

Technologies to manage risk for infrastructure

Boston Atlanta Chicago Los Angeles New York www.geotesting.com

ransm	nittal			
O:				
Delaney Pete	erson		DATE: 11/20/2019	GTX NO: 310685
Anchor QEA,	, LLC		RE: Gasco PDI	<u> </u>
720 Olive Wa	ay, Suite 1900			
Seattle, WA	98101			
COPIES	DATE		DESCRIPTION	
	11/20/2019	November 2019 Laboratory	Test Report	
_				
EMARKS:				
		SIGNED:	Bulsh	
CC:			Barbara Sanchez, Assistant	Laboratory Manager
		APPROVED BY	Jon Tu	m
			Jonathan Campbell, Labora	ntory Manager



Technologies to manage risk for infrastructure

Boston Atlanta Chicago Los Angeles New York www.geotesting.com

November 20, 2019

Delaney Peterson Anchor QEA, LLC 720 Olive Way, Suite 1900 Seattle, WA 98101

RE: Gasco PDI (GTX-310685)

Dear Delaney:

Enclosed are the test results you requested for the above referenced project. GeoTesting Express, Inc. (GTX) received 90 samples from you between 9/26/2019 and 10/18/2019.

GTX performed the following tests on these samples:

81 ASTM D2216 - Moisture Content

81 ASTM D854 - Specific Gravity

9 ASTM D6913 - Sieve Analysis

81 ASTM D6913/D7928 - Grain Size Analysis - Sieve and Hydrometer

81 ASTM D4318 - Atterberg Limits

A copy of your test request is attached.

The results presented in this report apply only to the items tested. This report shall not be reproduced except in full, without written approval from GeoTesting Express. The remainder of these samples will be retained for a period of sixty (60) days and will then be discarded unless otherwise notified by you. Please call me if you have any questions or require additional information. Thank you for allowing GeoTesting Express the opportunity of providing you with testing services. We look forward to working with you again in the future.

Respectfully yours,

Barbara Sanchez

**Assistant Laboratory Manager** 

GeoTesting Express, Inc. | 125 Nagog Park | Acton, MA 01720 | Toll Free 800 434 1062 | Fax 978 635 0266



Technologies to manage risk for infrastructure

Boston Atlanta Chicago Los Angeles New York www.geotesting.com

## **Geotechnical Test Report**

11/20/2019

# GTX-310685 Gasco PDI

Prepared for:

Anchor QEA, LLC



Client: Anchor QEA, LLC

Project: Gasco PDI

Location: Project No: GTX-310685
Boring ID: --- Sample Type: --- Tested By: ckg

Sample ID: --- Test Date: 10/07/19 Checked By: bfs
Depth: --- Test Id: 525985

#### Moisture Content of Soil and Rock - ASTM D2216

Boring ID	Sample ID	Depth	Description	Moisture Content,%
	PDI- 18SC-A-06-07 -19092		Moist, very dark gray silt	77.1
	PDI- 8SC-A-08-09 -1909		Moist, very dark gray sand	23.3
	PDI- 1SC-B-7.7-9.7 -1909		Moist, very dark gray sand with silt	13.0
	PDI- 4SC-B-10-12. 1-1909		Moist, very dark gray sand with silt	
	PDI- 6SC-B-4.2-6.2 -1909		Moist, very dark gray sand	14.3
	PDI- 64SC-B-04-06 -19092		Moist, very dark gray silt with sand	66.1



Client: Anchor QEA, LLC Gasco PDI Project:

Location:

Project No: GTX-310685 Boring ID: ---Sample Type: ---Tested By: ckg 10/11/19 Checked By: bfs Sample ID: ---Test Date:

Test Id: Depth: 526423

#### Moisture Content of Soil and Rock - ASTM D2216

Boring ID	Sample ID	Depth	Description	Moisture Content,%
	PDI- 6SC-B-9.8-11.8 -1910		Moist, very dark gray silty sand	23.8
	PDI- 71SC-B-08-10 -19100		Wet, very dark gray silty sand	42.8
	PDI- 9SC-B-7.8-9.8 -1909		Moist, very dark gray sand with silt	40.3
	PDI- 8SC-10.7-12.7 -1910		Moist, very dark gray sand	14.7
	PDI- 81SC-B-08-10 -19100		Wet, dark grayish olive silt with sand	64.1



Client: Anchor QEA, LLC Gasco PDI Project:

Location:

Project No: GTX-310685 Boring ID: ---Sample Type: ---Tested By: ckg 10/23/19 Checked By: bfs Sample ID: ---Test Date:

Test Id: Depth: 527613

#### Moisture Content of Soil and Rock - ASTM D2216

Boring ID	Sample ID	Depth	Description	Moisture Content,%
	PDI- 16SC-B-06 -08-19100		Moist, dark grayish brown silty sand	34.6
	PDI- 7SC-B-11 -13.5-1910		Moist, dark gray sand	19.1
	PDI- 3SC-B-8.7 -10.7-1910		Moist, dark grayish brown sand	17.8
	PDI- 8SC-B-7.1 -9.1-1910		Moist, dark gray sand with silt	20.4
	PDI- SC-B-8.2 -10.2-1910		Moist, dark grayish brown sand	28.6
	PDI- 49SC-B-06 -08-19101		Moist, dark grayish brown silty sand	31.8
	PDI- (2SC-B-06-08-1910)	Moist, dark grayish brown silty sand		45.4
	PDI- 66SC-B-06 -08-19101	Moist, dark olive brown silt		67.8
	PDI- 67SC-B-02 -04-19101		Wet, dark olive brown silt	
	PDI- 77SC-B-04 -06-19101		Wet, dark olive brown silt	81.4



Client: Anchor QEA, LLC

Project: Gasco PDI Location:

Location: Project No: GTX-310685

Boring ID: --- Sample Type: --- Tested By: ckg

Sample ID: --- Test Date: 10/23/19 Checked By: bfs

Depth: --- Test Id: 527633

#### Moisture Content of Soil and Rock - ASTM D2216

Boring ID	Sample ID	Depth	Description	Moisture Content,%
	PDI- 79SC-B-06 -08-19101		Wet, dark grayish brown silt	114.7
	PDI- 90SC-B-06 -08-19101		Moist, dark olive brown silt	81.9
	PDI- 07SPT-00 -04-19092		Wet, dark olive brown silt	107.7
	PDI- 07SPT-04 -09-19092		Wet, dark olive brown silt	84.4
	PDI- 07SPT-17 -18-19092		Moist, dark gray silty sand	42.3
	PDI- 07SPT-62 -64-19092		Moist, dark olive brown silty sand	27.3
	PDI- 08SPT-00 -6.4-19100		Wet, olive brown silt with sand	94.8
	PDI- 8SPT-14 -33.5-1910		Moist, dark olive brown sand	39.5
	PDI- 8SPT-33.5 -66.5-1910		Moist, dark gray sand with silt	29.8
	PDI- 09SPT-00 -6.5-19100		Wet, very dark olive silt	92.7



Location:

Boring ID: --- Sample Type: ---

Boring ID: --- Sample Type: --- Tested By: ckg
Sample ID: --- Test Date: 10/23/19 Checked By: bfs

Project No:

GTX-310685

Depth: --- Test Id: 527643

#### Moisture Content of Soil and Rock - ASTM D2216

Boring ID	Sample ID	Depth	Description	Moisture Content,%
	PDI- 9SPT-16.5 -18.1-1910		Moist, dark olive brown silt	80.2
	PDI- 09SPT-22 -30-19100		Moist, olive brown sand with silt	34.5
	PDI- 9SPT-35.5 -48.3-1910		Moist, olive brown sand with silt	25.9
	PDI- 9SPT-48.3 -51-1910		Moist, dark olive brown silt with sand	47.9
	PDI- 110 B-54-64.5 -191015		Moist, black sand with silt	18.0
	PDI- 10SPT-21 -32-19101		Moist, dark gray sand	23.5
	PDI- 10SPT-32 -45-19101		Moist, black sand	28.2
	PDI- 12SPT-00 -6.5-19100		Moist, dark brown silt	76.7
	PDI- 2SPT-07 -11.5-1910		Moist, dark gray sandy silt	53.2
	PDI- 2SPT-11.5 -26.5-1910		Moist, dark gray silty sand	36.6



Client: Anchor QEA, LLC Gasco PDI Project:

Location: Project No:

GTX-310685 Boring ID: ---Sample Type: ---Tested By: ckg Sample ID: ---Test Date: 10/23/19 Checked By: bfs

Test Id: Depth: 527653

#### Moisture Content of Soil and Rock - ASTM D2216

Boring ID	Sample ID	Depth	Description	Moisture Content,%
	PDI- 2SPT-37.5 -58-1910		Moist, very dark olive gray silty sand	19.1
	PDI- 13SPT-06 -16-19101		Wet, dark grayish brown silt	42.8
	PDI- 13SPT-16 -22-19101		Moist, dark grayish brown sand with silt	36.9
	PDI- 3SPT-22 -25.2-1910		Wet, dark grayish brown silt with sand	61.0
	PDI- 3SPT-31.9 -39.4-1910		Moist, dark gray silty sand	33.2
	PDI- 14SPT-00 -7.5-19100		Wet, olive brown silt	72.9
	PDI- 4SPT-25.5 -28-1910		Moist, dark olive brown silty sand	30.9
	PDI- 4SPT-42 -50.5-1910		Wet, olive brown sandy silt	49.6
	PDI- 4SPT-50.5 -55-1910		Moist, dark gray silty sand	37.2
	PDI- 4SPT-7.5 -12.5-1910		Moist, olive brown silt with sand	64.8



Location:

Boring ID: --- Sample Type: ---

Boring ID: --- Sample Type: --- Tested By: ckg
Sample ID: --- Test Date: 10/23/19 Checked By: bfs

Project No:

GTX-310685

Depth: --- Test Id: 527663

#### Moisture Content of Soil and Rock - ASTM D2216

Boring ID	Sample ID	Depth	Description	Moisture Content,%
	PDI- 15SPT-06 -11-19100		Moist, very dark gray silty sand	17.4
	PDI- 5SPT-18.6 -20.6-1910		Moist, dark olive brown silt with sand	71.7
	PDI- 5SPT-23 -28.1-1910		Moist, very dark olive brown sand with silt	27.8
	PDI- 5SPT-41.5 -49.3-1910		Moist, olive brown silty sand	38.8
	PDI- 16SPT-00 -4.5-19092		Wet, olive brown silt	82.8
	PDI- 6SPT-20 -26.7-1909		Moist, dark gray silty sand	26.2
	PDI- 6SPT-26.7 -28.6-1909		Wet, grayish brown silt	64.0
	PDI- 6SPT-51.5 -54.2-1909		Moist, olive brown silty sand	27.4
	PDI- 7SPT-11 -29.1-1910		Moist, dark gray sand	37.6
	PDI- 7SPT-29.1 -32-1910		Moist, dark gray silty sand	45.0



Location:

Boring ID: --- Sample Type: ---

Boring ID: --- Sample Type: --- Tested By: ckg
Sample ID: --- Test Date: 10/23/19 Checked By: bfs

Project No:

GTX-310685

Depth: --- Test Id: 527673

#### Moisture Content of Soil and Rock - ASTM D2216

Boring ID	Sample ID	Depth	Description	Moisture Content,%
	PDI- 7SPT-44.1 -53.5-1910		Moist, dark gray silty sand	45.6
	PDI- 7SPT-53.5 -63.5-1910		Wet, dark grayish brown silt with sand	83.1
	PDI- 18SPT-00 -4.5-19101		Wet, dark grayish brown silt	112.9
	PDI- 18SPT-4.5 -15-19101		Moist, dark grayish brown silt with sand	70.1
	PDI- 8SPT-46.5 -61-1910		Wet, dark grayish brown silty sand	62.1
	PDI- 19SPT-00 -4.5-19100		Moist, dark grayish brown silt with sand	76.8
	PDI- 9SPT-18.3 -31-1910		Moist, dark gray silty sand	30.4
	PDI- 19SPT-47 -52-19100		Moist, dark grayish brown silty sand	33.5
	PDI- 9SPT-9.5 -18.3-1910		Moist, dark grayish brown sand with silt	37.5
	PDI- 21SPT-00 -06-19093		Moist, olive brown silt	75.8



Sample ID: ---

Location:
Boring ID: --- Sample Type

Sample Type: --- Tested By: ckg Test Date: 10/23/19 Checked By: bfs

Project No:

GTX-310685

Depth: --- Test Id: 527619

#### Moisture Content of Soil and Rock - ASTM D2216

Boring ID	Sample ID	Depth	Description	Moisture Content,%
	PDI- 1SPT-11 -20.7-1909		Moist, dark olive brown silt	59.6
	PDI- 21SPT-21 -38-19093		Moist, dark olive gray silty sand	43.0
	PDI- 1SPT-49.4 -54-1909		Moist, dark grayish brown silty sand	44.7
	PDI- 22SPT-04 -09-19092		Wet, olive brown silt	79.7
	PDI- 2SPT-16.6 -24-1909		Moist, dark olive brown silty sand	48.8
	PDI- 22SPT-61 -66-19092		Wet, olive brown silty sand	41.8
	PDI- 23SPT-00 -4.5-19092		Wet, dark olive silt with sand	71.5
	PDI- 3SPT-25.5 -30.5-1909		Moist, dark gray silty sand	18.8
	PDI- 3SPT-63.2 -65.5-1909		Moist, dark olive brown silt with sand	48.0
	PDI- 9SC-B-05 -07-19100		Moist, dark olive brown sandy silt	60.6



Project: Gasco PDI Location:

Location: Project No: GTX-310685

Boring ID: --- Sample Type: --- Tested By: ckg

Sample ID: --- Test Date: 10/10/19 Checked By: bfs

Depth: --- Test Id: 525994

## Specific Gravity of Soils by ASTM D854

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity	Comment
	PDI- SC-A-06-07 -190		Moist, very dark gray silt	2.53	
	PDI- SC-A-08-09 -190		Moist, very dark gray sand	2.73	
	PDI- SC-B-7.7-9. 7-190		Moist, very dark gray sand with silt	2.73	
	PDI- SC-B-10-12.1 -19		Moist, very dark gray sand with silt	2.76	
	PDI- SC-B-4.2-6.2 -190		Moist, very dark gray sand	2.76	
	PDI- SC-B-04-06 -190		Moist, very dark gray silt with sand	2.63	



Client: Anchor QEA, LLC

Gasco PDI Project:

Location: Project No: GTX-310685 Boring ID: ---Sample Type: ---Tested By: ckg Sample ID: ---Test Date: 10/14/19 Checked By: bfs

Test Id: Depth: 526425

## Specific Gravity of Soils by ASTM D854

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity	Comment
	PDI- C-B-9.8-11.8 -19		Moist, very dark gray silty sand	2.77	
	PDI- SC-B-08-10 -191		Wet, very dark gray silty sand	2.67	
	PDI- SC-B-7.8-9.8 -190		Moist, very dark gray sand with silt	2.72	
	PDI- SC-10.7-12.7 -19		Moist, very dark gray sand	2.79	
	PDI- SC-B-08-10 -191		Wet, dark grayish olive silt with sand	2.72	



Client: Anchor QEA, LLC Gasco PDI Project:

Location:

Project No: GTX-310685 Boring ID: ---Sample Type: ---Tested By: ckg Sample ID: ---Test Date: 11/08/19 Checked By: bfs

Test Id: Depth: 527683

## Specific Gravity of Soils by ASTM D854

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity	Comment
	PDI- SC-B-06 -08-191		Moist, dark grayish brown silty sand	2.71	
	PDI- SC-B-1 1-13.5-19		Moist, dark gray sand	2.74	
	PDI- C-B-8.7 -10.7-19		Moist, dark grayish brown sand	2.73	
	PDI- SC-B-7.1 -9.1-191		Moist, dark gray sand with silt	2.69	
	PDI- C-B-8.2 -10.2-19		Moist, dark grayish brown sand	2.77	
	PDI- SC-B-06 -08-191		Moist, dark grayish brown silty sand	2.75	
	PDI- SC-B-06 -08-191		Moist, dark grayish brown silty sand	2.68	
	PDI- SC-B-06 -08-191		Moist, dark olive brown silt	2.56	
	PDI- SC-B-02 -04-191		Wet, dark olive brown silt	2.65	
	PDI- SC-B-04 -06-191		Wet, dark olive brown silt	2.68	



Client: Anchor QEA, LLC

Project: Gasco PDI Location:

Location: Project No: GTX-310685

Boring ID: --- Sample Type: --- Tested By: ckg

Sample ID: --- Test Date: 11/07/19 Checked By: bfs

Depth: --- Test Id: 527704

## Specific Gravity of Soils by ASTM D854

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity	Comment
	PDI- SC-B-06 -08-191		Moist, dark olive brown silt	2.60	
	PDI- 7SPT-00 -04-1909		Wet, dark olive brown silt	2.65	
	PDI- 7SPT-04 -09-1909		Wet, dark olive brown silt	2.58	
	PDI- 7SPT-17 -18-1909		Moist, dark gray silty sand	2.76	
	PDI- 7SPT-62 -64-1909		Moist, dark olive brown silty sand	2.76	
	PDI- SPT-00 -6.4-191		Wet, olive brown silt with sand	2.55	
	PDI- SPT-14 -33.5-191		Moist, dark olive brown sand	2.74	
	PDI- PT-33.5 -66.5-19		Moist, dark gray sand with silt	2.75	
	PDI- SPT-00 -6.5-191		Wet, very dark olive silt	2.54	
	PDI- PT-16.5 -18.1-19		Moist, dark olive brown silt	2.55	



Client: Anchor QEA, LLC

Project: Gasco PDI Location:

Location: Project No: GTX-310685

Boring ID: --- Sample Type: --- Tested By: ckg

Sample ID: --- Test Date: 10/30/19 Checked By: bfs

Depth: --- Test Id: 527714

## Specific Gravity of Soils by ASTM D854

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity	Comment
	PDI- 9SPT-22 -30-1910		Moist, olive brown sand with silt	2.72	
	PDI- PT-35.5 -48.3-19		Moist, olive brown sand with silt	2.75	
	PDI- SPT-48.3 -51-191		Moist, dark olive brown silt with sand	2.62	
	PDI- 110 -54-64.5 -19101		Moist, black sand with silt	2.75	
	PDI- 0SPT-21 -32-1910		Moist, dark gray sand	2.79	
	PDI- 0SPT-32 -45-1910		Moist, black sand	2.76	
	PDI- SPT-00 -6.5-191		Moist, dark brown silt	2.60	
	PDI- SPT-07 -11.5-191		Moist, dark gray sandy silt	2.64	
	PDI- PT-11.5 -26.5-19		Moist, dark gray silty sand	2.75	
	PDI- SPT-37.5 -58-191		Moist, very dark olive gray silty sand	2.75	



Sample ID: ---

Location:

Boring ID: --- Sample Type

Sample Type: --- Tested By: ckg
Test Date: 11/07/19 Checked By: bfs

Project No:

GTX-310685

Depth: --- Test Id: 527724

## Specific Gravity of Soils by ASTM D854

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity	Comment
	PDI- 3SPT-06 -16-1910		Wet, dark grayish brown silt	2.73	
	PDI- 3SPT-16 -22-1910		Moist, dark grayish brown sand with silt	2.77	
	PDI- SPT-22 -25.2-191		Wet, dark grayish brown silt with sand	2.66	
	PDI- PT-31.9 -39.4-19		Moist, dark gray silty sand	2.44	
	PDI- SPT-00 -7.5-191		Wet, olive brown silt	2.62	
	PDI- SPT-25.5 -28-191		Moist, dark olive brown silty sand	2.75	
	PDI- SPT-42 -50.5-191		Wet, olive brown sandy silt	2.77	
	PDI- SPT-50.5 -55-191		Moist, dark gray silty sand	2.77	
	PDI- SPT-7.5 -12.5-191		Moist, olive brown silt with sand	2.66	
	PDI- 5SPT-06 -11-1910		Moist, very dark gray silty sand	2.77	



Client: Anchor QEA, LLC

Project: Gasco PDI

Location: Project No: GTX-310685
Boring ID: --- Sample Type: --- Tested By: ckg

Sample ID: --- Test Date: 11/08/19 Checked By: bfs

Depth: --- Test Id: 527734

## Specific Gravity of Soils by ASTM D854

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity	Comment
	PDI- PT-18.6 -20.6-19		Moist, dark olive brown silt with sand	2.54	
	PDI- SPT-23 -28.1-191		Moist, very dark olive brown sand with silt	2.75	
	PDI- PT-41.5 -49.3-19		Moist, olive brown silty sand	2.76	
	PDI- SPT-00 -4.5-190		Wet, olive brown silt	2.67	
	PDI- SPT-20 -26.7-190		Moist, dark gray silty sand	2.77	
	PDI- PT-26.7 -28.6-19		Wet, grayish brown silt	2.69	
	PDI- PT-51.5 -54.2-19		Moist, olive brown silty sand	2.76	
	PDI- SPT-11 -29.1-191		Moist, dark gray sand	2.75	
	PDI- SPT-29.1 -32-191		Moist, dark gray silty sand	2.73	
	PDI- PT-44.1 -53.5-19		Moist, dark gray silty sand	2.71	



Client: Anchor QEA, LLC

Project: Gasco PDI Location:

Location: Project No: GTX-310685

Boring ID: --- Sample Type: --- Tested By: ckg

Sample ID: --- Test Date: 10/30/19 Checked By: bfs

Depth: --- Test Id: 527744

## Specific Gravity of Soils by ASTM D854

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity	Comment
	PDI- PT-53.5 -63.5-19		Wet, dark grayish brown silt with sand	2.66	
	PDI- SPT-00 -4.5-191		Wet, dark grayish brown silt	2.65	
	PDI- SPT-4.5 -15-191		Moist, dark grayish brown silt with sand	2.53	
	PDI- SPT-46.5 -61-191		Wet, dark grayish brown silty sand	2.71	
	PDI- SPT-00 -4.5-191		Moist, dark grayish brown silt with sand	2.62	
	PDI- SPT-18.3 -31-191		Moist, dark gray silty sand	2.70	
	PDI- 9SPT-47 -52-1910		Moist, dark grayish brown silty sand	2.78	
	PDI- SPT-9.5 -18.3-191		Moist, dark grayish brown sand with silt	2.73	
	PDI- 1SPT-00 -06-1909		Moist, olive brown silt	2.59	
	PDI- SPT-11 -20.7-190		Moist, dark olive brown silt	2.67	



Client: Anchor QEA, LLC Gasco PDI Project:

Location:

Project No: GTX-310685 Boring ID: ---Sample Type: ---Tested By: ckg Sample ID: ---Test Date: 11/08/19 Checked By: bfs

Test Id: Depth: 527689

## Specific Gravity of Soils by ASTM D854

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity	Comment
	PDI- 1SPT-21 -38-1909		Moist, dark olive gray silty sand	2.73	
	PDI- SPT-49.4 -54-190		Moist, dark grayish brown silty sand	2.70	
	PDI- 2SPT-04 -09-1909		Wet, olive brown silt	2.71	
	PDI- SPT-16.6 -24-190		Moist, dark olive brown silty sand	2.71	
	PDI- 2SPT-61 -66-1909		Wet, olive brown silty sand	2.74	
	PDI- SPT-00 -4.5-190		Wet, dark olive silt with sand	2.66	
	PDI- PT-25.5 -30.5-19		Moist, dark gray silty sand	2.77	
	PDI- PT-63.2 -65.5-19		Moist, dark olive brown silt with sand	2.67	
	PDI- SC-B-05 -07-1910		Moist, dark olive brown sandy silt	2.67	



Client: Anchor QEA, LLC Gasco PDI

Project: Location:

Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg Sample ID: PDI-014SG-00-0.99-1909Test Date: 10/02/19 Checked By: jsc

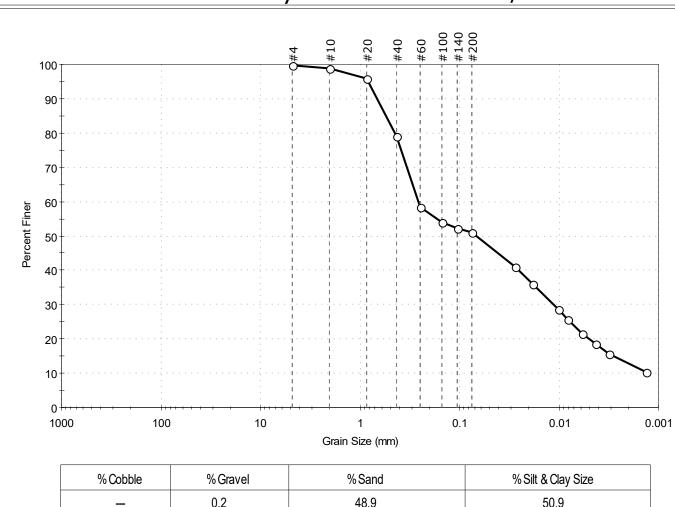
Test Id: Depth: 525297

Test Comment:

Visual Description: Moist, very dark gray sandy silt

Sample Comment:

#### Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
	0.2	48.9	50.9

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	96		
#40	0.42	79		
#60	0.25	58		
#100	0.15	54		
#140	0.11	52		
#200	0.075	51		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0276	41		
	0.0182	36		
	0.0101	29		
	0.0081	26		
	0.0059	22		
	0.0043	19		
	0.0032	16		
	0.0013	10		

<u>Coefficients</u>				
D <sub>85</sub> = 0.5444 mm	$D_{30} = 0.0112 \text{ mm}$			
D <sub>60</sub> = 0.2601 mm	$D_{15} = 0.0029 \text{ mm}$			
D <sub>50</sub> = 0.0681 mm	$D_{10} = N/A$			
$C_u = N/A$	$C_C = N/A$			

Classification <u>ASTM</u> N/A AASHTO Silty Soils (A-4 (0))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period: 1 minute Est. Specific Gravity: 2.65 Separation of Sample: #200 Sieve



Location: Project No: GTX-310685 Sample Type: bag Tested By: ckg

Boring ID: ---Sample ID: PDI-015SG-00-0.87-1909Test Date: 10/02/19 Checked By: jsc

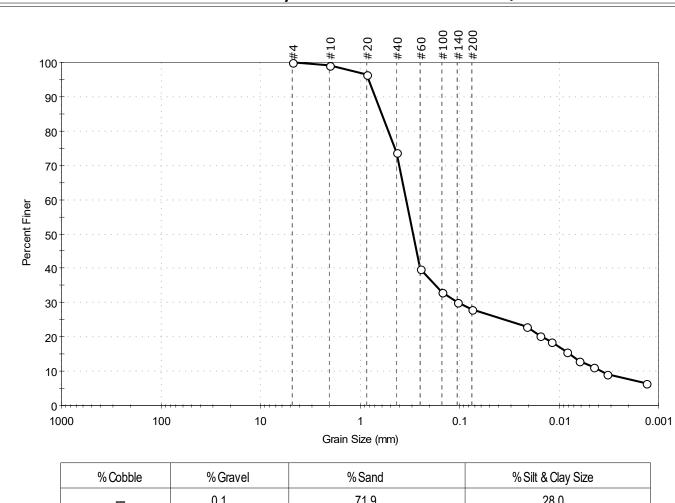
525298 Depth: Test Id:

Test Comment:

Visual Description: Moist, very dark gray silty sand

Sample Comment:

#### Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.1	71.9	28.0

				•
Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	97		
#40	0.42	74		
#60	0.25	40		
#100	0.15	33		
#140	0.11	30		
#200	0.075	28		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0210	23		
	0.0157	20		
	0.0120	18		
	0.0084	16		
	0.0063	13		
	0.0045	11		
	0.0033	9		
	0.0013	6		

<u>Coefficients</u>				
D <sub>85</sub> = 0.5984 mm	$D_{30} = 0.1051 \text{ mm}$			
D <sub>60</sub> = 0.3429 mm	$D_{15} = 0.0078 \text{ mm}$			
D <sub>50</sub> = 0.2934 mm	$D_{10} = 0.0037 \text{ mm}$			
Cu =92.676	$C_c = 8.706$			

**Classification** N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

#### <u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

<u>ASTM</u>

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Est. Specific Gravity: 2.65

Separation of Sample: #200 Sieve



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-016SC-B-06-08-1910Test Date: 10/29/19 Checked By: bfs

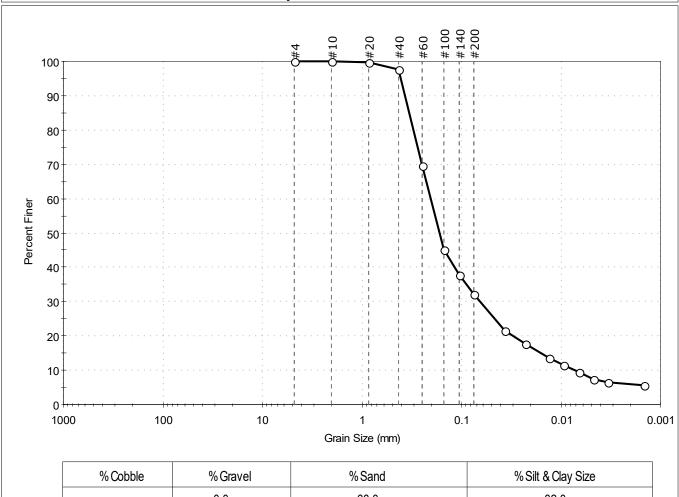
527547 Depth: Test Id:

Test Comment:

Visual Description: Moist, dark grayish brown silty sand

Sample Comment:

#### Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
	0.0	68.0	32.0

Sieve Name Sieve Size, mr		Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	98		
#60	0.25	70		
#100	0.15	45		
#140	0.11	38		
#200	0.075	32		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0364	22		
	0.0229	18		
	0.0132	14		
	0.0094	12		
	0.0066	10		
	0.0047	7		
	0.0034	6		
	0.0015	5		

<u>Coefficients</u>						
$D_{85} = 0.3339 \text{ mm}$	$D_{30} = 0.0651 \text{ mm}$					
$D_{60} = 0.2042 \text{ mm}$	$D_{15} = 0.0161 \text{ mm}$					
$D_{50} = 0.1659 \text{ mm}$	$D_{10} = 0.0072 \text{ mm}$					
$C_{11} = 28.361$	$C_c = 2.883$					

<u>Classification</u> Silty SAND (SM) **ASTM** 

AASHTO Silty Gravel and Sand (A-2-4 (0))

#### <u>Sample/Test Description</u> Sand/Gravel Particle Shape: ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Est. Specific Gravity: 2.65 Separation of Sample: #200 Sieve



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-018SC-A-06-07-1909Test Date: 10/08/19 Checked By: bfs

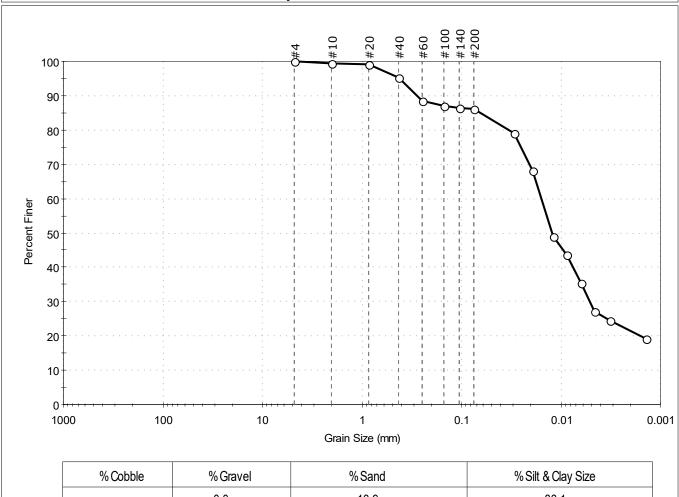
Depth: Test Id: 525971

Test Comment:

Visual Description: Moist, very dark gray silt

Sample Comment:

#### Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
	0.0	13.9	86.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	99		
#40	0.42	95		
#60	0.25	89		
#100	0.15	87		
#140	0.11	87		
#200	0.075	86		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0294	79		
	0.0194	68		
	0.0120	49		
	0.0088	44		
	0.0063	35		
	0.0046	27		
	0.0032	25		
	0.0014	19		

<u>Coeffic</u>	<u>cients</u>
D <sub>85</sub> = 0.0652 mm	$D_{30} = 0.0051 \text{ mm}$
D <sub>60</sub> = 0.0158 mm	$D_{15} = N/A$
$D_{50} = 0.0123 \text{ mm}$	$D_{10} = N/A$
$C_u = N/A$	$C_c = N/A$

<u>Classification</u> Elastic SILT (MH) <u>ASTM</u> AASHTO Clayey Soils (A-7-5 (47))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Est. Specific Gravity: 2.65 Separation of Sample: #200 Sieve



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: ckg

Boring ID: --- Sample Type: bag Tested By: ckg Sample ID: PDI-018SC-A-08-09-1909Test Date: 10/08/19 Checked By: bfs

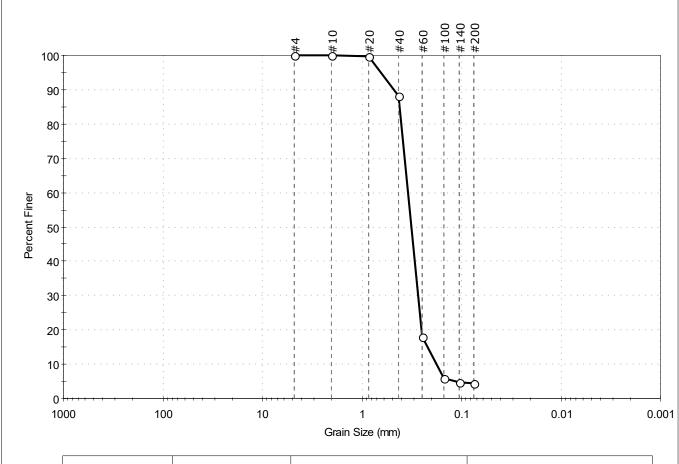
Depth: --- Test Id: 525972

Test Comment: ---

Visual Description: Moist, very dark gray sand

Sample Comment: ---

#### Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	95.7	4.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	88		
#60	0.25	18		
#100	0.15	6		
#140	0.11	5		
#200	0.075	4.3		

<u>cocincients</u>			
D <sub>85</sub> = 0.4149 mm	$D_{30} = 0.2738 \text{ mm}$		
D <sub>60</sub> = 0.3434 mm	$D_{15} = 0.2203 \text{ mm}$		
D <sub>50</sub> = 0.3184 mm	$D_{10} = 0.1781 \text{ mm}$		
C <sub>u</sub> =1.928	C <sub>c</sub> =1.226		

Coefficients

ASTM Poorly graded SAND (SP)

AASHTO Fine Sand (A-3 (1))

Sample/Test Description
Sand/Gravel Particle Shape: --Sand/Gravel Hardness: ---



Location: GTX-310685 Project No: Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-021SC-B-7.7-9.7-190Test Date: 10/08/19 Checked By: bfs

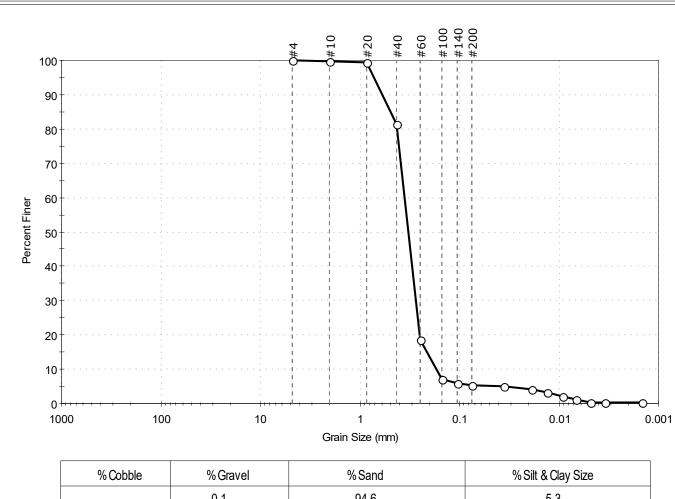
Depth: Test Id: 525973

Test Comment:

Visual Description: Moist, very dark gray sand with silt

Sample Comment:

#### Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.1	94.6	5.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	99		
#40	0.42	82		
#60	0.25	18		
#100	0.15	7		
#140	0.11	6		
#200	0.075	5.3		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0360	5		
	0.0190	4		
	0.0132	3		
	0.0092	2		
	0.0067	1		
	0.0049	0		
	0.0034	0		
	0.0015	0		

<u>Coeffi</u>	<u>cients</u>
D <sub>85</sub> = 0.4863 mm	$D_{30} = 0.2754 \text{ mm}$
D <sub>60</sub> = 0.3546 mm	D <sub>15</sub> =0.2140 mm
D <sub>50</sub> = 0.3260 mm	$D_{10} = 0.1714 \text{ mm}$
C <sub>11</sub> =2.069	$C_c = 1.248$

<u>Classification</u> Poorly graded SAND with Silt (SP-SM) <u>ASTM</u> AASHTO Fine Sand (A-3 (1))

#### <u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Est. Specific Gravity: 2.65 Separation of Sample: #200 Sieve



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-022SG-00-01-190924Test Date: 10/02/19 Checked By: jsc

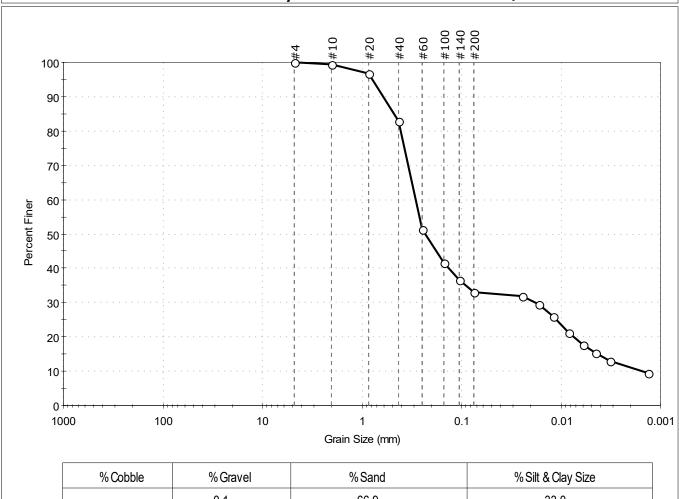
525299 Depth: Test Id:

Test Comment:

Visual Description: Moist, very dark gray silty sand

Sample Comment:

#### Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
	0.1	66.9	33.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	97		
#40	0.42	83		
#60	0.25	51		
#100	0.15	42		
#140	0.11	37		
#200	0.075	33		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0242	32		
	0.0168	29		
	0.0119	26		
	0.0084	21		
	0.0060	18		
	0.0045	15		
	0.0032	13		
	0.0013	9		

Coe	<u>ficients</u>	
D <sub>85</sub> = 0.4712 mm	$D_{30} = 0.0185 \text{ mm}$	
D <sub>60</sub> = 0.2896 mm	$D_{15} = 0.0043 \text{ mm}$	
D <sub>50</sub> = 0.2342 mm	$D_{10} = 0.0016 \text{ mm}$	
C <sub>11</sub> =181.000	$C_c = 0.739$	

**Classification** <u>ASTM</u> N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

#### <u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period: 1 minute Est. Specific Gravity: 2.65

Separation of Sample: #200 Sieve



Location: GTX-310685 Project No: Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-024SC-B-10-12.1-19(Test Date: 10/08/19 Checked By: bfs

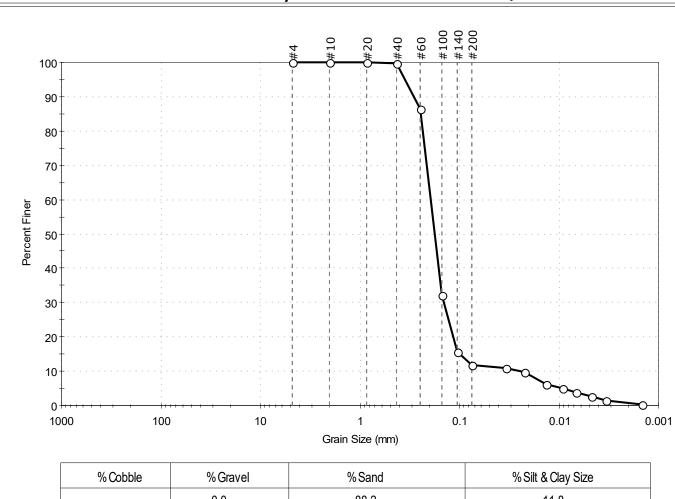
Depth: Test Id: 525974

Test Comment:

Visual Description: Moist, very dark gray sand with silt

Sample Comment:

#### Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	88.2	11.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
	,			
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	100		
#60	0.25	86		
#100	0.15	32		
#140	0.11	16		
#200	0.075	12		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0344	11		
	0.0222	10		
	0.0134	6		
	0.0091	5		
	0.0067	4		
	0.0047	3		
	0.0034	2		
	0.0015	0		

<u>Coet</u>	<u>ficients</u>	
D <sub>85</sub> = 0.2465 mm	$D_{30} = 0.1434 \text{ mm}$	
D <sub>60</sub> = 0.1949 mm	$D_{15} = 0.0998 \text{ mm}$	
D <sub>50</sub> = 0.1774 mm	$D_{10} = 0.0234 \text{ mm}$	
C <sub>11</sub> =8.329	$C_c = 4.509$	

<u>Classification</u> Poorly graded SAND with Silt (SP-SM) <u>ASTM</u> AASHTO Silty Gravel and Sand (A-2-4 (0))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape: ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Est. Specific Gravity: 2.65

Separation of Sample: #200 Sieve



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: ckg

Boring ID: --- Sample Type: bag Tested By: ckg Sample ID: PDI-027SC-B-11-13.5-19 Test Date: 10/25/19 Checked By: bfs

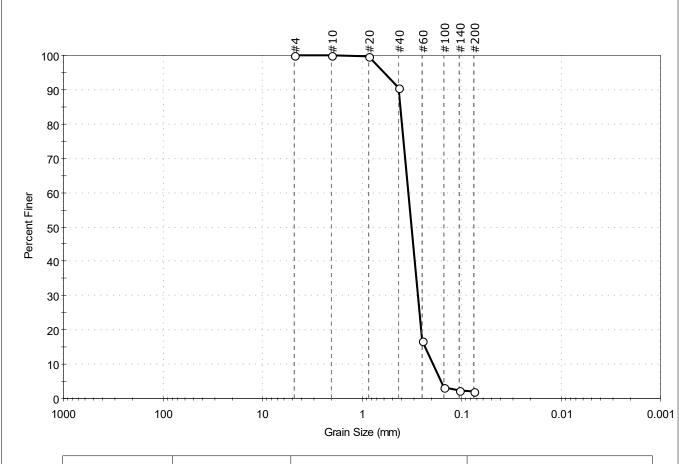
Depth: --- Test Id: 527551

Test Comment: ---

Visual Description: Moist, dark gray sand

Sample Comment: ---

### Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.1	97.9	2.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	91		
#60	0.25	17		
#100	0.15	3		
#140	0.11	2		
#200	0.075	2.0		

<u>Coefficients</u>				
D <sub>85</sub> = 0.4084 mm	$D_{30} = 0.2747 \text{ mm}$			
D <sub>60</sub> = 0.3411 mm	$D_{15} = 0.2327 \text{ mm}$			
D <sub>50</sub> = 0.3173 mm	$D_{10} = 0.1931 \text{ mm}$			
C <sub>u</sub> =1.766	C <sub>c</sub> =1.146			

ASTM Poorly graded SAND (SP)

AASHTO Fine Sand (A-3 (1))

Sample/Test Description
Sand/Gravel Particle Shape: ---

Sand/Gravel Hardness : ---



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: ckg

Boring ID: --- Sample Type: bag Tested By: ckg Sample ID: PDI-028SC-10.7-12.7-191Test Date: 10/14/19 Checked By: bfs

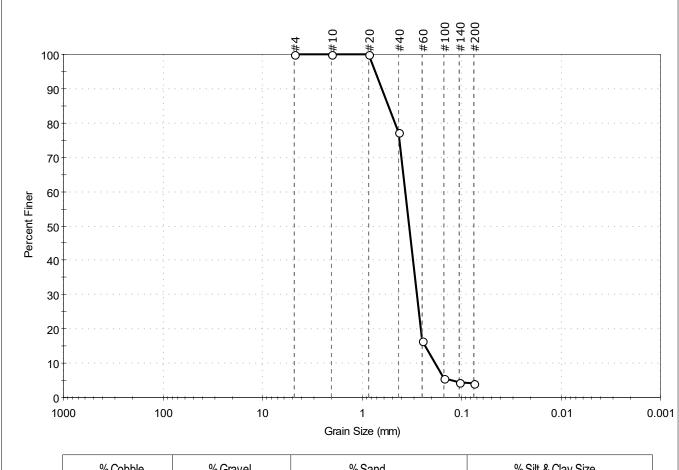
Depth: --- Test Id: 526420

Test Comment: ---

Visual Description: Moist, very dark gray sand

Sample Comment: ---

#### Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	96.0	4.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	77		
#60	0.25	17		
#100	0.15	6		
#140	0.11	5		
#200	0.075	4.0		

<u>Coefficients</u>			
D <sub>85</sub> = 0.5384 mm	$D_{30} = 0.2810 \text{ mm}$		
D <sub>60</sub> = 0.3654 mm	$D_{15} = 0.2321 \text{ mm}$		
D <sub>50</sub> = 0.3348 mm	$D_{10} = 0.1843 \text{ mm}$		
C <sub>u</sub> =1.983	$C_c = 1.173$		

ASTM Poorly graded SAND (SP)

AASHTO Fine Sand (A-3 (1))

Sample/Test Description
Sand/Gravel Particle Shape: --Sand/Gravel Hardness: ---



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: ckg

Boring ID: --- Sample Type: bag Tested By: ckg Sample ID: PDI-033SC-B-8.7-10.7-19Test Date: 11/05/19 Checked By: bfs

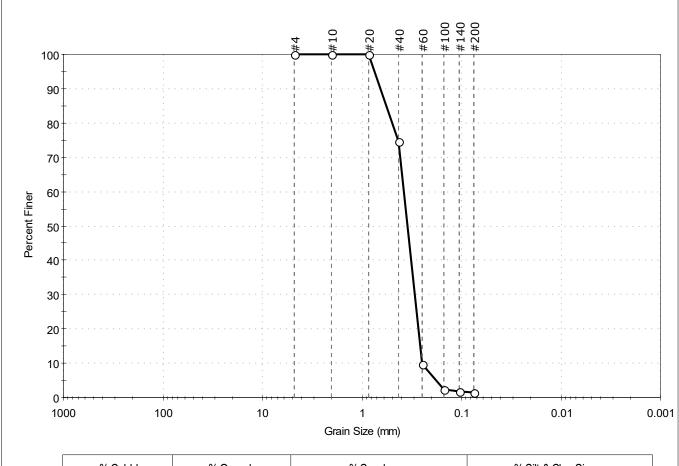
Depth: --- Test Id: 527550

Test Comment: ---

Visual Description: Moist, dark grayish brown sand

Sample Comment: ---

#### Particle Size Analysis - ASTM D6913/D7928



ıе	Sieve Size, mm Percen	t Finer Spec. Percent 0	Complies	Coefficients
		0.0	98.5	1.5
	% Cobble	% Gravel	% Sand	% Silt & Clay Size

