER CONTE Mass of Wet San Mass of Dry San Mass of Tare, g Moisture, %	mple and Tare, g		
		TES	T DATA			
	Load Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037		Readout De	aliper ID # 17/583 evice ID # 10/1016 Oven ID # 758/496	
Specimen C Compressive	oad at Failure, lbf ross-sectional Area, in ² e Strength at Failure, psi Factor for Height to Diamete	r Ratio	862 6.95 124 1.00	Fail	ure Code 3	
	ompressive Strength at Fa		124		Failure Sketch	
Note 2: * - A c	conversion factor based on H/D	=1.15 (C.F908 as 100% of DESCRIPTION	and add. correction p		ure Type: Cone and Shear	
	U	SCS (ASTM D2487: D2	488)	<u> </u>		
		REMARKS				



Timely Engineering Soil

 Γ ESTS, LLC

1874 Forge Street Tucker, GA 30084

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Fax: 770-923-8973



Tested By

KP/IH

Date

09/10/21

_	1E515, L	LC	Web: www.tes	st-llc.com	CCREDITED		Checked By	4
Client Pr. #		200016			Lab. PR. #		21136-02-1	
Pr. Name	Ti	me Oil Termir	nal		S. Type	Mold		
Sample ID	38622/2-23		Subsample	3	Location	Seattle, WA		
Add. Info	-	Mixing/Mo	lding Date	08/20/21		Curing Age, Days		2

Add. Info	-	Mixing/Molding Date	08/20/21		Curing Age, Days	21
	ASTM D 1633: Standar	d Test Methods for Com	pressive Strength	of Molded S	oil-Cement Cylinders	
		METHOD	В			
Initial Height Initial Diame Height-to-Dia Area, in ² Volume, in ³ Mass of San Wet Density Dry Density, Machine Spo	ter, in ameter Ratio nple, g , pcf pcf eed, in/min	5.603 2.977 1.88 6.96 39.00 1212.4 118.4 92.7 0.050 0.89	WATER CONTE Mass of Wet Sar Mass of Dry San Mass of Tare, g Moisture, %	mple and Ta	re, g 1509.9	
		TEST	DATA			
	Load Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037			al Caliper ID # 17/583 ut Device ID # 10/1016 Oven ID # 758/496	
Specimen C Compressive	oad at Failure, lbf ross-sectional Area, in ² e Strength at Failure, psi Factor for Height to Diameter	Ratio	2298 6.96 330 1.00		Failure Code 3	
	ompressive Strength at Fai	İ	330		Failure Sk	etch
Note 2: * - A c	conversion factor based on H/D=	1.15 (C.F908 as 100% ai DESCRIPTION	nd add. correction p	oer ASTM C42	Failure Type:	I Shear
	US	SCS (ASTM D2487: D24	88)		1	
		REMARKS				



Tests, Llc

1874 Forge Street Tucker, GA 30084

Phone: 770-938-8233 Fax: 770-923-8973

Tested By

KP/IH

Date

09/17/21

L	T	ESTS, LLC	Web: www.tes	st-Ilc.com		SHIO		Checked By	18
Client Pr. #		2000)16			Lab. PR. #		21136-02-1	
Pr. Name		Time Oil	Terminal			S. Type	Mold	Depth/Elev.	•
Sample ID	386	622/2-23	Subsample	4		Location		Seattle, WA	
Add. Info	-	Mixir	ng/Molding Date	olding Date 08/20/21			Curing A	ge, Days	28

	i i. ivailie	ı	inc on reminal		O. Type	word Deptit/Liev.	1
ASTM D 1633: Standard Test Methods for Compressive Strength of Molded Soil-Cement Cylinders METHOD B SAMPLE DATA Initial Height, in 5.654 Initial Diameter, in 2.972 Initial Diameter, in 1.90 Area, in 3.922 Mass of Dry Sample and Tare, g 1.259.3 Mass of Dry Sample and Tare, g 3.00.9 Area, in 3.922 Mass of Sample, g Moisture, % 2.7.1 Wet Density, pcf 118.9 Dry Density, pcf 93.5 Machine Speed, in/min 0.050 Strain rate, % / min Digital Caliper ID # 17/583 Readout Device ID # 10/1014 Balance ID # 10/1014 Balance ID # 10/1014 Balance ID # 10/1014 Balance ID # 10/1016 Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Note 2: *- A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION WATER CONTENT DETERMINATION Mass of Wet Sample and Tare, g 1519.5 Mass of Dry Sample and Tare, g 1259.3 Moisture, % 1259.3 Moisture, % 27.1 TEST DATA TEST DATA TEST DATA Failure Code 3 Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Note 2: *- A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION USCS (ASTM D2487: D2488)	Sample ID	38622/2-23	Subsample	4	Location	Seattle, WA	
Maximum Load at Failure, Ibf Specimen Cross-sectional Area, in Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio 1.00 Mass of West Sample and Tare, g 1519.5 1259.3 125	Add. Info	-	Mixing/Molding Date	08/20/21		Curing Age, Days	28
Maximum Load at Failure, Ibf Specimen Cross-sectional Area, in Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio 1.00 Mass of West Sample and Tare, g 1519.5 1259.3 125		ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	il-Cement Cylinders	
SAMPLE DATA Initial Height, in		110 11/1 2 1000 0 0001		pressi, e serengen	_	ar coment cylinaers	
Initial Height, in Initial Diameter, in Height, to Diameter Ratio Area, in 2 Volume, in 3 Mass of Wet Sample and Tare, g Mass of Dry Sample and Tare, g Mass of Dry Sample and Tare, g Mass of Tare, g Mass of Tare, g Mass of Tare, g Mass of Tare, g Mass of Sample, g Moisture, % Moisture, %			METHOD	В			
Initial Height, in Initial Diameter, in Height, to Diameter Ratio Area, in 2 Volume, in 3 Mass of Wet Sample and Tare, g Mass of Dry Sample and Tare, g Mass of Dry Sample and Tare, g Mass of Tare, g Mass of Tare, g Mass of Tare, g Mass of Tare, g Mass of Sample, g Moisture, % Moisture, %							
Initial Diameter, in		ı	5.054				Ī
Height-to-Diameter Ratio Area, in² 6,94 Moisture, % Mass of Tare, g Moisture, % Moisture, % Moisture, % Moisture, % Moisture, % Moisture, % Moisture, % Moi	-				•		
Area, in² Volume, in³ Mass of Sample, g Wet Density, pcf January (18.9) Machine Speed, in/min Strain rate, % / min TEST DATA TEST DATA TEST DATA Load Cell ID # Compression Device ID # Balance ID # Maximum Load at Failure, lbf Specimen Cross-sectional Area, in² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Note 2: *- A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION Moisture, % TEST DATA Digital Caliper ID # 17/583 Readout Device ID # 10/1016 Note 10/1016 Reported Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi DESCRIPTION USCS (ASTM D2487: D2488) USCS (ASTM D2487: D2488)				•	npie and Tare	-	
Volume, in ³ Mass of Sample, g Mass of Sample, g Met Density, pcf Dry Density, pcf Dry Density, pcf Dry Density, pcf Machine Speed, in/min Strain rate, % / min TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA Digital Caliper ID # 17/583 Readout Device ID # 10/1016 Oven ID # 758/496 Test Data Test DATA Test DATA Test DATA Test DATA Test DATA Test DATA Tes		ameter Natio		-			
Mass of Sample, g Wet Density, pcf Dry Density, pcf Machine Speed, in/min Strain rate, % / min TEST DATA TEST DATA TEST DATA TEST DATA Load Cell ID # Compression Device ID # Balance ID # Tol/1014 Balance ID # Tol/1016				ivioisture, %		21.1	i
Wet Density, pcf Dry Density, pcf Dry Density, pcf Dry Density, pcf Machine Speed, in/min Strain rate, % / min TEST DATA TEST DATA TEST DATA Load Cell ID # Compression Device ID # 10/1014 Balance ID # 10/1014 Balance ID # 10/1014 Balance ID # 10/1014 Balance ID # 10/1016 Oven ID # 758/496 Maximum Load at Failure, Ibf Specimen Cross-sectional Area, in² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION USCS (ASTM D2487: D2488) USCS (ASTM D2487: D2488)		nnle a					
Dry Density, pcf Machine Speed, in/min Strain rate, % / min TEST DATA TEST DATA Load Cell ID # Compression Device ID # Balance ID # 10/1014 Balance ID # 1036/1037 Maximum Load at Failure, lbf Specimen Cross-sectional Area, in² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION TEST DATA Digital Caliper ID # 17/583 Readout Device ID # 10/1016 Oven ID # 758/496 Failure Code 3 Failure Sketch Failure Sketch Failure Type: Cone and Shear		. •					
Machine Speed, in/min Strain rate, % / min TEST DATA Load Cell ID #	-	•					
TEST DATA Load Cell ID # Compression Device ID # Balance ID # Maximum Load at Failure, Ibf Specimen Cross-sectional Area, in² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION TEST DATA Digital Caliper ID # 17/583 Readout Device ID # 10/1016 Oven ID # 758/496 Failure Code 3 Failure Sketch Failure Sketch Failure Type: Cone and Shear		•					
Load Cell ID # Compression Device ID # Balance ID # Compression Device ID # Balance ID # Maximum Load at Failure, Ibf Specimen Cross-sectional Area, in² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION DESCRIPTION Digital Caliper ID # 17/583 10/1016 758/496 Failure Code 3 Failure Sketch Failure Sketch Failure Type: Cone and Shear	Strain rate, %	6 / min	0.88				
Load Cell ID # Compression Device ID # Balance ID # Compression Device ID # Balance ID # Maximum Load at Failure, Ibf Specimen Cross-sectional Area, in² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION DESCRIPTION Digital Caliper ID # 17/583 10/1016 758/496 Failure Code 3 Failure Sketch Failure Sketch Failure Type: Cone and Shear			TEST	DATA			
Compression Device ID # 10/1014 Balance ID # 10/36/1037 Maximum Load at Failure, Ibf Specimen Cross-sectional Area, in² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION USCS (ASTM D2487: D2488) Readout Device ID # 10/1016 Oven ID # 758/496 Failure Code 3 Failure Sketch Failure Sketch Failure Type: Cone and Shear			1231	DATA			
Compression Device ID # 10/1014 Balance ID # 1036/1037 Maximum Load at Failure, Ibf Specimen Cross-sectional Area, in² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION USCS (ASTM D2487: D2488) Readout Device ID # 10/1016 Oven ID # 758/496 Failure Code 3 Failure Code 3 Failure Sketch Failure Type: Cone and Shear		Load Cell ID #	11/1015		Digita	l Caliper ID # 17/583	
Maximum Load at Failure, lbf Specimen Cross-sectional Area, in ² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION USCS (ASTM D2487: D2488) Failure Code 3 Failure Code 3 Failure Code 3 Failure Type: Cone and Shear		Compression Device ID #			Readou	·	
Specimen Cross-sectional Area, in ² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION Failure Code 3 Failure Code 3 Failure Code 3 Failure Code 3 Failure Sketch Failure Sketch Failure Type: Cone and Shear		Balance ID #	1036/1037			Oven ID # 758/496	
Specimen Cross-sectional Area, in ² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION Failure Code 3 Failure Code 3 Failure Code 3 Failure Code 3 Failure Sketch Failure Sketch Failure Type: Cone and Shear					•		'
Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION Failure Type: Cone and Shear USCS (ASTM D2487: D2488)		_		3159			1
Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION Failure Type: Cone and Shear USCS (ASTM D2487: D2488)						Failure Code 3	
Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION Failure Sketch Failure Type: Cone and Shear		•		455			
Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION Failure Type: Cone and Shear	Conversion F	Factor for Height to Diameter	Ratio	1.00			
Failure Type: Cone and Shear USCS (ASTM D2487: D2488)	Reported Co	ompressive Strength at Fai	lure, psi	455		Failure Sket	ch
Failure Type: Cone and Shear	Note 2: * - A c	onversion factor based on H/D=	1.15 (C.F908 as 100% ar	nd add. correction p	per ASTM C42,) /	
USCS (ASTM D2487: D2488)			DESCRIPTION				
USCS (ASTM D2487: D2488)							
USCS (ASTM D2487: D2488)							
USCS (ASTM D2487: D2488)						• • • • • • • • • • • • • • • • • • • •	
		1.11	200 (ACTM D0407, D04	00)		Cone and S	Shear
REMARKS		U.	5CS (ASTNI DZ487: DZ4	88) 			
REMARKS							
			REMARKS				
	•						



Pr. Name

TIMELY

ENGINEERING SOIL

200016

Time Oil Terminal

Tests, LLC

1874 Forge Street Tucker, GA 30084

Phone: 770-938-8233

Fax: 770-923-8973

Web: www.test-llc.com



Mold

Lab. PR. #

S. Type

Tested By

Date

21136-02-1

Depth/Elevation

08/30/2

Checked By

08/30/21

Sample ID 38622/2-23 Subsample ID 5 Location Seattle, WA Add. Info Mixing/Molding Date 08/20/21 Curing Age, Days 10 ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow) **Initial Sample Data (Before Test) Test Data** Final Data (After Test) Height 3.004 7.63 cm Speed 9 2.969 in 7.54 Board Number 7 Average Height of Sample 3.005 7.63 Diameter cm cm in² cm² 6.92 44.67 Cell Number Average Diameter of Sample 2.970 7.54 cm Area 14 cm^3 in² cm² Volume 340.81 0.0120 Flow Pump Number 4A Area 6.93 44.70 cm³/sec cm³ 639.2 1.41 Flow Pump Rate* 4.48E-04 Volume 341.15 0.0120 Dry Density 91.8 Mass pcf cm^3 Specific Gravity 2.700 (Assumed) B - Value 0.95 Mass 653.7 1.44 Vol. of Voids 155.34 cm³ Dry Density 91.8 pcf Cell Pressure 95.0 psi Vol. of Solids 185.81 90.0 Back Pressure psi Void Ratio 0.84 **Moisture Content Moisture Content** 97.9 Confining (Effective) Pressure 5.0 psi Saturation Max Head 23.92 Mass of wet sample & tare 639.2 cm Mass of wet sample & tare 734.7 501.3 Min Head 23.21 Mass of dry sample & tare 582.8 Mass of dry sample & tare cm Mass of tare 0.0 Maximum Gradient 3.13 Mass of tare 81.5 % Moisture 27.5 Minimum Gradient 3.04 % Moisture 30.3 TIME FUNCTION Δt READING Head Gradient Temp. PERMEABILITY (cm/sec) Note: Deaired Water Used for Permeability Test. T_x(°C) @ 20 °C DATE HOUR @ T, R_{T} MIN (sec) DP, (psi) (cm) DESCRIPTION NΑ 5 23.21 9 0.33 3.04 27.5 08/30/21 USCS 9 15 600 23.92 3.13 27.5 3.25E-06 0.841 2.73E-06 (ASTM D2487;2488) 08/30/21 0.34 08/30/21 9 25 600 0.33 23.21 3.04 27.5 3.25E-06 0.841 2.73E-06 NA 9 35 600 0.34 23.92 3.13 27.5 3.25E-06 0.841 2.73E-06 08/30/21 REMARKS Bottom Half of the mold was used for testing. 08/30/21 9 45 600 0.33 23.21 3.04 27.5 3.25E-06 0.841 2.73E-06 08/30/21 9 55 600 0.34 23.92 3.13 27.5 3.25E-06 0.841 2.73E-06 5 08/30/21 10 600 0.33 23.21 3.04 27.5 3.25E-06 0.841 2.73E-06 Reported Average Hydraulic Conductivity* 2.7E-06 cm/sec Flow pump ID # 1043 Balance ID # Differential Pressure Meter ID # 1044/1048 1035/1036 Thermometer ID # 796/985 Oven ID# 496/758 Board Pressure Meter ID # 290 Syringe ID # 1047 Pore Pressure Meter ID # 216

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for

calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



Pr. Name

TIMELY

Engineering Soil

200016

Time Oil Terminal

Tests, Llc

1874 Forge Street Tucker, GA 30084

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Web: www.test-llc.com



Mold

Lab. PR. #

S. Type

Tested By Date

EB/KP 09/17/21

Checked By

21136-02-1

Depth/Elevation

18

Sample ID			38622	/2-23			Subs	ample ID	6		Location				Seattle, WA				
Add. Info		-		N	Mixing/M	lolding Da	te		08/20/21				Curin	ng Age, Days			28		
				ASTM		•				-	/draulic Cor	-			us				
					Ма	terials L	Jsing a F	lexible Wal	I Permeam	eter (Me	thod D, Con	stant Rat	e of Flo	w)					
ı	nitial San	nple Dat	a (Befor	e Test)				Test Dat	a					Final Data	(After Test)				
Height		3.022	in	7.68	cm	Speed			11						_				
Diameter			in	7.54	cm	Board Nu	ımber		1		Average Hei	ght of Sam	ple	3.023	in	7.68	cm		
Area		6.92	in ²	44.64	cm ²	Cell Num	ber		11		Average Dia	meter of Sa		2.969	in	7.54	cm		
Volume		342.62	cm ³	0.0121	ft ³	Flow Pun	np Numbei	r	1A		Area	6.92	in ²	44.67	cm ²				
Mass		649.2	g	1.43	lb	Flow Pun	np Rate*		1.12E-04	cm ³ /sec	Volume	342.96	cm ³	0.0121	ft ³	Dry De	nsity !		pcf
Specific Gr	-	2.700	(Assume	d)		B - Value			0.95		Mass	664.5	g	1.46	lb	Vol. of			cm ³
Dry Density	′	92.8	pcf			Cell Pres			95.0	psi						Vol. of	—		cm ³
						Back Pre			90.0	psi						Void R		0.82	in
		ture Cont		7		_	•) Pressure	5.0	psi			isture Co		7	Saturat	tion 1	100.4	%
Mass of we				g		Max Hea			95.66	cm	Mass of wet			738.3	g				
Mass of dry	•	tare	509.4	g		Min Head	-		94.96	cm	Mass of dry s		are	583.6	g				
Mass of tar			0.0	g			n Gradient		12.46		Mass of tare			74.2	g				
% Moisture			27.4		Τ.	Minimum 			12.37		% Moisture	1		30.4					
	FUNCTI	r	Δt	READIN	-	Head	Gradient	Temp.			(cm/sec)		Note: I	Deaired Wate	er Used for Pe	rmeabil	ity Test.		
DATE	HOUR	MIN	(sec)	DP, (ps	i)	(cm)		T _x (°C)	@ T _x	R _T	@ 20 °C			DESCRIPT	ION	•			
09/17/21	11	5	-	1.36	(95.66	12.46	25.1	-	-	-		NA				USC	S	
09/17/21	11	15	600	1.35	(94.96	12.37	25.1	2.02E-07	0.887	1.79E-07						(ASTM D248	87;2488)	
09/17/21	11	25	600	1.36	ę	95.66	12.46	25.1	2.02E-07	0.887	1.79E-07						NA		ì
09/17/21	11	35	600	1.35	Ş	94.96	12.37	25.1	2.02E-07	0.887	1.79E-07	*			REMARK	_			
09/17/21	11	45	600	1.35	(94.96	12.37	25.1	2.03E-07	0.887	1.80E-07	*	Bottom	Half of the m	nold was used	for test	ing.		i
09/17/21	11	55	600	1.36	(95.66	12.46	25.1	2.02E-07	0.887	1.79E-07	*							1
09/17/21	12	5	600	1.35	(94.96	12.37	25.1	2.02E-07	0.887	1.79E-07	*							ì
						Reported	l Average I	Hydraulic Co	nductivity*		1.8E-07	cm/sec						•	
Flow pump	ID#	2	22		Balanc	e ID#	1035/1036		Differential I	Pressure I	Meter ID #	•		1107					
Thermome	ter ID #	796	/985		Oven II	D #	496/758		Board Press	sure Mete	r ID#			64					
Syringe ID	#	14	40					•	Pore Pressu	ıre Meter	ID#			26/27					

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for

calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



TIMELY Engineering \mathbf{S} OIL

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Phone: 770-938-8233 Fax: 770-923-8973

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KP/IH

Date

08/28/21

L		Tests, ll	ı.C	Web: www.tes	st-Ilc.com		SHIO		Checked By	18
Client Pr. #			200016				Lab. PR. #		21136-02-1	
Pr. Name		Tim	ne Oil Termi	nal			S. Type	Mold	Depth/Elev.	1
Sample ID	3	38623/2-15		Subsample	1		Location		Seattle, WA	
Add. Info	-		Mixing/Mo	lding Date	08/23/2	21		Curing A	Age, Days	5
	•									

Sample ID	38623/2-15	Subsample	1	Location	Seattle, WA	
Add. Info	-	Mixing/Molding Date	08/23/21		Curing Age, Days	5
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	il-Cement Cylinders	
				"		
		METHOD	В			
	SAMPLE DATA		WATER CONTE	NT DETERM	ΙΙΝΔΤΙΩΝ	
Initial Heigh		5.608	Mass of Wet Sar			
Initial Diame		2.985	Mass of Dry San			
•	iameter Ratio	1.88	Mass of Tare, g		305.8	
Area, in ²		7.00	Moisture, %		27.4	
Volume, in ³		39.25				
Mass of Sai	. •	1216.5				
Wet Density Dry Density		118.1 92.6				
	peed, in/min	0.050				
Strain rate,		0.89				
		TEST	DATA			
	Load Cell ID #	11/1015		Digita	l Caliper ID # 17/583	
	Compression Device ID #	10/1014			it Device ID # 10/1016	
	Balance ID #	1036/1037			Oven ID # 758/496	
	oad at Failure, lbf		220	i		
	Cross-sectional Area, in ²		7.00	ı	Failure Code 3	
-	e Strength at Failure, psi		31	,		
	Factor for Height to Diameter	ı	1.00			
-	Compressive Strength at Fa	1	31		Failure Sketch	
Note 2: * - A	conversion factor based on H/D=	· · · · · · · · · · · · · · · · · · ·	nd add. correction p	per ASTM C42 _,) /	
		DESCRIPTION				
					Foilure Type:	
					Failure Type: Cone and She	ear
	U	SCS (ASTM D2487: D24	88)			
		DE144D140				
		REMARKS				



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Date

09/02/21 18

L	TESTS, L	LLC	Web: www.tes			SHIO	
Client Pr. #		200016				Lab. PR. #	
Pr. Name	Т	ime Oil Termir	nal			S. Type	Mol
Sample ID	38623/2-15		Subsample	2		Location	
Add. Info	-	Mixing/Mol	ding Date	08/23/2	1		Cur

21136-02-1 old Depth/Elev.

Sample ID	38623/2-15	Subsample	2	Location	Seattle, WA	
Add. Info	-	Mixing/Molding Date	08/23/21		Curing Age, Days	10
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded Soi	l-Cement Cylinders	
		METHOD	В	1		
Initial Height, in Initial Diamete Height-to-Diam Area, in ² Volume, in ³ Mass of Samp Wet Density, pondochine Spee	r, in neter Ratio le, g ocf cf d, in/min	5.589 2.976 1.88 6.96 38.88 1215.9 119.1 93.3 0.050	WATER CONTE Mass of Wet Sar Mass of Dry Sar Mass of Tare, g Moisture, %	mple and Tare	e, g 1510.0	
Strain rate, %	/ min	0.89				
		TEST	DATA			
C	oad Cell ID # Compression Device ID # calance ID #	11/1015 10/1014 1036/1037			Caliper ID # 17/583 Device ID # 10/1016 Oven ID # 758/496	
Specimen Cro	d at Failure, lbf ss-sectional Area, in ² Strength at Failure, psi		785 6.96 113	ı	Failure Code 3	
	actor for Height to Diameter	ı	1.00			
-	mpressive Strength at Fai	· ·	113 nd add. correction p		Failure Sketch Failure Type: Cone and Shear	
L	U	SCS (ASTM D2487: D24	88)			
		REMARKS				
		REWARNS				



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Date

09/13/21

	TESTS, LLC	Web: www.te	st-lic.com 🖀	CREDITED		Checked By	10
Client Pr. #	200016			Lab. PR. #		21136-02-1	
Pr. Name	Time Oil Term	ninal		S. Type	Mold	Depth/Elev.	-
Sample ID	38623/2-15	Subsample	3	Location		Seattle, WA	
Add. Info	- Mixing/M	olding Date	08/23/21		Curing A	ge, Days	21

Add. Info	
SAMPLE DATA Initial Height, in Initial Diameter, in Height-to-Diameter Ratio Area, in² Volume, in³ Mass of Sample, g Water Content Determination Mass of Wet Sample and Tare, g Mass of Dry Sample and Tare, g Mass of Tare, g Mass of Tare, g Moisture, % Moisture, % Mass of Sample, g Moisture, % Moisture, % Moisture, % Moisture, %	21
SAMPLE DATA Initial Height, in Initial Diameter, in Height-to-Diameter Ratio Area, in ² Volume, in ³ Mass of Sample, g Wet Density, pcf Mass of Sample, g Mass of Sample, g Mass of Sample, g Mass of Sample, g Mass of Sample, g Mass of Sample, g Mass of Sample, g Mass of Sample, g Mass of Sample, g Mass of Sample, g Mass of Sample, g Mass of Sample, g Mass of Sample, g Moisture, % Mass of Sample, g Moisture, % Mass of Sample, g Moisture, % Mass of Sample, g Moisture, % Mass of Sample, g Moisture, % Mass of Sample, g Moisture, % Mass of Sample, g Moisture, % Moisture, % Mass of Sample, g Moisture, % Mass of Sample and Tare, g 1254.3 Mass of Tare, g Moisture, % Moisture, %	
SAMPLE DATA Initial Height, in Initial Diameter, in Height-to-Diameter Ratio Area, in ² Volume, in ³ Mass of Sample, g Wet Density, pcf Mass of Sample, g Mass of Sample, g Mass of Sample, g Mass of Sample, g Mass of Sample, g Mass of Sample, g Mass of Sample, g Mass of Sample, g Mass of Sample, g Mass of Sample, g Mass of Sample, g Mass of Sample, g Mass of Sample, g Moisture, % Mass of Sample, g Moisture, % Mass of Sample, g Moisture, % Mass of Sample, g Moisture, % Mass of Sample, g Moisture, % Mass of Sample, g Moisture, % Mass of Sample, g Moisture, % Moisture, % Mass of Sample, g Moisture, % Mass of Sample and Tare, g 1254.3 Mass of Tare, g Moisture, % Moisture, %	
Initial Height, in Initial Diameter, in Initial Diameter, in Height-to-Diameter Ratio Area, in² Volume, in³ Mass of Sample, g Wet Density, pcf Mass of Wet Sample and Tare, g 1254.3 Mass of Tare, g Moisture, % Moisture, % Moisture, % 1215.2 Moisture, % 1215.2 Mass of Wet Sample and Tare, g 1254.3 Mass of Tare, g Moisture, % 127.5	
Initial Height, in Initial Diameter, in Initial Diameter, in Height-to-Diameter Ratio Area, in² Volume, in³ Mass of Sample, g Wet Density, pcf Mass of Wet Sample and Tare, g 1254.3 Mass of Tare, g Moisture, % Moisture, % Moisture, % 1215.2 Moisture, % 1215.2 Mass of Wet Sample and Tare, g 1254.3 Mass of Tare, g Moisture, % 127.5	
Initial Diameter, in Height-to-Diameter Ratio Area, in² Volume, in³ Mass of Sample, g Wet Density, pcf Dry Density, pcf Mass of Dry Sample and Tare, g 1254.3 Mass of Tare, g Moisture, % Moisture, % 127.5 Moisture, % 1284 Mass of Tare, g Moisture, % 127.5 Moisture, % 1284 Mass of Tare, g Moisture, % 127.5 Moisture, % 1284.3 Mass of Tare, g 1254.3 Noisture, % 105.1 105.	
Area, in ² Volume, in ³ Mass of Sample, g Wet Density, pcf Dry Density, pcf Machine Speed, in/min Strain rate, % / min Moisture, % 27.5 Moisture, % 27.5 Moisture, % 27.5 Moisture, % 27.5 Moisture, % 27.5	
Volume, in³ 39.13 Mass of Sample, g 1215.2 Wet Density, pcf 118.3 Dry Density, pcf 92.7 Machine Speed, in/min 0.050 Strain rate, % / min 0.89	
Mass of Sample, g Wet Density, pcf Dry Density, pcf Machine Speed, in/min Strain rate, % / min 1215.2 118.3 92.7 0.050 0.89	
Wet Density, pcf Dry Density, pcf Machine Speed, in/min Strain rate, % / min 118.3 92.7 0.050 0.89	
Dry Density, pcf 92.7 Machine Speed, in/min 0.050 Strain rate, % / min 0.89	
Machine Speed, in/min Strain rate, % / min 0.050 0.89	
Strain rate, % / min 0.89	
TEST DATA	
IESI DATA	
Load Cell ID # 11/1015 Digital Caliper ID # 17/583	
Compression Device ID # 10/1014 Readout Device ID # 10/1016	
Balance ID # 1036/1037 Oven ID # 758/496	
Maximum Load at Failure, lbf 1891	
Specimen Cross-sectional Area, in ² 6.99 Failure Code 3	
Compressive Strength at Failure, psi 270	
Conversion Factor for Height to Diameter Ratio 1.00	
Reported Compressive Strength at Failure, psi 270 Failure Sketch	
Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION	
DESCRIPTION	
Failure Type:	
Cone and She	ear
USCS (ASTM D2487: D2488)	
REMARKS	
REMARKS	
<u> </u>	



Timely Engineering Soil

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Tested By Date

KP/IH

09/20/21

10

	1E515, L	LC	Web: www.te	st-llc.com		REDITED		Checked By	16
Client Pr. #		200016				Lab. PR. #		21136-02-1	
Pr. Name	Т	ime Oil Termir	nal			S. Type	Mold	Depth/Elev.	-
Sample ID	38623/2-15		Subsample	4		Location		Seattle, WA	
Add. Info	1	Mixing/Mo	lding Date	08/23/2	21		Curing A	Age, Days	28
						·			

Sample ID	38623/2-15	Subsample	4	Location	Seattle, WA	
Add. Info	-	Mixing/Molding Date	08/23/21		Curing Age, Days	28
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	il-Cement Cylinders	
		METHOD	В	•		
		III.ETT105				
Initial Height, Initial Diamet Height-to-Dia Area, in ² Volume, in ³ Mass of Sam Wet Density, Dry Density, I Machine Spe Strain rate, %	er, in meter Ratio ple, g pcf pcf ed, in/min	5.583 2.984 1.87 6.99 39.04 1213.3 118.4 92.6 0.050 0.90	WATER CONTE Mass of Wet Sar Mass of Dry San Mass of Tare, g Moisture, %	mple and Tare	e, g 1513.9	
•	.,		DATA			
	Load Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037		-	I Caliper ID # 17/583 t Device ID # 10/1016 Oven ID # 758/496	
Specimen Cr Compressive Conversion F Reported Co	ad at Failure, lbf coss-sectional Area, in ² Strength at Failure, psi Factor for Height to Diameter compressive Strength at Fai conversion factor based on H/D=	lure, psi	2503 6.99 358 1.00 358 and add. correction p		Failure Code 3 Failure Sketch	
		DESCRIPTION		I	Failure Type: Cone and Shear	r
L	U	SCS (ASTM D2487: D24	88)	•		
		REMARKS				



Pr. Name

Sample ID

TIMELY

Engineering Soil

200016

Time Oil Terminal

 $Tests, \\ \text{llc}$

38623/2-15

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Fax: 770-923-8973

Web: www.test-llc.com

Subsample ID



Mold

Lab. PR. #

S. Type

Location

Tested By

Date

EB/KP 09/02/21

Checked By

21136-02-1

Seattle, WA

Depth/Elevation

09/02/21

Add. Info		-		Mix	ing/Molding Da	te	·	08/23/21]		Curin	g Age, Days			10
				ASTM D	5084; Standa				-		•			us		
					Materials U	Jsing a F	lexible Wal	l Permeam	eter (Me	thod D, Cor	stant Rate	e of Flo	w)			
lr	nitial Sar	nple Dat	a (Befor	e Test)			Test Data	a				- 1	Final Data	(After Test))	
Height		3.009	in	7.64 cı	m Speed			10]					_		
Diameter		2.967	in	7.54 cı		ımber		1		Average Hei	ght of Samp	le	3.010	in	7.65 cm	
Area		6.91	in ²	44.61 CI		ber		37		Average Dia	meter of Sa		2.968	in	7.54 cm	
Volume		340.92	cm ³	0.0120 ft	i low i ai	np Numbe	r	1B		Area	6.92	in ²	44.64	cm ²		
Mass		651.2	g	1.44 lb	Flow Pur	np Rate*		2.24E-04	cm ³ /sec	Volume	341.26	cm ³	0.0121	ft ³	Dry Density	93.5 pcf
Specific Gra	avity	2.700	(Assume	d)	B - Value			0.95		Mass	659.9	g	1.45	lb	Vol. of Voids	
Dry Density		93.5	pcf		Cell Pres			95.0	psi						Vol. of Solids	
					Back Pre			90.0	psi						Void Ratio	0.80
		ture Cont		1		•	e) Pressure	5.0	psi			sture Co		7	Saturation	97.9 %
Mass of wet			651.2	1	Max Hea			51.35	cm	Mass of wet	•		738.0	g		
Mass of dry Mass of tare		tare	511.1	g	Min Head	-		50.64	cm	Mass of dry	•	re	589.3	9		
% Moisture)		0.0 27.4	9		n Gradient Gradient		6.72 6.62	•	Mass of tare % Moisture			78.2 29.1	9		
	FUNCT	ON		55.50.0	•		Т		A DIL ITY		I	N			1.99	
	FUNCTI		Δt	READING	Head	Gradient	Temp.			(cm/sec) @ 20 °C	-	Note: L			ermeability Te	SI.
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R _T	@ 20 C		D.I.O.	DESCRIPT	ION	7	
09/02/21	7	20	-	0.72	50.64	6.62	25.2	-	-	-		NA				USCS
09/02/21	7	30	600	0.73	51.35	6.72	25.2	7.52E-07	0.885	6.66E-07					(AST	M D2487;2488)
09/02/21	7	40	600	0.72	50.64	6.62	25.2	7.52E-07	0.885	6.66E-07						NA
09/02/21	7	50	600	0.72	50.64	6.62	25.2	7.58E-07	0.885	6.71E-07	*			REMARK	(S	
09/02/21	8	0	600	0.73	51.35	6.72	25.2	7.52E-07	0.885	6.66E-07	*	Bottom	Half of the m	nold was used	d for testing.	
09/02/21	8	10	600	0.73	51.35	6.72	25.2	7.47E-07	0.885	6.61E-07	*					
09/02/21	8	20	600	0.72	50.64	6.62	25.2	7.52E-07	0.885	6.66E-07	*					
					Reported	l Average I	Hydraulic Co	nductivity*		6.7E-07	cm/sec					
Flow pump	ID#	2	22	В	alance ID#	1035/1036		Differential I	Pressure N	Meter ID #			942			
Thermomet	er ID#	796	/985	0	ven ID#	496/758		Board Press	sure Meter	· ID#			64			
Syringe ID #	#	14	41]				Pore Pressu	ıre Meter	D #			26/27			
					or Inflow and Calibra											Pump Rate isused for

calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.

5



Pr. Name

Thermometer ID #

Syringe ID #

796/985

1047

Oven ID#

496/758

TIMELY

Engineering Soil

200016

Time Oil Terminal

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Mold

Lab. PR. #

S. Type

Tested By

Date

09/20/21

EB/KP

Checked By 21136-02-1

Depth/Elevation

1042

779/780

i i. ivailie					Tillie Oil Tellii	iiiai				Э. туре	IVIOIG	Depti/Lievation	
Sample ID			38623	/2-15		Subsample ID 6			Location	,			
Add. Info		-		Mix	king/Molding Da	te		08/23/21		_	Curir	ng Age, Days	28
				ASTM D	5084; Standa	rd Test N	Method for	Measurem	ent of Hy	draulic Cor	nductivity of Satu	rated Porous	
					Materials U	Jsing a F	lexible Wal	I Permeam	eter (Me	thod D, Con	stant Rate of Flo	ow)	
ı	nitial San	nple Dat	a (Before	e Test)			Test Data	a	Final Data (After Test)				t)
Height		2.980	in	7.57 c	m Speed			11	1				
Diameter		2.968	in	7.54 c	m Board Nເ	ımber		5		Average Hei	ght of Sample	2.981 in	7.57 cm
Area		6.92	in ²	44.64 C	m ² Cell Num	ber		13		Average Dia	meter of Sample	2.969 in	7.54 cm
/olume		337.86	cm ³	0.0119 ft	Flow Pun	np Numbe	r	4A		Area	6.92 in ²	44.67 cm ²	
/lass		643.0	g	1.42 lb	Flow Pun	np Rate*		1.12E-04	cm ³ /sec	Volume	338.20 cm ³	0.0119 ft ³	Dry Density 93.4 pc
Specific Gr	avity	2.700	(Assume	d)	B - Value)		0.95		Mass	654.8 g	1.44 lb	Vol. of Voids 150.75 cm
Dry Density	/	93.4	pcf		Cell Pres	sure		95.0	psi				Vol. of Solids 187.45 cm
					Back Pre	ssure		90.0	psi				Void Ratio 0.80
Moisture Content Confining (Effective) Press							e) Pressure	5.0	psi		Moisture Co	ontent	Saturation 98.6 %
	t sample &		643.0	g	Max Hea	d		141.38	cm	Mass of wet	sample & tare	718.9 g	
-	/ sample &	tare	505.8	g	Min Head			140.68	cm		sample & tare	570.3 g	
Mass of tar			0.0	g		n Gradient		18.67		Mass of tare		64.5 g	
6 Moisture			27.1		Minimum	Gradient		18.58		% Moisture		29.4	
TIME	FUNCTI	ON	Δt	READING	Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)	Note:	Deaired Water Used for I	Permeability Test.
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R_T	@ 20 °C		DESCRIPTION	
09/20/21	8	5	-	2.01	141.38	18.67	25.5	-	-	-	NA		USCS
09/20/21	8	15	600	2.00	140.68	18.58	25.5	1.35E-07	0.879	1.18E-07	1		(ASTM D2487;2488)
09/20/21	8	25	600	2.01	141.38	18.67	25.5	1.35E-07	0.879	1.18E-07	1		NA
09/20/21	8	35	600	2.00	140.68	18.58	25.5	1.35E-07	0.879	1.18E-07	*	REMAF	RKS
09/20/21	8	45	600	2.01	141.38	18.67	25.5	1.35E-07	0.879	1.18E-07	* Bottom	Half of the mold was use	ed for testing.
09/20/21	8	55	600	2.00	140.68	18.58	25.5	1.35E-07	0.879	1.18E-07	*		
09/20/21	9	5	600	2.01	141.38	18.67	25.5	1.35E-07	0.879	1.18E-07	*		
					Reported	l Average I	Hydraulic Cor	nductivity*		1.2E-07	cm/sec		'
low pump	ID#	10)43	В	alance ID #	1035/1036		Differential I	Pressure I	Meter ID #	•	1044/1048	
				4			ı						

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate is used for calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.

Board Pressure Meter ID #

Pore Pressure Meter ID #



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Tested By Date

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08/29/21 10

	1E515, L	LC	Web: www.te	st-llc.com		REDITED		Checked By	16
Client Pr. #		200016				Lab. PR. #		21136-02-1	
Pr. Name	Т	ime Oil Termin	al			S. Type	Mold	Depth/Elev.	-
Sample ID	38624/2-40		Subsample	1		Location		Seattle, WA	
Add. Info	-	Mixing/Mol	ding Date	08/24/2	21		Curing A	Age, Days	5
				·		•		-	

Sample ID	38624/2-40	Subsample	1	Location	Seattle, WA	
Add. Info	-	Mixing/Molding Date	08/24/21]	Curing Age, Days	5
	ASTM D 1633: Standar	rd Test Methods for Con	pressive Strength	of Molded So	oil-Cement Cylinders	
				1		
		METHOD	В			
	SAMPLE DATA		WATER CONTE	NT DETERM	MINATION	
nitial Height	i i	5.584	Mass of Wet Sar			
Initial Diame	ter, in	2.950	Mass of Dry San	•		
	ameter Ratio	1.89	Mass of Tare, g		303.4	
Area, in ²		6.83	Moisture, %		31.5	
Volume, in ³		38.17				
Mass of Sam		1179.1				
Wet Density, Dry Density,		117.7 89.4				
Machine Spe		0.050				
Strain rate, %		0.90				
		TEC.	T DATA			
		IES	DATA			
	Load Cell ID #	11/1015		Digita	al Caliper ID # 17/583	
	Compression Device ID #	10/1014		Readou	ut Device ID # 10/1016	
	Balance ID #	1036/1037			Oven ID # 758/496	
Maximum La	and at Epilura, llaf		440	Ī		
	oad at Failure, lbf ross-sectional Area, in ²		412	 	Failure Code 3	
-	e Strength at Failure, psi		6.83	 	1 allule Code 3	
-	Factor for Height to Diameter	Patio	1.00			
	ompressive Strength at Fai		60		Failure Sketcl	h
-	onversion factor based on H/D=	· •		Dor ASTM CAR		1
NOIG Z A C	onversion lactor based on n/D=	DESCRIPTION	na ada. conection p	Jei AJ INI C42	′ /	
					Failure Type:	
					Cone and Sh	iear
	U	SCS (ASTM <u>D2487: D2</u>	188)			
]			
		REMARKS				



Timely Engineering Soil

200016

Tests, Llc

1874 Forge Street Tucker, GA 30084

Phone: 770-938-8233

Web: www.test-llc.com

Fax: 770-923-8973



Lab. PR.#

Failure Type:

Cone and Shear

Tested By

21136-02-1

KP/IH

Date
Checked By

09/03/21

Onone i i. n		200010			ab. 1 14. //		21100 02 1		
Pr. Name	Т	ime Oil Termi	nal		S. Type	Mold	Depth/Elev.	-	
Sample ID	38624/2-40		Subsample	2	Location		Seattle, WA		
Add. Info	-	Mixing/Mc	olding Date	08/24/21		Curing A	lge, Days	10	
	ASTM D 1633: Standa	rd Test Meth	nods for Com	pressive Strength	of Molded So	il-Cement C	ylinders		
	SAMPLE DATA			WATER CONTE	NT DETERM	IINATION			
Initial Height Initial Diame Height-to-Diame, in ² Volume, in ³ Mass of San Wet Density, Dry Density, Machine Sportain rate, Strain rate, Strain rate, Strain Page 19 19 19 19 19 19 19 19 19 19 19 19 19	eter, in ameter Ratio mple, g /, pcf pcf eed, in/min	5.619 2.974 1.89 6.95 39.03 1193.3 116.5 88.7 0.050 0.89		Mass of Wet Sar Mass of Dry San Mass of Tare, g Moisture, %	•		1527.3 1243.9 336.3 31.2		
			TEST	DATA					
	Load Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037				I Caliper ID t Device ID Oven ID	# 10/1016		
Specimen C Compressive	oad at Failure, lbf cross-sectional Area, in ² e Strength at Failure, psi Factor for Height to Diametel	r Ratio		804 6.95 116 1.00		Failure Code	e 3		
Reported C	ompressive Strength at Fai	ilure, psi		116	†		Failure Sketch	ı	
Note 2: * - A d	conversion factor based on H/D=		08 as 100% a RIPTION	nd add. correction p	per ASTM C42)			

USCS (ASTM D2487: D2488)

REMARKS



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TESTS. LLC

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Fax: 770-923-8973



Tested By

KP/IH

Date

09/14/21

	1E515, L	LC Web: www		ACCREDITED			
Client Pr. #		200016		Lab. PR. #		21136-02-1	
Pr. Name	T	ime Oil Terminal		S. Type	Mold	Depth/Elev.	ı
Sample ID	38624/2-40	Subsamp	le 3	Location		Seattle, WA	
Add. Info	•	Mixing/Molding Date	08/24/21	1	Curing Ag	ge, Days	21

Sample ID	38624/2-40	Subsample	3	Location	Seattle, WA	
Add. Info	-	Mixing/Molding Date	08/24/21		Curing Age, Days	21
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	il-Cement Cylinders	
				7		
		METHOD	В			
	SAMPLE DATA		WATER CONTE	NT DETERM	IINATION	
Initial Height		5.552	Mass of Wet Sar			İ
Initial Diame		2.975	Mass of Dry Sam	•		
	ameter Ratio	1.87	Mass of Tare, g	•	306.0	
Area, in ²		6.95	Moisture, %		31.9	
Volume, in ³		38.59				ı.
Mass of Sam	nple, g	1170.5				
Wet Density,	, pcf	115.5				
Dry Density,		87.6				
Machine Spe		0.050				
Strain rate, %	% / min	0.90				
		TEST	DATA			
						_
	Load Cell ID #	11/1015			I Caliper ID # 17/583	
	Compression Device ID #	10/1014		Readou	t Device ID # 10/1016	
	Balance ID #	1036/1037			Oven ID # 758/496	
N 4 2 1	and at Eathern Hit		4544	•		
	oad at Failure, lbf		1541		Failura Cada	I
-	ross-sectional Area, in ²		6.95		Failure Code 3	i
-	e Strength at Failure, psi		222			
	Factor for Height to Diameter		1.00			
-	ompressive Strength at Fa	· •	222		Failure Sket	ch
Note 2: * - A c	conversion factor based on H/D=		nd add. correction p	oer ASTM C42,) /	
		DESCRIPTION				
					Failure Type:	
		000 (407) 4 00 407 00 4	00)		Cone and S	Shear
	U	SCS (ASTM D2487: D24	88) I			
		REMARKS				
		KLIVIAKKO		1		



TIMELY Engineering $\mathbf{S}_{\mathrm{OIL}}$

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Tested By

KP/IH

Date

09/21/21 18

L	TESTS, L	LC	Web: www.tes	st-llc.com		REDITED		Checked By	18
Client Pr. #		200016				Lab. PR. #		21136-02-1	
Pr. Name	Т	ime Oil Termi	nal			S. Type	Mold	Depth/Elev.	-
Sample ID	38624/2-40		Subsample	4		Location		Seattle, WA	
Add. Info	-	Mixing/Mo	Iding Date	08/24/	21		Curing A	Age, Days	28
						-			

Sample ID	38624/2-40	Subsample	4	Location	Seattle, WA	
Add. Info	-	Mixing/Molding Date	08/24/21		Curing Age, Days	28
	ASTM D 1633: Standar	rd Test Methods for Com	pressive Strength	of Molded So	oil-Cement Cylinders	
				ī		
		METHOD	В	<u> </u>		
	SAMPLE DATA		WATER CONTE	NT DETERM	MINATION	
nitial Height	i e	5.611	Mass of Wet Sar			
Initial Diame		2.980	Mass of Dry San			
Height-to-Dia	ameter Ratio	1.88	Mass of Tare, g		416.5	
Area, in ²		6.97	Moisture, %		31.6	
Volume, in ³		39.13				
Mass of Sam	nple, g	1189.9				
Wet Density,	pcf	115.8				
Dry Density,		87.9				
Machine Spe		0.050				
Strain rate, %	6 / min	0.89				
		TEST	DATA			
	Load Cell ID #	11/1015		Digita	al Caliper ID # 17/583	
	Compression Device ID #	10/1014			ut Device ID # 10/1016	
	Balance ID #	1036/1037		reduce	Oven ID # 758/496	
		1000/1001			O VOIT ID 11 1 1 00/ 100	
Maximum Lo	ad at Failure, lbf		2068			
Specimen Cı	ross-sectional Area, in ²		6.97	Ī	Failure Code 3	
Compressive	e Strength at Failure, psi		297	İ		
Conversion F	actor for Height to Diameter	Ratio	1.00	Ì		
	ompressive Strength at Fai		297	Ì	Failure Sketch	
-	onversion factor based on H/D=			I ner∆STM <i>C4</i> 2		
VOIC Z. AC	onversion factor based on the	DESCRIPTION	ia add. correction p	3C1 AO 1111 O 12	′ /	
i		DECOMM HOM				
					Failure Type:	
					Failure Type: Cone and She	ear
Į.	U;	SCS (ASTM D2487: D24	88)			
		REMARKS				
		TALIWI TATO				



Pr. Name

TIMELY

Engineering Soil

200016

Time Oil Terminal

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Mold

Lab. PR. #

S. Type

Tested By

Date

Checked By

21136-02-1

Depth/Elevation

09/03/21

EB/KP

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow) Initial Sample Data (Before Test) Test Data Test Da	i. ivallic					Time On Tem	III Iai				O. Type	IVIOIG	Deptil/Licvation	
ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow) Initial Sample Data (Before Test) Test Data Test Da	Sample ID					5		Location Seattle, WA						
Special Spec	Add. Info		-		М	ixing/Molding Da	ate		08/24/21				Curing Age, Days	10
Specific Specific					ASTM D	•				-		-		
Market	lı	nitial San	nple Dat	a (Before	e Test)			Test Data	a				Final Data (After Tes	t)
Second Color Col	Height		3.013	in	7.65	cm Speed			10	1				
Second California Califor	Diameter		2.960	in	7.52	cm Board N	umber		4		Average Hei	ght of Sample	3.014 in	7.66 cm
Second Second	Area		6.88	in ²	44.40	cm ² Cell Nun	nber		43		_	-	le 2.961 in	
Section Sect	Volume		339.76	cm ³	0.0120	ft ³ Flow Pu	mp Numbe	r	3B	1	Area	6.89 in	² 44.43 cm ²	
Secritic Gravity 2.700 (Assumed) 88.1 pcf Secritic Gravity 88.1 pcf Secritic Gravity 88.1 pcf Secritic Gravity 88.1 pcf Secritic Gravity 88.1 pcf Secritic Gravity 88.1 pcf Secritic Gravity 88.1 pcf Secritic Gravity 88.1 pcf Secritic Gravity 88.1 pcf Secritic Gravity 88.1 pcf Secritic Gravity 88.1 pcf Secritic Gravity 88.1 pcf Secritic Gravity 88.1 pcf Secritic Gravity 88.1 pcf Secritic Gravity 95.0 psi 95.0 psi 90.0 psi psi 90.0	Mass		632.2	g	1.39				2.24E-04	cm ³ /sec	Volume	340.10 cr	m ³ 0.0120 ft ³	Dry Density 88.0 pcf
Back Pressure Solution Solution Confining (Effective) Pressure Solution So	Specific Gra	avity	2.700	(Assume	d)	B - Valu	e		0.95	1	Mass	638.0 g	1.41 lb	Vol. of Voids 162.36 cm ³
Saturation S	Dry Density	-	88.1	pcf		Cell Pres	ssure		95.0	psi				Vol. of Solids 177.74 cm ³
Max Max				•		Back Pre	essure		90.0	psi				Void Ratio 0.91
Mass of dry sample & tare S55.5 g Maximum Gradient Maximum Gradient Mass of tare M		Mois	ture Cont	ent		Confinin	g (Effective	e) Pressure	5.0	psi		Moistu	re Content	Saturation 97.4 %
Mass of tare Mass	Mass of wet	sample &	tare	632.2	g	Max Hea	ad		48.53	cm	Mass of wet	sample & tare	713.5 g	
Moisture 31.8 Minimum Gradient 6.25 % Moisture 32.9	Mass of dry	sample &	tare	479.6	g	Min Hea	d		47.83	cm	Mass of dry	sample & tare	555.5 g	
TIME FUNCTION	Mass of tare	Э		0.0	g	Maximur	m Gradient		6.34		Mass of tare		75.9 g	
DATE HOUR MIN (sec) DP, (psi) (cm) T _x (°C) @ T _x R _T @ 20 °C 9/03/21 11 5 - 0.69 48.53 6.34 25.1 9/03/21 11 15 600 0.68 47.83 6.25 25.1 8.01E-07 0.887 7.11E-07 9/03/21 11 35 600 0.68 47.83 6.25 25.1 8.01E-07 0.887 7.11E-07 9/03/21 11 35 600 0.69 48.53 6.34 25.1 8.01E-07 0.887 7.11E-07 9/03/21 11 45 600 0.69 48.53 6.34 25.1 8.01E-07 0.887 7.11E-07 9/03/21 11 55 600 0.68 47.83 6.25 25.1 8.01E-07 0.887 7.11E-07 9/03/21 11 55 600 0.69 48.53 6.34 25.1 8.01E-07 0.887 7.11E-07 9/03/21 11 55 600 0.69 48.53 6.34 25.1 8.01E-07 0.887 7.11E-07 9/03/21 12 5 600 0.69 48.53 6.34 25.1 8.01E-07 0.887 7.11E-07 9/03/21 12 5 600 0.69 48.53 6.34 25.1 8.01E-07 0.887 7.11E-07 9/03/21 12 5 600 0.69 48.53 6.34 25.1 8.01E-07 0.887 7.11E-07 9/03/21 12 5 600 0.69 48.53 6.34 25.1 8.01E-07 0.887 7.11E-07 9/03/21 12 5 600 0.69 48.53 6.34 25.1 8.01E-07 0.887 7.11E-07	% Moisture			31.8		Minimun	Gradient		6.25		% Moisture		32.9	
2/03/21 11 5 - 0.69 48.53 6.34 25.1 - - - - -	TIME	FUNCTI	ON	Δt	READING	Head	Gradient	Temp.	PERME	ABILITY	,	N	ote: Deaired Water Used for I	Permeability Test.
9/03/21 11 15 600 0.68 47.83 6.25 25.1 8.01E-07 0.887 7.11E-07 80/03/21 11 25 600 0.69 48.53 6.34 25.1 8.01E-07 0.887 7.11E-07 11 45 600 0.69 48.53 6.34 25.1 8.01E-07 0.887 7.11E-07 11 45 600 0.69 48.53 6.34 25.1 8.01E-07 0.887 7.11E-07 11 11 55 600 0.68 47.83 6.25 25.1 8.01E-07 0.887 7.11E-07 11 11 55 600 0.68 47.83 6.25 25.1 8.01E-07 0.887 7.11E-07 11 11 55 600 0.68 47.83 6.25 25.1 8.01E-07 0.887 7.11E-07 11 11 11 11 11 11 11 11 11 11 11 11 11	DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R_T	@ 20 °C			<u>_</u>
NA Section	09/03/21	11	5	-	0.69	48.53	6.34	25.1	-	-	-	N	A	USCS
9/03/21 11 35 600 0.68 47.83 6.25 25.1 8.01E-07 0.887 7.11E-07 * 9/03/21 11 45 600 0.69 48.53 6.34 25.1 8.01E-07 0.887 7.11E-07 * 9/03/21 11 55 600 0.68 47.83 6.25 25.1 8.01E-07 0.887 7.11E-07 * 9/03/21 12 5 600 0.69 48.53 6.34 25.1 8.01E-07 0.887 7.11E-07 * 9/03/21 12 5 600 0.69 48.53 6.34 25.1 8.01E-07 0.887 7.11E-07 *	09/03/21	11	15	600	0.68	47.83	6.25	25.1	8.01E-07	0.887	7.11E-07			(ASTM D2487;2488)
9/03/21 11 45 600 0.69 48.53 6.34 25.1 8.01E-07 0.887 7.11E-07 * 9/03/21 11 55 600 0.68 47.83 6.25 25.1 8.01E-07 0.887 7.11E-07 * 9/03/21 12 5 600 0.69 48.53 6.34 25.1 8.01E-07 0.887 7.11E-07 * 9/03/21 12 5 600 0.69 48.53 6.34 25.1 8.01E-07 0.887 7.11E-07 *	09/03/21	11	25	600	0.69	48.53	6.34	25.1	8.01E-07	0.887	7.11E-07			NA
9/03/21 11 55 600 0.68 47.83 6.25 25.1 8.01E-07 0.887 7.11E-07 * 9/03/21 12 5 600 0.69 48.53 6.34 25.1 8.01E-07 0.887 7.11E-07 *	09/03/21	11	35	600	0.68	47.83	6.25	25.1	8.01E-07	0.887	7.11E-07	*	REMAR	RKS
9/03/21 12 5 600 0.69 48.53 6.34 25.1 8.01E-07 0.887 7.11E-07 *	09/03/21	11	45	600	0.69	48.53	6.34	25.1	8.01E-07	0.887	7.11E-07	* B	ottom Half of the mold was use	ed for testing.
	09/03/21	11	55	600	0.68	47.83	6.25	25.1	8.01E-07	0.887	7.11E-07	*		
Reported Average Hydraulic Conductivity* 7.1E-07 cm/sec	09/03/21	12	5	600	0.69	48.53	6.34	25.1	8.01E-07	0.887	7.11E-07	*		
					_	Reporte	d Average I	Hydraulic Co	nductivity*		7.1E-07	cm/sec		
w pump ID # 475 Balance ID # 1035/1036 Differential Pressure Meter ID # 262	Flow pump	ID#	4	75		Balance ID #	1035/1036		Differential F	Pressure I	Meter ID #		262	
ermometer ID # 796/985 Oven ID # 496/758 Board Pressure Meter ID # 1041	Thermometer ID # 796/985 Oven ID # 496/758				Board Press	sure Mete	r ID#		1041					
ringe ID # 490 Pore Pressure Meter ID # 26/27	Syringe ID # 490 Pore F						Pore Pressu	ıre Meter	ID#		26/27			
nstant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate issued														

calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



Pr. Name

Sample ID

TIMELY

38624/2-40

Engineering Soil

200016

Time Oil Terminal

Tests, llc

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Phone: 770-938-8233

Fax: 770-923-8973

Web: www.test-llc.com

Subsample ID



Mold

Lab. PR. #

S. Type

Location

Tested By

21136-02-1

Seattle, WA

Depth/Elevation

Date

Checked By

09/21/21

EB/KP

Sample ID			30024	/2-40		Subs	ample ID	Ü		Location	Seattle, WA
Add. Info		-		Mix	ing/Molding Da	te		08/24/21]	Curing Age, Days 28
				ASTM D	=				-		nductivity of Saturated Porous nstant Rate of Flow)
Ir	nitial San	nple Data	a (Before	e Test)			Test Data	a			Final Data (After Test)
Height		3.010	in	7.65 cr	n Speed			11	1		
Diameter		2.971	in	7.55 cr	m Board Nu	ımber		18	1	Average Hei	eight of Sample 3.011 in 7.65 cm
Area		6.93	in ²	44.73 cr	m ² Cell Num	ber		37	1	Average Dia	ameter of Sample 2.972 in 7.55 cm
Volume		341.95	cm ³	0.0121 ft ³	Flow Pun	np Numbei		3A		Area	6.94 in ² 44.76 cm ²
Mass		632.1	g	1.39 lb	Flow Pun	np Rate*		1.12E-04	cm ³ /sec	Volume	342.29 cm ³ 0.0121 ft ³ Dry Density 87.5 pc
Specific Gra	vity	2.700	(Assume	d)	B - Value	•		0.95		Mass	638.4 g 1.41 lb Vol. of Voids 164.53 cm
Dry Density		87.6	pcf		Cell Pres	sure		95.0	psi		Vol. of Solids 177.77 cm
					Back Pre			90.0	psi		Void Ratio 0.93
		ture Cont		1) Pressure	5.0	psi		Moisture Content Saturation 96.3 %
Mass of wet	•			g	Max Hea			126.61	cm		t sample & tare 711.7 g
Mass of dry		tare	479.9	g	Min Head			125.21	cm		sample & tare 553.3 g
Mass of tare)		0.0	g		Gradient		16.56		Mass of tare	<u> </u>
% Moisture			31.7			Gradient		16.37		% Moisture	33.0
	FUNCTI		Δt	READING	Head	Gradient	Temp.			(cm/sec)	Note: Deaired Water Used for Permeability Test.
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R _T	@ 20 °C	DESCRIPTION
09/21/21	8	40	-	1.79	125.91	16.46	25.7	-	-	-	NA USCS
09/21/21	8	50	600	1.79	125.91	16.46	25.7	1.52E-07	0.875	1.33E-07	(ASTM D2487;2488)
09/21/21	9	0	600	1.78	125.21	16.37	25.7	1.52E-07	0.875	1.33E-07	NA NA
09/21/21	9	10	600	1.80	126.61	16.56	25.7	1.52E-07	0.875	1.33E-07	* REMARKS
09/21/21	9	20	600	1.79	125.91	16.46	25.7	1.52E-07	0.875	1.33E-07	Bottom Half of the mold was used for testing.
09/21/21	9	30	600	1.80	126.61	16.56	25.7	1.52E-07	0.875	1.33E-07	- *
09/21/21	9	40	600	1.79	125.91	16.46	25.7	1.52E-07	0.875	1.33E-07	1 *
					Reported	Average I	Hydraulic Cor	nductivity*	•	1.3E-07	cm/sec
Flow pump	ID#	47	75	В	alance ID#	1035/1036		Differential F	Pressure N	Meter ID #	469
Thermomet	er ID#	796	/985	0	ven ID#	496/758		Board Press	sure Meter	· ID#	570
Syringe ID # 491						Pore Pressu	ıre Meter	D #	779/780		
											inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate is used for

calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.

