

## **TRIP REPORT HIGH STREET VALVE SITE – INFILTRATION TESTING**

### **1.0 PURPOSE**

This Trip Report presents the field data and results of double-ring soil infiltration tests conducted to support the design of a stormwater management system at the High Street Valve site located in Woodbury Township, Blair County, Pennsylvania, as part of the Pennsylvania Pipeline Project (PPP) for Sunoco Pipeline, LP. Two shallow tests and two deep tests (IT-A and IT-B) were performed at the site. The test locations are listed by coordinates (latitude and longitude) in Table 1 and shown on the attached figure.

### **2.0 FIELD ACTIVITIES**

The two shallow infiltration tests were conducted by Dan Fenstermacher of Rettew, Inc., on September 28, 2016, and the two deep tests were performed by Scott Anderson, Keith Simpson and Jake Marlow of Tetra Tech, Inc., on October 3, 2016. The test locations were positioned in the field using a handheld, WAAS-enabled GPS unit. Table 1 provides the coordinates of the test locations. The tests were located in an open field approximately 25 feet southeast of High Street.

The infiltration tests were performed in accordance with the procedure specified in the 2006 Pennsylvania Stormwater Best Management Practices (BMP) Manual. The test locations were prepared with hand tools and a mini-excavator, and care was taken to minimize disturbance of the soil surface to be tested. Double-ring infiltrometers were used for the testing. For the shallow tests, the infiltrometers consisted of 11-inch diameter and 6-inch diameter sections of steel casing, each 7 inches in height; whereas, for the deep tests, the infiltrometers consisted of 10-inch diameter and 6-inch diameter sections of steel casing, each 10 inches in height. After digging to the target depth, the test surface was leveled, and loose soil and debris were removed. The rings were driven a minimum of 2 inches into the soil. The infiltration test depths are presented in Table 1.

The test locations were pre-soaked for 1 hour. The tests were then conducted with measurements at 10-minute or 30-minute intervals, based on the observed water level drop during the last half of the pre-soak period. Pre-soak and test information was recorded on infiltration test data sheets; copies of the test data sheets are attached to this report.

During the testing, the weather was sunny, approximately 55-70 degrees Fahrenheit. Additionally, less than 0.5 inches of precipitation was observed 24 hours prior to testing.

Test pits were excavated near each testing location to characterize the soil, determine the depth to bedrock, if encountered, and inspect for evidence of the seasonal high water table. The test pits were identified with the corresponding infiltration test name. The test pits were machine-excavated to 2 feet below the target infiltration test depth or refusal, whichever was encountered

first. Descriptions of the soil were recorded on field logs, which were based on the form example in the BMP manual. Copies of the field soil logs are attached to this report.

### **3.0 RESULTS**

#### **3.1 Soil Description**

Soils encountered generally consisted of a thin (up to approximately 5 inches) brown (7.5YR 4/3) surface soil layer composed of a silt loam with pores and roots underlain by a light brown (7.5YR 6/3) silt loam with moderate pores and roots. One alluvial layer was found consisting of a strong brown (7.5YR 4/6) silty clay loam with few pores and roots, underlain by weathered parent (limestone) rock and brown (7.5YR 5/4) silty clay loam. Bedrock was not found.

Seasonal high water was not observed at the testing locations, nor was any mottling observed.

According to United States Department of Agriculture Natural Resources Conservation Service Web Soil Survey data, the soil type for the test locations is mapped as follows:

- Humblersburg Cherty Silt Loam - (HuC soil symbol) with 8-15 percent slopes; with medium runoff and well drained.

#### **3.2 Infiltration Tests Results**

Table 1 summarizes the infiltration rates (inches per hour) calculated from the test data. The infiltration rates presented in Table 1 were calculated from the average water level drop of the last four stabilized readings measured in the inner ring.

The pre-soak test results for IT-A (deep) and IT-B (shallow and deep) indicated high infiltration rates, requiring 10 minute test cycles; whereas, the pre-soak test results for IT-A (shallow) indicated a low infiltration rate, requiring a 30 minute test cycle.