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	75		
#60	0.25	10		
#100	0.15	2		
#140	0.11	2		
#200	0.075	1.5		

<u> </u>	ocificients
D <sub>85</sub> = 0.5635 mm	$D_{30} = 0.2948 \text{ mm}$
D <sub>60</sub> = 0.3767 mm	$D_{15} = 0.2608 \text{ mm}$
D <sub>50</sub> = 0.3471 mm	$D_{10} = 0.2503 \text{ mm}$
C <sub>u</sub> =1.505	$C_c = 0.922$

ASTM Poorly graded SAND (SP)

AASHTO Fine Sand (A-3 (1))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape: ---

Sand/Gravel Hardness: ---



Client: Anchor QEA, LLC Gasco PDI Project:

Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-036SC-B-4.2-6.2-190Test Date: 10/08/19 Checked By: bfs

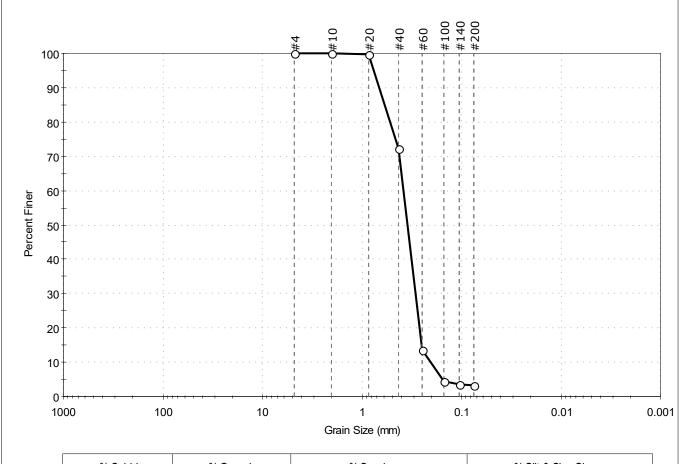
Test Id: 525975 Depth:

Test Comment:

Visual Description: Moist, very dark gray sand

Sample Comment:

#### Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	96.8	3.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	72		
#60	0.25	13		
#100	0.15	4		
#140	0.11	4		
#200	0.075	3.2		

<u>Coefficients</u>			
D <sub>85</sub> = 0.5876 mm	$D_{30} = 0.2903 \text{ mm}$		
D <sub>60</sub> = 0.3806 mm	D <sub>15</sub> =0.2536 mm		
D <sub>50</sub> = 0.3478 mm	$D_{10} = 0.2060 \text{ mm}$		
C <sub>u</sub> =1.848	$C_c = 1.075$		

Classification
Poorly graded SAND (SP) <u>ASTM</u> AASHTO Fine Sand (A-3 (1))

#### Sample/Test Description



Location: GTX-310685 Project No: ckg

Boring ID: ---Sample Type: bag Tested By: Sample ID: PDI-039SC-B-7.8-9.8-190Test Date: 10/08/19 Checked By: bfs

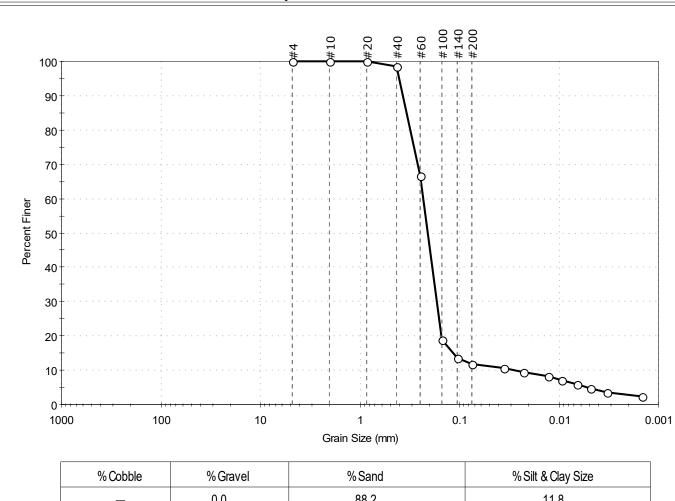
525979 Depth: Test Id:

Test Comment:

Visual Description: Moist, very dark gray sand with silt

Sample Comment:

#### Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	88.2	11.8

Sieve Size, mm	Percent Finer	Spec. Percent	Complies
4.75	100		
2.00	100		
0.85	100		
0.42	99		
0.25	67		
0.15	19		
0.11	13		
0.075	12		
Particle Size (mm)	Percent Finer	Spec. Percent	Complies
0.0361	11		
0.0226	9		
0.0130	8		
0.0094	7		
0.0066	6		
0.0048	5		
0.0033	4		
0.0014	2		
	2.00 0.85 0.42 0.25 0.15 0.11 0.075 Particle Size (mm) 0.0361 0.0226 0.0130 0.0094 0.0066 0.0048 0.0033	2.00 100 0.85 100 0.42 99 0.25 67 0.15 19 0.11 13 0.075 12 Particle Size (mm) Percent Finer 0.0361 11 0.0226 9 0.0130 8 0.0094 7 0.0066 6 0.0048 5	2.00 100 0.85 100 0.42 99 0.25 67 0.15 19 0.11 13 0.075 12 Particle Size (mm) Percent Finer Spec. Percent 0.0361 11 0.0226 9 0.0130 8 0.0094 7 0.0066 6 0.0048 5 0.0033 4

Coeffic	<u>Coefficients</u>	
D <sub>85</sub> =0.3391 mm	$D_{30} = 0.1688 \text{ mm}$	
D <sub>60</sub> = 0.2326 mm	D <sub>15</sub> =0.1169 mm	
D <sub>50</sub> = 0.2090 mm	$D_{10} = 0.0286 \text{ mm}$	
$C_u = 8.133$	$C_c = 4.283$	

<u>Classification</u> Poorly graded SAND with Silt (SP-SM) <u>ASTM</u>

AASHTO Silty Gravel and Sand (A-2-4 (0))

#### <u>Sample/Test Description</u> Sand/Gravel Particle Shape: ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Est. Specific Gravity: 2.65 Separation of Sample: #200 Sieve



Client: Anchor QEA, LLC Gasco PDI Project:

Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-041SC-B-8.2-10.2-19Test Date: 10/30/19 Checked By: bfs

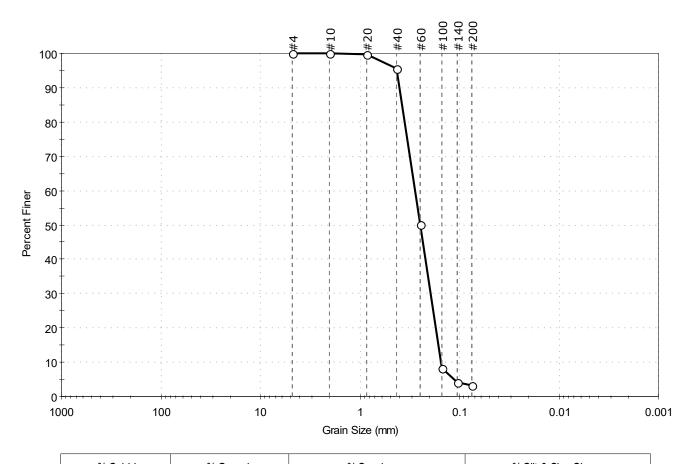
Test Id: 527545 Depth:

Test Comment:

Moist, dark grayish brown sand Visual Description:

Sample Comment:

#### Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	96.6	3.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	96		
#60	0.25	50		
#100	0.15	8		
#140	0.11	4		
#200	0.075	3.4		

<u>Coefficients</u>		
D <sub>85</sub> = 0.3758 mm	$D_{30} = 0.1957 \text{ mm}$	
D <sub>60</sub> = 0.2808 mm	$D_{15} = 0.1629 \text{ mm}$	
D <sub>50</sub> = 0.2500 mm	$D_{10} = 0.1532 \text{ mm}$	
$C_u = 1.833$	$C_c = 0.890$	

<u>Classification</u> Poorly graded SAND (SP) <u>ASTM</u> AASHTO Fine Sand (A-3 (1))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---Sand/Gravel Hardness: ---



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-046SC-B-9.8-11.8-19Test Date: 10/08/19 Checked By: bfs

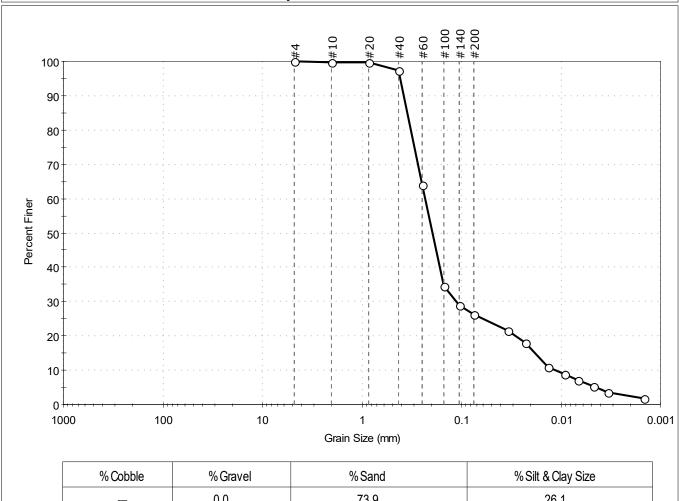
Test Id: 525977 Depth:

Test Comment:

Visual Description: Moist, very dark gray silty sand

Sample Comment:

#### Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size	
	0.0	73.9	26.1	

		•		
Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	97		
#60	0.25	64		
#100	0.15	34		
#140	0.11	29		
#200	0.075	26		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0340	22		
	0.0227	18		
	0.0134	11		
	0.0093	9		
	0.0067	7		
	0.0048	5		
	0.0034	4		
	0.0015	2		

<u>Coefficients</u>			
D <sub>85</sub> = 0.3497 mm	$D_{30} = 0.1135 \text{ mm}$		
D <sub>60</sub> = 0.2334 mm	$D_{15} = 0.0182 \text{ mm}$		
D <sub>50</sub> = 0.1963 mm	$D_{10} = 0.0114 \text{ mm}$		
C <sub>u</sub> =20.474	$C_c = 4.842$		

<u>Classification</u> Silty SAND (SM) <u>ASTM</u>

AASHTO Silty Gravel and Sand (A-2-4 (0))

#### <u>Sample/Test Description</u> Sand/Gravel Particle Shape: ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Est. Specific Gravity: 2.65

Separation of Sample: #200 Sieve



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-049SC-B-06-08-1910Test Date: 10/24/19 Checked By: bfs

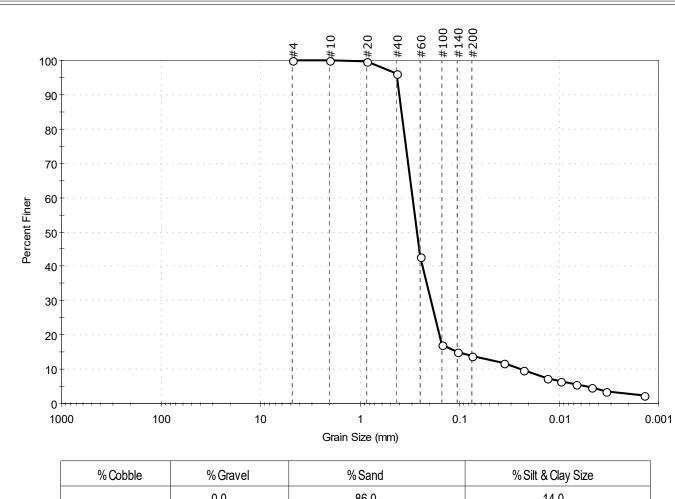
527554 Depth: Test Id:

Test Comment:

Visual Description: Moist, dark grayish brown silty sand

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	86.0	14.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	96		
#60	0.25	43		
#100	0.15	17		
#140	0.11	15		
#200	0.075	14		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0361	12		
	0.0230	10		
	0.0131	7		
	0.0095	6		
	0.0068	5		
	0.0048	5		
	0.0034	4		
	0.0014	2		

<u>Coefficients</u>		
D <sub>85</sub> = 0.3801 mm	$D_{30} = 0.1941 \text{ mm}$	
D <sub>60</sub> = 0.2968 mm	$D_{15} = 0.1066 \text{ mm}$	
D <sub>50</sub> = 0.2688 mm	$D_{10} = 0.0249 \text{ mm}$	
C <sub>11</sub> =11.920	$C_c = 5.098$	

<u>Classification</u> Silty SAND (SM) **ASTM** 

AASHTO Silty Gravel and Sand (A-2-4 (0))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape: ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-052SC-B-06-08-1910Test Date: 10/24/19 Checked By: bfs

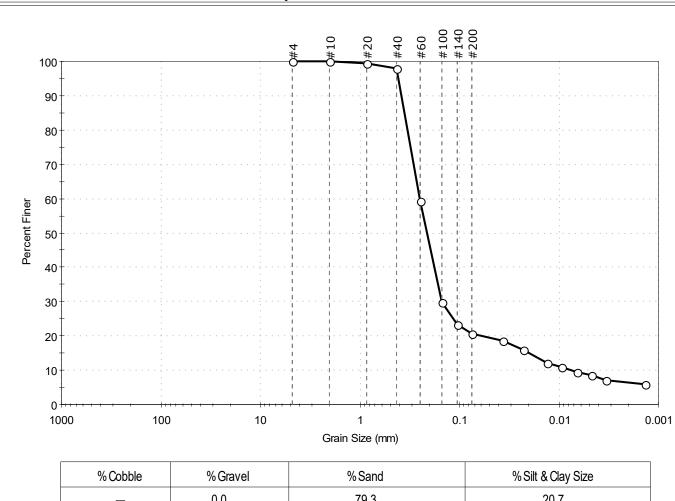
527555 Depth: Test Id:

Test Comment:

Visual Description: Moist, dark grayish brown silty sand

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	79.3	20.7

		_		
Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	98		
#60	0.25	59		
#100	0.15	30		
#140	0.11	23		
#200	0.075	21		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0365	19		
	0.0229	16		
	0.0131	12		
	0.0094	11		
	0.0067	10		
	0.0047	8		
	0.0034	7		
	0.0014	6		

<u>Coefficients</u>				
D <sub>85</sub> = 0.3554 mm	$D_{30} = 0.1505 \text{ mm}$			
D <sub>60</sub> = 0.2521 mm	$D_{15} = 0.0198 \text{ mm}$			
D <sub>50</sub> = 0.2126 mm	$D_{10} = 0.0075 \text{ mm}$			
Cu =33.613	$C_c = 11.980$			

<u>Classification</u> Silty SAND (SM) **ASTM** 

AASHTO Silty Gravel and Sand (A-2-4 (0))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape: ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-064SC-B-04-06-1909Test Date: 10/08/19 Checked By: bfs

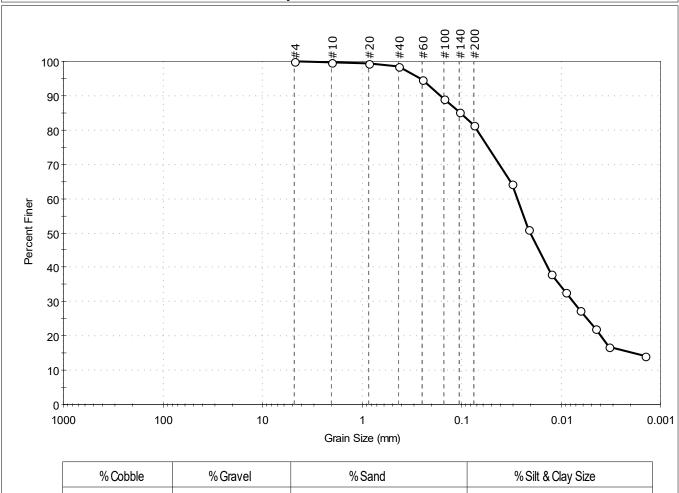
525976 Depth: Test Id:

Test Comment:

Visual Description: Moist, very dark gray silt with sand

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	18.5	81.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	99		
#40	0.42	99		
#60	0.25	95		
#100	0.15	89		
#140	0.11	85		
#200	0.075	81		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0313	64		
	0.0212	51		
	0.0124	38		
	0.0090	33		
	0.0065	27		
	0.0045	22		
	0.0033	17		
	0.0014	14		

<u>Coefficients</u>				
$D_{85} = 0.1044 \text{ mm}$	$D_{30} = 0.0076 \text{ mm}$			
$D_{60} = 0.0275 \text{ mm}$	$D_{15} = 0.0019 \text{ mm}$			
$D_{50} = 0.0202 \text{ mm}$	$D_{10} = N/A$			
$C_{ij} = N/A$	$C_c = N/A$			

<u>Classification</u> Elastic SILT with Sand (MH) <u>ASTM</u>

AASHTO Clayey Soils (A-7-5 (29))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape: ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Est. Specific Gravity: 2.65



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

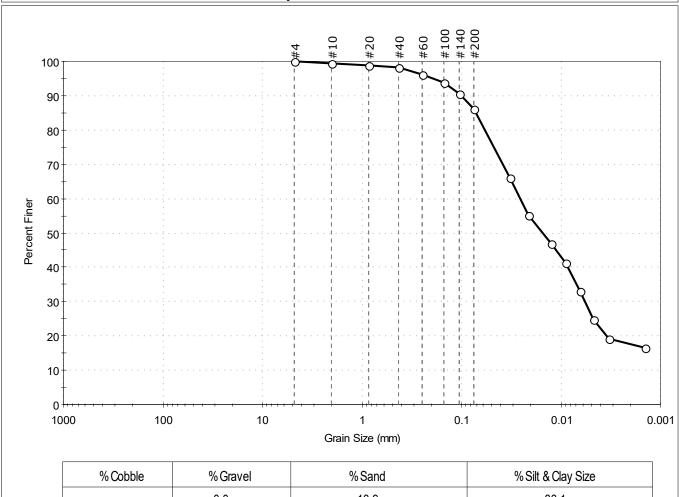
Sample ID: PDI-066SC-B-06-08-1910Test Date: 10/29/19 Checked By: bfs

527552 Test Id: Depth:

Test Comment:

Visual Description: Moist, dark olive brown silt Sample Comment: Sample contains organics

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
	0.0	13.9	86.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	99		
#40	0.42	98		
#60	0.25	96		
#100	0.15	94		
#140	0.11	90		
#200	0.075	86		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0324	66		
	0.0213	55		
	0.0126	47		
	0.0090	41		
	0.0065	33		
	0.0047	25		
	0.0033	19		
	0.0014	17		

<u>Coefficients</u>				
D <sub>85</sub> = 0.0716 mm	$D_{30} = 0.0057 \text{ mm}$			
D <sub>60</sub> = 0.0257 mm	$D_{15} = N/A$			
D <sub>50</sub> = 0.0155 mm	$D_{10} = N/A$			
C <sub>u</sub> =N/A	C <sub>c</sub> =N/A			

<u>Classification</u> Elastic SILT (MH) <u>ASTM</u> AASHTO Clayey Soils (A-7-5 (42))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Separation of Sample: #200 Sieve

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Est. Specific Gravity: 2.65



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-067SC-B-02-04-1910Test Date: 10/29/19 Checked By: bfs

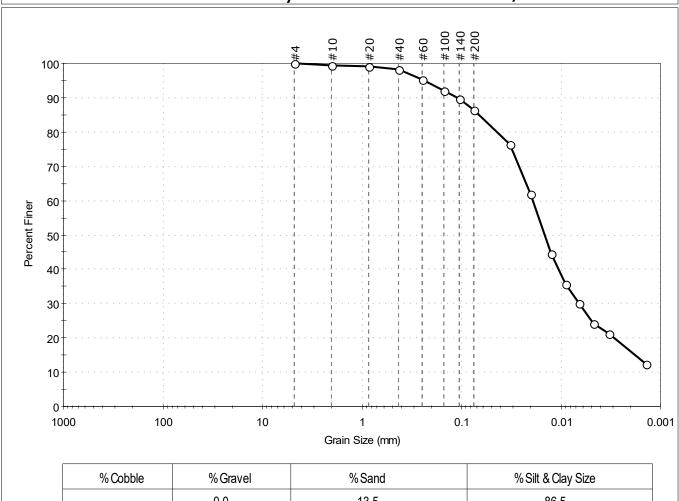
527546 Depth: Test Id:

Test Comment:

Visual Description: Wet, dark olive brown silt

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



	% Cobbl	e	% Gravel		% Sand		% Silt 8	k Clay Size
			0.0		13.5		3	36.5
G: N	Sieve Size, mm Percent Finer Spec. Percent		C	1				
Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies			<u>Coeffic</u>	<u>cients</u>
Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies		D <sub>85</sub> = 0.06		<u>cients</u> D <sub>30</sub> =0.0065 mm
#4	4.75	100	Spec. Percent	Compiles		$D_{85} = 0.06$ $D_{60} = 0.01$	63 mm	

#4	4.75	100		
#10	2.00	99		
#20	0.85	99		
#40	0.42	98		
#60	0.25	95		
#100	0.15	92		
#140	0.11	90		
#200	0.075	86		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0328	76		·
	0.0328 0.0202	76 62		
	0.0202	62		
	0.0202 0.0126	62 44		
	0.0202 0.0126 0.0091	62 44 36		
	0.0202 0.0126 0.0091 0.0065	62 44 36 30		
	0.0202 0.0126 0.0091 0.0065 0.0047	62 44 36 30 24		

$D_{50} = 0.03$	146 mm	$D_{10} =$	N/A
$C_u = N/A$		C <sub>c</sub> =	N/A
ASTM	<u>Class</u> Elastic SILT	ification (MH)	1

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

AASHTO Clayey Soils (A-7-5 (32))

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location:

Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg Sample ID: PDI-071SC-B-08-10-1910Test Date: 10/08/19 Checked By: bfs

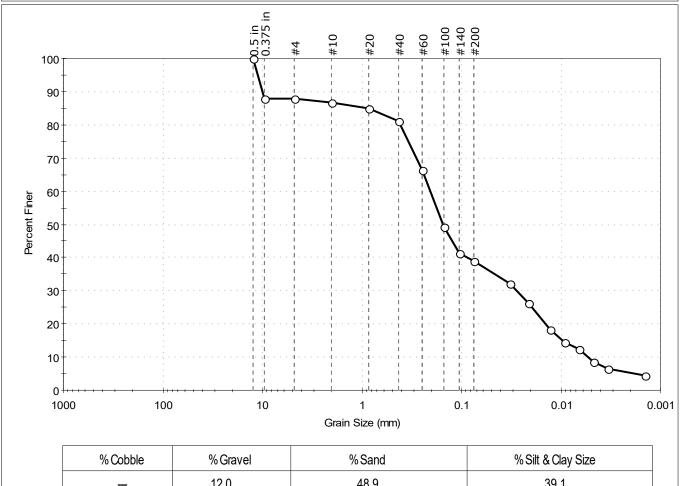
Test Id: 525978 Depth:

Test Comment:

Visual Description: Wet, very dark gray silty sand

Sample Comment:

# Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	12.0	48.9	39.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.5 in	12.50	100		
0.375 in	9.50	88		
#4	4.75	88		
#10	2.00	87		
#20	0.85	85		
#40	0.42	81		
#60	0.25	66		
#100	0.15	49		
#140	0.11	41		
#200	0.075	39		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0328	32		
	0.0212	26		
	0.0129	18		
	0.0093	14		
	0.0067	12		
	0.0047	9		
	0.0033	7		
	0.0014	5		

<u>Coefficients</u>					
D <sub>85</sub> = 0.8858 mm	$D_{30} = 0.0279 \text{ mm}$				
D <sub>60</sub> = 0.2068 mm	$D_{15} = 0.0097 \text{ mm}$				
D <sub>50</sub> = 0.1534 mm	$D_{10} = 0.0054 \text{ mm}$				
Cu =38.296	$C_c = 0.697$				

Classification Silty SAND (SM) <u>ASTM</u>

**AASHTO** Silty Soils (A-4 (0))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness: HARD

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Est. Specific Gravity: 2.65



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-077SC-B-04-06-1910Test Date: 10/29/19 Checked By: bfs

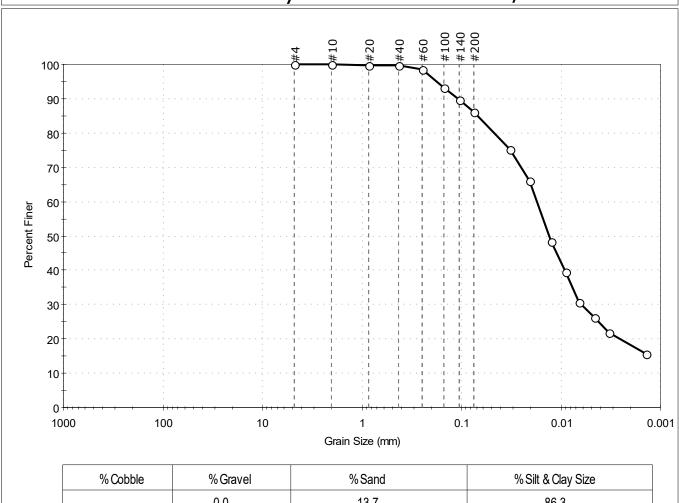
527543 Depth: Test Id:

Test Comment:

Visual Description: Wet, dark olive brown silt

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
	0.0	13.7	86.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	100		
#60	0.25	99		
#100	0.15	93		
#140	0.11	90		
#200	0.075	86		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0326	75		
	0.0208	66		
	0.0126	48		
	0.0090	39		
	0.0065	31		
	0.0046	26		
	0.0033	22		
	0.0014	16		

<u>Coefficients</u>				
D <sub>85</sub> = 0.0682 mm	$D_{30} = 0.0062 \text{ mm}$			
D <sub>60</sub> = 0.0175 mm	$D_{15} = N/A$			
$D_{50} = 0.0132 \text{ mm}$	$D_{10} = N/A$			
$C_u = N/A$	$C_c = N/A$			

<u>Classification</u> Elastic SILT (MH) <u>ASTM</u> AASHTO Clayey Soils (A-7-5 (29))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Est. Specific Gravity: 2.65



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-079SC-B-06-08-1910Test Date: 10/24/19 Checked By: bfs

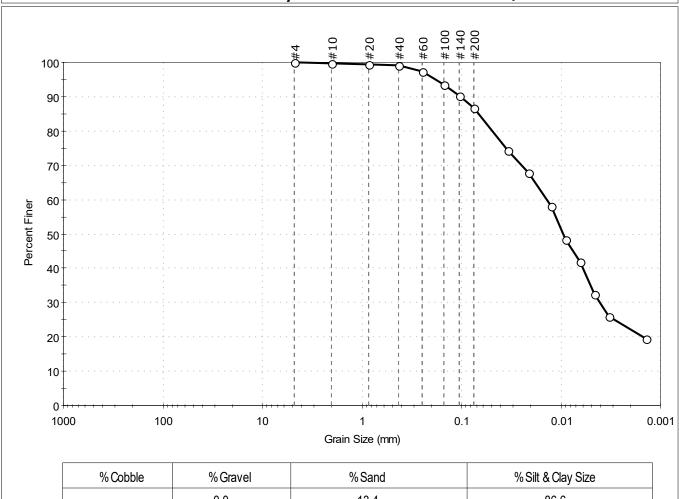
Test Id: 527544 Depth:

Test Comment:

Visual Description: Wet, dark grayish brown silt

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	13.4	86.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	99		
#60	0.25	97		
#100	0.15	94		
#140	0.11	90		
#200	0.075	87		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0341	74		
	0.0213	68		
	0.0125	58		
	0.0090	48		
	0.0064	42		
	0.0046	32		
	0.0033	26		
	0.0014	19		

Coeffic	<u>cients</u>
D <sub>85</sub> =0.0677 mm	$D_{30} = 0.0041 \text{ mm}$
D <sub>60</sub> = 0.0138 mm	$D_{15} = N/A$
D <sub>50</sub> = 0.0095 mm	$D_{10} = N/A$
C <sub>II</sub> =N/A	$C_C = N/A$

<u>Classification</u> Elastic SILT (MH) <u>ASTM</u> AASHTO Clayey Soils (A-7-5 (24))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Est. Specific Gravity: 2.65



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-081SC-B-08-10-1910Test Date: 10/14/19 Checked By: bfs

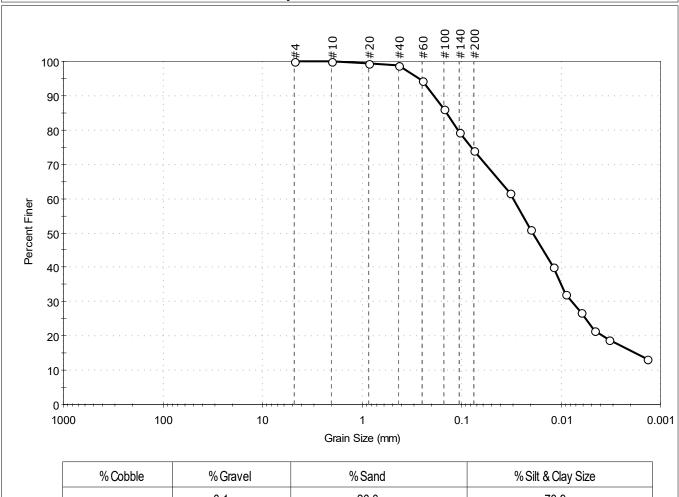
Test Id: Depth: 526421

Test Comment:

Visual Description: Wet, dark grayish olive silt with sand

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.1	26.0	73.9

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	99		
#60	0.25	94		
#100	0.15	86		
#140	0.11	79		
#200	0.075	74		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0325	62		
	0.0204	51		
	0.0121	40		
	0.0089	32		
	0.0063	27		
	0.0046	21		
	0.0033	19		
	0.0014	13		

<u>Coefficients</u>				
D <sub>85</sub> =0.1414 mm	$D_{30} = 0.0078 \text{ mm}$			
D <sub>60</sub> = 0.0301 mm	$D_{15} = 0.0018 \text{ mm}$			
D <sub>50</sub> = 0.0194 mm	$D_{10} = N/A$			
Cu =N/A	$C_{c} = N/A$			

<u>Classification</u> Elastic SILT with Sand (MH) <u>ASTM</u>

AASHTO Clayey Soils (A-7-5 (17))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape: ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Est. Specific Gravity: 2.65

Separation of Sample: #200 Sieve

printed 11/20/2019 9:37:00 AM



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

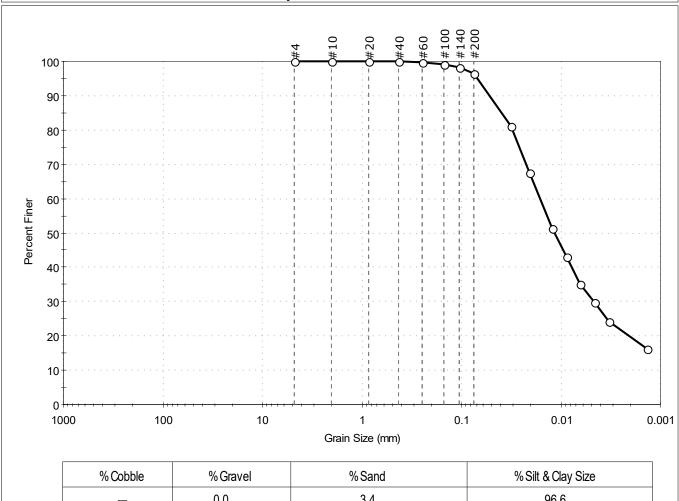
Sample ID: PDI-090SC-B-06-08-1910Test Date: 10/29/19 Checked By: bfs

Test Id: 527553 Depth:

Test Comment:

Visual Description: Moist, dark olive brown silt Sample Comment: Sample contains organics

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
	0.0	3.4	96.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	100		
#60	0.25	100		
#100	0.15	99		
#140	0.11	98		
#200	0.075	97		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0322	81		
	0.0207	68		
	0.0123	51		
	0.0089	43		
	0.0064	35		
	0.0046	30		
	0.0033	24		
	0.0014	16		

<u>Coefficients</u>				
D <sub>85</sub> =0.0400 mm	$D_{30} = 0.0047 \text{ mm}$			
D <sub>60</sub> = 0.0163 mm	$D_{15} = N/A$			
D <sub>50</sub> = 0.0117 mm	$D_{10} = N/A$			
Cu =N/A	$C_c = N/A$			

<u>Classification</u> Elastic SILT (MH) <u>ASTM</u>

AASHTO Clayey Soils (A-7-5 (51))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-101SG-00-01-190924Test Date: 10/02/19 Checked By: jsc

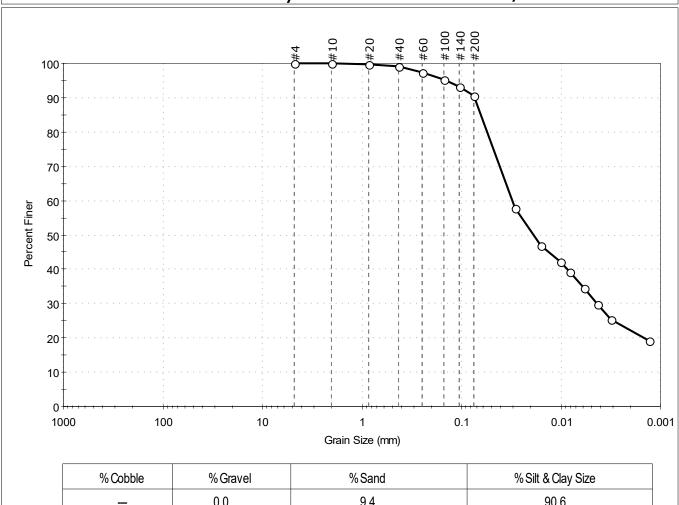
Test Id: 525300 Depth:

Test Comment:

Visual Description: Moist, very dark gray silt

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
	0.0	9.4	90.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	99		
#60	0.25	97		
#100	0.15	95		
#140	0.11	93		
#200	0.075	91		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0289	58		
	0.0160	47		
	0.0101	42		
	0.0082	39		
	0.0058	35		
	0.0043	30		
	0.0031	25		
	0.0013	19		

<u>Coefficients</u>				
D <sub>85</sub> =0.0637 mm	$D_{30} = 0.0043 \text{ mm}$			
D <sub>60</sub> = 0.0308 mm	$D_{15} = N/A$			
D <sub>50</sub> = 0.0189 mm	$D_{10} = N/A$			
C <sub>u</sub> =N/A	$C_C = N/A$			

**Classification** <u>ASTM</u> N/A AASHTO Silty Soils (A-4 (0))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device : Apparatus A - Mech Mixer



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-102SG-00-01-190924Test Date: 10/02/19 Checked By: jsc

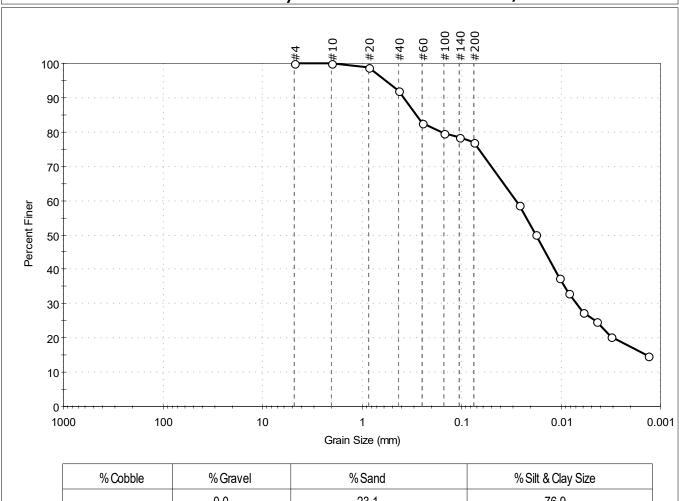
525301 Depth: Test Id:

Test Comment:

Visual Description: Moist, very dark gray silt with sand

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
	0.0	23.1	76.9

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	99		
#40	0.42	92		
#60	0.25	83		
#100	0.15	80		
#140	0.11	78		
#200	0.075	77		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0264	59		
	0.0179	50		
	0.0104	37		
	0.0083	33		
	0.0059	27		
	0.0044	25		
	0.0032	20		
	0.0013	15		

<u>Coefficients</u>				
D <sub>85</sub> = 0.2852 mm	$D_{30} = 0.0069 \text{ mm}$			
D <sub>60</sub> = 0.0283 mm	$D_{15} = 0.0014 \text{ mm}$			
D <sub>50</sub> = 0.0177 mm	$D_{10} = N/A$			
C <sub>u</sub> =N/A	C <sub>C</sub> =N/A			

Classification <u>ASTM</u> N/A AASHTO Silty Soils (A-4 (0))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device : Apparatus A - Mech Mixer



Location: Project No: GTX-310685 Sample Type: bag Tested By: ckg

Boring ID: ---Sample ID: PDI-103SG-00-01-190924Test Date: 10/02/19 Checked By: jsc

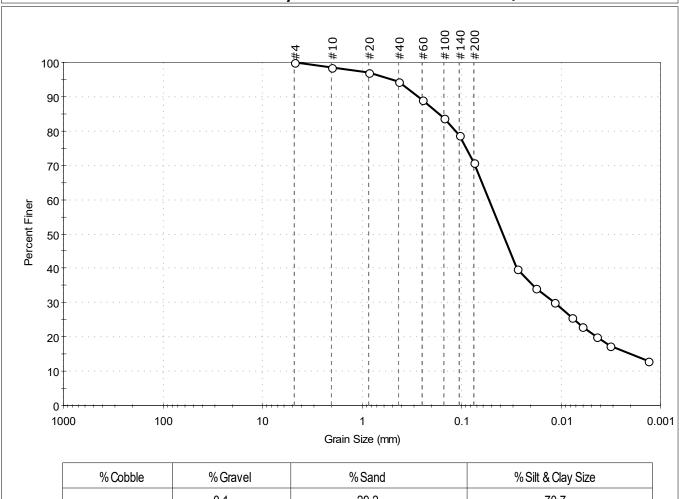
Depth: Test Id: 525302

Test Comment:

Visual Description: Moist, very dark gray silt with sand

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.1	29.2	70.7

		•		
Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	97		
#40	0.42	94		
#60	0.25	89		
#100	0.15	84		
#140	0.11	79		
#200	0.075	71		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0277	40		
	0.0179	34		
	0.0117	30		
	0.0078	26		
	0.0061	23		
	0.0044	20		
	0.0032	17		
	0.0013	13		

<u>Coefficients</u>			
D <sub>85</sub> =0.1678 mm	$D_{30} = 0.0116 \text{ mm}$		
D <sub>60</sub> = 0.0531 mm	D <sub>15</sub> =0.0020 mm		
D <sub>50</sub> = 0.0384 mm	$D_{10} = N/A$		
C <sub>u</sub> =N/A	$C_c = N/A$		

**Classification** <u>ASTM</u> N/A AASHTO Silty Soils (A-4 (0))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-104SG-00-01-190924Test Date: 10/02/19 Checked By: jsc

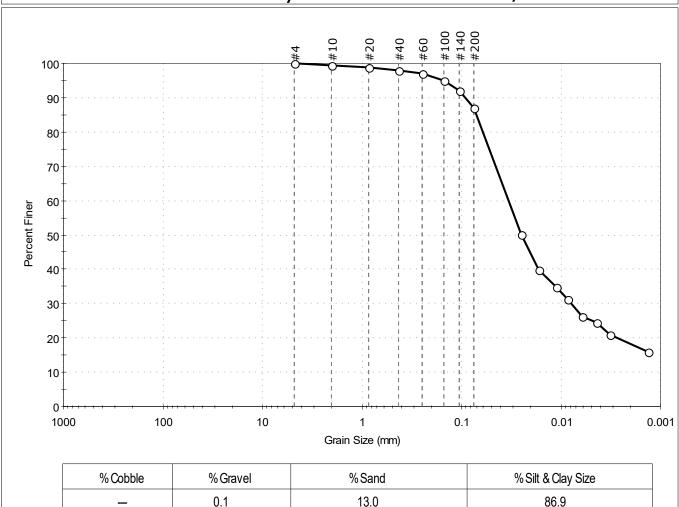
Test Id: 525303 Depth:

Test Comment:

Visual Description: Moist, very dark gray silt

Sample Comment:

# Particle Size Analysis - ASTM D6913/D7928



Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	99		
#40	0.42	98		
#60	0.25	97		
#100	0.15	95		
#140	0.11	92		
#200	0.075	87		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0253	50		
	0.0167	40		
	0.0111	35		
	0.0086	31		
	0.0061	26		
	0.0044	24		
	0.0032	21		
	0.0013	16		

<u>Coefficients</u>					
D <sub>85</sub> = 0.0709 mm	$D_{30} = 0.0079 \text{ mm}$				
D <sub>60</sub> = 0.0339 mm	$D_{15} = N/A$				
D <sub>50</sub> = 0.0252 mm	$D_{10} = N/A$				
$C_u = N/A$	$C_c = N/A$				

Classification <u>ASTM</u> N/A AASHTO Silty Soils (A-4 (0))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device : Apparatus A - Mech Mixer



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-105SG-00-0.99-1909Test Date: 10/02/19 Checked By: jsc

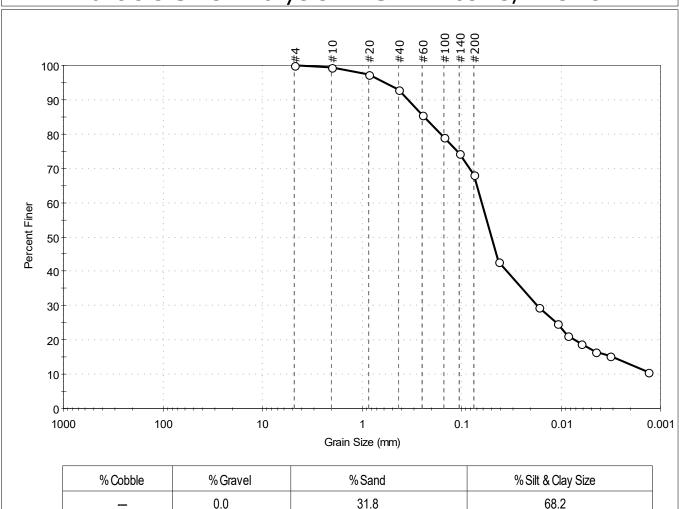
Test Id: Depth: 525304

Test Comment:

Visual Description: Moist, very dark gray sandy silt

Sample Comment:

# Particle Size Analysis - ASTM D6913/D7928



Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	97		
#40	0.42	93		
#60	0.25	85		
#100	0.15	79		
#140	0.11	74		
#200	0.075	68		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0425	43		
	0.0169	30		
	0.0109	25		
	0.0085	21		
	0.0062	19		
	0.0045	17		
	0.0032	15		
	0.0013	11		

<u>Coefficients</u>				
D <sub>85</sub> = 0.2406 mm	$D_{30} = 0.0174 \text{ mm}$			
D <sub>60</sub> = 0.0625 mm	$D_{15} = 0.0030 \text{ mm}$			
D <sub>50</sub> = 0.0501 mm	$D_{10} = N/A$			
$C_u = N/A$	$C_C = N/A$			

Classification <u>ASTM</u> N/A AASHTO Silty Soils (A-4 (0))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device : Apparatus A - Mech Mixer



Client: Anchor QEA, LLC Gasco PDI

Project: Location:

Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg Sample ID: PDI-106SG-00-01-190924Test Date: 10/02/19 Checked By: jsc

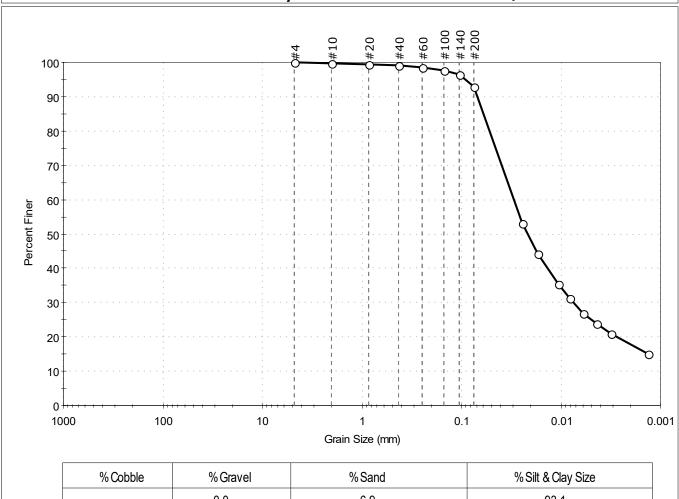
525305 Depth: Test Id:

Test Comment:

Visual Description: Moist, very dark gray silt

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
	0.0	6.9	93.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies	
#4	4.75	100			
#10	2.00	100			
#20	0.85	99			
#40	0.42	99			
#60	0.25	98			
#100	0.15	98			
#140	0.11	96			
#200	0.075	93			
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies	
	0.0243	53			
	0.0173	44			
	0.0106	36			
	0.0082	31			
	0.0060	27			
	0.0044	24			
	0.0032	21			
	0.0013	15			

<u>Coefficients</u>				
D <sub>85</sub> =0.0598 mm	$D_{30} = 0.0075 \text{ mm}$			
D <sub>60</sub> = 0.0295 mm	$D_{15} = N/A$			
D <sub>50</sub> = 0.0216 mm	$D_{10} = N/A$			
$C_u = N/A$	$C_c = N/A$			

**Classification** <u>ASTM</u> N/A AASHTO Silty Soils (A-4 (0))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device : Apparatus A - Mech Mixer



Location: Project No:

Boring ID: ---Sample Type: bag Tested By: ckg Sample ID: PDI-107SPT-00-04-19092Test Date: 11/06/19 Checked By: bfs

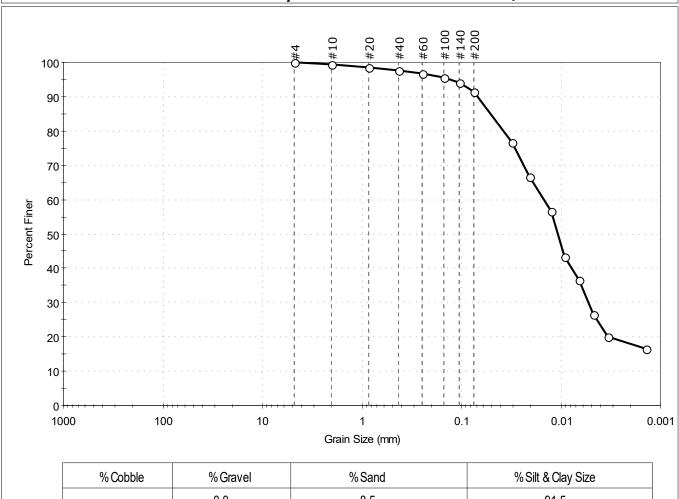
527556 Depth: Test Id:

Test Comment:

Visual Description: Wet, dark olive brown silt

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
	0.0	8.5	91.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	99		
#40	0.42	98		
#60	0.25	97		
#100	0.15	96		
#140	0.11	94		
#200	0.075	91		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0308	77		
	0.0208	67		
	0.0125	57		
	0.0091	43		
	0.0065	37		
	0.0047	27		
	0.0033	20		
	0.0014	17		

<u>Coefficients</u>			
D <sub>85</sub> =0.0509 mm	$D_{30} = 0.0052 \text{ mm}$		
D <sub>60</sub> = 0.0149 mm	$D_{15} = N/A$		
D <sub>50</sub> = 0.0107 mm	$D_{10} = N/A$		
C <sub>II</sub> =N/A	$C_C = N/A$		

GTX-310685

<u>Classification</u> Elastic SILT (MH) <u>ASTM</u> AASHTO Clayey Soils (A-7-5 (53))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

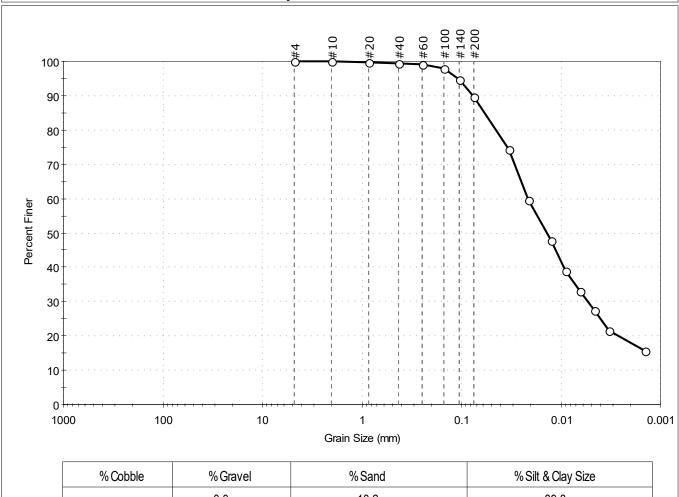
Sample ID: PDI-107SPT-04-09-19092Test Date: 11/06/19 Checked By: bfs

527557 Depth: Test Id:

Test Comment:

Visual Description: Wet, dark olive brown silt Sample Comment: Sample contains organics

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
	0.0	10.2	89.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	100		
#60	0.25	99		
#100	0.15	98		
#140	0.11	95		
#200	0.075	90		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0330	74		
	0.0213	60		
	0.0126	48		
	0.0091	39		
	0.0065	33		
	0.0046	27		
	0.0033	21		
	0.0014	16		

<u>Coefficients</u>			
D <sub>85</sub> = 0.0583 mm	$D_{30} = 0.0054 \text{ mm}$		
D <sub>60</sub> = 0.0216 mm	$D_{15} = N/A$		
D <sub>50</sub> = 0.0138 mm	$D_{10} = N/A$		
C <sub>II</sub> =N/A	$C_C = N/A$		

<u>Classification</u> Elastic SILT (MH) <u>ASTM</u> AASHTO Clayey Soils (A-7-5 (30))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-107SPT-17-18-19092Test Date: 11/06/19 Checked By: bfs

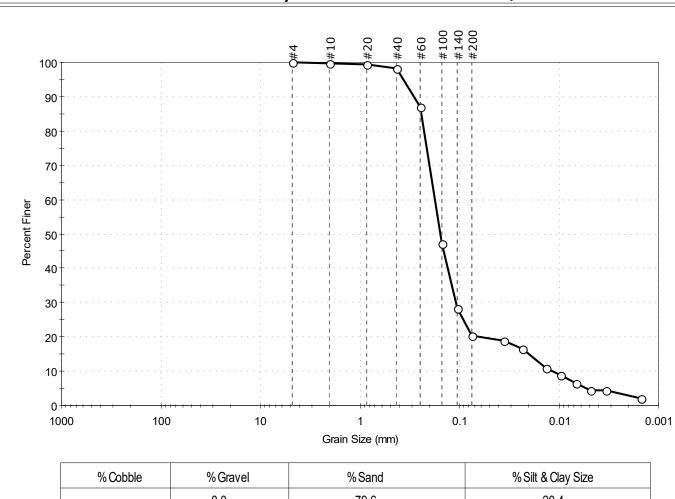
527558 Depth: Test Id:

Test Comment:

Visual Description: Moist, dark gray silty sand

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	79.6	20.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	98		
#60	0.25	87		
#100	0.15	47		
#140	0.11	28		
#200	0.075	20		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0355	19		
	0.0233	17		
	0.0135	11		
	0.0096	9		
	0.0068	7		
	0.0048	4		
	0.0034	4		
	0.0015	2		

<u>Coefficients</u>				
D <sub>85</sub> = 0.2437 mm	$D_{30} = 0.1094 \text{ mm}$			
D <sub>60</sub> = 0.1767 mm	$D_{15} = 0.0199 \text{ mm}$			
D <sub>50</sub> = 0.1554 mm	$D_{10} = 0.0114 \text{ mm}$			
C <sub>11</sub> =15.500	$C_c = 5.941$			

<u>Classification</u> Silty SAND (SM) <u>ASTM</u>

AASHTO Silty Gravel and Sand (A-2-4 (0))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape: ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685 Sample Type: bag Tested By: ckg

Boring ID: ---Sample ID: PDI-107SPT-62-64-19092Test Date: 11/06/19 Checked By: bfs

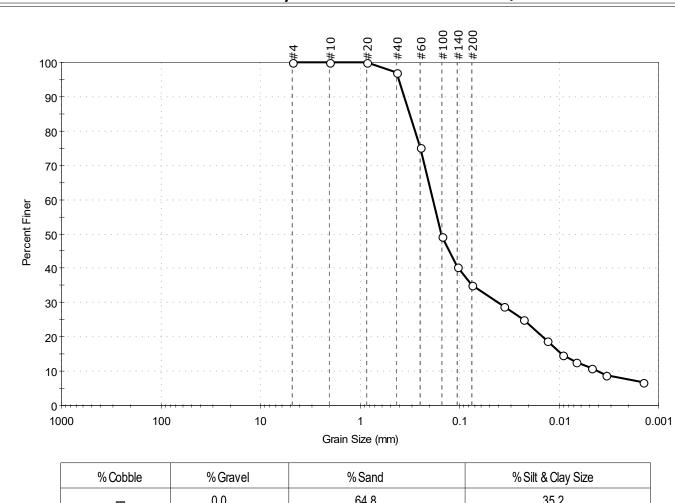
527559 Depth: Test Id:

Test Comment:

Visual Description: Moist, dark olive brown silty sand

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	64.8	35.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	97		
#60	0.25	75		
#100	0.15	49		
#140	0.11	40		
#200	0.075	35		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0357	29		
	0.0225	25		
	0.0131	19		
	0.0093	15		
	0.0067	13		
	0.0047	11		
	0.0034	9		
	0.0014	7		

<u>Coefficients</u>			
D <sub>85</sub> = 0.3165 mm	$D_{30} = 0.0401 \text{ mm}$		
D <sub>60</sub> = 0.1854 mm	$D_{15} = 0.0094 \text{ mm}$		
D <sub>50</sub> = 0.1524 mm	$D_{10} = 0.0042 \text{ mm}$		
C <sub>11</sub> =44.143	$C_c = 2.065$		

<u>Classification</u> Silty SAND (SM) **ASTM** 

AASHTO Silty Soils (A-4 (0))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: GTX-310685 Project No: Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-108SPT-00-6.4-1910CTest Date: 11/01/19 Checked By: bfs

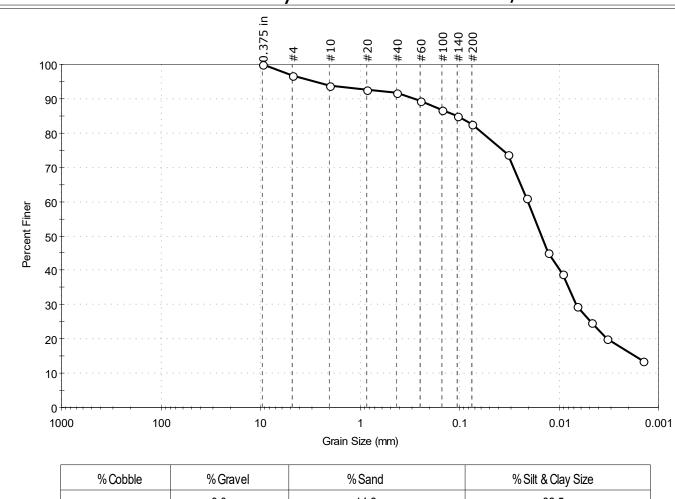
527560 Depth: Test Id:

Test Comment:

Visual Description: Wet, olive brown silt with sand

Sample Comment:

# Particle Size Analysis - ASTM D6913/D7928



3.3 14.2 82.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	97		
#10	2.00	94		
#20	0.85	93		
#40	0.42	92		
#60	0.25	89		
#100	0.15	87		
#140	0.11	85		
#200	0.075	82		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0328	74		
	0.0213	61		
	0.0127	45		
	0.0091	39		
	0.0066	29		
	0.0047	25		
	0.0033	20		
	0.0014	14		

<u>Coefficients</u>			
D <sub>85</sub> = 0.1081 mm	$D_{30} = 0.0067 \text{ mm}$		
D <sub>60</sub> = 0.0206 mm	$D_{15} = 0.0017 \text{ mm}$		
D <sub>50</sub> = 0.0149 mm	$D_{10} = N/A$		
C <sub>II</sub> =N/A	$C_c = N/A$		

<u>Classification</u> Elastic SILT with Sand (MH) <u>ASTM</u> AASHTO Clayey Soils (A-7-5 (41))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness: HARD

Dispersion Device : Apparatus A - Mech Mixer



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: ckg

Boring ID: --- Sample Type: bag Tested By: ckg Sample ID: PDI-108SPT-14-33.5-191(Test Date: 11/01/19 Checked By: bfs

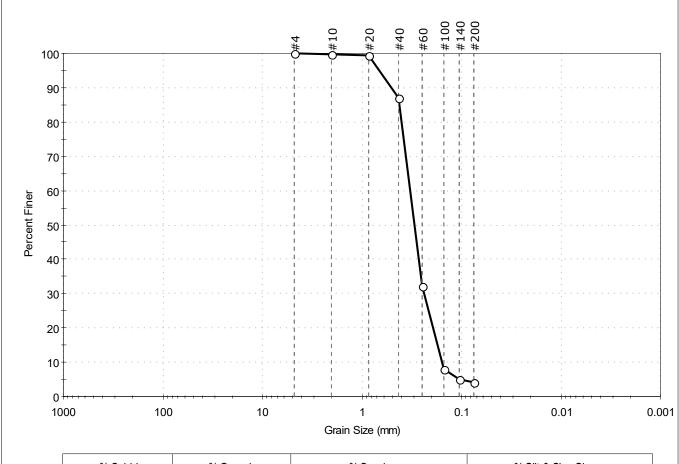
Depth: --- Test Id: 527561

Test Comment: ---

Visual Description: Moist, dark olive brown sand

Sample Comment: ---

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	95.9	4.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	99		
#40	0.42	87		
#60	0.25	32		
#100	0.15	8		
#140	0.11	5		
#200	0.075	4.1		

<u>Coe</u>	<u>fficients</u>
D <sub>85</sub> = 0.4167 mm	$D_{30} = 0.2394 \text{ mm}$
D <sub>60</sub> = 0.3274 mm	$D_{15} = 0.1743 \text{ mm}$
D <sub>50</sub> = 0.2973 mm	$D_{10} = 0.1568 \text{ mm}$
C <sub>u</sub> =2.088	C <sub>c</sub> =1.116

ASTM Poorly graded SAND (SP)

AASHTO Fine Sand (A-3 (1))

Sample/Test Description
Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-108SPT-33.5-66.5-19Test Date: 11/01/19 Checked By: bfs

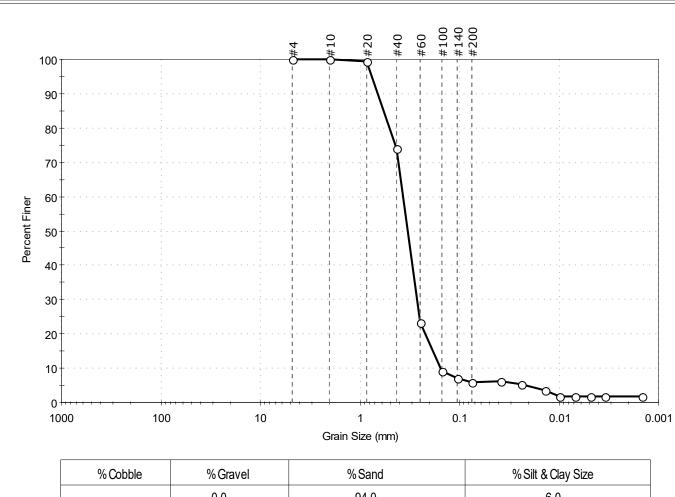
Depth: Test Id: 527562

Test Comment:

Visual Description: Moist, dark gray sand with silt

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
	0.0	94.0	6.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	99		
#40	0.42	74		
#60	0.25	23		
#100	0.15	9		
#140	0.11	7		
#200	0.075	6.0		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0385	6		
	0.0237	5		
	0.0137	4		
	0.0098	2		
	0.0069	2		
	0.0049	2		
	0.0034	2		
	0.0015	2		

<u>Coeff</u>	<u>icients</u>
D <sub>85</sub> = 0.5740 mm	$D_{30} = 0.2682 \text{ mm}$
D <sub>60</sub> = 0.3670 mm	$D_{15} = 0.1849 \text{ mm}$
D <sub>50</sub> = 0.3306 mm	$D_{10} = 0.1541 \text{ mm}$
C <sub>11</sub> =2.382	$C_{c} = 1.272$

<u>Classification</u> Poorly graded SAND with Silt (SP-SM) <u>ASTM</u> AASHTO Fine Sand (A-3 (1))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

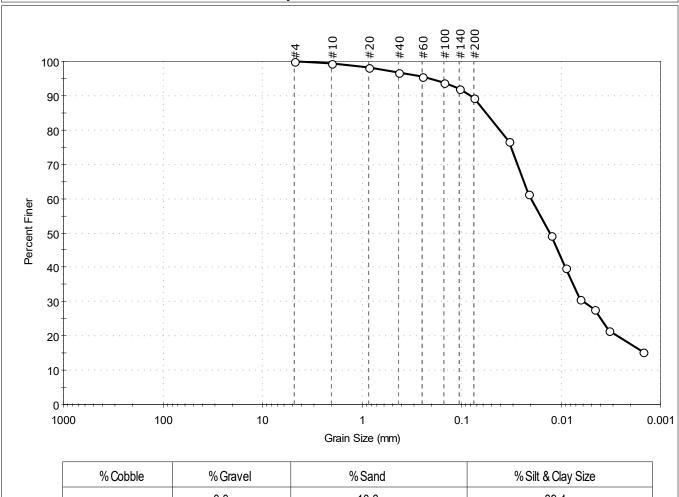
Sample ID: PDI-109SPT-00-6.5-1910(Test Date: 10/29/19 Checked By: bfs

527563 Depth: Test Id:

Test Comment:

Visual Description: Wet, very dark olive silt Sample Comment: Sample contains organics

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
	0.0	10.6	89.4

		<del>'</del>		<u>'</u>
Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	98		
#40	0.42	97		
#60	0.25	96		
#100	0.15	94		
#140	0.11	92		
#200	0.075	89		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0332	77		
	0.0211	61		
	0.0125	49		
	0.0090	40		
	0.0065	31		
	0.0046	28		
	0.0033	22		
	0.0015	15		

<u>Coefficients</u>			
D <sub>85</sub> = 0.0563 mm	$D_{30} = 0.0060 \text{ mm}$		
D <sub>60</sub> = 0.0199 mm	$D_{15} = N/A$		
D <sub>50</sub> = 0.0130 mm	$D_{10} = N/A$		
C <sub>u</sub> =N/A	$C_c = N/A$		

<u>Classification</u> Elastic SILT (MH) <u>ASTM</u> AASHTO Clayey Soils (A-7-5 (48))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Est. Specific Gravity: 2.65



Location: Project No: GTX-310685 ckg

Boring ID: ---Sample Type: bag Tested By: Sample ID: PDI-109SPT-16.5-18.1-19Test Date: 10/29/19 Checked By: bfs

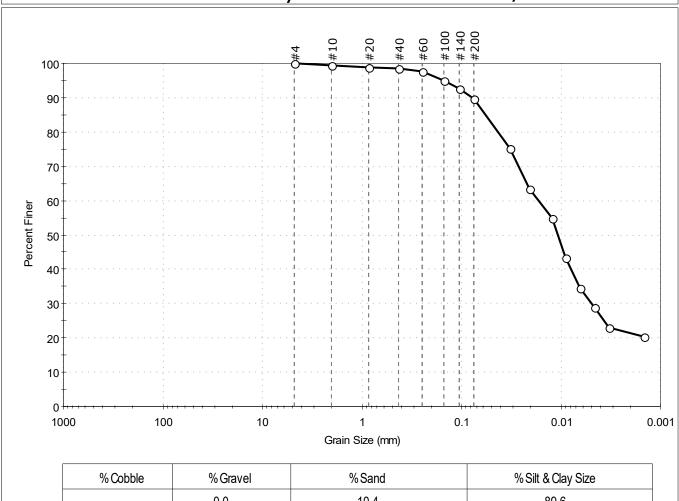
527564 Depth: Test Id:

Test Comment:

Visual Description: Moist, dark olive brown silt

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



Name	Sieve Size, mm Percen	t Finer Spec. Percent	Complies		<u>Coefficients</u>	
		0.0		10.4	89.6	
	% Cobble	% Gravel		% Sand	% Silt & Clay Size	

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	99		
#40	0.42	98		
#60	0.25	98		
#100	0.15	95		
#140	0.11	93		
#200	0.075	90		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0329	75		
	0.0209	64		
	0.0123	55		
	0.0089	43		
	0.0064	35		
	0.0046	29		
	0.0033	23		
	0.0015	20		

	111010110
D <sub>85</sub> = 0.0578 mm	$D_{30} = 0.0049 \text{ mm}$
D <sub>60</sub> = 0.0168 mm	$D_{15} = N/A$
D <sub>50</sub> = 0.0107 mm	$D_{10} = N/A$
$C_u = N/A$	$C_c = N/A$

<u>Classification</u> Elastic SILT (MH) <u>ASTM</u> AASHTO Clayey Soils (A-7-5 (38))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Est. Specific Gravity: 2.65 Separation of Sample: #200 Sieve

Sieve



Location: GTX-310685 Project No: Sample Type: bag Tested By: ckg

Boring ID: ---Sample ID: PDI-109SPT-22-30-19100Test Date: 10/29/19 Checked By: bfs

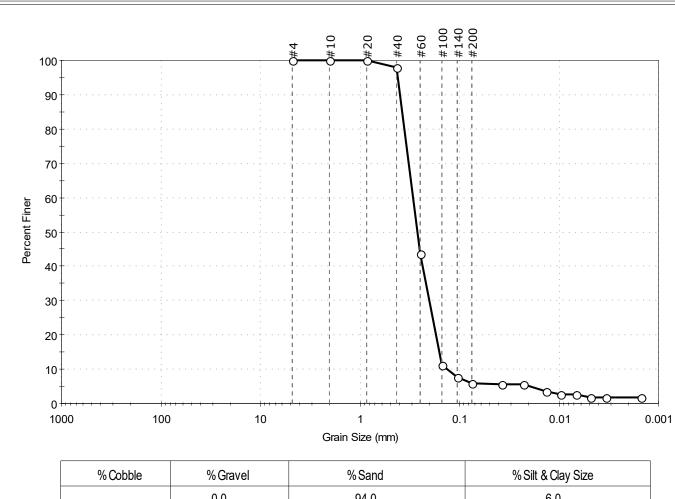
527565 Depth: Test Id:

Test Comment:

Visual Description: Moist, olive brown sand with silt

Sample Comment:

# Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	94.0	6.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	98		
#60	0.25	44		
#100	0.15	11		
#140	0.11	8		
#200	0.075	6.0		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0374	5		
	0.0229	5		
	0.0134	4		
	0.0095	3		
	0.0067	3		
	0.0048	2		
	0.0034	2		
	0.0015	2		

<u>Coefficients</u>				
D <sub>85</sub> = 0.3747 mm	$D_{30} = 0.2015 \text{ mm}$			
D <sub>60</sub> = 0.2933 mm	D <sub>15</sub> =0.1592 mm			
D <sub>50</sub> = 0.2659 mm	$D_{10} = 0.1336 \text{ mm}$			
C <sub>u</sub> =2.195	$C_c = 1.036$			

<u>Classification</u> Poorly graded SAND with Silt (SP-SM) <u>ASTM</u> AASHTO Fine Sand (A-3 (1))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: GTX-310685 Project No: Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-109SPT-35.5-48.3-19Test Date: 10/29/19 Checked By: bfs

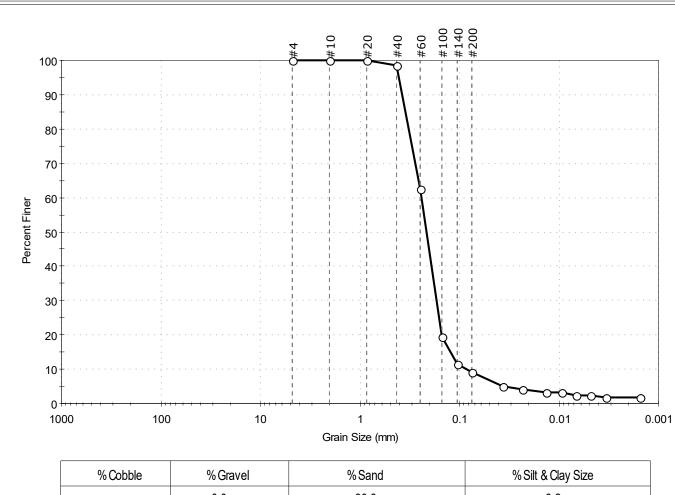
527566 Depth: Test Id:

Test Comment:

Visual Description: Moist, olive brown sand with silt

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	90.8	9.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	98		
#60	0.25	63		
#100	0.15	20		
#140	0.11	11		
#200	0.075	9.2		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0365	5		
	0.0233	4		
	0.0133	3		
	0.0095	3		
	0.0067	2		
	0.0048	2		
	0.0034	2		
	0.0015	2		

Coeffic	<u>cients</u>
D <sub>85</sub> = 0.3483 mm	$D_{30} = 0.1699 \text{ mm}$
D <sub>60</sub> = 0.2426 mm	$D_{15} = 0.1233 \text{ mm}$
D <sub>50</sub> = 0.2154 mm	$D_{10} = 0.0849 \text{ mm}$
Cu =2.857	$C_c = 1.401$

<u>Classification</u> Poorly graded SAND with Silt (SP-SM) <u>ASTM</u> AASHTO Fine Sand (A-3 (1))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-109SPT-48.3-51-191(Test Date: 10/29/19 Checked By: bfs

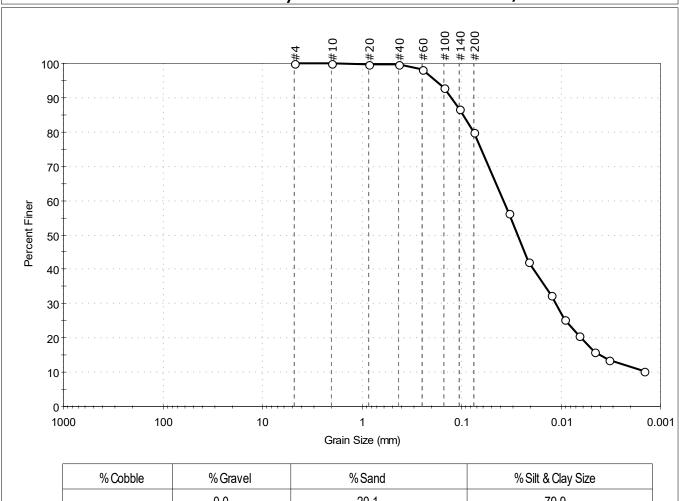
527567 Depth: Test Id:

Test Comment:

Visual Description: Moist, dark olive brown silt with sand

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



ve Name	Sieve Size, mm Per	cent Finer	Spec. Percent	Complies		<u>C</u>	<u>oefficients</u>	
			0.0		20.1		79.9	
	% Cobble		% Gravel		% Sand	0	% Silt & Clay Size	

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	100		
#60	0.25	98		
#100	0.15	93		
#140	0.11	87		
#200	0.075	80		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0335	56		
	0.0210	42		
	0.0126	33		
	0.0091	25		
	0.0065	21		
	0.0046	16		
	0.0033	14		
	0.0015	10		

	Coefficients
D <sub>85</sub> = 0.0976 mm	$D_{30} = 0.0112 \text{ mm}$
$D_{60} = 0.0380 \text{ mm}$	$D_{15} = 0.0041 \text{ mm}$
D <sub>50</sub> = 0.0273 mm	$D_{10} = N/A$
C <sub>u</sub> =N/A	$C_C = N/A$

<u>Classification</u> SILT with Sand (ML) **ASTM** 

AASHTO Silty Soils (A-4 (0))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: GTX-310685 Project No: Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-110 B-54-64.5-19101Test Date: 10/29/19 Checked By: bfs

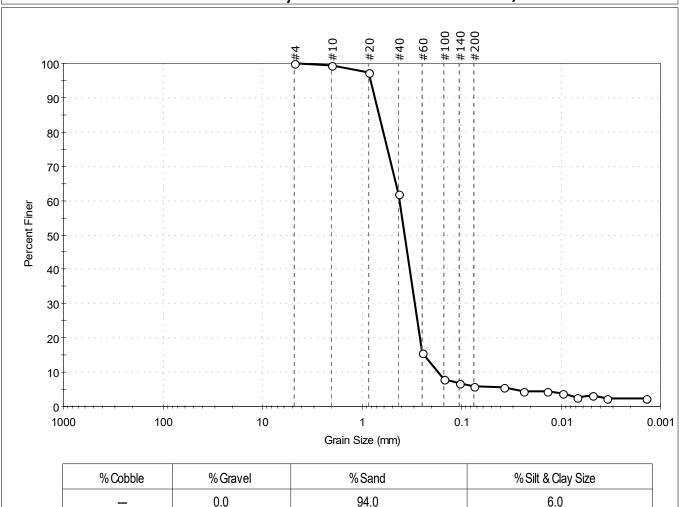
527568 Depth: Test Id:

Test Comment:

Visual Description: Moist, black sand with silt

Sample Comment:

# Particle Size Analysis - ASTM D6913/D7928



Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
	D.010 0.20,		Special Careent	
#4	4.75	100		
#10	2.00	99		
#20	0.85	97		
#40	0.42	62		
#60	0.25	16		
#100	0.15	8		
#140	0.11	7		
#200	0.075	6.0		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0375	6		
	0.0237	4		
	0.0137	4		
	0.0096	4		
	0.0068	3		
	0.0048	3		
	0.0034	2		
	0.0014	2		

<u>Coefficients</u>		
D <sub>85</sub> =0.6681 mm	$D_{30} = 0.2948 \text{ mm}$	
D <sub>60</sub> = 0.4158 mm	D <sub>15</sub> =0.2399 mm	
D <sub>50</sub> = 0.3707 mm	$D_{10} = 0.1717 \text{ mm}$	
C <sub>u</sub> =2.422	$C_c = 1.217$	

<u>Classification</u> Poorly graded SAND with Silt (SP-SM) <u>ASTM</u> AASHTO Fine Sand (A-3 (1))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: GTX-310685 Project No: Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-110SPT-21-32-19101Test Date: 10/29/19 Checked By: bfs

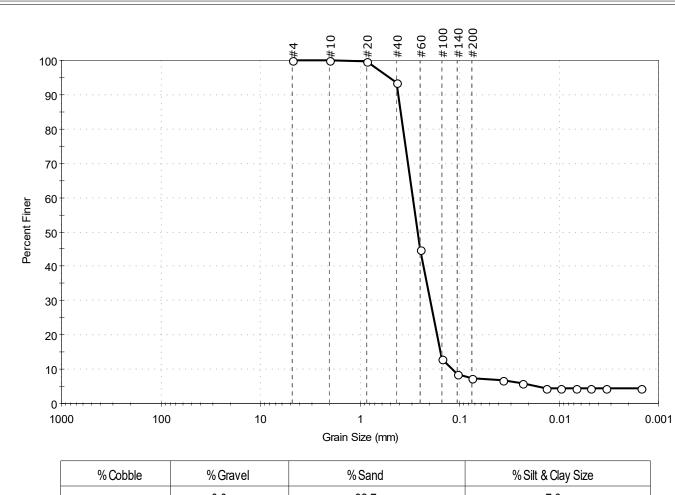
527569 Depth: Test Id:

Test Comment:

Visual Description: Moist, dark gray sand

Sample Comment:

# Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	92.7	7.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	94		
#60	0.25	45		
#100	0.15	13		
#140	0.11	9		
#200	0.075	7.3		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0368	7		
	0.0232	6		
	0.0135	5		
	0.0096	5		
	0.0068	5		
	0.0048	5		
	0.0034	5		
	0.0015	5		

	<u>Coefficients</u>			
D <sub>85</sub> = 0.3872 mm		$D_{30} = 0.1973 \text{ mm}$		
	D <sub>60</sub> = 0.2950 mm	$D_{15} = 0.1552 \text{ mm}$		
D <sub>50</sub> = 0.2646 mm		$D_{10} = 0.1184 \text{ mm}$		
	C <sub>11</sub> =2.492	$C_{c} = 1.115$		

<u>Classification</u> Poorly graded SAND with Silt (SP-SM) <u>ASTM</u> AASHTO Fine Sand (A-3 (1))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: ckg

Boring ID: --- Sample Type: bag Tested By: ckg Sample ID: PDI-110SPT-32-45-19101Test Date: 10/30/19 Checked By: bfs

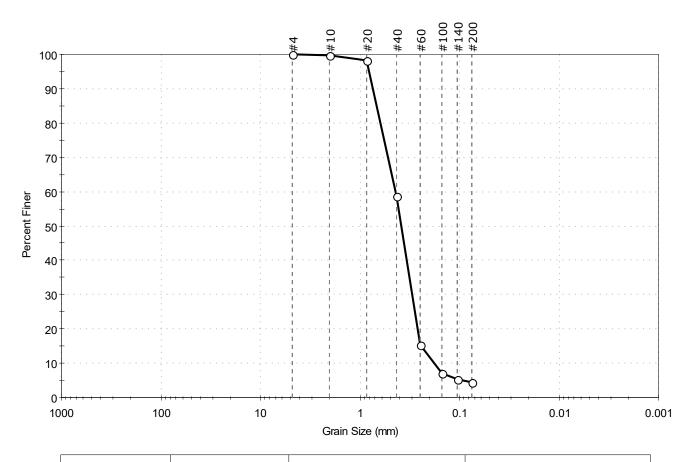
Depth: --- Test Id: 527570

Test Comment: ---

Visual Description: Moist, black sand

Sample Comment: ---

# Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.1	95.6	4.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	98		
#40	0.42	59		
#60	0.25	15		
#100	0.15	7		
#140	0.11	5		
#200	0.075	4.3		

<u>Coefficients</u>		
D <sub>85</sub> = 0.6746 mm	$D_{30} = 0.2994 \text{ mm}$	
D <sub>60</sub> = 0.4347 mm	D <sub>15</sub> =0.2464 mm	
D <sub>50</sub> = 0.3821 mm	$D_{10} = 0.1799 \text{ mm}$	
C <sub>u</sub> =2.416	$C_c = 1.146$	

ASTM Poorly graded SAND (SP)

AASHTO Fine Sand (A-3 (1))

Sample/Test Description
Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-112SPT-00-6.5-1910(Test Date: 11/05/19 Checked By: bfs

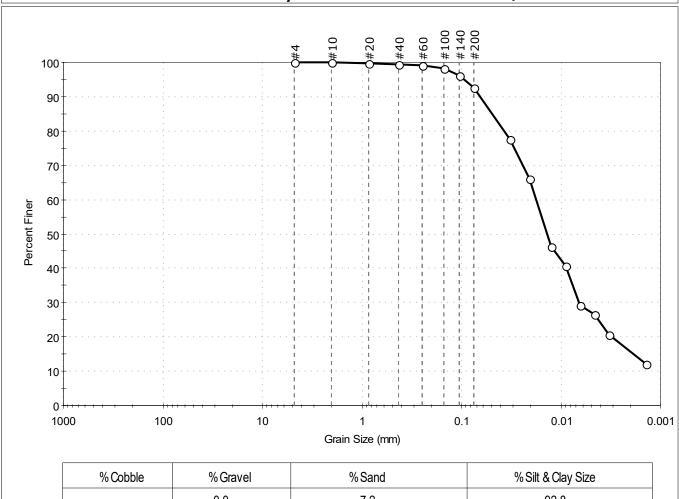
527571 Depth: Test Id:

Test Comment:

Visual Description: Moist, dark brown silt

Sample Comment:

# Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
	0.0	7.2	92.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	100		
#60	0.25	99		
#100	0.15	98		
#140	0.11	96		
#200	0.075	93		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0323	78		
	0.0208	66		
	0.0126	46		
	0.0090	41		
	0.0065	29		
	0.0046	26		
	0.0033	21		
	0.0014	12		

<u>Coefficients</u>		
D <sub>85</sub> = 0.0488 mm	$D_{30} = 0.0066 \text{ mm}$	
D <sub>60</sub> = 0.0178 mm	$D_{15} = 0.0018 \text{ mm}$	
D <sub>50</sub> = 0.0138 mm	$D_{10} = N/A$	
C <sub>II</sub> =N/A	$C_C = N/A$	

<u>Classification</u> Elastic SILT (MH) <u>ASTM</u>

AASHTO Clayey Soils (A-7-5 (45))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Est. Specific Gravity: 2.65



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-112SPT-07-11.5-191(Test Date: 11/01/19 Checked By: bfs

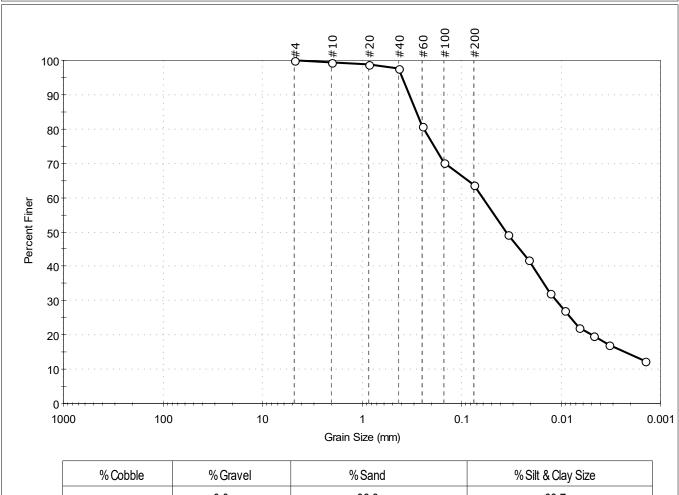
527572 Depth: Test Id:

Test Comment:

Visual Description: Moist, dark gray sandy silt

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	36.3	63.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	99		
#40	0.42	98		
#60	0.25	81		
#100	0.15	70		
#200	0.075	64		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0344	49		
	0.0211	42		
	0.0129	32		
	0.0092	27		
	0.0066	22		
	0.0047	20		
	0.0033	17		
	0.0014	12		

	<u>Coefficients</u>			
D <sub>85</sub> = 0.2849 mm		$D_{30} = 0.0112 \text{ mm}$		
	D <sub>60</sub> = 0.0615 mm	$D_{15} = 0.0023 \text{ mm}$		
	D <sub>50</sub> = 0.0357 mm	$D_{10} = N/A$		
	$C_u = N/A$	$C_C = N/A$		

<u>Classification</u> Sandy Elastic SILT (MH) **ASTM** 

AASHTO Clayey Soils (A-7-5 (11))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685 ckg

Boring ID: ---Sample Type: bag Tested By: Sample ID: PDI-112SPT-11.5-26.5-19Test Date: 10/31/19 Checked By: bfs

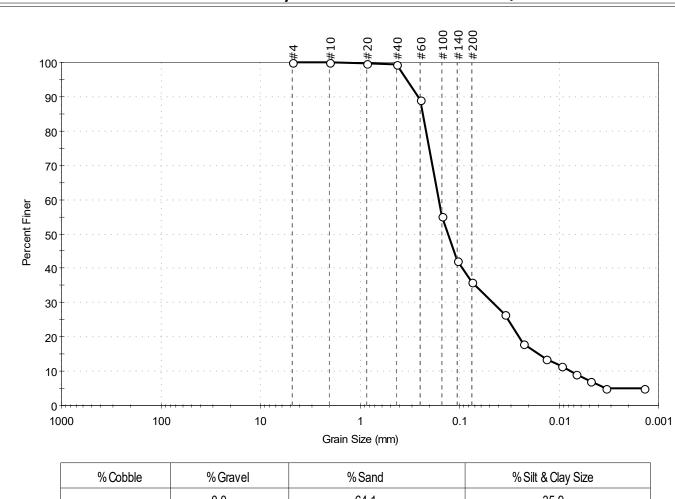
527573 Depth: Test Id:

Test Comment:

Visual Description: Moist, dark gray silty sand

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	64.1	35.9

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	99		
#60	0.25	89		
#100	0.15	55		
#140	0.11	42		
#200	0.075	36		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0351	27		
	0.0225	18		
	0.0134	14		
	0.0094	11		
	0.0067	9		
	0.0048	7		
	0.0034	5		
	0.0014	5		

<u>Coefficients</u>			
D <sub>85</sub> = 0.2350 mm	$D_{30} = 0.0465 \text{ mm}$		
D <sub>60</sub> = 0.1614 mm	$D_{15} = 0.0159 \text{ mm}$		
D <sub>50</sub> = 0.1309 mm	$D_{10} = 0.0075 \text{ mm}$		
$C_{II} = 21.520$	$C_c = 1.786$		

<u>Classification</u> Silty SAND (SM) **ASTM** 

AASHTO Silty Soils (A-4 (0))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-112SPT-37.5-58-191(Test Date: 10/29/19 Checked By: bfs

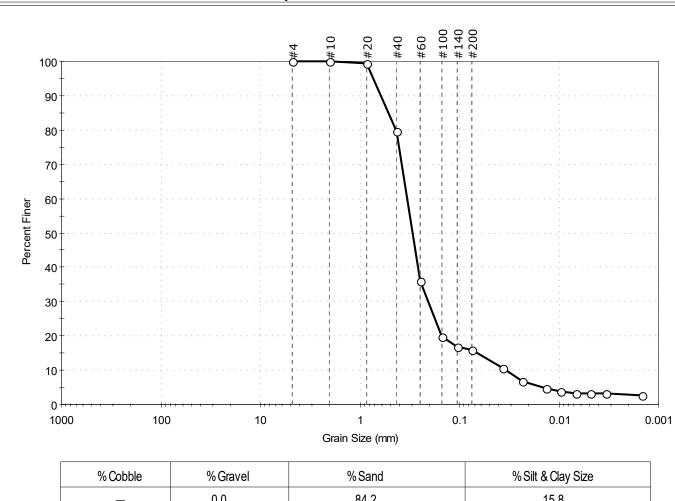
527574 Depth: Test Id:

Test Comment:

Visual Description: Moist, very dark olive gray silty sand

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	84.2	15.8

	L			
Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	99		
#40	0.42	80		
#60	0.25	36		
#100	0.15	20		
#140	0.11	17		
#200	0.075	16		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0367	11		
	0.0234	7		
	0.0136	5		
	0.0096	4		
	0.0068	3		
	0.0048	3		
	0.0034	3		
	0.0014	3		

<u>Coefficients</u>			
D <sub>85</sub> = 0.5121 mm	$D_{30} = 0.2062 \text{ mm}$		
D <sub>60</sub> = 0.3344 mm	$D_{15} = 0.0671 \text{ mm}$		
D <sub>50</sub> = 0.2961 mm	$D_{10} = 0.0339 \text{ mm}$		
C <sub>11</sub> =9.864	$C_c = 3.751$		

<u>Classification</u> Silty SAND (SM) **ASTM** 

AASHTO Silty Gravel and Sand (A-2-4 (0))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape: ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685 ckg

Boring ID: ---Sample Type: bag Tested By: Sample ID: PDI-113SPT-06-16-19101Test Date: 11/05/19 Checked By: bfs

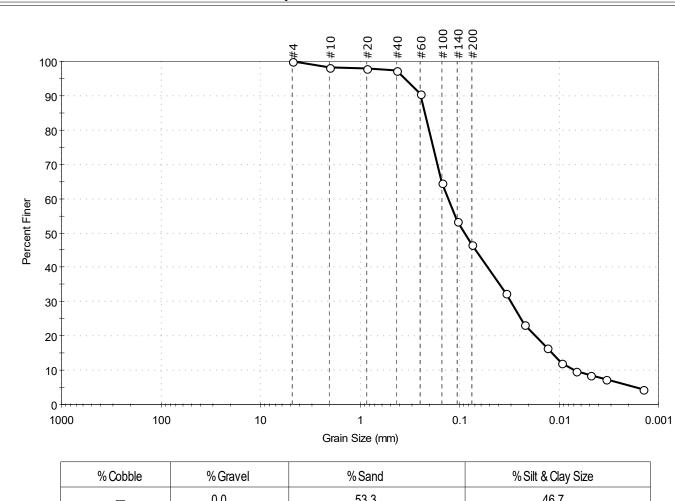
527575 Depth: Test Id:

Test Comment:

Visual Description: Wet, dark grayish brown silt

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	53.3	46.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	98		
#20	0.85	98		
#40	0.42	97		
#60	0.25	90		
#100	0.15	65		
#140	0.11	53		
#200	0.075	47		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0341	32		
	0.0224	23		
	0.0130	17		
	0.0095	12		
	0.0067	10		
	0.0048	9		
	0.0034	7		
	0.0014	5		

<u>Coefficients</u>			
D <sub>85</sub> = 0.2243 mm	$D_{30} = 0.0305 \text{ mm}$		
D <sub>60</sub> = 0.1298 mm	$D_{15} = 0.0117 \text{ mm}$		
D <sub>50</sub> = 0.0888 mm	$D_{10} = 0.0070 \text{ mm}$		
C <sub>11</sub> =18.543	$C_c = 1.024$		

<u>Classification</u> Silty SAND (SM) <u>ASTM</u>

AASHTO Silty Soils (A-4 (0))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: GTX-310685 Project No: Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-113SPT-16-22-19101Test Date: 10/31/19 Checked By: bfs

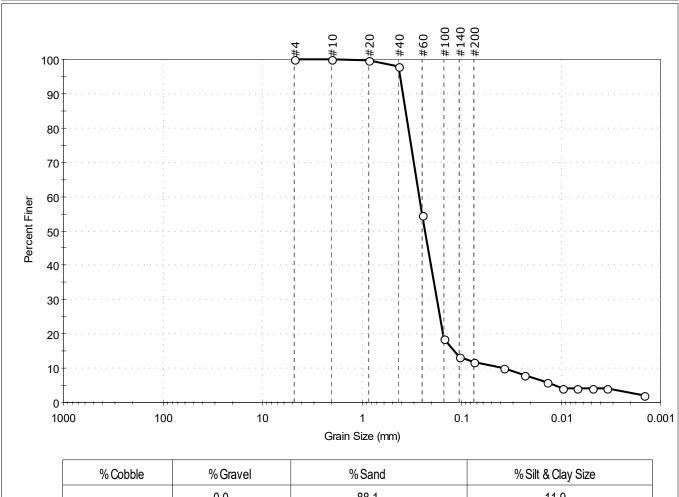
527576 Depth: Test Id:

Test Comment:

Visual Description: Moist, dark grayish brown sand with silt

Sample Comment:

# Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	88.1	11.9

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	98		
#60	0.25	54		
#100	0.15	19		
#140	0.11	13		
#200	0.075	12		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0379	10		
	0.0232	8		
	0.0137	6		
	0.0097	4		
	0.0069	4		
	0.0048	4		
	0.0034	4		
	0.0015	2		

<u>Coefficients</u>				
D <sub>85</sub> = 0.3627 mm	$D_{30} = 0.1766 \text{ mm}$			
D <sub>60</sub> = 0.2675 mm	$D_{15} = 0.1182 \text{ mm}$			
D <sub>50</sub> = 0.2347 mm	$D_{10} = 0.0377 \text{ mm}$			
Cu =7.095	$C_c = 3.093$			

<u>Classification</u> Poorly graded SAND with Silt (SP-SM) <u>ASTM</u>

AASHTO Silty Gravel and Sand (A-2-4 (0))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape: ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-113SPT-22-25.2-191(Test Date: 10/24/19 Checked By: bfs

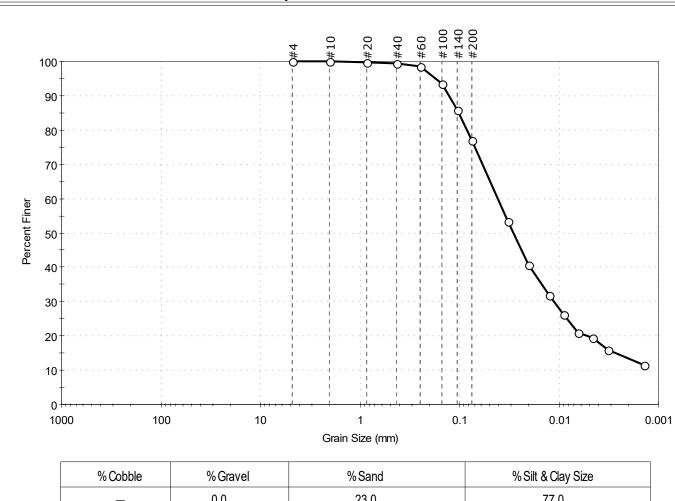
Test Id: 527577 Depth:

Test Comment:

Visual Description: Wet, dark grayish brown silt with sand

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	23.0	77.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
				<b>P</b> 1100
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	99		
#60	0.25	99		
#100	0.15	94		
#140	0.11	86		
#200	0.075	77		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0322	54		
	0.0201	41		
	0.0124	32		
	0.0089	26		
	0.0064	21		
	0.0046	19		
	0.0033	16		
	0.0014	11		