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Tested By

KP/IH

Date

08/30/21

L		TESTS, L	LC	Web: www.tes	st-llc.com		SHIO		Checked By	18
Client Pr. #	:		200016				Lab. PR. #		21136-02-1	
Pr. Name		Т	ime Oil Termi	ninal			S. Type	Mold	Depth/Elev.	-
Sample ID		38690/2-45		Subsample	1		Location		Seattle, WA	
Add. Info		•	Mixing/Mo	lding Date	08/25/2	21		Curing A	ige, Days	5

Sample ID	38690/2-45	Subsample	1	Location	Seattle, WA	4
Add. Info	-	Mixing/Molding Date	08/25/21	<u> </u>	Curing Age, Days	5
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	oil-Cement Cylinders	
		METHOD	В	ī		
		METHOD	В	l		
	SAMPLE DATA		WATER CONTE	NT DETERM	MINATION	
Initial Heigh	nt, in	5.586	Mass of Wet Sai	mple and Ta	re, g 1474.0	7
Initial Diam	eter, in	2.977	Mass of Dry San	nple and Tar	e, g 1184.8	
	Diameter Ratio	1.88	Mass of Tare, g		299.5	
Area, in ²		6.96	Moisture, %		32.7	
Volume, in ³		38.88				
Mass of Sa	. •	1178.9				
Wet Densit	• •	115.5				
Dry Density		87.0				
Strain rate,	peed, in/min	0.050 0.90				
Strain rate,	70 / 111111	0.90				
		TEST	DATA			
	Load Cell ID #	11/1015		Digita	al Caliper ID # 17/583	٦
	Compression Device ID #	10/1014			ut Device ID # 10/1016	7
	Balance ID #	1036/1037			Oven ID # 758/496	7
		<u> </u>		_		_
	Load at Failure, lbf		373			_
Specimen (Cross-sectional Area, in ²		6.96		Failure Code 3	
Compressiv	ve Strength at Failure, psi		54	<u> </u>		
Conversion	Factor for Height to Diameter	Ratio	1.00			
Reported (Compressive Strength at Fai	lure, psi	54		Failure Ske	etch
Note 2: * - A	conversion factor based on H/D=		nd add. correction բ	per ASTM C42	2)	
		DESCRIPTION			. /	
					Failure Type:	0.1
	1.10	SCS (ASTM D2487: D24	100)		Cone and	Shear
	U.	503 (ASTNI D2407. D24	1			
			J			
		REMARKS				
					•	



Pr. Name

Sample ID

Add. Info

Timely Engineering Soil

Tests, Llc

1874 Forge Street Tucker, GA 30084

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Fax: 770-923-8973
Web: www.test-llc.com

08/25/21

Tested By
Date

KP/IH 09/04/21

18

ESTS, ELC

200016

Time Oil Terminal

38690/2-45

Subsample 2

Mixing/Molding Date

Lab. PR. # S. Type Location

21136-02-1								
Mold	Depth/Elev.	•						
Seattle, WA								
Curing Ag	e, Days	10						

Checked By

ASTM D 1633: Standard Test Me	ethods for Com	pressive Strength	of Molded Soil-Cement Cylinders
	METHOD	В	
SAMPLE DATA Initial Height, in Initial Diameter, in Height-to-Diameter Ratio Area, in² Volume, in³ Mass of Sample, g Wet Density, pcf Dry Density, pcf Machine Speed, in/min Strain rate, % / min 5.628 5.628 6.98 2.982 4.89 1.89 4.99 4.99 5.628 1.89 6.98 1.89 6.98 1.82.0 1		WATER CONTE Mass of Wet San Mass of Dry San Mass of Tare, g Moisture, %	·
	TEST	DATA	
Load Cell ID # 11/1015 Compression Device ID # 10/1014 Balance ID # 1036/103			Digital Caliper ID # 17/583 Readout Device ID # 10/1016 Oven ID # 758/496
Maximum Load at Failure, lbf Specimen Cross-sectional Area, in ² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi		815 6.98 117 1.00 117	Failure Code 3
Note 2: * - A conversion factor based on H/D=1.15 (C.F DES	.908 as 100% a CRIPTION	nd add. correction p	Failure Type:
USCS (AST	M D2487: D24	88)	Cone and Shear
RE	MARKS		



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Date

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09/15/21

L	TES	STS, LLC	Web: www.te	st-Ilc.com	AGG
Client Pr. #		20001	6		
Pr. Name		Time Oil Te	erminal		
Sample ID	38690/	2-45	Subsample	3	
Add. Info	-	Mixing	/Molding Date	08/25/2	21

 Lab. PR. #
 21136-02-1

 S. Type
 Mold
 Depth/Elev.

 Location
 Seattle, WA

 Curing Age, Days
 21

Sample ID	38690/2-45	Subsample	3	Location	Se	eattle, WA	
Add. Info	-	Mixing/Molding Date	08/25/21		Curing Age,	Days	21
	ASTM D 1633: Standar	rd Test Methods for Com	pressive Strength	of Molded So	oil-Cement Cylin	ders	
		METHOD		Ţ			
		METHOD	В				
	SAMPLE DATA		WATER CONTE	NT DETERM	MINATION		
Initial Height	t, in	5.617	Mass of Wet Sar			1486.6	
Initial Diame		2.974	Mass of Dry San	•	_	1196.2	
Height-to-Di	ameter Ratio	1.89	Mass of Tare, g			303.8	
Area, in ²		6.95	Moisture, %			32.5	
Volume, in ³		39.02					
Mass of Sar	. •	1184.7					
Wet Density		115.7					
Dry Density,		87.2					
Machine Sp		0.050					
Strain rate, ^c	% / ITIIII	0.89					
		TEST	DATA				
	Load Cell ID #	11/1015		Digita	al Caliper ID #	17/583	
	Compression Device ID #	10/1014			· —	10/1016	
	Balance ID #	1036/1037				758/496	
	•			_	<u></u>		
	oad at Failure, lbf		1555				
Specimen C	cross-sectional Area, in ²		6.95		Failure Code	3	
Compressiv	e Strength at Failure, psi		224				
Conversion	Factor for Height to Diameter	Ratio	1.00				
Reported C	ompressive Strength at Fai	lure, psi	224		<u>Fa</u>	ailure Sketch	
Note 2: * - A	conversion factor based on H/D=		nd add. correction բ	oer ASTM C42	2)		
	<u>-</u>	DESCRIPTION					
						<i>'</i>	
					Failure Type:	one and She	or.
	L	SCS (ASTM D2487: D24	188)			one and one	;aı
		REMARKS					
					•		



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KP/IH

Date

09/22/21 18

L	TESTS, L	LC	Web: www.te	st-llc.com	AGG
Client Pr. #		200016			
Pr. Name	Т	ime Oil Termi	nal		
Sample ID	38690/2-45		Subsample	4	
Add. Info	-	Mixing/Mo	Iding Date	08/25/2	21

21136-02-1 Lab. PR. # Depth/Elev. S. Type Mold

Sample ID	38690/2-45	Subsample	4	Location	S	eattle, WA	
Add. Info	-	Mixing/Molding Date	08/25/21		Curing Age,	Days	28
	ASTM D 1633: Standar	d Test Methods for Com	pressive Strength	of Molded So	oil-Cement Cylin	ders	
		METHOD		1			
		METHOD	В				
	SAMPLE DATA		WATER CONTE	NT DETERN	MINATION		
Initial Height	t, in	5.752	Mass of Wet Sar			1516.0	
Initial Diame		2.974	Mass of Dry San	•	_	1218.4	
	ameter Ratio	1.93	Mass of Tare, g			313.2	
Area, in ²		6.95	Moisture, %			32.9	
Volume, in ³		39.96					
Mass of San	. •	1204.3					
Wet Density		114.8					
Dry Density, Machine Spe		86.4 0.050					
Strain rate, S		0.87					
		TEST	DATA				
		IESI	DATA				
	Load Cell ID #	11/1015			al Caliper ID#	17/583	
	Compression Device ID #	10/1014		Readou		10/1016	
	Balance ID #	1036/1037			Oven ID #	758/496	
Maximum Lo	oad at Failure, lbf		2299				
	ross-sectional Area, in ²		6.95	i.	Failure Code	3	
Compressive	e Strength at Failure, psi		331	i.	_		
Conversion	Factor for Height to Diameter	Ratio	1.00				
Reported C	ompressive Strength at Fai	lure, psi	331		Fa	ailure Sketch	
Note 2: * - A d	conversion factor based on H/D=		nd add. correction բ	er ASTM C42	?)		
		DESCRIPTION			,		
					_		
					Failure Type:	one and She	ear
	U;	SCS (ASTM D2487: D24	·88)				
]				
		REMARKS					
		-					



Pr. Name

TIMELY

Engineering Soil

200016

Time Oil Terminal

Tests, llc

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Mold

Lab. PR. #

S. Type

Tested By Date

21136-02-1

Depth/Elevation

Checked By

09/04/21 18

EB/KP

Sample ID			38690	/2-45		Subs	ample ID	5		Location	n	Seattle, W	/A			
Add. Info		-		M	ixing/Molding D	ate		08/25/21]		Curing Age, Days		1	0	
				ASTM [-				-		nductivity of S	Saturated Porous Flow)				
ı	nitial Sar	nple Dat	a (Befor	e Test)		Test Data				Final Data (After Test)						
Height		3.031	in	7.70	cm Speed			10						_		
Diameter		2.969	in		cm Board N	lumber		6		Average Hei	ight of Sample	3.032 in	7.70	cm		
Area			in ²	_	cm ² Cell Nur	mber		33		Average Dia	meter of Sample		7.54	cm		
Volume		343.87	cm ³	0.0121	ft ³ Flow Pu	mp Numbe	r	3A		Area	6.93 in ²	•				
Mass		628.3	g	1.39	lb Flow Pu	mp Rate*		2.24E-04	cm ³ /sec	Volume	344.22 cm	0.0122 ft ³	Dry De	ensity	85.8	pcf
Specific Gr	avity	2.700	(Assume	d)	B - Valu	е		0.95		Mass	634.1 g	1.40 lb	Vol. of	f Voids	168.99	cm ³
Dry Density	<i>'</i>	85.8	pcf		Cell Pre	ssure		95.0	psi				Vol. of	f Solids	175.23	cm ³
					Back Pr	essure		90.0	psi				Void R	≀atio	0.96	
	Mois	ture Cont	tent	_	Confinir	g (Effective	e) Pressure	5.0	psi		Moistur	e Content	Satura	ition	95.3	%
Mass of we	•		628.3	g	Max He	ad		31.65	cm		sample & tare	715.2 g				
Mass of dry		tare	472.9	g	Min Hea	nd		30.95	cm		sample & tare	554.3 g				
Mass of tar	е		0.0	g	Maximu	m Gradient		4.11		Mass of tare	•	81.4 g				
% Moisture			32.9		Minimur	n Gradient		4.02		% Moisture		34.0				
TIME	FUNCTI	ON	Δt	READING	Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)	No	te: Deaired Water Used for	Permeabi	ility Test.		
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R _T	@ 20 °C		DESCRIPTION				
09/04/21	10	5	-	0.44	30.95	4.02	25.3	-	-	-	NA	1		U	scs	
09/04/21	10	15	600	0.45	31.65	4.11	25.3	1.23E-06	0.883	1.09E-06				(ASTM E	02487;2488	3)
09/04/21	10	25	600	0.44	30.95	4.02	25.3	1.23E-06	0.883	1.09E-06					NA	
09/04/21	10	35	600	0.45	31.65	4.11	25.3	1.23E-06	0.883	1.09E-06	*	REMAI	_			_
09/04/21	10	45	600	0.44	30.95	4.02	25.3	1.23E-06	0.883	1.09E-06	* Bo	ttom Half of the mold was us	ed for tes	ting.		
09/04/21	10	55	600	0.45	31.65	4.11	25.3	1.23E-06	0.883	1.09E-06	*					
09/04/21	11	5	600	0.44	30.95	4.02	25.3	1.23E-06	0.883	1.09E-06	*					
					Reporte	d Average	Hydraulic Co	nductivity*		1.1E-06	cm/sec					
Flow pump	ID#	4	75		Balance ID #	1035/1036		Differential I	Pressure I	Meter ID #		469				
Thermome	ter ID#	796	6/985		Oven ID#	496/758		Board Press	sure Mete	r ID#		1042				
Syringe ID	#	4	91					Pore Pressu	ure Meter	ID#		779/780				

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for

calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



Pr. Name

Sample ID

TIMELY

38690/2-45

Engineering Soil

200016

Time Oil Terminal

Tests, Llc

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Subsample ID



Mold

Lab. PR. #

S. Type

Location

Tested By

Date

EB/KP 09/22/21

Checked By

21136-02-1

Seattle, WA

Depth/Elevation

09/22/21

Add. Info		_	00000	1	ing/Molding Da		ипріс ів	08/25/21		Location		Curino	Age, Days	Ocallio, W/	1	28
-					5084; Standa		Nothed for		ont of Liv	draulic Co	aductivity o			ue.	•	
				ASTIVID	-				-	thod D, Cor	-			us		
lr	itial Sar	nnla Dat	a (Befor	a Tast)		, s	Test Data		(•	(After Test)	1	
	iitiai Gai	2.998	1		Cd		rest Date		1				iliai Data	(Aitei Test)	,	
Height Diameter		2.998	in in	7.61 cr 7.55 cr		ımhar		11 4	ļ	Average Hei	abt of Compl		2.999	lin	7.62 cm	
Area		6.93	in ²	44.73 Cr				17	•	_	meter of Sam		2.999	in	7.55 cm	
Volume			cm ³	0.0120 ft ³		np Numbei	•	2A		Area		in ²	44.76	cm ²	7.55 CIT	
Mass		626.1	n	1.38 lb	. 1011 1 41	•	l	1.12E-04	cm ³ /sec	Volume	0.0.	cm ³	0.0120	ft ³	Dry Density	86.7 pc
Specific Gra	vitv	2.700	(Assume		B - Value	•		0.95		Mass	638.2	a	1.41	lb	Vol. of Voids	165.41 cr
Dry Density	,	86.8	pcf	- /	Cell Pres	sure		95.0	psi			5		1	Vol. of Solids	175.52 cr
			1.		Back Pre	ssure		90.0	psi						Void Ratio	0.94
	Mois	ture Cont	ent		Confining	g (Effective) Pressure	5.0	psi		Mois	ture Co	ntent		Saturation	99.3 %
Mass of wet	sample 8	tare	626.1	g	Max Hea	d		136.46	cm	Mass of wet	sample & tar	e	723.6	g		
Mass of dry		tare	473.9	g	Min Head			135.76	cm	Mass of dry		е	559.3	g		
Mass of tare)		0.0	g		n Gradient		17.91		Mass of tare			85.4	g		
% Moisture			32.1		Minimum	Gradient	1	17.82		% Moisture			34.7			
TIME	FUNCTI	ON	Δt	READING	Head	Gradient	Temp.		ABILITY	(cm/sec)		Note: D	eaired Wate	r Used for Po	ermeability Test	
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R_T	@ 20 °C	_		DESCRIPT	ION	_	
09/22/21	10	20	-	1.94	136.46	17.91	25.5	-	-	-		NA			ι	JSCS
09/22/21	10	30	600	1.93	135.76	17.82	25.5	1.40E-07	0.879	1.23E-07					(ASTM	D2487;2488)
09/22/21	10	40	600	1.94	136.46	17.91	25.5	1.40E-07	0.879	1.23E-07						NA
09/22/21	10	50	600	1.93	135.76	17.82	25.5	1.40E-07	0.879	1.23E-07	*			REMARK	S CS	
09/22/21	11	0	600	1.94	136.46	17.91	25.5	1.40E-07	0.879	1.23E-07	*	Bottom I	Half of the m	old was used	d for testing.	
09/22/21	11	10	600	1.93	135.76	17.82	25.5	1.40E-07	0.879	1.23E-07	*					
09/22/21	11	20	600	1.94	136.46	17.91	25.5	1.40E-07	0.879	1.23E-07	*					
					Reported	l Average I	Hydraulic Cor	nductivity*		1.2E-07	cm/sec					
Flow pump I	D #	2	44	В	alance ID#	1035/1036		Differential I	Pressure N	Meter ID #	_		346	1		
Thermomete	er ID #	796	/985	0	ven ID#	496/758		Board Press	sure Meter	· ID#			1041	1		
Syringe ID #	ŧ	2	45]		•	1	Pore Pressu	ıre Meter I	D #			26/27]		
					or Inflow and Calibra										racy +/-5%. Flow Pu	mp Rate isused for

calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.

6



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Tested By

KP/IH

Date

08/31/21

	TESTS, LLC	Web: www.test-		REDITED		Checked By	18
Client Pr. #	200016			Lab. PR. #		21136-02-1	
Pr. Name	Time Oil Teri	S. Type	Mold	Depth/Elev.	-		
Sample ID	38697/2-7	Subsample	1	Location		Seattle, WA	
Add. Info	- Mixing/N	Molding Date	08/26/21		Curing A	Age, Days	5
	ASTM D 1633: Standard Test Me	thods for Compr	ressive Strength	of Molded Soil	-Cement C	ylinders	

	METHOD B
SAMPLE DATA Initial Height, in Initial Diameter, in Height-to-Diameter Ratio Area, in² Volume, in³ Mass of Sample, g Wet Density, pcf Dry Density, pcf Machine Speed, in/min Strain rate, % / min 5.595 2.977 4.88 3.94 1.88 3.94 1.237.2 1.21.0 9.00 1.21.0 9.00 0.050	WATER CONTENT DETERMINATION Mass of Wet Sample and Tare, g Mass of Dry Sample and Tare, g Mass of Tare, g Moisture, % 1542.4 1225.5 305.7 34.5
	TEST DATA
Load Cell ID # 11/1015 Compression Device ID # 10/1014 Balance ID # 1036/103	Digital Caliper ID # 17/583 Readout Device ID # 10/1016 Oven ID # 758/496
Maximum Load at Failure, lbf Specimen Cross-sectional Area, in ² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio	249 6.96 Failure Code 3 36 1.00
Reported Compressive Strength at Failure, psi	36 Failure Sketch
Note 2: * - A conversion factor based on H/D=1.15 (C.F DESC	Post as 100% and add. correction per ASTM C42) CRIPTION Failure Type: Cone and Shear
USCS (ASTI	M D2487: D2488)
RE	MARKS



Timely Engineering Soil

 $T{\hbox{\footnotesize\rm ESTS}}, {\hbox{\footnotesize\rm LLC}}$

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Date
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09/05/21

Client Pr. #		200016			Lab. PR. #		21136-02-1	
Pr. Name	Т	ime Oil Termir	nal		S. Type	Mold	Depth/Elev.	-
Sample ID	38697/2-7		Subsample	2	Location		Seattle, WA	
Add. Info	-	Mixing/Mo	lding Date	08/26/21	I 🗆	Curing A	Age, Days	10
	ASTM D 1633: Standa		ods for Com	pressive Strength	of Molded Soil	-Cement C	Cylinders	
9	SAMPLE DATA			WATER CONTE	NT DETERMI	ΝΔΤΙΩΝ		
Initial Height, i Initial Diamete Height-to-Dian Area, in ² Volume, in ³ Mass of Samp Wet Density, p Dry Density, p Machine Spee Strain rate, %	n r, in neter Ratio ole, g ocf cf od, in/min	5.673 2.975 1.91 6.95 39.43 1253.3 121.1 90.2 0.050 0.88		Mass of Wet Sa Mass of Dry Sar Mass of Tare, g Moisture, %	mple and Tare	, g	1583.7 1265.0 331.4 34.1	
			TEST	DATA				
C	oad Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037				Caliper ID Device ID Oven ID	# 10/1016	
Specimen Cro Compressive S	d at Failure, lbf ss-sectional Area, in ² Strength at Failure, psi actor for Height to Diameter	r Ratio		1086 6.95 156 1.00	F	ailure Cod	le 3	
	npressive Strength at Fai			156	1		Failure Sketch	
· -	nversion factor based on H/D=	=1.15 (C.F90	08 as 100% a RIPTION		per ASTM C42)		Tallule Gretch	
					F	ailure Type		
L	1.10	CCC /ACTM	D2407: D24	100/			Cone and She	ar
1	U	SCS (ASTM	DZ487: DZ4	ŀδδ) 1				

REMARKS



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Tested By Date

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09/16/21 18

L		TESTS, L	LC	Web: www.te	st-llc.com	AAA
Client Pr. #			200016			
Pr. Name		Т	ime Oil Termi	nal		
Sample ID		38697/2-7		Subsample	3	
Add. Info	-	-	Mixing/Mo	Iding Date	08/26/2	21

21136-02-1 Lab. PR. # Depth/Elev. Mold S. Type

Sample ID	38697/2-7	Subsample	3	Location	Seattle, WA	
Add. Info	-	Mixing/Molding Date	08/26/21		Curing Age, Days	21
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	oil-Cement Cylinders	
		METHOD	В	•		
		METHOD	В			
	SAMPLE DATA		WATER CONTE	NT DETERN	MINATION	
Initial Height		5.686	Mass of Wet Sar			
Initial Diame	ter, in	2.987	Mass of Dry Sam	nple and Tar	e, g 1250.5	
-	ameter Ratio	1.90	Mass of Tare, g		306.9	
Area, in ²		7.01	Moisture, %		34.5	
Volume, in ³		39.84				
Mass of San	. •	1272.7				
Wet Density		121.7				
Dry Density, Machine Sp		90.4 0.050				
Strain rate, 9		0.88				
•	, , , , , , , , , , , , , , , , , , , ,	0.00				
		TEST	DATA			
	Load Cell ID #	11/1015		Digita	al Caliper ID # 17/583	
	Compression Device ID #	10/1014		•	ut Device ID # 10/1016	
	Balance ID #	1036/1037			Oven ID # 758/496	
Maximum Lo	oad at Failure, lbf		2933			
Specimen C	ross-sectional Area, in ²		7.01		Failure Code 3	
Compressive	e Strength at Failure, psi		419			
Conversion	Factor for Height to Diameter	· Ratio	1.00			
Reported C	ompressive Strength at Fai	lure, psi	419		Failure Sketch	1
Note 2: * - A d	conversion factor based on H/D=	:1.15 (C.F908 as 100% a	nd add. correction p	per ASTM C42	2)	
		DESCRIPTION				
					Failure Type:	
		000 (10711 00 107 00 1	00)		Cone and Sh	ear
	U	SCS (ASTM D2487: D24	88) I			
		REMARKS				



Timely Engineering Soil

TESTS, LLC

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Tested By

KP/IH

Date

09/23/21

	1E515, L	Web: www.t	est-lic.com 🙃	REDITED		Checked By	10
Client Pr. #		200016		Lab. PR. #		21136-02-1	
Pr. Name	7	ime Oil Terminal		S. Type	Mold	Depth/Elev.	-
Sample ID	38697/2-7	Subsample	4	Location		Seattle, WA	
Add. Info	1	Mixing/Molding Date	08/26/21		Curing A	ige, Days	28
•							

Sample ID	38697/2-7	Subsample	4	Location Seattle, WA			
Add. Info	-	Mixing/Molding Date	08/26/21		Curing Age, Days	28	
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	il-Cement Cylinders		
				!			
		METHOD	В				
	SAMPLE DATA		WATER CONTE	NT DETERM	IINATION		
Initial Height		5.748	Mass of Wet Sar				
Initial Diame		2.983	Mass of Dry Sam	-			
	ameter Ratio	1.93	Mass of Tare, g	•	299.6		
Area, in ²		6.99	Moisture, %		34.3		
Volume, in ³		40.17					
Mass of Sam	nple, g	1286.8					
Wet Density,	•	122.0					
Dry Density,		90.8					
Machine Spe		0.050					
Strain rate, %	% / MIN	0.87					
		TEST	DATA				
						Ī	
	Load Cell ID #	11/1015			I Caliper ID # 17/583		
	Compression Device ID #	10/1014		Readou	t Device ID # 10/1016		
	Balance ID #	1036/1037			Oven ID # 758/496		
Maximum Lo	oad at Failure, lbf		3385	Ī			
	ross-sectional Area, in ²		6.99		Failure Code 3	I	
-	e Strength at Failure, psi		484	'	Tallare Code 0	I	
•	Factor for Height to Diameter	r Patio	1.00				
	ompressive Strength at Fa		484		Failure Sket	ch	
-	•	· •		40714040			
Note 2: ^ - A c	onversion factor based on H/D=	=1.15 (C.F908 as 100% at DESCRIPTION	na aaa. correction p	per ASTM C42,) /		
		DESCRIPTION					
					Failure Turner	I	
					Failure Type: Cone and S	Shear	
	U	SCS (ASTM D2487: D24	.88)		Oone and e	nioai	
	_]				
			ı				
		REMARKS					



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Engineering Soil

200016

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Lab. PR. #

Tested By Date EB/KP 09/05/21

Checked By

21136-02-1

09/05/21

Pr. Name					Time Oil Teri	minal				S. Type	Mold	Depth/Elevation	-	
Sample ID			3869	7/2-7		Subs	ample ID	5		Location	ı	Seattle, V	NA	
Add. Info		-		Mi	xing/Molding D	ate		08/26/21]	Curi	ng Age, Days	10	
				ASTM D	-						nductivity of Sat estant Rate of Fl			
ı	nitial Sar	mple Da	ta (Befor	e Test)			Test Dat	а				Final Data (After Te	est)	
Height		2.147	in	5.45	cm Speed			9	1					
Diameter		2.995	in		m Board N	lumber		3		Average Hei	ght of Sample	2.148 in	5.46 cm	
Area		7.05	in ²	45.45	cm ² Cell Nu	mber		13		Average Dia	meter of Sample	2.996 in	7.61 cm	
Volume		247.87	cm ³	0.0088 f	t ³ Flow Pu	ımp Numbe	r	1A		Area	7.05 in ²	45.48 cm ²		
Mass		458.3	g	1.01 I	b Flow Pι	ımp Rate*		4.48E-04	cm ³ /sec	Volume	248.15 cm ³	0.0088 ft ³	Dry Density 86.0	pcf
Specific Gr	avity	2.700	(Assume	ed)	B - Valu	e		0.95 95.0		Mass	460.1 g	1.01 lb	Vol. of Voids 121.55	
Dry Density	·			Cell Pressure			psi				Vol. of Solids 126.60	cm ³		
	Moisture Content			Back Pressure			psi				Void Ratio 0.96	_		
	ss of wet sample & tare 458.3 g			Confining (Effective) Pressure			psi		Moisture C		Saturation 97.3	%		
	ss of wet sample & tare 458.3 g			Max Head Min Head			cm		sample & tare	534.0 g				
1	· — — •			Min Head Maximum Gradient			cm	,	sample & tare	415.8 g				
% Moisture			34.2	9		Minimum Gradient			1	Mass of tare % Moisture		74.2 g 34.6		
	FUNCT	ION	34.2 Δ t	READING	1	Head Gradient Temp.			A DILITY	/ (cm/sec)	Noto	Deaired Water Used for	r Dormoohility Toot	
	1	1	-			Gradieni	T _x (°C)	@ T _x	R _T	@ 20 °C	Note.		remeability rest.	
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)			₩ 1 _x	KT	@ 20 C	NA	DESCRIPTION	\neg	
09/05/21	8	5	<u> </u>	0.28	19.70	3.61	25.6	-	-	-			USCS	
09/05/21	8	15	600	0.27	18.99	3.48	25.6	2.78E-06	0.877	2.44E-06	1		(ASTM D2487;2488))
09/05/21	8	25	600	0.28	19.70	3.61	25.6	2.78E-06	0.877	2.44E-06			NA	
09/05/21	8	35	600	0.27	18.99	3.48	25.6	2.78E-06	0.877	2.44E-06	*	REMA		
09/05/21	8	45	600	0.28	19.70	3.61	25.6	2.78E-06	0.877	2.44E-06	* Bottor	n Half of the mold was u	sed for testing.	
09/05/21	8	55	600	0.27	18.99	3.48	25.6	2.78E-06	0.877	2.44E-06	*			
09/05/21	9	5	600	0.28	19.70	3.61	25.6	2.78E-06	0.877	2.44E-06	*			
				_	Reporte	d Average	Hydraulic Co	nductivity*		2.4E-06	cm/sec			
Flow pump	ID#		22	E	Balance ID#	1035/1036		Differential	Pressure	Meter ID #		1107		
Thermome	ter ID#	796	6/985		Oven ID#	496/758		Board Press	sure Mete	r ID#		1041		
Syringe ID	#	1	40					Pore Pressu	ure Meter	ID#		26/27		

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for

calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



Pr. Name

Sample ID

Add. Info

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Tested By Date

EB/KP 09/23/21

18 Checked By Web: www.test-llc.com 200016 Lab. PR. # 21136-02-1 Time Oil Terminal Mold Depth/Elevation S. Type 38697/2-7 Subsample ID 6 Location Seattle, WA Mixing/Molding Date 08/26/21 Curing Age, Days 28

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D. Constant Pate of Flow)

	Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)																
I	nitial Sar	nple Dat	a (Befor	e Test)			Test Data	a				F	inal Data (After Test)		
Height		3.024 2.969	in	7.68 cr 7.54 cr	1 '	umbor		11]	Average Hei	ight of Compl		3.025	lin	7.68 cm		
Diameter			in in ²		2				4	-	ight of Sample						
Area		0.02	cm ³	11.07	O O II T T O II			55	-	_	meter of Sam	npie lin²		in cm²	7.54 cm		
Volume			cm	0.0121 ft ³		mp Number	•	2B	cm ³ /sec	Area	0.00	cm ³		CIII			, I
Mass		655.3	g	1.44 lb	Flow Pu	•		1.12E-04	cm*/sec	Volume		Cm ²	0.0121		Dry Density		pcf
Specific Gra	-		(Assume	d)	B - Value			0.95	! .	Mass	655.3	g	1.44	lb	Vol. of Voids	100.00	cm ³
Dry Density	,	88.6	pcf		Cell Pres			95.0	psi						Vol. of Solid		cm ³
					Back Pre			90.0	psi						Void Ratio	0.90	-
		ture Cont		7		g (Effective) Pressure	5.0	psi			ture Co		1	Saturation	103.2	%
Mass of we	•		655.3	g	Max Hea			114.65	cm		sample & tar		740.5	g			
Mass of dry		tare	487.3	9	Min Hea			113.95	cm		sample & tare	е	572.3	g			
Mass of tar	е		0.0	g		m Gradient		14.92		Mass of tare	!		85.0	g			
% Moisture			34.5		Minimun	n Gradient		14.83		% Moisture	•		34.5				
TIME	FUNCT	ON	Δt	READING	Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)		Note: D	eaired Wate	r Used for P	ermeability Te	est.	
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R_T	@ 20 °C	_		DESCRIPTI	ON	_		
09/23/21	10	20	-	1.63	114.65	14.92	25.4	-	-	-		NA				USCS	
09/23/21	10	30	600	1.62	113.95	14.83	25.4	1.68E-07	0.881	1.48E-07					(AST	M D2487;2488)	_
09/23/21	10	40	600	1.63	114.65	14.92	25.4	1.68E-07	0.881	1.48E-07						NA	
09/23/21	10	50	600	1.62	113.95	14.83	25.4	1.68E-07	0.881	1.48E-07	*			REMAR	KS		-
09/23/21	11	0	600	1.63	114.65	14.92	25.4	1.68E-07	0.881	1.48E-07	*	Bottom	Half of the m	old was use	d for testing.		
09/23/21	11	10	600	1.63	114.65	14.92	25.4	1.68E-07	0.881	1.48E-07	*						
09/23/21	11	20	600	1.62	113.95	14.83	25.4	1.68E-07	0.881	1.48E-07	*						
					Reported	d Average I	Hydraulic Co	nductivity*		1.5E-07	cm/sec						
Flow pump ID # 244 Balance ID # 1035/1036 Differential Pressure Meter ID # 587																	
Thermomet	er ID#	796	6/985	0	ven ID#	496/758		Board Press	sure Meter	ID#			1041				
Syringe ID	#	2	46	Po					ıre Meter I	D #			26/27				
*Constant Bata	of Flour Suct	om (Flour Dr	ımp with Cali	brotod Curingo fo	r Inflow and Calibr	atad Graduata	d Dipotto for out	flow) is capable t	o maintain a	nanctant rata of it	oflow 9 outflow th	brough the	fully coturated as	ample with accu	roov 1/59/ Flow	Dump Pata iguaa	ad for

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



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Tested By Date

KP/IH

09/04/21 18

Web: www.test-llc.com Checked By Client Pr. # 200016 Lab. PR. # 21136-02-2 Pr. Name Time Oil Terminal Depth/Elev. S. Type Mold -Subsample Sample ID 38731/2-1 Location Seattle, WA

Add. Info	-	Mixing/Molding Date	08/30/21		Curing Age, Da	ays	5
	ASTM D 1633: Standar	d Test Methods for Com	pressive Strength	of Molded So	oil-Cement Cylinde	rs	
		METHOD	В				
Initial Height Initial Diame Height-to-Dia Area, in ² Volume, in ³ Mass of San Wet Density Dry Density, Machine Spe Strain rate, 9	ter, in ameter Ratio nple, g , pcf pcf eed, in/min	5.699 2.972 1.92 6.94 39.54 1177.3 113.4 88.0 0.050 0.88	WATER CONTE Mass of Wet Sar Mass of Dry Sar Mass of Tare, g Moisture, %	nple and Ta	re, g 14 e, g 12 3	477.4 214.5 103.0 28.8	
		TEST	DATA				
	Load Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037			ut Device ID # 10	7/583 0/1016 68/496	
Specimen C Compressive Conversion	oad at Failure, lbf ross-sectional Area, in ² e Strength at Failure, psi Factor for Height to Diameter ompressive Strength at Fai l		73 6.94 11 1.00		Failure Code	3 ire Sketch	
-	conversion factor based on H/D=	· •	nd add. correction p	er ASTM C42	Failure Type:	ne and She	
		REMARKS					



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Date

09/09/21

L	TESTS, 1	LLC	Web. WWW.test-lic.com ACCRE			Checked By			18
Client Pr. #		200016				Lab. PR. #		21136-02-2	
Pr. Name		Time Oil Termir	nal			S. Type	Mold	Depth/Elev.	-
Sample ID	38731/2-1		Subsample 2			Location		Seattle, WA	
Add. Info	-	Mixing/Mol	lding Date	08/30/	21		Curing	Age, Days	10
	ASTM D 1633: Stand SAMPLE DATA	of Molded So		Cylinders					

	METHOD	В			
SAMPLE DATA Initial Height, in Initial Diameter, in Height-to-Diameter Ratio Area, in² Volume, in³ Mass of Sample, g Wet Density, pcf Dry Density, pcf Machine Speed, in/min Strain rate, % / min 5.634 1.89 2.975 4.89 4.995 4.99		WATER CONTE Mass of Wet San Mass of Dry San Mass of Tare, g Moisture, %	mple and Tare, g)	1502.1 1234.5 303.0 28.7
	TEST	DATA			
Load Cell ID # Compression Device ID # Balance ID # Maximum Load at Failure, Ibf Specimen Cross-sectional Area, in² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.F96 DESCR	08 as 100% a. RIPTION	324 6.95 47 1.00 47 nd add. correction p	Readout Do	Oven ID #	17/583 10/1016 758/496 3
			Fail	lure Type:	Cone and Shear
USCS (ASTM	D2487: D24	[88]]	_		
REM	IARKS				



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L	TESTS, 1	LLC	Web: www.te	st-llc.com		REDITED	
Client Pr. #		200016				Lab. PR. #	
Pr. Name			S. Type				
Sample ID	38731/2-1		Subsample	3		Location	
Add. Info	-	Mixing/Mo	Iding Date	21			

21136-02-2 Mold Depth/Elev. -Seattle, WA

Add. Info	-	Mixing/Molding Date	08/30/21		Curing Age,	Days	21
	ASTM D 1633: Standar	d Test Methods for Com	pressive Strength	of Molded So	oil-Cement Cylind	lers	
		METHOD	В				
Initial Height, Initial Diamete Height-to-Diar Area, in ² Volume, in ³ Mass of Samp Wet Density, p Dry Density, p Machine Spee Strain rate, %	er, in meter Ratio ple, g porf porf ed, in/min	5.603 2.979 1.88 6.97 39.05 1191.7 116.2 90.3 0.050 0.89	WATER CONTE Mass of Wet Sar Mass of Dry Sam Mass of Tare, g Moisture, %	nple and Tai	re, g	1549.8 1284.3 359.9 28.7	
		TEST	DATA				
(Load Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037			ut Device ID #	17/583 10/1016 758/496	
Specimen Cro Compressive	nd at Failure, lbf oss-sectional Area, in ² Strength at Failure, psi actor for Height to Diameter	Ratio	674 6.97 97 1.00		Failure Code	3	
-	mpressive Strength at Fail nversion factor based on H/D=	· ·	97 nd add. correction p	er ASTM C42	?)	ilure Sketch	
	US	SCS (ASTM D2487: D24	88)		Failure Type: Co	one and She	ear
[REMARKS					



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Date

09/27/21 18

Web: www.test-llc.com Checked By Client Pr. # 21136-02-2 200016 Lab. PR. # Time Oil Terminal Depth/Elev. Pr. Name S. Type Mold

Sample ID	38731/2-1	Subsample	4	Location	Seattle, WA	
Add. Info	-	Mixing/Molding Date	08/30/21		Curing Age, Days	28
	ASTM D 1633: Standa	ard Test Methods for Con	pressive Strength	of Molded So	oil-Cement Cylinders	
		METHOD	В	Ī		
		WILTHOD		<u>l</u>		
	SAMPLE DATA		WATER CONTE	NT DETERM	MINATION	
nitial Heigh		5.641	Mass of Wet Sar	•		
nitial Diame		2.976	Mass of Dry San	nple and Tar	-	
	iameter Ratio	1.90	Mass of Tare, g		302.0	
Area, in ²		6.96	Moisture, %		28.7	
/olume, in ³		39.24				
Mass of Sar	. •	1204.1 116.9				
Wet Density Ory Density,		90.8				
	eed, in/min	0.050				
Strain rate,		0.89				
		TFS ⁻	T DATA			
		.20				
	Load Cell ID #	11/1015		Digita	al Caliper ID # 17/583	
	Compression Device ID #	10/1014		Readou	ut Device ID # 10/1016	
	Balance ID #	1036/1037			Oven ID # 758/496	
Maximum I o	oad at Failure, lbf		950	Ī		
	Cross-sectional Area, in ²		6.96		Failure Code 3	
-	re Strength at Failure, psi		137			
-	Factor for Height to Diamete	r Ratio	1.00			
	Compressive Strength at Fa		137		Failure Sketo	:h
-	conversion factor based on H/D:	· -		L ner ΔSTM C43		
VOIC Z. A	conversion lactor based on the	DESCRIPTION	na ada. concellon p	JOI AO IWI O-12	·/ /	
					Failure Type:	
					Cone and St	near
	U	SCS (ASTM D2487: D24	188)		•	
]			
		REMARKS				
		KEINIAKNO				
	<u> </u>					



Pr. Name

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Time Oil Terminal

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Mold

Lab. PR. #

S. Type

Tested By Date

EB/KP

Checked By

21136-02-2

Depth/Elevation

09/09/21 18

Sample ID					Subsample ID		5		Location			Seattle, WA						
Add. Info		-		N	lixing/Molo	ding Dat	te		08/30/21			Cu	ring Age, Days			10)	
				ASTM	-					-		nductivity of Sanstant Rate of F		us				
I	nitial San	nple Dat	a (Befor	e Test)				Test Dat	а				Final Data	(After Test)				
Dry Density Mass of we Mass of dry Mass of tar	2.959 in 7.52 cm cm 347.19 in 652.2 g 1.44 lb cm cm cm cm cm cm cm c		cm Bo cm² Ce ft³ Fle lb Fle Ba Ce Mi Mi	Speed Board Number Cell Number Flow Pump Number Flow Pump Rate* B - Value Cell Pressure Back Pressure Confining (Effective) Pressure Max Head Min Head Maximum Gradient			10 1 15 1B 2.24E-04 0.95 95.0 90.0 5.0 53.46 52.76 6.83	cm³/sec psi psi psi cm cm	Average Diam Area Volume Mass Mass of wet s Mass of dry s Mass of tare	ght of Sample meter of Sample 6.88 in² 347.54 cm³ 664.7 g Moisture of Sample & tare sample & tare	2.960 44.40 0.0123 1.47 Content 746.9 590.5 82.1	in in cm² ft³ lb	7.83 7.52 Dry Der Vol. of Vol. of Saturat	nsity Voids Solids	159.27	pcf cm ³ cm ³		
		ON		DEADING		Minimum Gradient Head Gradient Temp.			6.74	ADILITY	% Moisture (cm/sec)	Nete	30.8	u Haad fan Da		tı . T t		
DATE	HOUR	MIN	(sec)	DP, (psi			Gradient	Temp. T _x (°C)	@ T _x	R _T	@ 20 °C	Note	: Deaired Wate DESCRIPT		rmeabili	ty rest.		
09/09/21	9	20	-	0.76	53.	.46	6.83	25.3	-	-	-	NA				US	CS	
09/09/21	9	30	600	0.75	52.	.76	6.74	25.3	7.44E-07	0.883	6.57E-07					(ASTM D2	2487;2488)	_
09/09/21	9	40	600	0.76	53.	.46	6.83	25.3	7.44E-07	0.883	6.57E-07					N	A	
09/09/21	9	50	600	0.76	53.	.46	6.83	25.3	7.39E-07	0.883	6.53E-07	*		REMARK	_			_
09/09/21	10	0	600	0.75	52.	.76	6.74	25.3	7.44E-07	0.883	6.57E-07	* Botto	m Half of the m	old was used	for testi	ng.		
09/09/21	10	10	600	0.76	53.	.46	6.83	25.3	7.44E-07	0.883	6.57E-07	*						
09/09/21	10	20	600	0.75	52.	.76	6.74	25.3	7.44E-07	0.883	6.57E-07	*						
				1				Hydraulic Co	-		6.6E-07	cm/sec	0.10					
Flow pump			22	1	Balance II		1035/1036		Differential I				942	4				
Thermomet			/985	4	Oven ID #	<i>‡</i>	496/758		Board Press				64	1				
Syringe ID # 141				Pore Pressure Meter ID #					ID#		26/27							

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for

calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



Pr. Name

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Engineering Soil

200016

Time Oil Terminal

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Mold

Lab. PR. #

S. Type

Tested By

Date

EB/KP

Checked By

21136-02-2

Depth/Elevation

09/27/21

Sample ID			38731	1/2-1		Subs	ample ID	6		Location	Seattle, WA
Add. Info		-		Mix	ing/Molding Da	te		08/30/21			Curing Age, Days 28
ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)											
Initial Sample Data (Before Test) Test Data				Final Data (After Test)							
Height		3.009		7.64 cr				11		.	
Diameter		2.975	in in ²	7.56 cr 44.85 cr	2			18		_	ight of Sample 3.010 in 7.65 cm
Area Volume		6.95 342.76	cm ³	44.85 cr 0.0121 ft ³		ber np Numbei	_	14 2B		Average Diai	meter of Sample 2.976 in 7.56 cm
Mass		634.2	a	1.40 lb		•		1.12E-04	cm ³ /sec	Volume	343.10 cm ³ 0.0121 ft ³ Dry Density 89.3 pcf
Specific Gra	avitv	2.700	9 (Assume		B - Value	•		0.95	J 7000	Mass	644.3 g 1.42 lb Vol. of Voids 161.15 cm ³
Dry Density	,	89.8	pcf	/	Cell Pres			95.0	psi		Vol. of Solids 181.95 cm ³
	ı		ır		Back Pre	ssure		90.0	psi		Void Ratio 0.89
Moisture Content			Confining	(Effective	e) Pressure	5.0	psi		Moisture Content Saturation 95.0 %		
Mass of wet sample & tare 634.2 g			Max Head		57.68	cm		sample & tare 727.9 g			
Mass of dry		tare	493.1	g	Min Head			56.98	cm		sample & tare 574.3 g
Mass of tare	9		0.0	g		Gradient		7.54		Mass of tare	<u>~</u>
% Moisture 28.6				Minimum Gradient		7.45		% Moisture	31.1		
	FUNCTI		Δt	READING	Head	Gradient	Temp.			(cm/sec)	Note: Deaired Water Used for Permeability Test.
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R _T	@ 20 °C	DESCRIPTION
09/27/21	8	30	-	0.81	56.98	7.45	24.5	-	-	-	NA USCS
09/27/21	8	40	600	0.82	57.68	7.54	24.5	3.33E-07	0.899	2.99E-07	(ASTM D2487;2488)
09/27/21	8	50	600	0.81	56.98	7.45	24.5	3.33E-07	0.899	2.99E-07	NA
09/27/21	9	0	600	0.82	57.68	7.54	24.5	3.33E-07	0.899	2.99E-07	* REMARKS
09/27/21	9	10	600	0.81	56.98	7.45	24.5	3.33E-07	0.899	2.99E-07	* Bottom Half of the mold was used for testing.
09/27/21	9	20	600	0.82	57.68	7.54	24.5	3.33E-07	0.899	2.99E-07	*
09/27/21	9	30	600	0.81	56.98	7.45	24.5	3.33E-07	0.899	2.99E-07] *
				_	Reported	Average I	Hydraulic Cor	nductivity*		3.0E-07	cm/sec
Flow pump	ID#	24	14	В	alance ID#	1035/1036		Differential F	Pressure N	Neter ID #	587
Thermomet	er ID#	796	/985	0	ven ID#	496/758		Board Press	ure Meter	ID#	570
Syringe ID #	#	24	46]				Pore Pressu	re Meter	D #	779/780

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for

calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



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Phone: 770-938-8233

1874 Forge Street Tucker, GA 30084

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09/05/21 Date 18

Client Pr. # 200016	
Pr. Name Time Oil Terminal	
Sample ID 38732/2-43 Subsample 1	
Add. Info - Mixing/Molding Date 08/31/2	<u>'</u> 1

Lab. PR. # 21136-02-2 Depth/Elev. S. Type Mold -Location Seattle, WA

Add. Info	-	Mixing/Molding Date	08/31/21		Curing Age, Days	5
	ASTM D 1633: Standar	rd Test Methods for Com	pressive Strength	of Molded S	oil-Cement Cylinders	
		METHOD	В	•		
	SAMPLE DATA		WATER CONTE	I NT DETERM	MINATION	
Initial Height Initial Diame Height-to-Dia Area, in ² Volume, in ³ Mass of San Wet Density Dry Density, Machine Spo Strain rate, 9	t, in eter, in ameter Ratio nple, g c, pcf pcf eed, in/min	5.614 2.973 1.89 6.94 38.97 1171.1 114.5 86.5 0.050 0.89	Mass of Wet Sar Mass of Dry San Mass of Tare, g Moisture, %	mple and Ta	re, g 1480.6	
		TEST	DATA			
	Load Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037			al Caliper ID # 17/583 ut Device ID # 10/1016 Oven ID # 758/496]
Specimen C Compressive Conversion	oad at Failure, lbf ross-sectional Area, in ² e Strength at Failure, psi Factor for Height to Diameter ompressive Strength at Fai		522 6.94 75 1.00 75		Failure Code 3	etch
-	conversion factor based on H/D=			per ASTM C42		
	Us	SCS (ASTM D2487: D24	88)		•	
		REMARKS				

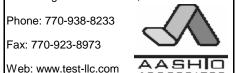


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L	TESTS, L	LC	Web: www.te	st-llc.com		SHIO		Checked By	18
Client Pr. #		200016				Lab. PR. #		21136-02-2	
Pr. Name	Time Oil Terminal				S. Type	Mold	Depth/Elev.	-	
Sample ID	38732/2-43		Subsample	2		Location		Seattle, WA	
Add. Info	-	Mixing/Mo	olding Date	08/31/2	21		Curing A	Age, Days	10
						•			

Sample ID	38732/2-43	Subsample	2	Location	Seattle, WA		
Add. Info	-	Mixing/Molding Date	08/31/21		Curing Age, Days	10	
	ASTM D 1633: Standa	ard Test Methods for Com	pressive Strength	of Molded So	oil-Cement Cylinders		
		METHOD		Ī			
		METHOD	В				
	SAMPLE DATA		WATER CONTE	NT DETERM	MINATION		
Initial Height		5.616	Mass of Wet Sar				
Initial Diame		2.968	Mass of Dry Sam	nple and Tare	. •		
-	ameter Ratio	1.89	Mass of Tare, g		297.1		
Area, in ²		6.92	Moisture, %		32.6		
Volume, in ³		38.85					
Mass of San	. •	1171.4					
Wet Density, Dry Density,		114.9 86.6					
Machine Spe		0.050					
Strain rate, %		0.89					
		TEST	DATA				
	Load Cell ID #	11/1015		Digita	al Caliper ID # 17/583		
	Compression Device ID #	10/1014		•	ut Device ID # 10/1016		
	Balance ID #	1036/1037			Oven ID # 758/496		
		<u> </u>					
	oad at Failure, lbf		858				
-	ross-sectional Area, in ²		6.92 Failure Code 3				
-	e Strength at Failure, psi		124				
	Factor for Height to Diamete		1.00				
-	ompressive Strength at Fa	· •	124		Failure Sketch		
Note 2: * - A c	conversion factor based on H/D		nd add. correction p	oer ASTM C42	?) /		
		DESCRIPTION					
					Failura Tura		
					Failure Type: Cone and She	ar	
	L	JSCS (ASTM D2487: D24	·88)		Conto ana Cho	u.	
		,]				
			_				
		REMARKS					



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				ACC	REDI		
Client Pr. #	200016						
Pr. Name	Т	ime Oil Terminal] s		
Sample ID	38732/2-43		Subsample	3	Lo		
Add. Info	-	Mixing/Molding Date 08/31/21					

b. PR. # 21136-02-2 Mold Depth/Elev. S. Type _ocation Seattle, WA 21 Curing Age, Days

7.133.11110	g,e.ag = a.c	33/31/21	• • • • • • • • • • • • • • • • • • •			
ASTM D 1633: Standard Test Methods for Compressive Strength of Molded Soil-Cement Cylinders						
	METHOD	В				
SAMPLE DATA		WATER CONTENT DETERMIN	ATION			
Initial Height, in Initial Diameter, in Height-to-Diameter Ratio Area, in ² Volume, in ³ Mass of Sample, g Wet Density, pcf Dry Density, pcf Machine Speed, in/min Strain rate, % / min	5.622 2.974 1.89 6.95 39.05 1176.2 114.7 86.5 0.050 0.89	Mass of Wet Sample and Tare, g Mass of Dry Sample and Tare, g Mass of Tare, g Moisture, %	g 1525.1			
	TEST	DATA				
Load Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037	Readout D	Caliper ID # 17/583 Device ID # 10/1016 Oven ID # 758/496			
Maximum Load at Failure, lbf Specimen Cross-sectional Area, in ² Compressive Strength at Failure, psi		303	ilure Code 3			
Conversion Factor for Height to Diameter		1.00	Fallows Ollertak			
Reported Compressive Strength at Fai Note 2: * - A conversion factor based on H/D=	· •		Failure Sketch			
			ilure Type: Cone and Shear			
US	SCS (ASTM D2487: D24	88)				
	REMARKS					
		•				



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09/28/21 18

Tests, Llc Web: www.test-llc.com Client Pr. # 200016 Pr. Name Time Oil Terminal Sample ID 38732/2-43 Subsample 4

Lab. PR. # 21136-02-2 Depth/Elev. S. Type Mold -Location Seattle, WA

Add. Info	-	Mixing/Molding Date	08/31/21		Curing Age, Days	28
	ASTM D 1633: Standar	rd Test Methods for Com	pressive Strength	of Molded S	oil-Cement Cylinders	
		METHOD	В	•		
	SAMPLE DATA		WATER CONTE	I INT DETERM	MINATION	
Initial Height Initial Diame Height-to-Dia Area, in ² Volume, in ³ Mass of San Wet Density Dry Density, Machine Spo Strain rate, 9	, in ter, in ameter Ratio nple, g , pcf pcf eed, in/min	5.554 2.983 1.86 6.99 38.82 1158.3 113.7 85.5 0.050 0.90	Mass of Wet Sar Mass of Dry San Mass of Tare, g Moisture, %			
		TEST	DATA			
	Load Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037			al Caliper ID # 17/583 ut Device ID # 10/1016 Oven ID # 758/496]
Specimen C Compressive Conversion	oad at Failure, lbf ross-sectional Area, in ² e Strength at Failure, psi Factor for Height to Diameter ompressive Strength at Fai		2207 6.99 316 1.00 316		Failure Code 3]
-	conversion factor based on H/D=	· •		per ASTM C42		
	U	SCS (ASTM D2487: D24	88)		•	
		REMARKS				



Flow pump ID #

Syringe ID #

Thermometer ID #

244

796/985

246

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			LLUI	<u>ت</u> , ـــــــ	Web. www.test-lic.com	_		ACC	REDITED			Checked by	-0	,
Client Pr. #					200016			Lab. PR. #			21136-02-2	•		
Pr. Name				Tim	e Oil Terminal			S. Type	Mold	Depth/	Elevation		-	
Sample ID		38732	/2-43		Subsample ID	5		Location			Seattle, WA			
Add. Info	-		ľ	Mixing/N	lolding Date	08/31/21] [Curii	ng Age, Days			10	
			ASTM		; Standard Test Method for aterials Using a Flexible Wal		•		•		ous			
Initial S	Initial Sample Data (Before Test) Test Data									Final Data	(After Test)			
Height	3.073	in	7.81	cm	Speed	10]							
Diameter	2.959	in	7.52	cm	Board Number	19	1	Average Heig	ht of Sample	3.074	in	7.81 cm		
Area	6.88	in ²	44.37	cm ²	Cell Number	13	1	Average Diam	neter of Sample	2.960	in	7.52 cm		
Volume	346.29	cm ³	0.0122	ft ³	Flow Pump Number	2B		Area	6.88 in ²	44.40	cm ²			
Mass	635.0	g	1.40	lb	Flow Pump Rate*	2.24E-04	cm ³ /sec	Volume	346.64 cm ³	0.0122	ft ³	Dry Density	86.4	pcf
Specific Gravity	2.700	(Assume	<u>d)</u>		B - Value	0.95	1	Mass	648.9 g	1.43	lb	Vol. of Voids	168.83	cm ³
											_			-

Dry Done	ity	00.0	POI		Och i icc	Joure		50.0	Poi					voi. or condo	177.01	
			_		Back Pre	essure		90.0	psi					Void Ratio	0.95	
	Mois	ture Con	tent		Confining	g (Effective) Pressure	5.0	psi		Moisture Co	ntent		Saturation	100.0	%
Mass of	vet sample 8	& tare	635.0	g	Max Hea	d		102.70	cm	Mass of wet	sample & tare	735.6	g			•
Mass of	dry sample 8	k tare	480.1	g	Min Head	d		101.99	cm	Mass of dry s	sample & tare	566.8	g			
Mass of t	are		0.0	g	Maximun	n Gradient		13.15		Mass of tare		86.7	g			
% Moistu	re		32.3		Minimum	Gradient		13.06		% Moisture		35.2				
TIN	/IE FUNCT	ION	Δt	READING	Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)	Note: D	eaired Wa	ter Used for P	ermeability Test		
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R _T	@ 20 °C	1	DESCRIP	TION			
09/10/2	1 8	5	-	1.46	102.70	13.15	25.7	-	-	-	NA			ι	JSCS	
00/10/2	1 0	15	600	1 45	101.00	12.06	25.7	2 95⊑ 07	0.975	2 27⊑ ∩7				(ASTM	D2487·2488)	

09/10/21 8 15 600 1.45 101.99 13.06 25.7 3.85E-07 | 0.875 | 3.37E-07 09/10/21 25 600 1.46 102.70 13.15 25.7 3.85E-07 0.875 3.37E-07 8 35 600 1.45 101.99 13.06 25.7 3.85E-07 0.875 3.37E-07 09/10/21 09/10/21 8 45 600 1.46 102.70 13.15 25.7 3.85E-07 0.875 3.37E-07 09/10/21 8 55 600 1.45 101.99 13.06 25.7 3.85E-07 0.875 3.37E-07 5 13.15 09/10/21 9 600 1.46 102.70 25.7 3.85E-07 0.875 3.37E-07

3.4E-07 cm/sec

Reported Average Hydraulic Conductivity*

Balance ID # Oven ID#

1035/1036 496/758

Differential Pressure Meter ID # Board Pressure Meter ID # Pore Pressure Meter ID #

NA			

(ASTM D2487;2488) NA

REMARKS

Bottom Half of the mold was used for testing.