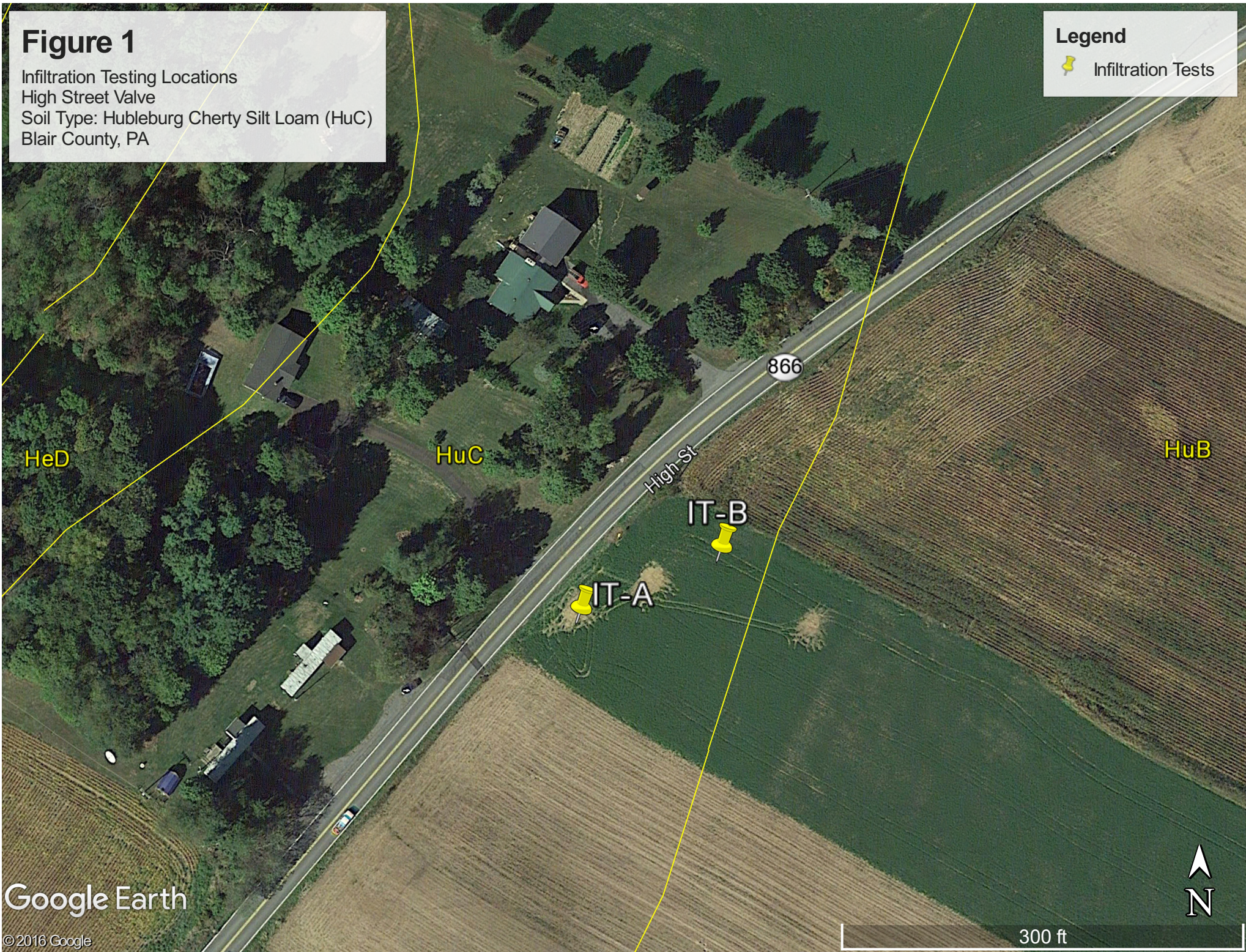
**Table 1**  
**Summary of Infiltration Test Results**  
**High Street Valve**  
**Woodbury Township, Blair County, PA**  
**Sunoco PPP**

Test Location (IT-)	Location Data		Test Depth (inches)	Infiltration Test Result (inches/hour)
	LATITUDE	LONGITUDE		
IT-A (shallow)	40.4324434°	- 078.2644795°	4	1.66
IT-A (deep)			36	5.44
IT-B (shallow)	40.432543°	- 078.264096°	5	4.31
IT-B (deep)			12	5.63

# Figure 1

Infiltration Testing Locations  
High Street Valve  
Soil Type: Hubleburg Cherty Silt Loam (HuC)  
Blair County, PA

**Legend**  
📌 Infiltration Tests



## **ATTACHMENTS**

## SOIL LOGS



# Soil Log

A

Tested By: Scott Anderson

Project: Sunoco

112105958

Project No.: ~~112107779~~ 17

Test Pit: High Street Valve A

Date: 10/3/2016

Elevation: \_\_\_\_\_

Equipment Used Man-Excavator

Geology: Bellfonte & Axeman Formations

Soil Type: Hubersburg Cherty Silt loam H+ B/H+ C

Land Use: Agricultural (Alfalfa)