<u>Coefficients</u>				
D <sub>85</sub> = 0.1025 mm	$D_{30} = 0.0111 \text{ mm}$			
D <sub>60</sub> = 0.0407 mm	$D_{15} = 0.0028 \text{ mm}$			
D <sub>50</sub> = 0.0283 mm	$D_{10} = N/A$			
$C_u = N/A$	$C_C = N/A$			

<u>Classification</u> Elastic SILT with Sand (MH) <u>ASTM</u>

AASHTO Clayey Soils (A-7-5 (18))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-113SPT-31.9-39.4-19Test Date: 11/01/19 Checked By: bfs

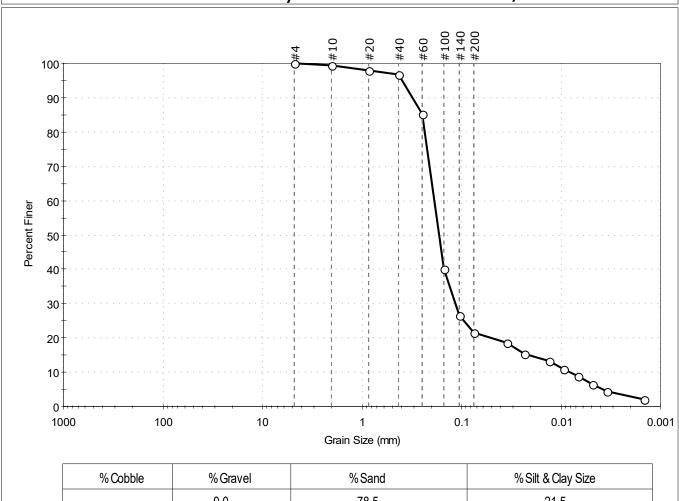
527578 Depth: Test Id:

Test Comment:

Visual Description: Moist, dark gray silty sand

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



Name	Sieve Size, mm Percen	t Finer Spec. Percent	Complies		<u>Coefficients</u>	
	-	0.0		78.5	21.5	
	% Cobble	% Gravel		% Sand	% Silt & Clay Size	

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	98		
#40	0.42	97		
#60	0.25	85		
#100	0.15	40		
#140	0.11	27		
#200	0.075	21		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0353	19		
	0.0231	15		
	0.0133	13		
	0.0095	11		
	0.0068	9		
	0.0048	7		
	0.0034	4		
	0.0015	2		

COCII	iciciico
D <sub>85</sub> = 0.2492 mm	$D_{30} = 0.1158 \text{ mm}$
D <sub>60</sub> = 0.1879 mm	$D_{15} = 0.0208 \text{ mm}$
D <sub>50</sub> = 0.1679 mm	$D_{10} = 0.0081 \text{ mm}$
C <sub>u</sub> =23.198	C <sub>c</sub> =8.811

<u>Classification</u> Silty SAND (SM) <u>ASTM</u>

AASHTO Silty Gravel and Sand (A-2-4 (0))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape: ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Est. Specific Gravity: 2.65 Separation of Sample: #200 Sieve

Ciovo



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-114SPT-00-7.5-1910(Test Date: 11/01/19 Checked By: bfs

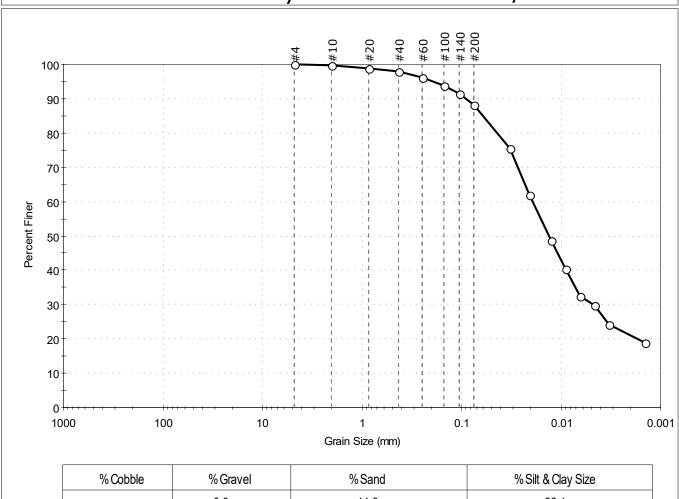
527579 Depth: Test Id:

Test Comment:

Visual Description: Wet, olive brown silt

Sample Comment:

# Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	11.9	88.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	99		
#40	0.42	98		
#60	0.25	96		
#100	0.15	94		
#140	0.11	92		
#200	0.075	88		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0324	76		
	0.0208	62		
	0.0125	49		
	0.0090	40		
	0.0065	32		
	0.0046	30		
	0.0033	24		
	0.0014	19		

<u>Coefficients</u>				
D <sub>85</sub> = 0.0610 mm	$D_{30} = 0.0048 \text{ mm}$			
D <sub>60</sub> = 0.0193 mm	$D_{15} = N/A$			
D <sub>50</sub> = 0.0132 mm	$D_{10} = N/A$			
C <sub>II</sub> =N/A	$C_C = N/A$			

<u>Classification</u> Elastic SILT (MH) <u>ASTM</u> AASHTO Clayey Soils (A-7-5 (29))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-114SPT-25.5-28-191(Test Date: 11/01/19 Checked By: bfs

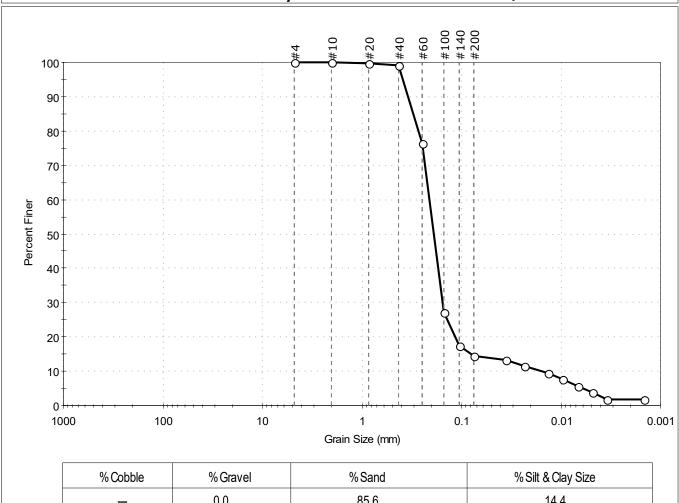
527580 Depth: Test Id:

Test Comment:

Visual Description: Moist, dark olive brown silty sand

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	85.6	14.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	99		
#60	0.25	76		
#100	0.15	27		
#140	0.11	17		
#200	0.075	14		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0359	13		
	0.0236	11		
	0.0135	9		
	0.0096	8		
	0.0068	6		
	0.0048	4		
	0.0034	2		
	0.0015	2		

<u>Coefficients</u>			
D <sub>85</sub> = 0.3059 mm	$D_{30} = 0.1547 \text{ mm}$		
D <sub>60</sub> = 0.2111 mm	$D_{15} = 0.0809 \text{ mm}$		
D <sub>50</sub> = 0.1903 mm	$D_{10} = 0.0157 \text{ mm}$		
Cu =13.446	$C_c = 7.221$		

<u>Classification</u> Silty SAND (SM) <u>ASTM</u>

AASHTO Silty Gravel and Sand (A-2-4 (0))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape: ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685 ckg

Boring ID: ---Sample Type: bag Tested By: Sample ID: PDI-114SPT-42-50.5-191(Test Date: 11/01/19 Checked By: bfs

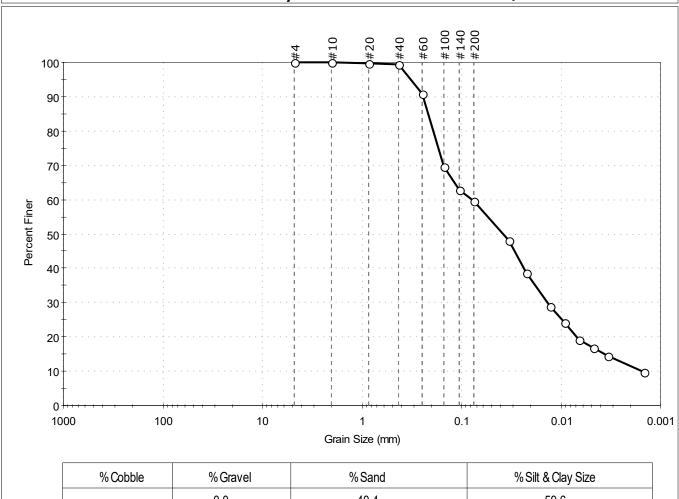
527581 Depth: Test Id:

Test Comment:

Visual Description: Wet, olive brown sandy silt

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	40.4	59.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	99		
#60	0.25	91		
#100	0.15	70		
#140	0.11	63		
#200	0.075	60		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0337	48		
	0.0221	39		
	0.0130	29		
	0.0093	24		
	0.0066	19		
	0.0047	17		
	0.0034	14		
	0.0014	10		

<u>Coefficients</u>			
D <sub>85</sub> = 0.2166 mm	$D_{30} = 0.0138 \text{ mm}$		
D <sub>60</sub> = 0.0786 mm	$D_{15} = 0.0036 \text{ mm}$		
D <sub>50</sub> = 0.0384 mm	$D_{10} = 0.0015 \text{ mm}$		
C <sub>11</sub> =52.400	$C_c = 1.615$		

<u>Classification</u> Sandy SILT (ML) **ASTM** AASHTO Silty Soils (A-5 (5))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-114SPT-7.5-12.5-191Test Date: 11/01/19 Checked By: bfs

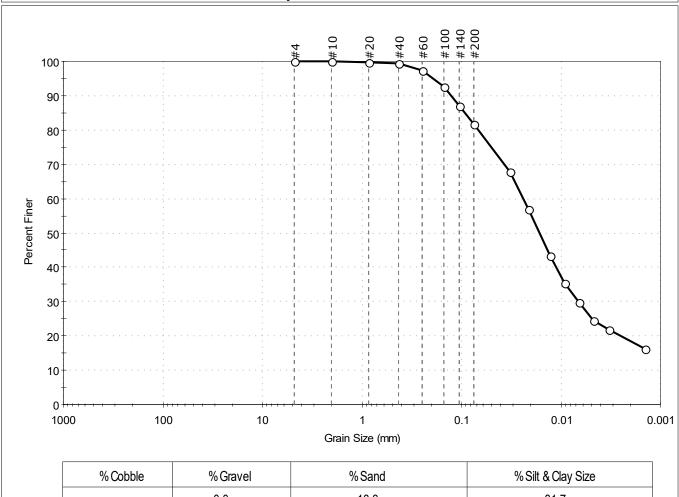
527583 Depth: Test Id:

Test Comment:

Visual Description: Moist, olive brown silt with sand

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
-	0.0	18.3	81.7

				_
Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	99		
#60	0.25	97		
#100	0.15	93		
#140	0.11	87		
#200	0.075	82		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0324	68		
	0.0213	57		
	0.0127	43		
	0.0091	35		
	0.0065	30		
	0.0047	24		
	0.0033	22		
	0.0014	16		

<u>Coefficients</u>				
D <sub>85</sub> =0.0928 mm	$D_{30} = 0.0066 \text{ mm}$			
D <sub>60</sub> = 0.0239 mm	$D_{15} = N/A$			
D <sub>50</sub> = 0.0163 mm	$D_{10} = N/A$			
Cu =N/A	$C_C = N/A$			

<u>Classification</u> Elastic SILT with Sand (MH) <u>ASTM</u>

AASHTO Clayey Soils (A-7-5 (24))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape: ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Est. Specific Gravity: 2.65

Separation of Sample: #200 Sieve



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-114SPT-50.5-55-191(Test Date: 11/01/19 Checked By: bfs

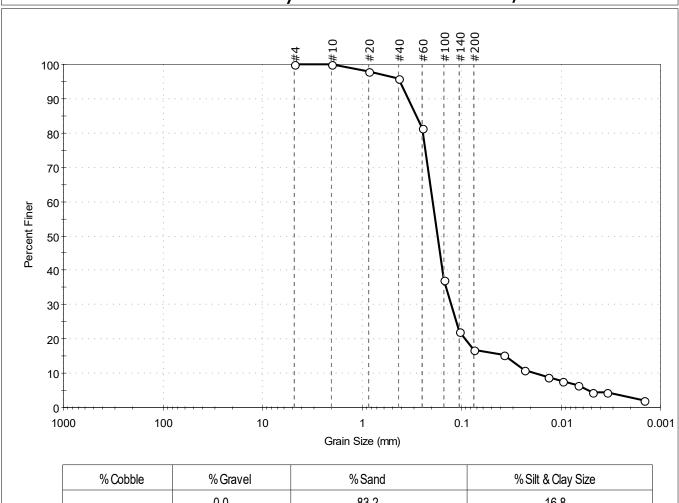
527582 Depth: Test Id:

Test Comment:

Visual Description: Moist, dark gray silty sand

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	83.2	16.8

				•
Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	98		
#40	0.42	96		
#60	0.25	81		
#100	0.15	37		
#140	0.11	22		
#200	0.075	17		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0377	15		
	0.0236	11		
	0.0136	9		
	0.0096	8		
	0.0068	7		
	0.0048	4		
	0.0034	4		
	0.0015	2		

<u>Coefficients</u>				
D <sub>85</sub> = 0.2851 mm	$D_{30} = 0.1275 \text{ mm}$			
D <sub>60</sub> = 0.1953 mm	$D_{15} = 0.0358 \text{ mm}$			
D <sub>50</sub> = 0.1741 mm	$D_{10} = 0.0181 \text{ mm}$			
$C_{11} = 10.790$	$C_c = 4.599$			

<u>Classification</u> Silty SAND (SM) **ASTM** 

AASHTO Silty Gravel and Sand (A-2-4 (0))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape: ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-115SPT-06-11-19100Test Date: 11/07/19 Checked By: bfs

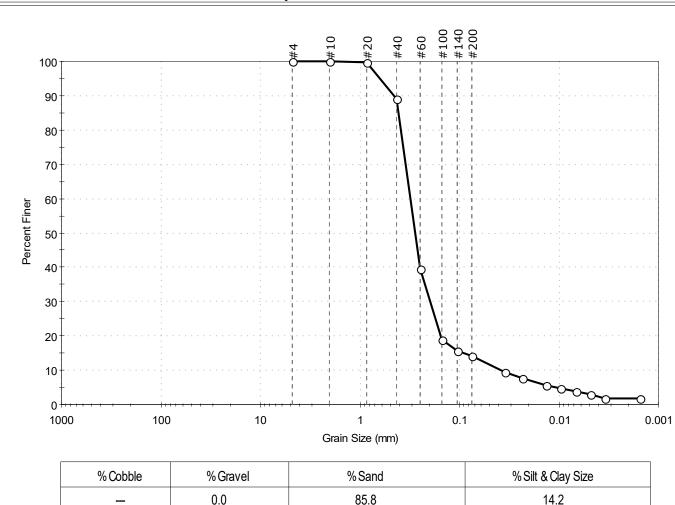
Test Id: 527584 Depth:

Test Comment:

Visual Description: Moist, very dark gray silty sand

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
-	0.0	85.8	14.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	89		
#60	0.25	40		
#100	0.15	19		
#140	0.11	16		
#200	0.075	14		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0349	9		
	0.0235	8		
	0.0135	6		
	0.0096	5		
	0.0068	4		
	0.0048	3		
	0.0034	2		
	0.0015	2		

<u>Coefficients</u>				
D <sub>85</sub> = 0.4072 mm	$D_{30} = 0.1974 \text{ mm}$			
D <sub>60</sub> = 0.3113 mm	D <sub>15</sub> =0.0918 mm			
D <sub>50</sub> = 0.2796 mm	$D_{10} = 0.0380 \text{ mm}$			
C <sub>11</sub> =8.192	$C_c = 3.294$			

<u>Classification</u> Silty SAND (SM) **ASTM** 

AASHTO Silty Gravel and Sand (A-2-4 (0))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape: ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-115SPT-18.6-20.6-19Test Date: 10/29/19 Checked By: bfs

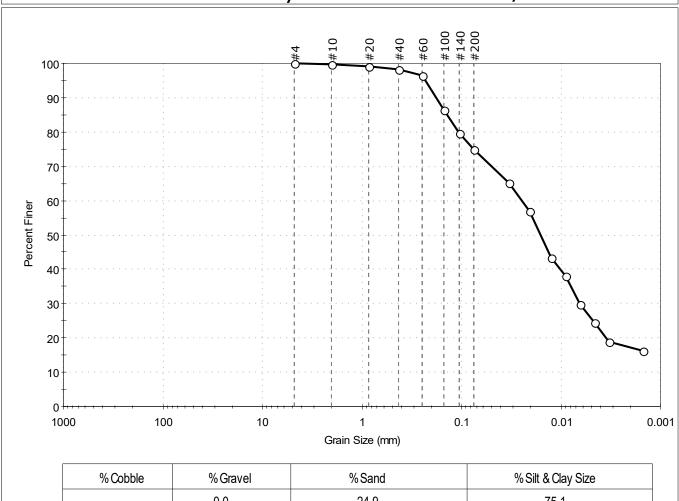
Test Id: 527585 Depth:

Test Comment:

Visual Description: Moist, dark olive brown silt with sand

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



	% CODD	ie	% Gravei		% Sand		% S	ilt & Clay Size
	_		0.0		24.9			75.1
Sieve Name	Sieve Size, mm	Percent Fir	ner Spec. Percent	Complies	1		Coe	<u>fficients</u>
						$D_{85} = 0.13$	87 mm	$D_{30} = 0.0065 \text{ mm}$
#4	4.75	100				$D_{60} = 0.02$	49 mm	$D_{15} = N/A$
#10	2.00	100						,
#20	0.85	99				$D_{50} = 0.01$	60 mm	$D_{10} = N/A$

#4	4.75	100		
#10	2.00	100		
#20	0.85	99		
#40	0.42	98		
#60	0.25	96		
#100	0.15	87		
#140	0.11	80		
#200	0.075	75		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0335	65		
	0.0209	57		
	0.0125	43		
	0.0089	38		
	0.0064	30		
	0.0046	24		
	0.0033	19		
	0.0015	16		
				+

$C_u = N/A$	$C_c = N/A$
<u>ASTM</u>	<u>Classification</u> Elastic SILT with Sand (MH)
<u>AASHTO</u>	Clayey Soils (A-7-5 (22))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location:

GTX-310685 Project No: Boring ID: ---Sample Type: bag Tested By: ckg Sample ID: PDI-115SPT-23-28.1-191(Test Date: 10/29/19 Checked By: bfs

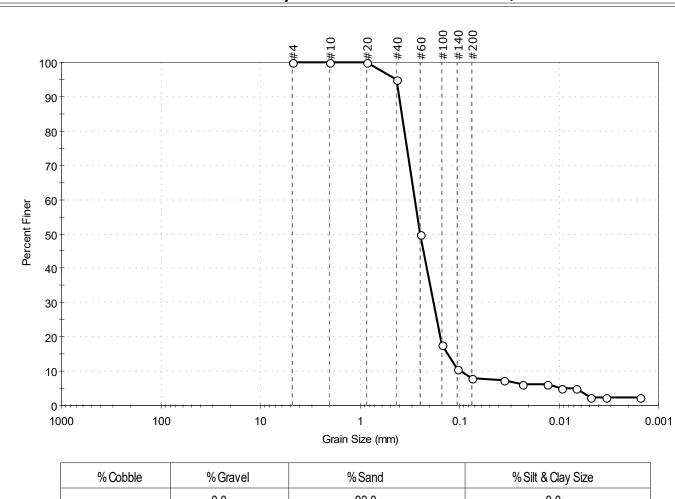
527586 Depth: Test Id:

Test Comment:

Visual Description: Moist, very dark olive brown sand with silt

Sample Comment:

# Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	92.0	8.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
	,			
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	95		
#60	0.25	50		
#100	0.15	18		
#140	0.11	11		
#200	0.075	8.0		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0360	7		
	0.0233	6		
	0.0133	6		
	0.0095	5		
	0.0067	5		
	0.0048	2		
	0.0034	2		
	0.0015	2		

	<u>Coefficients</u>			
D <sub>85</sub> = 0.3780 mm		$D_{30} = 0.1827 \text{ mm}$		
	D <sub>60</sub> = 0.2820 mm	$D_{15} = 0.1316 \text{ mm}$		
	D <sub>50</sub> = 0.2508 mm	$D_{10} = 0.0970 \text{ mm}$		
	C <sub>11</sub> = 2.907	$C_c = 1.220$		

<u>Classification</u> Poorly graded SAND with Silt (SP-SM) <u>ASTM</u> AASHTO Fine Sand (A-3 (1))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Est. Specific Gravity: 2.65

Separation of Sample: #200 Sieve



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-115SPT-41.5-49.3-19Test Date: 10/29/19 Checked By: bfs

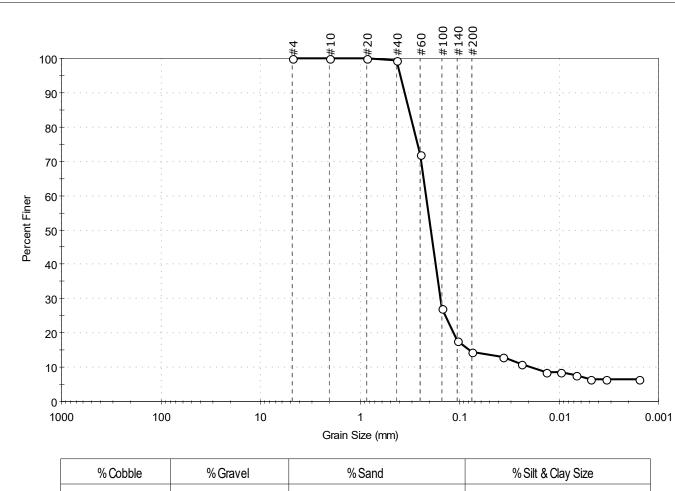
527587 Depth: Test Id:

Test Comment:

Visual Description: Moist, olive brown silty sand

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
	0.0	85.6	14.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	99		
#60	0.25	72		
#100	0.15	27		
#140	0.11	18		
#200	0.075	14		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0370	13		
	0.0237	11		
	0.0136	9		
	0.0096	9		
	0.0068	8		
	0.0048	6		
	0.0034	6		
	0.0016	6		

<u>Coefficients</u>				
D <sub>85</sub> = 0.3216 mm	$D_{30} = 0.1552 \text{ mm}$			
D <sub>60</sub> = 0.2181 mm	$D_{15} = 0.0799 \text{ mm}$			
D <sub>50</sub> = 0.1947 mm	$D_{10} = 0.0193 \text{ mm}$			
C <sub>11</sub> =11.301	$C_c = 5.722$			

<u>Classification</u> Silty SAND (SM) **ASTM** 

AASHTO Silty Gravel and Sand (A-2-4 (0))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape: ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Est. Specific Gravity: 2.65 Separation of Sample: #200 Sieve

printed 11/20/2019 9:37:40 AM



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-116SPT-00-4.5-1909ZTest Date: 10/30/19 Checked By: bfs

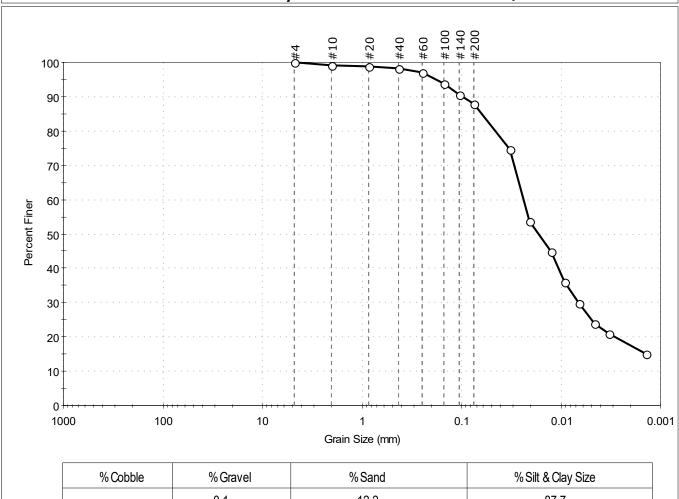
527588 Depth: Test Id:

Test Comment:

Visual Description: Wet, olive brown silt

Sample Comment:

# Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
	0.1	12.2	87.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	99		
#40	0.42	98		
#60	0.25	97		
#100	0.15	94		
#140	0.11	91		
#200	0.075	88		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0322	75		
	0.0209	54		
	0.0127	45		
	0.0091	36		
	0.0065	30		
	0.0047	24		
	0.0033	21		
	0.0014	15		

<u>Coefficients</u>						
D <sub>85</sub> = 0.0627 mm	$D_{30} = 0.0066 \text{ mm}$					
D <sub>60</sub> = 0.0238 mm	$D_{15} = 0.0014 \text{ mm}$					
D <sub>50</sub> = 0.0169 mm	$D_{10} = N/A$					
C <sub>II</sub> =N/A	$C_c = N/A$					

<u>Classification</u> Elastic SILT (MH) <u>ASTM</u> AASHTO Clayey Soils (A-7-5 (40))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-116SPT-20-26.7-190STest Date: 10/30/19 Checked By: bfs

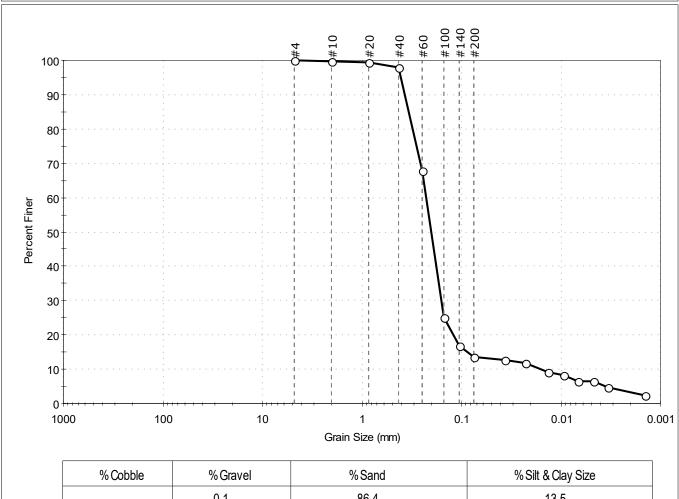
527589 Depth: Test Id:

Test Comment:

Visual Description: Moist, dark gray silty sand

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.1	86.4	13.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	99		
#40	0.42	98		
#60	0.25	68		
#100	0.15	25		
#140	0.11	17		
#200	0.075	14		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0368	13		
	0.0227	12		
	0.0134	9		
	0.0095	8		
	0.0067	6		
	0.0048	6		
	0.0034	5		
	0.0014	2		

<u>Coefficients</u>				
D <sub>85</sub> = 0.3380 mm	$D_{30} = 0.1591 \text{ mm}$			
D <sub>60</sub> = 0.2276 mm	$D_{15} = 0.0881 \text{ mm}$			
D <sub>50</sub> = 0.2020 mm	$D_{10} = 0.0157 \text{ mm}$			
C <sub>11</sub> =14.497	$C_c = 7.084$			

<u>Classification</u> Silty SAND (SM) **ASTM** 

AASHTO Silty Gravel and Sand (A-2-4 (0))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape: ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-116SPT-26.7-28.6-19Test Date: 10/30/19 Checked By: bfs

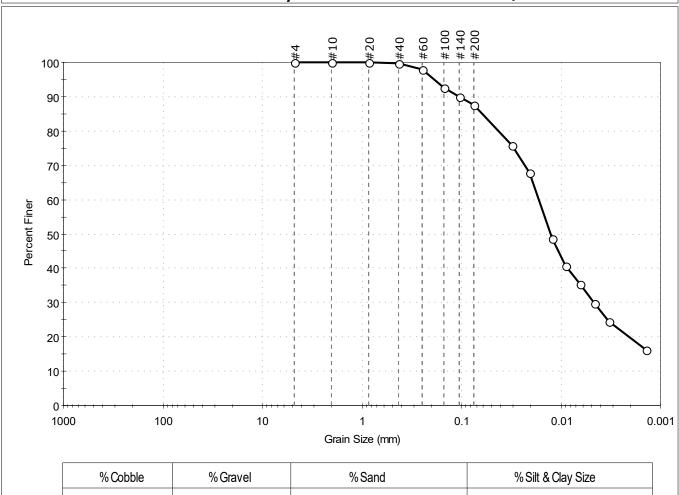
527590 Depth: Test Id:

Test Comment:

Visual Description: Wet, grayish brown silt

Sample Comment:

# Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	12.5	87.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	100		
#60	0.25	98		
#100	0.15	93		
#140	0.11	90		
#200	0.075	87		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0310	76		
	0.0206	68		
	0.0124	49		
	0.0090	41		
	0.0064	35		
	0.0046	30		
	0.0033	24		
	0.0014	16		

<u>Coefficients</u>				
D <sub>85</sub> =0.0620 mm	$D_{30} = 0.0046 \text{ mm}$			
D <sub>60</sub> = 0.0167 mm	$D_{15} = N/A$			
D <sub>50</sub> = 0.0128 mm	$D_{10} = N/A$			
C <sub>II</sub> =N/A	$C_C = N/A$			

<u>Classification</u> Elastic SILT (MH) <u>ASTM</u> AASHTO Clayey Soils (A-7-5 (15))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Est. Specific Gravity: 2.65

Separation of Sample: #200 Sieve

printed 11/20/2019 9:37:43 AM



Location: Project No: GTX-310685 ckg

Boring ID: ---Sample Type: bag Tested By: Sample ID: PDI-116SPT-51.5-54.2-19Test Date: 10/30/19 Checked By: bfs

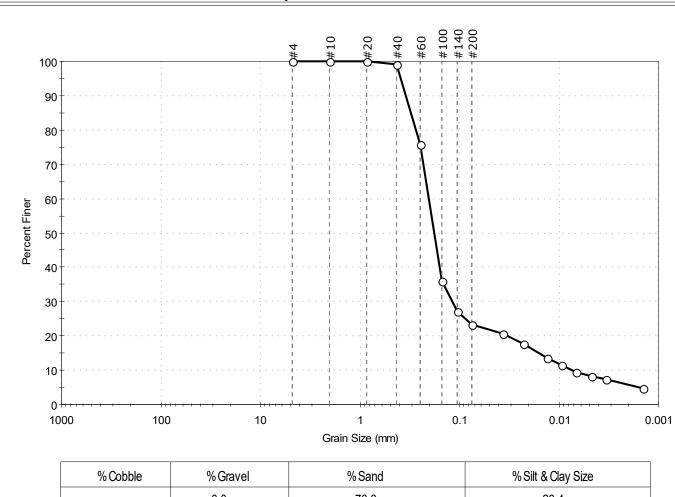
527591 Depth: Test Id:

Test Comment:

Visual Description: Moist, olive brown silty sand

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
	0.0	76.6	23.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
	,			
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	99		
#60	0.25	76		
#100	0.15	36		
#140	0.11	27		
#200	0.075	23		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0368	21		
	0.0228	18		
	0.0133	13		
	0.0094	11		
	0.0067	9		
	0.0048	8		
	0.0034	7		
	0.0014	5		

<u>Coefficients</u>						
D <sub>85</sub> = 0.3086 mm	$D_{30} = 0.1182 \text{ mm}$					
D <sub>60</sub> = 0.2041 mm	$D_{15} = 0.0163 \text{ mm}$					
D <sub>50</sub> = 0.1794 mm	$D_{10} = 0.0075 \text{ mm}$					
C <sub>11</sub> =27.213	$C_c = 9.127$					

<u>Classification</u> Silty SAND (SM) **ASTM** 

AASHTO Silty Gravel and Sand (A-2-4 (0))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape: ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: ckg

Boring ID: --- Sample Type: bag Tested By: ckg Sample ID: PDI-117SPT-11-29.1-191(Test Date: 10/31/19 Checked By: bfs

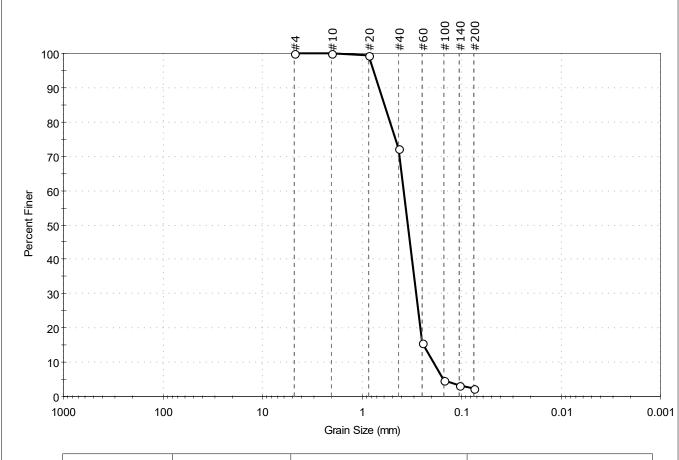
Depth: --- Test Id: 527592

Test Comment: ---

Visual Description: Moist, dark gray sand

Sample Comment: ---

# Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	%Sand	% Silt & Clay Size
_	0.0	97.6	2.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	99		
#40	0.42	72		
#60	0.25	16		
#100	0.15	5		
#140	0.11	3		
#200	0.075	2.4		

<u>Coefficients</u>		
D <sub>85</sub> = 0.5889 mm	$D_{30} = 0.2860 \text{ mm}$	
D <sub>60</sub> = 0.3791 mm	$D_{15} = 0.2421 \text{ mm}$	
D <sub>50</sub> = 0.3451 mm	$D_{10} = 0.1922 \text{ mm}$	
C <sub>u</sub> =1.972	C <sub>c</sub> =1.123	

ASTM Poorly graded SAND (SP)

AASHTO Fine Sand (A-3 (1))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By:

ckg Sample ID: PDI-117SPT-29.1-32-191(Test Date: 10/24/19 Checked By: bfs

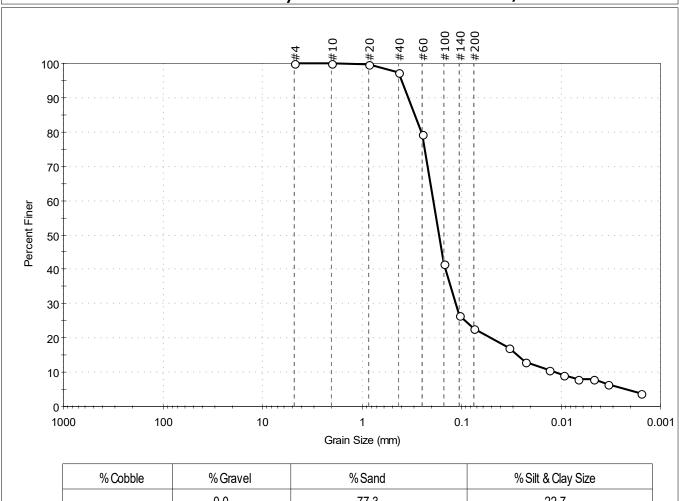
527593 Depth: Test Id:

Test Comment:

Visual Description: Moist, dark gray silty sand

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	77.3	22.7

		•		•
Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	97		
#60	0.25	79		
#100	0.15	42		
#140	0.11	27		
#200	0.075	23		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0331	17		
	0.0225	13		
	0.0132	10		
	0.0094	9		
	0.0067	8		
	0.0047	8		
	0.0034	7		
	0.0016	4		

<u>Coefficients</u>				
D <sub>85</sub> = 0.2955 mm	$D_{30} = 0.1146 \text{ mm}$			
D <sub>60</sub> = 0.1923 mm	$D_{15} = 0.0271 \text{ mm}$			
D <sub>50</sub> = 0.1680 mm	$D_{10} = 0.0117 \text{ mm}$			
C <sub>u</sub> =16.436	$C_c = 5.837$			

<u>Classification</u> Silty SAND (SM) **ASTM** 

AASHTO Silty Gravel and Sand (A-2-4 (0))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape: ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-117SPT-44.1-53.5-19Test Date: 10/31/19 Checked By: bfs

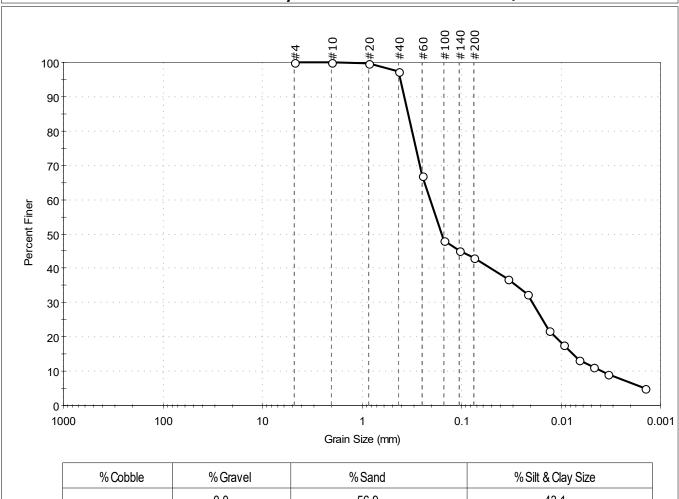
527594 Depth: Test Id:

Test Comment:

Visual Description: Moist, dark gray silty sand

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	56.9	43.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	97		
#60	0.25	67		
#100	0.15	48		
#140	0.11	45		
#200	0.075	43		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0340	37		
	0.0218	33		
	0.0131	22		
	0.0093	18		
	0.0067	13		
	0.0047	11		
	0.0034	9		
	0.0014	5		

<u>Coefficients</u>				
D <sub>85</sub> = 0.3430 mm	$D_{30} = 0.0193 \text{ mm}$			
D <sub>60</sub> = 0.2072 mm	$D_{15} = 0.0076 \text{ mm}$			
D <sub>50</sub> = 0.1576 mm	$D_{10} = 0.0039 \text{ mm}$			
C <sub>11</sub> =53.128	$C_c = 0.461$			

<u>Classification</u> Silty SAND (SM) **ASTM** 

AASHTO Clayey Soils (A-7-6 (3))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685 ckg

Boring ID: ---Sample Type: bag Tested By: Sample ID: PDI-117SPT-53.5-63.5-19Test Date: 10/24/19 Checked By: bfs

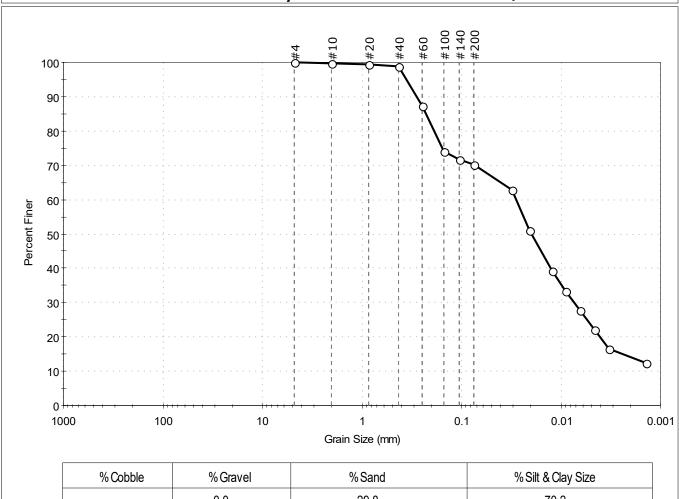
527595 Depth: Test Id:

Test Comment:

Visual Description: Wet, dark grayish brown silt with sand

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	29.8	70.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	99		
#40	0.42	99		
#60	0.25	87		
#100	0.15	74		
#140	0.11	72		
#200	0.075	70		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0310	63		
	0.0205	51		
	0.0123	39		
	0.0089	33		
	0.0064	28		
	0.0046	22		
	0.0033	17		
	0.0014	12		

<u>Coefficients</u>		
D <sub>85</sub> = 0.2293 mm	$D_{30} = 0.0073 \text{ mm}$	
D <sub>60</sub> = 0.0281 mm	D <sub>15</sub> =0.0024 mm	
D <sub>50</sub> = 0.0196 mm	$D_{10} = N/A$	
C <sub>u</sub> =N/A	C <sub>c</sub> =N/A	

<u>Classification</u> SILT with Sand (ML) **ASTM** AASHTO Clayey Soils (A-7-5 (9))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-118SPT-00-4.5-1910 Test Date: 10/24/19 Checked By: bfs

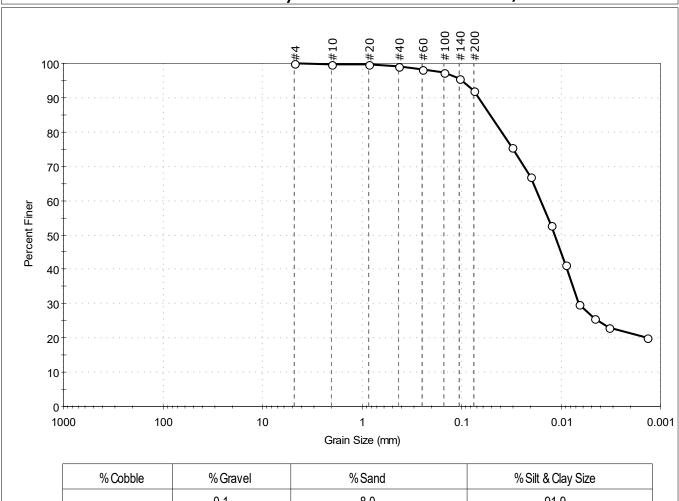
527596 Depth: Test Id:

Test Comment:

Visual Description: Wet, dark grayish brown silt

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
	0.1	8.0	91.9

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	99		
#60	0.25	98		
#100	0.15	97		
#140	0.11	95		
#200	0.075	92		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0313	76		
	0.0204	67		
	0.0125	53		
	0.0091	41		
	0.0065	30		
	0.0047	26		
	0.0033	23		
	0.0014	20		

Coeffic	<u>cients</u>
D <sub>85</sub> = 0.0518 mm	$D_{30} = 0.0066 \text{ mm}$
D <sub>60</sub> = 0.0161 mm	$D_{15} = N/A$
D <sub>50</sub> = 0.0116 mm	$D_{10} = N/A$
C <sub>II</sub> =N/A	$C_C = N/A$

<u>Classification</u> Elastic SILT (MH) <u>ASTM</u> AASHTO Clayey Soils (A-7-5 (37))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: GTX-310685 Project No: Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-118SPT-4.5-15-1910 Test Date: 10/24/19 Checked By: bfs

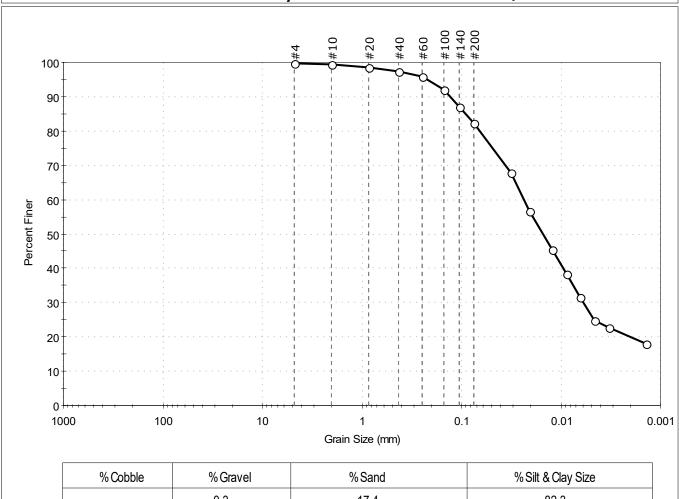
527597 Depth: Test Id:

Test Comment:

Visual Description: Moist, dark grayish brown silt with sand

Sample Comment:

# Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.3	17.4	82.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	98		
#40	0.42	97		
#60	0.25	96		
#100	0.15	92		
#140	0.11	87		
#200	0.075	82		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0316	68		
	0.0206	57		
	0.0123	45		
	0.0088	38		
	0.0064	32		
	0.0046	25		
	0.0033	23		
	0.0014	18		

<u>Coefficients</u>					
D <sub>85</sub> = 0.0914 mm	$D_{30} = 0.0059 \text{ mm}$				
D <sub>60</sub> = 0.0234 mm	$D_{15} = N/A$				
D <sub>50</sub> = 0.0152 mm	$D_{10} = N/A$				
C <sub>u</sub> =N/A	$C_c = N/A$				

<u>Classification</u> Elastic SILT with Sand (MH) <u>ASTM</u>

AASHTO Clayey Soils (A-7-5 (34))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Est. Specific Gravity: 2.65

Separation of Sample: #200 Sieve



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-118SPT-46.5-61-191(Test Date: 10/24/19 Checked By: bfs

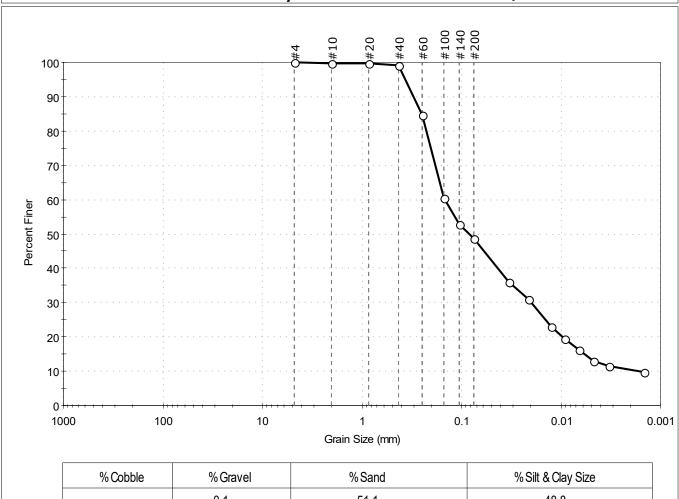
527598 Depth: Test Id:

Test Comment:

Visual Description: Wet, dark grayish brown silty sand

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.1	51.1	48.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	99		
#60	0.25	85		
#100	0.15	60		
#140	0.11	53		
#200	0.075	49		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0337	36		
	0.0210	31		
	0.0127	23		
	0.0092	20		
	0.0065	16		
	0.0047	13		
	0.0033	11		
	0.0015	10		

<u>Coefficients</u>							
D <sub>85</sub> = 0.2537 mm	$D_{30} = 0.0197 \text{ mm}$						
D <sub>60</sub> = 0.1474 mm	$D_{15} = 0.0057 \text{ mm}$						
D <sub>50</sub> = 0.0832 mm	$D_{10} = 0.0016 \text{ mm}$						
C <sub>11</sub> =92.125	$C_c = 1.646$						

<u>Classification</u> Silty SAND (SM) **ASTM** 

AASHTO Silty Soils (A-4 (1))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-119SPT-00-4.5-1910(Test Date: 10/25/19 Checked By: bfs