587 570 779/780

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



Pr. Name

Sample ID

Add. Info

TIMELY

38732/2-43

Engineering Soil

200016

Time Oil Terminal

Mixing/Molding Date

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Subsample ID



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Date

EB/KP 09/28/21

18 Checked By Lab. PR. # 21136-02-2 Mold Depth/Elevation S. Type Location Seattle, WA Curing Age, Days 28

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow) Final Data (After Test) Initial Sample Data (Before Test) **Test Data**

6

08/31/21

initiai Sar	iipie Data	(Deloie	e rest)			rest Data	1					inai Data (Aitei iest	.)		
Height	3.022	in	7.68 cm	Speed			12						_			
Diameter	2.972	in	7.55 cm		ımber		11		Average Heig	ght of Samp	le	3.023	in	7.68 cm		
Area	6.94	in ²	44.76 cm	Cell Num	ber		2		Average Diar	meter of Sar	mple	2.973	in	7.55 cm		
Volume	343.54	cm ³	0.0121 ft ³	Flow Pun	np Number	•	1A		Area	0.01	in ²	44.79	cm ²			
Mass	625.8	g	1.38 lb	Flow Pun	np Rate*		5.60E-05	cm ³ /sec	Volume	343.89	cm ³	0.0121	ft ³	Dry Density	84.5 p	ocf
Specific Gravity	2.700	(Assumed	<u>d)</u>	B - Value			0.95		Mass	630.8	g	1.39	lb	Vol. of Voids	171.38	cm ³
Dry Density	85.6	pcf		Cell Pres	sure		95.0	psi			_		•	Vol. of Solids	172.50 C	cm ³
				Back Pre	ssure		90.0	psi						Void Ratio	0.99	
Mois	ture Conte	ent	•	Confining	(Effective)) Pressure	5.0	psi		Mois	sture Co	ntent	-	Saturation	96.3	6
Mass of wet sample 8	tare	625.8	g	Max Hea	d		167.41	cm	Mass of wet s	sample & ta	re	702.8	g			
Mass of dry sample &	tare	471.3	g	Min Head	I		166.71	cm	Mass of dry s	sample & tai	re	535.8	g			
Mass of tare	_	0.0	g	Maximum	Gradient		21.80		Mass of tare			64.5	g			
% Moisture		32.8		Minimum	Gradient		21.71		% Moisture			35.4				
TIME FUNCTI	ION	Δt	READING	Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)		Note: D	eaired Wate	r Used for P	Permeability Tes	t.	
DATE HOUR	MIN	(sec)	DP, (psi)	(cm)		$T_x(^{\circ}C)$	@ T _x	R _T	@ 20 °C			DESCRIPTI	ON			
09/29/21 7	5	-	2.38	167.41	21.80	26.1	-	-	-	1	NA				USCS	
09/29/21 7	15	600	2.37	166.71	21.71	26.1	5.75E-08	0.867	4.99E-08	1				(ASTN	1 D2487;2488)	
09/29/21 7	25	600	2.38	167.41	21.80	26.1	5.75E-08	0.867	4.99E-08	1					NA	
09/29/21 7	35	600	2.37	166.71	21.71	26.1	5.75E-08	0.867	4.99E-08	*			REMAR	KS		
09/29/21 7	45	600	2.38	167.41	21.80	26.1	5.75E-08	0.867	4.99E-08	*	Bottom	Half of the m	old was use	d for testing.		
09/29/21 7	55	600	2.37	166.71	21.71	26.1	5.75E-08	0.867	4.99E-08	*						
09/29/21 8	5	600	2.38	167.41	21.80	26.1	5.75E-08	0.867	4.99E-08	*						
				Reported	Average H	Hydraulic Cor	nductivity*		5.0E-08	cm/sec						
Flow pump ID #	22	2	Ва	lance ID #	1035/1036		Differential F	Pressure N	/leter ID #	-		1107				
Thermometer ID #	796/	985	Ov	ven ID#	496/758		Board Press	sure Meter	ID#			776				
Syringe ID #	14	.0	_				Pore Pressu	ıre Meter I	D #			26/27				

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



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09/11/21

TESTS, LLC

Web: www.test-llc.com

Client Pr. #

Pr. Name
Sample ID
Add. Info

TESTS, LLC

Web: www.test-llc.com

Subsample

Add. Info

Mixing/Molding Date

O9/01/21

 Lab. PR. #
 21136-02-2

 S. Type
 Mold
 Depth/Elev.

 Location
 Seattle, WA

 Curing Age, Days
 10

Add. Info	-	Mixing/Molding Date	09/01/21		Curing A	ge, Days	10
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded Se	oil-Cement Cy	linders	
		METHOD	В	Ī			
		III.ETTIOD					
nitial Height nitial Diame Height-to-Di Area, in ² /olume, in ³ Mass of Sar Wet Density Ory Density, Machine Sp Strain rate, ⁶	eter, in ameter Ratio nple, g 7, pcf pcf eed, in/min	5.555 2.974 1.87 6.95 38.59 1164.3 114.9 81.3 0.050 0.90	WATER CONTE Mass of Wet Sar Mass of Dry San Mass of Tare, g Moisture, %	mple and Ta	re, g	1464.5 1125.3 303.4 41.3	
		TEST	DATA				
	Load Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037		•	al Caliper ID # ut Device ID # Oven ID #	# 10/1016	
Specimen C Compressiv	oad at Failure, lbf Fross-sectional Area, in ² e Strength at Failure, psi Factor for Height to Diamete	r Ratio	646 6.95 93 1.00		Failure Code	3	
	ompressive Strength at Fa	İ	93			Failure Sketo	ch
Note 2: * - A (conversion factor based on H/D=	=1.15 (C.F908 as 100% ai DESCRIPTION	nd add. correction p	per ASTM C42	Pailure Type		.
	U	SCS (ASTM D2487: D24	88)		l	Cone and S	near
		,					
		REMARKS					



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Date

09/29/21 10

	1E313, E	LC W	eb: www.tes	st-IIC.com		REDITED		Checked By	10
Client Pr. #		200016				Lab. PR. #		21136-02-2	
Pr. Name	Т	ime Oil Termina	l			S. Type	Mold	Depth/Elev.	-
Sample ID	38741/2-41	S	Subsample	2		Location		Seattle, WA	
Add. Info	-	Mixing/Moldi	ng Date	09/01/2	21		Curing A	Age, Days	28
	A CURA D 1/22 Ct	100 434 41 1		• 64		CM 11 10	". C C	1. 1	

ASTM D 1633: Standard Test Methods for Compressive Strength of Molded Soil-Cement Cylinders METHOD B	Sample ID	38741/2-41	Subsample	2	Location	Seattle, WA	
Maximum Load at Failure, Ibf Specimen Cross-sectional Area, in Conversion Factor for Height to Diameter Ratio 1.90 Maximum Load at Failure, psi Conversion Factor for Height to Diameter Ratio 1.90 Maximum Load at Failure, psi Conversion Factor for Height to Diameter Ratio 1.90 Maximum Load at Failure, psi Conversion Factor for Height to Diameter Ratio 1.90 Maximum Load at Failure, psi Conversion Factor for Height to Diameter Ratio 1.90 Maximum Load at Failure, psi Conversion Factor for Height to Diameter Ratio 1.00 Maximum Load at Failure, psi Conversion Factor for Height to Diameter Ratio 1.00 Maximum Load at Failure, psi Conversion Factor for Height to Diameter Ratio 1.00 Maximum Load at Failure, psi Conversion Factor for Height to Diameter Ratio 1.00 Maximum Load at Failure, psi Conversion Factor for Height to Diameter Ratio 1.00 ESCRIPTION Failure Type: Cone and Shear Cone a	Add. Info	-	Mixing/Molding Date	09/01/21	[Curing Age, Days	28
SAMPLE DATA Initial Height, in Initial Height, in Initial Diameter, in Initial Height, in Initial Height, in Initial Diameter, in Initial Diameter, in Initial Diameter, in Initial Diameter, in Initial Diameter, in Initial Diameter, in Initial Diameter, in Initial Diameter, in Initial Diameter, in Initial Diameter, in Initial Diameter Diameter Ratio Initial Diameter Diameter Ratio Initial Diameter Diameter Ratio Initial Diameter Diameter Ratio Initial Diameter Diameter Ratio Initial Diameter, in Initial Diam		ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	il-Cement Cylinders	
SAMPLE DATA Initial Height, in Initial Height, in Initial Diameter, in Initial Height, in Initial Height, in Initial Diameter, in Initial Diameter, in Initial Diameter, in Initial Diameter, in Initial Diameter, in Initial Diameter, in Initial Diameter, in Initial Diameter, in Initial Diameter, in Initial Diameter, in Initial Diameter Diameter Ratio Initial Diameter Diameter Ratio Initial Diameter Diameter Ratio Initial Diameter Diameter Ratio Initial Diameter Diameter Ratio Initial Diameter, in Initial Diam					ĭ		
Initial Height, in initial Height, in initial Diameter, in Height-to-Diameter Ratio Area, in 2 Goldmen, in 3 Area, in 3 Goldmen, in 3 Area, in 3 Goldmen, in 41.7 Holdmen, in 3 Goldmen, in 41.7 Holdmen, in 3 Goldmen, in 41.7 Holdmen, in 4			METHOD	В			
Initial Height, in initial Height, in initial Diameter, in Height-to-Diameter Ratio Area, in 2 Goldmen, in 3 Area, in 3 Goldmen, in 3 Area, in 3 Goldmen, in 41.7 Holdmen, in 3 Goldmen, in 41.7 Holdmen, in 3 Goldmen, in 41.7 Holdmen, in 4		SAMPLE DATA		WATER CONTE	NT DETERM	IINATION	
Mass of Dry Sample and Tare, g 1136.3	Initial Heigh		5.660				
Area, in² Volume, in³ Mass of Sample, g Wet Density, pcf 114.8 Dry Density, pcf Machine Speed, in/min Strain rate, % / min TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA Digital Caliper ID # 17/583 Readout Device ID # 10/1016 Deven ID # 10/1016 Deve	•						
Volume, in ³ Mass of Sample, g Mass of Sample, g Met Density, pcf Dry Density, pcf Dry Density, pcf Machine Speed, in/min Strain rate, % / min TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA Digital Caliper ID # 17/583 10/1016 10/101	-	iameter Ratio	1.90	Mass of Tare, g		298.5	
Mass of Sample, g Wet Density, pcf Machine Speed, in/min Strain rate, % / min TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA Digital Caliper ID # 17/583 10/1016 10/1014 1036/1037 Readout Device ID # 10/1016 10/1			6.97	Moisture, %		41.7	
Wet Density, pcf Dry Density, pcf Dry Density, pcf Machine Speed, in/min Strain rate, % / min TEST DATA TEST DATA TEST DATA TEST DATA Load Cell ID # Compression Device ID # Balance ID # 10/1014 1036/1037 Maximum Load at Failure, lbf Specimen Cross-sectional Area, in² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION USCS (ASTM D2487: D2488) TEST DATA Digital Caliper ID # 17/583 Readout Device ID # 10/1016 Oven ID # 758/496 Failure Code 3 Failure Sketch Failure Type: Cone and Shear							
TEST DATA TEST DATA Load Cell ID #		. •					
Machine Speed, in/min Strain rate, % / min TEST DATA Load Cell ID # Compression Device ID # Balance ID # 10/1014 Balance ID # 10/1015 Becimen Cross-sectional Area, in² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION USCS (ASTM D2487: D2488) TEST DATA Digital Caliper ID # 17/583 Readout Device ID # 10/1016 Oven ID # 758/496 Failure Code 3 Failure Code 3 Failure Sketch Failure Type: Cone and Shear							
TEST DATA Load Cell ID # Compression Device ID # Balance ID # Maximum Load at Failure, Ibf Specimen Cross-sectional Area, in² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION TEST DATA Digital Caliper ID # 17/583 Readout Device ID # 10/1016 Oven ID # 758/496 Failure Code 3 Failure Sketch Failure Sketch Failure Type: Cone and Shear							
Load Cell ID # Compression Device ID # Balance ID # Tol/1014 Balance ID # Tol/1014 Balance ID # Tol/1014 Balance ID # Tol/1014 Balance ID # Tol/1016 Tol/101							
Load Cell ID # Compression Device ID # Balance ID # Tol/1014 Balance ID # Tol/1014 Balance ID # Tol/1014 Balance ID # Tol/1014 Balance ID # Tol/1016 Tol/101							
Compression Device ID # 10/1014 Balance ID # 1036/1037 Maximum Load at Failure, Ibf Specimen Cross-sectional Area, in² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION USCS (ASTM D2487: D2488) Failure Code 3 Failure Code 3 Failure Sketch Failure Type: Cone and Shear			TEST	DATA			
Compression Device ID # 10/1014 Balance ID # 1036/1037 Maximum Load at Failure, Ibf Specimen Cross-sectional Area, in² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION USCS (ASTM D2487: D2488) Failure Code 3 Failure Code 3 Failure Sketch Failure Type: Cone and Shear		Load Cell ID #	11/1015		Digita	I Caliper ID # 17/583	
Maximum Load at Failure, lbf Specimen Cross-sectional Area, in ² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION USCS (ASTM D2487: D2488) Failure Code 3 Failure Code 3 Failure Code 3 Failure Type: Cone and Shear							
Specimen Cross-sectional Area, in ² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION Failure Code 3 Failure Code 3 Failure Code 3 Failure Code 3 Failure Sketch Failure Sketch Failure Type: Cone and Shear		Balance ID #	1036/1037			Oven ID # 758/496	
Specimen Cross-sectional Area, in ² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION Failure Code 3 Failure Code 3 Failure Code 3 Failure Code 3 Failure Sketch Failure Sketch Failure Type: Cone and Shear					"		
Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION Failure Type: Cone and Shear USCS (ASTM D2487: D2488)		_			ı	- · · · · · · · · · · · · · · · · · · ·	
Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION Failure Type: Cone and Shear USCS (ASTM D2487: D2488)					,	Failure Code 3	
Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION Failure Sketch Failure Type: Cone and Shear	-	•					
Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION Failure Type: Cone and Shear			ı				
DESCRIPTION Failure Type: Cone and Shear	-	•					ſ
Failure Type: Cone and Shear	Note 2: * - A	conversion factor based on H/D=	· · · · · · · · · · · · · · · · · · ·	nd add. correction p	per ASTM C42,) /	
USCS (ASTM D2487: D2488)			DESCRIPTION		-		
USCS (ASTM D2487: D2488)							
USCS (ASTM D2487: D2488)						Failura Turas	
USCS (ASTM D2487: D2488)						* *	ear
REMARKS		U	SCS (ASTM D2487: D24	88)			
REMARKS							
REMARKS			DEMARKO				
			REMARKS				
<u> </u>							



Pr. Name

TIMELY

Engineering Soil

200016

Time Oil Terminal

Tests, llc

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Mold

Lab. PR. #

S. Type

Tested By Date

09/

Checked By

21136-02-2

Depth/Elevation

09/11/21

EB/KP

Sample ID			38741	/2-41		Subs	ample ID	3		Location	1	Seattle, V	VA	
Add. Info		-		Mix	xing/Molding Da	ate		09/01/21			Curir	ng Age, Days		10
				ASTM D	=				-		nductivity of Satu			
ı	nitial Sar	nple Dat	a (Befor	e Test)			Test Dat	а				Final Data (After Te	st)	
Height Diameter Area Volume Mass Specific Gr. Dry Density Mass of we Mass of dry Mass of tar	Moist sample & sample & see	2.968 6.92 343.41 625.0 2.700 80.4	625.0 442.6 0.0	7.54 c 44.64 c 0.0121 ft 1.38 lb	Flow Pur B - Value Cell Pres Back Pre Confinin Max Hea Min Hea Maximur	nber mp Numbe mp Rate* e ssure essure g (Effective ad d m Gradient	e) Pressure	9 5 13 4B 4.48E-04 0.95 95.0 90.0 5.0 15.47 14.07 2.01	cm³/sec psi psi psi cm cm	Average Dia Area Volume Mass Mass of wet Mass of dry: Mass of tare	ght of Sample meter of Sample 6.92 in² 343.76 cm³ 628.0 g Moisture Co	726.6 g 541.2 g 98.6 g	7.70 7.54 Dry De Vol. of Vol. of Void R Satura	ensity 80.3 pcf Voids 179.83 cm ³ Solids 163.93 cm ³
% Moisture	FUNCTI	ON	41.2 Δ t	READING	Head	Gradient Gradient	Temp.	1.83 PERME	ARII ITY	% Moisture (cm/sec)	Note:	41.9 Deaired Water Used for	Permeahi	ility Test
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)	Oradichi	T _x (°C)	@ T _x	R _T	@ 20 °C	14010.	DESCRIPTION	Terricabi	mry 103t.
09/11/21 09/11/21	7	10 20	- 600	0.20 0.21	14.07 14.77	1.83 1.92	23.6 23.6	- 5.35E-06	- 0.918	- 4.92E-06	NA			USCS (ASTM D2487;2488)
09/11/21	7	30	600	0.21	14.77	1.92	23.6	5.23E-06	0.918	4.80E-06	<u> </u>			NA
09/11/21 09/11/21	7	40 50	600 600	0.22	15.47 14.77	2.01 1.92	23.6 23.6	5.10E-06 5.10E-06	0.918 0.918	4.69E-06 4.69E-06	* * Bottom	REMA Half of the mold was us	_	ting.
09/11/21	8	0	600	0.22	15.47	2.01	23.6	5.10E-06	0.918	4.69E-06	*			
09/11/21	8	10	600	0.21	14.77	1.92	23.6	5.10E-06	0.918	4.69E-06	*			
Flow pump Thermome	ter ID #	796)43 /985)46	1	Reported Balance ID # Oven ID #	1035/1036 496/758		nductivity* Differential I Board Press Pore Pressu	sure Mete	r ID#	cm/sec	1045/1049 1042 779/780		
Syringe ID	π	I C	/ -1 U	_				FULL FIESS	ine ivietel	1D#		119/100		

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for



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Mold

Lab. PR. #

S. Type

Tested By Date

Checked By

21136-02-2

Depth/Elevation

09/29/21

18

EB/KP

Sample ID			38741	/2-41			Subs	ampie ID	4		Location				Seattle, WA				
Add. Info		-		N	Mixing/Mo	olding Dat	te		09/01/21]		Curir	ig Age, Days			28		
				ASTM	-					-	/draulic Co	-			us				
					Mat	terials U	Jsing a F	lexible Wal	I Permeam	eter (Me	thod D, Cor	stant Rate	e of Flo	w)					
I.	nitial San	nple Dat	a (Befor	e Test)				Test Dat	а					Final Data	(After Test))			
Height		2.921	in	7.42	cm	Speed			11]									
Diameter		2.969	in			Board Nu	ımber		8		Average Hei	ght of Samp	ole	2.922	in	7.42 c	m		
Area		6.92	in ²	44.67	cm ²	Cell Num	ber		5		Average Dia	meter of Sa		2.970	in	7.54 c	m		
Volume		331.39	cm ³	0.0117	ft ³	Flow Pun	np Number	r	4A		Area	6.93	in ²	44.70	cm ²				
Mass		612.6	g	1.35	lb	Flow Pun	np Rate*		1.12E-04	cm ³ /sec	Volume	331.73	cm ³	0.0117	ft ³	Dry Dens	sity		pcf
Specific Gra		2.700	(Assume	d)		B - Value			0.95		Mass	613.0	g	1.35	lb	Vol. of V	oids 1		cm ³
Dry Density	′	81.6	pcf			Cell Pres			95.0	psi						Vol. of S	olids 1	160.52	cm ³
						Back Pre			90.0	psi						Void Rat	io	1.07	
		ture Cont		7		_	•) Pressure	5.0	psi			sture Co		7	Saturation	n	104.9	%
Mass of we	•		612.6	g		Max Hea			113.95	cm	Mass of wet	•		695.6	g				
Mass of dry		tare	433.4	g		Min Head	-		112.54	cm	Mass of dry		re	516.0	g				
Mass of tar			0.0	g			n Gradient		15.35		Mass of tare			82.6	g				
% Moisture			41.3				Gradient		15.16		% Moisture			41.4					
	FUNCTI	1	Δt	READING		lead	Gradient	Temp.			(cm/sec)	1	Note:	Deaired Wate	er Used for Pe	ermeability	/ Test.		
DATE	HOUR	MIN	(sec)	DP, (psi	i) (cm)		T _x (°C)	@ T _x	R _T	@ 20 °C			DESCRIPT	ION	_			
09/29/21	7	5	-	1.62	11	13.95	15.35	25.2	-	-	-		NA				USC	cs	
09/29/21	7	15	600	1.61	11	13.25	15.26	25.2	1.64E-07	0.885	1.45E-07						(ASTM D24	187;2488)	
09/29/21	7	25	600	1.62	11	13.95	15.35	25.2	1.64E-07	0.885	1.45E-07					Γ	N/	4	
09/29/21	7	35	600	1.61	11	13.25	15.26	25.2	1.64E-07	0.885	1.45E-07	*			REMARK	(S			
09/29/21	7	45	600	1.62	11	13.95	15.35	25.2	1.64E-07	0.885	1.45E-07	*	Bottom	Half of the m	nold was used	d for testin	g.		
09/29/21	7	55	600	1.61	11	13.25	15.26	25.2	1.64E-07	0.885	1.45E-07	*							
09/29/21	8	5	600	1.60	11	12.54	15.16	25.2	1.65E-07	0.885	1.46E-07	*							
						Reported	Average I	Hydraulic Co	nductivity*		1.5E-07	cm/sec							
Flow pump	ID#	10)43		Balance	ID#	1035/1036		Differential I	Pressure I	Meter ID #	=		1044/1048					
Thermomet	ter ID #	796	/985		Oven ID) #	496/758		Board Press	sure Mete	r ID#			290					
Syringe ID	#	10)47						Pore Pressu	ıre Meter	ID#			216					

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for



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Date

KP/IH

Checked By

09/09/21

					ACC
Client Pr. #		200016			
Pr. Name	Ti	ime Oil Termi	nal		
Sample ID	38742/2-36		Subsample	1	
Add. Info	-	Mixing/Mo	lding Date	09/02/2	21
1		•		•	

 Lab. PR. #
 21136-02-2

 S. Type
 Mold
 Depth/Elev.

 Location
 Seattle, WA

 Curing Age, Days
 7

Add. Info	-	Mixing/Molding Date	09/02/21		Curing Ag	ge, Days	7
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	oil-Cement Cy	linders	
		METHOD	В				
	0.44D) = D.474		WATER CONTE				
	SAMPLE DATA		WATER CONTE				
Initial Height		5.645	Mass of Wet Sar	•	-	1481.5	
Initial Diame		2.965	Mass of Dry San	nple and Tar	e, g	1202.3	
-	ameter Ratio	1.90	Mass of Tare, g			304.0	
Area, in ²		6.90	Moisture, %			31.1	
Volume, in ³		38.98					
Mass of San	. •	1179.2					
Wet Density	• •	115.3					
Dry Density,		87.9					
Machine Spe		0.050					
Strain rate, %	% / MIN	0.89					
		TES1	DATA				
	Load Cell ID #	11/1015		Digits	al Caliper ID#	17/583	
	Compression Device ID #	10/1014			ut Device ID #		
	Balance ID #	1036/1037		reado	Oven ID #	-	
	Dalarioc ID #	1000/100/			OVCII ID #	100/100	
Maximum Lo	oad at Failure, lbf		729	•			
	ross-sectional Area, in ²		6.90	•	Failure Code	3	
•	e Strength at Failure, psi		106				
-	Factor for Height to Diameter	r Ratio	1.00	•			
	ompressive Strength at Fa		106			Failure Sketc	h
•	conversion factor based on H/D=	• •		l ner ΔSTM CΔC			
71010 2. 710	onversion laster based on the	DESCRIPTION	na ada. comodion p	701 710 TW 0 12	-/	/	
					ľ	\perp	
						$1/ \setminus 1$	
					Failure Type:		
					rallure Type.	Cone and Sh	near
	U	SCS (ASTM D2487: D24	188)		L	Conc and Ci	
]				
			•				
		REMARKS			_		



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Date

09/12/21 18

10

L	TESTS, L	.LC	Web: www.tes	st-llc.com		SHIO REDITED		Checked By	
Client Pr. #		200016				Lab. PR. #		21136-02-2	
Pr. Name	Т	ime Oil Termir	nal			S. Type	Mold	Depth/Elev.	
Sample ID	38742/2-36		Subsample	2		Location		Seattle, WA	
Add. Info	-	Mixing/Mo	lding Date	09/02/2	21		Curing /	Age, Days	

ASTM D 1633: Standard Test Methods for Comp	oressive Strength	of Molded Soil-Cement Cylinders
METHOD [В	

	METHOD B
SAMPLE DATA Initial Height, in Initial Diameter, in Height-to-Diameter Ratio Area, in² Volume, in³ Mass of Sample, g Wet Density, pcf Dry Density, pcf Machine Speed, in/min Strain rate, % / min 5.678 5.678 5.678 5.678 5.678 5.678 5.678 5.678 5.678 5.678 5.97 5.97 5.97 5.97 5.68 5.697 5.97 5.97 5.697 5.697 5.697 5.97 5.697 5.697 5.697 5.697 5.697 5.697 5.697 5.697 5.697 5.697 5.678 5.67	WATER CONTENT DETERMINATION Mass of Wet Sample and Tare, g Mass of Dry Sample and Tare, g Mass of Tare, g Moisture, % 1489.2 1205.0 305.7 31.6
	TEST DATA
Load Cell ID # 11/1015 Compression Device ID # 10/1014 Balance ID # 1036/1037	Digital Caliper ID # 17/583 Readout Device ID # 10/1016 Oven ID # 758/496
Maximum Load at Failure, lbf Specimen Cross-sectional Area, in ² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi	1302 6.97 Failure Code 3 187 1.00 Failure Sketch
Note 2: * - A conversion factor based on H/D=1.15 (C.F9 DESCI	O8 as 100% and add. correction per ASTM C42) RIPTION Failure Type: Cone and Shear
USCS (ASTM	D2487: D2488)
REM	IARKS



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Tested By Date

KP/IH

09/30/21 12

I.	TESTS, L	LC	Web: www.te	st-llc.com		SHIO		Checked By	18
Client Pr. #		200016				Lab. PR. #		21136-02-2	
Pr. Name	Ti	me Oil Termi	nal			S. Type	Mold	Depth/Elev.	-
Sample ID	38742/2-36		Subsample	3		Location		Seattle, WA	
Add. Info	-	Mixing/Mo	olding Date	09/02/	21		Curing	Age, Days	28

Sample ID	38742/2-36	Subsample	3	Location	Seattle, WA	Seattle, WA		
Add. Info	-	Mixing/Molding Date	09/02/21		Curing Age, Days	28		
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	oil-Cement Cylinders			
				7	•			
		METHOD	В					
	0.4MDI		WATER CONTE	NT DETERM	AIN ATION			
عطما والمنطعة	SAMPLE DATA	E 075	WATER CONTE					
Initial Height, Initial Diamet		5.675 2.976	Mass of Wet Sar Mass of Dry San	•	-			
	ameter Ratio	1.91	Mass of Tare, g	iipie aliu Tait	305.3			
Area, in ²	amotor ratio	6.96	Moisture, %		31.4			
Volume, in ³		39.47	Wolstare, 70		31.4			
Mass of Sam	nole a	1178.4						
Wet Density,	. •	113.7						
Dry Density,		86.5						
Machine Spe		0.050						
Strain rate, %	% / min	0.88						
		TEOT	DATA					
		IESI	DATA					
	Load Cell ID #	11/1015		Digita	al Caliper ID # 17/583			
	Compression Device ID #	10/1014			ut Device ID # 10/1016			
	Balance ID #	1036/1037			Oven ID # 758/496			
Maximum Lo	ad at Failure, lbf		2603					
Specimen Cı	ross-sectional Area, in ²		6.96		Failure Code 3			
Compressive	e Strength at Failure, psi		374					
-	Factor for Height to Diamete	r Ratio	1.00					
	ompressive Strength at Fa		374		Failure Sketo	ch		
-	onversion factor based on H/D=		nd add. correction r	l oer ASTM C42				
7.0	o	DESCRIPTION	.a aaa. coco		′ /			
				I				
					Failure Type:			
					Cone and S	hear		
!	U	SCS (ASTM D2487: D24	.88)					
			-					
		REMARKS						
•								



Pr. Name

TIMELY

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Mold

Lab. PR. #

S. Type

Tested By Date EB/KP 09/12/21

Checked By

21136-02-2

Depth/Elevation

09/12/21 **/**8

Sample ID			38742	2/2-36			Subsa	ample ID	4		Location				Seattle, WA				
Add. Info		-		M	lixing/Moldir	ng Date)		09/02/21				Curin	ng Age, Days				10	
				ASTM I	D 5084; St	andar	d Test N	Method for	Measurem	ent of Hy	draulic Cor	nductivity	of Satu	rated Poro	us				
					Materi	ials Us	sing a Fl	lexible Wa	II Permeam	eter (Me	thod D, Con	stant Rat	e of Flo	w)					
ı	nitial Sar	nple Dat	a (Befor	e Test)				Test Dat	а					Final Data	(After Test)				
Height		2.992	in	7.60	cm Spe	eed			9						_				
Diameter		2.961	in	_		ard Num	nber		6		Average Hei	ght of Sam	ple	2.993	in	7.60	m		
Area		6.89	in ²			ll Numbe	er		37		Average Dia	meter of Sa	ample	2.962	in	7.52	m		
Volume		337.62	cm ³	0.0119	ft ³ Flov	w Pump	Number	r	4A		Area	6.89	in ²	44.46	cm ²	_			_
Mass		621.6	g	1.37	lb Flov	w Pump	Rate*		4.48E-04	cm ³ /sec	Volume	337.96	cm ³	0.0119	ft ³	Dry Den	sity	87.6	pcf
Specific Gr	avity	2.700	(Assume	ed)	В -	Value			0.95		Mass	630.3	g	1.39	lb	Vol. of V	oids	162.30	
Dry Density	/	87.7	pcf			II Pressu			95.0	psi						Vol. of S		175.67	cm ³
						ck Press			90.0	psi						Void Ra		0.92	
		ture Cont		7		•	•) Pressure	5.0	psi			isture Co		7	Saturation	วท	96.1	%
Mass of we	'		621.6	g		x Head			42.91	cm	Mass of wet	•		711.1	9				
Mass of dry		tare	474.3	g		n Head	O " '		42.20	cm	Mass of dry s	sample & ta	are	555.1	g				
Mass of tar			0.0	g			Gradient		5.64	_	Mass of tare			80.8	g				
% Moisture			31.1				Gradient		5.55		% Moisture	1		32.9					
	FUNCTI	1	Δt	READING		id G	Gradient	Temp.			(cm/sec)		Note: I	Deaired Wate	er Used for Pe	rmeabilit	y Test.		
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm	1)		T _x (°C)	@ T _x	R _T	@ 20 °C			DESCRIPT	ION				
09/12/21	8	5	-	0.60	42.2	20	5.55	24.1	-	-	-		NA				U	JSCS	
09/12/21	8	15	600	0.61	42.9	91	5.64	24.1	1.80E-06	0.908	1.63E-06					_	(ASTM	D2487;2488	3)
09/12/21	8	25	600	0.60	42.2	20	5.55	24.1	1.80E-06	0.908	1.63E-06							NA	
09/12/21	8	35	600	0.61	42.9)1	5.64	24.1	1.80E-06	0.908	1.63E-06	*	'		REMARK	S			
09/12/21	8	45	600	0.60	42.2	20	5.55	24.1	1.80E-06	0.908	1.63E-06	*	Bottom	Half of the m	nold was used	for testir	ıg.		
09/12/21	8	55	600	0.61	42.9)1	5.64	24.1	1.80E-06	0.908	1.63E-06	*							
09/12/21	9	5	600	0.60	42.2	20	5.55	24.1	1.80E-06	0.908	1.63E-06	*							
					Rep	ported A	Average H	Hydraulic Co	nductivity*		1.6E-06	cm/sec							
Flow pump	ID#	10)43		Balance ID	#	1035/1036		Differential I	Pressure I	Meter ID #	-		1044/1048					
Thermome	ter ID#	796	/985		Oven ID#	4	496/758		Board Press	sure Mete	r ID#			1042					
Syringe ID	#	10)47			-			Pore Pressu	ıre Meter	ID#			779/780					

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for



Pr. Name

Sample ID

TIMELY

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200016

Time Oil Terminal

Tests, Llc

38742/2-36

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Fax: 770-923-8973

Web: www.test-llc.com

Subsample ID



Mold

Lab. PR. #

S. Type

Location

Tested By

Date

21136-02-2

Seattle, WA

Depth/Elevation

EB/KP

Checked By

09/30/21

A I I I I			001 42	T			аттріс тВ	00/00/04		Location			
Add. Info		-		Mi	king/Molding Da	te		09/02/21		<u> </u>	Curing Age, Days 28		
				ASTM D	•				-		onductivity of Saturated Porous		
	Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)												
li	Initial Sample Data (Before Test) Test Data Final Data (After Test)												
Height		2.922	in	7.42	m Speed			10	1				
Diameter		2.976	in		m Board Nu	ımber		11	1	Average He	eight of Sample 2.923 in 7.42 cm		
Area		6.96	in ²	44.88	m ² Cell Num	ber		13		Average Dia	ameter of Sample 2.937 in 7.46 cm		
Volume		333.07	cm ³	0.0118 f	Flow Pur	np Numbe	r	1B]	Area	6.77 in ² 43.71 cm ²		
Mass		599.4	g	1.32 II	Flow Pur	np Rate*		2.24E-04	cm ³ /sec	Volume	324.51 cm ³ 0.0115 ft ³ Dry Density 87.7 p		
Specific Gra	avity	2.700	(Assume	d)	B - Value	:		0.95		Mass	615.4 g 1.36 lb Vol. of Voids 155.67 c		
Dry Density		85.4	pcf		Cell Pres	sure		95.0	psi		Vol. of Solids 168.84 c		
					Back Pre	ssure		90.0	psi		Void Ratio 0.92		
	Mois	ture Cont	ent	=	Confining	g (Effective	e) Pressure	5.0	psi		Moisture Content Saturation 102.5 %		
Mass of we	t sample 8	tare	599.4	g	Max Hea	d		66.82	cm		t sample & tare 696.8 g		
Mass of dry		tare	455.8	g	Min Head			66.12	cm		sample & tare 537.3 g		
Mass of tare	Э		0.0	g		n Gradient		9.00		Mass of tare	e <u>81.5</u> g		
% Moisture			31.5		Minimum	Gradient		8.91		% Moisture	35.0		
TIME	FUNCT	ON	Δt	READING	Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)	Note: Deaired Water Used for Permeability Test.		
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R_T	@ 20 °C	DESCRIPTION		
09/30/21	7	20	-	0.95	66.82	9.00	24.1	-	-	-	NA USCS		
09/30/21	7	30	600	0.94	66.12	8.91	24.1	5.72E-07	0.908	5.20E-07	(ASTM D2487;2488)		
09/30/21	7	40	600	0.95	66.82	9.00	24.1	5.72E-07	0.908	5.20E-07	NA NA		
09/30/21	7	50	600	0.94	66.12	8.91	24.1	5.72E-07	0.908	5.20E-07	* REMARKS		
09/30/21	8	0	600	0.95	66.82	9.00	24.1	5.72E-07	0.908	5.20E-07	* Bottom Half of the mold was used for testing.		
09/30/21	8	10	600	0.94	66.12	8.91	24.1	5.72E-07	0.908	5.20E-07	*		
09/30/21	8	20	600	0.95	66.82	9.00	24.1	5.72E-07	0.908	5.20E-07	*		
					Reported	Average I	Hydraulic Cor	nductivity*		5.2E-07	cm/sec		
Flow pump	ID#	2	2] [Balance ID #	1035/1036		Differential I	Pressure N	Meter ID #	942		
Thermomet	er ID#	796	/985		Oven ID #	496/758		Board Press	sure Meter	r ID#	776		
Syringe ID #	#	14	41]			•	Pore Pressu	ıre Meter I	ID#	26/27		
											inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused to		

calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.

5



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AASHIO

Tested By Date

Checked By

KP/IH

09/12/21 18

Tests, Llc Web: www.test-llc.com Client Pr. # 200016 Pr. Name Time Oil Terminal Sample ID 38765/2-4 Subsample

21136-02-3 Lab. PR. # S. Type Depth/Elev. Mold -Location Seattle, WA

Add. Info	-	Mixing/Molding Date	09/02/21		Curing Age, Days 10			
	ASTM D 1633: Standar	rd Test Methods for Com	pressive Strength	of Molded S	oil-Cement Cylinders			
		METHOD	В					
Initial Height Initial Diame Height-to-Dia Area, in ² Volume, in ³ Mass of San Wet Density Dry Density, Machine Spo	ter, in ameter Ratio nple, g , pcf pcf eed, in/min	5.560 2.967 1.87 6.91 38.44 1182.7 117.2 89.5 0.050 0.90	WATER CONTE Mass of Wet San Mass of Dry San Mass of Tare, g Moisture, %	mple and Ta	re, g 1483.0			
		TEST	DATA					
	Load Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037			al Caliper ID # 17/583 ut Device ID # 10/1016 Oven ID # 758/496]		
Specimen C Compressive Conversion Reported C	oad at Failure, lbf ross-sectional Area, in ² e Strength at Failure, psi Factor for Height to Diameter ompressive Strength at Fai	lure, psi	121 6.91 18 1.00 18		Failure Code 3	etch		
Note 2: * - A c	conversion factor based on H/D=	.1.15 (C.F908 as 100% ai DESCRIPTION	nd add. correction p	per ASTM C42				
	US	SCS (ASTM D2487: D24	88) 		Failure Type: Cone and	Shear		
		REMARKS	ı					



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		W 65. WWW.t	AE C	REDITED		Officored by	
Client Pr. #		200016		Lab. PR. #		21136-02-3	
Pr. Name	Т	ime Oil Terminal		S. Type	Mold	Depth/Elev.	-
Sample ID	38765/2-4	Subsample	2	Location		Seattle, WA	
Add. Info	-	Mixing/Molding Date	09/02/21		Curing A	ge, Days	28
Initial Heigh	SAMPLE DATA	rd Test Methods for Con METHOD 5.698	B WATER CONTE] ENT DETERMI	NATION	ylinders 1502.3	
Initial Diame		2.979	Mass of Dry Sai	•	g	1221.0	
	ameter Ratio	1.91	Mass of Tare, g			299.6	
Area, in ²		6.97	Moisture, %			30.5	
Volume, in ³ Mass of Sar Wet Density Dry Density, Machine Sp Strain rate, ⁶	v, pcf , pcf eed, in/min	39.71 1205.0 115.6 88.5 0.050 0.88					
		TES ⁻	T DATA				
	Load Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037		•	Caliper ID : Device ID : Oven ID :	# 10/1016	
Specimen C Compressiv	oad at Failure, lbf Cross-sectional Area, in ² The Strength at Failure, psi Factor for Height to Diameter	· Ratio	616 6.97 88 1.00] 	ailure Code	e 3	
	compressive Strength at Fai		88	1		Failure Sketo	:h
-	conversion factor based on H/D=	• •	and add. correction	per ASTM C42)			
				F	ailure Type	:	
			-			Cone and SI	hear
	U	SCS (ASTM D2487: D24	488) ¬				
			J				
		REMARKS					



Mass of tare

Flow pump ID #

Syringe ID #

Thermometer ID #

TIMELY

0.0

22

796/985

141

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USCS (ASTM D2487;2488) NA

Date

09/12/21 18

EB/KP

Client Pr. 200016 Lab. PR. # 21136-02-3 Time Oil Terminal Pr. Name Mold Depth/Elevation S. Type Sample ID 38765/2-4 Subsample ID 3 Location Seattle, WA Curing Age, Days Add. Info Mixing/Molding Date 09/02/21 10 ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow) **Initial Sample Data (Before Test)** Final Data (After Test) **Test Data** 2.992 Height 7.60 cm Speed 10 Diameter 2.925 lin 7.43 Board Number 3 Average Height of Sample 2.993 7.60 cm cm in² cm² 6.72 43.35 Cell Number 55 Average Diameter of Sample 2.926 7.43 cm Area cm³ cm² 329.46 0.0116 6.72 Volume Flow Pump Number 1B Area 43.38 cm³/sec cm3 Mass 632.4 1.39 Flow Pump Rate* 2.24E-04 Volume 329.80 0.0116 Dry Density 91.5 pcf cm^3 Specific Gravity 2.700 (Assumed) B - Value 0.95 Mass 629.6 1.39 Vol. of Voids 150.68 cm³ Dry Density 91.6 pcf Cell Pressure 95.0 psi Vol. of Solids 179.12 90.0 Back Pressure psi Void Ratio 0.84 **Moisture Content Moisture Content** Confining (Effective) Pressure 5.0 psi Saturation 96.9 Max Head 45.72 712.3 Mass of wet sample & tare 632.4 cm Mass of wet sample & tare Mass of dry sample & tare 483.7 Min Head 45.02 Mass of dry sample & tare 566.3 cm

6.01

Mass of tare

% Moisture			30.7		Minimum	Gradient		5.92		% Moisture	
TIME	FUNCTI	ON	Δt	READING	Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)	
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R _T	@ 20 °C	
09/12/21	7	20	-	0.65	45.72	6.01	23.8	-	-	-	
09/12/21	7	30	600	0.64	45.02	5.92	23.8	8.65E-07	0.914	7.91E-07	
09/12/21	7	40	600	0.65	45.72	6.01	23.8	8.65E-07	0.914	7.91E-07	
09/12/21	7	50	600	0.64	45.02	5.92	23.8	8.65E-07	0.914	7.91E-07	*
09/12/21	8	0	600	0.65	45.72	6.01	23.8	8.65E-07	0.914	7.91E-07	*
09/12/21	8	10	600	0.64	45.02	5.92	23.8	8.65E-07	0.914	7.91E-07	*
09/12/21	8	20	600	0.65	45.72	6.01	23.8	8.65E-07	0.914	7.91E-07	*
					Reported	l Average I	Hydraulic Cor	nductivity*		7.9E-07	cm/sec

Maximum Gradient

NΑ

82.6

30.2

26/27

DESCRIPTION

Reported Average Hydraulic Conductivity*

Balance ID # 1035/1036 Oven ID# 496/758 Differential Pressure Meter ID # Board Pressure Meter ID # Pore Pressure Meter ID #

942 1041

Bottom Half of the mold was used for testing.

REMARKS

Note: Deaired Water Used for Permeability Test.

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



Pr. Name

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Mold

Lab. PR. #

S. Type

Tested By Date

21136-02-3

Depth/Elevation

EB/KP 09/30/21

18 Checked By

Sample ID			3876	765/2-4 Subsample ID 4						Location				Seattle, WA					
Add. Info		=		N	lixing/Moldii	ing Date)		09/02/21]		Curin	g Age, Days				28	
				ASTM I	-					-	draulic Cor	-			us		ı		
					Mater	ials Us	sing a Fi	exible Wal	I Permeam	eter (Me	thod D, Con	stant Rai	e of Flo	w)					
I	nitial San	nple Dat	a (Befor	e Test)				Test Dat	а					Final Data	(After Test)				
Height		2.954	in	7.50	cm Spe	eed			10						_		-		
Diameter		2.960	in	-	-	ard Num	nber		12		Average Hei	ght of Sam	ple	2.955	in	7.51	cm		
Area		6.88	in ²			II Numbe	er		41		Average Dia	meter of Sa	_ ` .	2.961	in	7.52	cm		
Volume		333.11	cm ³	0.0118			Number	•	1A		Area	6.89	in ²	44.43	cm ²				_
Mass		620.9	g			w Pump	Rate*		2.24E-04	cm ³ /sec	Volume	333.45	cm ³	0.0118	ft ³	Dry De	,	89.2	pcf
Specific Gra	•	2.700	(Assume	ed)		Value			0.95		Mass	630.7	g	1.39	lb	Vol. of		156.92	cm ³
Dry Density	'	89.2	pcf			II Pressu			95.0	psi						Vol. of		176.53	cm ³
						ck Press			90.0	psi			:			Void Ra		0.89	-
., ,		ture Cont		ר		•	•) Pressure	5.0	psi	.		isture Co		7	Saturat	ion	98.2	%
Mass of we	•		620.9	9		ax Head			52.76	cm	Mass of wet			703.7	9				
Mass of dry Mass of tar		tare	476.4 0.0	9		n Head	Gradient		52.05 7.03	cm	Mass of dry s Mass of tare	sample & ta	are	549.7 73.3	9				
% Moisture			30.3	9		nimum G			6.93	_	% Moisture			32.3	g				
	FUNCTI	ION	Δt	READING		-	Gradient	Temp.		ARII ITV	(cm/sec)	Ī	Noto: [er Used for Pe	rmoahil	ity Toef		
DATE	HOUR	MIN	-				Jiauleiii	T _x (°C)	@ T _x	R _T	@ 20 °C	ł	Note. I	DESCRIPT		iiiieabii	ly 165t	•	
			(sec)	DP, (psi)	•				₩ 1 _X	ΝŢ	@ 20 0	ŀ	NA	DESCRIPT	ION				
09/30/21	7	20	-	0.75	52.7		7.03	24.1	-	-	-	ļ	INA					JSCS	
09/30/21	7	30	600	0.74	52.0	05	6.93	24.1	7.22E-07	0.908	6.56E-07						(ASTM	D2487;2488)
09/30/21	7	40	600	0.75	52.7	76	7.03	24.1	7.22E-07	0.908	6.56E-07							NA	_
09/30/21	7	50	600	0.74	52.0	05	6.93	24.1	7.22E-07	0.908	6.56E-07	*			REMARK	_			
09/30/21	8	0	600	0.75	52.7	76	7.03	24.1	7.22E-07	0.908	6.56E-07	*	Bottom	Half of the m	nold was used	for test	ng.		1
09/30/21	8	10	600	0.74	52.0	05	6.93	24.1	7.22E-07	0.908	6.56E-07	*							
09/30/21	8	20	600	0.75	52.7	76	7.03	24.1	7.22E-07	0.908	6.56E-07	*							
					Rep	ported A	Average H	Hydraulic Co	nductivity*		6.6E-07	cm/sec							
Flow pump	ID#	2	22		Balance ID) #	1035/1036		Differential	Pressure I	Meter ID #	•		1107					
Thermomet	er ID#	796	/985		Oven ID#	4	496/758		Board Press	sure Mete	r ID#			776					
Syringe ID:	#	1.	40						Pore Pressi	ıre Meter	ID#			26/27					

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for



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Date

09/13/21

	IESTS, L	LC Web: ww	w.test-llc.com		REDITED		Checked By	18
Client Pr. #		200016			Lab. PR. #		21136-02-3	
Pr. Name	Т	ime Oil Terminal			S. Type	Mold	Depth/Elev.	-
Sample ID	38766/2-46	Subsam	ple 1		Location		Seattle, WA	
Add. Info	-	Mixing/Molding Date	09/03	3/21		Curing A	Age, Days	10
	ASTM D 1633: Standa	rd Test Methods for C	ompressive S	trength	of Molded So	oil-Cement C	vlinders	

Add. Info	-	Mixing/Molding Date	09/03/21		Curing Age, Days	10
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded Soil-	Cement Cylinders	
		METHOD	В	•		
		211105				
Area, in ² Volume, in ³ Mass of Sa Wet Density Dry Density	eter, in viameter Ratio mple, g y, pcf y, pcf peed, in/min	5.610 2.979 1.88 6.97 39.10 1187.0 115.6 88.0 0.050 0.89	WATER CONTE Mass of Wet Sar Mass of Dry Sar Mass of Tare, g Moisture, %	mple and Tare,	g 1490.2	
		TEST	DATA			
	Load Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037		Readout D	Caliper ID # 17/583 Device ID # 10/1016 Oven ID # 758/496	
Specimen (Compressiv	oad at Failure, lbf Cross-sectional Area, in ² ve Strength at Failure, psi Factor for Height to Diametel	· Ratio	487 6.97 70 1.00	Fa	ilure Code 3	
-	Compressive Strength at Fai conversion factor based on H/D=		70 nd add. correction p		Failure Sketo	h
				Fa	ilure Type: Cone and SI	near
	U	SCS (ASTM D2487: D24	88)			
		REMARKS				



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Tested By Date

KP/IH 10/01/21

18

Client Pr. # 200016 Pr. Name Time Oil Terminal Sample ID 38766/2-46 Subsample 2

Lab. PR. # S. Type Mold Location

21136-02-3 Depth/Elev. -Seattle, WA

Checked By

Add. Info	-	Mixing/Molding Date	09/03/21	•	Curing Age, Days	28
	ASTM D 1633: Standar	rd Test Methods for Com	pressive Strength	of Molded S	oil-Cement Cylinders	
		METHOD	В			
Initial Heigh Initial Diame Height-to-Di Area, in ² Volume, in ³ Mass of Sar Wet Density Dry Density, Machine Sp Strain rate, ⁶	eter, in lameter Ratio mple, g lameter g lamet	5.588 2.971 1.88 6.93 38.74 1180.6 116.1 88.4 0.050 0.89	WATER CONTE Mass of Wet Sar Mass of Dry San Mass of Tare, g Moisture, %	mple and Ta	re, g 1484.0	
		TEST	DATA			
	Load Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037			al Caliper ID # 17/583 ut Device ID # 10/1016 Oven ID # 758/496	
Specimen C Compressiv Conversion	oad at Failure, lbf Cross-sectional Area, in ² e Strength at Failure, psi Factor for Height to Diameter Compressive Strength at Fai	İ	1501 6.93 217 1.00 217		Failure Code 3	etch
Note 2: * - A	conversion factor based on H/D=	:1.15 (C.F908 as 100% ar DESCRIPTION	nd add. correction p	oer ASTM C42	2)	
					Failure Type: Cone and	Shear
	U	SCS (ASTM D2487: D24	88)		T Conc and	Official
		REMARKS			_	



Pr. Name

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Phone: 770-938-8233

Fax: 770-923-8973

Web: www.test-llc.com



Mold

Lab. PR. #

S. Type

Tested By

21136-02-3

Depth/Elevation

EB/KP

Date Checked By 09/13/21 18

Sample ID	·				Subsample ID 3			Location	on Seattle, WA								
Add. Info		-		М	ixing/Molding Da	ate		09/03/21]		Curin	g Age, Days			10	
				ASTM D	•				-	draulic Cor thod D, Con	-		rated Porous w)	i			
In	itial San	nple Dat	a (Befor	e Test)			Test Dat	а		Final Data (After Test)							
Height Diameter Area Volume Mass Specific Grav Dry Density Mass of wet Mass of dry s Mass of tare	Mois t sample & sample &	2.975 6.95 346.06 634.7 2.700 87.2		7.56 44.85 0.0122 1.40	b Flow Pur B - Value Cell Pres Back Pre Confinin Max Hea Min Hea Maximur	nber mp Numbe mp Rate* e ssure essure g (Effective ad d m Gradient	e) Pressure	10 4 33 2B 2.24E-04 0.95 95.0 90.0 5.0 28.84 27.43 3.74	cm³/sec psi psi psi cm cm	Average Heig Average Dian Area Volume Mass Mass of wet s Mass of dry s Mass of tare	meter of Sa 6.96 346.41 645.0 Mo sample & ta	in ² cm ³ g	3.039 in in 2.976 in 44.88 cm cm 1.42 lb content 729.7 g 568.3 g 84.6 g 33.4	n²	7.72 c 7.56 c Dry Dens Vol. of Vo Vol. of So Void Rati	87. bids 167. blids 179. do 0.9	29 cm ³ 12 cm ³
% Moisture	FUNCTI	ON	Δt	READING	1	Gradient Gradient	Temp.	3.55 PERME	ABILITY	% Moisture (cm/sec)		Note:	Deaired Water U	Jsed for Pe	rmeability	Test.	
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R _T	@ 20 °C			DESCRIPTION		,		
09/13/21	7	40	-	0.40	28.14	3.65	23.3	-	-	-		NA				USCS	
09/13/21	7	50	600	0.39	27.43	3.55	23.3	1.39E-06	0.925	1.28E-06					_	(ASTM D2487;2	488)
09/13/21	8	0	600	0.40	28.14	3.65	23.3	1.39E-06	0.925	1.28E-06						NA	
09/13/21	8	10	600	0.39	27.43	3.55	23.3	1.39E-06	0.925	1.28E-06	*			REMARKS			
09/13/21	8	20	600	0.41	28.84	3.74	23.3	1.37E-06	0.925	1.27E-06	*	Bottom	Half of the mold	d was used	for testin	g.	
09/13/21	8	30	600	0.40	28.14	3.65	23.3	1.35E-06	0.925	1.25E-06	*						
09/13/21	8	40	600	0.41	28.84	3.74	23.3	1.35E-06	0.925	1.25E-06	*						
					Reported	d Average	Hydraulic Co	nductivity*		1.3E-06	cm/sec						-
Flow pump II	D#	24	44		Balance ID #	1035/1036	1	Differential I	Pressure I	Meter ID #	1		587				
Thermomete	er ID #	796	/985		Oven ID#	496/758	1	Board Press	sure Mete	r ID#			1041				
Syringe ID #		24	46				-	Pore Pressu	ıre Meter	ID#			26/27				

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for

calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



Pr. Name

Sample ID

TIMELY

38766/2-46

Engineering Soil

200016

Time Oil Terminal

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Subsample ID



Mold

Lab. PR. #

S. Type

Location

Tested By Date

21136-02-3

Seattle, WA

Depth/Elevation

Checked By

10/01/21

Add. Info - Mixing/Molding Date 09/03/21 - Curing Age, Days 2 - ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous - Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow) - Initial Sample Data (Before Test) - Height	8
Notice Column C	
Height 2.958 in 7.51 cm Speed 11 Average Height of Sample 2.959 in 7.52 cm Area 6.91 in² 44.58 cm² Cell Number 2 Area 334.91 cm³ 0.0118 ft³ Flow Pump Number 3A Area 6.91 in² 44.61 cm² Cm²	
Height 2.958 in 7.51 cm Speed 11	
Diameter 2.966 in 6.91 in² 7.53 cm 6.91 in² Board Number Mumber 14 Average Height of Sample 2.959 in 7.52 cm 7.52 cm Volume 334.91 cm³ 0.0118 ft³ Flow Pump Number 3A Area 6.91 in² 44.61 cm² 7.54 cm²	
Area 6.91 in² 44.58 cm² Cell Number 2 Average Diameter of Sample 2.967 in cm² 7.54 cm² Volume 334.91 cm³ 0.0118 ft³ Flow Pump Number 3A Area 6.91 in² 44.61 cm²	
Volume 334.91 cm³ 0.0118 ft³ Flow Pump Number 3A Area 6.91 in² 44.61 cm²	
Mass 624.5 g 1.38 lb Flow Pump Rate* 1.12E-04 cm³/sec Volume 335.25 cm³ 0.0118 ft³ Dry Density	
	88.4 pcf
Specific Gravity 2.700 (Assumed) B - Value 0.95 Mass 631.4 g 1.39 lb Vol. of Voids	159.35 cm ³
Dry Density 88.4 pcf Cell Pressure 95.0 psi Vol. of Solids	175.90 cm ³
Back Pressure 90.0 psi Void Ratio	0.91
Moisture Content Confining (Effective) Pressure 5.0 psi Moisture Content Saturation	98.2 %
Mass of wet sample & tare 624.5 g Max Head 81.59 cm Mass of wet sample & tare 702.7 g	
Mass of dry sample & tare 474.7 g Min Head 80.89 cm Mass of dry sample & tare 546.3 g	
Mass of tare 0.0 g Maximum Gradient 10.86 Mass of tare 71.6 g	
% Moisture 31.6 Minimum Gradient 10.76 % Moisture 32.9	
TIME FUNCTION At READING Head Gradient Temp. PERMEABILITY (cm/sec) Note: Deaired Water Used for Permeability Test.	
DATE HOUR MIN (sec) DP, (psi) (cm) $T_x(^{\circ}C)$ @ T_x R_T @ 20 $^{\circ}C$ DESCRIPTION	
10/01/21 10 50 - 1.15 80.89 10.76 24.2 NA NA US	SCS
10/01/21 11 0 600 1.16 81.59 10.86 24.2 2.32E-07 0.906 2.10E-07 (ASTM D	2487;2488)
10/01/21 11 10 600 1.15 80.89 10.76 24.2 2.32E-07 0.906 2.10E-07	۱A
10/01/21 11 20 600 1.16 81.59 10.86 24.2 2.32E-07 0.906 2.10E-07 * REMARKS	
10/01/21 11 30 600 1.15 80.89 10.76 24.2 2.32E-07 0.906 2.10E-07 * Bottom Half of the mold was used for testing.	
10/01/21	
10/01/21 11 50 600 1.15 80.89 10.76 24.2 2.32E-07 0.906 2.10E-07 *	
Reported Average Hydraulic Conductivity* 2.1E-07 cm/sec	
Flow pump ID # 475 Balance ID # 1035/1036 Differential Pressure Meter ID # 469	
Thermometer ID # 796/985 Oven ID # 496/758 Board Pressure Meter ID # 694/459	
Syringe ID # 491 Pore Pressure Meter ID # 372	
*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%.	ρ Rate isused for

calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.

4



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Tested By

Checked By

KP/IH

Date

09/17/21 18

-

L		TESTS, L	LC	Web: www.te	st-llc.com	AGG	, E		
Client Pr. #			200016						
Pr. Name	e Time Oil Terminal								
Sample ID		38789/2-47		Subsample	1				
Add. Info	-		Mixing/Mo	olding Date	09/07/2	21			

Lab. PR. # 21136-02-3 S. Type Depth/Elev. Mold

Sample ID	38789/2-47	Subsample	1	Location	Seattle, WA	
Add. Info	-	Mixing/Molding Date	09/07/21		Curing Age, Days	10
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	oil-Cement Cylinders	
		METHOD	В	Ī		
		METHOD	В	<u>[</u>		
	SAMPLE DATA		WATER CONTE	NT DETERM	MINATION	
Initial Heig	ht, in	5.657	Mass of Wet Sai	mple and Ta	re, g 1497.0	
Initial Diam		2.967	Mass of Dry San	•		
Height-to-[Diameter Ratio	1.91	Mass of Tare, g		304.9	
Area, in ²		6.91	Moisture, %		30.8	
Volume, in	3	39.11				
Mass of Sa	ample, g	1194.4				
Wet Densi	• •	116.3				
Dry Densit		88.9				
	speed, in/min	0.050				
Strain rate	, % / min	0.88				
		TEST	DATA			
	Load Cell ID #	11/1015		Digita	al Caliper ID # 17/583	
	Compression Device ID #	10/1014		-	ut Device ID # 10/1016	
	Balance ID #	1036/1037			Oven ID # 758/496	
	'	<u> </u>		•		
	Load at Failure, lbf		485			
Specimen	Cross-sectional Area, in ²		6.91		Failure Code 3	
Compressi	ive Strength at Failure, psi		70			
Conversion	n Factor for Height to Diameter	· Ratio	1.00			
Reported	Compressive Strength at Fai	lure, psi	70		Failure Sketch	า
Note 2: * - A	A conversion factor based on H/D=		nd add. correction բ	oer ASTM C42	2)	
		DESCRIPTION			. /	
					Failure Type:	
	[]	SCS (ASTM D2487: D24	.88)		Cone and Sh	ear
	0.	000 (NOTH <u>D2 107 : D2 1</u>]			
			<u>-</u>			
		REMARKS			1	
					I	



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L	T	ESTS, LLC		Web: www.te	st-llc.com	ACC			
Client Pr. #		200	016						
Pr. Name	Time Oil Terminal								
Sample ID	38	789/2-47		Subsample	2				
Add. Info - Mixing/Molding Date 09/07/21									

21136-02-3 Lab. PR. # Depth/Elev. S. Type Mold

Sample ID	38789/2-47	Subsample	2	Location	Seattle, WA	
Add. Info	-	Mixing/Molding Date	09/07/21		Curing Age, Days	28
	ASTM D 1633: Standa	ard Test Methods for Com	pressive Strength	of Molded So	oil-Cement Cylinders	
		METHOD	В	Ī		
		WETHOD	В	l		
	SAMPLE DATA		WATER CONTE	NT DETERM	MINATION	
Initial Heigh		5.651	Mass of Wet Sar	•		
Initial Diam Height-to-D	eter, in Piameter Ratio	2.969 1.90	Mass of Dry San Mass of Tare, g	npie and Tar	e, g 1271.3 359.9	
Area, in ²	Talliotor i tallo	6.92	Moisture, %		30.4	
Volume, in ³		39.12				
Mass of Sa	. •	1190.4				
Wet Densit Dry Density		115.9 88.8				
Machine Sp	peed, in/min	0.050				
Strain rate,	% / min	0.88				
		TEST	DATA			
	Load Cell ID #	11/1015		Digita	al Caliper ID # 17/583	
	Compression Device ID #	10/1014			ut Device ID # 10/1016	
	Balance ID #	1036/1037			Oven ID # 758/496	
Maximum L	oad at Failure, lbf		1180	Ī		
	Cross-sectional Area, in ²		6.92		Failure Code 3	
-	ve Strength at Failure, psi		170			
	Factor for Height to Diamete	İ	1.00			
-	Compressive Strength at Fa	· -	170	4074404	Failure Sketch	I
Note 2: ^ - A	conversion factor based on H/D	=1.15 (C.F908 as 100% at DESCRIPTION	na ada. correction p	oer ASTM C42	" /	
					Failure Type: Cone and She	oor
	L	ISCS (ASTM D2487: D24	88)		Cone and Sine	zai
		REMARKS				



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Engineering Soil

200016

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Lab. PR. #

Tested By

21136-02-3

Date

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09/17/21 18

EB/KP

Pr. Name					Time Oil Term	inal				S. Type	Mo	old	Depth/Elevation	-
Sample ID			38789	/2-47		Subs	ample ID	3		Location			Seattle, WA	4
Add. Info		-		Mi	xing/Molding Da	te		09/07/21]		Curin	g Age, Days	10
				ASTM D	•				-	draulic Cor thod D, Con	•		rated Porous w)	
lr	nitial Sar	nple Dat	a (Befor	e Test)			Test Dat	a					Final Data (After Test	:)
Height		3.019	in	7.67	m Speed			9	1					
Diameter		2.972	in		m Board Nu	umber		16		Average Hei	ght of Samp	ole	3.020 in	7.67 cm
Area		6.94	in ²		cm ² Cell Num	ber		55		Average Dia	meter of Sa		2.973 in	7.55 cm
Volume		343.20	cm ³	0.0121 f	t ³ Flow Pur	np Numbe	r	2A		Area	6.94	in ²	44.79 cm ²	
Mass		631.1	g	1.39 I	b Flow Pur	np Rate*		4.48E-04	cm ³ /sec	Volume	343.55	cm ³	0.0121 ft ³	Dry Density 87.8 pc
Specific Gra	avity	2.700	(Assume	d)	B - Value)		0.95		Mass	639.5	g	1.41 lb	Vol. of Voids 164.60 cr
Dry Density		87.8	pcf		Cell Pres	sure		95.0	psi					Vol. of Solids 178.94 cr
					Back Pre	essure		90.0	psi					Void Ratio 0.92
	Mois	ture Cont	ent	=	Confining	g (Effective) Pressure	5.0	psi		Moi	isture Co	ntent	Saturation 95.0 %
Mass of wet	sample 8	tare	631.1	g	Max Hea	d		28.84	cm	Mass of wet	sample & ta	are	720.3 g	
Mass of dry	sample &	tare	483.0	g	Min Head	b		28.14	cm	Mass of dry	sample & ta	ire	564.0 g	
Mass of tare	9		0.0	g	Maximun	n Gradient		3.76]	Mass of tare			81.0 g	
% Moisture			30.7		Minimum	Gradient		3.67		% Moisture			32.4	
TIME	FUNCT	ON	Δt	READING	Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)		Note: I	Deaired Water Used for P	Permeability Test.
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R _T	@ 20 °C			DESCRIPTION	_
09/17/21	8	5	-	0.41	28.84	3.76	25.1	-	-	-		NA		USCS
09/17/21	8	15	600	0.40	28.14	3.67	25.1	2.69E-06	0.887	2.39E-06				(ASTM D2487;2488)
09/17/21	8	25	600	0.41	28.84	3.76	25.1	2.69E-06	0.887	2.39E-06				NA
09/17/21	8	35	600	0.40	28.14	3.67	25.1	2.69E-06	0.887	2.39E-06	*		REMAR	
09/17/21	8	45	600	0.41	28.84	3.76	25.1	2.69E-06	0.887	2.39E-06	*	Bottom	Half of the mold was use	d for testing.
09/17/21	8	55	600	0.40	28.14	3.67	25.1	2.69E-06	0.887	2.39E-06	*			
09/17/21	9	5	600	0.41	28.84	3.76	25.1	2.69E-06	0.887	2.39E-06	*			
				-	Reported	Average	Hydraulic Co	nductivity*		2.4E-06	cm/sec			
Flow pump	ID#	2	44	Į i	Balance ID#	1035/1036		Differential F	Pressure I	Meter ID #			346	
Thermometer ID # 796/985 Oven ID # 496/758 Board Pre:				Board Press	sure Mete	· ID#			694/459					
Syringe ID #	#	2	45					Pore Pressu	ıre Meter	ID#			1104	

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for



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Tested By

10/05/21

Date Checked By

18

EB/KP

	,					ALL	- 0			
Client Pr. :	#	200016				Lab. PR. #		21136-02-3		
Pr. Name	Time Oil Terminal					S. Type	Mold Depth/Elevation -			=
Sample ID	38789/2-47 Subsample ID 4					Location	Seattle, WA			
Add. Info	-	- Mixing/Molding Date			09/07/21	Curing Age, Days			2	28

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow) **Initial Sample Data (Before Test) Test Data** Final Data (After Test) Height 3.032 7.70 cm Speed 10 Diameter 2.964 in 7.53 Board Number 24 Average Height of Sample 3.033 7.70 cm cm in² cm² 6.90 44.52 Cell Number 5 Average Diameter of Sample 2.965 7.53 cm Area cm³ in² cm² Volume 342.83 0.0121 Flow Pump Number 2B Area 6.90 44.55 cm³/sec cm³ 631.0 1.39 Flow Pump Rate* 2.24E-04 Volume 343.17 0.0121 Dry Density 88.2 Mass pcf cm^3 Specific Gravity 2.700 (Assumed) B - Value 0.95 Mass 646.7 1.43 Vol. of Voids 163.44 cm³ Dry Density 88.3 pcf Cell Pressure 95.0 psi Vol. of Solids 179.73 90.0 Back Pressure psi Void Ratio 0.91 **Moisture Content Moisture Content** 5.0 Confining (Effective) Pressure psi Saturation 98.8 Max Head 103.40 Mass of wet sample & tare 631.0 cm Mass of wet sample & tare 729.0 Mass of dry sample & tare 485.2 Min Head 101.99 Mass of dry sample & tare 567.6 cm Maximum Gradient Mass of tare 0.0 13.42 Mass of tare 82.4 % Moisture 30.0 Minimum Gradient 13.24 % Moisture 33.3 TIME FUNCTION Δt READING Head Gradient Temp. PERMEABILITY (cm/sec) Note: Deaired Water Used for Permeability Test. $T_x(^{\circ}C)$ @ 20 °C DATE **HOUR** @ T, R_{T} MIN (sec) DP, (psi) (cm) DESCRIPTION NΑ 7 40 1.45 101.99 13.24 24.3 10/05/21 USCS 7 50 600 103.40 13.42 24.3 3.77E-07 0.904 3.41E-07 (ASTM D2487;2488) 10/05/21 1.47 10/05/21 0 600 1.45 101.99 13.24 24.3 3.77E-07 0.904 3.41E-07 NA 8 10 600 1.46 102.70 13.33 24.3 3.79E-07 0.904 3.42E-07 10/05/21 REMARKS Bottom Half of the mold was used for testing. 10/05/21 8 20 600 1.47 103.40 13.42 24.3 3.76E-07 0.904 3.40E-07 10/05/21 8 30 600 1.45 101.99 13.24 24.3 3.77E-07 0.904 3.41E-07 10/05/21 8 40 600 1.46 102.70 13.33 24.3 3.79E-07 0.904 3.42E-07 Reported Average Hydraulic Conductivity* 3.4E-07 cm/sec Flow pump ID # 244 Balance ID # Differential Pressure Meter ID # 1035/1036 587 Thermometer ID # 796/985 Oven ID# 496/758 Board Pressure Meter ID # 1033 Syringe ID # 246 Pore Pressure Meter ID # 1106

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



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Tested By

KP/IH

Date
Checked By

09/18/21

		**************************************	ACC	REDITED		Checked By	
Client Pr. #		200016		Lab. PR. #	Lab. PR. # 21136-02-3		
Pr. Name	Т	ime Oil Terminal		S. Type	Mold	Depth/Elev.	-
Sample ID	38790/2-24	Subsample	1	Location	Seattle, WA		
Add. Info	-	Mixing/Molding Date	09/08/21] [Curing A	Age, Days	10
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	il-Cement C	Cylinders	
		METHOD	В	7			
		III III III		1			
	SAMPLE DATA		WATER CONTE				
Initial Height	t, in	5.629	Mass of Wet Sa	•		1495.9	
Initial Diame		2.971	Mass of Dry Sar	mple and Tare	e, g	1218.2	
Height-to-Dia	ameter Ratio	1.89	Mass of Tare, g			305.8	
Area, in ²		6.93	Moisture, %			30.4	
Volume, in ³		39.02					
Mass of San	nple, g	1195.1					
Wet Density		116.7					
Dry Density,	•	89.4					
Machine Spe		0.050					
Strain rate, 9		0.89					
		TEST	DATA				
	Load Cell ID #	11/1015		Digita	l Caliper ID	# 17/583	
	Compression Device ID #	10/1014		•	t Device ID		
	Balance ID #	1036/1037			Oven ID	# 758/496	
Maximum Lo	oad at Failure, lbf		639	7			
	ross-sectional Area, in ²			† ,	Failure Cod	le 3	
-			6.93	 	allule Cou	5	
-	e Strength at Failure, psi		92	4			
	Factor for Height to Diamete		1.00	<u> </u>			
Reported C	ompressive Strength at Fa	ilure, psi	92			Failure Sketc	:h
Note 2: * - A c	conversion factor based on H/D=	The state of the s	nd add. correction	per ASTM C42))		
		DESCRIPTION					
				l,	Failure Type	e:	
					/ -	Cone and Sh	near
	U	SCS (ASTM D2487: D24	88)				
		`	l [*]				
			J				
		REMARKS					



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Date

10/06/21 18

L	TESTS, L	LC	Web: www.tes	st-llc.com		SHIO		Checked By	18
Client Pr. #		200016				Lab. PR. #		21136-02-3	
Pr. Name	Т	Time Oil Term				S. Type	Mold	Depth/Elev.	-
Sample ID	38790/2-24	38790/2-24				Location		Seattle, WA	
Add. Info	-	Iding Date	09/08/	21		Curing A	ge, Days	28	

Sample ID	38790/2-24	Subsample	2	Location	Seattle, WA	
Add. Info	-	Mixing/Molding Date	09/08/21		Curing Age, Days	28
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	il-Cement Cylinders	
				ĭ		
		METHOD	В			
	SAMPLE DATA		WATER CONTE	NT DETERM	IINATION	
Initial Heigh		5.653	Mass of Wet Sar			
Initial Diam		2.981	Mass of Dry Sam			
-	Diameter Ratio	1.90	Mass of Tare, g		305.8	
Area, in ²		6.98	Moisture, %		30.4	
Volume, in ³		39.45				
Mass of Sa	. •	1207.4				
Wet Densit Dry Density		116.6 89.3				
	peed, in/min	0.050				
Strain rate,		0.88				
						
		TEST	DATA			
	Load Cell ID #	11/1015		Digita	I Caliper ID # 17/583	
	Compression Device ID #	10/1014			t Device ID # 10/1016	
	Balance ID #	1036/1037			Oven ID # 758/496	
	Load at Failure, lbf		2744	ı	_	
	Cross-sectional Area, in ²		6.98	ı	Failure Code 3	
-	ve Strength at Failure, psi		393	,		
	Factor for Height to Diameter	ı	1.00	i		
-	Compressive Strength at Fa		393		Failure Sketch	1
Note 2: * - A	conversion factor based on H/D=	· · · · · · · · · · · · · · · · · · ·	nd add. correction p	per ASTM C42) /	
		DESCRIPTION				
					_	
					Failure Type: Cone and She	ear
	U	SCS (ASTM D2487: D24	88)			-
		,	,			
			•			
		REMARKS				



Pr. Name

Sample ID

TIMELY

38790/2-24

Engineering Soil

200016

Time Oil Terminal

Tests, llc

1874 Forge Street Tucker, GA 30084

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Fax: 770-923-8973

Web: www.test-llc.com

Subsample ID



Mold

Lab. PR. #

S. Type

Location

Tested By Date

21136-02-3

Seattle, WA

Depth/Elevation

Checked By

09/18/21 18

EB/KP

Sample ID			30790	12-24		Subs	ample ib	3		Location				beattle, WA		
Add. Info		-		Mi	xing/Molding Da	ate		09/08/21]		Curing	g Age, Days		10	
				ASTM D	5084; Standa				-		-			s		
					Materials I	Jsing a F	lexible Wal	I Permeam	eter (Me	thod D, Con	stant Rate	of Flov	v)			
lı lı	nitial San	nple Dat	a (Before	e Test)			Test Data	a				F	inal Data (A	After Test)		
Height		3.013	in	7.65	cm Speed			9	1							
Diameter		2.962	in		m Board N	umber		15		Average Hei	ght of Sampl	le	3.014 ir	n	7.66 cm	
Area		6.89	in ²	44.46	cm ² Cell Nun	nber		17		Average Dia	meter of San	nple	2.963 ir	n	7.53 cm	
Volume		340.22	cm ³	0.0120 f	t ³ Flow Pu	mp Numbe	r	2B		Area	0.00	in ²	44.49	m ²		
Mass		631.3	g	1.39 I	b Flow Pui	mp Rate*		4.48E-04	cm ³ /sec	Volume	340.56	cm ³	0.0120 ff	t ³	Dry Density 88	
Specific Gra	avity	2.700	(Assume	d)	B - Value	-		0.95		Mass	641.6	g	1.41 II		Vol. of Voids 161	
Dry Density		88.8	pcf		Cell Pres			95.0	psi						Vol. of Solids 179	0.44 cm ³
					Back Pre			90.0	psi						Void Ratio 0.9	
		ture Cont		7) Pressure	5.0	psi			ture Co			Saturation 97	'.5 %
Mass of we	'			g	Max Hea			46.42	cm	Mass of wet			723.3 g	I		
Mass of dry		tare	484.4	g	Min Hea			45.72	cm	Mass of dry s		е	566.2 g	I		
Mass of tare	Э		0.0	g	-	n Gradient		6.06	1	Mass of tare			81.8	1		
% Moisture			30.3		1	Gradient		5.97		% Moisture			32.4			
TIME	FUNCTI	ON	Δt	READING	Head	Gradient	Temp.			(cm/sec)		Note: D	eaired Water	Used for Pe	ermeability Test.	
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R _T	@ 20 °C			DESCRIPTIO	N	•	
09/18/21	8	10	-	0.65	45.72	5.97	25.3	-	-	-		NA			USCS	
09/18/21	8	20	600	0.66	46.42	6.06	25.3	1.67E-06	0.883	1.48E-06					(ASTM D2487;	2488)
09/18/21	8	30	600	0.65	45.72	5.97	25.3	1.67E-06	0.883	1.48E-06					NA	
09/18/21	8	40	600	0.66	46.42	6.06	25.3	1.67E-06	0.883	1.48E-06	*			REMARK	S	
09/18/21	8	50	600	0.65	45.72	5.97	25.3	1.67E-06	0.883	1.48E-06	*	Bottom I	Half of the mo	ld was used	for testing.	
09/18/21	9	0	600	0.66	46.42	6.06	25.3	1.67E-06	0.883	1.48E-06	*					
09/18/21	9	10	600	0.65	45.72	5.97	25.3	1.67E-06	0.883	1.48E-06	*					
				_	Reported	d Average I	Hydraulic Co	nductivity*		1.5E-06	cm/sec					
Flow pump	ID#	24	44] [Balance ID #	1035/1036		Differential I	Pressure I	Meter ID #	=		587			
Thermomet	er ID#	796	/985		Oven ID#	496/758		Board Press	sure Mete	r ID#			694/459			
Syringe ID	#	24	46]				Pore Pressu	ıre Meter	ID#			372			

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for

calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.

3



Pr. Name

Syringe ID #

245

TIMELY

ENGINEERING SOIL

200016

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Mold

Lab. PR. #

S. Type

Tested By

Checked By

21136-02-3

Depth/Elevation

216

10

Date

10/06/21

EB/KP

Sample ID 38790/2-24 Subsample ID 4 Location Seattle, WA Add. Info Mixing/Molding Date 09/08/21 Curing Age, Days 28 ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow) **Initial Sample Data (Before Test) Test Data** Final Data (After Test) Height 3.013 7.65 cm Speed 11 2.969 in 7.54 Board Number 7 Average Height of Sample 3.014 7.66 Diameter cm cm in² cm² 6.92 44.67 Cell Number 33 Average Diameter of Sample 2.970 7.54 cm Area cm³ in² cm² Volume 341.83 0.0121 Flow Pump Number 2A Area 6.93 44.70 cm³/sec cm³ 631.9 1.39 Flow Pump Rate* 1.12E-04 Volume 342.17 0.0121 Dry Density 88.5 Mass pcf cm^3 Specific Gravity 2.700 (Assumed) B - Value 0.95 Mass 643.9 1.42 Vol. of Voids 162.43 88.6 cm³ Dry Density pcf Cell Pressure 95.0 psi Vol. of Solids 179.74 90.0 Back Pressure psi Void Ratio 0.90 **Moisture Content Moisture Content** 5.0 Confining (Effective) Pressure psi Saturation 97.6 Max Head 185.70 Mass of wet sample & tare 631.9 cm Mass of wet sample & tare 725.8 485.3 Min Head 184.99 Mass of dry sample & tare 567.2 Mass of dry sample & tare cm Mass of tare 0.0 Maximum Gradient 24.26 Mass of tare 81.9 % Moisture 30.2 Minimum Gradient 24.16 % Moisture 32.7 TIME FUNCTION Δt READING Head Gradient Temp. PERMEABILITY (cm/sec) Note: Deaired Water Used for Permeability Test. T_x(°C) @ 20 °C DATE HOUR @ T, R_{T} MIN (sec) DP, (psi) (cm) DESCRIPTION NΑ 5 8 2.64 185.70 24.26 23.1 10/06/21 USCS 8 15 600 184.99 24.16 23.1 1.04E-07 0.929 9.62F-08 (ASTM D2487;2488) 10/06/21 2.63 10/06/21 8 25 600 2.64 185.70 24.26 23.1 1.04E-07 0.929 9.62E-08 NA 8 35 600 2.63 184.99 24.16 23.1 1.04E-07 0.929 9.62E-08 10/06/21 REMARKS Bottom Half of the mold was used for testing. 10/06/21 8 45 600 2.64 185.70 24.26 23.1 1.04E-07 0.929 9.62E-08 10/06/21 8 55 600 2.63 184.99 24.16 23.1 1.04E-07 0.929 9.62E-08 5 10/06/21 9 600 2.64 185.70 24.26 23.1 1.04E-07 0.929 9.62E-08 Reported Average Hydraulic Conductivity* 9.6E-08 cm/sec Flow pump ID # 244 Balance ID # Differential Pressure Meter ID # 1035/1036 346 Thermometer ID # 796/985 Oven ID# 496/758 Board Pressure Meter ID # 290

Pore Pressure Meter ID #

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for



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Tested By

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KP/IH

09/19/21 Date

18

L		Tests, l	LC	Web: www.te	st-llc.com		, E
Client Pr. #	:		200016				
Pr. Name		Т	ime Oil Termi	nal			l
Sample ID		38854/2-32		Subsample	1		l
Add. Info	-	-	Mixing/Mo	olding Date	09/09/2	21	ı

21136-02-3 Lab. PR. # Depth/Elev. S. Type Mold -Location Seattle, WA

Add. Info	-	Mixing/Molding Date	09/09/21		Curing Age, Days	10
	ASTM D 1633: Standar	rd Test Methods for Com	pressive Strength	of Molded So	oil-Cement Cylinders	
		METHOD	В			
Initial Height Initial Diame Height-to-Di Area, in ² Volume, in ³ Mass of San Wet Density, Dry Density, Machine Spo Strain rate, S	eter, in ameter Ratio mple, g v, pcf pcf eed, in/min	5.567 2.962 1.88 6.89 38.36 1151.0 114.3 84.6 0.050 0.90	WATER CONTE Mass of Wet Sar Mass of Dry Sam Mass of Tare, g Moisture, %	nple and Ta	re, g 1507.2]
		TEST	DATA			
	Load Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037			al Caliper ID # 17/583 ut Device ID # 10/1016 Oven ID # 758/496]
Specimen C Compressive Conversion	oad at Failure, lbf cross-sectional Area, in ² e Strength at Failure, psi Factor for Height to Diameter	İ	560 6.89 81 1.00		Failure Code 3]
-	compressive Strength at Fai conversion factor based on H/D=	· -	81 nd add. correction p	er ASTM C42	Failure Ske	tch
					Failure Type:	Shear
	U	SCS (ASTM D2487: D24	88)		I Conc and	Silcai
		REMARKS				



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Date

10/07/21

L	TESTS, L	LC	Web: www.te	st-Ilc.com		REDITED		Checked By	18
Client Pr. #		200016				Lab. PR. #		21136-02-3	
Pr. Name	Т	ime Oil Termi	nal			S. Type	Mold	Depth/Elev.	-
Sample ID	38854/2-32		Subsample	2		Location		Seattle, WA	
Add. Info	-	Mixing/Mo	olding Date	09/09/	21		Curing A	28	
						-			

Add. Info	-	Mixing/Molding Date	09/09/21		Curing Age, Days	28
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	oil-Cement Cylinders	
		METHOD	В			
nitial Height nitial Diame Height-to-Dia Area, in ² /olume, in ³ Mass of San Wet Density, Ory Density, Machine Spe Strain rate, 9	eter, in ameter Ratio nple, g r, pcf pcf eed, in/min	5.635 2.975 1.89 6.95 39.17 1160.3 112.8 83.5 0.050 0.89	WATER CONTE Mass of Wet Sar Mass of Dry Sam Mass of Tare, g Moisture, %	mple and Ta	re, g 1457.3	
		TEST	DATA			
	Load Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037			al Caliper ID # 17/583 ut Device ID # 10/101 Oven ID # 758/49	6
Specimen C Compressive	oad at Failure, lbf ross-sectional Area, in ² e Strength at Failure, psi Factor for Height to Diameter	· Ratio	2866 6.95 412 1.00		Failure Code 3	
	ompressive Strength at Fai		412		Failure SI	ketch
Note 2: * - A c	conversion factor based on H/D=	-1.15 (C.F908 as 100% a DESCRIPTION	nd add. correction p	per ASTM C42	Failure Type:	d Shear
	U:	SCS (ASTM D2487: D24	88)		1 Cone and	d Official
		REMARKS				
		.12.11				



Pr. Name

TIMELY

Engineering Soil

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Mold

Lab. PR. #

S. Type

Tested By

Date

EB/KP 09/19/21

Checked By

21136-02-3

Depth/Elevation

09/19/21

					311 1 01111					O. 1, po	Wiola	2 Sp / Liovation	
Sample ID			38854	/2-32		Subs	ample ID	3		Location		Seattle, W	Α
Add. Info		-		Mix	ing/Molding Da	te		09/09/21]	Curii	ng Age, Days	10
				ASTM D					-		nductivity of Satur		
ı	nitial Sar	nple Dat	a (Befor	e Test)			Test Data	a				Final Data (After Tes	t)
Height		2.992	in	7.60 cr	n Speed			9					
Diameter		2.971	in	7.55 cr	-	umber		3		Average Hei	ght of Sample	2.993 in	7.60 cm
Area		6.93	in ²	44.73 cr	m ² Cell Num	ber		2		Average Dia	meter of Sample	2.972 in	7.55 cm
Volume		339.91	cm ³	0.0120 ft ³	Flow Pur	np Numbe	r	2A		Area	6.94 in ²	44.76 cm ²	
Mass		612.2	g	1.35 lb	Flow Pur	•		4.48E-04	cm ³ /sec	Volume	340.25 cm ³	0.0120 ft ³	Dry Density 83.0 pcf
Specific Gr	•	2.700	(Assume	d)	B - Value			0.95		Mass	617.7 g	1.36 lb	Vol. of Voids 172.58 cm
Dry Density	/	83.1	pcf		Cell Pres			95.0	psi				Vol. of Solids 167.67 cm
	Mois	ture Cont	ont		Back Pre		\ D====:==	90.0	psi		Moisture C	ontont	Void Ratio 1.03
Mass of we			612.2	l g	Max Hea		e) Pressure	5.0 41.50	psi cm	Mass of wet	sample & tare	699.5 g	Saturation 95.6 %
Mass of dry			452.7	9	Min Head			40.09	cm		sample & tare	534.5 g	
Mass of tar		tar o	0.0	g		n Gradient		5.46	0111	Mass of tare		81.8 g	
% Moisture			35.2		Minimum	Gradient		5.27		% Moisture		36.4	
TIME	FUNCTI	ON	Δt	READING	Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)	Note:	Deaired Water Used for F	Permeability Test.
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R_T	@ 20 °C		DESCRIPTION	
09/19/21	8	5	-	0.58	40.80	5.37	25.1	-	-	-	NA		USCS
09/19/21	8	15	600	0.57	40.09	5.27	25.1	1.88E-06	0.887	1.67E-06			(ASTM D2487;2488)
09/19/21	8	25	600	0.59	41.50	5.46	25.1	1.87E-06	0.887	1.65E-06	1		NA
09/19/21	8	35	600	0.58	40.80	5.37	25.1	1.85E-06	0.887	1.64E-06	*	REMAR	KS
09/19/21	8	45	600	0.59	41.50	5.46	25.1	1.85E-06	0.887	1.64E-06	* Botton	Half of the mold was use	ed for testing.
09/19/21	8	55	600	0.58	40.80	5.37	25.1	1.85E-06	0.887	1.64E-06	*		
09/19/21	9	5	600	0.59	41.50	5.46	25.1	1.85E-06	0.887	1.64E-06	*		
					Reported	Average	Hydraulic Co	nductivity*		1.6E-06	cm/sec		•
Flow pump	ID#	2	44	В	alance ID #	1035/1036		Differential F	Pressure I	Meter ID #	_	346	
Thermome	ter ID#	796	/985	0	ven ID#	496/758		Board Press	ure Mete	· ID#		1041	
Syringe ID	#	2	45]				Pore Pressu	ıre Meter	D #		26/27	

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for



Pr. Name

TIMELY

Engineering Soil

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Time Oil Terminal

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Mold

Lab. PR. #

S. Type

Tested By

Date

21136-02-3

Depth/Elevation

EB/KP

Checked By

10/07/21

Sample ID			38854	/2-32		Subs	ample ID	4		Location		Seatt	le, WA			
Add. Info		-		Mi	xing/Molding Da	te		09/09/21			Curin	g Age, Days			28	
				ASTM D	•				-		nductivity of Satu					
lı	nitial San	nple Dat	a (Befor	e Test)			Test Data	a				Final Data (After	Test)			
Height		3.027	in	7.69	cm Speed			11	1							
Diameter		2.971	in		m Board Nu	ımber		8	1	Average Hei	ght of Sample	3.028 in		7.69 cm		
Area		6.93	in ²	44.73	cm ² Cell Num	ber		15		Average Dia	meter of Sample	2.972 in		7.55 cm		
Volume		343.88	cm ³	0.0121 f	t ³ Flow Pun	np Numbe	r	1A		Area	6.94 in ²	44.76 cm ²				_
Mass		618.6	g	1.36 I	b Flow Pun	np Rate*		1.12E-04	cm ³ /sec	Volume	344.23 cm ³	0.0122 ft ³	D	Dry Density		pcf
Specific Gra	-	2.700	(Assume	d)	B - Value			0.95	1	Mass	633.3 g	1.40 lb		ol. of Voids		cm ³
Dry Density	'	83.1	pcf		Cell Pres			95.0	psi					ol. of Solids		cm ³
					Back Pre			90.0	psi					oid Ratio	1.03	4
		ture Cont		7		• •	e) Pressure	5.0	psi		Moisture Co		S	Saturation	100.4	%
Mass of we	•			g	Max Hea			203.99	cm		sample & tare	710.4 g				
Mass of dry Mass of tare		tare	458.0 0.0	9 g	Min Head	ว n Gradient		203.28	cm	Mass of dry s	sample & tare	535.0 g 77.0 g				
% Moisture	5		35.1	9	Minimum			26.43	1	% Moisture		38.3				
	FUNCTI	ION	Δt	READING	Head	Gradient	Temp.		ARII ITV	(cm/sec)	Noto: I	Deaired Water Used	d for Porn	moobility Too	<u> </u>	
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)	Gradient	T _x (°C)	@ T _x	R _T	@ 20 °C	Note. 1	DESCRIPTION	I IOI FEIII	neability res	ι.	
10/07/21	7	5	(300)	2.90	203.99	26.52	23.4		-	_	NA	DESCRIPTION			USCS	
10/07/21	7	15	600	2.89	203.28	26.43	23.4	9.45E-08	0.923	8.72E-08					л D2487;2488)	
10/07/21	7	25	600	2.90	203.99	26.52	23.4	9.45E-08	0.923	8.72E-08	1				NA]
10/07/21	7	35	600	2.89	203.28	26.43	23.4	9.45E-08	0.923	8.72E-08	*	Ri	EMARKS			J
10/07/21	7	45	600	2.89	203.28	26.43	23.4	9.47E-08	0.923	8.73E-08	* Bottom	Half of the mold wa		or testing.		1
10/07/21	7	55	600	2.90	203.99	26.52	23.4	9.45E-08	0.923	8.72E-08	*					
10/07/21	8	5	600	2.89	203.28	26.43	23.4	9.45E-08	0.923	8.72E-08	*					
					Reported	Average I	Hydraulic Co	nductivity*		8.7E-08	cm/sec					
Flow pump	ID#	2	22] [Balance ID #	1035/1036		Differential I	Pressure I		J	1107				
Thermomet	er ID#	796	5/985	1 (Oven ID #	496/758		Board Press	sure Mete	r ID#		290				
Syringe ID a	±	1.	40			•	•	Pore Pressi	ıre Meter	ID#		216				

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for



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1

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Tested By Date

KP/IH

Checked By

09/20/21 18

Web: www.test-llc.com Client Pr. # 200016 Pr. Name Time Oil Terminal Sample ID 38855/2-32(2) Subsample

Tests, Llc

Lab. PR. # 21136-02-3 Depth/Elev. S. Type Mold -Location Seattle, WA

Add. Info	-	Mixing/Molding Date	09/10/21	1	Curing Age, Days	10
	ASTM D 1633: Standa	ard Test Methods for Con	pressive Strength	of Molded Se	oil-Cement Cylinders	
		METHOD	В	Ī		
Initial Height		5.541	WATER CONTE Mass of Wet Sa	mple and Ta	re, g 1456.1]
Initial Diame Height-to-Dia Area, in ² Volume, in ³ Mass of San Wet Density, Dry Density, Machine Spe Strain rate, 9	ameter Ratio nple, g , pcf pcf eed, in/min	2.960 1.87 6.88 38.13 1197.3 119.6 93.0 0.050 0.90	Mass of Dry San Mass of Tare, g Moisture, %	nple and Tar	re, g 1190.3 261.7 28.6	_
		TEST	ΓDATA			
	Load Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037		_	al Caliper ID # 17/583 ut Device ID # 10/1016 Oven ID # 758/496]
Specimen C Compressive	oad at Failure, lbf ross-sectional Area, in ² e Strength at Failure, psi Factor for Height to Diamete	r Ratio	224 6.88 33 1.00		Failure Code 3]
Reported Co	ompressive Strength at Fa	ilure, psi	33 and add. correction p	per ASTM C42	Failure Ske	tch 1
					Failure Type:	Shear
	L	SCS (ASTM D2487: D24	488)]		•	
		REMARKS			7	



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Date

10/08/21

L	TESTS, L	LC	Web: www.te	st-llc.com		REDITED		Checked By	4
Client Pr. #		200016				Lab. PR. #		21136-02-3	
Pr. Name	Т	ime Oil Termi	nal			S. Type	Mold	Depth/Elev.	
Sample ID	38855/2-32(2)		Subsample	2		Location		Seattle, WA	
Add. Info	-	Mixing/Mo	olding Date	09/10/	21		Curing A	Age, Days	
						-			

Sample ID	38855/2-32(2)	Subsample	2	Location	Seattle, WA	
Add. Info	-	Mixing/Molding Date	09/10/21		Curing Age, Days	28
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	il-Cement Cylinders	
				•		
		METHOD	В			
	SAMPLE DATA		WATER CONTE	NT DETERM	INATION	
Initial Heigh		5.641	Mass of Wet Sar			
Initial Diame		2.970	Mass of Dry Sam	nple and Tare		
-	iameter Ratio	1.90	Mass of Tare, g		306.9	
Area, in ²		6.93	Moisture, %		28.8	
Volume, in ³		39.08				
Mass of Sar Wet Density	. •	1206.5 117.6				
Dry Density,	•	91.3				
Machine Sp		0.050				
Strain rate, '		0.89				
		TEST	DATA			
		1591	DATA			
	Load Cell ID #	11/1015		Digita	I Caliper ID # 17/583	
	Compression Device ID #	10/1014			t Device ID # 10/1016	
	Balance ID #	1036/1037			Oven ID # 758/496	
N.A	and at Fallium III.f		4404	•		
	oad at Failure, lbf Cross-sectional Area, in ²		1124	,	Failure Code 3	
•	ve Strength at Failure, psi		6.93 162	' '	andre code 5	
-	Factor for Height to Diameter	· Ratio	1.00	i		
	Compressive Strength at Fai		162		Failure Sketc	h
-	conversion factor based on H/D=	· •		er ASTM C.42		
71010 2. 711	oonvoroion ladior badda on i #b=	DESCRIPTION	ra ada. correction p)	′ /	
					Failure Type:	
					Cone and Sh	near
	U:	SCS (ASTM D2487: D24	88) I			
		REMARKS				



Pr. Name

Sample ID

TIMELY

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38855/2-32(2)

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Subsample ID



Mold

Lab. PR. #

S. Type

Location

Tested By Date

21136-02-3

Seattle, WA

Depth/Elevation

09

Checked By

09/20/21

EB/KP

Add. Info		-		Mix	ing/Molding Da	ate		09/10/21				Curin	g Age, Days	i		10
				ASTM D	5084; Standa				-		-			ous		
					Materials (Jsing a F	lexible Wal	l Permeam	eter (Me	thod D, Cor	istant Rat	e of Flo	w)			
lı	nitial San	nple Dat	a (Befor	e Test)			Test Data	a				I	Final Data	(After Test))	
Height		2.957	in	7.51 c	m Speed			9	1							
Diameter		2.929	in	7.44 c		umber		4		Average Hei	ght of Sam	ple	2.958	in	7.51 cm	
Area		6.74	in ²		m ² Cell Num	nber		37		Average Dia	meter of Sa		2.930	in	7.44 cm	
Volume		326.50	cm ³	0.0115 ft	Flow Pur	mp Numbe	r	2A		Area	6.74	in ²	43.50	cm ²		
Mass		629.8	g	1.39 lb	Flow Pur	mp Rate*		4.48E-04	cm ³ /sec	Volume	326.83	cm ³	0.0115	ft ³	Dry Density	93.9 pc
Specific Gra	•	2.700	(Assume	d)	B - Value	Э		0.95		Mass	634.4	g	1.40	lb	Vol. of Voids	144.71 cr
Dry Density	,	93.8	pcf		Cell Pres	ssure		95.0	psi						Vol. of Solids	
		_			Back Pre			90.0	psi			_			Void Ratio	0.79
		ture Cont		7			e) Pressure	5.0	psi			isture Co		_	Saturation	98.6 %
Mass of we	-		629.8	g	Max Hea			54.87	cm	Mass of wet	•		714.0	g		
Mass of dry		tare	490.8	g	Min Hea			54.16	cm	Mass of dry	•	are	571.6	g		
Mass of tar			0.0	g		n Gradient		7.30		Mass of tare			80.8	g		
% Moisture		ON!	28.3			Gradient	T	7.21	A DII 173	% Moisture	Ī		29.0		=	
	FUNCTI		Δt	READING	Head	Gradient	Temp.			(cm/sec)	4	Note: L			ermeability Tes	St.
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R _T	@ 20 °C	4		DESCRIPT	TION	7	
09/20/21	9	5	-	0.78	54.87	7.30	25.5	-	-	-		NA				USCS
09/20/21	9	15	600	0.77	54.16	7.21	25.5	1.42E-06	0.879	1.25E-06					(ASTI	M D2487;2488)
09/20/21	9	25	600	0.78	54.87	7.30	25.5	1.42E-06	0.879	1.25E-06						NA
09/20/21	9	35	600	0.78	54.87	7.30	25.5	1.41E-06	0.879	1.24E-06	*			REMARK	KS	
09/20/21	9	45	600	0.77	54.16	7.21	25.5	1.42E-06	0.879	1.25E-06	*	Bottom	Half of the r	nold was used	d for testing.	
09/20/21	9	55	600	0.78	54.87	7.30	25.5	1.42E-06	0.879	1.25E-06	*					
09/20/21	10	5	600	0.77	54.16	7.21	25.5	1.42E-06	0.879	1.25E-06	*					
				_	Reported	d Average I	Hydraulic Cor	nductivity*		1.2E-06	cm/sec					
Flow pump	ID#	2	44	В	alance ID#	1035/1036		Differential F	Pressure I	Meter ID #	_		346			
Thermomet	er ID#	796	/985	c	ven ID#	496/758		Board Press	sure Mete	· ID#			1041			
Syringe ID	#	2-	45				-	Pore Pressu	ıre Meter	D #			26/27			
					or Inflow and Calibra											ump Rate isused for

calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.

3



Pr. Name

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Mold

Lab. PR. #

S. Type

Tested By Date

21136-02-3

Depth/Elevation

10/08/21 18 Checked By

EB/KP

Sample ID		38855/2-32(2) Subsample ID 4						4		Location	n Seattle, WA	
Add. Info	I. Info - Mixing/			ing/Molding Da	Molding Date 09/10/21				J	Curing Age, Days 28		
ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)												
lr	nitial San	nple Dat	a (Befor	e Test)		Test Data				Final Data (After Test)		
Height		2.999	in	7.62 c	m Speed			10				
Diameter		2.964	in	7.53 c		ımber		22		Average Hei	eight of Sample 3.000 in 7.62 cm	
Area		6.90	in ²	44.52 C	m ² Cell Num	ber		41		Average Dia	ameter of Sample 2.965 in 7.53 cm	
Volume		339.10	cm ³	0.0120 ft	Flow Pur	np Numbe	r	2B		Area	6.90 in ² 44.55 cm ²	
Mass		639.3	g	1.41 lb		•		2.24E-04	cm ³ /sec	Volume	339.44 cm ³ 0.0120 ft ³ Dry Density 91.4 pcf	
Specific Gravity 2.700			(Assume	d)	B - Value					Mass	646.5 g 1.43 lb Vol. of Voids 155.27 cm ³	
Dry Density		91.5	pcf		Cell Pres			95.0	psi		Vol. of Solids 184.17 cm ³	
	Mois	ture Cont	ont	Back Pressure			90.0	psi		Void Ratio 0.84 Moisture Content Saturation 96.1 %		
Mass of wet								5.0 45.02	psi cm	Mass of wet		
Mass of dry	•		497.1					44.31	cm	Mass of wet sample & tare 720.6 g Mass of dry sample & tare 571.4 g		
Mass of tare			0.0	°			5.91		Mass of tare	· · · · · · · · · · · · · · · · · · ·		
% Moisture			28.6	28.6 Minimu			mum Gradient			% Moisture	30.0	
TIME FUNCTION			Δt	READING	Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)	Note: Deaired Water Used for Permeability Test.	
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R_T	@ 20 °C	DESCRIPTION	
10/08/21	10	5	-	0.63	44.31	5.82	22.5	-	-	-	NA USCS	
10/08/21	10	15	600	0.63	44.31	5.82	22.5	8.65E-07	0.942	8.15E-07	(ASTM D2487;2488)	
10/08/21	10	25	600	0.64	45.02	5.91	22.5	8.58E-07	0.942	8.08E-07	NA	
10/08/21	10	35	600	0.63	44.31	5.82	22.5	8.58E-07	0.942	8.08E-07	* REMARKS	
10/08/21	10	45	600	0.64	45.02	5.91	22.5	8.58E-07	0.942	8.08E-07	* Bottom Half of the mold was used for testing.	
10/08/21	10	55	600	0.63	44.31	5.82	22.5	8.58E-07	0.942	8.08E-07	*	
10/08/21	11	5	600	0.64	45.02	5.91	22.5	8.58E-07	0.942	8.08E-07	*	
	Reported Average Hydraulic Conductivity*									8.1E-07	cm/sec	
Flow pump ID # 2		14 Balan		alance ID#	1035/1036		Differential F	Differential Pressure Meter ID #		587		
Thermometer ID # 796		/985	С	ven ID#	496/758 Board Pressure Meter				r ID#	777		
Syringe ID # 2		24	46			Pore Pressure Meter ID #				ID#	1054	

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for



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KP/IH 09/21/21

18

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Checked By

Client Pr. # Pr. Name Sample ID Add. Info

200016										
Time Oil Terminal										
38873/2-25		Subsample	1							
-	Mixing/Mo	Iding Date	09/11/21							

Lab. PR. # 21136-02-3 S. Type Depth/Elev. Mold Seattle, WA Location Curing Age. Davs 10

Add. IIII0 - IVI	iixii ig/iviolali ig Date	03/11/21		Curing Age,	Days 10
ASTM D 1633: Standard Te	est Methods for Comp	oressive Strength o	f Molded Soil-	Cement Cylin	iders
	METHOD [В			
Initial Diameter, in Height-to-Diameter Ratio Area, in² Volume, in³ Mass of Sample, g Wet Density, pcf Dry Density, pcf	.697 .979 I.91	WATER CONTEN Mass of Wet Sam Mass of Dry Sam Mass of Tare, g Moisture, %	ple and Tare,	g	1519.7 1240.3 299.0 29.7
· · · · · · · · · · · · · · · · · · ·	0.88				
	TEST	DATA			
Compression Device ID # 10	/1015 /1014 6/1037			Caliper ID # Device ID # Oven ID #	17/583 10/1016 758/496
Maximum Load at Failure, lbf Specimen Cross-sectional Area, in ² Compressive Strength at Failure, psi		740 6.97 106	Fa	ailure Code	3
Conversion Factor for Height to Diameter Rati Reported Compressive Strength at Failure,	i i	1.00 106		E:	ailure Sketch
Note 2: * - A conversion factor based on H/D=1.15	· L			ailure Type:	Cone and Shear
USCS	(ASTM D2487: D248	38)			
	REMARKS				



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Date

10/09/21 12

L	TESTS, L		LLC Web: www.test-llc.com				SHIO		Checked By	18
Client Pr. #	:		200016				Lab. PR. #		21136-02-3	
Pr. Name		Т	ime Oil Termi	nal			S. Type	Mold	Depth/Elev.	ı
Sample ID		38873/2-25		Subsample	2		Location			
Add. Info	-	- Mixing/M			olding Date 09/11/21			Curing A	ige, Days	28
						='				

Sample ID	38873/2-25	Subsample	2	Location Seattle, WA				
Add. Info	-	Mixing/Molding Date	09/11/21		Curing Age, Days	28		
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	oil-Cement Cylinders			
		METHOD	В	•				
		METHOD	ь					
	SAMPLE DATA		WATER CONTE	NT DETERN	MINATION			
Initial Height	, in	5.636	Mass of Wet Sar					
Initial Diame		2.975	Mass of Dry Sam	nple and Tar				
-	ameter Ratio	1.89	Mass of Tare, g		304.0			
Area, in ²		6.95	Moisture, %		29.6			
Volume, in ³		39.18						
Mass of San	. •	1206.6						
Wet Density, Dry Density,		117.3 90.5						
Machine Spe		0.050						
Strain rate, %		0.89						
		TEST	DATA					
		1531	DATA					
	Load Cell ID #	11/1015		Digita	al Caliper ID # 17/583			
	Compression Device ID #	10/1014		Readou	ut Device ID # 10/1016			
	Balance ID #	1036/1037			Oven ID # 758/496			
Massinas I a	and at Calling Unit		0500	<u>"</u>				
	oad at Failure, lbf ross-sectional Area, in ²		2580	ı	Failure Code 3			
-			6.95	ı	Failure Code 3			
-	e Strength at Failure, psi	Dotio	371	ī				
	Factor for Height to Diameter	İ	1.00		Failura Cleata	. L		
-	ompressive Strength at Fai	· -	371		Failure Sketo	;n		
Note 2: * - A c	conversion factor based on H/D=	:1.15 (C.F908 as 100% ai DESCRIPTION	nd add. correction p	per ASTM C42	?) /			
		DESCRIPTION			ı 🗸			
					Foilure Type:			
					Failure Type: Cone and SI	hear		
	U	SCS (ASTM D2487: D24	88)		l			
		D=144.D(40						
		REMARKS			I			
					l			



Pr. Name

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Mold

Lab. PR. #

S. Type

Tested By

Date

Checked By

21136-02-3

Depth/Elevation

09/21/21 18

EB/KP

Sample ID		38873/2-25				Subsample ID 3				Location Seattle, WA							
Add. Info		-		М	ixing/Molding Da	ate		09/11/21]		Curi	ng Age, Days			10	
				ASTM D	•				-	draulic Cor thod D, Con	•		urated Porous ow)	3			
lı	nitial Sar	nple Dat	a (Befor	e Test)			Test Dat	а					Final Data (A	fter Test)			
Height				cm Board N cm² Cell Nur it³ Flow Pu b Flow Pu B - Valu Cell Pre: Back Pre Confinin Max Hea Maximus	mber mp Numbe mp Rate* e ssure essure g (Effective ad ind m Gradient	e) Pressure	10 19 14 3B 2.24E-04 0.95 95.0 90.0 5.0 120.28 119.58	cm³/sec psi psi psi cm cm	Average Heighten Average Diamed Area Volume Mass Mass of weth Mass of dry some Mass of tare	meter of Sa 6.96 342.99 642.8 Mo sample & t	of Sample 2.977 in cm² 2.99 cm³ 0.0121 ft³ Dry Density 2.8 g 1.42 lb Vol. of Voids Vol. of Solids Void Ratio Saturation e & tare 727.3 g e & tare 573.6 g 84.6 g					pcf 5 cm ³ 4 cm ³	
	FUNCTI	ION	29.4 Δt	READING	1	Gradient Gradient	Temp.	15.66 PERME	ABILITY	% Moisture (cm/sec)		Note:	31.4 Deaired Water U	Jsed for Pe	rmeability	Test.	
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R_T	@ 20 °C			DESCRIPTION	N	,		
09/21/21	7	5	-	1.71	120.28	15.75	25.7	- 0.405.07	-	- 0.705.07]	NA				USCS ASTM D2487;248	20)
09/21/21	7 7	15 25	600 600	1.70 1.71	119.58 120.28	15.66 15.75	25.7 25.7	3.18E-07 3.18E-07	0.875 0.875	2.78E-07 2.78E-07	1				(/	NA	00)
09/21/21	7	35	600	1.71	119.58	15.75	25.7	3.18E-07	0.875	2.78E-07	*			REMARKS	<u> </u>	INA	
09/21/21	7	45	600	1.71	120.28	15.75	25.7	3.18E-07	0.875	2.78E-07	*	Botton	Half of the mole			J.	\neg
09/21/21	7	55	600	1.70	119.58	15.66	25.7	3.18E-07	0.875	2.78E-07	*						
09/21/21	8	5	600	1.71	120.28	15.75	25.7	3.18E-07	0.875	2.78E-07	*						
					Reporte	d Average	Hydraulic Co	nductivity*	•	2.8E-07	cm/sec					,	<u> </u>
Flow pump	ID#	4	75		Balance ID #	1035/1036		Differential	Pressure I	Meter ID #	_		262				
Thermomet	er ID #	796	/985		Oven ID#	496/758		Board Press	sure Mete	r ID#			570				
Syringe ID #	Syringe ID # 490						Pore Pressu	ure Meter	eter ID # 779/780								

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for

calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



Pr. Name

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Mold

Lab. PR. #

S. Type

Tested By

Date

EB/KP 10/09/21

Checked By

21136-02-3

Depth/Elevation

10/09/21

Sample ID			38873	/2-25		Subsample ID 4			Location	ation Seattle, WA								
Add. Info		-		M	ixing/Molding	Date		09/11/21				Curir	ng Age, Days			28		
				ASTM [5084; Star	dard Test	Method for	Measurem	ent of Hy	ydraulic Coi	nductivity	of Satu	rated Poro	us				
					Material	s Using a I	lexible Wa	II Permeam	eter (Me	thod D, Cor	stant Rat	e of Flo	w)					
lı	nitial Sar	nple Dat	a (Befor	e Test)			Test Dat	a		Final Data (After Test)								
Height		3.012	in	7.65	cm Speed	d		12	1									
Diameter		2.970	in			Number		7		Average Hei	ght of Samp	ole	3.013	in	7.65	cm		
Area		6.93	in ²	44.70	cm ² Cell N	umber		2		Average Dia	meter of Sa	mple	2.971	in	7.55	cm		
Volume		341.95	cm ³	0.0121	ft ³ Flow I	Pump Numbe	er	4B		Area	6.93	in ²	44.73	cm ²		=		
Mass		633.2	g	1.40	lb Flow I	Pump Rate*		5.60E-05	cm ³ /sec	Volume	342.29	cm ³	0.0121	ft ³	Dry De	ensity	89.4	pcf
Specific Gra	avity	2.700	(Assume	d)	B - Va	lue		0.95		Mass	647.4	g	1.43	Vol. of	Voids 1		cm ³	
Dry Density	,	89.5	pcf		Cell P	ressure		95.0	psi			_		=	Vol. of	Solids 1	81.68	cm ³
		,	_		Back	Pressure		90.0	psi						Void R	atio	0.88	
	Mois	ture Cont	ent	_	Confir	ning (Effectiv	e) Pressure	5.0	psi		Moi	sture Co	ontent	_	Satura	tion	97.7	%
Mass of we	t sample 8	k tare	633.2	g	Max H	lead		173.74	cm	Mass of wet	sample & ta	are	729.5	g				
Mass of dry	sample &	tare	490.6	g	Min H	ead		172.33	cm	Mass of dry sample & tare			572.6	g				
Mass of tar	е		0.0	g	Maxin	num Gradien	t	22.70		Mass of tare			82.0	g				
% Moisture			29.1		Minim	um Gradient		22.52		% Moisture			32.0					
TIME	FUNCT	ION	Δt	READING	Head	Gradient	Temp.	PERME	EABILITY	(cm/sec)		Note:	Deaired Wate	er Used for P	ermeabi	lity Test.		
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R_T	@ 20 °C			DESCRIPT	ION				
10/09/21	7	10	-	2.47	173.74	22.70	22.7	-	-	-		NA				USC	s	
10/09/21	7	20	600	2.45	172.33	22.52	22.7	5.54E-08	0.938	5.19E-08						(ASTM D24	87;2488)	
10/09/21	7	30	600	2.45	172.33	22.52	22.7	5.56E-08	0.938	5.21E-08						NA	\	
10/09/21	7	40	600	2.46	173.04	22.61	22.7	5.55E-08	0.938	5.20E-08	*			REMARK	(S			
10/09/21	7	50	600	2.45	172.33	22.52	22.7	5.55E-08	0.938	5.20E-08	*	Bottom	Half of the m	old was used	d for tes	ting.		
10/09/21	8	0	600	2.47	173.74	22.70	22.7	5.54E-08	0.938	5.19E-08	*							
10/09/21	8	10	600	2.45	172.33	22.52	22.7	5.54E-08	0.938	5.19E-08	*							
					Repoi	ted Average	Hydraulic Co	nductivity*		5.2E-08	cm/sec							
Flow pump	pump ID # 1043 Balance ID # 1035/1036								Pressure I	Meter ID #	_		1045/1049	1				
Thermomet	hermometer ID # 796/985 Oven ID # 496/758 Bo							Board Press	sure Mete	r ID#			290	1				
Syringe ID # 1046								Pore Pressu	ure Meter	ID#			216	1				
*Constant Rate	of Flow Syst	tem (Flow Pu	ımp with Cali	− brated Syringe	for Inflow and Ca	librated Graduat	ed Pipette for out	tflow) is capable t	o maintain a	constant rate of ir	flow & outflow	through th	e fully saturated s	= sample with accu	racy +/-5%	5. Flow Pump F	Rate isuse	ed for



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Fax: 770-923-8973



Tested By

KP/IH

Date

09/23/21 10

I.	TESTS, L		LLC Web: www.test-llc.com			SHIO		Checked By	18
Client Pr. #	:	200016				Lab. PR. #		21136-02-3	
Pr. Name		Time Oil Termi	nal			S. Type	Mold	Depth/Elev.	-
Sample ID	38874/2	·-16	Subsample 1			Location		Seattle, WA	
Add. Info	-	Mixing/Mo	olding Date 09/13/21				Curing A	ige, Days	10

Add. Info	-	Mixing/Molding Date	09/13/21		Curing Age, Days	10
	ASTM D 1633: Standar	rd Test Methods for Com	pressive Strength	of Molded S	oil-Cement Cylinders	
		METHOD	В			
Initial Height Initial Diame Height-to-Dia Area, in ² Volume, in ³ Mass of San Wet Density Dry Density, Machine Spo Strain rate, S	eter, in ameter Ratio nple, g , pcf pcf eed, in/min	5.660 2.979 1.90 6.97 39.45 1246.7 120.4 94.7 0.050 0.88	WATER CONTE Mass of Wet San Mass of Dry San Mass of Tare, g Moisture, %	mple and Ta	re, g 1541.2	
		TEST	DATA			
	Load Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037			al Caliper ID # 17/583 ut Device ID # 10/1016 Oven ID # 758/496	
Specimen C Compressive	oad at Failure, lbf ross-sectional Area, in ² e Strength at Failure, psi Factor for Height to Diameter	Ratio	895 6.97 128 1.00		Failure Code 3	
	ompressive Strength at Fai	ı	128		Failure Sk	etch
Note 2: * - A c	conversion factor based on H/D=	1.15 (C.F908 as 100% ai DESCRIPTION	nd add. correction p	oer ASTM C42	Failure Type:	Shear
	US	SCS (ASTM D2487: D24	88)		Cone and	Oneai
		REMARKS				



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AASHIO

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Lab. PR. #

Checked By 21136-02-3

Client Pr. # Pr. Name Sample ID Add. Info

200016										
Time Oil Terminal										
38874/2-16		Subsample	2							
-	Mixing/Mo	Iding Date	09/13/21							

Depth/Elev. S. Type Mold -Location Seattle, WA Curing Age, Days 28

ASTM D 1633: Standard Test Me	thods for Com	pressive Strength	of Molded Soil-Cement Cy	linders
	METHOD	В		
SAMPLE DATA Initial Height, in Initial Diameter, in Height-to-Diameter Ratio Area, in² Volume, in³ Mass of Sample, g Wet Density, pcf Dry Density, pcf Machine Speed, in/min Strain rate, % / min 5.661 1.90 2.974 1.90 1.90 1.90 1.90 1.90 1.90 1.90 1.90		WATER CONTE Mass of Wet Sar Mass of Dry Sam Mass of Tare, g Moisture, %		1534.1 1270.5 297.2 27.1
	TEST	DATA		
Load Cell ID # 11/1015 Compression Device ID # 10/1014 Balance ID # 1036/103]		Digital Caliper ID # Readout Device ID # Oven ID #	10/1016
Maximum Load at Failure, lbf Specimen Cross-sectional Area, in ² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi		2589 6.95 373 1.00	Failure Code	3 Failure Sketch
Note 2: * - A conversion factor based on H/D=1.15 (C.F	908 as 100% a CRIPTION	nd add. correction p		
USCS (AST	M D2487: D24	88)		Sofic and Shear
RE	MARKS	1		



Pr. Name

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200016

Time Oil Terminal

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Mold

Lab. PR. #

S. Type

Tested By

Date

EB/KP

Checked By

21136-02-3

Depth/Elevation

09/23/21

Sample ID		38874/2-16					Subsample ID 3				Location Seattle, WA					
Add. Info		-		N	Mixing/M	olding Dat	te		09/13/21			Cu	ıring Age, Days		10	
				ASTM		•				-		nductivity of Sanstant Rate of F	aturated Porous Flow)			
lı	nitial San	nple Dat	a (Befor	e Test)				Test Dat	a				Final Data (After Tes	t)		
Height		3.008	in	7.64	cm	Speed			9							
Diameter			in		cm	Board Nu	ımber		18		Average Hei	ght of Sample	3.009 in	7.64	m	
Area		6.92	in ²		cm ²	Cell Num	ber		5		Average Dia	meter of Sample	2.969 in	7.54	m	
Volume		341.03	cm ³	0.0120	ft ³	Flow Pun	np Number	r	4B		Area	6.92 in ²	44.67 cm ²			
Mass		652.1	g	1.44	lb	Flow Pum	•		4.48E-04	cm ³ /sec	Volume	341.38 cm ³	0.0121 ft ³	Dry Den	· -	pcf
Specific Gra	-	2.700	(Assume	d)		B - Value			0.95		Mass	659.2 g	1.45 lb	Vol. of V		_ ^
Dry Density	'	93.8	pcf			Cell Pres			95.0	psi				Vol. of S		cm ³
						Back Pres			90.0	psi			• • •	Void Rat		
		ture Cont		1		_) Pressure	5.0	psi		Moisture		Saturation	on 96.6	%
	of wet sample & tare 652.1 g of dry sample & tare 512.8 g					Max Head			21.10	cm		sample & tare	740.5 g			
	of dry sample & tare 512.8 g of tare 0.0 q					Min Head			20.40	cm		sample & tare	594.2 g			
Mass of tar				g			Gradient		2.76	ļ	Mass of tare		81.4 g			
% Moisture			27.2			Minimum			2.67		% Moisture		28.5			
	FUNCTI	1	Δt	READING	_	Head	Gradient	Temp.			(cm/sec)	Note	: Deaired Water Used for I	Permeabilit	y Test.	
DATE	HOUR	MIN	(sec)	DP, (psi	i)	(cm)		T _x (°C)	@ T _x	R_T	@ 20 °C	<u></u>	DESCRIPTION			
09/23/21	8	5	-	0.29	2	20.40	2.67	25.4	-	-	-	NA			USCS	
09/23/21	8	15	600	0.30	2	21.10	2.76	25.4	3.69E-06	0.881	3.26E-06				(ASTM D2487;2488	8)
09/23/21	8	25	600	0.29	2	20.40	2.67	25.4	3.69E-06	0.881	3.26E-06				NA	
09/23/21	8	35	600	0.30	2	21.10	2.76	25.4	3.69E-06	0.881	3.26E-06	*	REMAR	-		
09/23/21	8	45	600	0.29	2	20.40	2.67	25.4	3.69E-06	0.881	3.26E-06	* Botto	om Half of the mold was use	ed for testin	ig.	
09/23/21	8	55	600	0.30	2	21.10	2.76	25.4	3.69E-06	0.881	3.26E-06	*				
09/23/21	9	5	600	0.29	2	20.40	2.67	25.4	3.69E-06	0.881	3.26E-06	*				
						Reported	Average I	Hydraulic Co	nductivity*		3.3E-06	cm/sec				
Flow pump	ID#	10)43		Balance	e ID#	1035/1036		Differential F	Pressure I	Meter ID #	_	1045/1049			
Thermomet	er ID#	796	/985		Oven II	D #	496/758		Board Press	sure Mete	r ID#		570			
Syringe ID	#	10	1046 Pore Pressur						ıre Meter	Meter ID # 779/780						

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for



Pr. Name

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Time Oil Terminal

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Mold

Lab. PR. #

S. Type

Tested By

21136-02-3

Depth/Elevation

Date Checked By

10/11/21 18

EB/KP

Sample ID			38874	/2-16		Subsample ID 4				Location Seattle, WA						
Add. Info		-		Mi	xing/Molding Da	te		09/13/21			Curir	ng Age, Days		28		
				ASTM D	•				-		nductivity of Satu					
li	nitial San	nple Dat	a (Befor	e Test)			Test Dat	a				Final Data (After Test	:)			
Height		3.037	in		m Speed			12								
Diameter		2.973	in		m Board Nu	ımber		8		Average Hei	ght of Sample	3.038 in	7.72 c	m		
Area		6.94	in ²	44.79	cm ² Cell Num	ber		55		Average Dia	meter of Sample	2.974 in	7.55 c	m		
Volume		345.48	cm ³	0.0122 f	t ³ Flow Pun	np Numbe	r	2B		Area	6.95 in ²	44.82 cm ²				
Mass		659.2	g	1.45 I		-		5.60E-05	cm ³ /sec	Volume	345.83 cm ³	0.0122 ft ³	Dry Dens	· —	pcf	
Specific Gra	-	2.700	(Assume	d)	B - Value			0.95		Mass	671.4 g	1.48 lb	Vol. of Vo		_ ^	
Dry Density	'	93.7	pcf		Cell Pres			95.0	psi				Vol. of So		r cm ³	
					Back Pre			90.0	psi				Void Rat			
		ture Cont		1	_		e) Pressure	5.0	psi		Moisture Co	752.8 a	Saturatio	n 99.4	%	
Mass of we	'			g	Max Hea	-		186.40	cm		sample & tare					
Mass of dry	•	tare	518.6	g	Min Head			185.70	cm	•	sample & tare	600.0 g				
	ss of tare 0.0 g					n Gradient		24.16		Mass of tare		81.4 g				
% Moisture			27.1		Minimum	Gradient	1	24.06		% Moisture	T	29.5				
TIME	FUNCTI	ON	Δt	READING	Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)	Note:	Deaired Water Used for P	ermeability	[,] Test.		
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R _T	@ 20 °C		DESCRIPTION	_			
10/11/21	6	30	-	2.64	185.70	24.06	22.1	-	-	-	NA			USCS		
10/11/21	6	40	600	2.65	186.40	24.16	22.1	5.18E-08	0.951	4.93E-08]			(ASTM D2487;248	8)	
10/11/21	6	50	600	2.64	185.70	24.06	22.1	5.18E-08	0.951	4.93E-08				NA		
10/11/21	7	0	600	2.65	186.40	24.16	22.1	5.18E-08	0.951	4.93E-08	*	REMARI	KS			
10/11/21	7	10	600	2.65	186.40	24.16	22.1	5.17E-08	0.951	4.92E-08	* Bottom	Half of the mold was use	d for testin	g.		
10/11/21	7	20	600	2.64	185.70	24.06	22.1	5.18E-08	0.951	4.93E-08	*					
10/11/21	7	30	600	2.65	186.40	24.16	22.1	5.18E-08	0.951	4.93E-08	*					
	_			_	Reported	Average I	Hydraulic Co	nductivity*		4.9E-08	cm/sec					
Flow pump	ID#	24	44] [Balance ID #	1035/1036		Differential I	Pressure I	Meter ID #	_	587				
Thermomet	er ID#	796	/985		Oven ID #	496/758		Board Press	sure Mete	r ID#		290				
Syringe ID	nge ID # 246					Pore Pressure Meter ID #						216				

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for



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 $T{\hbox{\footnotesize\rm ESTS}}, {\hbox{\footnotesize\rm LLC}}$

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Tested By Date

KP/IH

09/24/21

18 Checked By 21136-02-3

L		TESTS, L	LC	Web: www.te	st-llc.com	AGG
Client Pr. #			200016			
Pr. Name		Ti	me Oil Termi	nal		
Sample ID		38893/2-2		Subsample	1	
Add. Info	-		Mixing/Mo	Iding Date	09/14/	21

Lab. PR. # Depth/Elev. S. Type Mold Seattle, WA Location

Add. Inio	_	Mixing/Molding Date	09/14/21	<u>[</u>	Curing A	ge, Days	10
	ASTM D 1633: Standa	ard Test Methods for Con	pressive Strength	of Molded S	oil-Cement Cy	linders	
		METHOD	В				
	SAMPLE DATA		WATER CONTE	NT DETED	MINATION		
مامندا المناسا	-	F 000				4500 F	
Initial Heigh		5.633	Mass of Wet Sar			1506.5	
Initial Diame		2.960	Mass of Dry San	npie and Tar	e, g	1222.4	
-	ameter Ratio	1.90	Mass of Tare, g			299.0	
Area, in ²		6.88	Moisture, %			30.8	
Volume, in ³	_	38.76					
Mass of Sar		1211.7					
Wet Density		119.1					
Dry Density		91.0					
Machine Sp		0.050					
Strain rate,	% / MIN	0.89					
		TES	T DATA				
	Load Cell ID #	11/1015		Digita	al Caliper ID #	[‡] 17/583	
	Compression Device ID #	10/1014			ut Device ID #		
	Balance ID #	1036/1037			Oven ID #		
				7			
	oad at Failure, lbf		333				
Specimen C	Cross-sectional Area, in ²		6.88		Failure Code	3	
Compressiv	e Strength at Failure, psi		48				
Conversion	Factor for Height to Diamete	er Ratio	1.00				
Reported C	compressive Strength at Fa	ilure, psi	48			Failure Sketch	1
Note 2: * - A	conversion factor based on H/D	-	and add. correction p	oer ASTM C42	2)		
		DESCRIPTION			_		
					Failure Type	:	
]	Cone and Sh	ear
	L	JSCS (ASTM D2487: D24	<u>4</u> 88)				
		REMARKS					
					1		
	L				1		



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21136-02-3	

	TESTS, L	LC	Web: www.te	st-llc.com	ACC
		200016			
	Т	ime Oil Termi	nal		
	38893/2-2		Subsample	2	
_	•	Mixing/Mo	Iding Date	09/14/2	21
		Т	200016 Time Oil Termi 38893/2-2	200016 Time Oil Terminal 38893/2-2 Subsample	200016 Time Oil Terminal 38893/2-2 Subsample 2