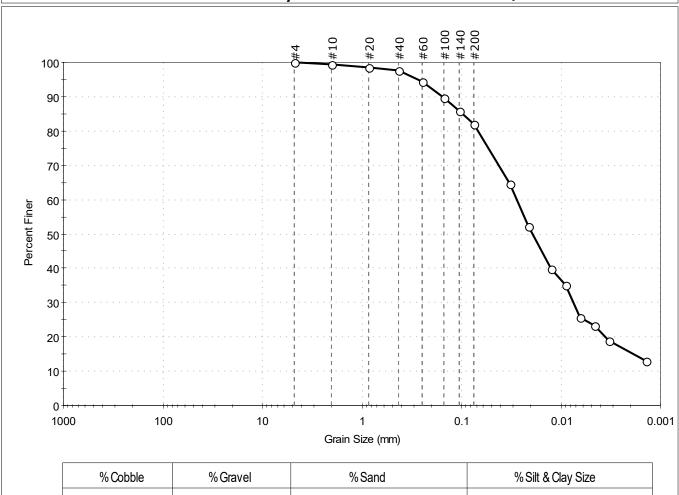
527599 Depth: Test Id:

Test Comment:

Moist, dark grayish brown silt with sand Visual Description:

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	18.1	81.9

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	99		
#40	0.42	98		
#60	0.25	95		
#100	0.15	90		
#140	0.11	86		
#200	0.075	82		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0329	64		
	0.0210	52		
	0.0126	40		
	0.0090	35		
	0.0065	26		
	0.0046	23		
	0.0033	19		
	0.0014	13		

<u>Coeffic</u>	<u>cients</u>	
D <sub>85</sub> = 0.0981 mm	$D_{30} = 0.0075 \text{ mm}$	
D <sub>60</sub> = 0.0279 mm	$D_{15} = 0.0019 \text{ mm}$	
D <sub>50</sub> = 0.0191 mm	$D_{10} = N/A$	
C <sub>u</sub> =N/A	$C_c = N/A$	

<u>Classification</u> Elastic SILT with Sand (MH) <u>ASTM</u>

AASHTO Clayey Soils (A-7-5 (37))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape: ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Est. Specific Gravity: 2.65

Separation of Sample: #200 Sieve



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-119SPT-18.3-31-191(Test Date: 10/29/19 Checked By: bfs

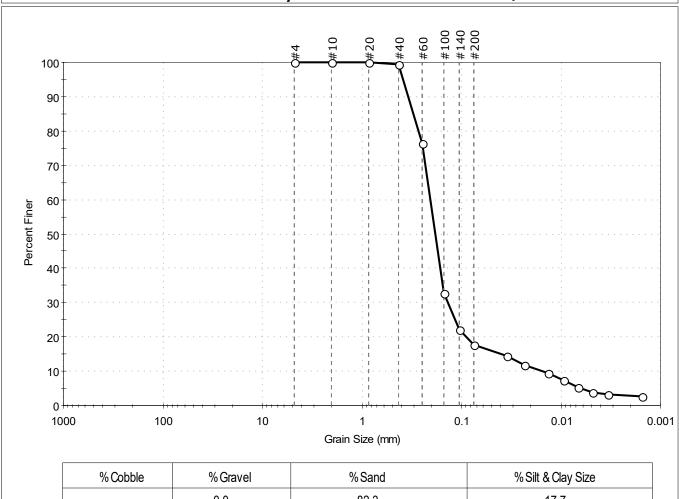
527600 Depth: Test Id:

Test Comment:

Visual Description: Moist, dark gray silty sand

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
-	0.0	82.3	17.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
	,			
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	99		
#60	0.25	76		
#100	0.15	33		
#140	0.11	22		
#200	0.075	18		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0350	15		
	0.0231	12		
	0.0134	10		
	0.0095	7		
	0.0067	5		
	0.0048	4		
	0.0034	3		
	0.0015	3		

<u>Coefficients</u>					
D <sub>85</sub> = 0.3051 mm	$D_{30} = 0.1369 \text{ mm}$				
D <sub>60</sub> = 0.2063 mm	$D_{15} = 0.0393 \text{ mm}$				
D <sub>50</sub> = 0.1835 mm	$D_{10} = 0.0149 \text{ mm}$				
C <sub>11</sub> =13.846	$C_c = 6.097$				

<u>Classification</u> Silty SAND (SM) <u>ASTM</u>

AASHTO Silty Gravel and Sand (A-2-4 (0))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape: ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Est. Specific Gravity: 2.65

Separation of Sample: #200 Sieve



Location: Project No: GTX-310685 ckg

Boring ID: ---Sample Type: bag Tested By: Sample ID: PDI-119SPT-47-52-19100Test Date: 10/25/19 Checked By: bfs

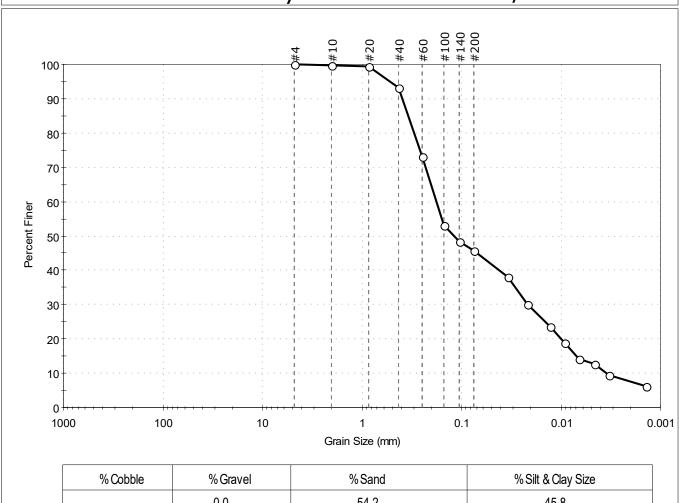
Test Id: Depth: 527601

Test Comment:

Visual Description: Moist, dark grayish brown silty sand

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
	0.0	54.2	45.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	93		
#60	0.25	73		
#100	0.15	53		
#140	0.11	48		
#200	0.075	46		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0339	38		
	0.0216	30		
	0.0127	24		
	0.0092	19		
	0.0066	14		
	0.0047	13		
	0.0033	9		
	0.0014	6		

<u>Coefficients</u>				
D <sub>85</sub> = 0.3420 mm	$D_{30} = 0.0214 \text{ mm}$			
D <sub>60</sub> = 0.1784 mm	$D_{15} = 0.0069 \text{ mm}$			
D <sub>50</sub> = 0.1186 mm	$D_{10} = 0.0035 \text{ mm}$			
C <sub>11</sub> =50.971	$C_c = 0.733$			

<u>Classification</u> Silty SAND (SM) <u>ASTM</u>

AASHTO Silty Soils (A-4 (1))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: GTX-310685 Project No: Tested By: ckg

Boring ID: ---Sample Type: bag Sample ID: PDI-119SPT-9.5-18.3-191Test Date: 10/25/19 Checked By: bfs

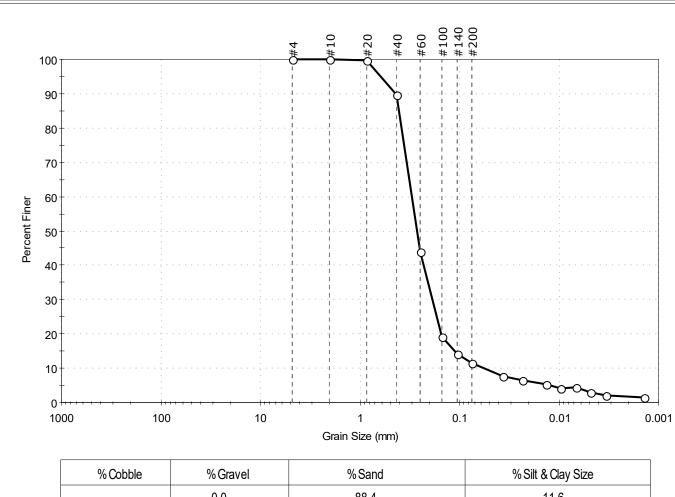
Depth: Test Id: 527602

Test Comment:

Visual Description: Moist, dark grayish brown sand with silt

Sample Comment:

# Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	88.4	11.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
	,			·
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	90		
#60	0.25	44		
#100	0.15	19		
#140	0.11	14		
#200	0.075	12		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0370	8		
	0.0233	7		
	0.0135	5		
	0.0096	4		
	0.0067	4		
	0.0048	3		
	0.0034	2		
	0.0014	2		

<u>Coefficients</u>				
D <sub>85</sub> = 0.4029 mm	$D_{30} = 0.1875 \text{ mm}$			
D <sub>60</sub> = 0.3010 mm	$D_{15} = 0.1128 \text{ mm}$			
D <sub>50</sub> = 0.2679 mm	$D_{10} = 0.0555 \text{ mm}$			
C <sub>u</sub> =5.423	$C_c = 2.104$			

<u>Classification</u> Poorly graded SAND with Silt (SP-SM) <u>ASTM</u>

AASHTO Silty Gravel and Sand (A-2-4 (0))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape: ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685 ckg

Boring ID: ---Sample Type: bag Tested By: Sample ID: PDI-121SPT-00-06-19093Test Date: 10/29/19 Checked By: bfs

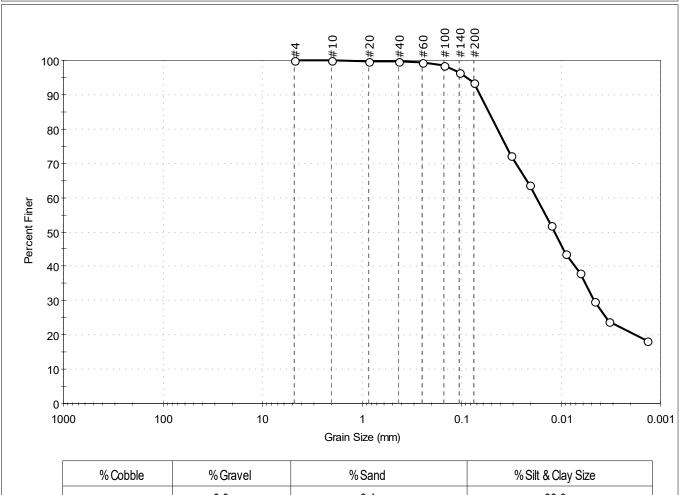
527603 Depth: Test Id:

Test Comment:

Visual Description: Moist, olive brown silt

Sample Comment:

# Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
	0.0	6.4	93.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	100		
#60	0.25	99		
#100	0.15	99		
#140	0.11	97		
#200	0.075	94		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0319	72		
	0.0209	64		
	0.0125	52		
	0.0090	44		
	0.0064	38		
	0.0046	30		
	0.0033	24		
	0.0014	18		

<u>Coefficients</u>			
D <sub>85</sub> = 0.0532 mm	$D_{30} = 0.0046 \text{ mm}$		
D <sub>60</sub> = 0.0178 mm	$D_{15} = N/A$		
D <sub>50</sub> = 0.0115 mm	$D_{10} = N/A$		
C <sub>II</sub> =N/A	$C_C = N/A$		

<u>Classification</u> Elastic SILT (MH) <u>ASTM</u> AASHTO Clayey Soils (A-7-5 (38))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Est. Specific Gravity: 2.65

Separation of Sample: #200 Sieve



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-121SPT-11-20.7-190sTest Date: 10/30/19 Checked By: bfs

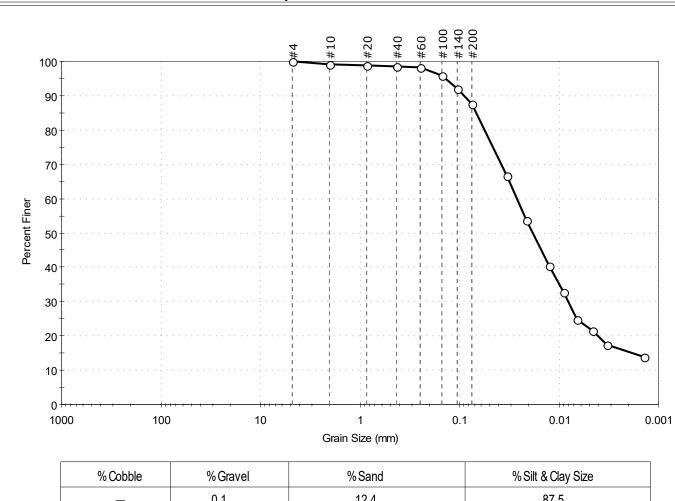
Depth: Test Id: 527604

Test Comment:

Visual Description: Moist, dark olive brown silt

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.1	12.4	87.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	99		
#40	0.42	99		
#60	0.25	98		
#100	0.15	96		
#140	0.11	92		
#200	0.075	88		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0331	67		
	0.0212	54		
	0.0126	41		
	0.0091	33		
	0.0065	25		
	0.0046	21		
	0.0033	18		
	0.0014	14		

<u>coemeients</u>						
D <sub>85</sub> = 0.0679 mm	$D_{30} = 0.0081 \text{ mm}$					
D <sub>60</sub> = 0.0264 mm	$D_{15} = 0.0018 \text{ mm}$					
D <sub>50</sub> = 0.0184 mm	$D_{10} = N/A$					
$C_u = N/A$	$C_c = N/A$					

Coefficients

<u>Classification</u> Elastic SILT (MH) <u>ASTM</u> AASHTO Clayey Soils (A-7-5 (26))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685 ckg

Boring ID: ---Sample Type: bag Tested By: Sample ID: PDI-121SPT-21-38-19093Test Date: 10/29/19 Checked By: bfs

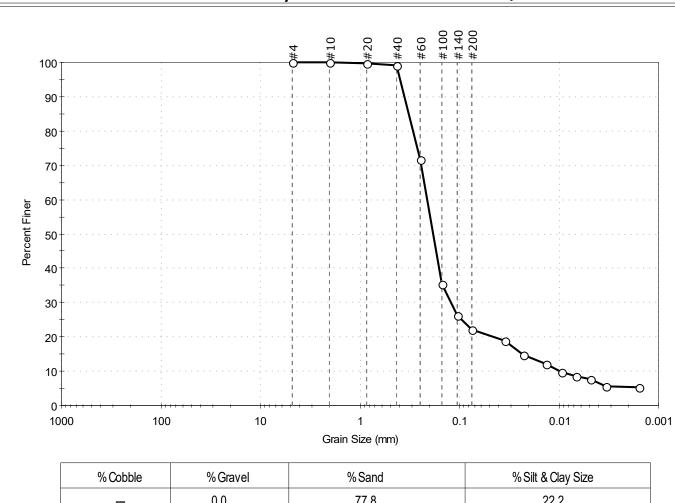
527605 Depth: Test Id:

Test Comment:

Visual Description: Moist, dark olive gray silty sand

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	77.8	22.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	99		
#60	0.25	72		
#100	0.15	35		
#140	0.11	26		
#200	0.075	22		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0352	19		
	0.0226	15		
	0.0135	12		
	0.0095	10		
	0.0068	9		
	0.0048	8		
	0.0034	6		
	0.0016	5		

<u>Coefficients</u>					
D <sub>85</sub> = 0.3231 mm	$D_{30} = 0.1227 \text{ mm}$				
D <sub>60</sub> = 0.2122 mm	D <sub>15</sub> =0.0231 mm				
D <sub>50</sub> = 0.1844 mm	$D_{10} = 0.0098 \text{ mm}$				
C <sub>11</sub> =21.653	$C_c = 7.240$				

<u>Classification</u> Silty SAND (SM) **ASTM** 

AASHTO Silty Gravel and Sand (A-2-4 (0))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape: ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-121SPT-49.4-54-190STest Date: 10/25/19 Checked By: bfs

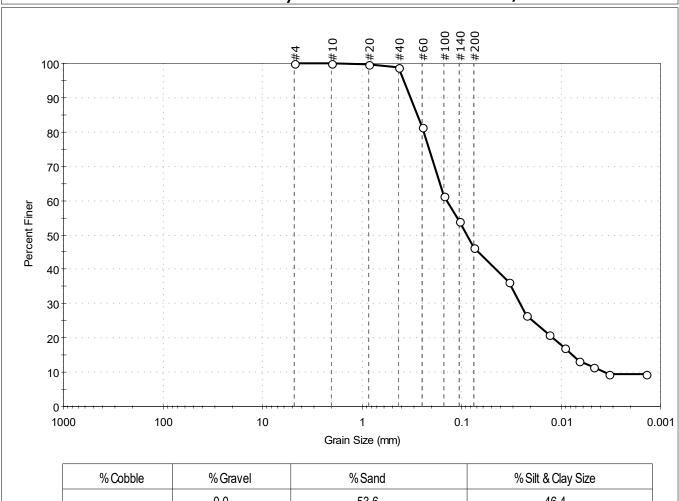
527606 Depth: Test Id:

Test Comment:

Visual Description: Moist, dark grayish brown silty sand

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



	% Cobbl	e	% Gravel		% Sand		% Silt 8	& Clay Size
	-		0.0		53.6			46.4
Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies			<u>Coeffi</u>	<u>cients</u>
						$D_{85} = 0.27$	88 mm	$D_{30} = 0.0256 \text{ mm}$
#4	1 75	100						

				·
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	99		
#60	0.25	81		
#100	0.15	61		
#140	0.11	54		
#200	0.075	46		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0337	36		
	0.0337 0.0220	36 27		
	0.0220	27		
	0.0220 0.0131	27 21		
	0.0220 0.0131 0.0093	27 21 17		
	0.0220 0.0131 0.0093 0.0066	27 21 17 13		
	0.0220 0.0131 0.0093 0.0066 0.0047	27 21 17 13 11		

D <sub>85</sub> = 0.2788 mm	$D_{30} = 0.0256 \text{ mm}$
D <sub>60</sub> = 0.1404 mm	$D_{15} = 0.0077 \text{ mm}$
D <sub>50</sub> = 0.0886 mm	$D_{10} = 0.0036 \text{ mm}$
$C_u = 39.000$	C <sub>c</sub> =1.297

<u>Classification</u> Silty SAND (SM) <u>ASTM</u> AASHTO Clayey Soils (A-7-5 (3))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

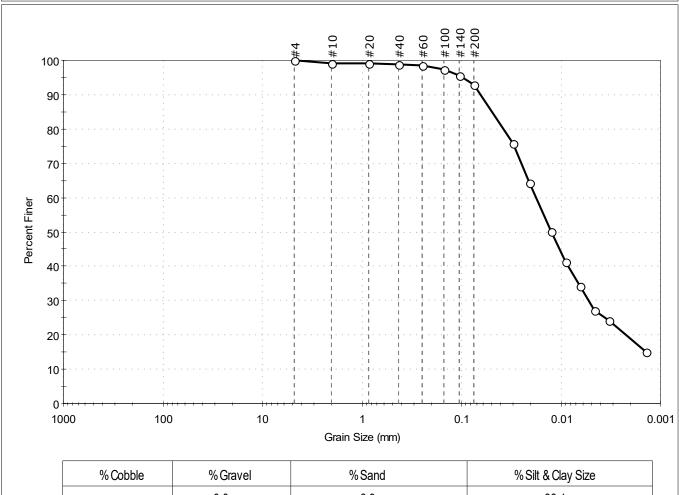
Sample ID: PDI-122SPT-04-09-19092Test Date: 11/07/19 Checked By: bfs

527607 Depth: Test Id:

Test Comment:

Visual Description: Wet, olive brown silt Sample Comment: Sample contains organics

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
	0.0	6.9	93.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	99		
#40	0.42	99		
#60	0.25	98		
#100	0.15	97		
#140	0.11	96		
#200	0.075	93		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0306	76		
	0.0209	64		
	0.0124	50		
	0.0089	41		
	0.0064	34		
	0.0046	27		
	0.0033	24		
	0.0014	15		

<u>Coefficients</u>					
D <sub>85</sub> = 0.0494 mm	$D_{30} = 0.0053 \text{ mm}$				
D <sub>60</sub> = 0.0178 mm	$D_{15} = N/A$				
D <sub>50</sub> = 0.0124 mm	$D_{10} = N/A$				
C <sub>u</sub> =N/A	$C_c = N/A$				

<u>Classification</u> Elastic SILT (MH) <u>ASTM</u> AASHTO Clayey Soils (A-7-5 (40))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Separation of Sample: #200 Sieve

Sand/Gravel Hardness: ---

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period: 1 minute Est. Specific Gravity: 2.65



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-122SPT-16.6-24-190STest Date: 11/07/19 Checked By: bfs

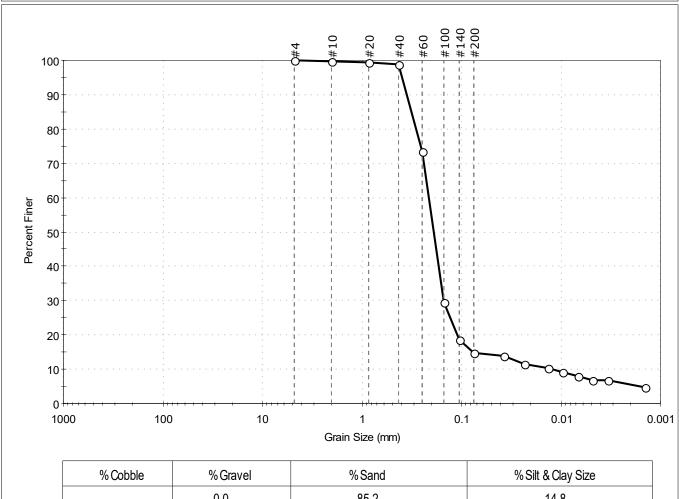
527608 Depth: Test Id:

Test Comment:

Visual Description: Moist, dark olive brown silty sand

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	85.2	14.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	99		
#40	0.42	99		
#60	0.25	74		
#100	0.15	30		
#140	0.11	19		
#200	0.075	15		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0377	14		
	0.0232	12		
	0.0135	10		
	0.0095	9		
	0.0068	8		
	0.0048	7		
	0.0034	7		
	0.0014	5		

<u>Coefficients</u>					
D <sub>85</sub> = 0.3182 mm	$D_{30} = 0.1506 \text{ mm}$				
D <sub>60</sub> = 0.2136 mm	D <sub>15</sub> = 0.0767 mm				
D <sub>50</sub> = 0.1901 mm	$D_{10} = 0.0120 \text{ mm}$				
$C_{II} = 17.800$	$C_c = 8.848$				

<u>Classification</u> Silty SAND (SM) **ASTM** 

AASHTO Silty Gravel and Sand (A-2-4 (0))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape: ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-122SPT-61-66-19092Test Date: 10/30/19 Checked By: bfs

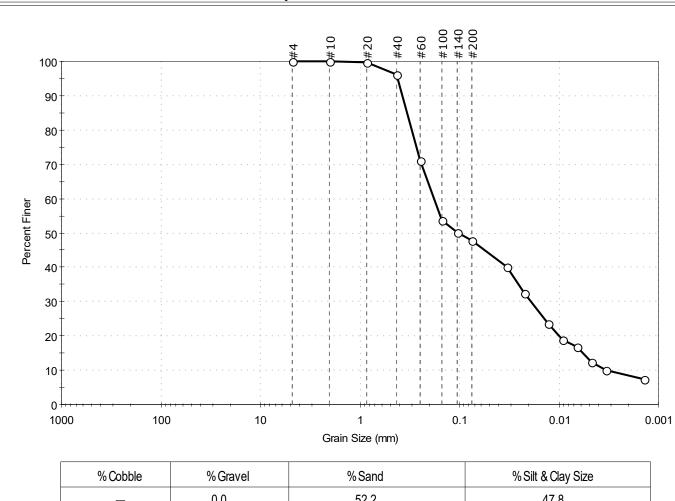
527609 Depth: Test Id:

Test Comment:

Visual Description: Wet, olive brown silty sand

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	52.2	47.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	96		
#60	0.25	71		
#100	0.15	54		
#140	0.11	50		
#200	0.075	48		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0332	40		
	0.0222	32		
	0.0130	23		
	0.0093	19		
	0.0066	17		
	0.0047	12		
	0.0034	10		
	0.0014	7		

<u>Coefficients</u>				
D <sub>85</sub> = 0.3352 mm	$D_{30} = 0.0192 \text{ mm}$			
D <sub>60</sub> = 0.1803 mm	$D_{15} = 0.0058 \text{ mm}$			
D <sub>50</sub> = 0.1049 mm	$D_{10} = 0.0033 \text{ mm}$			
Cu =54.636	$C_c = 0.620$			

<u>Classification</u> Silty SAND (SM) **ASTM** 

AASHTO Clayey Soils (A-6 (3))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685 Sample Type: bag Tested By: ckg

Boring ID: ---Sample ID: PDI-123SPT-00-4.5-1909ZTest Date: 10/29/19 Checked By: bfs

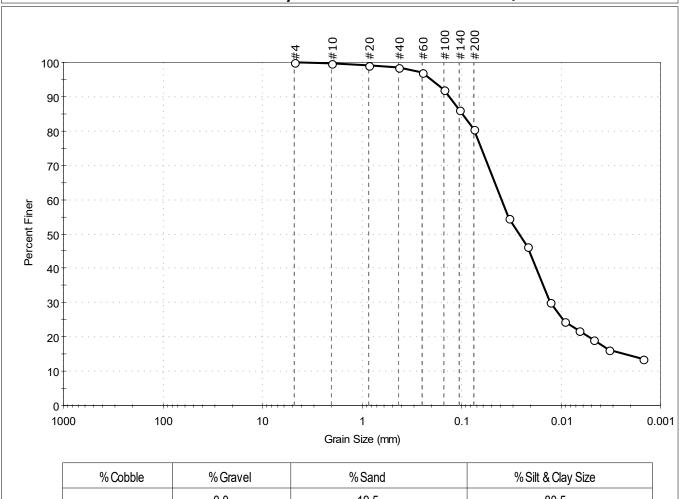
Depth: Test Id: 527610

Test Comment:

Visual Description: Wet, dark olive silt with sand

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	19.5	80.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	99		
#40	0.42	99		
#60	0.25	97		
#100	0.15	92		
#140	0.11	86		
#200	0.075	80		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0335	54		
	0.0217	46		
	0.0129	30		
	0.0092	25		
	0.0066	22		
	0.0047	19		
	0.0033	16		
	0.0015	14		

<u>Coefficients</u>				
D <sub>85</sub> =0.0992 mm	$D_{30} = 0.0129 \text{ mm}$			
D <sub>60</sub> = 0.0398 mm	D <sub>15</sub> =0.0022 mm			
D <sub>50</sub> = 0.0264 mm	$D_{10} = N/A$			
C <sub>u</sub> =N/A	$C_c = N/A$			

<u>Classification</u> Elastic SILT with Sand (MH) <u>ASTM</u> AASHTO Clayey Soils (A-7-5 (23))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape: ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-123SPT-25.5-30.5-19Test Date: 11/11/19 Checked By: bfs

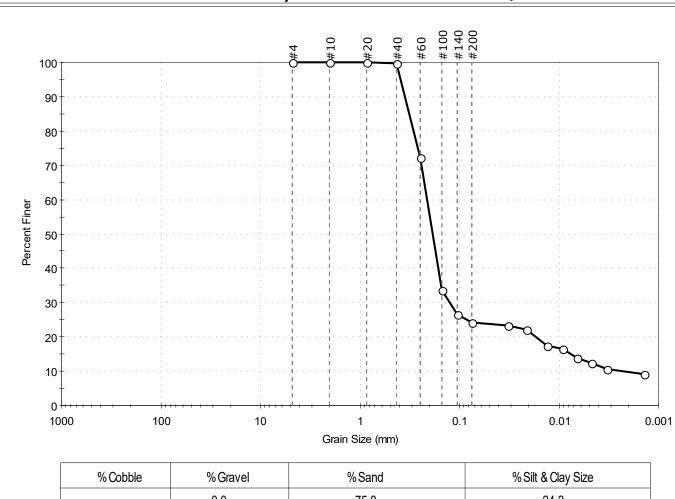
Depth: Test Id: 527611

Test Comment:

Visual Description: Moist, dark gray silty sand

Sample Comment:

## Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	75.8	24.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	100		
#60	0.25	72		
#100	0.15	34		
#140	0.11	27		
#200	0.075	24		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0326	23		
	0.0211	22		
	0.0131	17		
	0.0093	16		
	0.0066	14		
	0.0047	12		
	0.0033	11		
	0.0014	9		

<u>Coefficients</u>				
D <sub>85</sub> = 0.3204 mm	$D_{30} = 0.1255 \text{ mm}$			
D <sub>60</sub> = 0.2128 mm	D <sub>15</sub> = 0.0076 mm			
D <sub>50</sub> = 0.1865 mm	$D_{10} = 0.0023 \text{ mm}$			
C <sub>11</sub> =92.522	$C_c = 32.180$			

<u>Classification</u> Silty SAND (SM) **ASTM** 

AASHTO Silty Gravel and Sand (A-2-4 (0))

# <u>Sample/Test Description</u> Sand/Gravel Particle Shape: ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Est. Specific Gravity: 2.65

Separation of Sample: #200 Sieve



Location: Project No:

Boring ID: ---Sample Type: bag Tested By: ckg Sample ID: PDI-123SPT-63.2-65.5-19Test Date: 11/05/19 Checked By: bfs

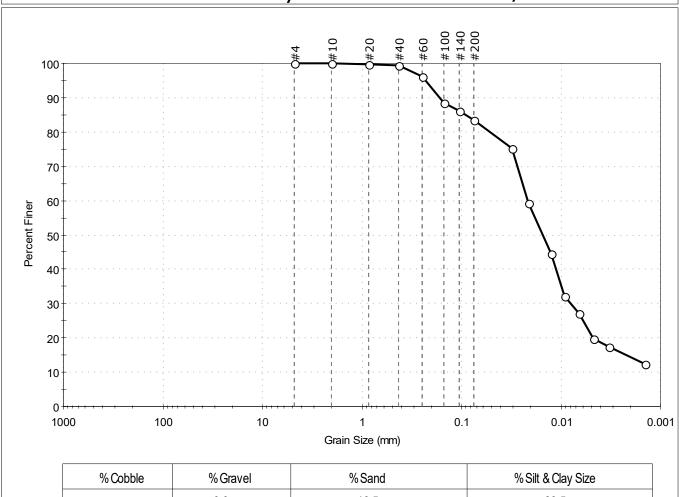
Depth: Test Id: 527612

Test Comment:

Visual Description: Moist, dark olive brown silt with sand

Sample Comment:

### Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size		
_	0.0	16.5	83.5		

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	99		
#60	0.25	96		
#100	0.15	89		
#140	0.11	86		
#200	0.075	83		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0313	75		
	0.0210	59		
	0.0125	44		
	0.0091	32		
	0.0065	27		
	0.0047	20		
	0.0033	17		
	0.0014	12		

<u>Coe</u> t	<u>fficients</u>
D <sub>85</sub> = 0.0911 mm	$D_{30} = 0.0079 \text{ mm}$
D <sub>60</sub> = 0.0214 mm	$D_{15} = 0.0022 \text{ mm}$
D <sub>50</sub> = 0.0152 mm	$D_{10} = N/A$
Cu =N/A	$C_c = N/A$

GTX-310685

<u>Classification</u> SILT with Sand (ML) **ASTM** 

AASHTO Clayey Soils (A-7-5 (13))

### <u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Est. Specific Gravity: 2.65 Separation of Sample: #200 Sieve



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: ckg

Sample ID: PDI-19SC-B-05-07-19100Test Date: 10/29/19 Checked By: bfs

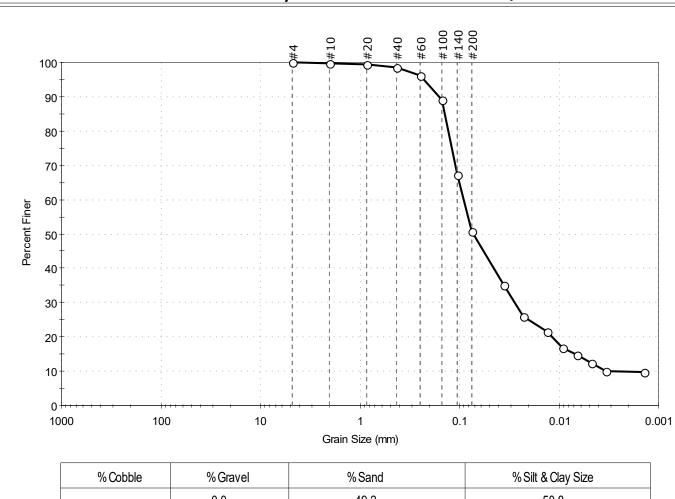
527549 Depth: Test Id:

Test Comment:

Visual Description: Moist, dark olive brown sandy silt

Sample Comment:

### Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size		
_	0.0	49.2	50.8		

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	#4 4.75			
#10	2.00	100		
#20	0.85	99		
#40	0.42	99		
#60	0.25	96		
#100	0.15	89		
#140	0.11	67		
#200	0.075	51		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0357	35		
	0.0226	26		
	0.0130	21		
	0.0093	17		
	0.0066	15		
	0.0047	12		
	0.0033	10		
	0.0014	10		

<u>Co</u>	<u>oefficients</u>	
D <sub>85</sub> = 0.1405 mm	$D_{30} = 0.0277 \text{ mm}$	
D <sub>60</sub> = 0.0909 mm	$D_{15} = 0.0070 \text{ mm}$	
D <sub>50</sub> = 0.0722 mm	$D_{10} = 0.0024 \text{ mm}$	
C <sub>11</sub> =37.875	$C_c = 3.517$	

<u>Classification</u> Sandy SILT (ML) **ASTM** 

AASHTO Silty Soils (A-4 (0))

### <u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device: Apparatus A - Mech Mixer

Dispersion Period: 1 minute Est. Specific Gravity: 2.65 Separation of Sample: #200 Sieve



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Sample ID: PDI-018SC-A-06-07-1909Test Date: 10/08/19 Checked By: bfs

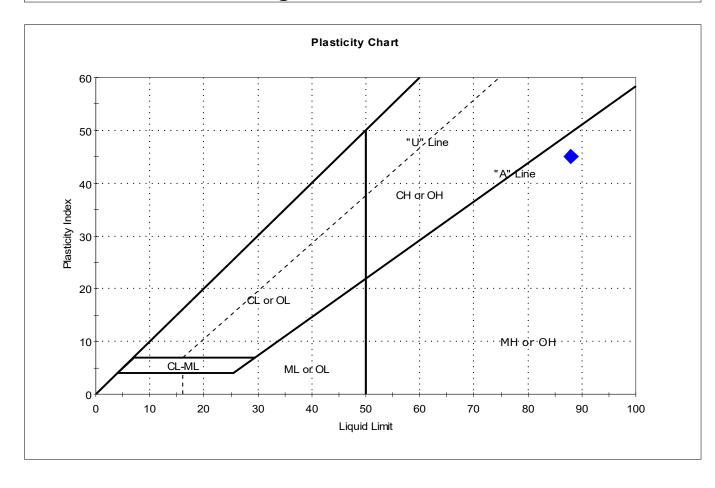
Depth: --- Test Id: 525962

Test Comment: ---

Visual Description: Moist, very dark gray silt

Sample Comment: ---

### Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	D18SC-A-06-07-19			77	88	43	45	0.8	Elastic SILT (MH)

Sample Prepared using the WET method

5% Retained on #40 Sieve Dry Strength: VERY HIGH

Dilatancy: SLOW
Toughness: MEDIUM



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: cam

525963

Sample ID: PDI-018SC-A-08-09-1909Test Date: 10/09/19 Checked By: bfs

Test Id: Depth: Test Comment:

Visual Description: Moist, very dark gray sand

Sample Comment:

## Atterberg Limits - ASTM D4318

#### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	)18SCA-08-09-19			23	n/a	n/a	n/a	n/a	Poorly graded SAND (SP)

12% Retained on #40 Sieve

Dry Strength: LOW Dilatancy: RAPID Toughness: n/a



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: cam

Sample ID: PDI-021SC-B-7.7-9.7-190Test Date: 10/09/19 Checked By: bfs

Test Id: Depth: 525964

Visual Description: Moist, very dark gray sand with silt

Sample Comment:

Test Comment:

### Atterberg Limits - ASTM D4318

#### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	21SC-B-7.7-9.7-19			13	n/a	n/a	n/a	n/a	Poorly graded SAND with Silt (SP-SM)

18% Retained on #40 Sieve

Dry Strength: LOW Dilatancy: RAPID Toughness: n/a



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Boring ID: --- Sample Type: bag Tested By: can Sample ID: PDI-024SC-B-10-12.1-19(Test Date: 10/09/19 Checked By: bfs

Depth: --- Test Id: 525965

Test Comment: ---

Visual Description: Moist, very dark gray sand with silt Sample Comment: ---

### Atterberg Limits - ASTM D4318

#### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	24SC-B-10-12.1-19			38	n/a	n/a	n/a	n/a	Poorly graded SAND with Silt (SP-SM)

0% Retained on #40 Sieve

Dry Strength: LOW Dilatancy: RAPID Toughness: n/a



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Sample ID: PDI-028SC-10.7-12.7-191Test Date: 10/14/19 Checked By: bfs

Sample ID: PDI-028SC-10.7-12.7-191Test Date: 10/14/19
Depth: --- Test Id: 526418

Test Comment: ---

Visual Description: Moist, very dark gray sand

Sample Comment: ---

## Atterberg Limits - ASTM D4318

#### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	28SC-10.7-12.7-19			15	n/a	n/a	n/a	n/a	Poorly graded SAND (SP)

23% Retained on #40 Sieve

Dry Strength: NONE Dilatancy: RAPID Toughness: n/a



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Sample ID: PDI-036SC-B-4.2-6.2-190Test Date: 10/09/19 Checked By: bfs

Sample ID: PDI-036SC-B-4.2-6.2-190Test Date: 10/09/1 Depth: -- Test Id: 525966

Test Comment: ---

Visual Description: Moist, very dark gray sand

Sample Comment: ---

## Atterberg Limits - ASTM D4318

#### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	36SC-B-4.2-6.2-19			14	n/a	n/a	n/a	n/a	Poorly graded SAND (SP)

28% Retained on #40 Sieve

Dry Strength: LOW Dilatancy: RAPID Toughness: n/a



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Boring ID: --- Sample Type: bag Tested By: can Sample ID: PDI-039SC-B-7.8-9.8-190Test Date: 10/09/19 Checked By: bfs

Depth: --- Test Id: 525970

Visual Description: Moist, very dark gray sand with silt

Sample Comment: ---

Test Comment:

### Atterberg Limits - ASTM D4318

#### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	39SC-B-7.8-9.8-19			40	n/a	n/a	n/a	n/a	Poorly graded SAND with Silt (SP-SM)

1% Retained on #40 Sieve

Dry Strength: LOW Dilatancy: RAPID Toughness: n/a



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Boring ID: --- Sample Type: bag Tested By: can Sample ID: PDI-046SC-B-9.8-11.8-19Test Date: 10/09/19 Checked By: bfs

Depth: --- Test Id: 525968

Test Comment: ---

Visual Description: Moist, very dark gray silty sand

Sample Comment: ---

## Atterberg Limits - ASTM D4318

#### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	\$6SC-B-9.8-11.8-1			24	n/a	n/a	n/a	n/a	Silty SAND (SM)

3% Retained on #40 Sieve Dry Strength: MEDIUM Dilatancy: RAPID

Toughness: n/a



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Sample ID: --- Sample Type: bag Tested By: can Sample ID: PDI-064SC-B-04-06-1909Test Date: 10/11/19 Checked By: bfs

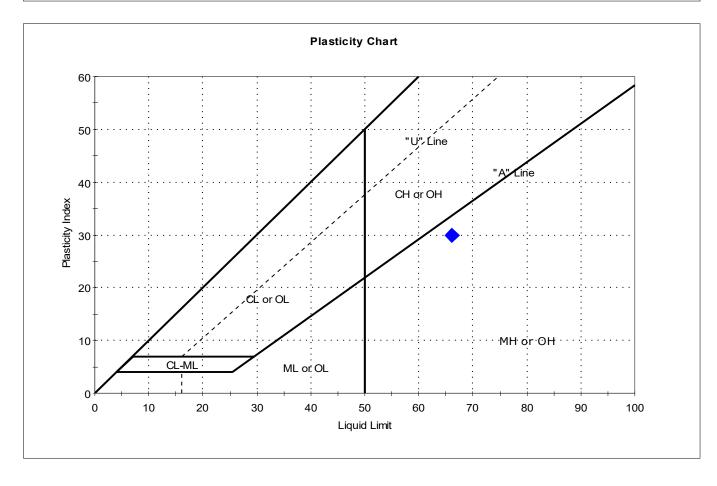
Depth: --- Test Id: 525967

Test Comment: ---

Visual Description: Moist, very dark gray silt with sand

Sample Comment: ---

## Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
<b>•</b>	064SC-B-04-06-19			66	66	36	30	1	Elastic SILT with Sand (MH)

Sample Prepared using the WET method

1% Retained on #40 Sieve Dry Strength: VERY HIGH

Dilatancy: SLOW
Toughness: MEDIUM



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Sample ID: PDI-071SC-B-08-10-1910Test Date: 10/15/19 Checked By: bfs

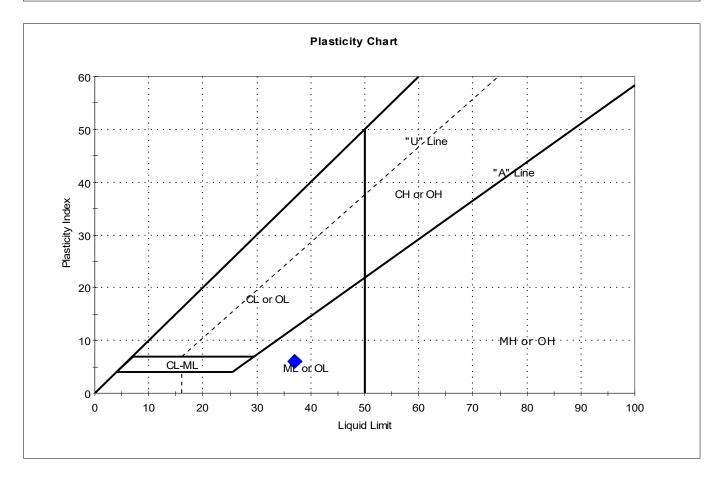
Depth: --- Test Id: 525969

Test Comment: ---

Visual Description: Wet, very dark gray silty sand

Sample Comment: ---

## Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	071SC-B-08-10-19			43	37	31	6	2	Silty SAND (SM)

Sample Prepared using the WET method

19% Retained on #40 Sieve

Dry Strength: HIGH Dilatancy: SLOW Toughness: LOW



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Sample ID: PDI-081SC-B-08-10-1910Test Date: 10/14/19 Checked By: bfs

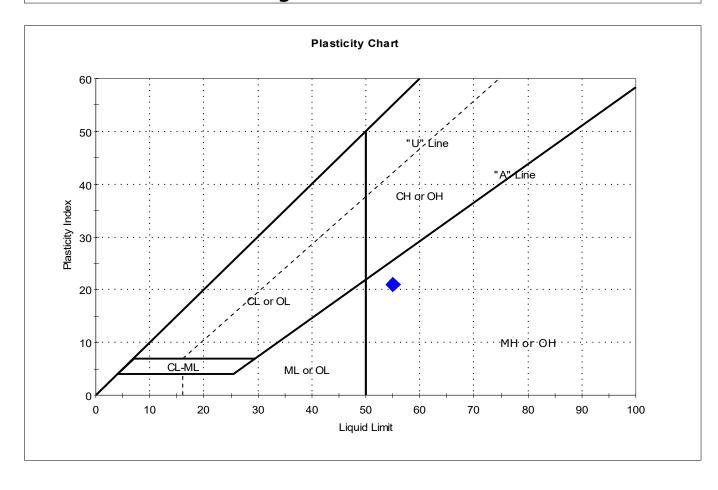
Depth: --- Test Id: 526419

Test Comment: ---

Visual Description: Wet, dark grayish olive silt with sand

Sample Comment: ---

### Atterberg Limits - ASTM D4318



Syn	nbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
	<b>•</b>	081SC-B-08-10-19			64	55	34	21	1.4	Elastic SILT with Sand (MH)

Sample Prepared using the WET method

1% Retained on #40 Sieve

Dry Strength: HIGH Dilatancy: SLOW Toughness: LOW



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: cam

Sample ID: PDI-016SC-B-06-08-1910Test Date: 11/06/19 Checked By: bfs

Test Id: Depth: 527477

Visual Description: Moist, dark grayish brown silty sand

Sample Comment:

Test Comment:

## Atterberg Limits - ASTM D4318

#### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	016SC-B-06-08-19			35	n/a	n/a	n/a	n/a	Silty SAND (SM)

2% Retained on #40 Sieve

Dry Strength: LOW Dilatancy: RAPID Toughness: n/a



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam Sample ID: PDI-027SC-B-11-13.5-19 Test Date: 11/12/19 Checked By: bfs

Depth: --- Test Id: 527481

Test Comment: ---

Visual Description: Moist, dark gray sand

Sample Comment: ---

## Atterberg Limits - ASTM D4318

#### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	27SC-B-11-13.5-19			19	n/a	n/a	n/a	n/a	Poorly graded SAND (SP)

9% Retained on #40 Sieve

Dry Strength: LOW Dilatancy: RAPID Toughness: n/a



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Boring ID: --- Sample Type: bag Tested By: cam Sample ID: PDI-033SC-B-8.7-10.7-19Test Date: 11/01/19 Checked By: bfs

Depth: --- Test Id: 527480

Visual Description: Moist, dark grayish brown sand

Sample Comment: ---

Test Comment:

## Atterberg Limits - ASTM D4318

#### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	33SC-B-8.7-10.7-1			18	n/a	n/a	n/a	n/a	Poorly graded SAND (SP)

25% Retained on #40 Sieve

Dry Strength: LOW Dilatancy: RAPID Toughness: n/a



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Boring ID: --- Sample Type: bag Tested By: can Sample ID: PDI-038SC-B-7.1-9.1-191Test Date: 10/25/19 Checked By: bfs

Depth: --- Test Id: 527478
Test Comment: ---

Visual Description: Moist, dark gray sand with silt

Sample Comment: ---

## Atterberg Limits - ASTM D4318

#### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	38SC-B-7.1-9.1-19			20	n/a	n/a	n/a	n/a	Poorly graded SAND with Silt (SP-SM)

35% Retained on #40 Sieve

Dry Strength: LOW Dilatancy: RAPID Toughness: n/a



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam Sample ID: PDI-041SC-B-8.2-10.2-19Test Date: 10/30/19 Checked By: bfs

Depth: --- Test Id: 527475
Test Comment: ---

Visual Description: Moist, dark grayish brown sand

Sample Comment: ---

## Atterberg Limits - ASTM D4318

#### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	\$1SC-B-8.2-10.2-1			29	n/a	n/a	n/a	n/a	Poorly graded SAND (SP)

4% Retained on #40 Sieve

Dry Strength: LOW Dilatancy: RAPID Toughness: n/a



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Boring ID: --- Sample Type: bag Tested By: can Sample ID: PDI-049SC-B-06-08-1910Test Date: 11/05/19 Checked By: bfs