Lab. PR. # 21136-02-3 Depth/Elev. S. Type Mold Location Seattle, WA

Add. Info	-	Mixing/Molding Date	09/14/21	1	Curing Ag	ge, Days 28
	ASTM D 1633: Standa	rd Test Methods for Con	pressive Strength	of Molded S	oil-Cement Cy	linders
		METHOD	В			
	SAMPLE DATA		WATER CONTE	NT DETERI	MINATION	
Initial Heigh	t, in	5.675	Mass of Wet Sa	mple and Ta	re, g	1482.3
Initial Diame		2.973	Mass of Dry San			1197.5
Height-to-D	iameter Ratio	1.91	Mass of Tare, g			261.8
Area, in ²		6.94	Moisture, %			30.4
Volume, in ³		39.40				
Mass of Sar	mple, g	1223.8				
Wet Density	, pcf	118.3				
Dry Density		90.7				
Machine Sp		0.050				
Strain rate,	% / min	0.88				
		TES	ΓDATA			
	Load Cell ID #	11/1015		Digita	al Caliper ID #	17/583
	Compression Device ID #	10/1014			ut Device ID #	
	Balance ID #	1036/1037			Oven ID #	
Maximum L	oad at Failure, lbf		2131			
Specimen C	Cross-sectional Area, in ²		6.94		Failure Code	3
Compressiv	re Strength at Failure, psi		307			
Conversion	Factor for Height to Diamete	r Ratio	1.00			
Reported C	Compressive Strength at Fa	ilure, psi	307			Failure Sketch
_	conversion factor based on H/D=		and add. correction i	∎ oer ASTM C4:	2)	
		DESCRIPTION	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		-,	
					Ī	
					Failure Type:	
					l andro Typo.	Cone and Shear
	U	SCS (ASTM D2487: D24	488)		•	
]			
		REMARKS				
					l	
					_	



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Lab. PR. #

Tested By

Date

21136-02-3

' **⊢**

EB/KP 09/24/21

Checked By

09/24/21

													· · · · · · · · ·		
Pr. Name					Time Oil Term	inal				S. Type	Mold	Depth/Ele	evation	-	
Sample ID			38893	3/2-2		Subs	ample ID	3		Location		S	Seattle, WA		
Add. Info		-		Mix	ring/Molding Da	te		09/14/21				Curing Age, Days		10	
				ASTM D	5084; Standa	rd Test N	lethod for	Measuremo	ent of Hy	draulic Cor	nductivity of	Saturated Porous	S		
					Materials U	Jsing a F	lexible Wal	I Permeam	eter (Me	thod D, Con	stant Rate o	of Flow)			
lr	nitial Sar	nple Dat	a (Before	e Test)			Test Dat	а				Final Data (A	fter Test)		
Height		3.027	in	7.69 cr	m Speed			9	1						
Diameter		2.964	in	7.53 cr		umber		7	1	Average Hei	ght of Sample	3.028 ir	า	7.69 cm	
Area		6.90	in ²	44.52 cr	m ² Cell Num	ber		15		Average Dia	meter of Samp		า	7.53 cm	
Volume		342.26	cm ³	0.0121 ft ³	Flow Pur	np Numbei	r	4B		Area	6.90 ir		m ²		
Mass		644.9	g	1.42 lb	Flow Pur	np Rate*		4.48E-04	cm ³ /sec	Volume	342.61 C	m ³ 0.0121 ft	t ³	Dry Density 90.0	pcf
Specific Gra	avity	2.700	(Assume	d)	B - Value)		0.95]	Mass	648.9 g	1.43 lk)	Vol. of Voids 159.57	
Dry Density		90.1	pcf		Cell Pres			95.0	psi					Vol. of Solids 183.04	cm ³
					Back Pre			90.0	psi					Void Ratio 0.87	
		ture Cont		1		• •) Pressure	5.0	psi			ire Content		Saturation 96.9	%
Mass of wet			644.9	g	Max Hea			20.40	cm		sample & tare	730.6 g	l		
Mass of dry		tare	494.2	g	Min Head			18.99	cm	_	sample & tare	575.9 g	l		
Mass of tare	Э		0.0	g		n Gradient		2.65	4	Mass of tare		81.7 g	l		
% Moisture			30.5			Gradient	_	2.47		% Moisture		31.3			
	FUNCT		Δt	READING	Head	Gradient	Temp.		1	(cm/sec)	N	lote: Deaired Water		rmeability Test.	
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R _T	@ 20 °C		DESCRIPTIO	N	ı	
09/24/21	7	5	-	0.28	19.70	2.56	24.5	-	-	-	N	IA		USCS	
09/24/21	7	15	600	0.27	18.99	2.47	24.5	4.00E-06	0.899	3.60E-06]			(ASTM D2487;2488	3)
09/24/21	7	25	600	0.29	20.40	2.65	24.5	3.93E-06	0.899	3.53E-06				NA	
09/24/21	7	35	600	0.28	19.70	2.56	24.5	3.86E-06	0.899	3.47E-06	*		REMARKS		_
09/24/21	7	45	600	0.28	19.70	2.56	24.5	3.93E-06	0.899	3.53E-06	* B	ottom Half of the mo	ld was used	for testing.	
09/24/21	7	55	600	0.27	18.99	2.47	24.5	4.00E-06	0.899	3.60E-06	*				
09/24/21	8	5	600	0.28	19.70	2.56	24.5	4.00E-06	0.899	3.60E-06	*				
		.		-	Reported	Average I	Hydraulic Co	nductivity*		3.5E-06	cm/sec				
Flow pump	ID#	10	043	В	alance ID #	1035/1036		Differential F	Pressure I	Meter ID #		1045/1049			
Thermomet	er ID#	796	/985	0	ven ID#	496/758		Board Press	sure Mete	r ID#		290			
Syringe ID #	#	10	046					Pore Pressu	ıre Meter	ID#		216			

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for



Pr. Name

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Mold

Lab. PR. #

S. Type

Tested By

21136-02-3

Depth/Elevation

10/1

Date
Checked By

10/12/21

EB/KP

Sample ID			38893	3/2-2		Subs	ample ID	4		Location		Seattle, WA	A	
Add. Info		-		N	/lixing/Molding	Date		09/14/21			Curing	Age, Days		28
				ASTM	-				-		nductivity of Satur stant Rate of Flov			
In	itial San	nple Dat	a (Befor	e Test)		Test Data				Final Data (After Test)				
Height Diameter Area Volume Mass Specific Grav Dry Density Mass of wet	Moist	2.969 6.92 342.51 643.9 2.700 90.1		44.67 0.0121 1.42	cm ² Cell N ft ³ Flow F lb Flow F B - Va Cell P Back I	Number umber Pump Number Pump Rate* lue ressure Pressure ing (Effective		11 18 14 4B 1.12E-04 0.95 95.0 90.0 5.0 166.00	cm³/sec psi psi psi cm	Average Diar Area Volume Mass	ght of Sample meter of Sample 6.93 in² 342.74 cm³ 650.2 g Moisture Corsample & tare	3.019 in 2.970 in 44.70 cm ² 0.0121 ft ³ 1.43 lb	7.67 cm 7.54 cm Dry Density Vol. of Voids Vol. of Solids Void Ratio Saturation	90.0 pcf 159.62 cm ³ 183.12 cm ³ 0.87 97.6 %
Mass of dry s Mass of tare % Moisture	sample &		494.5 0.0 30.2	g g	Min Ho Maxim			164.60 21.65 21.46	cm		sample & tare	576.9 g 82.4 g 31.5		
TIME	FUNCTI	ON	Δt	READING	G Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)	Note: D	eaired Water Used for P	ermeability Te	st.
DATE	HOUR	MIN	(sec)	DP, (psi) (cm)		T _x (°C)	@ T _x	R_T	@ 20 °C		DESCRIPTION		
10/12/21 10/12/21 10/12/21	7 7 7	20 30 40	- 600 600	2.35 2.36 2.34	165.30 166.00 164.60	21.56 21.65 21.46	21.6 21.6 21.6	- 1.16E-07 1.16E-07	- 0.962 0.962	- 1.12E-07 1.12E-07	NA		(AST	USCS M D2487;2488) NA
10/12/21	7	50	600	2.35	165.30	21.56	21.6	1.16E-07	0.962	1.12E-07	*	REMARI	KS	
10/12/21 10/12/21	8	0 10	600 600	2.35 2.34	165.30 164.60	21.56 21.46	21.6 21.6	1.16E-07 1.16E-07	0.962 0.962	1.12E-07 1.12E-07	* Bottom I	Half of the mold was use	d for testing.	
10/12/21	8	20	600	2.36	166.00	21.65	21.6	1.16E-07	0.962	1.12E-07	*			
Flow pump II Thermomete Syringe ID #	r ID#	796	43 /985 46		Repor Balance ID # Oven ID #	1035/1036 496/758	Hydraulic Co	nductivity* Differential Board Press	sure Mete	r ID#	cm/sec	1045/1049 570 779/780		•

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for



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Date

KP/IH

09/25/21

	1 E S I S, L	LC	web: www.te	st-IIC.com		REDITED		Checked By	10
Client Pr. #		200016				Lab. PR. #		21136-02-3	
Pr. Name	Time Oil Terminal					S. Type	Mold	Depth/Elev.	-
Sample ID	38894/2-17		Subsample	1		Location		Seattle, WA	
Add. Info	-	lding Date	09/15/2	21		Curing A	Age, Days	10	
1	<u> </u>	•		<u> </u>		-		·	

Sample ID	38894/2-17	Subsample	1	Location	Seattle, WA	
Add. Info	-	Mixing/Molding Date	09/15/21		Curing Age, Days	10
	ASTM D 1633: Standa	ard Test Methods for Com	pressive Strength	of Molded So	il-Cement Cylinders	
		METHOD	В	"		
		METHOD	В	_		
	SAMPLE DATA		WATER CONTE	NT DETERM	IINATION	
Initial Heigh	nt, in	5.661	Mass of Wet Sar	mple and Tar	e, g 1541.0	
Initial Diam		2.985	Mass of Dry Sam	nple and Tare		
•	Diameter Ratio	1.90	Mass of Tare, g		305.6	
Area, in ²	,	7.00	Moisture, %		27.7	
Volume, in ³		39.62				
Mass of Sa	. •	1238.1				
Wet Density Dry Density	• •	93.2				
	peed, in/min	0.050				
Strain rate,		0.88				
		TEST	DATA			
	Load Cell ID #	11/1015		Digita	I Caliper ID # 17/583	
	Compression Device ID #	10/1014			t Device ID # 10/1016	
	Balance ID #	1036/1037			Oven ID # 758/496	
				_		
	∟oad at Failure, lbf		528			
-	Cross-sectional Area, in ²		7.00		Failure Code 3	
-	ve Strength at Failure, psi		75			
	Factor for Height to Diamete		1.00			
Reported (Compressive Strength at Fa	ilure, psi	75		Failure Sketch	h
Note 2: * - A	conversion factor based on H/D-	•	nd add. correction p	oer ASTM C42)		
		DESCRIPTION				
					Failure Type:	oor.
	L	SCS (ASTM D2487: D24	.88)		Cone and Sh	leai
	·]			
			ı			
		REMARKS				



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10/13/21 18

L	TESTS, L	LC	Web: www.te	st-llc.com		REDITED		Che
Client Pr. #		200016				Lab. PR. #		2113
Pr. Name	Т	ime Oil Termi	nal			S. Type	Mold	Dep
Sample ID	38894/2-17		Subsample	2		Location		Seat
Add. Info	-	Mixing/Mo	olding Date	09/15/	21		Curing A	Age, D

Pr. Name	Т	ime Oil Terminal		S. Type	Mold	Depth/Elev.	-
Sample ID	38894/2-17	Subsample	2	Location		Seattle, WA	
Add. Info	-	Mixing/Molding Date	09/15/21		Curing A	Age, Days	28
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	il-Cement C	Cylinders	
			r			J	
		METHOD	В				
	SAMPLE DATA		WATER CONTE			45000	
Initial Height		5.641	Mass of Wet Sar	•	-	1532.0	
Initial Diame	ameter Ratio	2.979 1.89	Mass of Dry San Mass of Tare, g	ipie and Tare) , g	1265.0 306.9	
Area, in ²	ameter Ratio		_				
		6.97	Moisture, %			27.9	
Volume, in ³	anla a	39.32					
Mass of Sam Wet Density,		1228.0					
Dry Density,		119.0 93.0					
Machine Spe		0.050					
Strain rate, %		0.89					
- · · · · · · · · · · · · · · · · · · ·							
		TEST	DATA				
	Lood Call ID #	44/4045		Diaita	l Calinar ID	# 47/500	
	Load Cell ID # Compression Device ID #	11/1015 10/1014			I Caliper ID	# 17/583 # 10/1016	
	Balance ID #	1036/1037		Reauou		# 758/496	
	Dalance ID #	1030/1037			Ovenib	# 730/490	
Maximum Lo	oad at Failure, lbf		2557	•			
	ross-sectional Area, in ²		6.97	i e	Failure Cod	le 3	
-	e Strength at Failure, psi		367	ı			
-	Factor for Height to Diamete	r Ratio	1.00	ı			
	ompressive Strength at Fa	ı	367			Failure Sketch	า
-	conversion factor based on H/D	· · · · · · · · · · · · · · · · · · ·		or ASTM CAR	1		•
10062 A C	Onversion factor based on the	DESCRIPTION	id add. correction p	DEL ASTIVI C42)		
		DEGGIAII HOIV		1			
					Foilure Ture		
					Failure Typ	e. Cone and Sh	ear
	U	SCS (ASTM D2487: D24	88)				ou.
		`	,				
			l				
		REMARKS					



Pr. Name

TIMELY

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200016

Time Oil Terminal

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Mold

Lab. PR. #

S. Type

Tested By

Checked By

21136-02-3

Depth/Elevation

Date

09/25/21

EB/KP

Sample ID 38894/2-17 Subsample ID 3 Location Seattle, WA 09/15/21 Add. Info Mixing/Molding Date Curing Age, Days 10 ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow) **Initial Sample Data (Before Test) Test Data** Final Data (After Test) Height 2.984 7.58 cm Speed 9 2.973 in 7.55 Board Number 5 Average Height of Sample 2.985 7.58 Diameter cm cm in² cm² 6.94 44.79 Cell Number 5 Average Diameter of Sample 2.974 7.55 cm Area cm³ in^2 cm² Volume 339.45 0.0120 Flow Pump Number 3B Area 6.95 44.82 cm³/sec cm³ 644.0 1.42 Flow Pump Rate* 4.48E-04 Volume 339.79 0.0120 Dry Density 92.8 Mass pcf cm^3 Specific Gravity 2.700 (Assumed) B - Value 0.95 Mass 655.5 1.45 Vol. of Voids 152.59 cm³ Dry Density 92.9 pcf Cell Pressure 95.0 psi Vol. of Solids 187.21 90.0 Back Pressure psi Void Ratio 0.82 **Moisture Content Moisture Content** Confining (Effective) Pressure 5.0 psi Saturation 98.3 Max Head 21.10 Mass of wet sample & tare 644.0 cm Mass of wet sample & tare 719.8 505.3 Min Head 20.40 Mass of dry sample & tare 569.8 Mass of dry sample & tare cm Mass of tare 0.0 Maximum Gradient 2.78 Mass of tare 64.5 % Moisture 27.4 Minimum Gradient 2.69 % Moisture 29.7 TIME FUNCTION Δt READING Head Gradient Temp. PERMEABILITY (cm/sec) Note: Deaired Water Used for Permeability Test. T_x(°C) @ 20 °C DATE HOUR @ T, R_{T} MIN (sec) DP, (psi) (cm) DESCRIPTION NΑ 5 8 0.30 21.10 2.78 24.8 09/25/21 USCS 8 15 600 20.40 2.69 24.8 3.65E-06 0.893 3.26E-06 (ASTM D2487;2488) 09/25/21 0.29 09/25/21 8 25 600 0.30 21.10 2.78 24.8 3.65E-06 0.893 3.26E-06 NA 09/25/21 8 35 600 0.29 20.40 2.69 24.8 3.65E-06 0.893 3.26E-06 REMARKS Bottom Half of the mold was used for testing. 09/25/21 8 45 600 0.30 21.10 2.78 24.8 3.65E-06 0.893 3.26E-06 09/25/21 8 55 600 0.30 21.10 2.78 24.8 3.59E-06 0.893 3.21E-06 5 09/25/21 9 600 0.29 20.40 2.69 24.8 3.65E-06 0.893 3.26E-06 Reported Average Hydraulic Conductivity* 3.2E-06 cm/sec Flow pump ID # Balance ID # Differential Pressure Meter ID # 475 1035/1036 262 Thermometer ID # 796/985 Oven ID# 496/758 Board Pressure Meter ID # 1042 Syringe ID # 490 Pore Pressure Meter ID # 779/780

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for



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Date

10/13/21 18

EB/KP

Checked By Client Pr. 200016 Lab. PR. # 21136-02-3 Time Oil Terminal Mold Depth/Elevation Pr. Name S. Type Sample ID 38894/2-17 Subsample ID 4 Location Seattle, WA 09/15/21 Add. Info Mixing/Molding Date Curing Age, Days 28 ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow) **Initial Sample Data (Before Test) Final Data (After Test) Test Data** 2.992 Height 7.60 cm Speed 11 Diameter 2.968 in 7.54 Average Height of Sample 2.993 7.60 cm cm in² cm² 6.92 Average Diameter of Sample 2.969 7.54 cm Area 44.64 cm^3 cm² Volume 339.22 0.0120 Area 6.92 44.67 cm3 Mass 646.6 1.43 Volume 339.56 0.0120 Dry Density 93.5 pcf cm^3 Specific Gravity 2.700 (Assumed) Mass 654.2 1.44 Vol. of Voids 151.09 cm^3

> 16.01 15.91

Moisture Cont	ent		Confining (Effective)
Mass of wet sample & tare	646.6	g	Max Head
Mass of dry sample & tare	508.5	g	Min Head
Mass of tare	0.0	g	Maximum Gradient
% Moisture	27.2		Minimum Gradient

pcf

93.5

Board Number	18	
Cell Number	17	
Flow Pump Number	1A	
Flow Pump Rate*	1.12E-04	cm ³ /se
B - Value	0.95	
Cell Pressure	95.0	psi
Back Pressure	90.0	psi
Confining (Effective) Pressure	5.0	psi
Max Head	121.69	cm
Min Head	120.98	cm

Moisture Co	ntent	
Mass of wet sample & tare	730.8	g
Mass of dry sample & tare	585.6	g
Mass of tare	77.1	g
% Moisture	28.6	1

Vol. of Solids	188.47
Void Ratio	0.80
Saturation	96.2

70 1110101010			-							70 111010101		
TIME	FUNCTI	ON	Δt	READING	Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)		
DATE	0/13/21 7 5 0/13/21 7 15 0/13/21 7 25		(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R_T	@ 20 °C		
10/13/21	7	5	-	1.73	121.69	16.01	21.7	-	1	-		
10/13/21	7	15	600	1.72	120.98	15.91	21.7	1.57E-07	0.960	1.51E-07		
10/13/21	7	25	600	1.73	121.69	16.01	21.7	1.57E-07	0.960	1.51E-07		
10/13/21	7	35	600	1.72	120.98	15.91	21.7	1.57E-07	0.960	1.51E-07	*	
10/13/21	7	45	600	1.73	121.69	16.01	21.7	1.57E-07	0.960	1.51E-07	*	
10/13/21	7	55	600	1.72	120.98	15.91	21.7	1.57E-07	0.960	1.51E-07	*	
10/13/21 8 5		600	1.73	121.69	16.01	21.7	1.57E-07	0.960	1.51E-07	*		
					Penorted	I Average F	Judraulic Cor	ductivity*		1.5F-07	cm	

Note: Deaired Water Used for Permeability Test. **DESCRIPTION**

Bottom Half of the mold was used for testing.

NA	USCS (ASTM D2487;2488)
	NA
REMARK	. <u></u> S

1.5E-07 cm/sec Reported Average Hydraulic Conductivity

Flow pump ID # Thermometer ID # Syringe ID #

Dry Density

22 796/985 140

Balance ID # 1035/1036 Oven ID# 496/758

Differential Pressure Meter ID # Board Pressure Meter ID # Pore Pressure Meter ID #

1107 570 779/780

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



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09/26/21 18

L	TESTS,	LLC W	eb: www.tes	st-Ilc.com		SHIO		Checked By	18
Client Pr. #		200016	L			Lab. PR. #			
Pr. Name		Time Oil Termina	nal			S. Type	Mold	Depth/Elev.	-
Sample ID	38895/2-5	S	Subsample	1		Location			
Add. Info	-	Mixing/Moldi	lding Date 09/16/21			Curing A	ge, Days	10	
		•							

Sample ID	38895/2-5	Subsample	1	Location	Seattle, WA	
Add. Info	-	Mixing/Molding Date	09/16/21		Curing Age, Days	10
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	il-Cement Cylinders	
		METHOD		Ī		
		METHOD	В			
	SAMPLE DATA		WATER CONTE	NT DETERM	INATION	
Initial Heigh	nt, in	5.694	Mass of Wet Sai	mple and Tare	e, g 1506.1	
Initial Diam		2.975	Mass of Dry San	nple and Tare		
•	iameter Ratio	1.91	Mass of Tare, g		298.4	
Area, in ²		6.95	Moisture, %		32.5	
Volume, in ³		39.58				
Mass of Sa Wet Densit	. •	1210.2 116.5				
Dry Density	• •	87.9				
	peed, in/min	0.050				
Strain rate,		0.88				
		TEST	DATA			
	Load Cell ID #	11/1015		-	Caliper ID # 17/583	
	Compression Device ID #	10/1014		Readou	t Device ID # 10/1016	
	Balance ID #	1036/1037			Oven ID # 758/496	
Maximum L	oad at Failure, lbf		727			
	Cross-sectional Area, in ²		6.95	ı	Failure Code 3	
	e Strength at Failure, psi		105			
-	Factor for Height to Diamete	r Ratio	1.00			
	Compressive Strength at Fa	ı	105		Failure Sketch	
Note 2: * - A	conversion factor based on H/D	ا =1.15 (C.F908 as 100% aı	nd add. correction p	er ASTM C42)		
		DESCRIPTION	•	,		
				I	ailure Type:	
		000 (4074 00407 004	00)		Cone and Shear	
	U	SCS (ASTM D2487: D24	88) I			
		REMARKS				



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10/14/21 Date

18

L	TESTS, L	LC Web: www.te		SHIO			
Client Pr. #		Lab. PR. #					
Pr. Name	Ti	S. Type	Mold				
Sample ID	38895/2-5	Subsample	2	Location			
Add. Info	-	Mixing/Molding Date	lixing/Molding Date 09/16/21				

21136-02-3 Depth/Elev. Seattle WA

Sample ID	38895/2-5	Subsample	2	Location	Seattle, WA	
Add. Info	-	Mixing/Molding Date	09/16/21	<u> </u>	Curing Age, Days	28
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	oil-Cement Cylinders	
		METHOD	В	Ī		
		III.ETT105		l		
	SAMPLE DATA		WATER CONTE	NT DETERM	MINATION	
Initial Heig	ght, in	5.659	Mass of Wet Sai	mple and Ta	re, g 1501.8	
Initial Diar		2.978	Mass of Dry San	nple and Tar	e, g 1207.5	
_	Diameter Ratio	1.90	Mass of Tare, g		305.2	
Area, in ²		6.97	Moisture, %		32.6	
Volume, ir	า ³	39.42				
Mass of S	ample, g	1198.6				
Wet Dens		115.8				
Dry Densi		87.3				
	Speed, in/min	0.050				
Strain rate	e, % / min	0.88				
		TEST	DATA			
	Load Cell ID #	11/1015		Digits	al Caliper ID # 17/583	
	Compression Device ID #	10/1014		•	ut Device ID # 10/1016	
	Balance ID #	1036/1037			Oven ID # 758/496	
Maximum	Load at Failure, lbf		3146			
Specimen	Cross-sectional Area, in ²		6.97	1	Failure Code 3	
Compress	sive Strength at Failure, psi		452			
-	on Factor for Height to Diamete	r Ratio	1.00			
	Compressive Strength at Fa		452	İ	Failure Sketo	ch
Note 2: * - /	A conversion factor based on H/D=	=1.15 (C.F908 as 100% a	nd add. correction เ	er ASTM C42	2)	
		DESCRIPTION	,		′ /	
					Failure Type:	
					Cone and S	hear
	U	SCS (ASTM D2487: D24	.88)		•	
		REMARKS				
					I	



Pr. Name

Sample ID

TIMELY

38895/2-5

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200016

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Subsample ID



Mold

Lab. PR. #

S. Type

Location

Tested By

Date

21136-02-3

Seattle, WA

Depth/Elevation

EB/KP

Checked By

09/26/21

Add. Info		-		Mix	Mixing/Molding Date 09/16/21				Curing Age, Days 10									
				ASTM D	5084; Standa				-		-			us				
					Materials U	Ising a F	lexible Wal	I Permeam	eter (Me	hod D, Con	stant Rate	e of Flo	w)					
Ir	nitial San	nple Dat	a (Befor	e Test)			Test Data	a					Final Data	(After Test)				
Height		3.009	in	7.64 cr	m Speed			9										
Diameter		2.962	in	7.52 cr		ımber		8		Average Hei	ght of Samp	le	3.010	in	7.65	cm		
Area		6.89	in ²	44.46 cr	m ² Cell Num	ber		2		Average Diar	meter of Sa		2.963	in	7.53	cm		
		0.0120 ft ³	Flow Pun	np Numbei	r	4B		Area	6.90	in ²	44.49	cm ²						
		1.39 lb	Flow Pun	np Rate*		4.48E-04	cm ³ /sec	Volume	340.11	cm ³	0.0120	ft ³	Dry De			ocf		
Specific Gravity 2.700 (Assumed)			d)	B - Value			0.95		Mass	641.5	g	1.41	lb	Vol. of			cm ³	
Dry Density 87.9 pcf				Cell Pres			95.0	psi						Vol. of			cm ³	
	Moisture Content				Back Pre	ssure		90.0	psi						Void Ra	atio 0.	92	
				7		Confining (Effective) Pressure			psi		Moi	sture Co		٦	Saturat	ion 10	0.0	6
Mass of wet sample & tare 632.6			g		Max Head			cm	'			722.7	g					
Mass of dry sample & tare 478.7			g	Min Head	-		28.84	cm	Mass of dry s	sample & ta	re	560.0	g					
Mass of tare 0.0			g		n Gradient		3.86		Mass of tare			81.3	g					
% Moisture			32.1		Minimum	Gradient		3.77		% Moisture			34.0					
TIME	FUNCTI	ON	Δt	READING	Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)		Note: [Deaired Wate	er Used for Pe	ermeabil	ity Test.		
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R_T	@ 20 °C			DESCRIPT	ION	_			
09/26/21	7	5	-	0.42	29.54	3.86	25.0	-	-	-		NA				USCS		
09/26/21	7	15	600	0.41	28.84	3.77	25.0	2.64E-06	0.889	2.35E-06						(ASTM D2487	2488)	
09/26/21	7	25	600	0.42	29.54	3.86	25.0	2.64E-06	0.889	2.35E-06						NA		
09/26/21	7	35	600	0.41	28.84	3.77	25.0	2.64E-06	0.889	2.35E-06	*			REMARK				
09/26/21	7	45	600	0.42	29.54	3.86	25.0	2.64E-06	0.889	2.35E-06	*	Bottom	Half of the m	old was used	for test	ng.		
09/26/21	7	55	600	0.41	28.84	3.77	25.0	2.64E-06	0.889	2.35E-06	*							
09/26/21	8	5	600	0.42	29.54	3.86	25.0	2.64E-06	0.889	2.35E-06	*							
				_	Reported	Average I	Hydraulic Cor	nductivity*		2.3E-06	cm/sec							
Flow pump I	Flow pump ID # 1043 Balai			alance ID#	1035/1036		Differential F	Pressure N	/leter ID #			1045/1049						
Thermomete	er ID#	796	/985	0	ven ID#	496/758		Board Press	ure Meter	ID#			290					
Syringe ID #	yringe ID # 1046						-	Pore Pressu	ıre Meter I	D #			216					
*Constant Rate	onstant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate issued for												fully saturated s	sample with accur	acy +/-5%	Flow Pump Rat	e isused	

calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.

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Date

10/14/21

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		1 ESTS, EEC	Web. www.te	est-lic.com	Web. www.test-iic.com					20
Client Pr. 7	200016						21136-02-3			
Pr. Name		Time Oil Terminal						Depth/Elevation		=
Sample ID	38895	Subsam	nple ID	4	4 Location Seattle, W					
Add. Info	-	e		09/16/21		Curing	g Age, Days	2	8	

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow) **Initial Sample Data (Before Test) Test Data** Final Data (After Test) Height 3.034 7.71 cm Speed 11 Diameter 2.974 in 7.55 Board Number 12 Average Height of Sample 3.035 7.71 cm cm in² cm² 6.95 44.82 Cell Number 41 Average Diameter of Sample 2.975 7.56 cm Area cm^3 cm² Volume 345.37 0.0122 Flow Pump Number 3B Area 6.95 44.85 cm³/sec cm³ 638.0 1.41 Flow Pump Rate* 1.12E-04 Volume 345.72 0.0122 Dry Density 87.1 Mass pcf cm^3 Specific Gravity 2.700 (Assumed) B - Value 0.95 Mass 645.5 1.42 Vol. of Voids 167.03 cm³ Dry Density 87.1 pcf Cell Pressure 95.0 psi Vol. of Solids 178.68 90.0 0.93 Back Pressure psi Void Ratio **Moisture Content Moisture Content** 5.0 Confining (Effective) Pressure psi Saturation 97.6 Mass of wet sample & tare Max Head 155.45 638.0 cm Mass of wet sample & tare 719.6 Mass of dry sample & tare 482.3 Min Head 153.34 Mass of dry sample & tare 556.6 cm Mass of tare 0.0 Maximum Gradient 20.17 Mass of tare 74.3 % Moisture 32.3 Minimum Gradient 19.89 % Moisture 33.8 TIME FUNCTION Δt READING Head Gradient Temp. PERMEABILITY (cm/sec) Note: Deaired Water Used for Permeability Test. $T_x(^{\circ}C)$ @ 20 °C DATE HOUR @ T, R_{T} MIN (sec) DP, (psi) (cm) DESCRIPTION NΑ 5 20.07 9 2.20 154.75 21.4 10/14/21 USCS 9 15 600 2.19 154.04 19.98 21.4 1.25E-07 0.967 1.21E-07 (ASTM D2487;2488) 10/14/21 10/14/21 9 25 600 2.20 154.75 20.07 21.4 1.25E-07 0.967 1.21E-07 NA 9 35 600 2.18 153.34 19.89 21.4 1.25E-07 0.967 1.21E-07 10/14/21 REMARKS Bottom Half of the mold was used for testing. 10/14/21 9 45 600 2.19 154.04 19.98 21.4 1.25E-07 0.967 1.21E-07 10/14/21 9 55 600 2.20 154.75 20.07 21.4 1.25E-07 0.967 1.21E-07 5 10/14/21 10 600 2.21 155.45 20.17 21.4 1.24E-07 0.967 1.20E-07 Reported Average Hydraulic Conductivity* 1.2E-07 cm/sec Flow pump ID # Balance ID # Differential Pressure Meter ID # 475 1035/1036 262 Thermometer ID # 796/985 Oven ID# 496/758 Board Pressure Meter ID # 776 Syringe ID # 490 Pore Pressure Meter ID # 26/27

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



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Date

09/27/21

_		I ESTS, L	LC	Web: www.te	st-Ilc.com		REDITED		Checked By	16
Client Pr. #			200016				Lab. PR. #		21136-02-3	
Pr. Name		Ti	ime Oil Termi	inal			S. Type	Mold	Depth/Elev.	-
Sample ID	38896/2-9			Subsample	1		Location			
Add. Info	- Mixing/Mo			olding Date 09/17/21				Curing	Age, Days	10

ASTM D 1633: Standard Test Methods for Compressive Strength of Molded Soil-Cement Cylinders METHOD B SAMPLE DATA WATER CONTENT DETERMINATION Initial Height, in Mass of Wet Sample and Tare, g 1516.3 Initial Diameter, in Mass of Dry Sample and Tare, g 1245.6 Height-to-Diameter Ratio 1.89 Mass of Tare, g 299.8	Sample ID	38896/2-9	Subsample	1	Location	Seattle, WA	
Mathematical Height, in 5.593 Mass of Wet Sample and Tare, g 1516.3 Mass of Dys Sample and Tare, g 1245.6 Mass of Dys Sample and Tare, g 1245.6 Mass of Dys Sample and Tare, g 1245.6 Mass of Dys Sample and Tare, g 1245.6 Mass of Dys Sample and Tare, g 1245.6 Mass of Dys Sample and Tare, g 299.8 Mass of Sample, g 1218.9 Moisture, % 283.6 Moisture, % 28	Add. Info	-	Mixing/Molding Date	09/17/21		Curing Age, Days	10
SAMPLE DATA		ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	il-Cement Cylinders	
SAMPLE DATA					"		
Initial Height, in Initial Diameter, in Height-to-Diameter Ratio Area, in ² G. 90 Volume, in ³ Mass of Wet Sample and Tare, g Mass of Dry Sample and Tare, g Mass of Dry Sample and Tare, g Mass of Sample, g Moisture, % Moisture, 9 Moisture, % Moisture, % Moisture, % Moisture, % Moisture, % Moisture, % Moisture, % Moisture, % Moisture, % Moisture, 9 Moisture, % Moisture, % Moisture, % Moisture, % Moisture, 9 Moisture, % Moisture, % Moisture, % Moisture, % Moisture, 9 Moist			METHOD	В			
Initial Height, in Initial Diameter, in		SAMPLE DATA		WATER CONTE	NT DETERM	ΙΙΝΔΤΙΩΝ	
Initial Diameter, in Height-to-Diameter Ratio Area, in 6.90 Volume, in 3.38.57 Mass of Sample, g 1218.9 Wet Density, pcf 120.4 Dry Density, pcf 9.33.6 Machine Speed, in/min 10.89 TEST DATA Load Cell ID # 11/1015	Initial Heigh		5.593				
Area, in² Volume, in³ Mass of Sample, g Wet Density, pcf Jensity, pcf Machine Speed, in/min Strain rate, % / min TEST DATA TEST DATA TEST DATA TEST DATA Load Cell ID # Compression Device ID # Balance ID # Maximum Load at Failure, lbf Specimen Cross-sectional Area, in² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION Moisture, % Moisture, % Digital Caliper ID # 17/583 Readout Device ID # 10/1016 Oven ID # 639 Failure Code 3 Failure Sketch Failure Sketch Failure Type: Cone and Shear							
Volume, in ³ Mass of Sample, g Mass of Sample, g Met Density, pcf Dry Density, pcf Dry Density, pcf Machine Speed, in/min Strain rate, % / min TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA Digital Caliper ID # 17/583 Readout Device ID # 10/1016 Town ID # 10/1016 To	Height-to-D	iameter Ratio	1.89	Mass of Tare, g		299.8	
Mass of Sample, g Wet Density, pcf Machine Speed, in/min Strain rate, % / min TEST DATA TEST DATA TEST DATA TEST DATA TEST DATA Load Cell ID # Compression Device ID # Balance ID # Toylon ID # Toyl	Area, in ²		6.90	Moisture, %		28.6	
Wet Density, pcf Dry De							
Dry Density, pcf Machine Speed, in/min Strain rate, % / min TEST DATA TEST DATA Load Cell ID # Compression Device ID # Balance ID # 10/1014 Balance ID # 1036/1037 Maximum Load at Failure, lbf Specimen Cross-sectional Area, in² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION TEST DATA Digital Caliper ID # 17/583 Readout Device ID # 10/1016 Oven ID # 758/496 Failure Code 3 Failure Sketch Failure Sketch Failure Type: Cone and Shear		. •					
Machine Speed, in/min Strain rate, % / min TEST DATA Load Cell ID # Compression Device ID # 11/1015 Balance ID # 10/1014 Balance ID # 10/36/1037 Maximum Load at Failure, Ibf Specimen Cross-sectional Area, in² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION USCS (ASTM D2487: D2488) TEST DATA Digital Caliper ID # 17/583 Readout Device ID # 10/1016 Oven ID # 758/496 Failure Code 3 Failure Code 3 Failure Sketch Failure Type: Cone and Shear							
TEST DATA Load Cell ID #							
TEST DATA Load Cell ID #							
Load Cell ID # Compression Device ID # Balance ID # Tol/1014 Balance ID # Tol/1014 Balance ID # Tol/1014 Balance ID # Tol/1014 Tol/1016 To							
Compression Device ID # 10/1014 Balance ID # 1036/1037 Maximum Load at Failure, Ibf Specimen Cross-sectional Area, in² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION USCS (ASTM D2487: D2488) Readout Device ID # 10/1016 Oven I			TEST	DATA			
Compression Device ID # 10/1014 Balance ID # 1036/1037 Maximum Load at Failure, Ibf Specimen Cross-sectional Area, in² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION USCS (ASTM D2487: D2488)		Load Cell ID #	11/1015		Digita	I Caliner ID # 17/583	
Balance ID # 1036/1037 Oven ID # 758/496 Maximum Load at Failure, Ibf Specimen Cross-sectional Area, in² 6.90 Failure Code 3 Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi 93 Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION Failure Type: Cone and Shear USCS (ASTM D2487: D2488)							
Specimen Cross-sectional Area, in ² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION Failure Code 3 Failure Code 3 Failure Code 3 Failure Code 3 Failure Sketch Failure Sketch Failure Type: Cone and Shear		-	1036/1037				
Specimen Cross-sectional Area, in ² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION Failure Code 3 Failure Code 3 Failure Code 3 Failure Code 3 Failure Sketch Failure Sketch Failure Type: Cone and Shear			 -		_		
Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION Failure Type: Cone and Shear USCS (ASTM D2487: D2488)		_		639	ı		
Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION Failure Type: Cone and Shear USCS (ASTM D2487: D2488)					ı	Failure Code 3	
Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION Failure Sketch Failure Type: Cone and Shear	-	· ·					
Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION Failure Type: Cone and Shear			ı				
Failure Type: Cone and Shear USCS (ASTM D2487: D2488)	-	· ·	1				1
Failure Type: Cone and Shear	Note 2: * - A	conversion factor based on H/D=	· · · · · · · · · · · · · · · · · · ·	nd add. correction p	per ASTM C42) /	
USCS (ASTM D2487: D2488)			DESCRIPTION				
USCS (ASTM D2487: D2488)							
USCS (ASTM D2487: D2488)						Failura Turas	
USCS (ASTM D2487: D2488)						* *	ear
		U	SCS (ASTM D2487: D24	88)			
REMARKS							
REMARKS			DE144D140				
			REMARKS				



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10/15/21

	1ESTS, LLC	Web: www.tes	st-llc.com	CCREDITED		Checked By	16
Client Pr. #	200016	6		Lab. PR. #		21136-02-3	
Pr. Name	Time Oil Te	rminal		S. Type	Mold	Depth/Elev.	-
Sample ID	38896/2-9	Subsample	2	Location		Seattle, WA	
Add. Info	- Mixing/	Molding Date	09/17/21		Curing A	Age, Days	28
· ·	<u> </u>				•	-	

Sample ID	38896/2-9	Subsample	2	Location	•	Seattle, WA	
Add. Info	-	Mixing/Molding Date	09/17/21		Curing Age	e, Days	28
	ASTM D 1633: Standa	ard Test Methods for Com	pressive Strength	of Molded So	il-Cement Cyli	nders	
		METHOD	В	Ī			
		METHOD	В				
	SAMPLE DATA		WATER CONTE	NT DETERM	IINATION		
Initial Heigh	nt, in	5.623	Mass of Wet Sar	mple and Tar	e, g	1519.1	
Initial Diam	eter, in	2.969	Mass of Dry San	nple and Tare	e, g	1248.0	
Height-to-D	iameter Ratio	1.89	Mass of Tare, g			298.8	
Area, in ²		6.92	Moisture, %			28.6	
Volume, in ³	3	38.93				_	
Mass of Sa	mple, g	1222.6					
Wet Densit	y, pcf	119.6					
Dry Density	v, pcf	93.0					
	peed, in/min	0.050					
Strain rate,	% / min	0.89					
		TEST	DATA				
	Load Cell ID #	11/1015		Digito	I Caliper ID #	17/583	
	Compression Device ID #	10/1014			t Device ID #	10/1016	
	Balance ID #	1036/1037		rcadou	Oven ID #	758/496	
	Balarioo IB II	1000,1007			0 1011 115 11	100/100	
Maximum L	₋oad at Failure, lbf		2206				
Specimen (Cross-sectional Area, in ²		6.92	ļ	Failure Code	3	
Compressiv	ve Strength at Failure, psi		319		L		
-	Factor for Height to Diamete	r Ratio	1.00	İ			
	Compressive Strength at Fa		319		F	ailure Sketcl	h
	conversion factor based on H/D		nd add_correction r	er ASTM C42	, Γ		
		DESCRIPTION		,	,		
						\times 1	
						/	
					ع :Failure Type	<u></u>	
						Cone and Sh	iear
	U	SCS (ASTM D2487: D24	·88)				
		DEMARKO					
		REMARKS					



Pr. Name

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200016

Time Oil Terminal

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Mold

Lab. PR. #

S. Type

Tested By Date

21136-02-3

Depth/Elevation

EB/KP 09/27/21

Checked By

18

Sample ID			38896	6/2-9		Subsample ID 3				Location Seattle, WA			
Add. Info		-		Mix	ing/Molding Da	te		09/17/21]	Curing Age, Days 10		
				ASTM D	•				-		nductivity of Saturated Porous stant Rate of Flow)		
Ir	Initial Sample Data (Before Test) Test Data										Final Data (After Test)		
Height Diameter Area Volume Mass Specific Gra Dry Density		3.056 2.955 6.86 343.45 657.3 2.700 92.6	in in in² cm³ g (Assumer	7.76 cr 7.51 cr 44.25 cr 0.0121 ft [*] 1.45 lb	m Board Num ² Cell Num ³ Flow Pun B - Value Cell Pres Back Pre	ber np Number np Rate* sure ssure	r e) Pressure	9 7 33 3B 4.48E-04 0.95 95.0 90.0 5.0	cm³/sec psi psi psi	_	ght of Sample		
Mass of wet Mass of dry Mass of tare % Moisture	sample &	tare		g g	Max Hea	d I Gradient	e) i ressure	22.51 21.10 2.90 2.72	cm cm		sample & tare 726.7 g sample & tare 574.0 g		
TIME DATE	FUNCTI HOUR	ON MIN	Δ t (sec)	READING DP, (psi)	Head (cm)	Gradient	Temp. T _x (°C)	PERME @ T _x	ABILITY R _T	(cm/sec) @ 20 °C	Note: Deaired Water Used for Permeability Test. DESCRIPTION		
09/27/21 09/27/21 09/27/21	7 7 7	5 15 25	600	0.31 0.32 0.31	21.81 22.51 21.81	2.81 2.90 2.81	24.5 24.5 24.5	3.55E-06 3.55E-06	0.899	- 3.19E-06 3.19E-06	NA USCS (ASTM D2487;2488) NA		
09/27/21	7 7 7	35 45 55	600 600 600	0.32 0.30 0.31	22.51 21.10 21.81	2.90 2.72 2.81	24.5 24.5 24.5	3.55E-06 3.60E-06 3.66E-06	0.899 0.899 0.899	3.19E-06 3.24E-06 3.29E-06	* REMARKS * Bottom Half of the mold was used for testing. *		
09/27/21 09/27/21	8	5	600	0.31	22.51	2.90	24.5	3.55E-06	0.899	3.19E-06	*		
Flow pump I Thermomete Syringe ID #	er ID#	796	75 /985 90	4	Reported alance ID # ven ID #	Average I 1035/1036 496/758	Hydraulic Cor	nductivity* Differential F Board Press Pore Pressu	ure Meter	· ID#	262 290 216		

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for



Pr. Name

Sample ID

Add. Info

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Time Oil Terminal

Mixing/Molding Date

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38896/2-9

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Subsample ID



Tested By Date

10/15/21

EB/KP

18 Checked By Lab. PR. # 21136-02-3 S. Type Mold Depth/Elevation 4 Location Seattle, WA Curing Age, Days 28

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flovible Wall Permeameter (Method D. Constant Pate of Flow)

09/17/21

	Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)															
Initi	ial San	nple Dat	a (Before	e Test)			Test Data		Final Data (After Test)							
Height		3.047	in	7.74 cr	n Speed			12	1							
Diameter			in	7.51 cr	n Board Nu	ımber		3	1	Average Hei	ght of Sam	ple	3.048 ir	n	7.74 cm	
Area		6.86	in ²	44.28 cr	n ² Cell Num	ber		33		Average Dia	meter of Sa	ample	2.957 ir	n	7.51 cm	
Volume		342.67	cm ³	0.0121 ft ³	Flow Pun	np Numbei	r	3B		Area	6.87	in ²	44.31	cm ²		
Mass		657.9	g	1.45 lb	Flow Pun	np Rate*		5.60E-05	cm ³ /sec	Volume	343.01	cm ³	0.0121 ft	t ³	Dry Density	93.2 pc
Specific Gravit	ty	2.700	(Assume	d)	B - Value			0.95		Mass	670.0	g	1.48 II	b	Vol. of Voids	153.27 cr
Dry Density		93.3	pcf		Cell Pres	sure		95.0	psi			_			Vol. of Solids	189.74 cr
			_		Back Pre	ssure		90.0	psi						Void Ratio	0.81
	Moist	ure Cont	ent	_	Confining	(Effective) Pressure	5.0	psi		Мо	isture Co	ntent		Saturation	102.9 %
Mass of wet sa	ample &	tare	657.9	g	Max Hea	d		115.36	cm	Mass of wet	sample & ta	are	754.1 g)		
Mass of dry sa	ample &	tare	512.3	g	Min Head	t		114.65	cm	Mass of dry s	sample & ta	are	596.4 g)		
Mass of tare			0.0	g	Maximum	n Gradient		14.90		Mass of tare			84.1	9		
% Moisture			28.4		Minimum	Gradient		14.81		% Moisture			30.8			
TIME F	UNCTI	ON	Δt	READING	Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)		Note: [Deaired Water	Used for Pe	rmeability Te	st.
DATE H	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R_T	@ 20 °C			DESCRIPTIO	N		
10/15/21	9	5	-	1.64	115.36	14.90	22.7	-	-	-	1	NA				USCS
10/15/21	9	15	600	1.63	114.65	14.81	22.7	8.51E-08	0.938	7.98E-08	1				(AST	M D2487;2488)
10/15/21	9	25	600	1.64	115.36	14.90	22.7	8.51E-08	0.938	7.98E-08	1					NA
10/15/21	9	35	600	1.63	114.65	14.81	22.7	8.51E-08	0.938	7.98E-08	*			REMARK	s	
10/15/21	9	45	600	1.64	115.36	14.90	22.7	8.51E-08	0.938	7.98E-08	*	Bottom	Half of the mo	ld was used	for testing.	
10/15/21	9	55	600	1.64	115.36	14.90	22.7	8.48E-08	0.938	7.95E-08	*					
10/15/21	10	5	600	1.63	114.65	14.81	22.7	8.51E-08	0.938	7.98E-08	*					
			•	<u>. </u>	Reported	Average I	Hydraulic Co	nductivity*	•	8.0E-08	cm/sec					<u> </u>
Flow pump ID	#	4	75	Ва	alance ID#	1035/1036		Differential I	Pressure N	Meter ID #			262			
Thermometer	ID#	796	/985	0	ven ID#	496/758		Board Press	sure Meter	· ID#			1041			
Syringe ID #	ļ	4	90	1			ı	Pore Pressu	ıre Meter	D#			26/27			
*Constant Rate of	nstant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate is used for															



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Date

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10/01/21

Clie	nt Pr. #		200016		La					
Pr. N	Name	Time Oil Terminal								
Sam	ple ID	39007/2-33		Subsample	1					
Add	. Info	=	Mixing/Mo	Iding Date	09/21/21					
						_				

 ab. PR. #
 21136-02-3

 S. Type
 Mold
 Depth/Elev.

 Location
 Seattle, WA

 Curing Age, Days
 1

Add. Info	-	Mixing/Molding Date	09/21/21		Curing Ag	ge, Days	10
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	oil-Cement Cy	linders	
		METHOD	В				
			_	_			
	SAMPLE DATA		WATER CONTE				
Initial Height		5.684	Mass of Wet Sar	•	-	1498.5	
Initial Diame		2.980	Mass of Dry Sam	nple and Tar	e, g	1198.9	
-	ameter Ratio	1.91	Mass of Tare, g			301.3	
Area, in ²		6.97	Moisture, %			33.4	
Volume, in ³		39.64					
Mass of San	. •	1199.2					
Wet Density	•	115.2					
Dry Density,		86.4					
Machine Spe		0.050					
Strain rate, 9	% / MIN	0.88					
		TEST	DATA				
	Load Cell ID #	11/1015		Digita	al Caliper ID#	17/583	
	Compression Device ID #	10/1014			ut Device ID #		
	Balance ID #	1036/1037			Oven ID #		
	24.400 12				0.02		
Maximum Lo	oad at Failure, lbf		1110				
Specimen C	ross-sectional Area, in ²		6.97	•	Failure Code	3	
Compressive	e Strength at Failure, psi		159	•			
Conversion I	Factor for Height to Diameter	r Ratio	1.00	ı			
	ompressive Strength at Fai		159			Failure Sketch	
Note 2: * - A c	conversion factor based on H/D=	=1.15 (C.F908 as 100% a	nd add. correction p	er ASTM C42	2)		
		DESCRIPTION					
					Failure Type:		
					,,	Cone and She	ar
	U	SCS (ASTM <u>D2487: D24</u>	88)		-		
		REMARKS					



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Tested By

Date

KP/IH 10/19/21

18

Web: www.test-llc.com Checked By Client Pr. # 200016 Lab. PR. # 21136-02-3 Pr. Name Time Oil Terminal S. Type Depth/Elev. Mold

Sample ID	39007/2-33	Subsample	2	Location	Seattle, WA	
Add. Info	-	Mixing/Molding Date	09/21/21		Curing Age, Days	28
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	il-Cement Cylinders	
		METHOD	В	Ī		
		211102		<u>l</u>		
	SAMPLE DATA		WATER CONTE	NT DETERM	INATION	
Initial Heig		5.702	Mass of Wet Sar			
Initial Diam	neter, in Diameter Ratio	2.975 1.92	Mass of Dry San Mass of Tare, g	nple and Tare	, g 1208.0 309.4	
Area, in ²	Diameter Natio	6.95	Moisture, %		33.3	
Volume, in	3	39.64	Wolstare, 70		00.0	
Mass of Sa		1201.0				
Wet Densi	• •	115.4				
Dry Densit	ry, pct Speed, in/min	86.5 0.050				
Strain rate	•	0.88				
		TEST	DATA			
	Load Cell ID #	11/1015		Digita	Caliper ID # 17/583	
	Compression Device ID #	10/1014		_	t Device ID # 10/1016	
	Balance ID #	1036/1037			Oven ID # 758/496	
Maximum	Load at Failure, lbf		3746			
Specimen	Cross-sectional Area, in ²		6.95		Failure Code 3	
Compress	ive Strength at Failure, psi		539			
	n Factor for Height to Diameter	İ	1.00			
-	Compressive Strength at Fa		539		Failure Sketch	
Note 2: * - A	A conversion factor based on H/D=	-	nd add. correction p	per ASTM C42)		
		DESCRIPTION		1		
					Failure Type:	
					Cone and Shea	ar
	U	SCS (ASTM <u>D2487: D24</u>	88)			
		REMARKS				



Pr. Name

Sample ID

TIMELY

39007/2-33

Engineering Soil

200016

Time Oil Terminal

 $Tests, \\ \text{llc}$

1874 Forge Street Tucker, GA 30084

Phone: 770-938-8233

Fax: 770-923-8973

Web: www.test-llc.com

Subsample ID



Mold

Lab. PR. #

S. Type

Location

Tested By Date

21136-02-3

Seattle, WA

Depth/Elevation

EB/KP

Checked By

10/01/21 18

Add. Info - Mixing/Molding Date 09/21/21									Curir	g Age, Days			10					
				ASTM						-	draulic Cor thod D, Con	-			us			
lı	nitial Sar	nple Dat	a (Befor	e Test)				Test Data	a					Final Data	(After Test)			
Height		3.051	in	7.75	cm S	Speed			10]								
Diameter		2.971	in			Board Nu	ımber		7		Average Hei	ght of Sam	ple	3.052	in	7.75	cm	
Area		6.93	in ²			Cell Num	ber		15		Average Dia	meter of Sa		2.972	in	7.55	cm	
Volume		346.61	cm ³	0.0122	ft ³	Flow Pun	np Numbei	r	4A		Area	6.94	in ²	44.76	cm ²			
Mass		637.4	g		lb F	Flow Pun	np Rate*		2.24E-04	cm ³ /sec	Volume	346.95	cm ³	0.0123	ft ³	Dry De		
Specific Gra	-	2.700	(Assume	ed)		B - Value			0.95		Mass	644.4	g	1.42	lb	Vol. of		
Dry Density		86.2	pcf			Cell Pres			95.0	psi						Vol. of		
	Maia	ture Cont				Back Pre			90.0	psi		Ma	:-4 C			Void R		
Mass of west			637.4	٦		Contining Max Head	•) Pressure	5.0 74.56	psi	Mana of west		isture Co	728.6	1	Satura	tion 97	.5 %
Mass of wer			479.0	9		Min Head			73.86	cm	Mass of wet			563.5	g			
Mass of tare		laie	0.0	9			ı n Gradient		9.62	CIII	Mass of tare		al C	84.5	g			
% Moisture			33.1	- "			Gradient		9.53	1	% Moisture			34.5	9			
TIME	FUNCTI	ION	Δt	READING		lead	Gradient	Temp.		ABILITY	(cm/sec)		Note:	Deaired Wate	er Used for Pe	ermeabil	ity Test.	
DATE	HOUR	MIN	(sec)	DP, (psi		cm)		T _x (°C)	@ T _x	R_T	@ 20 °C			DESCRIPT			,	
10/01/21	7	5	-	1.05	73	3.86	9.53	24.6	-	-	-		NA				USCS	
10/01/21	7	15	600	1.06	74	4.56	9.62	24.6	5.23E-07	0.897	4.69E-07						(ASTM D2487;	2488)
10/01/21	7	20	300	1.05	73	3.86	9.53	24.6	5.23E-07	0.897	4.69E-07						NA	
10/01/21	7	25	300	1.06	74	4.56	9.62	24.6	5.23E-07	0.897	4.69E-07	*			REMARK	S.		
10/01/21	7	30	300	1.05	73	3.86	9.53	24.6	5.23E-07	0.897	4.69E-07	*	Bottom	Half of the m	old was used	for test	ing.	
10/01/21	7	35	300	1.06	74	4.56	9.62	24.6	5.23E-07	0.897	4.69E-07	*						
10/01/21	7	40	300	1.05	73	3.86	9.53	24.6	5.23E-07	0.897	4.69E-07	*						
					F	Reported	Average I	Hydraulic Co	nductivity*		4.7E-07	cm/sec						
Flow pump	ID#	10)43		Balance	ID#	1035/1036		Differential I	Pressure M	Meter ID #	_		1044/1048				
Thermomet	er ID#	796	/985		Oven ID) #	496/758		Board Press	sure Meter	r ID#			290]			
Syringe ID #	#	10)47						Pore Pressu	ıre Meter	ID#			216]			

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for

calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.

3



Pr. Name

Sample ID

Add. Info

TIMELY

39007/2-33

Engineering Soil

200016

Time Oil Terminal

Mixing/Molding Date

Tests, Llc

1874 Forge Street Tucker, GA 30084

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Web: www.test-llc.com

Subsample ID



Tested By

Date

10/19/21

EB/KP

Lab. PR. # 21136-02-3

S. Type Mold Depth/Elevation - Location Seattle, WA

Curing Age, Days 28

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

09/21/21

4

	Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)														
Initial S	ample Da	ta (Befor	e Test)			Test Data				Final Data (After Test)					
Height	3.019	in	7.67 cn	n Speed			11]							
Diameter	2.973	in	7.55 cn	n Board Nu	ımber		5		Average Hei	ght of Sam	ple	3.020 in	7.67	cm	
Area	6.94	in ²	44.79 cn	n ² Cell Num	ber		41		Average Dia	meter of Sa	ample	2.974 in	7.55	cm	
Volume	343.43	cm ³	0.0121 ft ³	Flow Pun	np Numbe	r	4A		Area	6.95	in ²	44.82 cm ²			
Mass	631.3	g	1.39 lb	Flow Pun	np Rate*		1.12E-04	cm ³ /sec	Volume	343.78	cm ³	0.0121 ft ³	Dry De	nsity 86.	1 pcf
Specific Gravity	2.700	(Assume	d)	B - Value)		0.95		Mass	636.4	g	1.40 lb	Vol. of	Voids 168.	.18 cm ³
Dry Density	86.2	pcf		Cell Pres	sure		95.0	psi					Vol. of	Solids 175.	.60 cm ³
		_		Back Pre	ssure		90.0	psi					Void R	atio 0.9	6
Moisture Content Confining (Effective) Pressure 5.0 psi Moisture Content Saturation 96.5 %										5 %					
Mass of wet sample	& tare	631.3	g	Max Hea	d		51.35	cm	Mass of wet	sample & t	are	712.3 g			
Mass of dry sample	& tare	474.2	g	Min Head	t		49.94	cm	Mass of dry s	sample & ta	are	550.0 g			
Mass of tare		0.0	g	Maximun	n Gradient		6.69		Mass of tare			75.8 g			
% Moisture		33.1		Minimum	Gradient		6.51		% Moisture			34.2			
TIME FUNC	TION	Δt	READING	Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)		Note: [Deaired Water Used	for Permeabil	ity Test.	
DATE HOU	R MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R _T	@ 20 °C	1		DESCRIPTION			
10/19/21 7	10	-	0.72	50.64	6.60	22.6	-	-	-		NA			USCS	
10/19/21 7	20	600	0.72	50.64	6.60	22.6	3.79E-07	0.940	3.56E-07	1				(ASTM D2487;2	.488)
10/19/21 7	30	600	0.73	51.35	6.69	22.6	3.76E-07	0.940	3.53E-07	1				NA	
10/19/21 7	40	600	0.71	49.94	6.51	22.6	3.79E-07	0.940	3.56E-07	*		REI	MARKS		
10/19/21 7	50	600	0.72	50.64	6.60	22.6	3.81E-07	0.940	3.58E-07	*	Bottom	Half of the mold was	s used for test	ing.	$\overline{}$
10/19/21 8	0	600	0.71	49.94	6.51	22.6	3.81E-07	0.940	3.58E-07	*					
10/19/21 8	10	600	0.73	51.35	6.69	22.6	3.79E-07	0.940	3.56E-07	*					
<u>'</u>		•		Reported	l Average I	Hydraulic Co	nductivity*		3.6E-07	cm/sec					
Flow pump ID #	10	043	Ва	alance ID#	1035/1036	1	Differential I	Pressure N	Meter ID #	4		1044/1048			
Thermometer ID #	796	6/985	0	ven ID#	496/758		Board Press	sure Meter	· ID#			1042			
Syringe ID #	1	047	1			1	Pore Pressu	ıre Meter I	D #			779/780			
*Constant Rate of Flow S	unstant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate is used for														

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused fo calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



Timely Engineering Soil

Tests, Llc

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Web: www.test-llc.com

Tested By

Date

KP/IH

Checked By

10/02/21

	1 2010, 22	vveb. www.tes	AE C	REDITED		Checked by	1
Client Pr. #		200016		Lab. PR. #		21136-02-3	
Pr. Name	Tim	e Oil Terminal		S. Type	Mold	Depth/Elev.	
Sample ID	39008/2-13	Subsample	1	Location		Seattle, WA	
Add. Info	-	Mixing/Molding Date	09/22/21		Curing A	ige, Days	
		-		-	-	-	

Sample ID	39008/2-13	Subsample	1	Location	Seattle, WA	
Add. Info	-	Mixing/Molding Date	09/22/21		Curing Age, Days	10
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	oil-Cement Cylinders	
		METHOD	В	•		
		METHOD	ь			
	SAMPLE DATA		WATER CONTE	NT DETERN	MINATION	
Initial Height	, in	5.658	Mass of Wet Sar	mple and Tai	re, g 1522.7	
nitial Diame		2.978	Mass of Dry Sam	nple and Tar		
-	ameter Ratio	1.90	Mass of Tare, g		298.9	
Area, in ²		6.97	Moisture, %		30.1	
Volume, in ³		39.41				
Mass of San	. •	1225.8				
Wet Density, Dry Density,		118.5 91.1				
Machine Spe		0.050				
Strain rate, %		0.88				
			DATA			
		IESI	DATA			
	Load Cell ID #	11/1015		Digita	al Caliper ID # 17/583	
	Compression Device ID #	10/1014		•	ut Device ID # 10/1016	
	Balance ID #	1036/1037			Oven ID # 758/496	
				•		
	pad at Failure, lbf		884	1		
-	ross-sectional Area, in ²		6.97	1	Failure Code 3	
-	e Strength at Failure, psi		127	ī		
	Factor for Height to Diameter	İ	1.00			
-	ompressive Strength at Fa		127		Failure Sketo	;h
Note 2: * - A c	conversion factor based on H/D=		nd add. correction p	per ASTM C42	?) /	
		DESCRIPTION			. ./	
					F-11 T-11	
					Failure Type: Cone and Si	near
	U	SCS (ASTM D2487: D24	88)			
	Г	REMARKS			Ī	



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Tested By

KP/IH

Date

10/20/21

	1 E 3 I 3, L	Web: www.t	est-lic.com	CREDITED		P	
Client Pr. #		200016		Lab. PR. #			
Pr. Name	Т	ime Oil Terminal		S. Type	Mold	Depth/Elev.	-
Sample ID	39008/2-13	Subsample	2	Location			
Add. Info	-	Mixing/Molding Date	09/22/21		Curing A	28	

Sample ID	39008/2-13	Subsample	2	Location	Seattle, WA	
Add. Info	-	Mixing/Molding Date	09/22/21		Curing Age, Days	28
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded S	oil-Cement Cylinders	
		METHOD	В	Ī		
		METHOD	Ь	l		
	SAMPLE DATA		WATER CONTE	NT DETERM	MINATION	
Initial Heig	ht, in	5.653	Mass of Wet Sar	mple and Ta	re, g 1514.3	
Initial Diam	neter, in	2.976	Mass of Dry San	nple and Tar	e, g 1232.5	
	Diameter Ratio	1.90	Mass of Tare, g		298.6	
Area, in ²		6.96	Moisture, %		30.2	
Volume, in		39.32				
Mass of Sa	. •	1218.8				
Wet Densi		118.1				
Dry Density		90.7				
Strain rate	peed, in/min	0.050 0.88				
Strain rate,	, 70 / 111111	0.00				
		TEST	DATA			
	Load Cell ID #	11/1015		Digit	al Caliper ID # 17/583	
	Compression Device ID #	10/1014			ut Device ID # 10/1016	
	Balance ID #	1036/1037			Oven ID # 758/496	
	Load at Failure, lbf		2604			
Specimen	Cross-sectional Area, in ²		6.96		Failure Code 3	
Compressi	ve Strength at Failure, psi		374			
	n Factor for Height to Diameter		1.00			
Reported	Compressive Strength at Fai	lure, psi	374		Failure Sketo	ch
Note 2: * - A	\ conversion factor based on H/D=	-	nd add. correction p	oer ASTM C42	2)	
		DESCRIPTION			. /	
					Failure Type:	l
		SCS (ASTM D2487: D24	88)		Cone and S	near
	0.	500 (NOTH B2+07: B2+]			
			l			
		REMARKS			_	



Pr. Name

TIMELY

Engineering Soil

200016

Time Oil Terminal

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Mold

Lab. PR. #

S. Type

Tested By

21136-02-3

Depth/Elevation

10/02/2

Date
Checked By

10/02/21

Sample ID	mple ID 39008/2-13				Subsample ID 3					Seattle, WA							
Add. Info		-		Mi	xing/Molding Da	ate		09/22/21			Curing Age, Days 10						
				ASTM D	•				-	*	nductivity of Saturated Porous nstant Rate of Flow)						
ı	nitial Sar	nple Dat	a (Befor	e Test)			Test Dat	a		Final Data (After Test)							
Height		2.957	in	7.51	cm Speed			10	1								
Diameter	ameter 2.969 in 7.54 cm			umber		8	1	Average Hei	ight of Sample 2.958 in 7.51 cm								
Area		6.92	in ²		cm ² Cell Nun	nber		55		Average Dia	ameter of Sample 2.970 in 7.54 cm						
Volume		335.48	cm ³	0.0118 f	t ³ Flow Pu	mp Numbe	r	4B		Area	6.93 lin ² 44.70 cm ²						
Mass		633.6	g	1.40 I	b Flow Pu	mp Rate*		2.24E-04	cm ³ /sec	Volume	335.82 cm ³ 0.0119 ft ³ Dry Density 90.6 pcf						
Specific Gr	•		(Assume	ed)	B - Value			0.95]	Mass	640.9 g 1.41 lb Vol. of Voids 155.33 cm ³						
Dry Density	/	90.7	pcf		Cell Pres			95.0	psi		Vol. of Solids 180.49 cm ³						
					Back Pre			90.0	psi		Void Ratio 0.86						
	Moisture Content lass of wet sample & tare 633.6 g				• .	e) Pressure	5.0	psi		Moisture Content Saturation 98.9 %							
	Mass of wet sample & tare 633.6 g Mass of dry sample & tare 487.4 g			Max Hea			49.24	cm		sample & tare 723.9 g							
Mass of dry		tare	0.0	9	Min Hea			48.53 6.55	cm	Mass of dry s	sample & tare 570.3 g 82.9 g						
% Moisture			30.0	- 19		Maximum Gradient Minimum Gradient			1	% Moisture	82.9 g 31.5						
	FUNCTI	ON	Δt	READING	Head	Gradient	Temp.	6.46 DEDME	I ABILITY	' (cm/sec)	Note: Deaired Water Used for Permeability Test.						
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)	Gradient	T _x (°C)	@ T _x	R _T	@ 20 °C	DESCRIPTION						
10/02/21	8	5	(300)	0.70	49.24	6.55	24.6	U IX			NA USCS						
		15	-	+				7 705 07		0.045.07	(ASTM D2487;2488)						
10/02/21	8		600	0.69	48.53	6.46	24.6	7.70E-07	0.897	6.91E-07	 						
10/02/21	8	25	600	0.70	49.24	6.55	24.6	7.70E-07	0.897	6.91E-07	NA NA						
10/02/21	8	35	600	0.69	48.53	6.46	24.6	7.70E-07	0.897	6.91E-07	* REMARKS						
10/02/21	8	45	600	0.70	49.24	6.55	24.6	7.70E-07	0.897	6.91E-07	* Bottom Half of the mold was used for testing.						
10/02/21	8	55	600	0.69	48.53	6.46	24.6	7.70E-07	0.897	6.91E-07	*						
10/02/21	9	5	600	0.70	49.24	6.55	24.6	7.70E-07	0.897	6.91E-07	*						
					Reported	d Average	Hydraulic Co	nductivity*		6.9E-07	cm/sec						
Flow pump	ID#	10)43		Balance ID #	1035/1036		Differential I	Pressure I	Meter ID #	1045/1049						
Thermome	ter ID#	796	/985	(Oven ID#	496/758		Board Press	sure Mete	r ID#	290						
Syringe ID	#	10)46				=	Pore Pressu	ıre Meter	ID#	216						

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for



Pr. Name

TIMELY

Engineering Soil

200016

Time Oil Terminal

Tests, llc

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Mold

Lab. PR. #

S. Type

Tested By Date

Checked By

21136-02-3

Depth/Elevation

10/20/21 18

EB/KP

Sample ID			39008	/2-13		Subs	ample ID	4		Location		;	Seattle, WA						
Add. Info		-		N	lixing/Molding Da	ate		09/22/21			Curin	g Age, Days			28				
				ASTM I	•				-	*	nductivity of Satu		ıs						
li	nitial Sar	nple Dat	a (Befor	e Test)			Test Dat	а				Final Data (A	After Test)						
Height		3.030	in	7.70	cm Speed			11	1										
Diameter		2.969	in		cm Board N	umber		15		Average Hei	ght of Sample	3.031	in	7.70 cm	ı				
Area		6.92	in ²		cm ² Cell Nun	nber		55		Average Dia	meter of Sample		in	7.54 cm	ı				
Volume		343.76	cm ³	0.0121	ft ³ Flow Pu	mp Numbe	r	2B		Area	6.93 in ²		cm ²			_			
Mass		646.9	g	1.43	lb Flow Pu	mp Rate*		1.12E-04	cm ³ /sec	Volume	344.10 cm ³	0.0122	ft ³	Dry Densi		pcf			
Specific Gra	-	2.700	(Assume	d)	B - Valu	-		0.95	_	Mass	658.8 g	1.45	lb	Vol. of Vo					
Dry Density	,	90.0	pcf		Cell Pres			95.0	psi					Vol. of So		cm ³			
					Back Pre			90.0	psi					Void Ratio 0.87					
	lass of dry sample & tare 495.9 g				• .	e) Pressure	5.0	psi		Moisture Co			Saturation	101.5	%				
	lass of wet sample & tare 646.9 g lass of dry sample & tare 495.9 g			Max Hea Min Hea			139.27	cm		sample & tare		g							
	•	tare		9		a m Gradient		137.16 18.09	cm	Mass of tare	sample & tare		g g						
Mass of tare 0.0 g % Moisture 30.4			Minimum Gradient			1	% Moisture		32.8	9									
	FUNCT	ION	Δt	READING	1	Gradient	Temp.	17.82 DEDME	I ARII IT∨	' (cm/sec)	Noto:	Deaired Water	Llead for Do	rmoability	Toet				
DATE	HOUR	MIN	(sec)	DP, (psi)		Gradient	T _x (°C)	@ T _x	R _T	@ 20 °C	Note.	DESCRIPTION		inteability	1631.				
10/20/21	7	10	(360)	1.97	138.57	18.00	22.5	€ 1 _X	1	0 20 0	NA	DESCRIPTIO	JIN		USCS				
10/20/21	7	20	600	1.95	137.16	17.82	22.5	1.40E-07	0.942	1.32E-07	-			(4	0303 ASTM D2487;2488	3)			
			.		+			+		+	1			(
10/20/21	7	30	600	1.98	139.27	18.09	22.5	1.40E-07	0.942	1.31E-07					NA				
10/20/21	7	40	600	1.96	137.87	17.91	22.5	1.39E-07	0.942	1.31E-07		light of the second	REMARK			_			
10/20/21	7	50	600	1.97	138.57	18.00	22.5	1.40E-07	0.942	1.31E-07	* Bottom	Half of the mo	old was used	for testing	•				
10/20/21	8	0	600	1.95	137.16	17.82	22.5	1.40E-07	0.942	1.32E-07	*								
10/20/21	8	10	600	1.98	139.27	18.09	22.5	1.40E-07	0.942	1.31E-07	*								
				_	Reporte	d Average	Hydraulic Co	nductivity*		1.3E-07	cm/sec								
Flow pump	ID#	2	44		Balance ID #	1035/1036		Differential	Pressure I	Meter ID #		587							
Thermomet	er ID#	796	6/985		Oven ID#	496/758		Board Press	sure Mete	r ID#		694/459							
Syringe ID :	#	2	46					Pore Pressi	ire Meter	ID #		372							

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for



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KP/IH 10/02/21

SHIO

10/02/21

L	TESTS, L	LC	Web: www.te	st-llc.com	ACC					
Client Pr. #										
Pr. Name	Т	Time Oil Terminal								
Sample ID	39009/CAA-4 Ex-Situ	(1)	Subsample	1						
Add. Info	-	Mixing/Mo	Iding Date	09/22/21						

Lab. PR. # 21136-02-3
S. Type Mold Depth/Elev. Location Seattle, WA
Curing Age, Days 10

Add. Info	-	Mixing/Molding Date	09/22/21		Curing Age, Days	10
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded S	oil-Cement Cylinders	
		METHOD	В			
Initial Height Initial Diame Height-to-Dia Area, in ² Volume, in ³ Mass of Sam Wet Density, Dry Density, Machine Spe Strain rate, 9	ter, in ameter Ratio nple, g , pcf pcf eed, in/min	5.622 2.977 1.89 6.96 39.13 1184.5 115.3 86.9 0.050 0.89	WATER CONTE Mass of Wet San Mass of Dry San Mass of Tare, g Moisture, %	mple and Ta	re, g 1482.2]
		TEST	DATA			
	Load Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037		al Caliper ID # 17/583 ut Device ID # 10/1016 Oven ID # 758/496]	
Specimen Compressive Conversion I	oad at Failure, lbf ross-sectional Area, in ² e Strength at Failure, psi Factor for Height to Diameter ompressive Strength at Fai	İ	1086 6.96 156 1.00		Failure Code 3 Failure Sket] tch
-	conversion factor based on H/D=			per ASTM C42		
	U	SCS (ASTM D2487: D24	88)		•	
		REMARKS			_	



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Date

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10/20/21

Client Pr. # 200016 Lab. PR. # Pr. Name Time Oil Terminal S. Type	Mold	21136-02-3						
Pr. Name Time Oil Terminal S. Type	Mold							
	MOIU	Depth/Elev.	-					
Sample ID 39009/CAA-4 Ex-Situ (1) Subsample 2 Location		Seattle, WA						
Add. Info - Mixing/Molding Date 09/22/21	Curing A	Age, Days	28					
ASTM D 1633: Standard Test Methods for Compressive Strength of Molded Soil-Co	Time Oil Terminal 2							
METHOD B								
SAMPLE DATA WATER CONTENT DETERMINA	TION							
		1495.5						
Height-to-Diameter Ratio 1.91 Mass of Tare, g		305.6						
Area, in ² 6.97 Moisture, %		32.3						
Volume, in ³ 39.61								
Mass of Sample, g 1191.8								
Wet Density, pcf 114.6								
Strain rate, % / min 0.88								
TEST DATA								
Load Cell ID # 11/1015 Digital Cal	liper ID	# 17/583						
Compression Device ID # 10/1014 Readout De								
Balance ID # 1036/1037 O	ven ID	# 758/496						
Maximum Load at Failure, lbf 2684								
Specimen Cross-sectional Area, in ² 6.97 Failu	ure Code	е 3						
Compressive Strength at Failure, psi 385								
Conversion Factor for Height to Diameter Ratio 1.00								
Reported Compressive Strength at Failure, psi 385		Failure Sket	ch					
Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% and add. correction per ASTM C42) DESCRIPTION								
Faile	ıre Tyne							
l'anc	alo Type		Shear					

USCS (ASTM D2487: D2488)

REMARKS



Pr. Name

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Time Oil Terminal

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Mold

Lab. PR. #

S. Type

Tested By Date

Checked By

21136-02-3

Depth/Elevation

10/02/21

i i. ivallic					Time On Term	iiiui				6. Type Wildia Beptivelevation						
Sample ID		390	009/CAA-4	4 Ex-Situ (1)		Subs	ample ID	3		Location	Seattle, WA					
Add. Info		-		Mix	king/Molding Da	te		09/22/21]	Curing Age, Days 10					
				ASTM D	-				-		nductivity of Saturated Porous nstant Rate of Flow)					
I	nitial Sar	nple Dat	a (Befor	e Test)			Test Data	a		Final Data (After Test)						
Height		2.988	in	7.59 c	m Speed			10	1							
Diameter		2.970	in		m Board Nu	umber		18		Average Hei	ight of Sample 2.989 in 7.59 cm					
Area		6.93	in ²	44.70 C	m ² Cell Num	ber		37		Average Dia	ameter of Sample 2.971 in 7.55 cm					
Volume		339.22	cm ³	0.0120 ft	Flow Pur	np Numbe	r	4A		Area	6.93 in ² 44.73 cm ²					
Mass		623.4	g	1.37 lk		•		2.24E-04	cm ³ /sec	Volume	339.56 cm ³ 0.0120 ft ³ Dry Density 86.7 pcf					
Specific Gravity 2.700 (Assumed)			B - Value			0.95		Mass	634.6 g 1.40 lb Vol. of Voids 164.91 cm ³							
Dry Density 86.7 pcf				Cell Pres Back Pre			95.0	psi		Vol. of Solids 174.66 cm ³						
	ture Cont	ent				e) Pressure	90.0	psi psi	Woid Ratio0.94Moisture ContentSaturation98.9							
Mass of we			623.4	la	Max Hea	•) i lessule	188.51	cm	Mass of wet sample & tare 717.3 g						
Mass of dry sample & tare 471.5 g					Min Head			187.81	cm		sample & tare 554.3 g					
Mass of tar			0.0	g	Maximun	n Gradient		24.83		Mass of tare	· · · · · · · · · · · · · · · · · · ·					
% Moisture			32.2		Minimum	Gradient		24.74		% Moisture	34.6					
TIME	FUNCTI	ION	Δt	READING	Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)	Note: Deaired Water Used for Permeability Test.					
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R_T	@ 20 °C	DESCRIPTION					
10/02/21	8	5	-	2.68	188.51	24.83	24.6	-	-	-	NA Uscs					
10/02/21	8	15	600	2.67	187.81	24.74	24.6	2.02E-07	0.897	1.81E-07	(ASTM D2487;2488)					
10/02/21	8	25	600	2.68	188.51	24.83	24.6	2.02E-07	0.897	1.81E-07	NA					
10/02/21	8	35	600	2.68	188.51	24.83	24.6	2.02E-07	0.897	1.81E-07	* REMARKS					
10/02/21	8	45	600	2.67	187.81	24.74	24.6	2.02E-07	0.897	1.81E-07	* Bottom Half of the mold was used for testing.					
10/02/21	8	55	600	2.67	187.81	24.74	24.6	2.02E-07	0.897	1.82E-07] *					
10/02/21	9	5	600	2.68	188.51	24.83	24.6	2.02E-07	0.897	1.81E-07	1 *					
	Reported Average Hydraulic Cor									1.8E-07	cm/sec					
Flow pump	ID#	10)43	В	Balance ID #	1035/1036		Differential F	Pressure I	Meter ID #	1044/1048					
Thermomet	Thermometer ID # 796/985 Oven ID # 496/758 B							Board Press	sure Mete	r ID#	570					
Syringe ID	#	10)47				•	Pore Pressu	ıre Meter	ID#	779/780					
1				-												

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for



Pr. Name

Sample ID

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Engineering Soil

200016

Time Oil Terminal

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39009/CAA-4 Ex-Situ (1)

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Subsample ID



Mold

Lab. PR. #

S. Type

Location

Tested By

21136-02-3

Seattle, WA

Depth/Elevation

Date
Checked By

10/20/21

EB/KP

Sample 1D		330	100/ OAA	+ LX-Situ (1)		Oubs		7		Location				Seattle, WA			
Add. Info		-		Mi	xing/Molding Da	ate		09/22/21]		Curir	ng Age, Days			28	
				ASTM D	5084; Standa				-		-			us			
					Materials (Jsing a F	lexible Wal	I Permeam	eter (Me	thod D, Con	stant Rat	te of Flo	w)				
lr	nitial San	nple Dat	a (Before	e Test)			Test Data	a		Final Data (After Test)							
Height		3.013	in	7.65	m Speed			11									
Diameter		2.973	in		m Board N	umber		16		Average Hei	ght of Sam	ple	3.014	in	7.66 cm		
Area			in ²	44.79	m ² Cell Nun	nber		4		Average Dia	meter of Sa	ample	2.974	in	7.55 cm		
Volume		342.75	cm ³	0.0121 f	Flow Pur	mp Numbe	r	2A]	Area	6.95	in ²	44.82	cm ²			=
Mass		621.6	g	1.37 II		•		1.12E-04	cm ³ /sec	Volume	343.10	cm ³	0.0121	ft ³	Dry Density		pcf
Specific Gra	avity	2.700	(Assume	d)	B - Value			0.95		Mass	633.2	g	1.40	lb	Vol. of Voids	169.49	cm ³
Dry Density		85.3	pcf		Cell Pres			95.0	psi						Vol. of Solids		cm ³
					Back Pre	essure		90.0	psi						Void Ratio	0.98	
Moisture Content					• •	e) Pressure	5.0	psi	Moisture Content				1	Saturation 97.0 %			
Mass of wet sample & tare 621.6 g			Max Hea			156.86	cm	Mass of wet sample & tare 712.4 g				g					
Mass of dry sample & tare 468.6 g			Min Hea			154.75	cm	Mass of dry		are	548.0	g					
Mass of tare	Э		0.0	g		n Gradient		20.49	1	Mass of tare			79.4	g			
% Moisture			32.7			Gradient	1	20.21		% Moisture			35.1				
TIME	FUNCTI	ION	Δt	READING	Head	Gradient	Temp.		1	(cm/sec)		Note:	Deaired Wate	r Used for Pe	ermeability Tes	st.	
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R _T	@ 20 °C			DESCRIPT	ION	_		
10/20/21	7	10	-	2.22	156.15	20.40	22.5	-	-	-		NA				USCS	
10/20/21	7	20	600	2.20	154.75	20.21	22.5	1.23E-07	0.942	1.16E-07					(ASTI	M D2487;2488)	_
10/20/21	7	30	600	2.23	156.86	20.49	22.5	1.23E-07	0.942	1.16E-07						NA	
10/20/21	7	40	600	2.21	155.45	20.31	22.5	1.23E-07	0.942	1.15E-07	*			REMARK	_		_
10/20/21	7	50	600	2.22	156.15	20.40	22.5	1.23E-07	0.942	1.16E-07	*	Bottom	Half of the m	old was used	d for testing.]
10/20/21	8	0	600	2.20	154.75	20.21	22.5	1.23E-07	0.942	1.16E-07	*						
10/20/21	8	10	600	2.23	156.86	20.49	22.5	1.23E-07	0.942	1.16E-07	*						
Reported Average Hydraulic C							Hydraulic Co	nductivity*		1.2E-07	cm/sec						-
Flow pump ID # 244 Balance ID # 1035/1036 D					Differential I	Pressure I	Meter ID #	=		346							
Thermomet	er ID#	796	/985] (Oven ID#	496/758		Board Press	sure Mete	Meter ID # 694/459							
Syringe ID #	#	24	45	1			1	Pore Pressu	ure Meter								
							15: (/==/ = =		

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for



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10/03/21

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Client Pr. #		200016				Lab. PR. #		21136-02-3	
Pr. Name	Т	ime Oil Termi	nal			S. Type	Mold	Depth/Elev.	-
Sample ID	39010/CAA-4 Ex-Situ	ı (2)	Subsample	1		Location		Seattle, WA	
Add. Info	-	Mixing/Mo	Iding Date	09/23/2	21		Curing A	ge, Days	10
-									

Sample ID	39010/CAA-4 Ex-Situ	ı (2)	Subsample	1	Location	Seattle, WA	
Add. Info	-	Mixing/Mo	lding Date	09/23/21		Curing Age, Days	10
	ASTM D 1633: Standa	rd Test Meth	ods for Com	pressive Strength	of Molded So	il-Cement Cylinders	
					•		
			METHOD	В			
	SAMPLE DATA			WATER CONTE	NT DETERM	IINATION	
Initial Height		5.634		Mass of Wet Sar			
Initial Diame		2.969		Mass of Dry Sam			
-	ameter Ratio	1.90		Mass of Tare, g		419.9	
Area, in ²		6.92		Moisture, %		36.2	
Volume, in ³		39.01					
Mass of San	. •	1161.6					
Wet Density Dry Density,	-	113.4 83.3					
Machine Spe		0.050					
Strain rate, 9		0.89					
			TEST	DATA			
	Load Cell ID #	11/1015			Digita	I Caliper ID # 17/583	
	Compression Device ID #	10/1014				t Device ID # 10/1016	
	Balance ID #	1036/1037				Oven ID # 758/496	
			•		•		
	oad at Failure, lbf			1392			
•	ross-sectional Area, in ²			6.92		Failure Code 3	
-	e Strength at Failure, psi			201	1		
	Factor for Height to Diameter			1.00			
-	ompressive Strength at Fa			201		Failure Sketo	ch
Note 2: * - A c	conversion factor based on H/D=			nd add. correction p	per ASTM C42)) /	
		DESCI	RIPTION		Ī		
						Foilure Type:	
						Failure Type: Cone and S	hear
	U	SCS (ASTM	D2487: D24	88)			
	Г	REM	ARKS		Ī		



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Client Pr. #		200016			Lab. PR.	#	21136-02-3	
Pr. Name	Т	ime Oil Termi	nal		S. Typ	е Мо	ld Depth/Elev.	
Sample ID	39010/CAA-4 Ex-Situ	(2)	Subsample	2	Locatio	n	Seattle, WA	
Add. Info	-	Mixing/Mo	olding Date	09/23/21	ı	Cur	ring Age, Days	28
	ASTM D 1633: Standa	rd Test Meth	ods for Comp	ressive Stre	ngth of Molded	Soil-Ceme	ent Cylinders	

Add. Info	-	Mixing/Molding Date	09/23/21	Curing Age, Days 28	
	ASTM D 1633: Standa	ard Test Methods for Com	pressive Strength	of Molded Soil-Cement Cylinders	
		METHOD	В	1	
		WETHOD	В	1	
	SAMPLE DATA			NT DETERMINATION	
Initial Heio		5.656		mple and Tare, g 1453.4	
Initial Diar	neter, in Diameter Ratio	2.977 1.90	Mass of Dry San Mass of Tare, g	nple and Tare, g 1145.7 297.1	
Area, in ²	Diameter Natio	6.96	Moisture, %	36.3	
Volume, ii	n^3	39.37	70	86.6	
Mass of S		1163.5			
Wet Dens	• •	112.6			
Dry Densi		82.6			
Strain rate	Speed, in/min e. % / min	0.050			
	, , , , , , , , , , , , , , , , , , , ,				
		TEST	DATA		
	Load Cell ID #	11/1015		Digital Caliper ID # 17/583	
	Compression Device ID #	10/1014		Readout Device ID # 10/1016	
	Balance ID #	1036/1037		Oven ID # 758/496	
Maximum	Load at Failure, lbf		3313]	
	Cross-sectional Area, in ²		6.96	Failure Code 3	
Compress	sive Strength at Failure, psi		476		
Conversio	on Factor for Height to Diamete	r Ratio	1.00		
Reported	Compressive Strength at Fa	ilure, psi	476	Failure Sketch	
Note 2: * -	A conversion factor based on H/D	· · · · · · · · · · · · · · · · · · ·	nd add. correction p	per ASTM C42)	
	_	DESCRIPTION			
				Failure Times	
				Failure Type: Cone and Shear	
	U	SCS (ASTM D2487: D24	88)		
		REMARKS			



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Client Pr. #		200016				Lab. PR. #		21136-02-3		
Pr. Name		Time Oil Termi	inal			S. Type	Mold	Depth/Elevation		-
Sample ID	39010/CAA-4	Ex-Situ (2)	Subsa	ample ID	3	Location		Seattle, WA		
Add. Info	=	Mixing/Molding Dat	e		09/23/21		Curing	g Age, Days		10
		ASTM D 5084; Standa	rd Test M	lethod for I	Measurement of Hy	draulic Cond	ductivity of Satu	rated Porous		

Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow) **Initial Sample Data (Before Test)** Final Data (After Test) **Test Data** Height 2.995 7.61 cm Speed 10 Diameter 2.957 in 7.51 Board Number 19 Average Height of Sample 2.996 7.61 cm cm in² cm² 6.87 Cell Number 12 Average Diameter of Sample 2.958 7.51 cm Area 44.31 cm³ in² cm² Volume 337.05 0.0119 Flow Pump Number 2B Area 6.87 44.34 cm³/sec cm3 609.3 1.34 Flow Pump Rate* 2.24E-04 Volume 337.39 0.0119 Dry Density 82.8 Mass pcf cm^3 Specific Gravity 2.700 (Assumed) B - Value 0.95 Mass 620.9 1.37 Vol. of Voids 171.48 cm³ Dry Density 82.9 pcf Cell Pressure 95.0 psi Vol. of Solids 165.91 90.0 Back Pressure psi Void Ratio 1.03 **Moisture Content Moisture Content** 5.0 Confining (Effective) Pressure psi Saturation 100.9 Max Head 45.72 Mass of wet sample & tare 609.3 cm Mass of wet sample & tare 689.7 Mass of dry sample & tare 447.8 Min Head 45.02 Mass of dry sample & tare 516.8 cm Mass of tare 0.0 Maximum Gradient 6.01 Mass of tare 69.0 % Moisture 36.1 Minimum Gradient 5.92 % Moisture 38.6 TIME FUNCTION Δt READING Head Gradient Temp. PERMEABILITY (cm/sec) Note: Deaired Water Used for Permeability Test. $T_x(^{\circ}C)$ @ 20 °C DATE **HOUR** @ T, R_{T} MIN (sec) DP, (psi) (cm) **DESCRIPTION** NΑ 7 5 25.1 0.65 45.72 6.01 10/03/21 USCS 7 15 600 45.02 5.92 25.1 8.47E-07 0.887 7.52E-07 (ASTM D2487;2488) 10/03/21 0.64 10/03/21 7 25 600 0.65 45.72 6.01 25.1 8.47E-07 0.887 7.52E-07 NA 10/03/21 7 35 600 0.65 45.72 6.01 25.1 8.41E-07 0.887 7.46E-07 REMARKS Bottom Half of the mold was used for testing. 10/03/21 7 45 600 0.64 45.02 5.92 25.1 8.47E-07 0.887 7.52E-07 10/03/21 7 55 600 0.64 45.02 5.92 25.1 8.54E-07 0.887 7.58E-07 5 10/03/21 8 600 0.65 45.72 6.01 25.1 8.47E-07 0.887 7.52E-07 Reported Average Hydraulic Conductivity* 7.5E-07 cm/sec Flow pump ID # 244 Balance ID # Differential Pressure Meter ID # 1035/1036 587 Thermometer ID # 796/985 Oven ID# 496/758 Board Pressure Meter ID # 570 Syringe ID # 246 Pore Pressure Meter ID # 779/780

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



Client Pr.

Pr. Name

TIMELY

Engineering Soil

200016

Time Oil Terminal

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Mold

Lab. PR. #

S. Type

Tested By

21136-02-3

Depth/Elevation

Date

EB/KP 10/21/21

Checked By

10/21/21

i i. i tallic					Time on Tem					О. Туро	IVIOIG	Depti // Lievation	
Sample ID							Location		Seattle, W	Α			
Add. Info		-		Mix	king/Molding Da	ite		09/23/21			Cı	ıring Age, Days	28
				ASTM D	-				-		nductivity of Sanstant Rate of F	aturated Porous Flow)	
I	nitial Sar	nple Dat	a (Befor	e Test)			Test Data	a				Final Data (After Tes	et)
Height		3.002	in	7.63 c	m Speed			11	1				
Diameter		2.961	in	7.52 c	m Board No	umber		3	1	Average Hei	ght of Sample	3.003 in	7.63 cm
Area		6.89	in ²	44.43 C	m ² Cell Num	nber		5	1	Average Dia	meter of Sample	2.962 in	7.52 cm
Volume		338.75	cm ³	0.0120 ft	Flow Pur	np Numbe	r	4B		Area	6.89 in ²	44.46 cm ²	
Mass		613.9	g	1.35 lk	Flow Pur	mp Rate*		1.12E-04	cm ³ /sec	Volume	339.09 cm ³	0.0120 ft ³	Dry Density 82.6 pcf
Specific Gr	-	2.700	(Assume	d)	B - Value			0.95		Mass	621.7 g	1.37 lb	Vol. of Voids 172.79 cm
Dry Density	/	82.7	pcf		Cell Pres			95.0	psi				Vol. of Solids 166.30 cm
	Maia	·····-			Back Pre			90.0	psi		Maiatuua	Contont	Void Ratio 1.04
Mass of wa		ture Cont	613.9	1_	Confining Max Hea		e) Pressure	5.0 48.53	psi	Mass of wat	Moisture		Saturation 99.9 %
	et sample & / sample &		449.0	9	Min Hea			48.53	cm cm		sample & tare sample & tare	704.7 g 532.0 g	
Mass of tar		laie	0.0	9		u n Gradient		6.36	CIII	Mass of tare		83.0 g	
% Moisture			36.7	9		Gradient		6.18	1	% Moisture		38.5	
TIME	FUNCTI	ON	Δt	READING	Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)	Note	: Deaired Water Used for	Permeability Test.
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R_T	@ 20 °C		DESCRIPTION	
10/21/21	7	20	-	0.68	47.83	6.27	23.4	-	-	-	NA		USCS
10/21/21	7	30	600	0.67	47.13	6.18	23.4	4.05E-07	0.923	3.73E-07			(ASTM D2487;2488)
10/21/21	7	40	600	0.69	48.53	6.36	23.4	4.02E-07	0.923	3.71E-07	1		NA
10/21/21	7	50	600	0.68	47.83	6.27	23.4	3.99E-07	0.923	3.68E-07	*	REMAR	RKS
10/21/21	8	0	600	0.69	48.53	6.36	23.4	3.99E-07	0.923	3.68E-07	* Botte	om Half of the mold was us	ed for testing.
10/21/21	8	10	600	0.67	47.13	6.18	23.4	4.02E-07	0.923	3.71E-07	*		
10/21/21	8	20	600	0.68	47.83	6.27	23.4	4.05E-07	0.923	3.73E-07	*		
					Reported	d Average	Hydraulic Co	nductivity*		3.7E-07	cm/sec		•
Flow pump	ID#	10)43	В	Balance ID #	1035/1036		Differential F	Pressure I	Meter ID #	=	1045/1049	
Thermome	ter ID #	796	/985] c	Oven ID #	496/758		Board Press	sure Mete	r ID#		1041	
Syringe ID	#	10)46					Pore Pressu	ıre Meter	ID#		26/27	

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for



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10/03/21 18

Tests, Llc Web: www.test-llc.com Client Pr. # 200016 Time Oil Terminal Pr. Name 39011/2-10

Lab. PR. # 21136-02-3 S. Type Depth/Elev. Mold -Seattle WA

Sample ID	39011/2-10	Subsample	1	Location	Seattle, WA	
Add. Info	-	Mixing/Molding Date	09/23/21		Curing Age, Days	10
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	oil-Cement Cylinders	
			_		•	
		METHOD	В			
	SAMPLE DATA		WATER CONTE	NT DETERM	IINATION	
Initial Height		5.651	Mass of Wet Sar			
nitial Diame		2.969	Mass of Dry San	•	. 0	
	ameter Ratio	1.90	Mass of Tare, g		359.1	
Area, in ²		6.92	Moisture, %		32.2	
Volume, in ³		39.12	, ,,			
Mass of Sam	nple. a	1207.4				
Wet Density,	. •	117.6				
Dry Density,		88.9				
Machine Spe		0.050				
Strain rate, 9	% / min	0.88				
		TEST	DATA			
	Load Cell ID #	11/1015			l Caliper ID # 17/583	
	Compression Device ID #	10/1014		Readou	It Device ID # 10/1016	
	Balance ID #	1036/1037			Oven ID # 758/496	
Maximum Lo	oad at Failure, lbf		642	•		
	ross-sectional Area, in ²		6.92		Failure Code 3	
-	e Strength at Failure, psi		93		Tallare Gode 0	
-	Factor for Height to Diameter	· Datio	1.00			
	ompressive Strength at Fai		93		Failure Sketo	ch
-	•	• •				<i>)</i>
Note 2: " - A C	conversion factor based on H/D=	DESCRIPTION	па ааа. соггестоп р	per ASTM C42	⁾ /	
		DESCRIPTION		Ī		
					F-11 T	
					Failure Type: Cone and S	hear
	U	SCS (ASTM D2487: D24	88)			
		Ì	,			
			•			
		REMARKS		ı		



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10/21/21

	1ESIS, L	Web: www.te		CREDITED		Checked By	16
Client Pr. #		200016		Lab. PR. #		21136-02-3	
Pr. Name	Т	ime Oil Terminal		S. Type	Mold	Depth/Elev.	-
Sample ID	39011/2-10	Subsample	2	Location		Seattle, WA	
Add. Info	-	Mixing/Molding Date	09/23/21		Curing A	Age, Days	28
	ASTM D 1622, Standa	nd Tost Mothods for Com	nnoggiva Strong	th of Moldad Sa	vil Coment C	vlindors	

Add. Info -	Mixing/Molding Date	09/23/21		Curing Age, Days	28
ASTM D 1633: Stand	ard Test Methods for Com	pressive Strength	of Molded S	oil-Cement Cylinders	
	METHOD	В	•		
SAMPLE DATA Initial Height, in Initial Diameter, in Height-to-Diameter Ratio Area, in ² Volume, in ³ Mass of Sample, g Wet Density, pcf Dry Density, pcf Machine Speed, in/min Strain rate, % / min	5.627 2.976 1.89 6.96 39.14 1193.2 116.1 87.6 0.050 0.89	WATER CONTE Mass of Wet San Mass of Dry San Mass of Tare, g Moisture, %	mple and Ta	re, g 1491.4	
	TEST	DATA			
Load Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037			al Caliper ID # 17/583 ut Device ID # 10/1016 Oven ID # 758/496]
Maximum Load at Failure, lbf Specimen Cross-sectional Area, in ² Compressive Strength at Failure, psi Conversion Factor for Height to Diamete Reported Compressive Strength at Fa		1384 6.96 199 1.00 199		Failure Code 3 Failure Ske] tch
Note 2: * - A conversion factor based on H/L	· •		per ASTM C42		
				Failure Type:	Shear
(JSCS (ASTM D2487: D24	88)			onoai
<u>-</u>	REMARKS			_	



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10/03/21

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18 Web: www.test-llc.com Checked By Client Pr. 200016 Lab. PR. # 21136-02-3 Pr. Name Time Oil Terminal Mold Depth/Elevation S. Type Sample ID 39011/2-10 Subsample ID 3 Location Seattle, WA Add. Info Mixing/Molding Date 09/23/21 Curing Age, Days 10

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow) **Initial Sample Data (Before Test) Test Data Final Data (After Test)**

Height		2.973	in	7.55 cr	m Speed			9	1								
Diameter		2.969	in	7.54 cr	m Board N	umber		5		Average Hei	ght of Samp	ole	2.974	in	7.55 cm		
Area		6.92	in ²	44.67 cr	m ² Cell Num	nber		5	1	Average Dia	meter of Sai	mple	2.970	in	7.54 cm		
Volume		337.29	cm ³	0.0119 ft ³	Flow Pur	mp Number		3B		Area	6.93	in ²	44.70	cm ²	<u> </u>		
Mass		629.2	g	1.39 lb	Flow Pur	mp Rate*		4.48E-04	cm ³ /sec	Volume	337.63	cm ³	0.0119	ft ³	Dry Density	87.9	pcf
Specific Gr	avity	2.700	(Assume	d)	B - Value	е		0.95	1	Mass	635.2	g	1.40	lb	Vol. of Voids	161.42	cm ³
Dry Density	/	88.0	pcf		Cell Pres	ssure		95.0	psi			_		_	Vol. of Solids	s 176.21	cm ³
			_		Back Pre	essure		90.0	psi						Void Ratio	0.92	
	Mois	ture Cont	ent		Confining	g (Effective) Pressure	5.0	psi		Mois	sture Co	ntent		Saturation	98.8	%
Mass of we	t sample &	tare	629.2	g	Max Hea	ad		28.84	cm	Mass of wet	sample & ta	ire	708.5	g			•
Mass of dry	/ sample &	tare	475.7	g	Min Hea	d		28.14	cm	Mass of dry s	sample & ta	re	549.1	g			
Mass of tar	е		0.0	g	Maximur	m Gradient		3.82		Mass of tare			73.4	g			
% Moisture			32.3		Minimum	n Gradient		3.72		% Moisture			33.5				
TIME	FUNCTI	ION	Δt	READING	Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)		Note: [Deaired Wate	er Used for I	Permeability Te	st.	
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		$T_x(^{\circ}C)$	@ T _x	R_T	@ 20 °C			DESCRIPT	ION			
10/03/21	7	20	-	0.40	28.14	3.72	24.1	-	-	-	1	NA				USCS	
10/03/21	7	30	600	0.41	28.84	3.82	24.1	2.66E-06	0.908	2.41E-06					(AST	M D2487;2488)	
10/03/21	7	40	600	0.41	28.84	3.82	24.1	2.63E-06	0.908	2.38E-06						NA]
10/03/21	7	50	600	0.40	28.14	3.72	24.1	2.66E-06	0.908	2.41E-06	*			REMAR	RKS		J
10/03/21	8	0	600	0.40	28.14	3.72	24.1	2.69E-06	0.908	2.44E-06	*	Bottom	Half of the m	nold was use	ed for testing.		1
10/03/21	8	10	600	0.41	28.84	3.82	24.1	2.66E-06	0.908	2.41E-06	*						
10/03/21	8	20	600	0.41	28.84	3.82	24.1	2.63E-06	0.908	2.38E-06	*						
15,36,21			100				Hydraulic Co		3.300	2.4E-06	cm/sec						
Пани в него-	ID #	4-	7.5	1 .			iyuraulic COI		Dunna 1		CITI/SEC		202	-			
Flow pump		-	75	1	alance ID #	1035/1036		Differential I					262	_			
Thermome		796	/985	0	ven ID#	496/758		Board Press	sure Mete	· ID#			1042				
Syringe ID	#	4	90					Pore Pressu	ıre Meter	D #			779/780				

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



Client Pr. #

Pr. Name

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Mold

Lab. PR. #

S. Type

Tested By Date

Checked By

21136-02-3

Depth/Elevation

10/21/21 18

EB/KP

Sample ID			39011	/2-10		Subs	ample ID	4		Location			Seattle, WA			
Add. Info		-		N	lixing/Molding Da	ate		09/23/21			Curin	ıg Age, Days			28	
				ASTM I	•				-	*	nductivity of Satu		s			
li	nitial Sar	nple Dat	a (Befor	e Test)			Test Dat	а				Final Data (A	After Test)			
Height		3.008	in	7.64	cm Speed			11	1							
Diameter		2.965	in		cm Board N	umber		4		Average Hei	ght of Sample	3.009 i	n	7.64 cm	ı	
Area		6.90	in ²		cm ² Cell Nur	nber		2		Average Dia	meter of Sample		n	7.53 cm	ı	
Volume		340.34	cm ³	0.0120	ft ³ Flow Pu	mp Numbe	r	4A		Area	6.91 in ²		cm ²			_
Mass		635.1	g	1.40	lb Flow Pu	mp Rate*		1.12E-04	cm ³ /sec	Volume	340.69 cm ³	0.0120 f	t ³	Dry Densi	· —	pcf
Specific Gra	-	2.700	(Assume	d)	B - Valu	-		0.95	_	Mass	642.6 g	1.42 I	b	Vol. of Vo		
Dry Density	,	88.1	pcf		Cell Pre			95.0	psi					Vol. of So		cm ³
					Back Pro			90.0	psi					Void Ratio		4
		ture Cont		1		• .	e) Pressure	5.0	psi		Moisture Co			Saturation	99.7	%
Mass of we				9	Max Hea Min Hea			82.30	cm		sample & tare	724.7	-			
Mass of dry Mass of tare	•	tare	480.4 0.0	9 a		a m Gradient		80.89 10.77	cm	Mass of tare	sample & tare	562.5 82.1	9			
% Moisture			32.2	- ⁹		n Gradient		10.77	1	% Moisture		33.8	9			
	FUNCT	ION	Δt	READING		Gradient	Temp.		I ARII IT∨	' (cm/sec)	Noto:	Deaired Water	Llood for Do	rmoohility	Toet	
DATE	HOUR	MIN	(sec)	DP, (psi)		Gradient	T _x (°C)	@ T _x	R _T	@ 20 °C	Note. 1	DESCRIPTIO		inneability	1631.	
10/21/21	7	20	- (300)	1.16	81.59	10.68	23.4	J .X		_	NA	DESCRIPTION	214		USCS	
10/21/21	7	30	600	1.17	82.30	10.77	23.4	2.34E-07	0.923	2.16E-07	1			(A	4STM D2487;2488	8)
10/21/21	7	40	600	1.15	80.89	10.58	23.4	2.35E-07	0.923	2.17E-07	1				NA	Ė
10/21/21	7	50	600	1.15	80.89	10.58	23.4	2.37E-07	0.923	2.19E-07	*		REMARK	<u> </u>		
10/21/21	8	0	600	1.17	82.30	10.77	23.4	2.35E-07	0.923	2.17E-07	* Bottom	Half of the mo				
10/21/21	8	10	600	1.16	81.59	10.68	23.4	2.34E-07	0.923	2.17E-07 2.16E-07	*			J		
10/21/21	8	20	600	1.17	82.30	10.00	23.4	2.34E-07	0.923	2.16E-07	*					
10/21/21	Ů	20	000	1.17		ı		l	0.323		/					
				7			Hydraulic Co 1	-	_	2.2E-07	cm/sec					
Flow pump	ID#		043	1	Balance ID #	1035/1036		Differential				1044/1048				
Thermomet	er ID#	796	/985	4	Oven ID #	496/758		Board Press	sure Mete	r ID#		1041				
Syringe ID:	#	10	147	1				Pore Pressi	ire Meter	ID #		26/27				

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for



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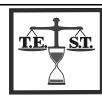
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Date 10/

10/04/21

	TESTS, LLC	Web: www.te	est-Ilc.com		SHIO		Checked By	18
Client Pr. 3	r. # 200016	i			Lab. PR. #		21136-02-3	
Pr. Name	e Time Oil Ter	minal			S. Type	Mold	Depth/Elev.	•
Sample ID	D 39012/2-22	Subsample	1		Location		Seattle, WA	
Add. Info	- Mixing/	Molding Date	09/24/2	21		Curing /	Age, Days	10
Sample ID	D 39012/2-22	Subsample		21	, , ,		Sea	ittle, WA

Add. Info	-	Mixing/Molding Date	09/24/21		Curing Age, Days	10
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded Soil-C	Cement Cylinders	
		METHOD	В	•		
Initial Heigh Initial Diame Height-to-Di		5.611 2.972 1.89	WATER CONTE Mass of Wet Sar Mass of Dry San Mass of Tare, g	mple and Tare, g		
Area, in ² Volume, in ³ Mass of Sar Wet Density Dry Density Machine Sp Strain rate,	mple, g /, pcf , pcf eed, in/min	6.94 38.92 1205.5 118.0 90.4 0.050 0.89	Moisture, %		30.4	
		TEST	DATA			
	Load Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037		Readout De	aliper ID # 17/583 evice ID # 10/1016 Oven ID # 758/496	
Specimen C Compressiv	oad at Failure, lbf Cross-sectional Area, in ² re Strength at Failure, psi Factor for Height to Diameter	Ratio	720 6.94 104 1.00	Fail	ure Code 3	
Reported C	Compressive Strength at Fai conversion factor based on H/D=	lure, psi	104	per ASTM C42)	Failure Sketcl	า
				Fail	ure Type: Cone and Sh	ear
	U	SCS (ASTM D2487: D24	88)			
		REMARKS				



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Client Pr. # 200016 Pr. Name Time Oil Terminal Sample ID 39012/2-22 Subsample Add. Info Mixing/Molding Date 09/24/21

Lab. PR. # 21136-02-3 Depth/Elev. S. Type Mold Location Seattle, WA Curing Age, Days 28

ASTM D 1633: Standard Test Methods for Con	npressive Strength of Molded Soil-Cement Cylinders
METHOD	В
SAMPLE DATA Initial Height, in Initial Diameter, in Height-to-Diameter Ratio Area, in ² Volume, in ³ Mass of Sample, g Wet Density, pcf Dry Density, pcf Machine Speed, in/min Strain rate, % / min 5.544 1.86 6.98 1.86 1.86 1.86 1.86 1.86 1.86 1.86 1.86 1.86 1.86 1.89 1.90 1.90 1.90 1.90 1.90	WATER CONTENT DETERMINATION Mass of Wet Sample and Tare, g Mass of Dry Sample and Tare, g Mass of Tare, g Moisture, % 1493.2 1213.0 304.2 304.2 30.8
TES	T DATA
Load Cell ID # 11/1015 Compression Device ID # 10/1014 Balance ID # 1036/1037	Digital Caliper ID # 17/583 Readout Device ID # 10/1016 Oven ID # 758/496
Maximum Load at Failure, lbf Specimen Cross-sectional Area, in ² Compressive Strength at Failure, psi Conversion Factor for Height to Diameter Ratio Reported Compressive Strength at Failure, psi Note 2: * - A conversion factor based on H/D=1.15 (C.F908 as 100% a	1451 6.98 208 1.00 208 Failure Code 3 Failure Sketch
DESCRIPTION	Failure Type: Cone and Shear
USCS (ASTM D2487: D2	488)
REMARKS	



Client Pr.

Pr. Name

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200016

Time Oil Terminal

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Mold

Lab. PR. #

S. Type

Tested By Date

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21136-02-3

Depth/Elevation

10/04/21 18

Sample ID			39012	2/2-22			Subs	ample ID	3		Location				Seattle, WA			
Add. Info		-		N	lixing/M	olding Da	te		09/24/21]		Curir	ng Age, Days			10	
				ASTM		•				-	draulic Cor	-			us			
					Ma	terials U	Ising a F	lexible Wal	II Permeam	eter (Me	thod D, Con	stant Rat	te of Flo	ow)				
ı	Initial San	nple Dat	a (Befor	e Test)				Test Dat	а					Final Data	(After Test)			
Height		3.002	in	7.63	cm	Speed			9]								
Diameter		2.972	in			Board Nu	ımber		6	1	Average Hei	ght of Sam	ple	3.003	in	7.63 cr	n	
Area		6.94	in ²			Cell Num	ber		11		Average Dia	meter of Sa		2.973	in	7.55 cr	n	
Volume		341.27	cm ³	0.0121	ft ³	Flow Pun	np Numbe	r	4A		Area	6.94	in ²	44.79	cm ²			
Mass		637.7	g		lb	Flow Pun	np Rate*		4.48E-04	cm ³ /sec	Volume	341.61	cm ³	0.0121	ft ³	Dry Dens		pcf
Specific Gr	ravity	2.700	(Assume	d)		B - Value			0.95		Mass	645.7	g	1.42	lb	Vol. of Vo	-	_ ^
Dry Density	y	89.6	pcf			Cell Pres			95.0	psi						Vol. of Sc		cm ³
						Back Pre			90.0	psi						Void Ration	-	
		ture Cont		7		_		e) Pressure	5.0	psi			isture Co		7	Saturation	n 97.2	%
Mass of we				g		Max Hea			21.81	cm	Mass of wet	•		727.8	g			
Mass of dry	•	tare	489.9	9		Min Head	t n Gradient		21.10	cm	Mass of dry s Mass of tare	sample & ta	are	572.4 82.5	9			
% Moisture			0.0 30.2	9		Minimum			2.86	-	% Moisture			31.7	9			
		ON	30.2 Δt	DEADING				Taman		\ DU IT\	I	1	Mata				T	
	E FUNCTI			READING		Head	Gradient	Temp.	—		(cm/sec) @ 20 °C	-	Note:		er Used for Pe	ermeability	rest.	
DATE	HOUR	MIN	(sec)	DP, (psi		(cm)		T _x (°C)	@ T _x	R _T	@ 20 C		1.10	DESCRIPT	ION	ĭ		
10/04/21	7	40	-	0.30	2	21.10	2.77	24.7	-	-	-		NA				USCS	
10/04/21	7	50	600	0.31	2	21.81	2.86	24.7	3.56E-06	0.895	3.18E-06					(.	ASTM D2487;248	8)
10/04/21	8	0	600	0.31	2	21.81	2.86	24.7	3.50E-06	0.895	3.13E-06						NA	
10/04/21	8	10	600	0.30	2	21.10	2.77	24.7	3.56E-06	0.895	3.18E-06	*			REMARK	S		
10/04/21	8	20	600	0.30	2	21.10	2.77	24.7	3.62E-06	0.895	3.24E-06	*	Bottom	Half of the m	nold was used	for testing	J .	
10/04/21	8	30	600	0.31	2	21.81	2.86	24.7	3.56E-06	0.895	3.18E-06	*						
10/04/21	8	40	600	0.30	2	21.10	2.77	24.7	3.56E-06	0.895	3.18E-06	*						
						Reported	Average I	Hydraulic Co	nductivity*		3.2E-06	cm/sec						
Flow pump	ID#	10)43		Balance	e ID#	1035/1036		Differential I	Pressure I	Meter ID #			1044/1048				
Thermome	ter ID#	796	/985		Oven II	D #	496/758		Board Press	sure Mete	r ID#			1042				
Syringe ID	#	10)47						Pore Pressu	ıre Meter	ID#			779/780				

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for



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Date

EB/KP 10/22/21

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														-		
Client Pr. #				20001	6				Lab. PR. #	‡			21136-02-	3	•	
Pr. Name				Time Oil Te	rminal				S. Type	e Mo	ld	Depth/	Elevation		-	
Sample ID		39012	/2-22		Subs	sample ID	4		Location	n			Seattle, W.	A		
Add. Info	-		Mix	xing/Molding	Date		09/24/21				Curin	g Age, Days			28	
			ASTM D	5084; Stan	dard Test	Method for	Measurem	ent of Hy	/draulic Co	nductivity	of Satu	rated Porc	ous			
				Material	Using a F	lexible Wa	II Permeam	eter (Me	thod D, Cor	nstant Rate	e of Flo	w)				
Initial S	Sample Dat	a (Befor	e Test)			Test Dat	a				I	Final Data	(After Tes	t)		
Height	3.066	in	7.79 c	m Speed			12									
Diameter	2.965	in	7.53 c	m Board	Number		18		Average Hei	ight of Samp	ole	3.067	in	7.79 cm		
Area	6.90	in ²	44.55	m ² Cell N	umber		15		Average Dia	meter of Sa	mple	2.966	in	7.53 cm		
Volume	346.91	cm ³	0.0123 ft	t ³ Flow F	ump Numbe	er	4B		Area	6.91	in ²	44.58	cm ²			
Mass	653.9	g	1.44 II	o Flow F	ump Rate*		5.60E-05	cm ³ /sec	Volume	347.25	cm ³	0.0123	ft ³	Dry Density	90.2	pcf
Specific Gravity	2.700	(Assume	d)	B - Va	ue		0.95		Mass	664.5	g	1.46	lb	Vol. of Voids	161.37	cm ³
Dry Density	90.3	pcf		Cell P	essure		95.0	psi						Vol. of Solids	185.88	cm ³
				Back	Pressure		90.0	psi						Void Ratio	0.87]
Me	oisture Con	tent	_	Confir	ing (Effective	e) Pressure	5.0	psi		Moi	sture Co	ntent		Saturation	100.8	%
Mass of wet sampl	e & tare	653.9	g	Max H	ead		104.10	cm	Mass of wet	sample & ta	ire	749.8	g			
Mass of dry sample	e & tare	501.8	g	Min H	ead		102.70	cm	Mass of dry	sample & ta	re	587.2	g			
Mass of tare		0.0	g	Maxim	um Gradient	t	13.36		Mass of tare)		85.4	g			
% Moisture		30.3		Minim	um Gradient		13.18		% Moisture			32.4				
TIME FUNC	CTION	Δt	READING	Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)		Note: D	Deaired Wate	er Used for F	Permeability Tes	st.	
DATE HOLL	ID MIN	(000)	DB (poi)	(cm)	ĺ	T(°C)	@ T	R_	@ 20 °C			DECCRIPT	TION			

TIME	FUNCTI	ON	Δt	READING	Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)	
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R _T	@ 20 °C	
10/22/21	8	35	-	1.47	103.40	13.27	21.3	-	-	-	
10/22/21	8	45	600	1.48	104.10	13.36	21.3	9.43E-08	0.969	9.14E-08	
10/22/21	8	55	600	1.46	102.70	13.18	21.3	9.46E-08	0.969	9.17E-08	
10/22/21	8	5	-3000	1.48	104.10	13.36	21.3	9.46E-08	0.969	9.17E-08	*
10/22/21	9	15	4200	1.47	103.40	13.27	21.3	9.43E-08	0.969	9.14E-08	*
10/22/21	9	25	600	1.48	104.10	13.36	21.3	9.43E-08	0.969	9.14E-08	*
10/22/21	9	35	600	1.46	102.70	13.18	21.3	9.46E-08	0.969	9.17E-08	*
					Reported	l Average I	Hydraulic Cor	nductivity*		9.2E-08	cr

Balance ID #

9.2E-08 cm/sec

Oven ID# 496/758 Board Pressure Meter ID #

1035/1036

Pore Pressure Meter ID #

Differential Pressure Meter ID #

DESCRIPTION NΑ USCS (ASTM D2487;2488) NA REMARKS Bottom Half of the mold was used for testing.

> 1045/1049 570 779/780

Thermometer ID # Syringe ID #

Flow pump ID #

1043 796/985 1046

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



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 $T{\hbox{\footnotesize\rm ESTS}}, {\hbox{\footnotesize\rm LLC}}$

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10/04/21 18

L	TESTS, L	LC	Web: www.te	st-llc.com	AGG
Client Pr. #		200016			
Pr. Name	Т	ime Oil Termi	nal		
Sample ID	39044/CAA-4 Ex-Situ	(3)	Subsample	1	
Add. Info	-	Mixing/Mo	Iding Date	09/24/2	21

Lab. PR. # 21136-02-3 Depth/Elev. S. Type Mold Seattle, WA Location 10 Curing Age. Davs

Add. IIIIO		Mixing/Molding Date	03/24/21	<u> </u>	Curing Ag	e, Days	10
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded Soil	-Cement Cyl	linders	
		METHOD	В				
Initial Height, in Initial Diameter Height-to-Diam Area, in ² Volume, in ³ Mass of Sample Wet Density, po Dry Density, po Machine Speed Strain rate, % /	r, in neter Ratio re, g cf cf d, in/min	5.747 2.975 1.93 6.95 39.95 1153.2 110.0 77.6 0.050 0.87	WATER CONTE Mass of Wet Sar Mass of Dry Sam Mass of Tare, g Moisture, %	nple and Tare,	g	1409.4 1070.6 258.3 41.7	
		TEST	T DATA				
Co	oad Cell ID # ompression Device ID # alance ID #	11/1015 10/1014 1036/1037			Caliper ID # Device ID # Oven ID #	10/1016	
Compressive S Conversion Fac	ss-sectional Area, in ² Strength at Failure, psi ctor for Height to Diametel		2083 6.95 300 1.00	F	ailure Code	3	
-	npressive Strength at Fai version factor based on H/D=		300 nd add. correction p	per ASTM C42)		Failure Sketch	
				F	ailure Type:	Cone and She	ar
	U	SCS (ASTM D2487: D24	188)				
		REMARKS					



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Client Pr. #		200016				Lab. PR. #		21136-02-3	
Pr. Name	T	ime Oil Termi	nal		S. Type	Mold	Depth/Elev.	-	
Sample ID	39044/CAA-4 Ex-Situ		Location		Seattle, WA				
Add. Info	ı	Mixing/Mo	olding Date	09/24/2	21		Curing A	lge, Days	28
	ASTM D 1633: Standa	rd Test Meth	ods for Com	oressive Str	ength	of Molded So	il-Cement C	ylinders	

Sample ID	39044/CAA-4 Ex-Siti	u (3) Subsample	2	Location	Seattle, WA	
Add. Info	-	Mixing/Molding Date	09/24/21	<u> </u>	Curing Age, Days	28
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	oil-Cement Cylinders	
			_	7		
		METHOD	В	l		
	SAMPLE DATA		WATER CONTE	NT DETERM	MINATION	
Initial Heigl		5.681	Mass of Wet Sai			
Initial Diam		2.979	Mass of Dry San		, 0	
	Diameter Ratio	1.91	Mass of Tare, g	•	303.7	
Area, in ²		6.97	Moisture, %		41.4	
Volume, in	3	39.60				
Mass of Sa	ample, g	1142.5				
Wet Densit	• •	109.9				
Dry Density		77.7				
Machine S Strain rate,	peed, in/min	0.050				
Strain rate,	, % / !!!!!!	0.88				
		TES1	T DATA			
	Load Cell ID #	11/1015		Digita	al Caliper ID # 17/583	
	Compression Device ID #	10/1014		•	ut Device ID # 10/1016	
	Balance ID #	1036/1037			Oven ID # 758/496	
				_		
	Load at Failure, lbf		4268			
-	Cross-sectional Area, in ²		6.97		Failure Code 3	
-	ve Strength at Failure, psi		612			
Conversion	r Factor for Height to Diamete	r Ratio	1.00			
Reported	Compressive Strength at Fa	ilure, psi	612		Failure Sketo	h
Note 2: * - A	conversion factor based on H/D		nd add. correction μ	per ASTM C42	2)	
		DESCRIPTION			. /	
					Failure Type: Cone and SI	hoor
	U	SCS (ASTM D2487: D24	188)		Cone and Si	IGai
	_]			
			_			
		REMARKS			Ţ	
					I	



Client Pr.