Depth: --- Test Id: 527484
Test Comment: ---

Visual Description: Moist, dark grayish brown silty sand

Sample Comment: ---

## Atterberg Limits - ASTM D4318

#### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	049SC-B-06-08-19			32	n/a	n/a	n/a	n/a	Silty SAND (SM)

4% Retained on #40 Sieve

Dry Strength: LOW Dilatancy: RAPID Toughness: n/a



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Boring ID: --- Sample Type: bag Tested By: can Sample ID: PDI-052SC-B-06-08-1910Test Date: 11/06/19 Checked By: bfs

Depth: --- Test Id: 527485

Visual Description: Moist, dark grayish brown silty sand

Sample Comment: ---

Test Comment:

## Atterberg Limits - ASTM D4318

#### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	)52SC-B-06-08-19			45	n/a	n/a	n/a	n/a	Silty SAND (SM)

2% Retained on #40 Sieve

Dry Strength: LOW Dilatancy: RAPID Toughness: n/a



Client: Anchor QEA, LLC Gasco PDI Project:

Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: cam

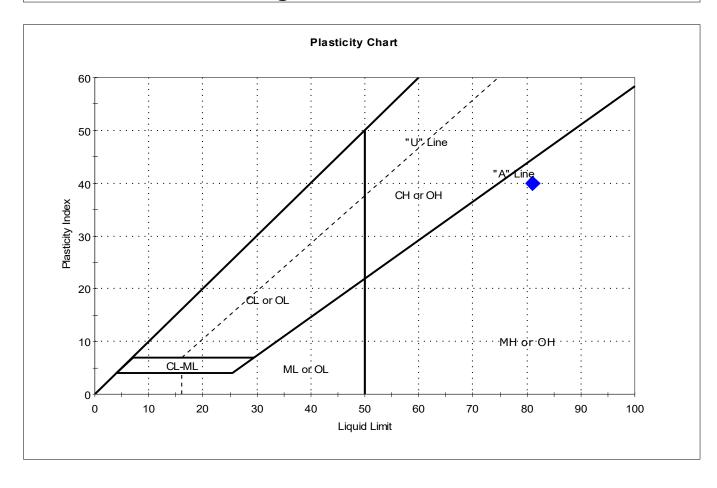
527482

Sample ID: PDI-066SC-B-06-08-1910Test Date: 11/13/19 Checked By: bfs

Depth: Test Id: Test Comment:

Visual Description: Moist, dark olive brown silt Sample Comment: Sample contains organics

# Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	066SC-B-06-08-19			68	81	41	40	0.7	Elastic SILT (MH)

Sample Prepared using the WET method

2% Retained on #40 Sieve Dry Strength: VERY HIGH

Dilatancy: SLOW Toughness: MEDIUM



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

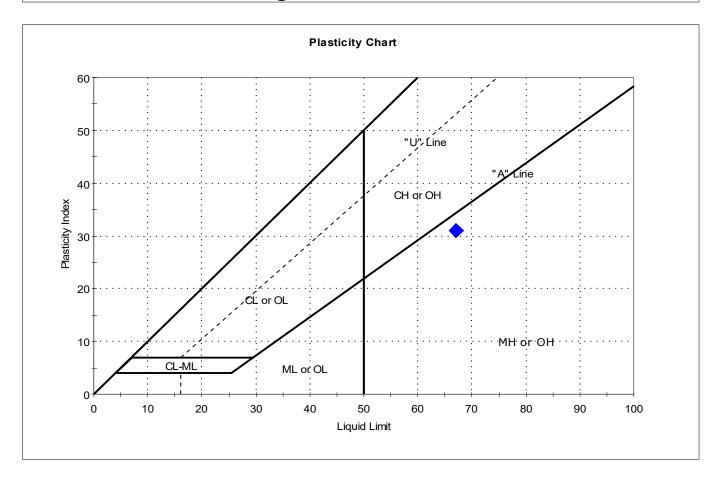
Boring ID: --- Sample Type: bag Tested By: can Sample ID: PDI-067SC-B-02-04-1910Test Date: 11/11/19 Checked By: bfs Depth: --- Test Id: 527476

Depth: ---Test Comment: ---

Visual Description: Wet, dark olive brown silt

Sample Comment: ---

### Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	067SC-B-02-04-19			74	67	36	31	1.2	Elastic SILT (MH)

Sample Prepared using the WET method

2% Retained on #40 Sieve

Dry Strength: HIGH Dilatancy: SLOW Toughness: LOW



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Sample ID: PDI-077SC-B-04-06-1910Test Date: 10/25/19 Checked By: bfs

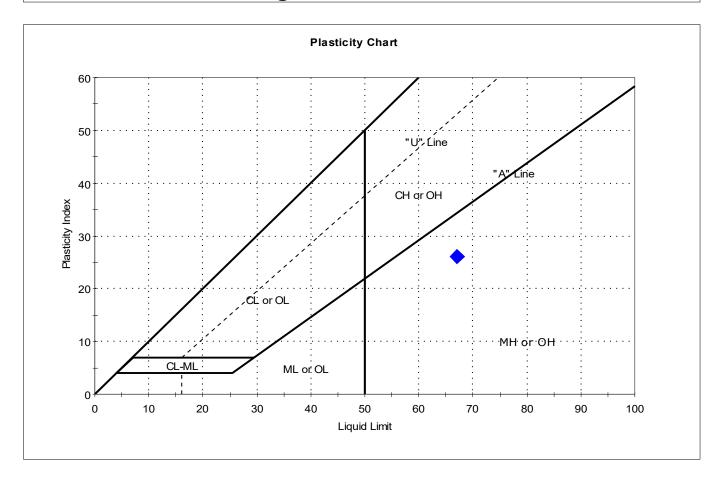
Depth: --- Test Id: 527473

Test Comment: ---

Visual Description: Wet, dark olive brown silt

Sample Comment: ---

### Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	)77SC-B-04-06-19			81	67	41	26	1.6	Elastic SILT (MH)

Sample Prepared using the WET method

0% Retained on #40 Sieve Dry Strength: VERY HIGH

Dilatancy: SLOW Toughness: LOW



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

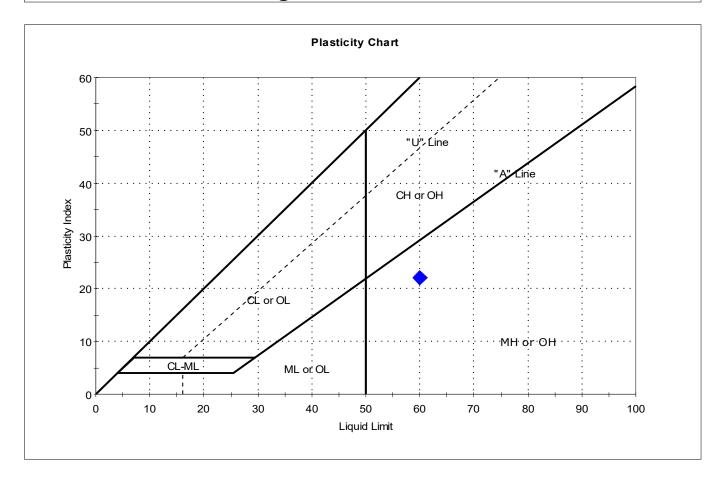
Sample ID: PDI-079SC-B-06-08-1910Test Date: 11/18/19 Checked By: bfs Depth: --- Test Id: 527474

Test Comment: ---

Visual Description: Wet, dark grayish brown silt

Sample Comment: ---

## Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	)79SC-B-06-08-19			115	60	38	22	3.5	Elastic SILT (MH)

Sample Prepared using the WET method

1% Retained on #40 Sieve Dry Strength: VERY HIGH

Dilatancy: SLOW
Toughness: MEDIUM



Client: Anchor QEA, LLC Gasco PDI Project:

Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: cam

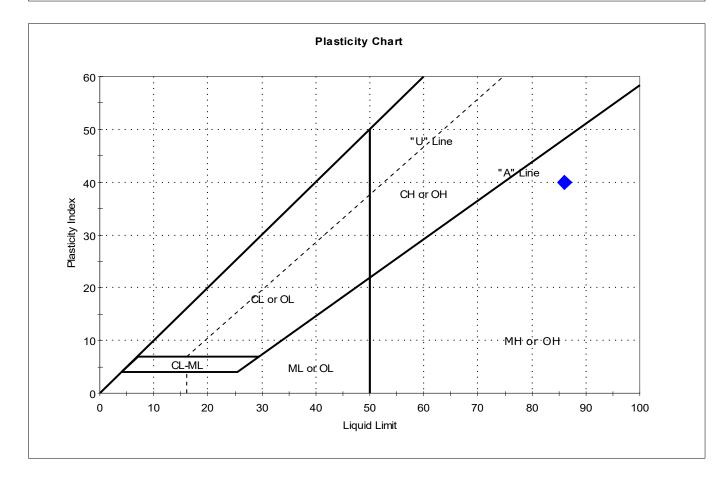
Sample ID: PDI-090SC-B-06-08-1910Test Date: 11/11/19 Checked By: bfs

527483 Depth: Test Id:

Test Comment:

Visual Description: Moist, dark olive brown silt Sample Comment: Sample contains organics

# Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	)90SC-B-06-08-19			82	86	46	40	0.9	Elastic SILT (MH)

Sample Prepared using the WET method

0% Retained on #40 Sieve

Dry Strength: HIGH Dilatancy: SLOW Toughness: LOW



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Sample ID: PDI-107SPT-00-04-19092Test Date: 11/12/19 Checked By: bfs

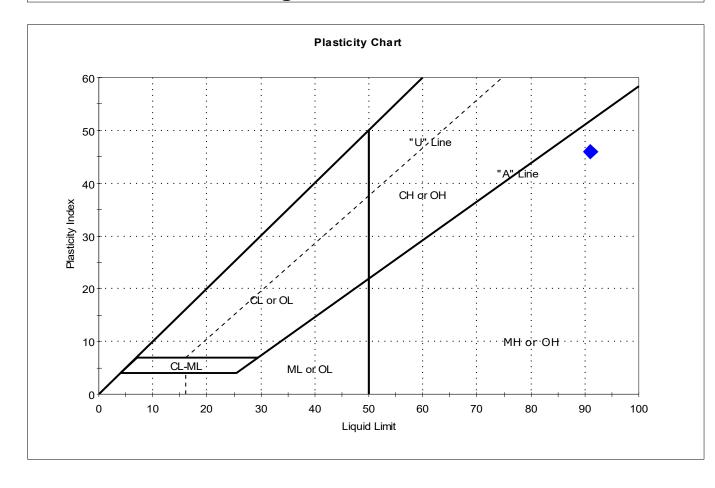
Depth: --- Test Id: 527486

Test Comment: ---

Visual Description: Wet, dark olive brown silt

Sample Comment: ---

### Atterberg Limits - ASTM D4318



Symbo	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	107SPT-00-04-190			108	91	45	46	1.4	Elastic SILT (MH)

Sample Prepared using the WET method

2% Retained on #40 Sieve Dry Strength: MEDIUM Dilatancy: SLOW Toughness: MEDIUM



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

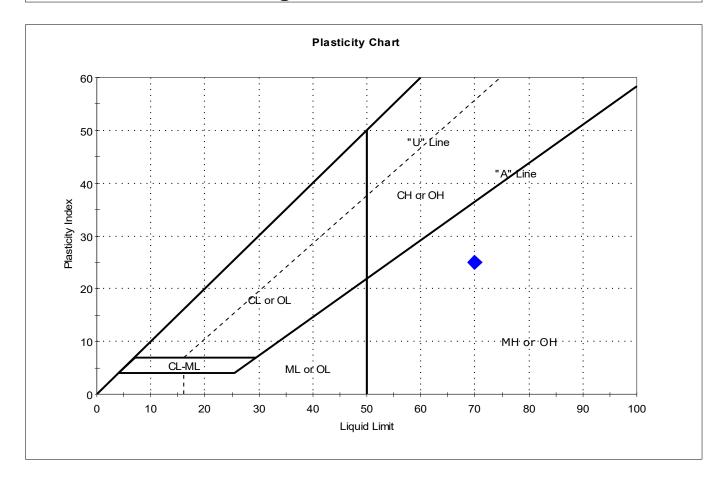
Sample ID: PDI-107SPT-04-09-19092Test Date: 11/18/19 Checked By: bfs

Depth: --- Test Id: 527487

Test Comment: ---

Visual Description: Wet, dark olive brown silt Sample Comment: Sample contains organics

# Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
<b>•</b>	107SPT-04-09-190			84	70	45	25	1.6	Elastic SILT (MH)

Sample Prepared using the WET method

0% Retained on #40 Sieve Dry Strength: VERY HIGH

Dilatancy: SLOW Toughness: LOW



Client: Anchor QEA, LLC Gasco PDI Project:

Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: cam

Sample ID: PDI-107SPT-17-18-19092Test Date: 11/11/19 Checked By: bfs

527488 Test Id: Depth: Test Comment:

Visual Description: Moist, dark gray silty sand

Sample Comment:

## Atterberg Limits - ASTM D4318

#### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	107SPT-17-18-190			42	n/a	n/a	n/a	n/a	Silty SAND (SM)

2% Retained on #40 Sieve Dry Strength: MEDIUM Dilatancy: RAPID Toughness: n/a



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Boring ID: --- Sample Type: bag Tested By: cam Sample ID: PDI-107SPT-62-64-19092Test Date: 10/28/19 Checked By: bfs

Depth: --- Test Id: 527489

Visual Description: Moist, dark olive brown silty sand

Sample Comment: ---

Test Comment:

## Atterberg Limits - ASTM D4318

#### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	107SPT-62-64-190			27	n/a	n/a	n/a	n/a	Silty SAND (SM)

3% Retained on #40 Sieve Dry Strength: MEDIUM Dilatancy: RAPID

Toughness: n/a



Client: Anchor QEA, LLC Gasco PDI Project:

Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: cam

Sample ID: PDI-108SPT-00-6.4-1910CTest Date: 11/11/19 Checked By: bfs

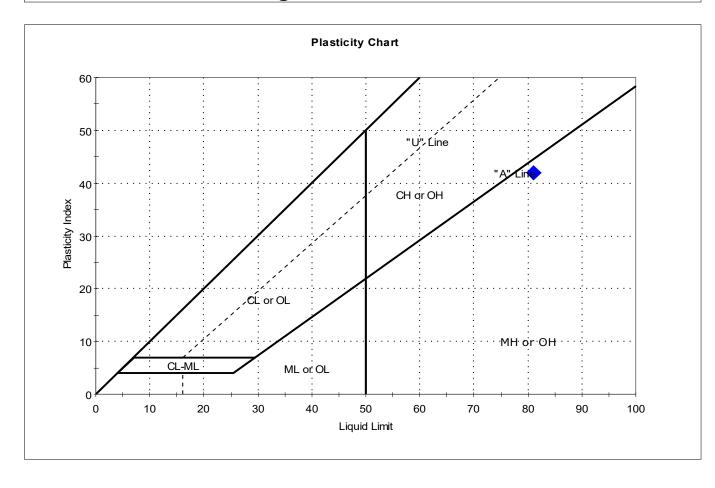
527490 Depth: Test Id:

Test Comment:

Visual Description: Wet, olive brown silt with sand

Sample Comment:

## Atterberg Limits - ASTM D4318



Syn	nbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
	•	108SPT-00-6.4-19:			95	81	39	42	1.3	Elastic SILT with Sand (MH)

Sample Prepared using the WET method

8% Retained on #40 Sieve Dry Strength: VERY HIGH

Dilatancy: SLOW Toughness: LOW



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam Sample ID: PDI-108SPT-14-33.5-191(Test Date: 10/23/19 Checked By: bfs

Depth: --- Test Id: 527491

Test Comment: --Visual Description: Moist, dark olive brown sand

Sample Comment: ---

## Atterberg Limits - ASTM D4318

#### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	.08SPT-14-33.5-19			39	n/a	n/a	n/a	n/a	Poorly graded SAND (SP)

13% Retained on #40 Sieve

Dry Strength: LOW Dilatancy: RAPID Toughness: n/a



Client: Anchor QEA, LLC Gasco PDI Project:

Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: cam

527492

Sample ID: PDI-108SPT-33.5-66.5-19Test Date: 10/28/19 Checked By: bfs Test Id:

Depth: Test Comment:

Visual Description: Moist, dark gray sand with silt

Sample Comment:

## Atterberg Limits - ASTM D4318

#### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
<b>•</b>	08SPT-33.5-66.5-1			30	n/a	n/a	n/a	n/a	Poorly graded SAND with Silt (SP-SM)

26% Retained on #40 Sieve

Dry Strength: LOW Dilatancy: RAPID Toughness: n/a



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

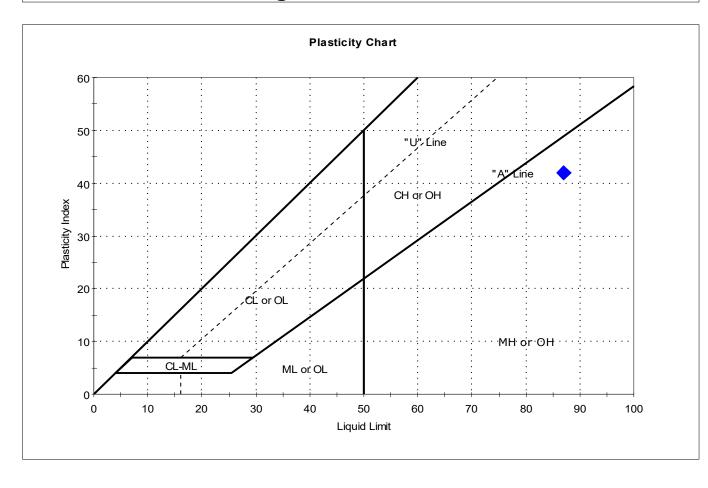
Sample ID: PDI-109SPT-00-6.5-1910CTest Date: 11/18/19 Checked By: n/a

Sample ID: PDI-109SPT-00-6.5-1910CTest Date: 11/18/19
Depth: --- Test Id: 527493

Test Comment: ---

Visual Description: Wet, very dark olive silt Sample Comment: Sample contains organics

# Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	109SPT-00-6.5-19			93	87	45	42	1.1	Elastic SILT (MH)

Sample Prepared using the WET method

3% Retained on #40 Sieve Dry Strength: VERY HIGH

Dilatancy: SLOW Toughness: LOW



Anchor QEA, LLC Client: Gasco PDI Project:

Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: cam

Sample ID: PDI-109SPT-16.5-18.1-19Test Date: 11/18/19 Checked By: bfs

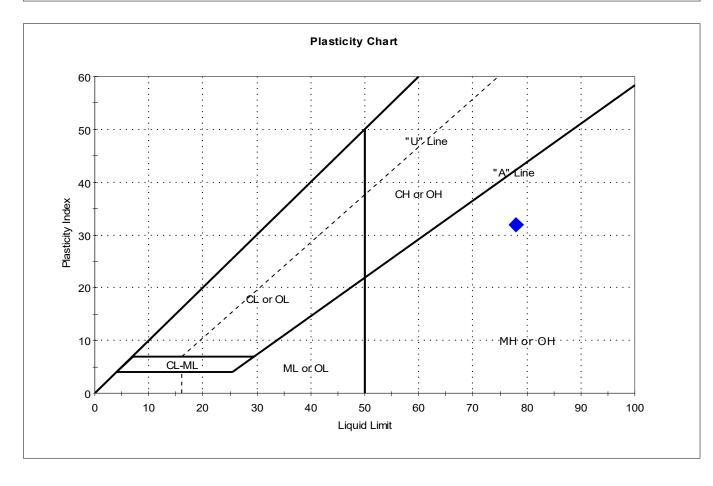
Depth: Test Id: 527494

Test Comment:

Visual Description: Moist, dark olive brown silt

Sample Comment:

## Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	D9SPT-16.5-18.1-1			80	78	46	32	1.1	Elastic SILT (MH)

Sample Prepared using the WET method

2% Retained on #40 Sieve Dry Strength: VERY HIGH

Dilatancy: SLOW Toughness: MEDIUM



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam Sample ID: PDI-109SPT-22-30-19100Test Date: 10/25/19 Checked By: bfs

Depth: --- Test Id: 527495

Visual Description: Moist, olive brown sand with silt

Sample Comment: ---

Test Comment:

## Atterberg Limits - ASTM D4318

#### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	109SPT-22-30-191			35	n/a	n/a	n/a	n/a	Poorly graded SAND with Silt (SP-SM)

2% Retained on #40 Sieve

Dry Strength: LOW Dilatancy: RAPID Toughness: n/a



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam Sample ID: PDI-109SPT-35.5-48.3-19Test Date: 10/24/19 Checked By: bfs

Depth: --- Test Id: 527496

Test Comment: --Visual Description: Moist, olive brown sand with silt

Sample Comment: ---

## Atterberg Limits - ASTM D4318

#### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	D9SPT-35.5-48.3-1			26	n/a	n/a	n/a	n/a	Poorly graded SAND with Silt (SP-SM)

2% Retained on #40 Sieve

Dry Strength: LOW Dilatancy: RAPID Toughness: n/a



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Boring ID: --- Sample Type: bag Tested By: can Sample ID: PDI-109SPT-48.3-51-191(Test Date: 11/12/19 Checked By: bfs

Depth: --- Test Id: 527497
Test Comment: ---

Visual Description: Moist, dark olive brown silt with sand

Sample Comment: ---

# Atterberg Limits - ASTM D4318

### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	.09SPT-48.3-51-19			48	n/a	n/a	n/a	n/a	SILT with Sand (ML)

0% Retained on #40 Sieve

Dry Strength: LOW Dilatancy: RAPID Toughness: n/a



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam Sample ID: PDI-110 B-54-64.5-19101Test Date: 10/24/19 Checked By: bfs

Depth: --- Test Id: 527498

Test Comment: ---

Visual Description: Moist, black sand with silt

Sample Comment: ---

# Atterberg Limits - ASTM D4318

### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	PDI-110 B-54-64.5-191015			18	n/a	n/a	n/a	n/a	Poorly graded SAND with Silt (SP-SM)

38% Retained on #40 Sieve

Dry Strength: LOW Dilatancy: RAPID Toughness: n/a



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam Sample ID: PDI-110SPT-21-32-19101Test Date: 10/24/19 Checked By: bfs

Depth: --- Test Id: 527499

Test Comment: ---

Visual Description: Moist, dark gray sand

Sample Comment: ---

# Atterberg Limits - ASTM D4318

### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	110SPT-21-32-191			24	n/a	n/a	n/a	n/a	Poorly graded SAND with Silt (SP-SM)

6% Retained on #40 Sieve

Dry Strength: LOW Dilatancy: RAPID Toughness: n/a



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: cam

Sample ID: PDI-110SPT-32-45-19101Test Date: 10/24/19 Checked By: bfs Test Id: 527500

Test Comment:

Depth:

Visual Description: Moist, black sand

Sample Comment:

# Atterberg Limits - ASTM D4318

### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	110SPT-32-45-191			28	n/a	n/a	n/a	n/a	Poorly graded SAND (SP)

41% Retained on #40 Sieve

Dry Strength: LOW Dilatancy: RAPID Toughness: n/a



Location: Project No: GTX-310685 Sample Type: bag Boring ID: ---Tested By: cam

Sample ID: PDI-112SPT-00-6.5-1910CTest Date: 11/11/19 Checked By: bfs 527501

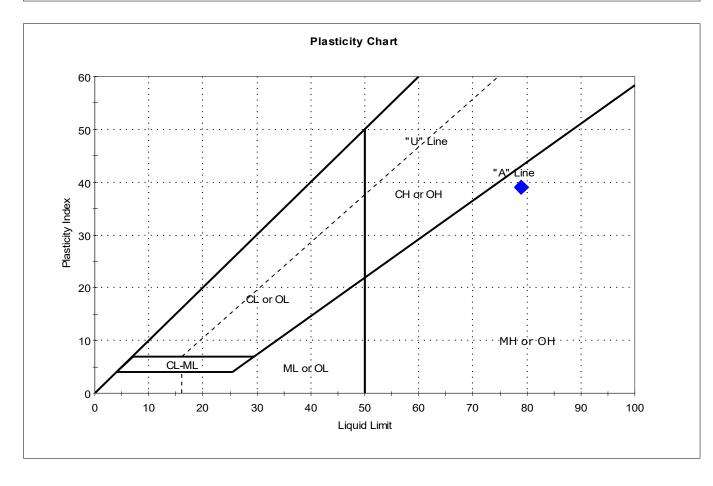
Depth: Test Id:

Test Comment:

Visual Description: Moist, dark brown silt

Sample Comment:

## Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
<b>•</b>	112SPT-00-6.5-19			77	79	40	39	0.9	Elastic SILT (MH)

Sample Prepared using the WET method

0% Retained on #40 Sieve

Dry Strength: HIGH Dilatancy: SLOW Toughness: LOW



Location: Project No: GTX-310685
Boring ID: --- Sample Type: bag Tested By: cam

Boring ID: --- Sample Type: bag Tested By: cam Sample ID: PDI-112SPT-07-11.5-191(Test Date: 11/15/19 Checked By: bfs

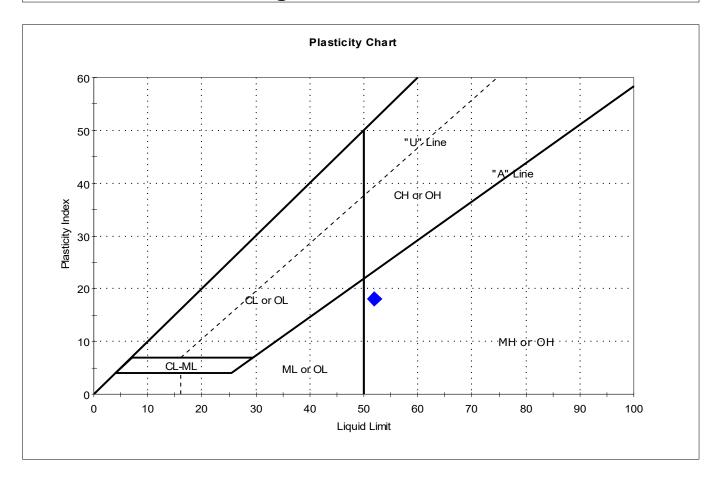
Depth: --- Test Id: 527502

Test Comment: ---

Visual Description: Moist, dark gray sandy silt

Sample Comment: ---

# Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	12SPT-07-11.5-19			53	52	34	18	1.1	Sandy Elastic SILT (MH)

Sample Prepared using the WET method

2% Retained on #40 Sieve Dry Strength: VERY HIGH

Dilatancy: SLOW
Toughness: MEDIUM



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Boring ID: --- Sample Type: bag Tested By: cam Sample ID: PDI-112SPT-11.5-26.5-19Test Date: 11/12/19 Checked By: bfs

Depth: --- Test Id: 527503

Test Comment: --Visual Description: Moist, dark gray silty sand

Sample Comment: ---

# Atterberg Limits - ASTM D4318

### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	12SPT-11.5-26.5-1			37	n/a	n/a	n/a	n/a	Silty SAND (SM)

1% Retained on #40 Sieve Dry Strength: MEDIUM Dilatancy: RAPID

Toughness: n/a



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Boring ID: --- Sample Type: bag Tested By: can Sample ID: PDI-112SPT-37.5-58-191(Test Date: 10/28/19 Checked By: bfs

Depth: --- Test Id: 527504
Test Comment: ---

Visual Description: Moist, very dark olive gray silty sand

Sample Comment: ---

## Atterberg Limits - ASTM D4318

#### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	.12SPT-37.5-58-19			19	n/a	n/a	n/a	n/a	Silty SAND (SM)

20% Retained on #40 Sieve

Dry Strength: LOW Dilatancy: RAPID Toughness: n/a



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Sample ID: PDI-113SPT-06-16-19101Test Date: 11/13/19 Checked By: bfs

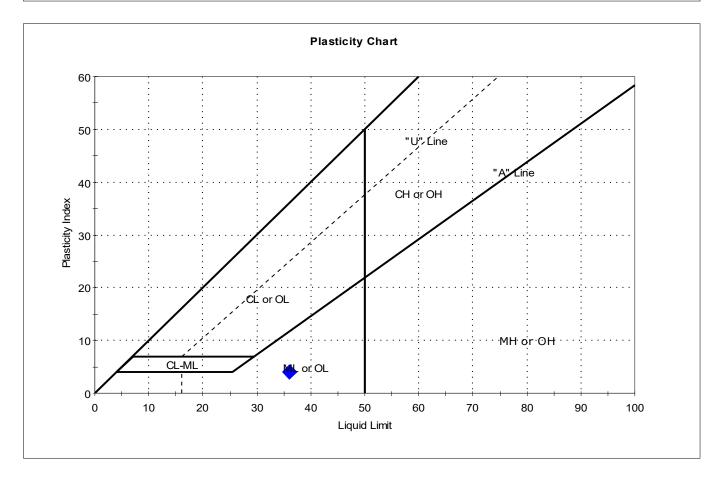
Sample ID: PDI-113SPT-06-16-19101Test Date: 11/13/19
Depth: --- Test Id: 527505

Test Comment: ---

Visual Description: Wet, dark grayish brown silt

Sample Comment: ---

# Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	113SPT-06-16-191			43	36	32	4	2.7	Silty SAND (SM)

Sample Prepared using the WET method

3% Retained on #40 Sieve Dry Strength: VERY HIGH

Dilatancy: SLOW
Toughness: MEDIUM



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam Sample ID: PDI-113SPT-16-22-19101Test Date: 10/23/19 Checked By: bfs

Depth: --- Test Id: 527506

Visual Description: Moist, dark grayish brown sand with silt

Sample Comment: ---

Test Comment:

### Atterberg Limits - ASTM D4318

### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	113SPT-16-22-191			37	n/a	n/a	n/a	n/a	Poorly graded SAND with Silt (SP-SM)

2% Retained on #40 Sieve

Dry Strength: LOW Dilatancy: RAPID Toughness: n/a



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: cam

527507

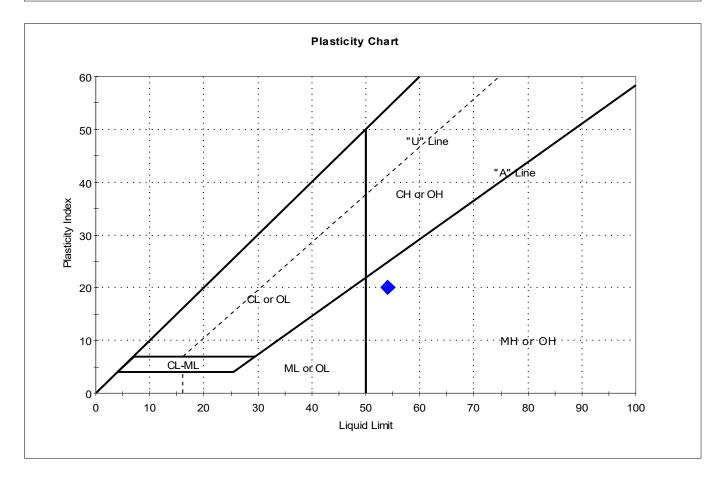
Sample ID: PDI-113SPT-22-25.2-191(Test Date: 11/12/19 Checked By: bfs

Depth: Test Id: Test Comment:

Visual Description: Wet, dark grayish brown silt with sand

Sample Comment:

# Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	.13SPT-22-25.2-19			61	54	34	20	1.3	Elastic SILT with Sand (MH)

Sample Prepared using the WET method

1% Retained on #40 Sieve

Dry Strength: HIGH Dilatancy: SLOW Toughness: LOW



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Boring ID: --- Sample Type: bag Tested By: cam Sample ID: PDI-113SPT-31.9-39.4-19Test Date: 10/23/19 Checked By: bfs

Depth: --- Test Id: 527508

Test Comment: ---

Visual Description: Moist, dark gray silty sand

Sample Comment: ---

# Atterberg Limits - ASTM D4318

### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	13SPT-31.9-39.4-1			33	n/a	n/a	n/a	n/a	Silty SAND (SM)

3% Retained on #40 Sieve

Dry Strength: LOW Dilatancy: RAPID Toughness: n/a



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

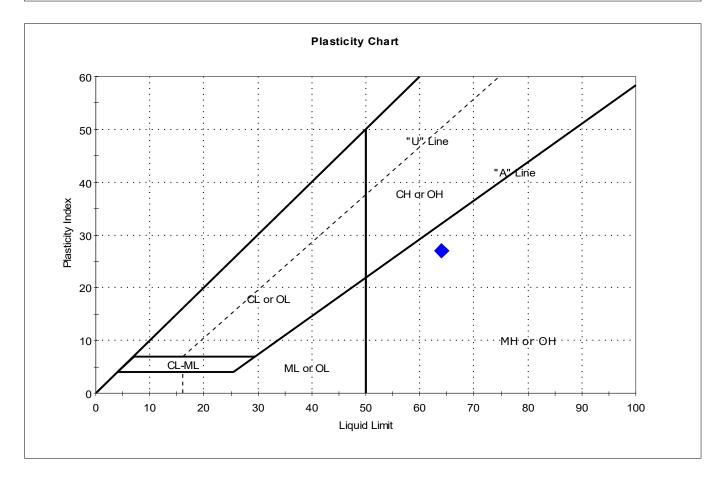
Boring ID: --- Sample Type: bag Tested By: can Sample ID: PDI-114SPT-00-7.5-1910(Test Date: 11/11/19 Checked By: bfs Depth: --- Test Id: 527509

Depth: --- Test Id:
Test Comment: ---

Visual Description: Wet, olive brown silt

Sample Comment: ---

## Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	114SPT-00-7.5-19			73	64	37	27	1.3	Elastic SILT (MH)

Sample Prepared using the WET method

2% Retained on #40 Sieve Dry Strength: VERY HIGH



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: cam

527510

Sample ID: PDI-114SPT-25.5-28-191(Test Date: 10/30/19 Checked By: bfs Test Id:

Depth: Test Comment:

Visual Description: Moist, dark olive brown silty sand

Sample Comment:

# Atterberg Limits - ASTM D4318

### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	.14SPT-25.5-28-19			31	n/a	n/a	n/a	n/a	Silty SAND (SM)

1% Retained on #40 Sieve

Dry Strength: LOW Dilatancy: RAPID Toughness: n/a



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Boring ID: --- Sample Type: bag Tested By: cam Sample ID: PDI-114SPT-42-50.5-191(Test Date: 11/15/19 Checked By: bfs

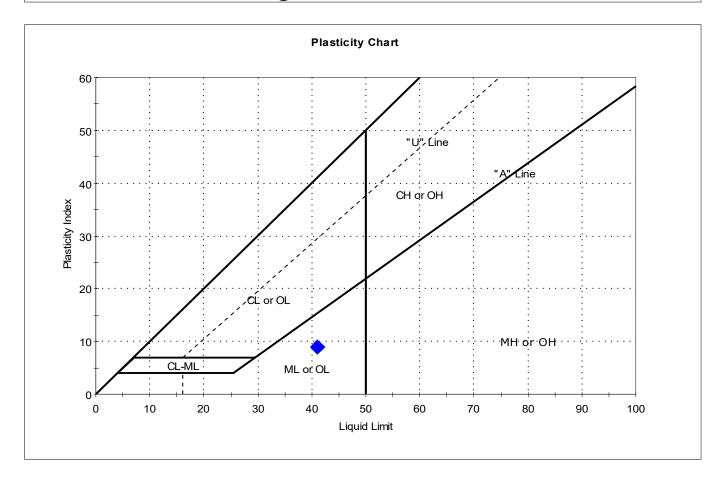
Depth: --- Test Id: 527511

Test Comment: ---

Visual Description: Wet, olive brown sandy silt

Sample Comment: ---

## Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	.14SPT-42-50.5-19			50	41	32	9	2	Sandy SILT (ML)

Sample Prepared using the WET method

1% Retained on #40 Sieve

Dry Strength: HIGH Dilatancy: SLOW Toughness: LOW



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Boring ID: --- Sample Type: bag Tested By: can Sample ID: PDI-114SPT-50.5-55-191(Test Date: 10/28/19 Checked By: bfs

Depth: --- Test Id: 527512

Test Comment: ---

Visual Description: Moist, dark gray silty sand

Sample Comment: ---

# Atterberg Limits - ASTM D4318

### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	14SPT-50.5-55-19			37	n/a	n/a	n/a	n/a	Silty SAND (SM)

4% Retained on #40 Sieve Dry Strength: MEDIUM Dilatancy: RAPID

Toughness: n/a



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Boring ID: --- Sample Type: bag Tested By: can Sample ID: PDI-114SPT-7.5-12.5-191Test Date: 11/18/19 Checked By: bfs

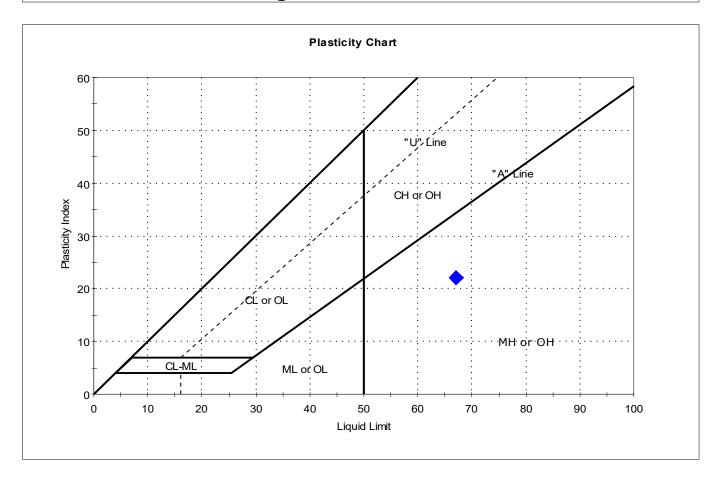
Depth: --- Test Id: 527513

Test Comment: ---

Visual Description: Moist, olive brown silt with sand

Sample Comment: ---

# Atterberg Limits - ASTM D4318



Symbo	I Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	14SPT-7.5-12.5-19			65	67	45	22	0.9	Elastic SILT with Sand (MH)

Sample Prepared using the WET method

1% Retained on #40 Sieve Dry Strength: VERY HIGH

Dilatancy: SLOW
Toughness: MEDIUM



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam Sample ID: PDI-115SPT-06-11-19100Test Date: 10/24/19 Checked By: bfs

Depth: --- Test Id: 527514

Test Comment: --Visual Description: Moist, very dark gray silty sand

Sample Comment: ---

# Atterberg Limits - ASTM D4318

### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
<b>•</b>	115SPT-06-11-191			17	n/a	n/a	n/a	n/a	Silty SAND (SM)

11% Retained on #40 Sieve

Dry Strength: LOW Dilatancy: RAPID Toughness: n/a



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: cam

Sample ID: PDI-115SPT-18.6-20.6-19Test Date: 11/13/19 Checked By: bfs

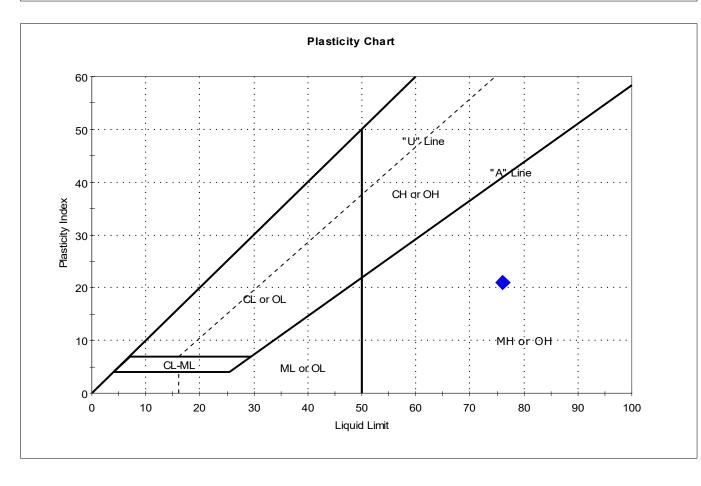
527515 Depth: Test Id:

Test Comment:

Visual Description: Moist, dark olive brown silt with sand

Sample Comment:

# Atterberg Limits - ASTM D4318



Sym	bol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
		15SPT-18.6-20.6-1			72	76	55	21	0.8	Elastic SILT with Sand (MH)

Sample Prepared using the WET method

2% Retained on #40 Sieve Dry Strength: VERY HIGH

Dilatancy: SLOW Toughness: MEDIUM



Client: Anchor QEA, LLC

Project: Gasco PDI

Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: cam Sample ID: PDI-115SPT-23-28.1-191(Test Date: 10/24/19 Checked By: bfs

Test Id: 527516 Depth:

Test Comment:

Moist, very dark olive brown sand with silt Visual Description:

Sample Comment:

## Atterberg Limits - ASTM D4318

### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	15SPT-23-28.1-19			28	n/a	n/a	n/a	n/a	Poorly graded SAND with Silt (SP-SM)

5% Retained on #40 Sieve

Dry Strength: LOW Dilatancy: RAPID Toughness: n/a



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam Sample ID: PDI-115SPT-41.5-49.3-19Test Date: 10/25/19 Checked By: bfs

Depth: --- Test Id: 527517

Test Comment: ---

Visual Description: Moist, olive brown silty sand

Sample Comment: ---

# Atterberg Limits - ASTM D4318

### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	15SPT-41.5-49.3-1			39	n/a	n/a	n/a	n/a	Silty SAND (SM)

1% Retained on #40 Sieve

Dry Strength: LOW Dilatancy: RAPID Toughness: n/a



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Sample ID: PDI-116SPT-00-4.5-19092Test Date: 11/11/19 Checked By: bfs

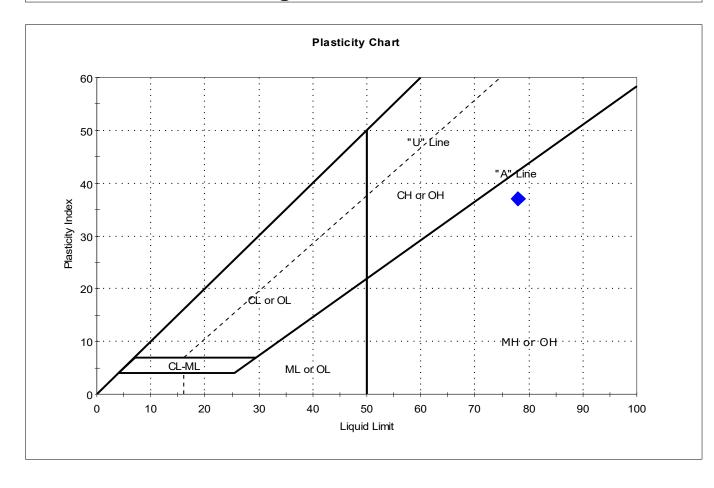
Sample ID: PDI-116SPT-00-4.5-19097Test Date: 11/11/19
Depth: --- Test Id: 527518

Test Comment: ---

Visual Description: Wet, olive brown silt

Sample Comment: ---

## Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	116SPT-00-4.5-190			83	78	41	37	1.1	Elastic SILT (MH)

Sample Prepared using the WET method

2% Retained on #40 Sieve

Dry Strength: HIGH Dilatancy: SLOW Toughness: LOW



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Boring ID: --- Sample Type: bag Tested By: can Sample ID: PDI-116SPT-20-26.7-190\$Test Date: 11/01/19 Checked By: bfs

Depth: --- Test Id: 527519

Test Comment: ---

Visual Description: Moist, dark gray silty sand

Sample Comment: ---

# Atterberg Limits - ASTM D4318

### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	16SPT-20-26.7-19			26	n/a	n/a	n/a	n/a	Silty SAND (SM)

2% Retained on #40 Sieve

Dry Strength: LOW Dilatancy: RAPID Toughness: n/a



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Sample ID: PDI-116SPT-26.7-28.6-19Test Date: 11/11/19 Checked By: bfs

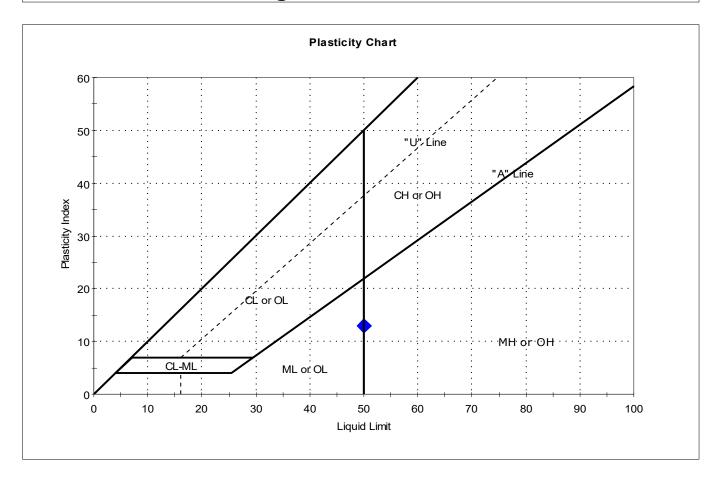
Sample ID: PDI-116SPT-26.7-28.6-19Test Date: 11/11/19
Depth: --- Test Id: 527520

Test Comment: ---

Visual Description: Wet, grayish brown silt

Sample Comment: ---

## Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	16SPT-26.7-28.6-1			64	50	37	13	2.1	Elastic SILT (MH)

Sample Prepared using the WET method

0% Retained on #40 Sieve Dry Strength: VERY HIGH



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Boring ID: --- Sample Type: bag Tested By: can Sample ID: PDI-116SPT-51.5-54.2-19Test Date: 10/25/19 Checked By: bfs

Depth: --- Test Id: 527521

Test Comment: ---

Visual Description: Moist, olive brown silty sand Sample Comment: ---

# Atterberg Limits - ASTM D4318

#### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	16SPT-51.5-54.2-1			27	n/a	n/a	n/a	n/a	Silty SAND (SM)

1% Retained on #40 Sieve

Dry Strength: LOW Dilatancy: RAPID Toughness: n/a



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam Sample ID: PDI-117SPT-11-29.1-191(Test Date: 10/28/19 Checked By: bfs

Depth: --- Test Id: 527522

Test Comment: ---

Visual Description: Moist, dark gray sand

Sample Comment: ---

# Atterberg Limits - ASTM D4318

### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	.17SPT-11-29.1-19			38	n/a	n/a	n/a	n/a	Poorly graded SAND (SP)

28% Retained on #40 Sieve

Dry Strength: LOW Dilatancy: RAPID Toughness: n/a



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: cam

527523

Sample ID: PDI-117SPT-29.1-32-191(Test Date: 11/05/19 Checked By: bfs

Test Id: Depth: Test Comment:

Visual Description: Moist, dark gray silty sand

Sample Comment:

# Atterberg Limits - ASTM D4318

### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	17SPT-29.1-32-19			45	n/a	n/a	n/a	n/a	Silty SAND (SM)