Pr. Name

TIMELY

Engineering Soil

200016

Time Oil Terminal

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Mold

Lab. PR. #

S. Type

Tested By Date EB/KP 10/05/21

Checked By

21136-02-3

Depth/Elevation

10/05/21

Sample ID		390)44/CAA-4	4 Ex-Situ (3)		Subs	ample ID	3		Location	1			Seattle, WA				
Add. Info		-		Mix	king/Molding Da	ite		09/24/21]		Curin	g Age, Days			11		
				ASTM D	5084; Standa Materials U				-	draulic Cor thod D, Cor	-			ous				
	Initial Sar	nple Dat	a (Befor	e Test)			Test Dat	а					Final Data	(After Test)				
Height		3.013	in	7.65 c	m Speed			10	1									
Diameter		2.974	in		m Board N	umber		4		Average Hei	ght of Samp	ole	3.014	in	7.66 ci	m		
Area		6.95	in ²	44.82 C	m ² Cell Num	nber		2		Average Dia	meter of Sa	mple	2.975	in	7.56 ci	m		
Volume		342.98	cm ³	0.0121 ft	Flow Pur	np Numbe	r	3B		Area	6.95	in ²	44.85	cm ²				_
Mass		597.6	g	1.32 lk	Flow Pur	mp Rate*		2.24E-04	cm ³ /sec	Volume	343.33	cm ³	0.0121	ft ³	Dry Dens	sity	76.8	pcf
Specific Gr	avity	2.700	(Assume	ed)	B - Value)		0.95]	Mass	608.2	g	1.34	lb	Vol. of Vo	oids	186.80	cm ³
Dry Density	y	76.9	pcf		Cell Pres			95.0	psi						Vol. of So	_	156.53	cm ³
		_			Back Pre			90.0	psi						Void Rati	· -	1.19	_
		ture Cont		7		• •	e) Pressure	5.0	psi			sture Co		٦	Saturatio	n	99.3	%
Mass of we	•		597.6	9	Max Hea			139.27	cm	Mass of wet			677.2	9				
Mass of dr		tare	422.7	9	Min Hea			138.57	cm	Mass of dry		ire	491.6	9				
Mass of tai			0.0	9		n Gradient		18.19	1	Mass of tare			68.9	g				
% Moisture			41.4			Gradient		18.10		% Moisture	I		43.9					
	FUNCTI	1	Δt	READING	Head	Gradient	Temp.	-	1	(cm/sec)		Note: [Deaired Wate	er Used for Pe	rmeability	Test.		
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R _T	@ 20 °C			DESCRIPT	ION	•			
10/05/21	9	20	-	1.98	139.27	18.19	23.5	-	-	-		NA				USC	CS	
10/05/21	9	30	600	1.97	138.57	18.10	23.5	2.75E-07	0.920	2.53E-07						(ASTM D2	487;2488))
10/05/21	9	40	600	1.98	139.27	18.19	23.5	2.75E-07	0.920	2.53E-07	1					N/	A	1
10/05/21	9	50	600	1.97	138.57	18.10	23.5	2.75E-07	0.920	2.53E-07	*			REMARK	s			_
10/05/21	10	0	600	1.98	139.27	18.19	23.5	2.75E-07	0.920	2.53E-07	*	Bottom	Half of the m	nold was used	for testing	g.		1
10/05/21	10	10	600	1.97	138.57	18.10	23.5	2.75E-07	0.920	2.53E-07	*							
10/05/21	10	20	600	1.98	139.27	18.19	23.5	2.75E-07	0.920	2.53E-07	*							
					Reported	Average	Hydraulic Co	nductivity*		2.5E-07	cm/sec				_			
Flow pump	ID#	4	75	В	alance ID#	1035/1036		Differential I	Pressure I	Meter ID #	_		262					
Thermome	ter ID#	796	/985] c	oven ID#	496/758		Board Press	sure Mete	r ID#			1041					
Syringe ID	#	4	90					Pore Pressu	ıre Meter	ID#			26/27					

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for



Client Pr. #

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200016

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Lab. PR. #

Tested By Date EB/KP 10/22/21

Checked By

21136-02-3

10/22/21

Pr. Name					Time Oil Term	ninal				S. Type	Mol	ld	Depth/	Elevation		=
Sample ID		390	044/CAA-	4 Ex-Situ (3)		Subs	ample ID	4		Location				Seattle, WA		
Add. Info		-		Mix	ring/Molding Da	ite		09/24/21				Curin	g Age, Days			28
				ASTM D	5084; Standa Materials U				-	draulic Cor thod D, Cor	-			ous		
ı	nitial Sar	mple Dat	ta (Befor	e Test)			Test Dat	а					Final Data	(After Test))	
Height		3.063	in	7.78 cr	m Speed			12	1							
Diameter		2.966	in	7.53 cr		umber		19		Average Hei	ght of Samp	le	3.064	in	7.78 cm	
Area		6.91	in ²	44.58 cr	m ² Cell Num	nber		5		Average Dia	meter of Sar	mple	2.967	in	7.54 cm	
Volume		346.80	cm ³	0.0122 ft ³	Flow Pur	np Numbe	r	4A		Area	6.91	in ²	44.61	cm ²		
Mass		606.9	g	1.34 lb	Flow Pur	np Rate*		5.60E-05	cm ³ /sec	Volume	347.15	cm ³	0.0123	ft ³	Dry Density	77.1 pcf
Specific Gr	•	2.700	(Assume	d)	B - Value)		0.95		Mass	615.5	g	1.36	lb	Vol. of Voids	188.28 cm ³
Dry Density	/	77.2	pcf		Cell Pres			95.0	psi						Vol. of Solids	
					Back Pre			90.0	psi			_			Void Ratio	1.19
		ture Cont		1			e) Pressure	5.0	psi			sture Co		7	Saturation	99.1 %
Mass of we	•		606.9	g	Max Hea			158.27	cm	Mass of wet			696.9	9		
Mass of dry	•	tare	429.0	9	Min Head			156.15	cm	Mass of dry s	•	re	510.3	9		
Mass of tar % Moisture			0.0 41.5	9		n Gradient n Gradient		20.34	1	Mass of tare % Moisture			81.3 43.5	9		
	FUNCT	ION	41.5 Δt	READING	Head	Gradient	Temp.			(cm/sec)		Noto: F		r Hood for D	ermeability Tes	
	1	1	1	_		Gradieni	T _x (°C)		R _T	@ 20 °C	-	Note. L			ermeability res	šl.
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)	<u> </u>		@ T _x	KT	@ 20 0	-	NA	DESCRIPT	ION	7	
10/22/21	8	35	-	2.25	158.27	20.34	21.3	-	-	-		INA.				USCS
10/22/21	8	45	600	2.22	156.15	20.06	21.3	6.21E-08	0.969	6.02E-08					(AST	M D2487;2488)
10/22/21	8	55	600	2.24	157.56	20.25	21.3	6.23E-08	0.969	6.04E-08						NA
10/22/21	9	5	600	2.23	156.86	20.16	21.3	6.21E-08	0.969	6.02E-08	*			REMARK		
10/22/21	9	15	600	2.25	158.27	20.34	21.3	6.20E-08	0.969	6.01E-08	*	Bottom	Half of the m	nold was used	d for testing.	
10/22/21	9	25	600	2.24	157.56	20.25	21.3	6.19E-08	0.969	6.00E-08	*					
10/22/21	9	35	600	2.25	158.27	20.34	21.3	6.19E-08	0.969	6.00E-08	*					
					Reported	d Average	Hydraulic Co	nductivity*		6.0E-08	cm/sec					
Flow pump	ID#	10	043	В	alance ID #	1035/1036		Differential	Pressure I	Meter ID #	=		1044/1048			
Thermome	ter ID#	796	6/985	0	ven ID#	496/758		Board Pres	sure Mete	r ID#			570			
Syringe ID	#	10	047					Pore Pressi	ure Meter	ID#			779/780			

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for



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10/05/21

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Client Pr. #
Pr. Name
Sample ID
Add. Info

Time Oil Terminal

39045/CAA-4 Ex-Situ (4)
Subsample 1
Add. Info

Mixing/Molding Date
09/25/21

 Lab. PR. #
 21136-02-3

 S. Type
 Mold
 Depth/Elev.

 Location
 Seattle, WA

 Curing Age, Days
 10

Sample ID	39045/CAA-4 Ex-Situ	(4) Sub	sample	1	Location		Seattle, WA	
Add. Info	-	Mixing/Molding	Date	09/25/21		Curing Age	e, Days	10
	ASTM D 1633: Standa	rd Test Methods i	for Com	pressive Strength	of Molded So	oil-Cement Cyl	inders	
					ľ			
		ME	THOD	В				
	SAMPLE DATA			WATER CONTE	NT DETERN	IINATION		
Initial Height,		5.682		Mass of Wet Sar			1451.5	
Initial Diamet		2.977		Mass of Dry San	•		1150.8	
Height-to-Dia	ameter Ratio	1.91		Mass of Tare, g		_	360.0	
Area, in ²		6.96		Moisture, %			38.0	
Volume, in ³		39.55						
Mass of Sam	. •	1162.0						
Wet Density,		111.9						
Dry Density, Machine Spe		81.1 0.050						
Strain rate, %		0.88						
, .								
			TEST	DATA				
	Load Cell ID #	11/1015			Digita	al Caliper ID #	17/583	
	Compression Device ID #	10/1014				ut Device ID #	10/1016	
	Balance ID #	1036/1037				Oven ID#	758/496	
		_	ī		Ī	•		
	ad at Failure, lbf			1642		[
-	ross-sectional Area, in ²			6.96		Failure Code	3	
-	Strength at Failure, psi			236	ŗ			
	Factor for Height to Diameter			1.00			- "	
-	ompressive Strength at Fa			236		r	Failure Sketch	Í
Note 2: * - A c	onversion factor based on H/D=	1.15 (C.F908 as: DESCRIPT		nd add. correction p	per ASTM C42	?)		
		DESCRIPT	ION			,		
						Failure Type:		
							Cone and She	ear
•	U	SCS (ASTM D24	87: D24	88)				
		REMARK	(S					
•								



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10/23/21 18

Tests, Llc Web: www.test-llc.com Client Pr. # 200016 Pr. Name Time Oil Terminal Subsample Sample ID 39045/CAA-4 Ex-Situ (4)

Lab. PR. # 21136-02-3 Depth/Elev. S. Type Mold -Location Seattle, WA

Add. Info	-	Mixing/Molding Date	09/25/21		Curing Age,	Days	28
	ASTM D 1633: Standar	rd Test Methods for Com	pressive Strength	of Molded So	oil-Cement Cylind	lers	
		METHOD	В				
Initial Height Initial Diame Height-to-Dia Area, in ² Volume, in ³ Mass of San Wet Density Dry Density, Machine Spe Strain rate, 9	ter, in ameter Ratio nple, g , pcf pcf eed, in/min	5.689 2.977 1.91 6.96 39.60 1162.5 111.8 80.9 0.050 0.88	WATER CONTE Mass of Wet Sar Mass of Dry Sar Mass of Tare, g Moisture, %	mple and Ta	re, g	1460.6 1139.2 299.0 38.3	
		TEST	DATA				
	Load Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037			ut Device ID #	17/583 10/1016 758/496	
Specimen C Compressive Conversion	oad at Failure, lbf ross-sectional Area, in ² e Strength at Failure, psi Factor for Height to Diameter ompressive Strength at Fai		4685 6.96 673 1.00 673		Failure Code	3	n
-	conversion factor based on H/D=	1.15 (C.F908 as 100% a. DESCRIPTION	nd add. correction p	per ASTM C42	Failure Type:	one and Sh	
	US	SCS (ASTM D2487: D24	88)				
		REMARKS					



Client Pr.

Pr. Name

Sample ID

TIMELY

39045/CAA-4 Ex-Situ (4)

Engineering Soil

200016

Time Oil Terminal

Tests, Llc

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Phone: 770-938-8233

Fax: 770-923-8973

Web: www.test-llc.com

Subsample ID



Location

Tested By

EB/KP

Date 10/05/21 18 Checked By Lab. PR. # 21136-02-3 Mold Depth/Elevation S. Type

Seattle, WA

Add. Info		-		· · · · ·	xing/Molding Da			09/25/21]	Cu	ring Age, Days	10
				ASTM D	-				-		nductivity of Sa	aturated Porous	
Ir	nitial San	nple Data	a (Before	e Test)			Test Data		(Final Data (After Test)	
Height			lin .		m Speed			11	1			,	
Diameter		2.968	in		m Board Nu	ımber		12		Average Heig	ght of Sample	2.931 in	7.44 cm
Area			in ²		cm ² Cell Num			14			meter of Sample	2.969 in	7.54 cm
Volume			cm ³	0.0117 f	2	np Numbe	•	2B		Area	6.92 in ²	44.67 cm ²	
Mass		592.7	g	1.31 I	o Flow Pur	•		1.12E-04	cm ³ /sec	Volume	332.53 cm ³	0.0117 ft ³	Dry Density 80.6 pcf
Specific Gra	avity	2.700	(Assume	d)	B - Value			0.95		Mass	603.5 g	1.33 lb	Vol. of Voids 173.45 cm ³
Dry Density	-	80.7	pcf		Cell Pres	sure		95.0	psi				Vol. of Solids 159.07 cm ³
	•		•		Back Pre	ssure		90.0	psi				Void Ratio 1.09
	Moist	ture Cont	ent	_	Confining	g (Effective) Pressure	5.0	psi		Moisture	Content	Saturation 100.3 %
Mass of wet	sample &	tare	592.7	g	Max Hea	d		150.53	cm	Mass of wet	sample & tare	688.4 g	
Mass of dry		tare	429.5	g	Min Head			149.82	cm	•	sample & tare	514.4 g	
Mass of tare	9		0.0	g		n Gradient		20.22		Mass of tare		84.9 g	
% Moisture			38.0		Minimum	Gradient		20.12		% Moisture		40.5	
TIME	FUNCTI	ON	Δt	READING	Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)	Note	: Deaired Water Used for Po	ermeability Test.
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		$T_x(^{\circ}C)$	@ T _x	R_T	@ 20 °C		DESCRIPTION	
10/05/21	10	5	-	2.14	150.53	20.22	23.5	-	-	-	NA		USCS
10/05/21	10	15	600	2.13	149.82	20.12	23.5	1.24E-07	0.920	1.14E-07	1		(ASTM D2487;2488)
10/05/21	10	25	600	2.14	150.53	20.22	23.5	1.24E-07	0.920	1.14E-07	1		NA
10/05/21	10	35	600	2.13	149.82	20.12	23.5	1.24E-07	0.920	1.14E-07	*	REMARK	S CS
10/05/21	10	45	600	2.14	150.53	20.22	23.5	1.24E-07	0.920	1.14E-07	* Botto	om Half of the mold was used	
10/05/21	10	55	600	2.13	149.82	20.12	23.5	1.24E-07	0.920	1.14E-07	*		
10/05/21	11	5	600	2.14	150.53	20.22	23.5	1.24E-07	0.920	1.14E-07	*		
				<u>I</u>			Hydraulic Cor		1	1.1E-07	cm/sec		
Flow pump	ID#	24	44] ,	Balance ID #	1035/1036	1, 2. 20	Differential F	Pressure M		1	587	
Thermometer			/985	1	Oven ID#	496/758		Board Press				776	
Syringe ID #			46	1		100,100		Pore Pressu				26/27	

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for

calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.

3



Client Pr. :

TIMELY

Engineering Soil

200016

Tests, llc

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Fax: 770-923-8973

Web: www.test-llc.com



Lab. PR. #

Tested By Date EB/KP

Checked By

21136-02-3

10/23/21

Pr. Name					Time (Oil Term	inal				S. Type	Mol	d	Depth/I	Elevation			-	
Sample ID		390	045/CAA-	4 Ex-Situ (4	l)		Subs	ample ID	4		Location				Seattle, WA				
Add. Info		-		N	lixing/Mo	olding Dat	te		09/25/21				Curin	g Age, Days				28	
				ASTM	-					-	draulic Cor thod D, Cor	-			us				
lı	nitial Sar	mple Dat	a (Befor	e Test)				Test Dat	a					Final Data	(After Test)				
Height		3.009	l _{in}	7.64	cm S	Speed			12	1									
Diameter		2.973	in			Board Nu	ımber		5	1	Average Hei	ght of Samp	le	3.010	in	7.65	cm		
Area		6.94	in ²		cm ²	Cell Num	ber		15	1	Average Dia			2.974	in	7.55			
Volume		342.30	cm ³	0.0121	ft ³	Flow Pun	np Numbei	r	4B		Area	6.95	in ²	44.82	cm ²		ı		
Mass		612.1	g	1.35	lb F	Flow Pun	np Rate*		5.60E-05	cm ³ /sec	Volume	342.64	cm ³	0.0121	ft ³	Dry De	nsity	80.7	pcf
Specific Gra	avity	2.700	(Assume	ed)	E	B - Value			0.95		Mass	622.8	g	1.37	lb	Vol. of	Voids	178.61	cm ³
Dry Density		80.7	pcf		C	Cell Pres	sure		95.0	psi					_	Vol. of	Solids	164.03	cm ³
						Back Pre			90.0	psi						Void Ra	atio	1.09	
	Mois	ture Cont		-		_) Pressure	5.0	psi			sture Co		=	Saturat	ion	100.7	%
Mass of we	•		612.1	g		Max Hea			187.81	cm	Mass of wet			710.1	g				
Mass of dry	•	tare	442.8	g	I -	Min Head	-		185.70	cm	Mass of dry s	•	re	530.2	g				
Mass of tar			0.0	g			Gradient		24.56	<u> </u>	Mass of tare			87.4	g				
% Moisture			38.2				Gradient		24.29		% Moisture	T		40.6					
	FUNCT	r	Δt	READING		ead	Gradient	Temp.			(cm/sec)		Note: D	Deaired Wate	er Used for Pe	rmeabil	ity Test	t.	
DATE	HOUR	MIN	(sec)	DP, (psi) (c	cm)		T _x (°C)	@ T _x	R _T	@ 20 °C			DESCRIPT	ION	-			
10/23/21	7	20	-	2.65	18	6.40	24.38	23.3	-	-	-		NA				Į	JSCS	
10/23/21	7	30	600	2.64	18	5.70	24.29	23.3	5.13E-08	0.925	4.75E-08						(ASTM	D2487;2488	3)
10/23/21	7	40	600	2.67	18	37.81	24.56	23.3	5.12E-08	0.925	4.73E-08							NA	
10/23/21	7	50	600	2.66	18	37.10	24.47	23.3	5.10E-08	0.925	4.71E-08	*			REMARK	.S			_
10/23/21	8	0	600	2.66	18	37.10	24.47	23.3	5.11E-08	0.925	4.72E-08	*	Bottom	Half of the m	nold was used	for test	ing.		
10/23/21	8	10	600	2.67	18	37.81	24.56	23.3	5.10E-08	0.925	4.71E-08	*							
10/23/21	8	20	600	2.65	18	6.40	24.38	23.3	5.11E-08	0.925	4.72E-08	*							
					F	Reported	Average I	Hydraulic Co	nductivity*		4.7E-08	cm/sec							
Flow pump	ID#	10	043		Balance	ID#	1035/1036		Differential	Pressure I	Meter ID #	•		1045/1049					
Thermomet	er ID#	796	6/985		Oven ID	#	496/758		Board Press	sure Mete	r ID#			1042					
Syringe ID	#	10	046					•	Pore Pressu	ure Meter	ID#			779/780					

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for



Timely Engineering Soil

 Γ ESTS, LLC

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Tested By

KP/IH

Date

10/05/21

	1E515, L	LC	Web: www.te	st-IIc.com		REDITED		Checked By	10
Client Pr. #		200016				Lab. PR. #		21136-02-3	
Pr. Name	Т	ime Oil Termir	nal			S. Type	Mold	Depth/Elev.	-
Sample ID	39046/2-21	39046/2-21 Subsample 1				Location		Seattle, WA	
Add. Info	-	Mixing/Mol	ding Date	09/25/2	21		Curing A	ge, Days	10

Sample ID	39046/2-21	Subsample	1	Location	Seattle, WA	
Add. Info	-	Mixing/Molding Date	09/25/21		Curing Age, Days	10
	ASTM D 1633: Standa	rd Test Methods for Con	pressive Strength	of Molded So	oil-Cement Cylinders	
		METHOD		Ţ		
		METHOD	В	<u>[</u>		
	SAMPLE DATA		WATER CONTE	NT DETERM	MINATION	
Initial Heigh	ht, in	5.585	Mass of Wet Sar	mple and Ta	re, g 1502.3	
Initial Diam	•	2.965	Mass of Dry San	nple and Tar		
-	Diameter Ratio	1.88	Mass of Tare, g		301.8	
Area, in ²	2	6.90	Moisture, %		28.6	
Volume, in		38.56				
Mass of Sa	. •	1202.2				
Wet Density Dry Density		118.8 92.3				
	peed, in/min	0.050				
Strain rate,		0.90				
		TES ⁻	Γ DATA			
	Load Cell ID #	11/1015			al Caliper ID # 17/583	
	Compression Device ID #	10/1014		Readou	ut Device ID # 10/1016	
	Balance ID #	1036/1037			Oven ID # 758/496	
Maximum L	Load at Failure, lbf		385	Ī		
Specimen (Cross-sectional Area, in ²		6.90		Failure Code 3	
Compressiv	ve Strength at Failure, psi		56			
Conversion	Factor for Height to Diamete	r Ratio	1.00			
Reported (Compressive Strength at Fa	ilure, psi	56	1	Failure Sketo	ch
Note 2: * - A	conversion factor based on H/D=	=1.15 (C.F908 as 100% a	and add. correction p	er ASTM C42	2)	
		DESCRIPTION	•			
					Failure Type:	
					Cone and S	hear
	U	SCS (ASTM D2487: D2	488) 7			
			_			
		REMARKS				
					-	



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Tested By

KP/IH

Date

10/23/21 10

	1ESIS, L	LC Web: w	ww.test-llc.com		REDITED		Checked By	16
Client Pr. #		200016			Lab. PR. #		21136-02-3	
Pr. Name	Т	S. Type	Mold	Depth/Elev.	-			
Sample ID	39046/2-21	Subsar	mple 2		Location		Seattle, WA	
Add. Info	-	Mixing/Molding Da	ate 09/25	5/21	[[Curing A	ge, Days	28
	_				_		-	

Pr. Name		ime Oil Terminal		S. Type	Mold	Depth/Elev.	-
Sample ID	39046/2-21	Subsample	2	Location		Seattle, WA	
Add. Info	-	Mixing/Molding Date	09/25/21	l L	Curing A	ge, Days	28
	ASTM D 1633: Standa	ard Test Methods for Com	pressive Strength	of Molded Soi	l-Cement Cy	linders	
			-	•	•		
		METHOD	В				
	SAMPLE DATA		WATER CONTE	NT DETERM	INATION		
Initial Heigl		5.676	Mass of Wet Sar			1513.4	
Initial Diam		2.977	Mass of Dry San	•		1243.3	
	Diameter Ratio	1.91	Mass of Tare, g	•	, 3	298.4	
Area, in ²		6.96	Moisture, %			28.6	
Volume, in	3	39.51					
Mass of Sa	ample, g	1216.3					
Wet Densit	• • •	117.3					
Dry Density		91.2					
Machine S∣ Strain rate,	peed, in/min	0.050					
Strain rate,	70 / 111111	0.88					
		TEST	DATA				
	Load Cell ID #	11/1015		Digital	Caliper ID #	‡ 17/583	
	Compression Device ID #	10/1014			Device ID #		
	Balance ID #	1036/1037			Oven ID #	-	
				_			
	_oad at Failure, lbf		1600				
Specimen	Cross-sectional Area, in ²		6.96	F	ailure Code	3	
Compressi	ve Strength at Failure, psi		230				
Conversior	n Factor for Height to Diamete	r Ratio	1.00				
Reported (Compressive Strength at Fa	ilure, psi	230			Failure Sketch	I
Note 2: * - A	conversion factor based on H/D	=1.15 (C.F908 as 100% a	nd add. correction p	per ASTM C42)			
		DESCRIPTION					
				F	ailure Type		
		ICCC (ACTM DO407, DO4	00)			Cone and She	∍ar
	C	ISCS (ASTM D2487: D24	(88) 				
		REMARKS					



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Average Diameter of Sample

Mass of wet sample & tare

Mass of dry sample & tare

6.92

338.99

646.1

Moisture Content

Area

Mass

Volume

Mass of tare

2.3E-06

cm/sec

Tested By Date

EB/KP 10/05/21

			Tests, llc	Web: www	w.test-llc.com	1		REDITED		Checked By	18
Client Pr. #			200016				Lab. PR. #		21136-02-3		
Pr. Name	Time Oil Terminal						S. Type	Mold	Depth/Elevation		=
Sample ID		39046/2	2-21	Subs	ample ID	3	Location		Seattle, WA		
Add. Info	=		Mixing/Molding Dat	е		09/25/21		Curing	Age, Days		10

41

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow) **Initial Sample Data (Before Test) Final Data (After Test) Test Data** Speed 10 **Board Number** 3 Average Height of Sample

leight	2.987	in	7.59	cm
Diameter	2.968	in	7.54	cm
Area	6.92	in ²	44.64	cm ²
/olume	338.65	cm ³	0.0120	ft ³
Mass	636.9	g	1.40	lb
Specific Gravity	2.700	(Assumed	d)	•
Dry Density	91.1	pcf		
		•		

Thermometer ID #

Volume	338.65	cm³	0.0120	ft°	Flow Pump Number	3A	
Mass	636.9	g	1.40	lb	Flow Pump Rate*	2.24E-04	cm ³ /se
Specific Gravity	2.700	(Assumed	d)	_	B - Value	0.95	
Dry Density	91.1	pcf			Cell Pressure	95.0	psi
		-			Back Pressure	90.0	psi
Mois	ture Cont	ent			Confining (Effective) Pressure	5.0	psi
Mass of wet sample 8	tare	636.9	g		Max Head	15.47	cm
Mass of dry sample &	tare	494.6	g		Min Head	14.77	cm
Mass of tare		0.0	g		Maximum Gradient	2.04	

				3			_				
% Moisture			28.8		Minimum	Gradient		1.95		% Moisture	
TIME	FUNCTI	ON	Δt	READING	Head	Gradient	Temp.	PERME	ABILITY	(cm/sec)	
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		$T_x(^{\circ}C)$	@ T _x	R_T	@ 20 °C	
10/05/21	9	20	-	0.21	14.77	1.95	23.5	-	-	-	
10/05/21	9	30	600	0.22	15.47	2.04	23.5	2.52E-06	0.920	2.32E-06	
10/05/21	9	40	600	0.21	14.77	1.95	23.5	2.52E-06	0.920	2.32E-06	
10/05/21	9	50	600	0.22	15.47	2.04	23.5	2.52E-06	0.920	2.32E-06	*
10/05/21	10	0	600	0.21	14.77	1.95	23.5	2.52E-06	0.920	2.32E-06	*
10/05/21	10	10	600	0.22	15.47	2.04	23.5	2.52E-06	0.920	2.32E-06	*
10/05/21	10	20	600	0.21	14.77	1.95	23.5	2.52E-06	0.920	2.32E-06	*

Cell Number

		Reported	Average I	Hydraulic Conductivity*
w pump ID #	475	Balance ID #	1035/1036	Differentia

796/985

Oven ID# 496/758

Differential Pressure Meter ID # Board Pressure Meter ID #

2.988 2.969 cm² 44.67 0.0120

1.42

727.7

576.1

81.5

Dry Density Vol. of Voids Vol. of Solids Void Ratio

Saturation

7.59 cm

7.54 cm

91.0 pcf cm^3 155.84 cm³ 183.16 0.85 97.3

30.7 Note: Deaired Water Used for Permeability Test. **DESCRIPTION**

NA		
		(A
	DEMARKS	

USCS STM D2487;2488) NA

REMARKS Bottom Half of the mold was used for testing.

> 469 1041 26/27

Syringe ID # 491 Pore Pressure Meter ID #

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



Client Pr. #

Pr. Name

TIMELY

Engineering Soil

200016

Time Oil Terminal

Tests, llc

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Mold

Lab. PR. #

S. Type

Tested By Date

EB/KP 10/23/21

Checked By

21136-02-3

Depth/Elevation

18

Sample ID			39046	5/2-21		Subs	ample ID	4		Location			Seattle, WA			
Add. Info		-		M	ixing/Molding Da	ate		09/25/21			Curin	g Age, Days			28	
				ASTM [•				-	*	nductivity of Satu		ıs			
li	nitial Sar	nple Dat	a (Befor	e Test)			Test Dat	а		Final Data (After Test)						
Height		3.031	in	7.70	cm Speed			11	1							
Diameter		2.967	in		cm Board N	umber		6		Average Hei	ght of Sample	3.032	in	7.70 cr	n	
Area		6.91	in ²		cm ² Cell Nur	nber		5		Average Dia	meter of Sample		in	7.54 cr	n	
Volume		343.41	cm ³	0.0121	ft ³ Flow Pu	mp Numbe	r	1A		Area	6.92 in ²		cm ²			
Mass		641.0	g	1.41	lb Flow Pu	mp Rate*		1.12E-04	cm ³ /sec	Volume	343.75 cm ³	0.0121	ft ³	Dry Dens	,	pcf
Specific Gra	-	2.700	(Assume	d)	B - Valu	-		0.95	_	Mass	650.6 g	1.43	lb	Vol. of Vo		
Dry Density	,	90.7	pcf		Cell Pre			95.0	psi					Vol. of Sc		t cm ³
					Back Pr			90.0	psi					Void Ratio		4
		ture Cont		ר		• ,	e) Pressure	5.0	psi		Moisture Co			Saturation	n 95.4	%
Mass of we				9	Max Hea Min Hea			68.93	cm		sample & tare		g			
Mass of dry Mass of tare	•	tare	499.0 0.0	9 a		ւս m Gradient		66.12 8.95	cm	Mass of tare	sample & tare		g g			
% Moisture			28.5	- ⁹		n Gradient		8.59	1	% Moisture		30.4	9			
	FUNCT	ION	Δ t	READING	1	Gradient	Temp.		I ARII IT∨	' (cm/sec)	Noto: I	Deaired Water	Llood for Do	rmoobility	Toet	
DATE	HOUR	MIN	(sec)	DP, (psi)		Gradient	T _x (°C)	@ T _x	R _T	@ 20 °C	Note. 1	DESCRIPTION		inteability	1631.	
10/23/21	6	40	(360)	0.94	66.12	8.59	23.3	€ 1 _X	-	_	NA	DESCRIFTR	JIV		USCS	
10/23/21	6	50	600	0.94	68.93	8.95	23.3	2.86E-07	0.925	2.65E-07	1			(0303 ASTM D2487;2488	8)
	7	0	600	0.97	68.23	8.86	23.3	2.82E-07	0.925	2.61E-07	1				NA	<u>'</u>
10/23/21	-		1	 		-				_	*		55111511	L	NA	
10/23/21	7	10	600	0.97	68.23	8.86	23.3	2.83E-07	0.925	2.62E-07	* Rottom	Half of the mo	REMARK			_
10/23/21	7	20	600	0.95	66.82	8.68	23.3	2.86E-07	0.925	2.65E-07	. Bottom	riali oi tile ilit	nu was useu	າດເຂວແກ່	i •	
10/23/21	7	30	600	0.97	68.23	8.86	23.3	2.86E-07	0.925	2.65E-07	*					
10/23/21	7	40	600	0.96	67.53	8.77	23.3	2.85E-07	0.925	2.63E-07	*					
				_	Reporte	d Average	Hydraulic Co	nductivity*		2.6E-07	cm/sec					
Flow pump	ID#	2	22		Balance ID#	1035/1036		Differential	Pressure I	Meter ID #		1107				
Thermomet	er ID#	796	/985		Oven ID#	496/758		Board Press	sure Mete	r ID#		1042				
Syringe ID :	#	1.	40	1			-	Pore Pressi	ıre Meter	ID#		779/780				

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for



TIMELY Engineering $\mathbf{S}_{\mathrm{OIL}}$

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Tested By Date

Checked By

KP/IH

10/07/21	
18	

	TESTS, L	LC	Web: www.te		ASHIO	
Client Pr. #		200016			Lab. PR. #	
Pr. Name	Ti	ime Oil Termir	nal		S. Type	Mold
Sample ID	39047/2-20		Subsample	1	Location	
Add. Info	-	Mixing/Mo	Iding Date	09/27/21		Curing

21136-02-3 Depth/Elev. Seattle, WA

Add. Info	-	Mixing/Molding Date	09/27/21		Curing Age, Days	10
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	oil-Cement Cylinders	
		METHOD	В			
Initial Height Initial Diame Height-to-Dia Area, in ² Volume, in ³ Mass of Sam Wet Density, Dry Density, Machine Spe Strain rate, 9	ter, in ameter Ratio nple, g , pcf pcf eed, in/min	5.633 2.977 1.89 6.96 39.21 1187.9 115.4 87.9 0.050 0.89	WATER CONTE Mass of Wet Sar Mass of Dry San Mass of Tare, g Moisture, %	mple and Ta	re, g 1485.6	
		TEST	DATA			
	Load Cell ID # Compression Device ID # Balance ID #	11/1015 10/1014 1036/1037			al Caliper ID # 17/583 ut Device ID # 10/1016 Oven ID # 758/496	I
Specimen Compressive Conversion F	oad at Failure, lbf ross-sectional Area, in ² e Strength at Failure, psi Factor for Height to Diametel compressive Strength at Fai		896 6.96 129 1.00 129		Failure Code 3 Failure Sket	ch
Note 2: * - A c	onversion factor based on H/D=	1.15 (C.F908 as 100% an DESCRIPTION	nd add. correction p	per ASTM C42	Failure Type:	Shear
	U.	SCS (ASTM D2487: D24	88)		T Gone and G	ПСА
		REMARKS				



TIMELY Engineering Soil

1874 Forge Street Tucker, GA 30084

Phone: 770-938-8233

Fax: 770-923-8973



Tested By

KP/IH

Date

10/25/21 10

	1 ESTS, L	Web: www.te		REDITED		Checked By	16
Client Pr. #		200016		Lab. PR. #			
Pr. Name	Т	ime Oil Terminal	S. Type	Mold	Depth/Elev.	-	
Sample ID	39047/2-20	Subsample	2	Location		Seattle, WA	
Add. Info	•	Mixing/Molding Date	09/27/21		Curing A	ge, Days	28

Sample ID	39047/2-20	Subsample	2	Location	Seattle, WA	
Add. Info	-	Mixing/Molding Date	09/27/21		Curing Age, Days	28
	ASTM D 1633: Standa	rd Test Methods for Com	pressive Strength	of Molded So	il-Cement Cylinders	
				ľ		
		METHOD	В			
	SAMPLE DATA		WATER CONTE	NT DETERM	IINATION	
Initial Height,		5.594	Mass of Wet Sar			1
Initial Diamet		2.980	Mass of Dry Sam	-		1
Height-to-Dia		1.88	Mass of Tare, g	•	302.0	
Area, in ²		6.97	Moisture, %		31.6	
Volume, in ³		39.02				•
Mass of Sam	ple, g	1175.7				
Wet Density,	-	114.8				
Dry Density,		87.2				
Machine Spe		0.050				
Strain rate, %	0 / 111111	0.89				
		TEST	DATA			
	Load Cell ID #	11/1015		Digito	I Caliper ID # 17/583	1
	Compression Device ID #	10/1014			I Caliper ID # 17/583 It Device ID # 10/1016	1
	Balance ID #	1036/1037		readou	Oven ID # 758/496	
	Dalarioo ID II				0.1011.12 11 1 1 0 0 1 1 0 0]
Maximum Lo	ad at Failure, lbf		2742			
	oss-sectional Area, in ²		6.97		Failure Code 3	1
Compressive	Strength at Failure, psi		393			1
Conversion F	actor for Height to Diameter	· Ratio	1.00	'		
Reported Co	ompressive Strength at Fai	lure, psi	393		Failure Sket	:ch
Note 2: * - A c	onversion factor based on H/D=	-1.15 (C.F908 as 100% ai	nd add. correction p	per ASTM C42,)	1
		DESCRIPTION	·	ŕ		
					Failure Type:	1
					Cone and S	3hear
	U	SCS (ASTM <u>D2487: D24</u>	88)			
		REMARKS				
ſ		KLWAKKO				
Ĺ						



Client Pr. #

TIMELY

Engineering Soil

200016

Tests, llc

1874 Forge Street Tucker, GA 30084

Phone: 770-938-8233

Fax: 770-923-8973

Web: www.test-llc.com



Lab. PR. #

Tested By

Checked By

21136-02-3

10/0

Date

10/07/21

EB/KP

					2000.0						L		·		
Pr. Name					Time Oil Terr	minal				S. Type	Mold	Depth/Elevation	-		
Sample ID			39047	/2-20		Subs	ample ID	3		Location		Seattle, W	A		
Add. Info		-		Mi	xing/Molding D	ate		09/27/21			(Curing Age, Days	10		
				ASTM D	5084; Stand	ard Test I	Method for	Measurem	ent of Hy	/draulic Co	nductivity of	Saturated Porous			
					Materials	Using a F	lexible Wal	I Permeam	eter (Me	thod D, Cor	stant Rate of	f Flow)			
Ir	nitial Sar	nple Dat	a (Before	e Test)			Test Dat	a		Final Data (After Test)					
Height		3.005	in	7.63	cm Speed			10	1						
Diameter		2.969	in	7.54	cm Board N	lumber		9	1	Average Hei	ght of Sample	3.006 in	7.64 cm		
Area		6.92	in ²	44.67	cm ² Cell Nur	mber		41		Average Dia	meter of Sample	e 2.970 in	7.54 cm		
Volume		340.92	cm ³	0.0120 f	ft ³ Flow Pu	ımp Numbe	r	2A		Area	6.93 in ²	44.70 cm ²			
Mass		629.4	g	1.39 I	b Flow Pu	ımp Rate*		2.24E-04	cm ³ /sec	Volume	341.27 cm	n ³ 0.0121 ft ³	Dry Density 87.6 pcf		
Specific Gra	-		(Assume	d)	B - Valu			0.95]	Mass	642.7 g	1.42 lb	Vol. of Voids 163.80 cm ³		
Dry Density		87.7	pcf		Cell Pre			95.0	psi				Vol. of Solids 177.46 cm ³		
					Back Pr			90.0	psi				Void Ratio 0.92		
		ture Cont		1		ng (Effective	e) Pressure	5.0	psi			re Content	Saturation 99.8 %		
Mass of wet	'			g	Max He			17.59	cm		sample & tare	724.0 g			
Mass of dry Mass of tare		tare	479.0 0.0	9	Min Hea	ad m Gradient		16.88 2.30	cm	Mass of dry	sample & tare	560.5 g 81.5 g			
% Moisture	7		31.4	9		n Gradient		2.30	1	% Moisture		34.1			
	FUNCTI	ION	Δt	READING	•	Gradient	Temp.	1	A DII ITV	(cm/sec)	No	ote: Deaired Water Used for I	Parmachility Toot		
DATE	HOUR	MIN				Gradient	T _x (°C)	@ T _x	R _T	@ 20 °C	INC		remeability rest.		
			(sec)	DP, (psi)	(cm)	0.00		₩ 1 _X	IXT	@ 20 0	NA NA	DESCRIPTION	¬		
10/07/21	8	5	-	0.25	17.59	2.30	23.1	-	-	-	- '"	•	USCS		
10/07/21	8	15	600	0.24	16.88	2.21	23.1	2.22E-06	0.929	2.06E-06	4		(ASTM D2487;2488)		
10/07/21	8	25	600	0.25	17.59	2.30	23.1	2.22E-06	0.929	2.06E-06			NA		
10/07/21	8	35	600	0.24	16.88	2.21	23.1	2.22E-06	0.929	2.06E-06	*	REMAR			
10/07/21	8	45	600	0.25	17.59	2.30	23.1	2.22E-06	0.929	2.06E-06	* Bo	ottom Half of the mold was use	ed for testing.		
10/07/21	8	55	600	0.24	16.88	2.21	23.1	2.22E-06	0.929	2.06E-06	*				
10/07/21	9	5	600	0.25	17.59	2.30	23.1	2.22E-06	0.929	2.06E-06	*				
					Reporte	d Average I	Hydraulic Co	nductivity*		2.1E-06	cm/sec				
Flow pump	ID#	24	44	E	Balance ID#	1035/1036		Differential I	Pressure I	Meter ID #		346			
Thermomet	Thermometer ID # 796/985 Oven ID #			Oven ID#	D# 496/758 Board Pressure Meter				r ID#		571				
Syringe ID #	Syringe ID # 245				Pore Pressure Meter ID						29				
1		_	_	_											

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate is used for calculations of HC (ASTM STP 977) results at steady Differential Pressure (DP) Readings at the range of +/-5%. Permeation was stopped after HC versus Time (see table above) showed no significant upward or downward trend.



Client Pr.

Pr. Name

TIMELY

Engineering Soil

200016

Time Oil Terminal

Tests, llc

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Fax: 770-923-8973

Web: www.test-llc.com



Mold

Lab. PR. #

S. Type

Tested By

Date

21136-02-3

Depth/Elevation

EB/KP

Checked By

10/25/21

Sample ID			39047	7/2-20		Subs	ample ID	4		Location	1	Seattle	, WA			
Add. Info		-		Mi	xing/Molding Da	ate		09/27/21			Curin	ng Age, Days			28	
				ASTM D	-				-		nductivity of Satu					
li	Initial Sample Data (Before Test)						Test Dat	a		Final Data (After Test)						
Height Diameter Area Volume Mass Specific Gra Dry Density Mass of we Mass of dry Mass of tare % Moisture	Moist t sample & r sample & e	2.967 6.91 343.86 635.1 2.700 87.4	in in in in 2 cm³ g (Assume pcf eent 635.1 481.8 0.0 31.8	7.54 d 44.61 d 0.0121 f 1.40 l	Flow Pur B - Value Cell Pres Back Pre Confinin Max Hea Min Head Maximur	nber mp Numbe mp Rate* e ssure essure g (Effective	e) Pressure	10 14 14 2a 2.24E-04 0.95 95.0 90.0 5.0 205.39 203.99 26.63 26.45	cm³/sec psi psi psi cm cm	Average Dia Area Volume Mass	ght of Sample meter of Sample 6.92 in² 344.21 cm³ 645.4 g Moisture Co sample & tare sample & tare	3.036 in 2.968 in 44.64 cm² 0.0122 ft³ 1.42 lb content 725.8 g 562.3 g 80.5 g 33.9	7.5 Dry Vol. Vol.	cm 54 cm Density of Voids of Solids d Ratio uration	165.74 178.47 0.93	pcf cm ³ cm ³
	FUNCTI		Δt	READING	Head	Gradient	Temp.			(cm/sec)	Note: I	Deaired Water Used	for Perme	ability Test		
DATE	HOUR	MIN	(sec)	DP, (psi)	(cm)		T _x (°C)	@ T _x	R _T	@ 20 °C	<u> </u>	DESCRIPTION				
10/25/21	7	0	-	2.91	204.69	26.54	24.7	-	-	-	NA			l	USCS	
10/25/21	7	10	600	2.90	203.99	26.45	24.7	1.89E-07	0.895	1.69E-07]			(ASTM	D2487;2488)	_
10/25/21	7	20	600	2.92	205.39	26.63	24.7	1.89E-07	0.895	1.69E-07					NA	
10/25/21	7	30	600	2.92	205.39	26.63	24.7	1.88E-07	0.895	1.69E-07	*		MARKS			_
10/25/21	7	40	600	2.90	203.99	26.45	24.7	1.89E-07	0.895	1.69E-07	* Bottom	Half of the mold was	s used for t	esting.		
10/25/21	7	50	600	2.92	205.39	26.63	24.7	1.89E-07	0.895	1.69E-07	*					
10/25/21	8	0	600	2.91	204.69	26.54	24.7	1.89E-07	0.895	1.69E-07	*					
					Reported	d Average	Hydraulic Co	nductivity*		1.7E-07	cm/sec					
Flow pump	ID#	2	44	E	Balance ID #	1035/1036		Differential I	Pressure I	Meter ID #		346				
Thermomet	er ID#	796	/985] (Oven ID #	496/758		Board Press	sure Mete	r ID#		694/459				
Syringe ID # 245				-	Pore Pressu	ure Meter	ID#		372							

*Constant Rate of Flow System (Flow Pump with Calibrated Syringe for Inflow and Calibrated Graduated Pipette for outflow) is capable to maintain a constant rate of inflow & outflow through the fully saturated sample with accuracy +/-5%. Flow Pump Rate isused for

Sample S			1	Sample Depth (ft.	<30 psi		30 -	50 psi		>1×10 ⁻⁶ cm/sec	1v10 ⁻⁶ - 1v10 ⁻⁷	cm/sec		Passing Result
2-42													6	
2-42 1 0 08/18/21 14.74 57 199 138 224 58.06.07 16.07 1.07 1.07 1.07 1.07 1.07 1.07 1.07 1	Cell #	Sample #	Date Sampled								cm/se	c)		COMMENTS
2-23					5-7 Day	10-DAY	21-DAY	28-DAY	42-DAY	7-DAY	10-DAY	28-DAY	42- DAY	COMMENTS
2-23	2-42	1	08/18/21	14.74	57	100	193	224			9.0F-07	1.6E-07		
2-15 4 4 002/3/11 133 60 116 272 277 716-77 13-6														
2-45 6 6 08/25/21 1163 54 117 224 331 11668 11569 12607 227 7 08/25/21 317 7 15 15 16 419 444 27 5.66 8 7 2.67 2.77 2.18 8 08/30/21 318.9 11 7 97 117 6 66 607 30 6	2-15	4			31						6.7E-07			
2-7	2-40				60	116								
2-11 8 08/80/21 1189 11 7 97 137 66607 30607 30607 241 10 0 09/01/21 17.75 9 10 327 316 36607 30608 316 36607 30608 316 36607 36608 316 36607 36608 316 36607 36608 316 36607 36608 316 36607 36608 316 36607 36608 316 36607 36608 316 36607 36608 316 36607 3660	2-45		08/25/21	16.3	54	117	224	331				1.2E-07		
2-41 10 09/01/21 17.75 93 3 32 316 34.67 5.06.08 2-41 11 09/01/21 17.75 93 3 32 27 5.76.08 2-43 11 09/01/21 16.42 106 187 374 11.60 5.06.08 2-46 13 09/01/21 18.7 70 71 11.60 2.16.07 2-46 13 09/01/21 18.7 70 71 11.60 2.16.07 2-47 11 09/01/21 18.7 70 71 11.60 2.16.07 2-48 13 09/01/21 18.7 70 71 11.60 2.16.07 2-49 14 09/01/21 18.7 70 71 11.60 2.16.07 2-40 13 09/01/21 18.7 70 71 11.60 2.16.07 2-47 11 09/01/21 18.5 70 70 17.7 2-48 18 09/01/21 18.7 70 71 17.7 2-49 18 09/11/21 18.7 17.7 2-21 18 09/11/21 12.5 11.60 11.			08/26/21	17.7	36	156	419	484			2.4E-06	1.5E-07		
2-41 10 090/121 1775 93 82 27 0.474-68 1.54-97 1 2-36 12 090/121 156-2 157 374 156-68 5.24-97 2-36 13 090/121 18.7 70 217 334 156-68 5.24-97 2-47 14 090/121 18.5 70 170 124-68 344-97 2-47 14 090/121 15.5 70 170 124-68 344-97 2-242 15 090/121 17 92 393 15.56-69 6-69 1 2-322 16 090/121 12.5 11 15.5 11 122 116-68 5.64-97 2-322 17 090/121 12.5 11 15.5 11 122 116-68 5.64-97 2-323 18 090/121 12.5 11 15.5 11 122 116-68 5.64-97 2-324 19 090/121 12.5 11 15.5 11 122 116-68 5.64-97 2-325 19 090/121 12.5 11 15.5 11 122 116-68 5.64-97 2-327 19 090/121 12.5 11 15.5 11 122 116-68 5.64-97 2-328 19 090/121 12.5 11 15.5 12.5 12.5 12.5 12.5 12.			08/30/21	18.9	11	47								
2-46 11 09(02/11 16.42 166 187 37.4 184.68 87.55.07 6.66.07 12.1 16.1 16.1 16.1 16.1 16.1 16.1 16.1			08/31/21	11.3	75		303				3.4E-07	5.0E-08		
2-36 12 050/2/21 16.27 306 137 70 217 15.56 12.67 1.24 15.66 13. 050/3/21 18.5 70 217 15.56 2.16 07 2.24 15 050/3/21 18.5 70 17.0 2.46 06 3.46 07 1.22 11.22														
2.46 13 09(3)(2) 187 70 217 13:696 2.167 2.27 14 09(0)(2) 18:5 70 170 2.27 14 15 09(0)(2) 18:5 70 170 2.2696 3.4607 2.22 16 0 09(0)(2) 13:5 81 17 92 333 15:566 9:607 2.23 16 0 09(0)(2) 13:5 81 1412 18:666 9:607 2.22 18 09(1)(2) 12:5 10:6 171 2.22 17 12:66 8:1607 2.22 18 09(1)(2) 12:5 10:6 171 2.2607 3.1607 2.22 18 09(1)(2) 12:5 10:6 171 2.2607 3.1607 2.22 18 09(1)(2) 12:5 10:6 171 2.2607 3.1607 2.22 18 09(1)(2) 12:5 10:6 171 2.2607 3.1607 2.2607 3.1607 2.20 12:8 1773 13:656 4.9568 3.1607 2.21 2.10 19:6 19:6 19:6 19:6 19:6 19:6 19:6 19:6											7.9E-07			
2.47					106									
2-24 15 09/08/21 135 08 1 15-06 95-07 1 15-05														
2-312 16 09/09/21 13.5 81 412 1.65 8.76 8.														
2-32(2) 17 09/10/21 20 31 162 12-66 81-67 52-68 12-67 22-5 18 09/11/21 12-5 106 37 1 28 07 52-68 1 28 09/13/21 17.6 14 30.7 13-68 49-68 12-7 12-8 12-8 12-8 12-8 12-8 12-8 12-8 12-8														
225 18 09/11/21 125 106 371 28607 52608 221 21 09/15/21 15 15 15 16 15 27 21 09/15/21 15 15 15 16 15 27 21 09/15/21 15 15 15 15 25 18 367 3266 31,607 221 22 17 22 1 09/15/21 15 15 15 15 15 15 15 15 15 15 15 15 15						81								
2-16						33				1				
2-2														
2-17 21 09/15/21 15-5 72 36 367 33-66 1.5-07 2-5 22 09/15/21 12 105 452 2 32-66 1.5-07 2-9 23 09/17/21 15-5 33 31 319 32-66 8.0-08 2-33 24 09/17/21 20 15-5 33 319 32-66 8.0-08 2-33 24 09/17/21 20 15-5 33 319 32-66 8.0-08 2-34 25 09/17/21 20 15-7 374 6.6-6-7 3.3-07						128				1				
2-5						75								
2-9 23 09/17/21 15.5 93 31.9 32.66 8.06.8 2.23 2.3 2.4 09/21/21 20 15/5 55.9 3.0 4.74-07 3.66.07 1.36.07 1.26.														
2-33														
CAA & ExSitu (1) 25 09/22/11 20 1156 385 186.07 1156.07 126.07 1														
CAA+ Ex-Situ (1) 26 09/22/21														
CAA-4 Ex-Situ (2) 28 09/23/21 201 475 7.55-07 3.75-07														
2-22 EH				7.6										
2-22 EH 29 09/24/71 19.5 104 208 3.2E-06 9.2E-08	CAA-4 Ex-Situ (2)	28	09/23/21	-		201		476			7.5E-07	3.7E-07		
2.21 East 31 0.9/25/21 15.3 5.6 230 2.3E-06 2.6E-07	2-22 EH	29		19.5		104		208			3.2E-06	9.2E-08		
CAA-4 Ex-Situ (4) 32 09/25/21 - 236 673 1,1E-07 4.7E-08	CAA-4 Ex-Situ (3)		09/24/21	-				612				6.0E-08		
2-20 East 33			09/25/21	15.3		56		230			2.3E-06	2.6E-07		
2-27 34 09/28/21 17 70 450 3.4E-06 3.0E-07 CAA-4 Ex-Situ (S) 35 09/28/21 - 280 768 7.6E-07 1.7E-07 4-72 36 09/29/21 - 88 335 3.7E-07 5.9E-08 CAA-4 SP 37 09/30/21 - 88 757 2.9E-08 4-9 38 10/02/21 20 132														
CAA-4 Ex-Situ (5) 35 09/28/21 - 88 335 3.7.6.07 5.76.07														
4-72 36 0.9/29/21 - 88 335 3.7E-07 5.9E-08 CAA-4SP 37 0.9/30/21 - 577 7.9E-08 - 4-9 38 10/02/21 20 132 2.8E-07 - 4-12 40 10/09/21 19 125 1.8E-07 - 4-2 41 10/11/21 18 66 9.3E-07 4-7 42 10/12/21 18 66 9.3E-07 4-1 43 10/13/21 15 34 73 5.8E-06 4-63 44 10/14/21 20 79 6.6E-07 4-58 45 10/15/21 10 92 7.3E-07 4-60 47 10/18/21 20 77 1.7E-07 4-53 48 10/19/21 16.5 118 7.0E-07 4-53 48 10/19/21 16.5 118 7.0E-07 4-46 49 10/20/21 13 99 4.7E-07 4-20 50 10/21/21 20 230 1.9E-07 4-22 51 10/22/21 18 336 2.0E-07 4-26 53 10/25/21 20 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>														
CAA-4SP 37 09;30/21 - 577 2,96.08 4-9 38 10/02/21 20 132 2.86.07 1412 40 10/09/21 19 125 1.86.07 1.86.														
4-9 38 10/02/21 20 132 2.8E-07 4-12 40 10/09/21 19 125 1.8E-07 4-2 41 10/11/21 18 75 1.7E-06 6.4E-07 4-7 42 10/12/21 18 66 9.3E-07 9.3E-07 4-1 43 10/13/21 15 34 73 5.8E-06 9.8E-07 4-63 44 10/14/21 20 79 6.6E-07 6.6E-07 4-58 45 10/15/21 13 53 5.8E-07 9.8E-07 4-44 46 10/16/21 13 53 5.8E-07 9.8E-07 4-53 48 10/16/21 13 53 5.8E-07 1.7E-07 4-53 48 10/19/21 16.5 1118 7.0E-07 1.7E-07 4-46 49 10/20/21 13 99 4.7E-07 4.7E-07 4-20 50 10/21/21 20 220						88					3.7E-07			
4-12 40 10/09/21 19 125 1.8E-07 1.7E-06 4.8E-07 1.7E-06 4.4E-07 4.4T 41 10/11/21 18 75 1.7E-06 6.4E-07 4.4E-07 4.4T 42 10/12/21 18 66 9.3E-07 4.4T 43 10/13/21 15 31 73 5.8E-06 9.8E-07 4.4G 4.4G 4.4G 4.4G 10/14/21 20 79 6.6E-07 4.5E-07 4.5E-07 4.5E-07 4.4G 4.6G-07 4.5E-07 4.4G 4.6G-07 4.7E-07 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>														
4-2 41 10/11/21 18 75 1.78-06 6.4E-07 4-7 42 10/12/21 18 66 9.3E-07 4-1 43 10/13/21 15 14 73 5.8E-06 9.8E-07 4-63 44 10/14/21 20 79 6.6E-07 6.6E-07 1.78E-07 4-58 45 10/15/21 10 92 7.3E-07 1.78E-07														
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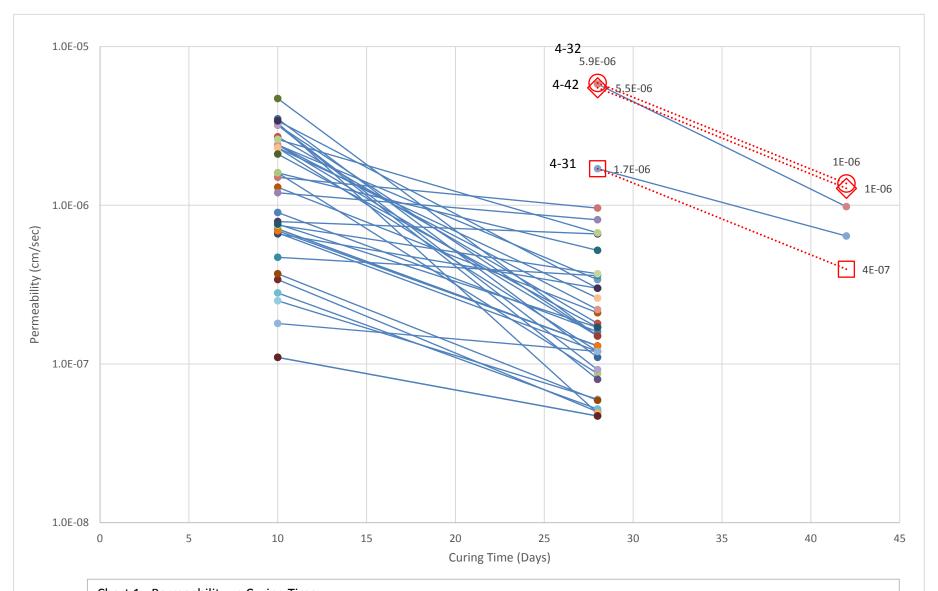


Chart 1 - Permeability vs Curing Time
Shows results of 10 day and 28 day across CAA-2 and 4. Also includes the 28 day test results projected with the average reduction based on data collected at CAA-4 for the 28 and 42 day sample results. Working conceptual draft figure plotted on 7/20/22.

Remedial	Action	Comp	letion	Renort
Nemedia	ALLIUII	CUIIIDI	CLIUII	NEDUL

Appendix J Regenesis Remediation Application Summary



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Fax: (949) 366-8090

12/28/2021

REGENESIS Proposal No. ChL66181

Kristin Anderson Floyd Snider 401 Union St. Seattle, Washington, 98101

SUBJECT: Remediation Application Services – Time Oil Site – Seattle, WA

Kristin,

REGENESIS Remediation Services (RRS) has recently completed an in-situ injection application of PlumeStop® Liquid Activated Carbon™ (PlumeStop), S-Micro ZVI® and Bio-Dechlor Inoculum Plus® (BDI Plus). The goal of the remedial application was to reduce CVOC compounds in the groundwater. RRS employed in-situ sorption and biodegradation, bioaugmentation along with in-situ chemical reduction methods to achieve remediation goals.

RRS mobilized experienced 40-hour HAZWOPER trained personnel, custom built injection trailer, support truck and equipment on December 6th, 2021. On-site application of the remediation technology was completed over eight days between December 7th and December 16th, 2021. Site cleanup and demobilization was completed on December 16th.

Please review the attached application summary, map, injection log and photo log for more detail on the application.

RRS appreciates the opportunity to work at this site with Floyd Snider. RRS will be available to interpret the field data as it is collected or answer any questions. If you need additional information regarding the application process or attached field notes, please contact Isaac Gregg at (720.955.5142) or Will Mohan at (224.754.2660).

Sincerely,

Isaac Gregg

Remediation Services Project Manager

REGENESIS Remediation Services

Zulas

Will Mohan

Project Supervisor

REGENESIS Remediation Services



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Application Summary Page







OVERVIEW

Client: Floyd Snider Site Address: 2737 W. Commodore Way, Seattle, WA, 98199

Client PM: Kristin Anderson Project Name: Time Oil Cantera

RRS Project Manager: Isaac Gregg **Project Dates:** 12/07/2021 to 12/16/2021 **RRS Project Supervisor**: Will Mohan

Product

Regenesis Remediation Services (RRS) applied PlumeStop, S-Micro ZVI and BDI Plus on-site by using an *in-situ* remediation method to treat a CVOC plume by installing a permeable reactive barrier (PRB).

PlumeStop consists of carbon particles milled to 1 to 2 micrometers. The particle size and the proprietary surface chemistry allow the carbon particles to be suspended as a colloid. The material was formulated to not only flow as a colloidal liquid without fracturing (i.e. through well networks and aquifers), but also allow the PlumeStop carbon to attach to soil particles once contacted.

S-MicroZVI, an advanced zero-valent iron (ZVI) product proven to accomplish *In Situ* Chemical Reduction (ISCR) of contaminants within the subsurface environment. S-MicroZVI is delivered as a colloidal suspension 40% ZVI by weight in glycerol with a particle size of less than 5 microns. S-MicroZVI is manufactured using a state-of-the-art sulfidation process resulting in a particle coating which increases activation toward specific contaminants and extends performance longevity. S-MicroZVI destroys contaminants abiotically and applied to stimulate ISCR-enhanced bioremediation.

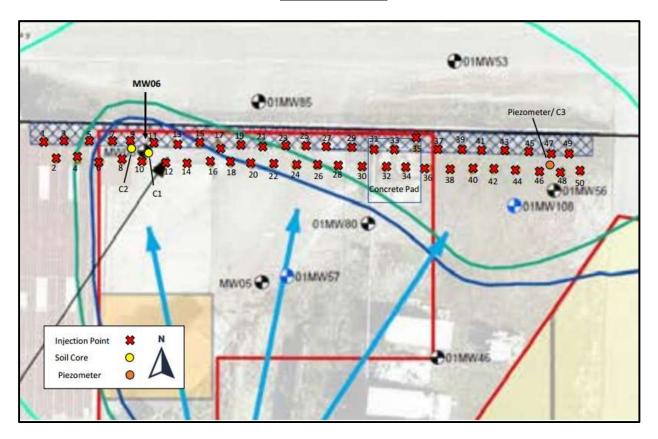
BDI Plus is an enriched natural consortium containing species of Dehalococcoides sp. (DHC). BDI Plus has been shown to simulate the rapid and complete dechlorination of chlorinated solvents such as tetrachloroethene (PCE), trichloroethene (TCE), dichloroethene (DCE) and vinyl chloride (VC) to non-toxic end products, ethene, carbon dioxide and water.



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Figure 1- Map



Application

The injection was completed by pumping on three to four injection points at a time using the RRS injection trailer manifold system. Injection tooling was driven to the target treatment depth via Direct Push Technology (DPT). The initial strategy was to use pressure activated injection probe with a top-down approach. This tool was used overcome potential flowing sands. The odd numbered, downgradient injection points would be set at depths of 21, 23, 25 and 27 feet below ground surface (bgs). The even numbered, upgradient points were setat depths of 22, 24, 26 and 28. This offsetting technique helped install a PRB without any gaps or weak areas. Dueto having issues initiating flow with the pressure activated injection probes the RRS team decided to switch to a 2-foot retractable injection screen tool with a bottom-up approach.



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Pressure Activated Injection Probe



2-Foot Retractable Screen

Site Preparations

On Site Equipment

- RRS custom-built injection trailer
- Support vehicle
- Auxiliary equipment
- Site safety equipment

Health and Safety Compliance

 RRS arrived on-site on December 7th, 2021. A health and safety meeting was held with all field staff present. RRS performed site reconnaissance, became familiar with the project site, water source, site hazards and completed a jobsite safety inspection. Notable site hazards included: direct contaminant contact, cold weather dangers, dehydration, slip/trip potential on injection hosing, injection line pressure, uneven terrain and multiple third-party crews performing their own tasks. Once completed, the injection trailer was staged and prepared for product transfer and mixing.