3% Retained on #40 Sieve Dry Strength: MEDIUM Dilatancy: RAPID

Toughness: n/a



Location: Project No: GTX-310685
Boring ID: --- Sample Type: bag Tested By: cam

Sample ID: PDI-117SPT-44.1-53.5-19Test Date: 11/11/19 Checked By: bfs

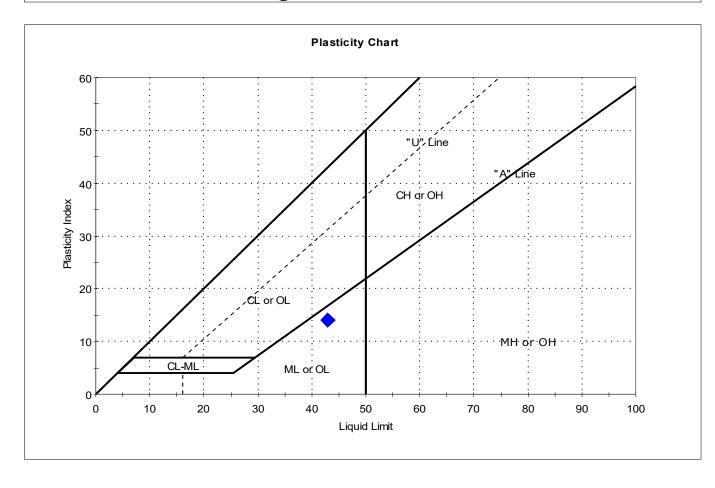
Depth: --- Test Id: 527524

Test Comment: ---

Visual Description: Moist, dark gray silty sand

Sample Comment: ---

## Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	L7SPT-44.1-53.5-1			46	43	29	14	1.2	Silty SAND (SM)

Sample Prepared using the WET method

3% Retained on #40 Sieve

Dry Strength: HIGH Dilatancy: SLOW Toughness: LOW



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Sample ID: PDI-117SPT-53.5-63.5-19Test Date: 11/12/19 Checked By: bfs

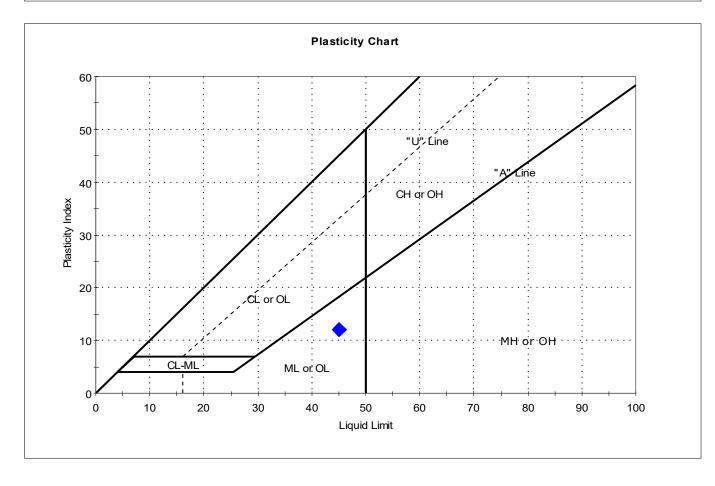
Sample ID: PDI-117SPT-53.5-63.5-19Test Date: 11/12/19
Depth: --- Test Id: 527525

Test Comment: ---

Visual Description: Wet, dark grayish brown silt with sand

Sample Comment: ---

# Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
<b>•</b>	17SPT-53.5-63.5-1			83	45	33	12	4.2	SILT with Sand (ML)

Sample Prepared using the WET method

1% Retained on #40 Sieve

Dry Strength: HIGH Dilatancy: SLOW Toughness: LOW



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: cam

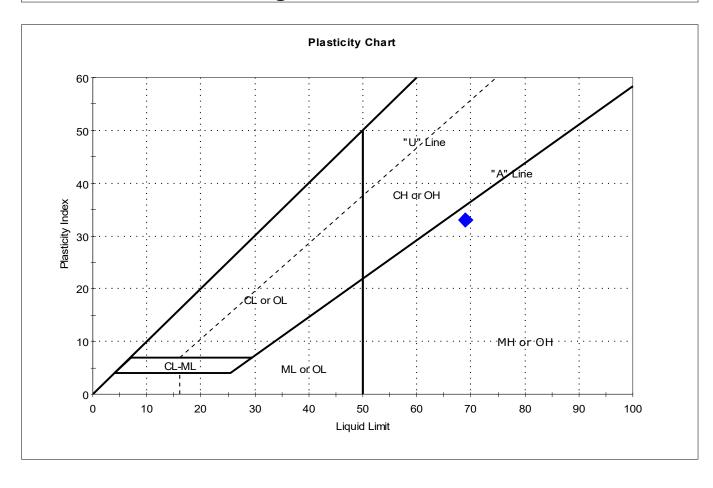
Sample ID: PDI-118SPT-00-4.5-1910fTest Date: 11/18/19 Checked By: bfs

Depth: Test Id: 527526 Test Comment:

Visual Description: Wet, dark grayish brown silt

Sample Comment:

# Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	118SPT-00-4.5-19			113	69	36	33	2.3	Elastic SILT (MH)

Sample Prepared using the WET method

1% Retained on #40 Sieve Dry Strength: VERY HIGH

Dilatancy: SLOW Toughness: MEDIUM



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: cam

527527

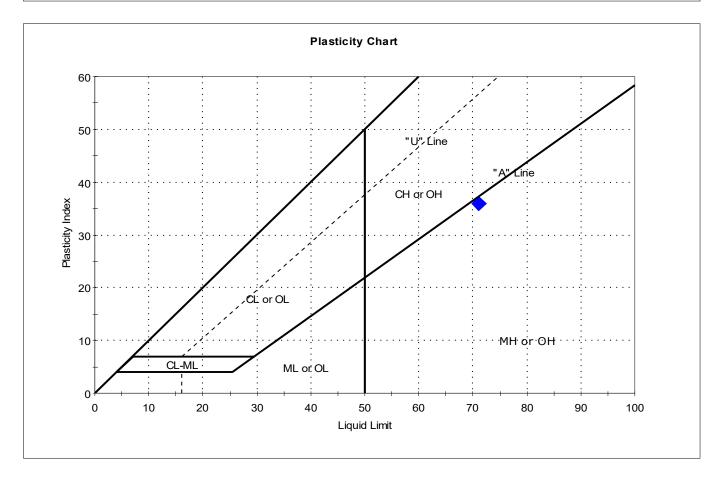
Sample ID: PDI-118SPT-4.5-15-1910fTest Date: 11/12/19 Checked By: bfs Test Id:

Depth: Test Comment:

Visual Description: Moist, dark grayish brown silt with sand

Sample Comment:

# Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	118SPT-4.5-15-19:			70	71	35	36	1	Elastic SILT with Sand (MH)

Sample Prepared using the WET method

3% Retained on #40 Sieve Dry Strength: VERY HIGH



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Sample ID: PDI-118SPT-46.5-61-191(Test Date: 11/11/19 Checked By: bfs

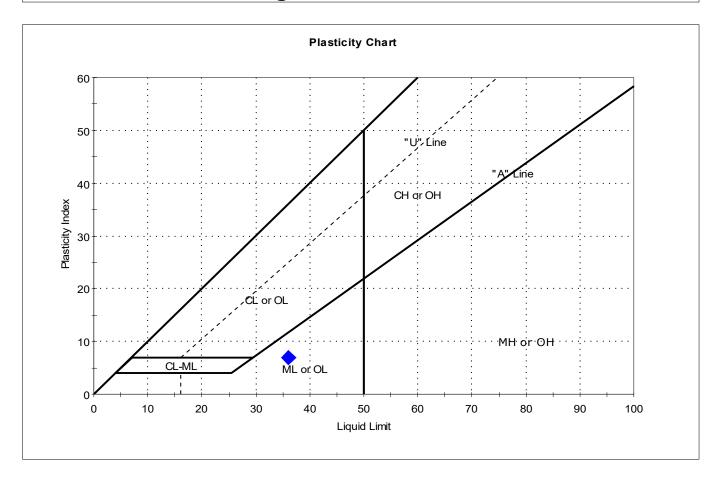
Depth: --- Test Id: 527528

Test Comment: ---

Visual Description: Wet, dark grayish brown silty sand

Sample Comment: ---

# Atterberg Limits - ASTM D4318



Symbo	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	.18SPT-46.5-61-19			62	36	29	7	4.7	Silty SAND (SM)

Sample Prepared using the WET method

1% Retained on #40 Sieve Dry Strength: VERY HIGH



Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: cam

Sample ID: PDI-119SPT-00-4.5-1910CTest Date: 11/12/19 Checked By: bfs

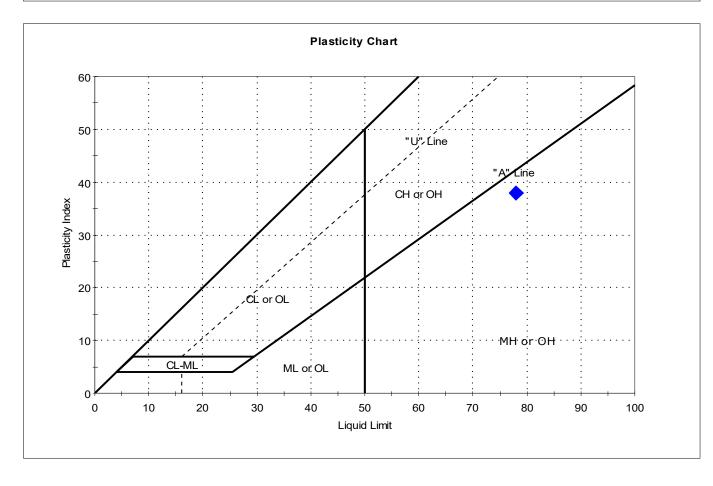
527529 Depth: Test Id:

Test Comment:

Visual Description: Moist, dark grayish brown silt with sand

Sample Comment:

# Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	119SPT-00-4.5-19:			77	78	40	38	1	Elastic SILT with Sand (MH)

Sample Prepared using the WET method

2% Retained on #40 Sieve Dry Strength: VERY HIGH



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Boring ID: --- Sample Type: bag Tested By: cam Sample ID: PDI-119SPT-18.3-31-191(Test Date: 10/25/19 Checked By: bfs

Depth: --- Test Id: 527530

Test Comment: ---

Visual Description: Moist, dark gray silty sand

Sample Comment: ---

# Atterberg Limits - ASTM D4318

### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	19SPT-18.3-31-19			30	n/a	n/a	n/a	n/a	Silty SAND (SM)

1% Retained on #40 Sieve Dry Strength: MEDIUM Dilatancy: RAPID

Toughness: n/a



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Sample ID: PDI-119SPT-47-52-19100Test Date: 11/11/19 Checked By: bfs

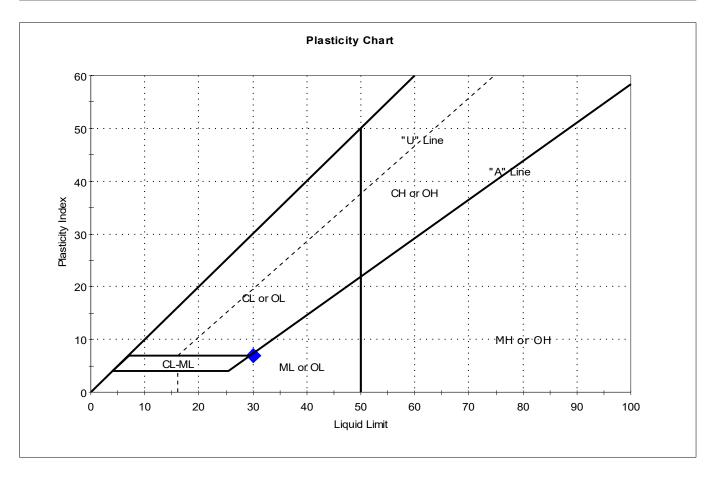
Depth: --- Test Id: 527531

Test Comment: ---

Visual Description: Moist, dark grayish brown silty sand

Sample Comment: ---

# Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	119SPT-47-52-191			33	30	23	7	1.5	Silty SAND (SM)

Sample Prepared using the WET method

7% Retained on #40 Sieve

Dry Strength: HIGH Dilatancy: SLOW Toughness: LOW



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Boring ID: --- Sample Type: bag Tested By: can Sample ID: PDI-119SPT-9.5-18.3-191Test Date: 11/12/19 Checked By: bfs

Depth: --- Test Id: 527532

Test Comment: --Visual Description: Moist, dark grayish brown sand with silt

Sample Comment: ---

### Atterberg Limits - ASTM D4318

#### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	19SPT-9.5-18.3-19			37	n/a	n/a	n/a	n/a	Poorly graded SAND with Silt (SP-SM)

10% Retained on #40 Sieve Dry Strength: MEDIUM Dilatancy: RAPID

The sample was determined to be Non-Plastic

Toughness: n/a



Anchor QEA, LLC Client: Gasco PDI Project:

Location: Project No: GTX-310685 Boring ID: ---Sample Type: bag Tested By: cam

Sample ID: PDI-121SPT-00-06-19093Test Date: 11/15/19 Checked By: bfs

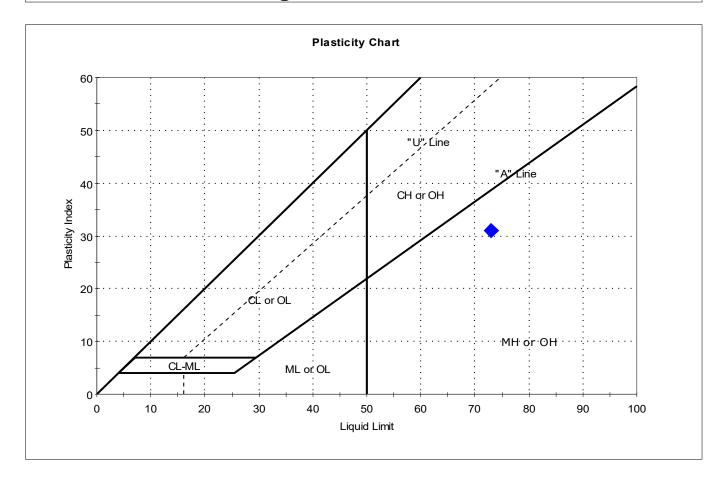
527533 Depth: Test Id:

Test Comment:

Visual Description: Moist, olive brown silt

Sample Comment:

#### Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	121SPT-00-06-190			76	73	42	31	1.1	Elastic SILT (MH)

Sample Prepared using the WET method

0% Retained on #40 Sieve Dry Strength: VERY HIGH

Dilatancy: SLOW Toughness: LOW



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Sample ID: PDI-121SPT-11-20.7-190STest Date: 11/11/19 Checked By: bfs

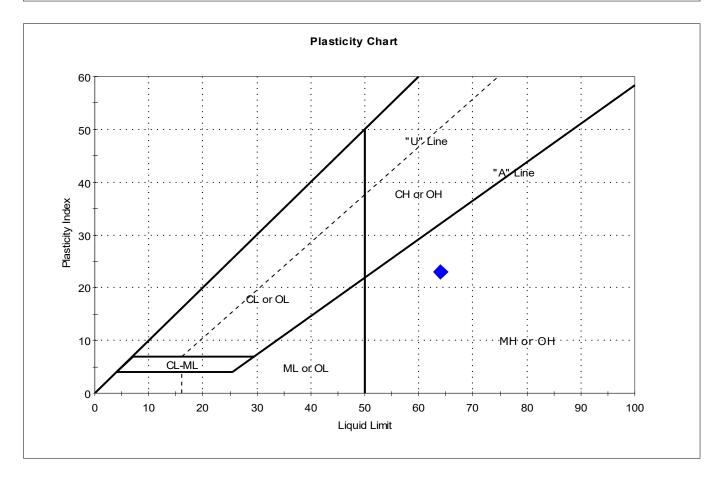
Depth: --- Test Id: 527534

Test Comment: ---

Visual Description: Moist, dark olive brown silt

Sample Comment: ---

#### Atterberg Limits - ASTM D4318



Symbo	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	21SPT-11-20.7-19			60	64	41	23	0.8	Elastic SILT (MH)

Sample Prepared using the WET method

1% Retained on #40 Sieve Dry Strength: VERY HIGH

Dilatancy: SLOW Toughness: LOW



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Boring ID: --- Sample Type: bag Tested By: cam Sample ID: PDI-121SPT-21-38-19093 Test Date: 10/28/19 Checked By: bfs

Depth: --- Test Id: 527535
Test Comment: ---

Visual Description: Moist, dark olive gray silty sand

Sample Comment: ---

#### Atterberg Limits - ASTM D4318

#### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	121SPT-21-38-190			43	n/a	n/a	n/a	n/a	Silty SAND (SM)

1% Retained on #40 Sieve Dry Strength: MEDIUM Dilatancy: RAPID

Toughness: n/a

The sample was determined to be Non-Plastic



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Sample ID: PDI-121SPT-49.4-54-190STest Date: 11/18/19 Checked By: bfs

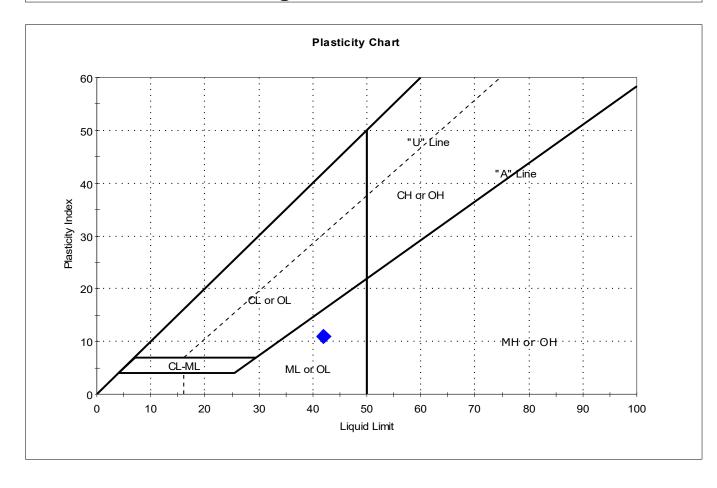
Depth: --- Test Id: 527536

Test Comment: ---

Visual Description: Moist, dark grayish brown silty sand

Sample Comment: ---

#### Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	.21SPT-49.4-54-19			45	42	31	11	1.2	Silty SAND (SM)

Sample Prepared using the WET method

1% Retained on #40 Sieve

Dry Strength: HIGH Dilatancy: SLOW Toughness: MEDIUM



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

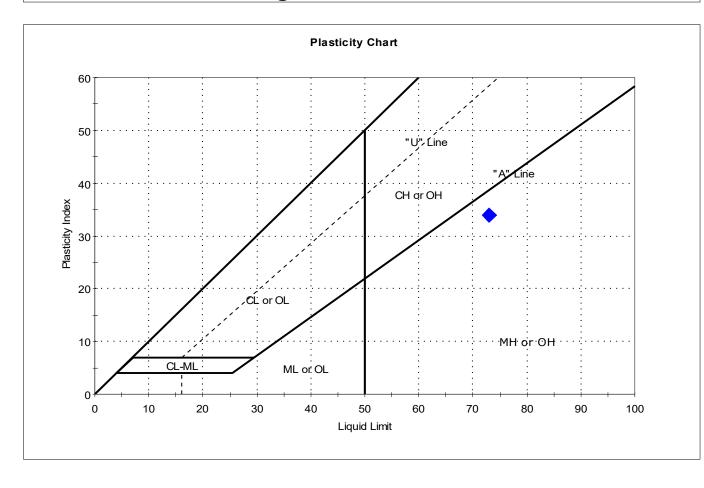
Sample ID: PDI-122SPT-04-09-19092Test Date: 11/12/19 Checked By: bfs

Depth: --- Test Id: 527537

Test Comment: ---

Visual Description: Wet, olive brown silt
Sample Comment: Sample contains organics

#### Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	122SPT-04-09-190			80	73	39	34	1.2	Elastic SILT (MH)

Sample Prepared using the WET method

1% Retained on #40 Sieve Dry Strength: VERY HIGH

Dilatancy: SLOW Toughness: LOW



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Boring ID: --- Sample Type: bag Tested By: can Sample ID: PDI-122SPT-16.6-24-190STest Date: 11/11/19 Checked By: bfs

Depth: --- Test Id: 527538
Test Comment: ---

Visual Description: Moist, dark olive brown silty sand

Sample Comment: ---

#### Atterberg Limits - ASTM D4318

#### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	.22SPT-16.6-24-19			49	n/a	n/a	n/a	n/a	Silty SAND (SM)

1% Retained on #40 Sieve

Dry Strength: LOW Dilatancy: RAPID Toughness: n/a

The sample was determined to be Non-Plastic



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

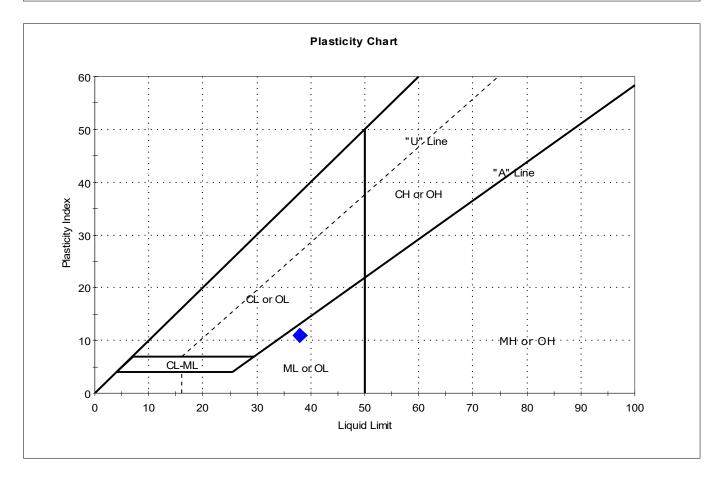
Sample ID: PDI-122SPT-61-66-19092Test Date: 11/08/19 Checked By: bfs Depth: --- Test Id: 527539

Test Comment: ---

Visual Description: Wet, olive brown silty sand

Sample Comment: ---

#### Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
<b>•</b>	122SPT-61-66-190			42	38	27	11	1.3	Silty SAND (SM)

Sample Prepared using the WET method

4% Retained on #40 Sieve Dry Strength: VERY HIGH

Dilatancy: SLOW Toughness: LOW



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Sample ID: PDI-123SPT-00-4.5-19092Test Date: 11/11/19 Checked By: bfs

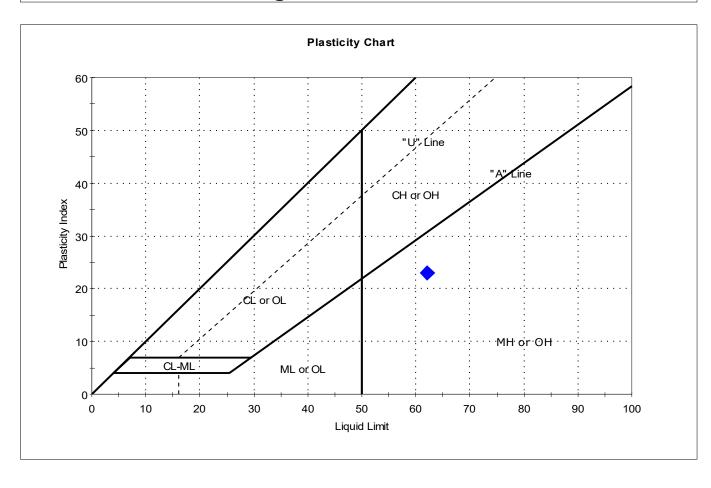
Depth: --- Test Id: 527540

Test Comment: ---

Visual Description: Wet, dark olive silt with sand

Sample Comment: ---

#### Atterberg Limits - ASTM D4318



Syn	mbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
	<b>•</b>	123SPT-00-4.5-190			72	62	39	23	1.4	Elastic SILT with Sand (MH)

Sample Prepared using the WET method

1% Retained on #40 Sieve Dry Strength: VERY HIGH

Dilatancy: SLOW Toughness: LOW



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Boring ID: --- Sample Type: bag Tested By: can Sample ID: PDI-123SPT-25.5-30.5-19Test Date: 10/25/19 Checked By: bfs

Depth: --- Test Id: 527541

Test Comment: ---

Visual Description: Moist, dark gray silty sand

Sample Comment: ---

#### Atterberg Limits - ASTM D4318

#### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	23SPT-25.5-30.5-1			19	n/a	n/a	n/a	n/a	Silty SAND (SM)

0% Retained on #40 Sieve

Dry Strength: LOW Dilatancy: RAPID Toughness: n/a

The sample was determined to be Non-Plastic



Location: Project No:
Boring ID: --- Sample Type: bag Tested By:

Boring ID: --- Sample Type: bag Tested By: cam Sample ID: PDI-123SPT-63.2-65.5-19Test Date: 11/13/19 Checked By: bfs

GTX-310685

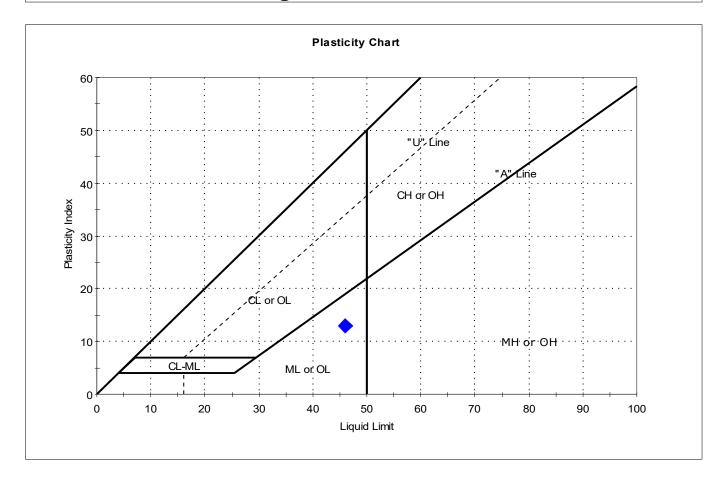
Depth: --- Test Id: 527542

Test Comment: ---

Visual Description: Moist, dark olive brown silt with sand

Sample Comment: ---

#### Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	23SPT-63.2-65.5-1			48	46	33	13	1.2	SILT with Sand (ML)

Sample Prepared using the WET method

1% Retained on #40 Sieve Dry Strength: VERY HIGH

Dilatancy: SLOW
Toughness: MEDIUM



Location: Project No: GTX-310685

Boring ID: --- Sample Type: bag Tested By: cam

Boring ID: --- Sample Type: bag Tested By: can Sample ID: PDI-19SC-B-05-07-19100Test Date: 11/05/19 Checked By: bfs

Depth: --- Test Id: 527479
Test Comment: ---

Visual Description: Moist, dark olive brown sandy silt

Sample Comment: ----

#### Atterberg Limits - ASTM D4318

#### **Sample Determined to be non-plastic**

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	19SC-B-05-07-191			61	n/a	n/a	n/a	n/a	Sandy SILT (ML)

1% Retained on #40 Sieve Dry Strength: MEDIUM Dilatancy: RAPID

Toughness: n/a

The sample was determined to be Non-Plastic



Gasco PDI Project:

**NW Natural** 

Client:

1605 Cornwall Avenue, Bellingham, WA 98225

POC: \* Delaney Peterson (360-715-2707)

Sample Custodian: COC ID:

NWGEO-20190924-170421

Lab:

Northwest Geotech CATX B

-					-					
COC	Field Sample ID	Samp Type	Matrix	Collected	Contain	Lab QC*	Test Request	Method	TAT**	Preservative
Number		le		Date Ti	Time	3				
001	PDI-014SG-00-0.78-190923	z	SE	09/23/2019 17:0	1 20:					
							Grain Size	D6913/D7928	30	4°C
005	PDI-015SG-00-0.87-190924	z	SE	09/24/2019 11:1	19 1					
							Grain Size	D6913/D7928	30	4°C
003	PDI-022SG-00-01-190924	z	SE	09/24/2019 13:	13:00 1					
							Grain Size	D6913/D7923	30	4°C
004	PDI-101SG-00-01-190923	z	SE	09/23/2019 13:3	35 1					
							Grain Size	D6913/D7928	30	4°C
900	PDI-102SG-00-01-190923	z	SE	09/23/2019 15:0	1 20	×				
							Grain Size	D6913/D7928	30	4°C
900	PDI-103SG-00-01-190924	z	SE	09/24/2019 14:	14:30 1					
							Grain Size	D6913/D7928	30	4°C
200	PDI-104SG-00-01-190924	Z	SE	09/24/2019 14:4:	45 1					
							Grain Size	D6913/D7928	30	4°C
800	PDI-105SG-00-0.99-190924	Z	SE	09/24/2019 14:	14:00 1					
							Grain Size	D6913/D7928	30	4°C
600	PDI-106SG-00-01-190924	Z	SE	09/24/2019 15:0	15:05					
							Grain Size	D6913/D7928	30	4°C

Comment:					
Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature	Signature Run	Signature	Signature	Signature	Signature
Print Name Deterson	Print Name Piecech	Print Name	Print Name	Print Name	Print Name
Company AQ		Company	Company	Company	Company
Date/Time 9. 25. 19 1000	Date Time 19 11 am	Date/Time	Date/Time	Date/Time	Date/Time

Date Printed: 9/24/2019

	11
I OF	}}
CE	V.
A	S.
%	S OE
•	1

**POC:** \* Delaney Peterson (360-715-2707)

## ENVIRONMENTAL SAMPLE CHAIN OF CUSTODY

COC ID:

NWGEO-20190926-165106

			.000	NVGEO-20180820-10
Delaney Peterson (360-715-2707)	Project:	Gasco PDI	Sample Custodian:	deb
1605 Cornwall Avenue, Bellingham, WA 98225	Client:	NW Natural	Lab:	Northwest Geotech

Comment: All Charges DP 10.2.19

Received By:	Signature	Print Name	Company	Date/Time
Relinguished By:	Signature	Print Name	Сотрапу	Date/Time
Received By:	Signature	Print Name	Company	Date/Time
Relinquished By:	Signature	Print Name	Company	Date/Time
Received By:	Signature mm	Shannon Piccueh		Date/Time/ 10:30
Relinquished By:	SURANGE REF	Printlang Lers a	Company AQ	Date/Time . 2, 14 (000)

	244
~	110
IOI	S OEA CO
S	A
A	Ö
%	1
4	ar.

COC ID:

NWGEO-20190926-165106

Sample Custodian:

deb

Northwest Geotech

Lab:

**NW Natural** Gasco PDI

1605 Cornwall Avenue, Bellingham, WA 98225

**POC:** \* Delaney Peterson (360-715-2707)

Sample Type

Field Sample ID

COC Sample Number

PDI-024SC-B-10-12.1-190927

004

PDI-036SC-B-4.2-6.2-190929

900

PDI-064SC-B-04-06-190929

900

Project: Client:

Matrix	Collected	# Contain	Lab QC*	Test Reguest	Method	TAT**	Presentative
	Date Time	*********					
SE	09/27/2019 11:31	71					
				Specific gravity	D854	30	4°C
SE	09/29/2019 12:37	121					
				Atterberg Limits	D4318	30	4°C
				Bulk Density Sp. Carw. Ly	D7263	30	4°C
				Grain Size	D6913/D7928	30	4°C
				Moisture Content	D2216	30	4°C
SE	09/29/2019 8:19	21	×		2		
				Atterberg Limits	D4318	30	4°C
			,	Bulk Density	D7263	30	4°C
				Grain Size	D6913/D7928	30	4°C
				Moisture Content	D2216	30	4°C
				Specific gravity	D854	30	4°C

S.				¥	
	Received By	Signature	Print Name	Company	Date/Time
	Relinauished Bv.	Signature	Print Name	Company	Date/Time
	Received By:	Signature	Print Name	Company	Date/Time
	Relinauished By.	Signature	Print Name	Company	Date/Time Date/Time
51.2.01 ok	Received By:	Signature Pur Sign	Print ham Preciel Prin		Date/Time   10'-76   Date
commence All changes DP 10.2.17	Relinquished BV	Signature	Print Name Peters in		Date/Time /0.2. (§ 1000

COC ID:

NWGEO-20191001-164659

Sample Custodian:

deb

**NW Natural** Gasco PDI

1605 Cornwall Avenue, Bellingham, WA 98225

**POC:** \* Delaney Peterson (360-715-2707)

Sample Type

Field Sample ID

COC Sample Number

z

PDI-046SC-B-9.8-11.8-191001

00

Project: Client:

Northwest Geotech Lab:

Preservative			4°C	4°C	4°C	4°C		4°C	4°C	4°C	4°C
TAT**			30	30	30	30		30	30	30	30
Method			D4318	D6913/D7928	D2216	D854		D4318	D6913/D7928	D2216	D854
Test Request			Atterberg Limits	Grain Size	Moisture Content	Specific gravity		Atterberg Limits	Grain Size	Moisture Content	Specific gravity
Lab QC*										6	
# Containe	ers	_					-				
D.	Time	8:48					14:00				
Collected	Date	10/01/2019 8:48					10/01/2019 14:00				
Matrix		SE					SE				
Comp	10		ı				1	1			

z

PDI-071SC-B-08-10-191001

005

Comment:			G.		÷
				o the second of	Density Dr.
Relinquished By:	Received By:	neu oy.	OV.	. According	
Signature		Signature	Signature	Signature	Signature
ことと	Sand Come				
Print-Name 1	Print Name	Print Name	Print Name	Print Name	Print Name
. (	Company	Company	Company	Company	Company
Company	XX		*		
Date/Time San	Date/Time	Date/Time	Date/Time	Date/Time	Date/Time
10.7.7					

Date Printed: 10/1/2019



COC ID:

NWGEO-20191001-170018

						20101-10010	0.00
Project:	Gasc	Gasco PDI		Sam	Sample Custodian:	deb	
Client:	NN	NW Natural		Lab:		Northwest Geotech	itech
 Collected	þ	# Contain	Lab QC*	Test Request	Method	**TAT	, it ()
Date	Time					<u> </u>	רופאפו אמוואפ
09/30/2019 9:17	9:17	-			General S. S. Salvania S. Salvania		
	-			Atterberg Limits	D4318	30	4°C
				Grain Size	D6913/D7928	30	4°C
				Moisture Content	D2216	30	4°C
				Specific gravity	D854	30	4°C

Sample Type

SE

z

PDI-039SC-B-7.8-9.8-190930

001

Field Sample ID

COC Sample Number

1605 Cornwall Avenue, Bellingham, WA 98225

**POC:** \* Delaney Peterson (360-715-2707)

	Relinquished By:	Signature	Print Name	Company	Date/Time
	Received By:	Signature	Print Name	Company	Date/Time
	Relinquished By:	Signature	Print Name	Company	Date/Time
	Received By:	Signature Con	Shannon Recueh	Company	10/3/(9 10530
Comment	ished By:	4	ार्टीट डज्जू -	40	Date/Time Co. 2.19 1000

Company Date/Time

Print Name

#### ANCHOR OEA COLO 1201 3rd Avenue, Suite 2600, Seattle, WA 98101

#### ENVIRONMENTAL SAMPLE CHAIN OF CUSTODY

Gasco PDI Project:

**NW Natural** Client:

1605 Cornwall Avenue, Bellingham, WA 98225

POC: \* Delaney Peterson (360-715-2707)

Lab QC # Containers

Collected

Sample Type

Time 8:11

Date

10/03/2019

SE

Z

PDI-028SC-B-10.7-12.7-191003

90

Field Sample ID

COC Sample Number

COC ID:

Sample Custodian:

deb

NWGEO-20191003-134441

Lab:

Geotesting Express TAT\*\* 888 D6913/D7928 Method D4318 Atterberg Limits Test Request Grain Size

Preservative

4°C

စ္က

04318

D2216

D854

Mashure Content Herbers Grain Size Sp. Grasity Moisture Content Specific gravity PDI-0818C-B-08-10-191002/SE/10.2.19/0903/1

82740 Cr690 589 D2216

Print Name Signature Company Received By: Signature Print Name Company Print Name Company Print Name Shannon Company

Received By: Signature

Print Name

Date Printed: 10/3/2019

\* Lab QC Requested for sample when box is checked \*\* TAT = Turn Around Time in DAYS # POC = Project Point of Contact

Date/Time Company

Date/Time

Date/Time

Date/Time

Date/Time 11 am 10/8/19

000)

Date/Time (0.4.19

#### A ANCHOR OEA EEE TOOT 37d Avenue, Suite 2600, Seattle, WA 98101

# ENVIRONMENTAL SAMPLE CHAIN OF CUSTODY

COC ID:

NWGEO-20191014-145320

CO, SN, BJ, DL

Geotesting Express Sample Custodian:

**NW Natural** Gasco PDI

1605 Cornwall Avenue, Bellingham, WA 98225

**POC:** \* Delaney Peterson (360-715-2707)

z

PDI-077SC-B-04-06-191014

001

Field Sample ID

Sample Number

Z

PDI-079SC-B-06-08-191014

002

Project: Client:

Lab:

Preservative 4°C 4°C 4°C 4°C 4°C 4°C TAT\*\* 30 888 8888 D4318 D6913/D7928 D2216 D854 D6913/D7928 Method D2216 D854 D4318 Moisture Content Specific gravity Moisture Content Atterberg Limits Atterberg Limits Test Request Specific gravity **Grain Size** Grain Size Lab QC\* # Containers Time 13:15 8:41 Collected 10/14/2019 10/14/2019 Date Matrix SE SE Sample Type

Comment:					
Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature MMA	Signature from farm	Signature	Signature		Signature
Print Name C. Old Straw	Print Name Standa Piecueh	Print Name	Print Name	Print Name	Print Name
Company	Company	Company	Company .	Company	Company
Date/Time   0   5   5   5   5   5	Date/Time 1/19 8:55	Date/Time	Date/Time [	Date/Time	Date/Time

AN AN OE
----------

COC ID:

NWGEO-20191010-175158

CO, SN, DL, BJ

Geotesting Express

Sample Custodian:

Lab:

NW Natural Gasco PDI

1605 Cornwall Avenue, Bellingham, WA 98225

Delaney Peterson (360-715-2707)

POC:

Sample Type

SE

z

PDI-041SC-B-8.2-10.2-191010

001

Field Sample ID

COC Sample Number

SE

z

PDI-067SC-B-02-04-191010

002

Project: Client:

,			the state of					20/20/20				_
	Preservative			4°C	4°C	4°C	4°C		4°C	4°C	4°C	4°C
	TAT**			30	30	30	30		30	30	30	30
	Method			D4318	D6913/D7928	D2216	D854		D4318	D6913/D7928	D2216	D854
	Test Request			Atterberg Limits	Grain Size	Moisture Content	Specific gravity		Atterberg Limits	Grain Size	Moisture Content	Specific gravity
	Lab QC*											
	# Contain	ers	-					-				
	Þe	Time	9:42					15:48				
	Collected	Date	10/10/2019 9:42					10/10/2019 15:48				

	Received By:	Signature Signature	Print Name Print Name	Company	Date/Time Date/Time
	Received By:	Signature	Print Name	Сотрапу	Date/Time
	Relinquished By:	Signature	Print Name	Company	Date/Time
	Received Bv:	Signature Perus	Print Name Sharron Precueh	Company Company	Date/Time 0155
Comment:	Relinfulshed By:	Signafure	Print Name	Company	Date/Time   535

Date Printed: 10/10/2019

COC ID:

NWGEO-20191009-171243

CO, SN, BJ, DL

Lab:

**NW Natural** Gasco PDI

1605 Cornwall Avenue, Bellingham, WA 98225

**POC:** \* Delaney Peterson (360-715-2707)

z

PDI-016SC-B-06-08-191009

90

Field Sample ID

COC Sample Number

z

PDI-038SC-B-7.1-9.1-191009

005

Project: Client:

Geotesting Express Sample Custodian:

Preservative δ 2 4°C TAT\*\* 30 888 30 88 30 D4318 D6913/D7928 D2216 D854 D6913/D7928 Method D4318 D2216 D854 Moisture Content Specific gravity Moisture Content Atterberg Limits Atterberg Limits Test Request Specific gravity **Grain Size Grain Size** Lab QC\* # Containers Time 15:56 9:41 Collected 10/09/2019 10/09/2019 Date Matrix SE SE Sample Type

Comment:					
Relinguished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature	Signature and my	Signature	Signature	Signature	Signature
Print Notate C-01/2E1/20	Print Name Shannon Atench	Print Name	Print Name	Print Name	Print Name
Company	Company CC	Company	Company	Сотрапу	Company
Date/Time   5   5   5   5   5   5   5   5   5	rolzvle 8:55	Date/Time	Date/Time	Date/Time	Date/Time

Gasco PDI Project:

**POC:** \* Delaney Peterson (360-715-2707)

COC Sample Number

001

002

**NW Natural** Client:

Sample Custodian: COC ID:

NWGEO-20191008-163122

CO, SN, BJ, NB, DL

1605 Cornwall Avenue, Bellingham, WA 98225	, WA (	98225	Client:	NW N	Natural		T	Lab:	Geotesting Express	kpress
	Samp Type	Matrix	Collected		# Contain	Lab QC*	Test Reduest	Method	**TAT	Dreservative
	le e	8	Date	Time	ers				; 	ו כפכן אמוואפ
PDI-019SC-B-05-07-191008	z	SE	10/08/2019 14:55	4:55	_					
							Atterberg Limits	D4318	30	4°C
							Grain Size	D6913/D7928	30	4°C
							Moisture Content	D2216	30	4°C
							Specific gravity	D854	30	4°C
PDI-033SC-B-8.7-10.7-191008	z	SE	10/08/2019 13:08	3:08	1			1		
							Atterberg Limits	D4318	30	4°C
							Grain Size	D6913/D7928	30	4°C
							Moisture Content	D2216	30	4°C
							Specific gravity	D854	30	4°C

Comment:					
Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received Bv:
KINNE		Signature	Signature	Signature	Signature
Print Name C. ORELIRG	Print Name Shannon Precuch	Print Name	Print Name	Print Name	Print Name
Company AQ	Company	Company	Сотрапу	Company	Company
Date/Time 10/15/19/1848/535	S   Date/Time / 1/19 8:55	Date/Time	Date/Time	Date/Time	Date/Time

COC ID:

NWGEO-20191011-174305

Sample Custodian:

SN

Geotesting Express

Lab:

**NW Natural** Gasco PDI

Project: Client:

Delaney Peterson (360-715-2707)

\* :DOG

COC Sample Number

001

002

Preservative 4°C 4°C 4°C 4°C 4°C 4°C TAT\*\* 8 8 30 8888 30 D6913/D7928 D6913/D7928 D2216 D854 Method D4318 D2216 D4318 D854 Atterberg Limits Grain Size Moisture Content Moisture Content Atterberg Limits Specific gravity Specific gravity Test Request Grain Size Lab QC\* # Containers Time 14:25 8:40 Collected 10/11/2019 10/11/2019 Date Matrix SE SE 1605 Cornwall Avenue, Bellingham, WA 98225 Sample Type z z PDI-027SC-B-11-13.5-191011 PDI-066SC-B-06-08-191011 Field Sample ID

	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
	my Bund	Signature	Signature	Signature	Signature
FIRE	Print Name Sharings Precien	Print Name	Print Name	Print Name	Print Name
	Company CTX	Сотрапу	Company	Company	Company
SES1 67	Date/Time 10/2/101	Date/Time	Date/Time	Date/Time	Date/Time

Date Printed: 10/11/2019

COC ID:

NWGEO-20191012-174803

SN

Geotesting Express

Lab:

**NW Natural** Gasco PDI

1605 Cornwall Avenue, Bellingham, WA 98225

**POC:** \* Delaney Peterson (360-715-2707)

Sample Type

Field Sample ID

COC Sample Number

PDI-090SC-B-06-08-191012

00

Project: Client:

Sample Custodian:

Matrix	Collected		# Contain	Lab QC*	Test Request	Method	TAT**	Preservative
	Date	Time	ers		-		:	
SE	SE 10/12/2019 14:22	4:22	7					May State of
					Atterberg Limits	D4318	30	4°C
					Grain Size	D6913/D7928	30	4°C
					Moisture Content	D2216	30	4°C
					Specific gravity	D854	30	4°C

Received By: Signature Print Name Company
-------------------------------------------

COC ID:

NWGEO-20191015-152359

CO, SN, BJ, DL

Preservative Geotesting Express 4°C 4°C 4°C 4°C 4°C TAT\*\* 8888 8888 D4318 D6913/D7928 D2216 D854 D6913/D7928 Sample Custodian: Method D4318 D2216 Lab: Moisture Content Specific gravity Moisture Content Atterberg Limits Grain Size Atterberg Limits Test Request Grain Size Lab QC\* **NW Natural** Gasco PDI Containers Time 13:32 8:54 Collected Project: 10/15/2019 10/15/2019 Client:

Date

SE

Z

PDI-049SC-B-06-08-191015

001

Field Sample ID

COC Sample Number

SE

z

PDI-052SC-B-06-08-191015

002

Sample Type

1605 Cornwall Avenue, Bellingham, WA 98225

Delaney Peterson (360-715-2707)

POC:

D854

Specific gravity

Comment:					
Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature M.M.	Signature Rund	Signature	Signature	Signature	Signature
Print Name C. OREFIZC	Print Name Shan non Precueh	Print Name	Print Name	Print Name	Print Name
Company	Company GTX	Company	Company	Сотрапу	Company
Date/Time   6   535	Date/Time 12/14 8:55	Date/Time	Date/Time	Date/Time	Date/Time

Date Printed: 10/15/2019

COC ID:

NWGEO-20191016-101220

	ress	Preservative			4°C	4°C	4°C	4°C		4°C	4°C	4°C	4°C		4°C .	4°C	4°C	4°C		4°C
	Geotesting Express	TAT**			30	30	30	30		30	30	30	30		30	30	30	30		30
Sample Custodian: CJ		Method			D4318	D6913/D7928	D2216	D854	and the second s	D4318	D6913/D7928	D2216	D854		D4318	D6913/D7928	D2216	D854		0,40,40
Sam	Lab:	Test Request		al de la companya de	Atterberg Limits	Grain Size	Moisture Content	Specific gravity		Atterberg Limits	Grain Size	Moisture Content	Specific gravity		Atterberg Limits	Grain Size	Moisture Content	Specific gravity		
					_		-													Ι
	_	Lab QC*																		4
co PDI	Natural	qe * # Contain	_																1/	*
Gasco PDI	NW Natural	# Contain	Time s	12:35					13:00					14:55   1					13:35	
Project: Gasco PDI	Client: NW Natural	Collected # QC*	_	09/23/2019 12:35					<del>ا</del> ا					09/23/2019 14:55   🖍 1 🔲					<del> </del>	
	Client:	Matrix Collected	Date Time	i					13:00										13:35	┨
	Client:	Matrix Collected	Date Time	09/23/2019					09/23/2019 13:00					09/23/2019					09/23/2019 13:35	
		# Conlected	a a o o o o o o o o o o o o o o o o o o	SE 09/23/2019					SE 09/23/2019 13:00					SE 09/23/2019					SE 09/23/2019 13:35	

Comment:				
a d prince of a	Palinnuiched By	Received Bv.	Relinauished Bv.	Received Bv.
Kelmodushed by Signature Signature		Signature	Signature	Signature
Print Name (Truck # Time)	Print Name	Print Name, Acrossor	Print Name	Print Name
Company Av. Ma. 1 254 Company X	Company	Company	Company	Company
Date/Time 10/16/19 : 1406	Date/Time	Date/Time	Date/Time	Date/Time
1 (12)				

888

D6913/D7928 D2216

Atterberg Limits Grain Size Moisture Content Specific gravity

10/07/2019 13:25

SE

z

PDI-108SPT-00-6.4-191007

900

D854

D4318

Date Printed: 10/16/2019

Page 1 of 15

		⋛
		1201 3rd Avenue Suite 2600 Seattle W
$\stackrel{\checkmark}{\sim}$	77	c
0	77	Š
I	11	9
$\Box$	-	ū
Ž	E	9
<	O	4
αÌ	R	7
7	J	ξ
•		+

1605 Cornwall Avenue, Bellingham, WA 98225

**POC:** \* Delaney Peterson (360-715-2707)

# ENVIRONMENTAL SAMPLE CHAIN OF CUSTODY

COC ID:

NWGEO-20191016-101220

Geotesting Express ರ Sample Custodian: Lab: NW Natural Gasco PDI Project: Client:

COC Sample Number	Field Sample ID	Sample Type	Matrix	Collected	# Containers	Lab QC*	Test Request	Method	TAT**	Preservative
		·		Date	+					
900	PDI-108SPT-00-6.4-191007	z	SE	10/07/2019 13:25	F					
							Atterberg Limits	D4318	08	4°C
							Grain Size	D6913/D7928	30	4°C
		٠					Moisture Content	D2216	30	4°C
							Specific gravity	D854	30	4°C
900	PDI-108SPT-14-33.5-191007	z	SE	10/07/2019 9:15	#					
							Atterberg Limits	D4318	30	4°C
						<b>.</b>	Grain Size	D6913/D7928	30	4°C
						<b>.</b>	Moisture Content	D2216	30	4°C
							Specific gravity	D854	30	4°C
200	PDI-108SPT-33.5-66.5-191007	z	SE	10/07/2019 10:55	14					
							Atterberg Limits	D4318	30	4°C
							Grain Size	D6913/D7928	30	4°C
							Moisture Content	D2216	30	4°C
							Specific gravity	D854	30	4°C
800	PDI-109SPT-00-6.5-191004	z	SE	10/04/2019 9:05	A					
							Atterberg Limits	D4318	30	4°C
							Grain Size	D6913/D7928	30	4°C
							Moisture Content	D2216	30	4°C
							Specific gravity	D854	30	4°C
600	PDI-109SPT-16.5-18.1-191004	z	SE	10/04/2019 10:30	¥ ]					

Comment:					
Relinouished Bv:	Received Bv:	Reinquished By:	Received By:	Relinguished Bv.	Received Bv.
Signature Mach	Signature		Signature	Signature	Signature
Print Name Gunet The	Print Name / J	Print Name	Print Name Scart Removed	Print Name	Print Name
company Anelor 084	Company $\chi$	Company	Company	Сотрапу	Сотрапу
Date/Time / 0/1 ( / 9 / ) 1 / 0 0 Date/Time	Date/Time   5/16/19 \$ 12(00	Date/Time	Date/Time	Date/Time	Date/Time

/ / Lab QC Requested for sample when box is checked \*\* TAT = Turn Around Time in DAYS # POC = Project Point of Contact

Date Printed: 10/16/2019

Page 2 of 15

ANCHOR OEA ((()) 1201 3rd Avenue, Suite 2600, Seattle, WA 98101
-----------------------------------------------------------------------

Gasco PDI

Project:

**POC:** \* Delaney Peterson (360-715-2707)

COC ID:

NWGEO-20191016-101220

Sample Custodian:

 $\overline{S}$ 

SSE	Preservative		4°C	4°C	4°C	4°C		4°C	4°C	4°C	4°C		4°C	4°C	4°C	4°C		4°C	4°C	4°C	4°C	
Geotesting Express	TAT**		30		30	30		30	30	30	30		30	30	30	30	in the second	30	30	30	30	
Lab: Geot	Method		D4318	D6913/D7928	D2216	D854		D4318	D6913/D7928	D2216	D854		D4318	D6913/D7928	D2216	D854		D4318	D6913/D7928	D2216	D854	
	Test Request		Atterberg Limits	Grain Size	Moisture Content	Specific gravity		Atterberg Limits	Grain Size	Moisture Content	Specific gravity		Atterberg Limits	Grain Size	Moisture Content	Specific gravity		Atterberg Limits	Grain Size	Moisture Content	Specific gravity	
ıtural	Containers		`	٦		I.,			٦	<u>                                     </u>	L			٦		<u> </u>			Ľ			#1
NW Natural	ed Time	10:30					11:11					12:10					13:30					9:50
Client:	Collected	10/04/2019					10/04/2019		-			10/04/2019					10/04/2019					10/15/2019
8225	Matrix	SE					SE					SE					SE					SE
m, WA 9	Sample Type	z					z					z					z					z
1605 Cornwall Avenue, Bellingham, WA 98225	COC Sample Number Field Sample ID	PDI-109SPT-16.5-18.1-191004					PDI-109SPT-22-30-191004					PDI-109SPT-35.5-48.3-191004					PDI-109SPT-48.3-51-191004					PDI-110 B-54-64.5-191015
			1				010					1	1				012	1				013

Comment:				
Dalinniishad Ru	Relinguished By:	Received By:	Relinguished Bv:	Received Bv:
8 Jit		Signature & Signature	Signature	Signature
Print Name / C D	Print Name	Print Name 15 Fersuson	Print Name	Print Name
Company Action (25 A Company C	Сотралу	Atomoon	Сотрапу	Сотрапу
Date/Time Date/Time Date/Time	Date/Time	Date/Time Ach 9 8Am	Date/Time	Date/Time

\* Lab QC Requested for sample when box is checked \*\* TAT = Turn Around Time in DAYS # POC = Project Point of Contact

Date Printed: 10/16/2019

COC ID:

NWGEO-20191016-101220

ress	Preservative		4°C	4°C	4°C	4°C		4°C	4°C	4°C	4°C		4°C	4°C	4°C	4°C		4°C	4°C	4°C	4°C	
CJ Geotesting Express	TAT**		30	30	30	30		30	30	30	30		30	30	30	30		30	30	30	30	
ole Custodian:	Method		D4318	D6913/D7928	D2216	D854		D4318	D6913/D7928	D2216	D854		D4318	D6913/D7928	D2216	D854		D4318	D6913/D7928	D2216	D854	
Samı Lab:	Test Request		Atterberg Limits	Grain Size	Moisture Content	Specific gravity		Atterberg Limits	Grain Size	Moisture Content	Specific gravity		Atterberg Limits	Grain Size	Moisture Content	Specific gravity		Atterberg Limits	Grain Size	Moisture Content	Specific gravity	
	Lab QC*		4	10	2	ြလ		٩	Ιœ	<u> </u>	0)		٩	0	_	0)		4	<u></u>	<u> </u>	07	
Gasco PDI NW Natural	# Containers	17					7					4 1					14 (	ľ				4
Gasc	Time	9:50					11:20					13:05					8:30					9:30
Project: Client:	Collected	10/15/2019					10/10/2019					10/10/2019					10/03/2019					10/03/2019
rð.		=	1				=	1				=	Į.				١.					
322	Matrix	SE 1					SE 10					SE 10					SE					SE
, WA 9822	Sample	$\vdash$															<del> </del>					N SE
POC: * Delaney Peterson (360-715-2707) 1605 Cornwall Avenue, Bellingham, WA 98225	Sample	SE					SE					SE					SE					$\vdash$

	Possinal By Retinuished By Received By	Signature Signature	۱ ا	106 A Company C Company	7; 1400 DateTime 10/16/14; 1400 DateTime
Comment:		Signature 12 # 10   Signature 12   Signature 15   S			9; 1400

\*\* Lab QC Requested for sample when box is checked \*\* TAT = Turn Around Time in DAYS # POC = Project Point of Contact

Date Printed: 10/16/2019

Page 4 of 15

A ANCE OEA 2 1201 3rd Avenue, Suite
-------------------------------------------

Gasco PDI

Project:

Delaney Peterson (360-715-2707)

POC:

COC ID:

NWGEO-20191016-101220

Sample Custodian:

 $\Im$ 

Preservative Geotesting Express 4°C 4°C 4°C 4°C 4°C 4°C 4°C 4°C 4°C TAT\*\* 888 8888 888 8 8888 30 D4318 D6913/D7928 D4318 D6913/D7928 D6913/D7928 D6913/D7928 D2216 D854 Method D2216 D854 D2216 D4318 D2216 D4318 D854 D854 Lab: Moisture Content Moisture Content Atterberg Limits Grain Size Moisture Content Moisture Content Atterberg Limits Atterberg Limits Atterberg Limits Specific gravity Specific gravity Specific gravity Specific gravity Test Request **Grain Size** Grain Size Grain Size Lab QC # **NW Natural** 1 Containers Time 9:00 9:50 10/03/2019 12:50 9:40 9:30 Collected 10/03/2019 10/11/2019 10/11/2019 10/03/2019 Client: Date SE SE Matrix SE SE SE 1605 Cornwall Avenue, Bellingham, WA 98225 Sample z z z z z Туре PDI-112SPT-11.5-26.5-191003 PDI-112SPT-37.5-58-191003 PDI-112SPT-07-11.5-191003 PDI-113SPT-16-22-191011 PDI-113SPT-06-16-191011 Field Sample ID 019 020 COC Sample Number 018 017 021

Comment:					
Relinauished Bv:	Received By:	Relinauished Bv.	Received Bv:	Relinguished By:	Received By:
137	Signature		The		Signature
Print Name Case Jean 26	Print Name	Print Name	Print Name + + Pergusson	Print Name	Print Name
	Company (	Company	,	Company	Сотрапу
Date/Time 10 / 16 / 1460 Date/Time 10 / 16 / 1400	Date/Time_16/16/19 1400	Date/Time	1.9 84m	Date/Time	Date/Time

COC ID:

NWGEO-20191016-101220

Preservative Geotesting Express 4°C 4°C 4°C ړ. ۲ 4°C 4°C 4°C 4°C 4°C 4°C TAT\*\* 888 8888 888 888 8 စ္က  $\overline{S}$ D4318 D6913/D7928 D2216 D6913/D7928 D2216 D6913/D7928 D6913/D7928 Sample Custodian: D2216 D854 Method D4318 D4318 D2216 D4318 D854 D854 D854 Lab: Grain Size Moisture Content Specific gravity Moisture Content Specific gravity Moisture Content Moisture Content Atterberg Limits Atterberg Limits Atterberg Limits Atterberg Limits Specific gravity Specific gravity Test Request Grain Size Grain Size Grain Size Lab QC\* # **NW Natural** Gasco PDI 7 Containers Time 10:15 11:20 8:20 9:50 Collected 10/11/2019 10/11/2019 10/08/2019 Project: 10/11/2019 Client: Date Matrix SE SE SE 1605 Cornwall Avenue, Bellingham, WA 98225 SE Sample z z z Type Delaney Peterson (360-715-2707) PDI-113SPT-31.9-39.4-191011 PDI-113SPT-22-25.2-191011 PDI-114SPT-00-7.5-191008 PDI-113SPT-16-22-191011 Field Sample ID POC: 024 Sample Number 022 023 021

Comment:					
	عرق المشمومة	Dalinnishad B.v.	Renaived Re	Reinnuished Bv	Received Bv.
13/	Signature		14		Signature
Print Name - A	Print Name	Print Name	Print Name + FRONTSON	Print Name	Print Name
Company Archor OCA		Company		Сотрапу	Сотрапу
Q	Date/Time //6/19 //400	Date/Time	Date/Time (G/21/CM SAM	Date/Time	Date/Time

10/08/2019 10:40

SE

z

PDI-114SPT-25.5-28-191008

025

\* Lab QC Requested for sample when box is checked \*\* TAT = Turn Around Time in DAYS # POC = Project Point of Contact Date Printed: 10/16/2019

A VIEW CONTRACTOR
ì
7
9
۰

COC ID:

NWGEO-20191016-101220

Preservative Geotesting Express 4°C 4°C 4°C 4°C **4**°C ړ د 4°C 4°C TAT\*\* 888 8888 888 စ္က စ္က  $\overline{\mathcal{S}}$ D6913/D7928 D6913/D7928 D6913/D7928 Sample Custodian: Method D4318 D2216 D4318 D2216 D854 D4318 D2216 D854 D854 Lab: Moisture Content Specific gravity Moisture Content Moisture Content Atterberg Limits Atterberg Limits Atterberg Limits Specific gravity Specific gravity Test Request **Grain Size** Grain Size Grain Size Lab QC # Containers 7 **NW Natural** ¥ Gasco PDI ¥ Time 10:40 12:55 13:55 9:15 Collected 10/08/2019 10/08/2019 10/08/2019 10/08/2019 Project: Client: Date Matrix SE SE SE SE 1605 Cornwall Avenue, Bellingham, WA 98225 Sample z z z z Туре Delaney Peterson (360-715-2707) PDI-114SPT-7.5-12.5-191008 PDI-114SPT-50.5-55-191008 PDI-114SPT-25.5-28-191008 PDI-114SPT-42-50.5-191008 Field Sample ID \* :DOG COC Sample Number 025 026 028 027

Comments	Received BV.		
Received By: Received By:		Relinanished Bv:	Received By:
Signature	Signature Signature Signature		Signature
Print Name Color Print Name	Print Name Print Name		Print Name
Company Company	Company +X Company		Сотрапу
Date/Time 10/16/19/19/05 Date/Time	Date/Time Date/Time		Date/Time

4°C 4°C 4°C

8888

D6913/D7928

D4318

D2216 D854

Moisture Content

Specific gravity

9:00

10/09/2019

SE

z

PDI-115SPT-06-11-191009

029

Atterberg Limits

**Grain Size** 

\* Lab QC Requested for sample when box is checked \*\* TAT = Turn Around Time in DAYS # POC = Project Point of Contact

Date Printed: 10/16/2019

* ANCHOR	A OEA ##	1201 3rd Avenue, Suite 2600, Seattle, WA 98101
* * ANC	と OEA	1201 3rd Avenue, S

COC ID:

NWGEO-20191016-101220

Delaney Peterson (360-715-2707) <b>Project:</b> Gasco PDI 1605 Cornwall Avenue, Bellingham, WA 98225 <b>Client:</b> NW Natural
Matrix Collected in # QC* Tast Bornest
<u>क</u> Date Time
N SE 10/09/2019 9:00   1
Atterberg Limits
Grain Size
Moisture Content
Specific gravity
N SE 10/09/2019 10:00 🔏 🌓
Atterberg Limits
Grain Size
Moisture Content
Specific gravity
N SE 10/09/2019 10:35 🗚 🔲
Atterberg Limits
Grain Size

Comment:					
Reinauished By:	Received BV:	Relinguished By:	Received By:	Relinguished Bv:	Received Bv:
Signature of Signature	Signature	Signature	Signature Signature	Signature	Signature
Print Name Green Trusch	Print Name - PA - F	Print Name	hogo	Print Name	Print Name
Company Anchor OFA	Company	Сотрапу		Сотрапу	Сотрапу
Date/Time 6/16/19 (460)	Date/Time (C/C/C) /400	Date/Time	Date/Time (5) 82m	Date/Time	Date/Time

4°C 4°C 4°C

30 စ္က 8888

D6913/D7928 D2216 D854

Grain Size Moisture Content

Specific gravity

09/26/2019 16:05

SE

z

PDI-116SPT-00-4.5-190926

033

Atterberg Limits

10/09/2019 13:30

SE

z

PDI-115SPT-41.5-49.3-191009

032

D4318

D854

Moisture Content

Specific gravity

\* Lab QC Requested for sample when box is checked \*\* TAT = Turn Around Time in DAYS # POC = Project Point of Contact

Date Printed: 10/16/2019

Page 8 of 15

A ANCHOR	COEA COMPANIE Suite 2600 Seattle WAY
~	Y

.

NWGEO-20191016-101220

COC ID:

Preservative 4°C 4°C 4°C 4°C **4**℃ 4°C Geotesting Express 4°C 4°C 4°C 4°C 4°C 4°C TAT\*\* 88 888 888 888 88 30 8 30  $\overline{S}$ D6913/D7928 D6913/D7928 D6913/D7928 D6913/D7928 Sample Custodian: D2216 D4318 D2216 Method D2216 D4318 D2216 D4318 D4318 D854 D854 D854 D854 Lab: Moisture Content Specific gravity Grain Size
Moisture Content
Specific gravity Moisture Content Moisture Content Atterberg Limits Atterberg Limits Atterberg Limits Atterberg Limits Specific gravity Specific gravity Test Request Grain Size Grain Size **Grain Size** Lab QC # # **NW Natural** Gasco PDI F ¥ Containers 09/27/2019 14:10 10/02/2019 10:05 Time 16:05 10:30 9:15 Collected 09/26/2019 Project: 09/26/2019 09/27/2019 Client: Date Matrix SE SE SE SE SE 1605 Cornwall Avenue, Bellingham, WA 98225 Sample z z z z Z Туре Delaney Peterson (360-715-2707) PDI-116SPT-26.7-28.6-190926 PDI-116SPT-51.5-54.2-190927 PDI-116SPT-20-26.7-190927 PDI-117SPT-11-29.1-191002 PDI-116SPT-00-4.5-190926 Field Sample ID POC: Sample Number 036 033 034 035 037

Comment:					
0.000	Received Rv.	Relinguished Bv.	Received Bv:	Relinguished By:	Received By:
Signature C	7		32		Signature
Print Name	Print Name	Print Name	Jacc nsan	Print Name	Print Name
Company Acker OFA	Company	Company		Сотрапу	Сотрапу
Date/Time   140C)	Date/Time //6/19 //406	Date/Time	Date/Time	Date/Time	Date/Time

\* Lab QC Requested for sample when box is checked \*\* TAT = Turn Around Time in DAYS # POC = Project Point of Contact

Date Printed: 10/16/2019

Page 9 of 15

Gasco PDI

Project:

**POC:** \* Delaney Peterson (360-715-2707)

COC ID:

Sample Custodian:

 $\overline{S}$ 

NWGEO-20191016-101220

	ative																					
press	Preservative		4°C	4°C	4°C	4°C		4°C	4°C	4°C	4°C		4°C	4°C	4°C	4°C		4°C	4°C	4°C	4°C	
Geotesting Express	TAT**		30	30	30	30		30	30	30	30		30	30	30	30		30	30	30	30	
Geot																						
	p		<u>«</u>	D6913/D7928	0			80	D6913/D7928	6			8	D6913/D7928	c			8	D6913/D7928	0		
	Method		D4318	D691;	D2216	D854		D4318	D691	D2216	D854		D4318	D691	D2216	D854		D4318	D691	D2216	D854	
Lab:																						
		and the																				
	uest		imits		ontent	avity		imits		ontent	avity		imits		ontent	avity		imits		ontent	avity	
	Test Request		Atterberg Limits	Grain Size	Moisture Content	Specific gravity		Atterberg Limits	Grain Size	Moisture Content	Specific gravity		Atterberg Limits	Grain Size	Moisture Content	Specific gravity		Atterberg Limits	Grain Size	Moisture Content	Specific gravity	
	Lab QC*		¥	O	Σ	S	П	¥	ဖ	Σ	S		A	၅	Σ	S	П	Ā	O	Σ	S	П
NW Natural	# Containers	7					18					134					12					
N N	Time	10:05					11:30					13:25					14:40					8:45
ij	1 42						ြ					_	ŀ				ا ا					2019
<u>ie</u>	Collected	2/2019					2/201					2/2019					2/2019					4
Client:	ق ا	10/02/2019					10/02/2019					10/02/2019					10/02/2019					10/14/2019
	Matrix	SE					SE 10/02/201				THE STATE OF THE S	SE 10/02/2019					SE 10/02/2018					SE 10/14/2
	ق ا																_					Н
	Sample D	SE					SE					SE					SE					SE
	Sample D	N SE					N SE					N SE					N SE					N SE
	X Liter M Sample Type	N SE					N SE					N SE					N SE					N SE
	X Liter M Sample Type	N SE					N SE					N SE					N SE					N SE
1605 Cornwall Avenue, Bellingham, WA 98225 Clier	Sample D	SE					SE					SE					SE					SE

Соммент:					
Relinauished By:	Received Bv:	Relinauished Bv:	Received Bv:	Relinanished Bv:	Received By:
Signature /	Signature	Signature	Signature of the Signat		Signature
Print Name of Venish	Print Name / Follow	Print Name	Print Name Ferruson	Print Name	Print Name
Company Acker OEA	Company ( C	Сотрапу		Company	Сотрапу
0041	Date/TimpP/(6/19 1400	Date/Time	18(2) 13 8AM	Date/Time	Date/Time

\* Lab QC Requested for sample when box is checked \*\* TAT = Turn Around Time in DAYS # POC = Project Point of Contact

Date Printed: 10/16/2019

A ANCHOR	CEA CONTRACTOR OF THE PARTY OF
7	X

Gasco PDI

Project:

**POC:** \* Delaney Peterson (360-715-2707)

NWGEO-20191016-101220 COC ID:

 $\overline{S}$ Sample Custodian:

	Preservative																					
cpress	Pres		4°C	4°C	4°C	4°C		4°C	4°C	4°C	4°C		4°C	4°C	4°C	4°C		4°C	4°C	4°C	4°C	
Geotesting Express	TAT**		30	30	30	30		30	30	30	30		30	30	30	30		30	30	30	30	
	Method		D4318	D6913/D7928	D2216	D854		D4318	D6913/D7928	D2216	D854		D4318	D6913/D7928	D2216	D854		D4318	D6913/D7928	D2216	D854	
Lab:	Test Request		Atterberg Limits	Grain Size	Moisture Content	Specific gravity		Atterberg Limits	Grain Size	Moisture Content	Specific gravity		Atterberg Limits	Grain Size	Moisture Content	Specific gravity		Atterberg Limits	Grain Size	Moisture Content	Specific gravity	
	Lab QC*																П					$\Box$
_		Ш					L					Ш					Ш					믝
Natural	# Containers					•	7/4					] 18				٠	] 18					7
NW Natural	# Containers • —	8:45				•	9:30					13:45				٠	8:40					10:05
Client: NW Natural	# Containers	_																				
Client:	Collected sauristuch #	8:45					9:30					13:45					8:40					10:05
Client:	Matrix Collected salarismus #	10/14/2019 8:45					10/14/2019 9:30					10/14/2019 13:45					10/01/2019 8:40					10/01/2019 10:05
	Matrix Collected particle and a second collected bate Time collected collect	SE 10/14/2019 8:45					SE 10/14/2019 9:30					SE 10/14/2019 13:45					SE 10/01/2019 8:40					SE 10/01/2019 10:05

Received By   Signature   Signatur	Comment:					
Signature         Image: Signature print Name         <	Relinguished BV:	Received Bv:	Relinauished Bv:	Received By:	Relinquished Bv.	Received By:
(Vm         Print Name         Print Name         Print Name         Print Name           人名         Company         Company         Company         Company         Company           村心と         Date/Time         Date/Time         Date/Time         Date/Time	Signature June D.T.	Signature	Signature	b		Signature
以及 Company	Print Name GANNACH TIMIN	Print Name		Puriname Ferr USON		Print Name
14 ob Date/Time 10/16/19, 1400 Date/Time Date/Time Date/Time	Company Archa UEA	Company $\nearrow$		X + Suedunoo		Сотрапу
	Date/Time 1 4 16 19 1406	Date/Time 10/16/19', 1406		Bate Time 16 8 AM		Date/Time

Date Printed: 10/16/2019

ANCHOR OEA EEE 1201 3rd Avenue, Suite 2600, Seattle, WA 98101
---------------------------------------------------------------

COC ID:

NWGEO-20191016-101220

*	* Delaney Peterson (360-715-2707)			Project:	Gasco PDI	PDI		Samp	Sample Custodian: CJ	7	
		۱, ۷۷۸ و	38225	Client:	NW Natura	atural		Lab:	9	Geotesting Express	press
COC Sample Number	Field Sample ID	Sample Type	Matrix	Collected	d	# Containers	Lab QC*	Test Request	Method	TAT**	Preservative
045	PDI-119SPT-18.3-31-191001	z	SE	10/01/2019	10:05	17	П				
							-	Atterberg Limits	D4318	30	4°C
							19	Grain Size	D6913/D7928	30	4°C
							=	Moisture Content	D2216	30	4°C
					•		107	Specific gravity	D854	30	4°C
046	PDI-119SPT-47-52-191001	z	SE	10/01/2019	14:00	1 %	П				
								Atterberg Limits	D4318	30	4°C
							10	Grain Size	D6913/D7928	30	4°C
								Moisture Content	D2216	30	4°C
							107	Specific gravity	D854	30	4°C
047	PDI-119SPT-9.5-18.3-191001	z	SE	10/01/2019	9:35	17					
								Atterberg Limits	D4318	30	4°C
							10	Grain Size	D6913/D7928	30	4°C
							1	Moisture Content	D2216	30	4°C
							ارما	Specific gravity	D854	30	4°C
048	PDI-121SPT-00-06-190930	z	SE	09/30/2019	8:30	17					
2								Atterberg Limits	D4318	30	4°C
							<u> </u>	Grain Size	D6913/D7928	30	4°C
								Moisture Content	D2216	30	4°C
							٢	Specific gravity	D854	30	4°C

Comment:				
Doorwing Dr.	Relinenished Re	Received By	Rejinauished Bv.	Received By:
Signature M.M. W. T. Signature	Signature	Signature	Signature	Signature
Print Name Print Name	Print Name	Print Name + Ferceson	Print Name	Print Name
Company A. J. J. A. Company	Сотрапу	X+Z	Company	Company
Date/Time   O    6	14 1 1900 Date/Time	Date/Time (d/a/ kg 8 Am	Date/Time	Date/Time

SE 09/30/2019 9:25

z

049 PDI-121SPT-11-20.7-190930

r t f \* Lab QC Requested for sample when box is checked \*\* TAT = Turn Around Time in DAYS # POC = Project Point of Contact

Date Printed: 10/16/2019

Page 12 of 15



NWGEO-20191016-101220 COC ID:

Preservative Geotesting Express 4°C 4°C TAT\*\* 8888  $\overline{S}$ D6913/D7928 Sample Custodian: Method D4318 D2216 D4318 D854 Lab: Moisture Content Atterberg Limits Atterberg Limits Specific gravity Test Request Grain Size c Sc Sc # **NW Natural** Gasco PDI Containers Time 9:25 09/30/2019 10:25 Collected 09/30/2019 Project: Client: Date Matrix SE 1605 Cornwall Avenue, Bellingham, WA 98225 SE Sample z z Туре Delaney Peterson (360-715-2707) PDI-121SPT-11-20.7-190930 PDI-121SPT-21-38-190930 Field Sample ID POC: Sample Number 049 020

4°C 4°C

D6913/D7928

D2216 D854

Moisture Content Specific gravity

051

**Grain Size** 

4°C

888

D4318 D6913/D7928

D2216

D854

18

4°C 4°C 4°C

888

D6913/D7928

D2216

D854

D4318

တ္တ

Moisture Content Atterberg Limits Grain Size Moisture Content Atterberg Limits Specific gravity Grain Size 09/30/2019 13:30 09/25/2019 15:35 SE SE z z PDI-121SPT-49.4-54-190930 PDI-122SPT-04-09-190925

052

Specific gravity 16:55 09/25/2019 SE z PDI-122SPT-16.6-24-190925

053

Print Name Signature Company Print Name Signature Company Print Name Eciff Fars USON Company Print Name Company Signature Print Name Company Signature 3 Comment Print Name

\* Lab QC Requested for sample when box is checked \*\* TAT = Turn Around Time in DAYS # POC = Project Point of Contact Date/Time 16/20/15

Date/Time

00*H* 

1.61/91/61

Date/Time

00/21:61/91/8,

Date Printed: 10/16/2019

Page 13 of 15

Date/Time

Date/Time

848

A ANCHOR OEA COLL Sold Section 1000 BEILD	טומ לאפוותם, סמוום 2000, ספפוום, איר
-------------------------------------------	--------------------------------------

\* .

COC Sample Number

053

## **ENVIRONMENTAL SAMPLE CHAIN OF CUSTODY**

COC ID:

NWGEO-20191016-101220

Delaney Peterson (360-715-2707)			Project:	Gasco PDI	PDI		Sam	Sample Custodian:	$\overline{S}$	
1605 Cornwall Avenue, Bellingham, WA 98225	, WA	98225	Client:	NW Natural	atural		Lab:		Geotesting Express	oress
Field Sample ID	Samp Type	Matrix	Collected	70	# Contair	GE & COntain	Test Request	Method		Preservative
	e e		Date	Time	ers			1	:	
PDI-122SPT-16.6-24-190925	z	SE	N SE 09/25/2019 1	6:55	100					
							Atterberg Limits	D4318	30	4°C
							Grain Size	D6913/D7928	30	4°C
							Moisture Content	D2216	30	4°C

4°C 4°C 4°C

888

D854

Specific gravity

Atterberg Limits

09/26/2019 14:00

SE

z

054 PDI-122SPT-61-66-190926

Grain Size

8888

D4318 D6913/D7928

									)	
						ø	Moisture Content	D2216	30	4°C
٠							Specific gravity	D854	30	4°C
055	PDI-123SPT-00-4.5-190924	z	SE	09/24/2019 1	15:15	$\square$ $l \neq l$				
							Atterberg Limits	D4318	30	4°C
							Grain Size	D6913/D7928	30	4°C
							Moisture Content	D2216	30	4°C
							Specific gravity	D854	30	4°C
056	PDI-123SPT-25.5-30.5-190925	z	SE	09/25/2019	9:10	□ 1 #				
							Atterberg Limits	D4318	30	4°C
							Grain Size	D6913/D7928	30	4°C
							Moisture Content	D2216	30	4°C
							Specific gravity	D854	30	4°C
057	057 PDI-123SPT-63.2-65.5-190925	z	SE	09/25/2019 13:15	13:15	$\square$  1 $\forall$				

Comment:				
Relinquished BØ , Received Bv.	. Relinauished Bv.	Received Bv:	Relinauished Bv.	Received Bv:
Signature Signature	Signature	Signatures The Control of the Contro	Signature	Signature
Print Name Convert Thuis Print Name Co 1547	Print Name	Print Name Feath Percusen	Print Name	Print Name
Company Are Now SEA Company (4)		Company	Сотрапу	Company
Date/Time   つ/(り/タ / げっし   Date/Time / 0 / 16 / 14 / 1 ぜ 0 ()	J	16/21/15 SAM	Date/Time	Date/Time
Date Printed: 10/16/2019 *Lab QC Requested for s	/ ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' '	n Around Time in DAYS # POC = Proj	ect Point of Contact	Dog 44 of 45

Date Printed: 10/16/2019

Page 14 of 15



**POC:** \* Delaney Peterson (360-715-2707)

# **ENVIRONMENTAL SAMPLE CHAIN OF CUSTODY**

COC ID:

NWGEO-20191016-101220

Delaney Peterson (360-715-2707)	_		Project:	Gasco PDI	PDI		Samp	Sample Custodian:	రె	
1605 Cornwall Avenue, Bellingham, WA 98225	, WA	98225	Client:	Z N Z	Natural		Lab:		Geotesting Express	xpress
Field Sample ID	Samp Type	Matrix	Collected	pe	# Contain	Lab QC*	Test Reguest	Method	TAT*	Preservative
	le e		Date	Time	ers		-			
PDI-123SPT-63.2-65.5-190925	z	SE	N SE 09/25/2019 13:15	13:15	#1					
							Atterberg Limits	D4318	30	4°C
						_	Grain Size	D6913/D7928	30	4°C
							Moisture Content	D2216	30	4°C

COC Sample Number

057

Specific gravity

Comment:					
Relinguished/8v:	Received By:	Relinauished Bv:	Received By:	Relinguished By:	Received Bv:
Signature MM // [	Signature	Signature	The Landing applications	Signature	Signature
Print Name & weff Tearlier	Print Name	Print Name	Print Name / Ferruson	Print Name	Print Name
company Archin OEA	Company 🗡 🗸	Company	Company	Сотрапу	Сотрапу
Date/Time   16/16/19/19/19/19/19	Date/Time / 0/16/[4]; 1400	Date/Time	Date/Time 10/18/10/18	Date/Time	Date/Time

Page 15 of 15

#### 

### ENVIRONMENTAL SAMPLE CHAIN OF CUSTODY

**POC:** \* Delaney Peterson (360-715-2707)

1605 Cornwall Avenue, Bellingham, WA 98225

Project:

Client:

Gasco PDI

**NW Natural** 

COC ID:

NWGEO-201910.

Geotesting Express CO, SN, BJ, SS

Sample Custodian:

Lab:

	_					Т
Preservative			4°C	4°C	4°C	4°C
TAT**			30	30	30	30
Method			D4318	D6913/D7928	D2216	D854
Test Request			Atterberg Limits	Grain Size	Moisture Content	Specific gravity
Lab QC*						
# Contain	ers	_				
Collected	Date Time	10/23/2019 12:46				
Matrix	21	SE				
Samp Type	le	z				
			1			

PDI-057SC-B-06-08-191023

00

Field Sample ID

COC Sample Number

Comment:		/3	0 0	2	
ti de					
on the state of th					
Signature Signature	Jan.	Neintquisited BV. Signature	Received by: Signature	Kelindulsned By: Signature	Received By: Signature
Print Names Ben Toli Son		Print Name	Print Name	Print Name	Print Name
Company Anchor OEH		Company	Сотрапу	Сотрапу	Company
Date/Time 10/19 @ 1215	Date/Time	Date/Time	Date/Time	Date/Time	Date/Time

\* Lab QC Requested for sample when box is checked \*\* TAT = Turn Around Time in DAYS # POC = Project Point of Contact

OR	2600, Seattle, WA 98101
NA &	201 3rd Avenue, 3

Project:

Gasco PD

Client:

1605 Cornwall Avenue, Bellingham, WA 98225

**POC:** \* Delaney Peterson (360-715-2707)

NWGFO-20191022-162549

				COC ID:		NWGEO-20191022-102349	1022-102343	
Gasco PDI	PDI			Sample	Sample Custodian:	CO, SN, BJ, SS	"	
NW Natural	atural			Lab:	Ü	Geotesting Express	ress	
ō	# Contain	අ Contain	Test Request	9	Method	TAT**	Preservative	
Time	ers							
10.11	,							
14:05	_				D4318	30	4°C	
			Atterberg Limits		20010	30	4°C	
			Grain Size		D6913/D7928	9 5	J.,	
			Moisture Content		D2216	30	2	
			Mostar Controls		D854	30	4°C	
			Specific gravity					
0,00	,							
10:48	_		-		D4318	30	4°C	
			Atterberg Limits		0001010101	ç	4°C	
			Grain Size		D6913/D7928	200	207	
			Mainting Content		D2216	30	D-4	_
			Moistal & Collicin		DSEA	30	4°C	_
			Specific gravity		+co0			_

Date

Collected

Sample Type

14:05

10/22/2019

SE

z

PDI-083SC-B-08-10-191022

001

Field Sample ID

COC Sample Number

Specific gravity

10/22/2019 10:48

SE

z

PDI-099SC-B-02-04-191022

002

	Received By:	Signature		Print Name		Company		Date/Time			Page 1 of 1	
	Relinquished By:			d die de la company de la comp			Company		Date/Time	7	ect Point of Contact	
		By.	Signature		Print Name		Company		Date/Time		* I ah OC. Requiested for sample when box is checked ** TAT = Tum Around Time in DAYS # POC = Project Point of Contact	
		Relinquished By:	Signature		Print Name		Company		Date/Time		ample when box is checked ** TAT = Tu	
				12	Print Name	7	Company		DateTime	"	* 1 sh OC Requested for st	במם לכי ייבילים
Comment:			led By:	Signature	Т		Der Jerose		Trever Orive	Date/Time	101411	

Date Printed: 10/22/2019

ANCHOR OEA EEEE OOF 3010 Solite, WA 98101

**POC:** \* Delaney Peterson (360-715-2707)

### ENVIRONMENTAL SAMPLE CHAIN OF CUSTODY

Gasco PDI Project:

NW Natural

COC Sample Number

00

002

COC ID:

NWGEO-20191017-123936

Sample Custodian:

SN

Geotesting Express

Lab:

Field Sample ID         Edg and Sample ID         Attended Sample ID         Indicated ID	1605 Cornwall Avenue, Bellingham, WA 98225	ham, WA	98225	Client:	NW Natural	atural		Lab:		Geotesting Express	bress
Date   Time   B   Atterberg Limits   Da516   30     N   SE   10/17/2019   10:46   1	Glad Samula II	Typ	_		Þ	# Contain	Lab QC*	Test Request	Method	TAT**	Preservative
N         SE         10/17/2019         9:06         1         Atterberg Limits         Atterberg Limits         D4318         30           Grain Size         Moisture Content         D6913/D7928         30           Specific gravity         D854         30           Atterberg Limits         D4318         30           Grain Size         Moisture Content         D6913/D7928         30           Moisture Content         D5216         30           Moisture Content         D6913/D7928         30           Moisture Content         D854         30	בפות סמוולוס וס	e e	alo.	Date	Time	ers					
N         SE         10/17/2019 10:46   1   I   I   I   I   I   I   I   I   I	DI-031SC-B-8.9-10.9-191017	z	S.	├	90:6	_					
N         SE         10/17/2019 10:46         1         Image: Transmission of the content of th		:		⊣ .				Atterberg Limits	D4318	30	4°C
Noisture Content         DD216         30           Specific gravity         DB54         30           Atterberg Limits         D4318         30           Grain Size         Moisture Content         D6913/D7928         30           Moisture Content         D2216         30           Specific gravity         D854         30	*							Grain Size	D6913/D7928	30	4°C
N SE   10/17/2019 10:46   1								Moisture Content	D2216	30	4°C
N         SE         10/17/2019 10:46         1         Image: Content Cont								Specific gravity	D854	30	4°C
Atterberg Limits         D4318         30           Grain Size         D6913/D7928         30           Moisture Content         D2216         30           Specific gravity         D854         30	1-097SC-R-02-04-191017	Z	\ \frac{\partial}{\partial}	-	10.46	<b>~</b>					
D6913/D7928     30       D2216     30       D854     30		-	3	┨				Atterbera Limits	D4318	30	4°C
D2216 30 D854 30								Grain Size	D6913/D7928	30	4°C
D854 30								Moisture Content	D2216	30	4°C
								Specific gravity	D854	30	4°C

	9			
Comment:				
	Refinenciable By	Received By:	Relinquished By:	Received By:
Relinquished By: Signature Signature  Signature	Signature	4	Signature	Signature
Print Name	Print Name	Print Name	Print Name	Print Name
Company Company	Company	Company	Company	Сотрапу
Date/Time	Date/Time	Date/Time	Date/Time	Date/Time
	* Lab QC Requested for sample when box is checked ** TAT = Turn Around Time in DAYS # POC = Project Point of Contact	un Around Time in DAYS # POC = Proj	ect Point of Contact	Page 1 of 1

#### ANCHOR OEA : OEA :

# ENVIRONMENTAL SAMPLE CHAIN OF CUSTODY

COC ID:

NWGEO-20191016-143858

CO, SN, BJ, DL

Geotesting Express

Lab:

**NW Natural** Gasco PDI

1605 Cornwall Avenue, Bellingham, WA 98225

POC: \* Delaney Peterson (360-715-2707)

PDI-022SC-B-5.5-7.5-191016

00

Field Sample ID

COC Sample Number

Project: Client:

Sample Custodian:

Г												r result				$\Box$
	Preservative		4°C	4°C	4°C	4°C		4°C	4°C	4°C	4°C		4°C	4°C	4°C	4°C
	TAT**		30	30	30	30		30	30	30	30		30	30	30	30
	Method		D4318	D6913/D7928	D2216	D854		D4318	D6913/D7928	D2216	D854		D4318	D6913/D7928	D2216	D854
	Test Request		Atterbera Limits	Grain Size	Moisture Content	Specific gravity	2	Atterberg Limits	Grain Size	Moisture Content	Specific gravity		Atterberg Limits	Grain Size	Moisture Content	Specific gravity
	Lab QC*												]			
	Containers	141					57   1					38 1				
	Collected Date Ti	10/16/2019 13:41					10/16/2019 7:57					10/16/2019 10:38				
	Matrix	SE					R.					T,	100			
	Sample Type	z					z	:				z	:			
)																

PDI-059SC-B-06-08-191016

002

003 PDI-069SC-B-10-12-191016

		Received By:	Signature	Print Name	Company	· Date/Time	
		Relinquished By:	Signature	Print Name	Company	Date/Time	
		Received By:	Signature	Print Name	Company	Date/Time	
20		Delinuished Rv.	Signature	Print Name	Company	Date/Time	
			Signature By:	Print Name	2000 X	Kar	١
	Comment:		Relinquished By: Signature	PYT	1	V	一 (ダ) こっちご

Date Printed: 10/16/2019



#### **WARRANTY and LIABILITY**

GeoTesting Express (GTX) warrants that all tests it performs are run in general accordance with the specified test procedures and accepted industry practice. GTX will correct or repeat any test that does not comply with this warranty. GTX has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material

GTX may report engineering parameters that require us to interpret the test data. Such parameters are determined using accepted engineering procedures. However, GTX does not warrant that these parameters accurately reflect the true engineering properties of the *in situ* material. Responsibility for interpretation and use of the test data and these parameters for engineering and/or construction purposes rests solely with the user and not with GTX or any of its employees.

GTX's liability will be limited to correcting or repeating a test which fails our warranty. GTX's liability for damages to the Purchaser of testing services for any cause whatsoever shall be limited to the amount GTX received for the testing services. GTX will not be liable for any damages, or for any lost benefits or other consequential damages resulting from the use of these test results, even if GTX has been advised of the possibility of such damages. GTX will not be responsible for any liability of the Purchaser to any third party.

#### **Commonly Used Symbols**

A	pore pressure parameter for $\Delta \sigma_1 - \Delta \sigma_3$	$S_{\rm r}$	Post cyclic undrained shear strength
В	pore pressure parameter for $\Delta \sigma_3$	T	temperature
CAI	CERCHAR Abrasiveness Index	t	time
CIU	isotropically consolidated undrained triaxial shear test	U, UC	unconfined compression test
CR	compression ratio for one dimensional consolidation	UU, Q	unconsolidated undrained triaxial test
CSR	cyclic stress ratio	u <sub>a</sub>	pore gas pressure
$C_c$	coefficient of curvature, $(D_{30})^2 / (D_{10} \times D_{60})$	u <sub>e</sub>	excess pore water pressure
$C_{\mathrm{u}}$	coefficient of uniformity, D <sub>60</sub> /D <sub>10</sub>	u, u <sub>w</sub>	pore water pressure
$C_c$	compression index for one dimensional consolidation	V V	total volume
$C_{\alpha}$	coefficient of secondary compression	V <sub>g</sub>	volume of gas
$c_{v}$	coefficient of consolidation	$\overset{v}{v}_{s}^{g}$	volume of solids
c	cohesion intercept for total stresses	$\dot{\mathbf{V}}_{\mathrm{s}}$	shear wave velocity
c'	cohesion intercept for effective stresses	$\mathbf{V}_{\mathbf{v}}$	volume of voids
D	diameter of specimen	V <sub>w</sub>	volume of water
D	damping ratio	V w Vo	initial volume
$D_{10}$	diameter at which 10% of soil is finer	v	velocity
$D_{15}$	diameter at which 15% of soil is finer	W	total weight
$D_{30}$	diameter at which 30% of soil is finer	W <sub>s</sub>	weight of solids
$D_{50}$	diameter at which 50% of soil is finer	$\mathbf{W}_{\mathrm{w}}$	weight of water
$D_{60}$	diameter at which 60% of soil is finer		ě
D <sub>85</sub>	diameter at which 85% of soil is finer	w	water content
d <sub>50</sub>	displacement for 50% consolidation	Wc	water content at consolidation
d <sub>90</sub>	displacement for 90% consolidation	Wf	final water content
d <sub>100</sub>	displacement for 100% consolidation	Wı	liquid limit
E	Young's modulus	Wn	natural water content
e	void ratio	Wp	plastic limit
e <sub>c</sub>	void ratio after consolidation	Ws	shrinkage limit
e <sub>o</sub>	initial void ratio	$w_o, w_i$	initial water content
G	shear modulus	α	slope of q <sub>f</sub> versus p <sub>f</sub>
G,	specific gravity of soil particles	α'	slope of q <sub>f</sub> versus p <sub>f</sub> '
H H	height of specimen	$\gamma_t$	total unit weight
$H_R$	Rebound Hardness number	γd	dry unit weight
i	gradient	$\gamma_s$	unit weight of solids
Is	$\epsilon$	$\gamma_{\mathrm{w}}$	unit weight of water
-	Uncorrected point load strength	ε	strain
$I_{S(50)}$ $H_A$	Size corrected point load strength index Modified Taber Abrasion	$\epsilon_{\mathrm{vol}}$	volume strain
па Нт	Total hardness	$\epsilon_h, \epsilon_v$	horizontal strain, vertical strain
HT Ko		μ	Poisson's ratio, also viscosity
-	lateral stress ratio for one dimensional strain	σ	normal stress
k	permeability	σ'	effective normal stress
LI	Liquidity Index	$\sigma_c, \sigma'_c$	consolidation stress in isotropic stress system
m <sub>v</sub>	coefficient of volume change	$\sigma_h, \sigma'_h$	horizontal normal stress
n	porosity	$\sigma_{\rm v},\sigma'_{\rm v}$	vertical normal stress
PI	plasticity index	$\sigma'_{vc}$	Effective vertical consolidation stress
$P_c$	preconsolidation pressure	$\sigma_1$	major principal stress
p,	$(\sigma_1 + \sigma_3)/2$ , $(\sigma_v + \sigma_h)/2$	$\sigma_2$	intermediate principal stress
p'	$(\sigma'_1 + \sigma'_3)/2$ , $(\sigma'_v + \sigma'_h)/2$	$\sigma_3$	minor principal stress
p'c	p' at consolidation	τ	shear stress
Q	quantity of flow	φ	friction angle based on total stresses
q	$(\sigma_1 - \sigma_3)/2$	φ'	friction angle based on effective stresses
$q_{\mathrm{f}}$	q at failure	φ' г	residual friction angle
$q_o, q_i$	initial q	$\phi_{ult}$	φ for ultimate strength
$q_c$	q at consolidation		