General Application Information

The remediation reagent was prepared and applied via an RRS custom-built injection trailer. The injection trailer is fully enclosed and contains mixing tanks, pumps, and a delivery system. Retractable injection screens were used for application into the injection points. The RRS injection trailer used for the completion of this project contains the following components:

- Complete drain conical mixing tanks
- Vortex/Cyclone mixer
- Application pump



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- Multiple fluid delivery lines
- Self-sufficient, dedicated power
- Flow and pressure controls
- Backflow prevention
- Pressure bypass controls
- Emergency eyewash and First-Aid station

The application pump is a multiple diaphragm positive displacement pump designed to prevent pulsation of the remediation reagent while being applied. The application pump can deliver the remediation reagent at up to 250 pounds per square inch (psi) at up to 20 gallons per minute (gpm) to overcome potential hydraulic limitations. Mechanisms capable of maintaining and controlling injection pressures and injection flowrates per injection point have been installed to achieve and maintain desired application pressures and flowrates. Safety bypass mechanisms are also installed to release back pressure in the event injection pressures exceed desired application ranges. Our application delivery system can deliver the remediation reagent at up to four (4) separate delivery lines simultaneously, each having the capability of monitoring injection pressures and injection flowrates/totals at any given time. Each delivery line can reach beyond the injection trailer of at least 100 linear feet, limiting the need to move the injection trailer from point to point or in this case limiting the need to move the trailer several times each day. Additional line extensions were utilized when necessary to increase the trailers range without being moved. The remediation reagent solutions were prepared in two (2) 350-gallon conical tanks that are configured with chemically resistant materials. This system setup allows for the remediation reagent solutions to beinjected while mixing and preparing the second tank so that downtime is avoided due to mixing and continuous pumping can occur. A vortex/cyclone mixer mounted to the mixing tanks rated with a liquid movement of 1800 gpm in water and is outfitted with a shaft and propellers capable of sustaining a homogenous mixture was used to help mix the reagents properly. For each batch, mix water was extracted from the nearby fire hydrant. Once the water filled to the appropriate volume per the design concentration the remedial reagent was transferred from the totes via an air-driven diaphragm pump. Each tote was measured and marked to show volumetric measurements to ensure accurate reagent dosing.

On-Site Work Summary

2021 Project Schedule:

December 6th: RRS mobilize to Seattle, WA

December 7th – December 10th: On-site Injections

December 13th – December 16th: On-site Injections

December 16th: Site Cleanup and demobilize



Global Headquarters

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Distribution Confirmation

The beginning of the injections took place near MW06 to validate the designed point placement. While injecting into the points adjacent to MW06 (IP-9, IP-10 and IP-11) ground water was continuously monitored using a peristaltic pump. After injecting 140 of the 400 total gallons into IP-9 PlumeStop was observed being pumped out of MW06. During the duration of the injections of the adjacent points the PlumeStop concentrations were measured and reached a concentration of 5,000 milligrams of carbon per liter (mg C/L).

A piezometer (Piezometer-1) was installed between IP-46, IP-47 and IP-48 to validate point placement of the eastern end of the barrier. While injecting on IP-47 and IP-48 groundwater was pumped to the surface using a peristaltic pump. After 350 gallons was injected into each of IP-47 and 48 PlumeStop was observed, a concentration of 2,000 mg C/L was recorded. After the completion of IP-46 the PlumeStop concentration increased to 4,000 mg C/L.

There were three soil cores collected throughout the project, including one soil core taken during the piezometer installation. Due to the high surface area created by the high percentages of clays and fines in the target treatment zone it would not be expected to see free phase carbon in the soil cores. Also, the dark gray sand, silts and clays in the cores make a poor contrast between them and the PlumeStop. The relatively low designed injection concentration would not provide for visual black staining of the soil. Locations of the wells, injection points, piezometer and cores can be found in *Figure 1*.

Plumestop/S-Micro ZVI/BDI Plus Permeable Reactive Barrier

A total of 10,000 lbs. of Plumestop, 3,500 lbs. of S-Micro ZVI and 18 liters of BDI Plus was mixed with 18,628 gallons of water and applied to the 50 injection points, totaling 20,000 gallons of mixed product.

Application Method: Direct push drilling with 2-foot retractable screens and pressure activated injection probes.

Injection Depth: 20 to 28 feet below ground surface

Number of Injection Points: 50

Deviations From Proposal: The pressure activated probes were not functioning as expected so a decision was made to switch to 2-foot retractable screens to accomplish design goals.

Please see attached Table 1 for details on injection flow rates and pressures observed.

RRS appreciates the opportunity to work with Floyd Snider at this site. If you need additional information regarding the application event or have any questions, please feel free to contact Isaac Gregg at (720.955.5142) or Will Mohan at (224.754.2660).



Floyd Snider-Time Oil Injection Summary Log PlumeStop, S-MicroZVI and BDI Plus Barrier Table 1



										Table ']				,	
							Volume	of PlumeStop I	njected			Pounds of	Pounds of S-			
Injection Point	Date	Time	Injection Interval (feet)	Injection Tool Depth (feet)	Injection Pressure (psi)	Flow Rate (gpm)	Beginning Flow Meter (gal)	Ending Flow Meter (gal)	Gallons Injected Per Interval	Total Gallons Per Location	Batches Injected Per Location	PlumeStop Injected Per Location	Micro ZVI Per Location	Liters of BDI Per Interval	Comments	Injection Tooling
	12/9/2021	13:02	26-28	-	91	4.20	0.00	100.00	100.00					0.090	Short circuiting out of IP-2. ~1 gallons of surfaced material. Plug with bentonite	
IP-1	12/9/2021	13:30	24-26	-	80	4.50	100.00	200.00	100.00	400	1.33	200	70	0.090		2-Foot Screen
	12/9/2021	13:52	22-24	-	23	5.60	200.00	300.00	100.00					0.090		
	12/9/2021	14:20	20-22	-	22 82	5.50	300.00	400.00	100.00					0.090		
	12/9/2021 12/9/2021	13:10 13:27	26-28 24-26	-	66	3.20 5.60	0.00	100.00 200.00	100.00					0.090		
IP-2	12/9/2021	13:50	22-24	-	49	4.80	200.00	300.00	100.00	400	1.33	200	70	0.090		2-Foot Screen
	12/9/2021	14:20	20-22	-	44	4.50	300.00	400.00	100.00					0.090		
	12/10/2021	8:33	26-28	-	114	3.60	0.00	100.00	100.00					0.090		
IP-3	12/10/2021	9:04	24-26	-	118	5.60	100.00	200.00	100.00	400	1.33	200	70	0.090		2-Foot Screen
IF-3	12/10/2021	9:22	22-24	-	86	5.90	200.00	300.00	100.00	400	1.55	200	70	0.090		2-F00t 3creen
	12/10/2021	9:44	20-22	-	75	5.90	300.00	400.00	100.00					0.090		
	12/9/2021	9:47	20-22	22	147	3.00	0.00	100.00	100.00					0.090		
IP-4	12/9/2021	10:24	22-24	24	127	5.40	100.00	200.00	100.00	400	1.33	200	70	0.090		Pressure Activated Probe
	12/9/2021 12/9/2021	11:04 11:38	24-26 26-28	26 28	120 134	5.00 3.80	200.00 300.00	300.00 400.00	100.00					0.090		
	12/10/2021	11:02	26-28	-	115	4.00	0.00	100.00	100.00					0.090		
	12/10/2021	11:28	24-26	_	89	4.80	100.00	200.00	100.00	1				0.090		
IP-5	12/10/2021	11:51	22-24	-	77	5.00	200.00	300.00	100.00	400	1.33	200	70	0.090		2-Foot Screen
	12/10/2021	12:18	20-22	-	70	4.80	300.00	400.00	100.00					0.090		
	12/8/2021	14:52	20-22	22	115	5.50	0.00	100.00	100.00					0.090		
IP-6	12/8/2021	15:11	22-24	24	136	4.00	100.00	200.00	100.00	400	1.33	200	70	0.090		Pressure Activated Probe
11 -0	12/8/2021	15:53	24-26	26	144	3.40	200.00	300.00	100.00	400	1.00	200	10	0.090		Tressure Activated Frobe
	12/9/2021	8:10	26-28	28	152	2.70	300.00	400.00	100.00					0.090		
	12/13/2021	8:55	20-22	21	137	3.80	0.00	100.00	100.00					0.090		
IP-7	12/13/2021	9:33	22-24	23	99	3.30	100.00	200.00	100.00	400	1.33	200	70	0.090		Pressure Activated Probe
	12/13/2021 12/13/2021	9:42 10:00	24-26 26-28	25 27	30 10	6.20 2.20	200.00 300.00	300.00 400.00	100.00 100.00	-				0.090		
	12/8/2021	10:12	20-22	22	130	2.80	0.00	100.00	100.00					0.090		
	12/8/2021	11:44	22-24	24	148	3.00	100.00	200.00	100.00					0.090		
IP-8	12/8/2021	12:25	24-26	26	108	4.60	200.00	300.00	100.00	400	1.33	200	70	0.090		Pressure Activated Probe
	12/8/2021	12:55	26-28	28	150	2.50	300.00	400.00	100.00					0.090		
	12/7/2021	11:09	20-22	21	151	3.30	0.00	100.00	100.00			200		0.090		
IP-9	12/7/2021	11:50	22-24	23	147	1.00	100.00	200.00	100.00	400	1.33		70	0.090	PS in MW-06 after 140 gallons injected.	Pressure Activated Probe
11 -5	12/7/2021	12:54	24-26	25	118	2.90	200.00	300.00	100.00	400	1.00	200	10	0.090	MW-06 contains 5,000 mg C/L	T 1033die 7iouvaled i 10be
	12/7/2021	13:58	26-28	27	134	3.40	300.00	400.00	100.00					0.090		
	12/7/2021	14:40	20-22	22	139	3.00	0.00	100.00	100.00					0.090		
IP-10	12/7/2021 12/7/2021	15:17 16:00	22-24 24-26	24 26	114 154	5.40 3.30	100.00 200.00	200.00 300.00	100.00	400	1.33	200	70	0.090		Pressure Activated Probe
	12/8/2021	8:24	26-28	28	88	3.50	300.00	400.00	100.00					0.090		
	12/7/2021	11:10	20-22	21	150	4.50	0.00	100.00	100.00					0.090	No flow. Pull up 2 feet then push back down 2 feet to initiate flow	
15.44	12/7/2021	12:04	22-24	23	155	1.60	100.00	200.00	100.00	400	4.00	000	70	0.090		
IP-11	12/7/2021	13:02	24-26	25	120	3.20	200.00	300.00	100.00	400	1.33	200	70	0.090		Pressure Activated Probe
	12/7/2021	13:49	26-28	27	118	2.80	300.00	400.00	100.00					0.090		
	12/7/2021	14:06	20-22	22	149	3.70	0.00	100.00	100.00					0.090		
IP-12	12/7/2021	15:50	22-24	24	161	2.80	100.00	200.00	100.00	400	1.33	200	70	0.090		Pressure Activated Probe
	12/8/2021	8:24	24-26	26	120	1.80	200.00	300.00	100.00					0.090		
	12/8/2021 12/8/2021	9:47 12:26	26-28 20-22	28 21	123 112	4.40 3.20	300.00 0.00	400.00 100.00	100.00 100.00					0.090		
	12/8/2021	13:00	22-24	23	136	3.60	100.00	200.00	100.00					0.090		
IP-13	12/8/2021	13:31	24-26	25	139	3.20	200.00	300.00	100.00	400	1.33	200	70	0.090		Pressure Activated Probe
	12/8/2021	14:19	26-28	27	144	3.00	300.00	400.00	100.00					0.090		
	12/8/2021	8:57	20-22	22	90	3.80	0.00	100.00	100.00					0.090		
IP-14	12/8/2021	9:47	22-24	24	126	3.60	100.00	200.00	100.00	400	1.33	200	70	0.090		Pressure Activated Probe
115-14	12/8/2021	10:18	24-26	26	99	6.10	200.00	300.00	100.00	400	1.55	200	70	0.090		Flessule Activated Flobe
	12/8/2021	11:43	26-28	28	130	4.20	300.00	400.00	100.00					0.090		
	12/8/2021	13:41	20-22	21	144	3.80	0.00	100.00	100.00					0.090		
IP-15	12/8/2021	14:11 14:54	22-24 24-26	23	120	3.30	100.00	200.00	100.00	400	1.33	200	70	0.090		Pressure Activated Probe
	12/8/2021 12/8/2021	13:30	26-28	25 27	151 139	3.00 3.10	200.00 300.00	300.00 400.00	100.00 100.00	-				0.090		
	12/9/2021	8:15	20-22	22	150	2.00	0.00	100.00	100.00					0.090		
	12/9/2021	9:30	22-24	24	150	2.20	100.00	200.00	100.00					0.090		
IP-16	12/9/2021	10:05	24-26	26	143	2.60	200.00	300.00	100.00	400	1.33	200	70	0.090		Pressure Activated Probe
	12/9/2021	11:12	26-28	28	122	3.10	300.00	400.00	100.00					0.090		
	12/9/2021	14:00	26-28	-	48	5.10	0.00	100.00	100.00					0.090	Injection point moved 1' South to avoid catch basin	
IP-17	12/9/2021	15:06	24-26	-	55	5.80	100.00	200.00	100.00	400	1.33	200	70	0.090		2-Foot Screen
1	12/9/2021	15:29	22-24	-	37	4.20	200.00	300.00	100.00					0.090		
	12/9/2021	16:02	20-22	-	24	4.10	300.00	400.00	100.00					0.090		

Proceedings		12/9/2021	10:40	26-28	-	73	5.80	0.00	100.00	100.00					0.090	Attemping using 2 ft retractable screen with bottom-up approach	
Column C	IP-18				-			100.00	200.00		400	1 33	200	70	0.090		2-Foot Screen
Post 100	11 - 10										400	1.55	200	70			2-1 001 0016611
Fig. 1,000																	
Part																	
Page 1,000	IP-19				-						450	1.50	225	79			2-Foot Screen
Post		12/10/2021	10:15	20-22	-	66	5.20	300.00	450.00	150.00					0.135	Pumped 50 extra gallons to make up for IP-20	
CAMPAIN CAMP																	
Colored Colo	IP-20										300	1.00	150	53		Chan apply due to confesion 201 to the south condemnanth the steel of nines	2-Foot Screen
Fig. Fig.																Stop early due to surfacing 30 to the south undernearth the stack of pipes	
Page Page																	
Page 1997 1997 1998	IP-21	12/10/2021	12:10	22-24	-	45	5.50	200.00	300.00	100.00	450	1.50	225	79	0.090		2-Foot Screen
Property 1.5					-										_	Pumped 50 extra gallons to make up for IP-20	
Part																	
18/19/28/1 5-11 5-22 5-2 5	IP-22										400	1.33	200	70			2-Foot Screen
\$\frac{\partial \column{2}{c} \frac{\partial \column{2}{c} \frac{\partial \column{2}{c} \frac{\partial \column{2}{c} \frac{\partial \column{2}{c} \frac{\partial \column{2}{c} \frac{\partial \column{2}{c} \frac{\partial \column{2}{c} \frac{\partial \column{2}{c} \frac{\partial \column{2}{c} \frac{\partial \column{2}{c} \frac{\partial \column{2}{c} \frac{\partial \column{2}{c} \column{2}{c} \frac{\partial \column{2}{c} \column{2}{c} \frac{\partial \column{2}{c} \column{2}{c																	
Part		12/13/2021	8:55	26-28	-	237	1.90	0.00	100.00	100.00					0.090		
1.00.000	IP-23				-						400	1.33	200	70			2-Foot Screen
PASS PASS	20													. •			2 : 35: 35:35:
## 1965 1965																	
						* * *											
9-12-12-12-12-12-12-12-12-12-12-12-12-12-	IP-24				-						400	1.33	200	70			2-Foot Screen
Part			12:04		-			300.00	400.00	100.00					0.090		
Post Principal 18-94 23-24 - 77 4.80 29.30 30.00 100.00					-	_											
Post Post	IP-25										400	1.33	200	70			2-Foot Screen
12-19-201 18-10																	
Part Part															_		
Column C	IP-26				-						400	1 33	200	70	0.090		2-Foot Screen
171 172 173 174	11 -20										400	1.00	200	70			2 1 001 0010011
P-27																resume at lower flowrate. Approximately 5 gallons of surfaced material.	
P-26 T-25/2007 13:00 72:24 . 192 5-84 70:00					†												
P28	IP-27				-						400	1.33	200	70			2-Foot Screen
P-21		12/13/2021	13:21		-	120		300.00	400.00	100.00					0.090		
Page																	
P-30	IP-28										400	1.33	200	70			2-Foot Screen
P-29 1714-2021 P-28 P-28 P-28 P-114 P-29 P																	
Part Part																	
P31 P31 P32	IP-29		9:04	24-26	-	11	3.00				400	1 33	200	70	0.090		2-Foot Screen
P-30	20				+						100	1.00	200	, ,			21 001 0010011
P-30 12/13/2021 12/40 24-26 - 88 5.10 100.00 200.00 100.00 100.00 13.3 200 70 0.000 0.000 12/13/2021 13.23 20.22 - 31 4.00 500.00 100.00 100.00 100.00 12/13/2021 13.23 20.22 - 37 6.50 20.00 300.00 100.00 100.00 100.00 12/13/2021 11.140 24-26 - 44 6.50 100.00 200.00 100.00 100.00 100.00 12/13/2021 12.11 22.24 - 37 6.50 20.00 300.00 100.00 100.00 100.00 100.00 100.00 12/13/2021 12.11 12.24 22.24 - 37 6.50 20.00 300.00 10																	
Page Page																	
P_3 12/14/2021 11:33 26:28 - 48 6:30 0:00 10:	IP-30										400	1.33	200	70			2-Foot Screen
P-31 12/14/2021 11-149 24-26 - 44 5.00 100.00 200.00 100.00 400 1.33 200 70 0.090 -			13:23		-			300.00	400.00	100.00					0.090		
P-31 12/14/02/1 12:11 22:24 - 37 5:30 20:00 300.00 10:00 1					•												
P-32 12/14/2021 12/30 20/22 - 70 5.20 300.00 400.00 100.0	IP-31				†						400	1.33	200	70			2-Foot Screen
P-32 12/15/2021 10.24 26-28 - 39 4.20 0.00 100.00 100.00 100.00 100.00 100.00 12/15/2021 11.25 22-24 - 71 6.40 200.00 300.00 100.00 100.00 12/15/2021 11.47 20.02 - 33 3.80 300.00 400.00 100.00 100.00 100.00 12/15/2021 11.40 22.40 - 32 5.80 100.00 200.00 100.					•												
P-32 12/15/2021 11:25 22-24 - 11:4 5.10 10:00 20:00 10:0																	
12/15/2021 11:25 22:24 - 71 6:40 20:00 300:00 100:	IP-32				-						400	1.33	200	70			2-Foot Screen
P-35 12/14/2021 13:53 26:28 - 40 4:50 0.00 100.0	11 32										100	1.00	200				2 . 001 0010011
P-38 12/14/2021 14:20 24:26 -																	
P-33 12/14/2021 14:42 22-24 - 28 5.50 200.00 300.00 100.00 400 1.33 200 70 0.090					+												
P-36 12/14/2021 11:33 26-28 - 48 3.80 0.00 100.0	IP-33				t						400	1.33	200	70			2-Foot Screen
P-34 12/14/2021 11:49 24:26 - 78 5.80 100.00 200.00 100.00 400 1.33 200 200.00 100.00 200.00 20					-												
P-34 12/14/2021 12:11 22-24 - 63 5.50 200.00 300.00 100.00 400 100.00 12/14/2021 12:30 20-22 - 41 5.10 300.00 400.00 100.00 100.00 100.00 12/15/2021 13:00 26-28 - 60 8.00 0.00 100.00 100.00 100.00 12/15/2021 13:24 24-26 - 75 2.40 100.00 200.00 100.00 100.00 100.00 12/15/2021 13:36 22-24 - 43 2.20 200.00 300.00 100.00																	
12/14/2021 12:30 20-22 - 41 5.10 300.00 400.00 1	IP-34										400	1.33	200	70			2-Foot Screen
P-35 12/15/2021 13:00 26-28 - 60 8.00 0.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 12/15/2021 13:24 24-26 - 75 2.40 100.00 200.00 100.00 100.00 100.00 12/15/2021 13:56 22-24 - 43 2.20 200.00 300.00 100.00																	
P-35 12/15/2021 13:24 24-26 - 75 2.40 100.00 200.00 100.00 100.00 100.00 12/15/2021 13:56 22-24 - 43 2.20 200.00 300.00 100.00 100.00 12/15/2021 14:33 20-22 - 29 1.40 300.00 400.00 100																Point redrilled just North off concrete pad due to refusal at 4 ft.	
12/15/2021 13:56 22-24 - 43 2.20 200.00 300.00 100.00 12/15/2021 14:33 20-22 - 29 1.40 300.00 400.00 100.00 12/13/2021 12:38 26-28 - 122 4.00 0.00 100.00 12/13/2021 12:58 24-26 - 101 4.80 100.00 200.00 100.00 12/13/2021 13:20 22-24 - 80 5.30 200.00 300.00 100.00 13/13/2021 13:20 22-24 - 80 5.30 200.00 300.00 100.00	IP-35	12/15/2021	13:24	24-26	-	75	2.40	100.00	200.00		400	1 33	200	70			2-Foot Screen
IP-36	11 -33				•						400	1.55	200	10			2-1 001 0016611
IP-36																	
IP-36 12/13/2021 13:20 22-24 - 80 5.30 200.00 300.00 100.00 400 1.33 200 70 0.090																	
	IP-36										400	1.33	200	70			2-Foot Screen

	12/14/2021	13:55	26-28	_	129	4.00	0.00	100.00	100.00					0.090	
	12/14/2021	14:21	24-26	-	102	5.00	100.00	200.00	100.00					0.090	
IP-37	12/14/2021	14:45	22-24	-	110	4.60	200.00	300.00	100.00	400	1.33	200	70	0.090	2-Foot Screen
	12/14/2021	15:10	20-22		78	4.90	300.00	400.00	100.00					0.090	
	12/13/2021	15:18	26-28	-	110	4.70	0.00	100.00	100.00					0.090	
	12/13/2021	15:40	24-26		77	5.10	100.00	200.00	100.00					0.090	
IP-38		15:58	22-24	-		4.90		300.00	100.00	400	1.33	200	70		2-Foot Screen
	12/13/2021			-	62		200.00							0.090	
	12/13/2021	16:22	20-22	-	55	5.00	300.00	400.00	100.00						
	12/15/2021	12:31	26-28	-	27	2.00	0.00	100.00	100.00					0.090	
IP-39	12/15/2021	13:10	24-26	-	94	2.70	100.00	200.00	100.00	400	1.33	200	70	0.090	2-Foot Screen
	12/15/2021	13:56	22-24	-	40	6.30	200.00	300.00	100.00					0.090	
	12/15/2021	14:10	20-22	-	45	3.10	300.00	400.00	100.00					0.090	
	12/14/2021	8:29	26-28	-	33	3.70	0.00	100.00	100.00					0.090	
IP-40	12/14/2021	9:05	24-26	-	53	1.10	100.00	200.00	100.00	400	1.33	200	70	0.090	2-Foot Screen
	12/14/2021	9:51	22-24	-	43	2.30	200.00	300.00	100.00					0.090	
	12/14/2021	10:29	20-22	-	46	3.10	300.00	400.00	100.00					0.090	
	12/15/2021	14:31	26-28	-	80	4.00	0.00	100.00	100.00					0.090	
IP-41	12/15/2021	15:02	24-26	-	105	2.50	100.00	200.00	100.00	400	1.33	200	70	0.090	2-Foot Screen
	12/15/2021	15:20	22-24	-	73	7.10	200.00	300.00	100.00	.00		200		0.090	
	12/15/2021	15:55	20-22	-	63	4.20	300.00	400.00	100.00					0.090	
	12/14/2021	11:42	26-28	-	49	3.20	0.00	100.00	100.00					0.090	
IP-42	12/14/2021	12:08	24-26	-	57	4.40	100.00	200.00	100.00	400	1.33	200	70	0.090	2-Foot Screen
11 -42	12/14/2021	12:33	22-24	-	44	4.00	200.00	300.00	100.00	400	1.00	200	70	0.090	2-1 oot octeen
	12/14/2021	12:52	20-22	-	40	3.80	300.00	400.00	100.00					0.090	
	12/16/2021	9:15	26-28	-	40	3.40	0.00	100.00	100.00					0.090	
IP-43	12/16/2021	9:48	24-26	-	28	1.80	100.00	200.00	100.00	400	4.00	000	70	0.090	2 Fact 0
IP-43	12/16/2021	10:20	22-24	-	32	2.90	200.00	300.00	100.00	400	1.33	200	70	0.090	2-Foot Screen
	12/16/2021	10:58	20-22	-	39	3.10	300.00	400.00	100.00					0.090	
	12/14/2021	8:47	26-28	-	46	5.30	0.00	100.00	100.00					0.090	
ID 44	12/14/2021	9:05	24-26	-	53	7.70	100.00	200.00	100.00	400	4.00	000	70	0.090	25.42
IP-44	12/14/2021	10:01	22-24	-	53	6.50	200.00	300.00	100.00	400	1.33	200	70	0.090	2-Foot Screen
	12/14/2021	10:31	20-22	-	49	4.80	300.00	400.00	100.00					0.090	
	12/16/2021	9:15		_	20	3.30	0.00	100.00	100.00					0.090	
		9:15	26-28	-											
	12/16/2021		26-28 24-26	-	51	3.00	100.00	200.00						0.090	
IP-45	12/16/2021 12/16/2021	9:47	24-26		51 43	3.00 4.10	100.00 200.00	200.00 300.00	100.00	400	1.33	200	70	0.090	2-Foot Screen
IP-45	12/16/2021	9:47 10:29	24-26 22-24	-	43	4.10	200.00	300.00	100.00 100.00	400	1.33	200	70	0.090	2-Foot Screen
IP-45	12/16/2021 12/16/2021	9:47 10:29 11:10	24-26 22-24 20-22	- - -	43 32	4.10 2.40	200.00 300.00	300.00 400.00	100.00 100.00 100.00	400	1.33	200	70	0.090 0.090	2-Foot Screen
	12/16/2021 12/16/2021 12/15/2021	9:47 10:29 11:10 12:17	24-26 22-24 20-22 26-28	- - -	43 32 80	4.10 2.40 3.10	200.00 300.00 0.00	300.00 400.00 100.00	100.00 100.00 100.00 100.00					0.090 0.090 0.090 Piezometer reading at 3000 mg/l after 40 gallons injected	
IP-45	12/16/2021 12/16/2021 12/15/2021 12/15/2021	9:47 10:29 11:10 12:17 13:14	24-26 22-24 20-22 26-28 24-26	- - -	43 32 80 25	4.10 2.40 3.10 3.70	200.00 300.00 0.00 100.00	300.00 400.00 100.00 200.00	100.00 100.00 100.00 100.00 100.00	400	1.33	200	70 70	0.090 0.090 0.090 Piezometer reading at 3000 mg/l after 40 gallons injected 0.090 Piezometer reading at 4000 mg/l after 115 gallons injected	2-Foot Screen 2-Foot Screen
	12/16/2021 12/16/2021 12/15/2021 12/15/2021 12/15/2021	9:47 10:29 11:10 12:17 13:14 13:56	24-26 22-24 20-22 26-28 24-26 22-24	-	43 32 80 25 25	4.10 2.40 3.10 3.70 2.70	200.00 300.00 0.00 100.00 200.00	300.00 400.00 100.00 200.00 300.00	100.00 100.00 100.00 100.00 100.00 100.00					0.090 0.090 0.090 Piezometer reading at 3000 mg/l after 40 gallons injected 0.090 Piezometer reading at 4000 mg/l after 115 gallons injected 0.090	
	12/16/2021 12/16/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021	9:47 10:29 11:10 12:17 13:14 13:56 14:19	24-26 22-24 20-22 26-28 24-26 22-24 20-22	- - -	43 32 80 25 25 32	4.10 2.40 3.10 3.70 2.70 3.60	200.00 300.00 0.00 100.00 200.00 300.00	300.00 400.00 100.00 200.00 300.00 400.00	100.00 100.00 100.00 100.00 100.00 100.00 100.00					0.090 0.090 0.090 Piezometer reading at 3000 mg/l after 40 gallons injected 0.090 Piezometer reading at 4000 mg/l after 115 gallons injected 0.090 0.090	
IP-46	12/16/2021 12/16/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021	9:47 10:29 11:10 12:17 13:14 13:56 14:19 9:52	24-26 22-24 20-22 26-28 24-26 22-24 20-22 26-28	- - - - - -	43 32 80 25 25 32 53	4.10 2.40 3.10 3.70 2.70 3.60 4.20	200.00 300.00 0.00 100.00 200.00 300.00 0.00	300.00 400.00 100.00 200.00 300.00 400.00	100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00	400			70	0.090 0.090 Piezometer reading at 3000 mg/l after 40 gallons injected 0.090 Piezometer reading at 4000 mg/l after 115 gallons injected 0.090 0.090 0.090	
	12/16/2021 12/16/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021	9:47 10:29 11:10 12:17 13:14 13:56 14:19 9:52 10:33	24-26 22-24 20-22 26-28 24-26 22-24 20-22 26-28 24-26	- - - - - - -	43 32 80 25 25 32 53 20	4.10 2.40 3.10 3.70 2.70 3.60 4.20 3.30	200.00 300.00 0.00 100.00 200.00 300.00 0.00	300.00 400.00 100.00 200.00 300.00 400.00 100.00 200.00	100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00					0.090 0.090 Piezometer reading at 3000 mg/l after 40 gallons injected 0.090 Piezometer reading at 4000 mg/l after 115 gallons injected 0.090 0.090 0.090 0.090 0.090	
IP-46	12/16/2021 12/16/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021	9:47 10:29 11:10 12:17 13:14 13:56 14:19 9:52 10:33 10:55	24-26 22-24 20-22 26-28 24-26 22-24 20-22 26-28 24-26 22-24	- - - - - - - -	43 32 80 25 25 32 53 20 38	4.10 2.40 3.10 3.70 2.70 3.60 4.20 3.30 6.90	200.00 300.00 0.00 100.00 200.00 300.00 0.00 100.00 200.00	300.00 400.00 100.00 200.00 300.00 400.00 100.00 200.00 300.00	100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00	400	1.33	200	70	0.090 0.090 Piezometer reading at 3000 mg/l after 40 gallons injected 0.090 Piezometer reading at 4000 mg/l after 115 gallons injected 0.090 0.090 0.090 0.090 0.090 0.090	2-Foot Screen
IP-46	12/16/2021 12/16/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021	9:47 10:29 11:10 12:17 13:14 13:56 14:19 9:52 10:33 10:55 11:20	24-26 22-24 20-22 26-28 24-26 22-24 20-22 26-28 24-26 22-24 20-22	- - - - - - - - -	43 32 80 25 25 32 53 20 38 34	4.10 2.40 3.10 3.70 2.70 3.60 4.20 3.30 6.90 2.70	200.00 300.00 0.00 100.00 200.00 300.00 0.00 100.00 200.00 300.00	300.00 400.00 100.00 200.00 300.00 400.00 100.00 200.00 300.00 400.00	100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00	400	1.33	200	70	0.090 0.090 Piezometer reading at 3000 mg/l after 40 gallons injected 0.090 Piezometer reading at 4000 mg/l after 115 gallons injected 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090	2-Foot Screen
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IP-46	12/16/2021 12/16/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021	9:47 10:29 11:10 12:17 13:14 13:56 14:19 9:52 10:33 10:55 11:20 9:39	24-26 22-24 20-22 26-28 24-26 22-24 20-22 26-28 24-26 22-24 20-22 26-28 24-26	- - - - - - - - - - -	43 32 80 25 25 32 53 20 38 34 68 80	4.10 2.40 3.10 3.70 2.70 3.60 4.20 3.30 6.90 2.70 2.80 3.80	200.00 300.00 0.00 100.00 200.00 300.00 0.00 100.00 200.00 300.00 0.00	300.00 400.00 100.00 200.00 300.00 400.00 100.00 200.00 300.00 400.00 100.00 200.00	100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00	400	1.33	200	70	0.090 0.090 Piezometer reading at 3000 mg/l after 40 gallons injected 0.090 Piezometer reading at 4000 mg/l after 115 gallons injected 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090	2-Foot Screen
IP-46 IP-47	12/16/2021 12/16/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021	9:47 10:29 11:10 12:17 13:14 13:56 14:19 9:52 10:33 10:55 11:20 9:39 9:57	24-26 22-24 20-22 26-28 24-26 22-24 20-22 26-28 24-26 22-24 20-22 26-28 24-26 22-24 20-22	- - - - - - - - - - - -	43 32 80 25 25 32 53 20 38 34 68 80 26	4.10 2.40 3.10 3.70 2.70 3.60 4.20 3.30 6.90 2.70 2.80 3.80 2.50	200.00 300.00 0.00 100.00 200.00 300.00 0.00 100.00 200.00 300.00 0.00 100.00 200.00	300.00 400.00 100.00 200.00 300.00 400.00 100.00 200.00 300.00 400.00 100.00 200.00 300.00	100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00	400	1.33	200	70	0.090 0.090 Piezometer reading at 3000 mg/l after 40 gallons injected 0.090 Piezometer reading at 4000 mg/l after 115 gallons injected 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090	2-Foot Screen 2-Foot Screen
IP-46 IP-47	12/16/2021 12/16/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021	9:47 10:29 11:10 12:17 13:14 13:56 14:19 9:52 10:33 10:55 11:20 9:39 9:57 10:43 11:13	24-26 22-24 20-22 26-28 24-26 22-24 20-22 26-28 24-26 22-24 20-22 26-28 24-26 22-24 20-22 26-28 24-26	- - - - - - - - - - - - -	43 32 80 25 25 32 53 20 38 34 68 80 26 30	4.10 2.40 3.10 3.70 2.70 3.60 4.20 3.30 6.90 2.70 2.80 3.80 2.50 3.40	200.00 300.00 0.00 100.00 200.00 300.00 0.00 100.00 200.00 300.00 100.00 200.00 300.00	300.00 400.00 100.00 200.00 300.00 400.00 100.00 200.00 300.00 400.00 100.00 200.00 300.00 400.00	100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00	400	1.33	200	70	0.090 0.090 0.090 Piezometer reading at 3000 mg/l after 40 gallons injected 0.090 Piezometer reading at 4000 mg/l after 115 gallons injected 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090	2-Foot Screen 2-Foot Screen
IP-46 IP-47	12/16/2021 12/16/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021	9:47 10:29 11:10 12:17 13:14 13:56 14:19 9:52 10:33 10:55 11:20 9:39 9:57 10:43 11:13	24-26 22-24 20-22 26-28 24-26 22-24 20-22 26-28 24-26 22-24 20-22 26-28 24-26 22-24 20-22 26-28	- - - - - - - - - - - - - - - -	43 32 80 25 25 32 53 20 38 34 68 80 26 30 43	4.10 2.40 3.10 3.70 2.70 3.60 4.20 3.30 6.90 2.70 2.80 3.80 2.50 3.40 7.90	200.00 300.00 0.00 100.00 200.00 300.00 0.00 100.00 200.00 300.00 0.00 100.00 200.00 300.00 0.00	300.00 400.00 100.00 200.00 300.00 400.00 100.00 200.00 300.00 400.00 200.00 300.00 400.00 100.00	100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00	400	1.33	200	70	0.090 0.090 Piezometer reading at 3000 mg/l after 40 gallons injected 0.090 Piezometer reading at 4000 mg/l after 115 gallons injected 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090	2-Foot Screen 2-Foot Screen
IP-46 IP-47	12/16/2021 12/16/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021	9:47 10:29 11:10 12:17 13:14 13:56 14:19 9:52 10:33 10:55 11:20 9:39 9:57 10:43 11:13 11:45	24-26 22-24 20-22 26-28 24-26 22-24 20-22 26-28 24-26 22-24 20-22 26-28 24-26 22-24 20-22 26-28 24-26 22-24 20-22 26-28	- - - - - - - - - - - - - - - - - - -	43 32 80 25 25 32 53 20 38 34 68 80 26 30 43 38	4.10 2.40 3.10 3.70 2.70 3.60 4.20 3.30 6.90 2.70 2.80 3.80 2.50 3.40 7.90 4.20	200.00 300.00 0.00 100.00 200.00 300.00 0.00 100.00 200.00 300.00 0.00 100.00 200.00 300.00 0.00 100.00	300.00 400.00 100.00 200.00 300.00 400.00 100.00 200.00 300.00 400.00 100.00 200.00 300.00 400.00 200.00	100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00	400	1.33	200	70	0.090 0.090 0.090 Piezometer reading at 3000 mg/l after 40 gallons injected 0.090 Piezometer reading at 4000 mg/l after 115 gallons injected 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090 0.090	2-Foot Screen 2-Foot Screen
IP-46 IP-47	12/16/2021 12/16/2021 12/15/2021	9:47 10:29 11:10 12:17 13:14 13:56 14:19 9:52 10:33 10:55 11:20 9:39 9:57 10:43 11:13 11:45 12:01 12:28	24-26 22-24 20-22 26-28 24-26 22-24 20-22 26-28 24-26 22-24 20-22 26-28 24-26 22-24 20-22 26-28 24-26 22-24 20-22 26-28	- - - - - - - - - - - - - - - - - - -	43 32 80 25 25 32 53 20 38 34 68 80 26 30 43 38 42	4.10 2.40 3.10 3.70 2.70 3.60 4.20 3.30 6.90 2.70 2.80 3.80 2.50 3.40 7.90 4.20 5.10	200.00 300.00 0.00 100.00 200.00 300.00 0.00 100.00 200.00 300.00 0.00 100.00 200.00 300.00 0.00 100.00 200.00 200.00	300.00 400.00 100.00 200.00 300.00 400.00 100.00 200.00 300.00 400.00 200.00 300.00 400.00 100.00 200.00 300.00	100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00	400 400 400	1.33	200	70 70 70	0.090 0.090 Piezometer reading at 3000 mg/l after 40 gallons injected 0.090 Piezometer reading at 4000 mg/l after 115 gallons injected 0.090	2-Foot Screen 2-Foot Screen 2-Foot Screen
IP-46 IP-47	12/16/2021 12/16/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/16/2021 12/16/2021 12/16/2021	9:47 10:29 11:10 12:17 13:14 13:56 14:19 9:52 10:33 10:55 11:20 9:39 9:57 10:43 11:13 11:45 12:01 12:28 12:50	24-26 22-24 20-22 26-28 24-26 22-24 20-22 26-28 24-26 22-24 20-22 26-28 24-26 22-24 20-22 26-28 24-26 22-24 20-22 26-28	- - - - - - - - - - - - - - - - - - -	43 32 80 25 25 25 32 53 20 38 34 68 80 26 30 43 38 42 34	4.10 2.40 3.10 3.70 2.70 3.60 4.20 3.30 6.90 2.70 2.80 3.80 2.50 3.40 7.90 4.20 5.10 5.70	200.00 300.00 0.00 100.00 200.00 300.00 0.00 100.00 200.00 300.00 0.00 100.00 200.00 300.00 0.00 100.00 200.00 300.00 0.00 300.00 0.00	300.00 400.00 100.00 200.00 300.00 400.00 200.00 300.00 400.00 100.00 200.00 300.00 400.00 100.00 200.00 300.00 400.00	100.00 100.00	400 400 400	1.33	200	70 70 70	0.090 0.090 Piezometer reading at 3000 mg/l after 40 gallons injected 0.090 Piezometer reading at 4000 mg/l after 115 gallons injected 0.090	2-Foot Screen 2-Foot Screen 2-Foot Screen
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IP-46 IP-47 IP-48	12/16/2021 12/16/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/15/2021 12/16/2021 12/16/2021 12/16/2021 12/16/2021	9:47 10:29 11:10 12:17 13:14 13:56 14:19 9:52 10:33 10:55 11:20 9:39 9:57 10:43 11:13 11:45 12:01 12:28 12:50 9:16	24-26 22-24 20-22 26-28 24-26 22-24 20-22 26-28 24-26 22-24 20-22 26-28 24-26 22-24 20-22 26-28 24-26 22-24 20-22 26-28 24-26 22-24 20-22 26-28	- - - - - - - - - - - - - - - - - - -	43 32 80 25 25 25 32 53 20 38 34 68 80 26 30 43 38 42 34 40	4.10 2.40 3.10 3.70 2.70 3.60 4.20 3.30 6.90 2.70 2.80 3.80 2.50 3.40 7.90 4.20 5.10 5.70 5.50	200.00 300.00 0.00 100.00 200.00 300.00 0.00 100.00 200.00 300.00 0.00 100.00 200.00 300.00 0.00 200.00 300.00 0.00	300.00 400.00 100.00 200.00 300.00 400.00 100.00 200.00 300.00 400.00 200.00 300.00 400.00 200.00 300.00 400.00 100.00 200.00 300.00	100.00 100.00	400 400 400	1.33	200	70 70 70	0.090 0.090 Piezometer reading at 3000 mg/l after 40 gallons injected 0.090 Piezometer reading at 4000 mg/l after 115 gallons injected 0.090	2-Foot Screen 2-Foot Screen 2-Foot Screen

Total Gallons:	Total Number of Batches:	Total Lbs. PlumeStop	Total Lbs. of S- Micro ZVI	Total Litres of BDI:
20000	66.67	10000	3500	18.000

Global Headquarters

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Photo Log



Photo 1: View of Plumestop totes and S-Micro ZVI barrels on site at TOC. East view.



Photo 2: View of 500-gallon water wagon provided by ESN that is connected to RRS injection trailer. Southeast view.



Photo 3: ESN personnel lifting injection rods to specified interval. Southeast view.



Photo 4: View of Floyd Snider's monitoring well equipment.

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Photo 5: A concrete coring drill was brought out to pre-core IP-31 to IP-35. Northeast view



Photo 6: A piezometer was installed between IP-47 (left) and IP-48 (right). Northeast view.



Core 1- Taken between IP-11 and IP-12 at 11:00 on 12/8/21

Table J.1
Water Quality Monitoring Confirmation Data During PlumeStop Injections

				Dissolved	Specific				
			Temp	Oxygen	Conductivity		ORP	Turbidity	
Monitoring Well	Date	Time	(°C)	(mg/L)	(μS/cm)	рН	(mV)	(NTU)	Color
		11:20	13.5	1.0	538	6.65	102.8		Clear
		13:20	14.4	1.6	1500	7.09	-31.5	1.77	Black
		13:27	14.2	0.73	1770	7.25	-107	1.83	Black
	7-Dec	13:47	13.4	0.46	1881	9.05	-240	2.21	Black
	/-Dec	14:02	12.3	0.42	1915	9.76	-230.8	2.96	Black
		14:20	12.0	0.40	1910	9.46	-231.2	3.34	Black
		15:04	12.4	0.39	2294	9.17	-233.6	3.49	Black
		15:36	12.3	0.35	2295	8.97	-250.1	3.58	Black
		9:50	11.4	1.04	2134	9.92	-60.2	9.9	Black
		10:20	12.3	0.52	2154	8.86	-296.7	3.32	Black
MW06 ⁽¹⁾		11:50	10.3	0.4	2150	8.95	-244.5	2.95	Black
INIVOO	8-Dec	13:20	12.7	0.51	2120	8.89	-304.5	3.23	Black
	0-Dec	14:10	13	0.32	2071	8.91	-321.4	2.65	Black
		14:55	12.4	0.31	2037	8.94	-268.5	2.36	Black
		15:45	12.9	0.29	1999	8.92	-252.3	2.16	Black
		16:15	12.6	0.29	1973	8.9	-276.5	2.00	Black
		8:45	11.6	1.18	1805	8.9	-93.3	2.55	Black
		9:00	12	0.8	1785	8.87	-320.4	2.08	Black
	9-Dec	9:15	12	0.67	1796	8.88	-358.2	1.76	Black
	9-Dec	10:20	11.7	0.74	1776	8.82	-323.7	2.11	Black
		11:15	12	0.5	1851	8.92	-255	1.29	Black
		12:05	11.5	0.41	1642	8.86	-347	0.85	Black
	9-Dec	16:15	12	0.49	582	6.81	-88.6	162	Clear
	3-Dec	16:25	12.1	0.49	579	6.84	-84.3	126	Clear
		10:30	14	1.3	572	6.67	160.8	21.8	Clear
		10:55	13.3	0.95	575	6.71	158.3	7.2	Clear
	10-Dec	11:40	12.4	0.94	563	6.69	154	5.93	Clear
01MW85 ⁽²⁾	10-Dec	12:15	13.7	0.69	566	6.71	152	12.8	Clear
OTIMIMOD		13:05	13.7	0.64	565	6.74	143	3.70	Clear
		13:30	13.4	0.63	560	6.73	139	2.85	Clear
		9:50	12.2	1.49	542	6.62	187.9	29	Clear
	13-Dec	10:50	13.5	0.87	554	6.78	184.2	15	Clear
	13-060	12:10	13.1	0.89	545	6.72	172	13.5	Clear
		13:20	14.6	0.61	569	6.73	145	0.67	Clear

Notes:

Groundwater was pumped using a low-flow method with a peristaltic pump. Groundwater quality was measured using a YSI instrument.

Abbreviations:

°C Degrees Celsius

mg/L Milligram per liter

mV Millivolts

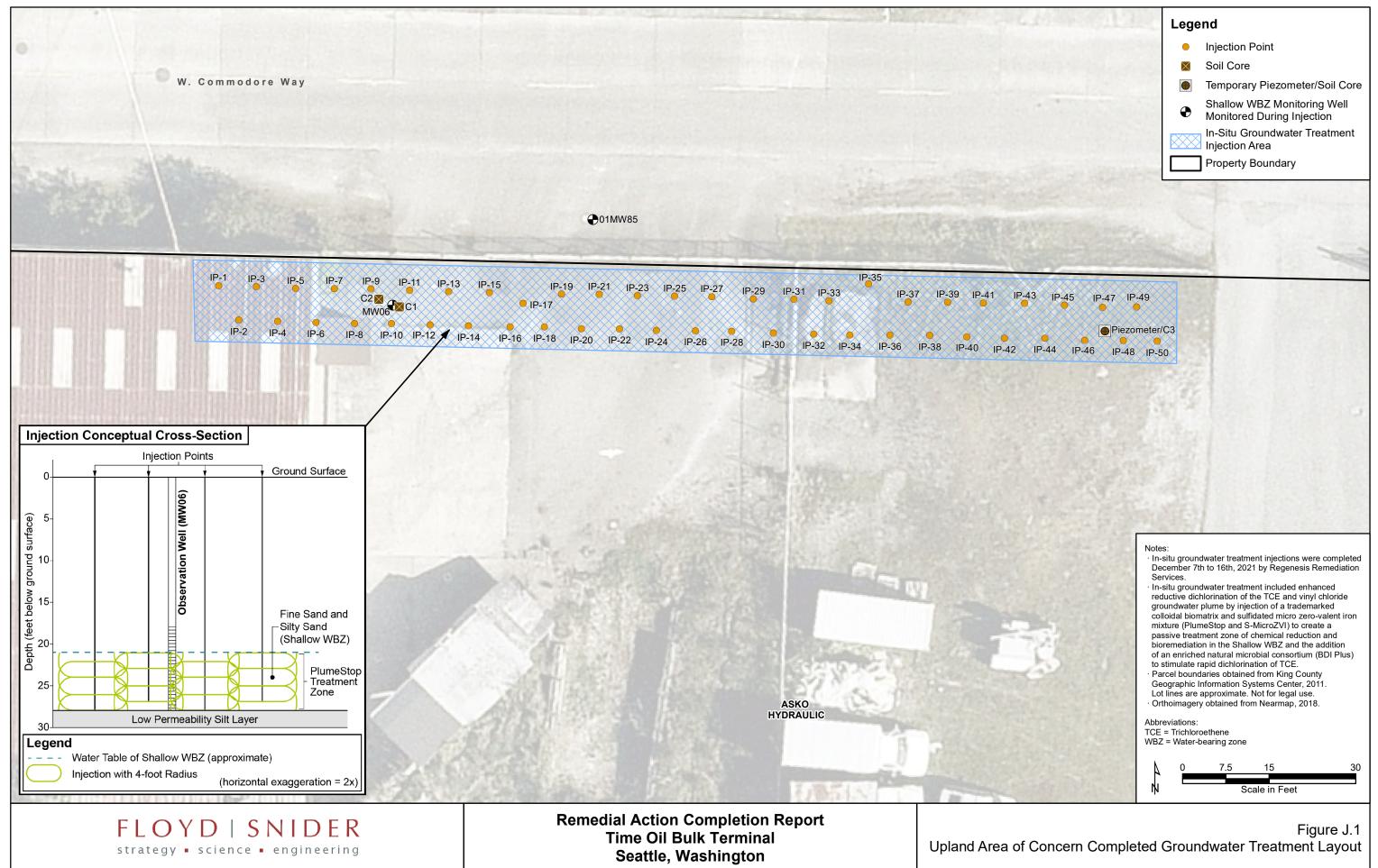
NTU Nephelometric Turbidity unit

ORP Oxidation reduction potential

μS/cm Microsiemens per centimeter

¹ PlumeStop was observed in monitoring well MW06 after pumping 140 gallons of PlumeStop into adjacent injection point IP-9.

² Monitoring well 01MW85 was not anticipated to be inside the radius of influence for the PlumeStop injections; however, groundwater monitoring was completed at this location until the nearest injection point to 01MW85 was finished to determine if PlumeStop was migrating downstream.



Appendix K Product Data Sheets



SAFETY DATA SHEET

LONG DURATION FOAM AC-645

Section 1. Identification

GHS product identifier : LONG DURATION FOAM AC-645

Chemical name : Proprietary Surfactant.

Other means of : Aqueous anionic surfactant mixture. identification

Product type : Liquid.

Relevant identified uses of the substance or mixture and uses advised against

Product use : Aqueous Surfactant. Spray application for VOC and Odor control.

Area of application : Industrial applications.

Supplier/Manufacturer: Rusmar, Inc.

216 Garfield Avenue West Chester, PA 19380 Phone: 610-436-4314 Fax: 610-436-8436

e-mail address of person responsible for this SDS

: info@rusmarinc.com

Website: www.rusmarinc.com

Emergency telephone number (with hours of

operation)

: 888 488 8044 or 212 682 1200 CHEMTREC 800 424 9300

Section 2. Hazards identification

OSHA/HCS status : While this material is not considered hazardous by the OSHA Hazard Communication

Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available

for employees and other users of this product.

Classification of the substance or mixture

: Not classified.

GHS label elements

Signal word : No signal word.

Hazard statements: No known significant effects or critical hazards.

Precautionary statements

Prevention: Not applicable.Response: Not applicable.Storage: Not applicable.Disposal: Not applicable.

Hazards not otherwise

classified

: None known.

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Section 3. Composition/information on ingredients

Substance/mixture : Substance

Chemical name : Proprietary Surfactant.

Other means of : Aqueous anionic surfactant mixture.

identification

CAS number/other identifiers

CAS number : Not available.

Product code : Not available.

Ingredient name	Other names	%	CAS number
Proprietary Surfactant.	-	100	-

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health and hence require reporting in this section.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower

eyelids. Check for and remove any contact lenses. Get medical attention if irritation

occurs.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get

medical attention if symptoms occur.

Skin contact: Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes.

Get medical attention if symptoms occur.

Ingestion : Wash out mouth with water. Remove victim to fresh air and keep at rest in a position

comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact
 Inhalation
 No known significant effects or critical hazards.
 Skin contact
 No known significant effects or critical hazards.
 Ingestion
 No known significant effects or critical hazards.
 No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : No specific data.
Inhalation : No specific data.
Skin contact : No specific data.
Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large

quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

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Section 4. First aid measures

Protection of first-aiders

: No action shall be taken involving any personal risk or without suitable training.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing

media

: Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing

media

: None known.

Specific hazards arising from the chemical

Hazardous thermal decomposition products : In a fire or if heated, a pressure increase will occur and the container may burst.

: Decomposition products may include the following materials: carbon dioxide

carbon monoxide sulfur oxides

Special protective actions for fire-fighters

: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.

For emergency responders

: If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For nonemergency personnel".

Environmental precautions

: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill

: Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

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Section 6. Accidental release measures

Large spill

: Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures

: Put on appropriate personal protective equipment (see Section 8).

Advice on general occupational hygiene

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities

: Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

None.

Appropriate engineering controls

Environmental exposure controls

- : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.
- : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures

: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period.

Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection

: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Skin protection

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Section 8. Exposure controls/personal protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be

worn at all times when handling chemical products if a risk assessment indicates this is

necessary.

Body protection : Personal protective equipment for the body should be selected based on the task being

performed and the risks involved and should be approved by a specialist before

handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected

based on the task being performed and the risks involved and should be approved by a

specialist before handling this product.

Respiratory protection : Use a properly fitted, air-purifying or air-fed respirator complying with an approved

> standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe

working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Clear viscous liquid.]

Color : Translucent, White,

: Odorless. Odor

Odor threshold : Not available.

pН : Not available. **Melting point** : Not available.

: 99°C (210.2°F) **Boiling point** Flash point : Not applicable.

: Not available. **Evaporation rate** Flammability (solid, gas) : Not applicable.

Lower and upper explosive

(flammable) limits

: Not available.

Vapor pressure : 3.3 kPa (25 mm Hg) [room temperature]

Vapor density : Not available. **Relative density** : 1.01 to 1.06

: Easily soluble in the following materials: cold water and hot water. Solubility

Solubility in water : Easily soluble. Partition coefficient: n-: Not available.

octanol/water

Auto-ignition temperature

Decomposition temperature

SADT : Not available. **Viscosity**

: Not available.

: Not available.

: Not available.

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Section 10. Stability and reactivity

Reactivity: No specific test data related to reactivity available for this product or its ingredients.

Chemical stability: The product is stable.

Possibility of hazardous

reactions

: Under normal conditions of storage and use, hazardous reactions will not occur.

Under normal conditions of storage and use, hazardous polymerization will not occur.

Conditions to avoid : Keep away from heat.

Incompatible materials : No specific data.

Hazardous decomposition

products

: Low levels of sulfur oxides on exposure to high temperatures (concentrate).

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Not available.

Conclusion/Summary : Not expected.

Irritation/Corrosion

Not available.

Sensitization

Not available.

Mutagenicity

Conclusion/Summary: Not available.

Carcinogenicity

Conclusion/Summary: Not available.

Reproductive toxicity

Conclusion/Summary: Not available.

Teratogenicity

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely

routes of exposure

: Not available.

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Section 11. Toxicological information

Potential acute health effects

Eye contact
 Inhalation
 No known significant effects or critical hazards.
 Skin contact
 No known significant effects or critical hazards.
 Ingestion
 No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No specific data.
Inhalation : No specific data.
Skin contact : No specific data.
Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate : Not available.

effects

Potential delayed effects : Not available.

Long term exposure

Potential immediate : Not available.

effects

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards.
 Carcinogenicity : No known significant effects or critical hazards.
 Mutagenicity : No known significant effects or critical hazards.
 Teratogenicity : No known significant effects or critical hazards.
 Developmental effects : No known significant effects or critical hazards.
 Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Not available.

Persistence and degradability

Not available.

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Section 12. Ecological information

Bioaccumulative potential

Not available.

Mobility in soil

Soil/water partition coefficient (Koc)

: Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods

: The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-
Transport hazard class(es)	-	-	-
Packing group	-	-	-
Environmental hazards	No.	No.	No.
Additional information	-	-	-

Special precautions for user : Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

: Not available.

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Section 15. Regulatory information

: United States inventory (TSCA 8b): Not determined. **U.S. Federal regulations**

Clean Air Act Section 112

(b) Hazardous Air **Pollutants (HAPs)** : Not listed

Clean Air Act Section 602

Class I Substances

: Not listed

Clean Air Act Section 602 **Class II Substances**

: Not listed

DEA List I Chemicals

: Not listed

(Precursor Chemicals)

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Not applicable.

Composition/information on ingredients

No products were found.

SARA 313

Not applicable.

State regulations

Massachusetts : This material is not listed. **New York** : This material is not listed. **New Jersey** : This material is not listed. **Pennsylvania** : This material is not listed.

California Prop. 65

None of the components are listed.

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol (Annexes A, B, C, E)

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Inform Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

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Section 16. Other information

Hazardous Material Information System (U.S.A.)



Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks Although HMIS® ratings are not required on SDSs under 29 CFR 1910. 1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.)



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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
Not classified.	

History

Date of issue/Date of : 05/28/2015

revision

Date of previous issue : No previous validation

Version : 1
Prepared by : IHS

Key to abbreviations : ATE = Acute Toxicity Estimate BCF = Bioconcentration Factor

GHS = Globally Harmonized System of Classification and Labelling of Chemicals

IATA = International Air Transport Association

IBC = Intermediate Bulk Container

IMDG = International Maritime Dangerous Goods

LogPow = logarithm of the octanol/water partition coefficient

MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships,

1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)

UN = United Nations

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LONG DURATION FOAM AC-645

Section 16. Other information

References : HCS (U.S.A.)- Hazard Communication Standard

International transport regulations

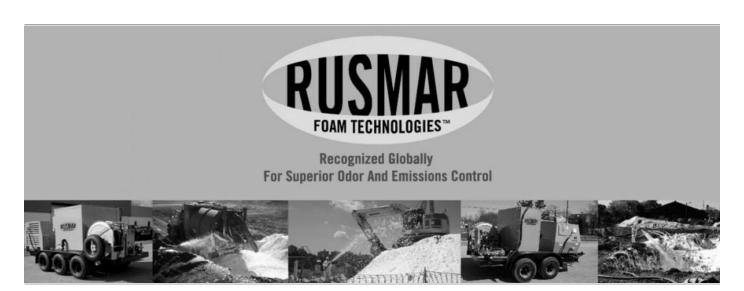
▼ Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

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OC (AC645)

RUSMAR INCORPORATED HEADQUARTERS

216 Garfield Avenue West Chester, **P**A 19380 1-800-733-3626

Advertisements



RusFoam® OC (AC645)

The Odor-Control Foam

RusFoam® OC long duration foam **p**roduces a thick, long-lasting, viscous foam barrier for immediate control of dust, odors and volatile organic compounds (VOCs).

RusFoam[®] OC is recognized by the U.S. Environmental Protection Agency, the U.S. Army Corps of Engineers, state agencies and major corporations as providing superior emission control for a period up to 17 hours. It has been specified for use at Superfund and other hazardous waste sites across the United States and Canada, and elsewhere in the world.

RusFoam® OC is designed for use with all Rusmar Pneumatic Foam Units.

FEATURES

- Biodegradable
- · Non-hazardous
- Non-combustible
- Non-reactive

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BENEFITS

REPORT THIS AD

- · Easy to use
- · Safe for workers and environment
- · Will not add to soil volume
- · Will not add to treatment costs
- More effective than the competition

APPLICATIONS

The **p**rimary a**pp**lication for RusFoam[®] OC is control of odors, VOCs and dust during active excavation and for overnight coverage of contaminated soils at hazardous waste sites.

RusFoam® OC can also be applied on liquid surfaces, such as lagoons and retention ponds.

ODOR CONTROL FOR CHALLENGING PROBLEMS

The remediation of hazardous waste sites often includes excavation of soil contaminated with odorous compounds. RusFoam[®] OC has no odor itself, although a pleasant wintergreen or vanilla scent can be added. It forms a barrier between contaminants and the atmosphere and can be applied during active excavation to provide an immediate and effective barrier to minimize odors. It is completely biodegradable and poses no threat to workers, neighboring residents or ground water.

SOLVES TRANSPORTATION PROBLEMS

RusFoam[®] OC can also be applied on top of trucks, railcars and barges for odor and emission control during transport of materials such as contaminated soils or sewage sludge. Ammonia tests performed on trucks containing sewage sludge resulted in a drop of concentration levels from 170 ppm prior to foaming down to 6 ppm after coverage with RusFoam[®] OC.

- Minimizes worker exposure
- · Maintains fence-line odor and VOC emission limits
- · Effective on lagoon and pond closures
- Can be applied to near vertical or liquid surfaces



CONTROLS FUGITIVE DUST

At hazardous waste sites, fugitive dust can present a health hazard. RusFoam[®] OC can be applied on top of the dusty material to prevent any wind-borne emissions. There is no need to mobilize equipment to immediately cover with soil or tarps. The Pneumatic Foam Unit can be filled and placed at the site to be used at a moment's notice.

CLEANS UP EMERGENCY SPILLS

In emergency spills, odor and VOC control is often difficult because of the terrain and accident conditions. RusFoam[®] OC can be applied to any shaped object, as well as steep slopes,

water, mud, snow and ice. It is non-flammable and non-reactive. Difficult spill problems can be accommodated.

METHOD OF APPLICATION

RusFoam® OC is supplied in either 450 pound (200L) drums or in bulk. Bulk shipments can be stored outside in a Rusmar Bulk Storage-Dilution System. The Bulk Storage and Dilution

system is comprised of a 7000 gallon (26,500L) heated and stirred chemical storage tank with a microprocessor to

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