Weather: 60°F, Sunny

Additional Comments

Horizon	Upper Boundary	Lower Boundary	Soil Textural Class	Type, Size, Coarse Fragments, etc.	Soil Color	Color Patterns	Pores, Roots, Rock Structure	Depth to Bedrock	Depth to Water	Comments
O	0"	5"	Silt Loam	Brown silt with trace clay	7.5 YR 4/3	Solid	many/cl. soil pores and roots	—	> 5'	No mottling
A	5"	10"	Silt Loam	Tan silt w/ trace clay & small rocks (< 3")	7.5 YR 6/3	Solid	moderate pores and roots	—	> 5'	No mottling
B	10"	39"	Silty clay loam	Red/orange/brown silty clay with silt and clay fragments	7.5 YR 4/6	Solid	Few pores and roots (long roots)	—	> 5'	No mottling
C	39"	60"	Weathered rock & silty clay loam	Gray limestone 71" long white & silty clay	7.5 YR 5/4	—	massive	> 60"	> 5'	No mottling

Horizon:	USDA Definition	Soil Textural Class	Boundary	Notes:
O	Organic debris	Use ternary diagram from US Department of Agriculture Soil Conservation Service	Use depth and classification	- O horizon damp, loose hor. zone slightly damp - 60.5 inches rain in previous 24 hours - Large rocks (limestone, quartzite) > 1" to > 2" below 39"
A	Dark colored, mixed mineral organic matter		Classification as Follows:	
B	Maximum accumulation of silicate clay minerals		Abrupt	
C	Weathered parent material		Clear	
R	Layer of consolidated rock beneath the soil		Gradual	
			Diffuse	



# Soil Log

B

Tested By: Scott Anderson

Project: Sunoco

Project No.: 112205958  
~~#21007777~~ 17

Test Pit: High Street Valve B

Date: 10/3/2016

Elevation: \_\_\_\_\_

Equipment Used: Mini Excavator

Geology: Bellfonte & Axeman Formations

Soil Type: Hubersburg chunky silt loam HuB/HuC

Land Use: Agricultural (Alfalfa)

Weather: 60° F, Sunny

Additional Comments

Horizon	Upper Boundary	Lower Boundary	Soil Textural Class	Type, Size, Coarse Fragments, etc.	Soil Color	Color Patterns	Pores, Roots, Rock Structure	Depth to Bedrock	Depth to Water	Comments
O	0"	5"	Silt Loam	Brown silt w/ trace to minor clays	7.5 YR 4/3	Solid	Abundant pores & roots	—	> 3'	No mottling
A	5"	9"	Silt Loam	Tan silt w/ trace to minor clay, roots	7.5 YR 6/3	Solid	Moderate pores & roots	—	> 3'	No mottling
B	9"	23"	Silt clay Loam	Dense/stiff silt clay to clay	7.5 YR 4/6	Solid	Few pores and roots	—	> 3'	No mottling (red/orange/iron)
C/R	23"	~36"	Weathered Rocks	Weathered rocks @ to ~24"	5 YR 5/4	—	massive, solid	~36"	> 3'	No mottling

Horizon:	USDA Definition	Soil Textural Class	Boundary	Notes:
O	Organic debris	Use ternary diagram from US Department of Agriculture Soil Conservation Service	Use depth and classification	<ul style="list-style-type: none"> <li>- O Horizon damp, lower horizons slightly damp</li> <li>- 20.5 inches rain in previous 24 hours</li> <li>- Scrapping large rocks (&gt;1-2') @ 3 ft Bgs. Likely weathered BR (limestone)</li> </ul>
A	Dark colored, mixed mineral organic matter		Classification as Follows:	
B	Maximum accumulation of silicate clay minerals		Abrupt	
C	Weathered parent material		Clear	
R	Layer of consolidated rock beneath the soil		Gradual	
			Diffuse	

Table based on: Sample soil log located on page 12 of the Pennsylvania Stormwater Best Management Practices Manual  
USDA Definitions located from: [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/edu/?cid=nrcs142p2\\_054308](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/edu/?cid=nrcs142p2_054308)

**INFILTRATION TEST DATA SHEETS**







Tetra Tech, Inc.

# INFILTRATION TEST DATA SHEET

A

HIGH ST. VALUE

PROJECT NAME: SUNOCO LOGISTICS TEST AREA ID: IT-A-DEEP  
 PROJECT NUMBER: 112 IC05958 - 17 PERSONNEL: K. SIMPSON J. MARLOW  
S. ANDERSON

TEST METHOD: Double Ring Infiltrometer Percolation  
Single Ring Infiltrometer

INNER RING INSIDE DIAMETER/HEIGHT: 6" X 10"  
 OUTER RING INSIDE DIAMETER/HEIGHT: 10" X 10"

Location Coordinates or Description:  
40.4324434  
-078.2644795

PERCOLATION HOLE DIAMETER: NA (If performing an open hole perc test)

DATE(s): 10/3/16

Distance from the bottom of the inner ring/hole to measuring point (minimum water column of 6-8 inches): 8"

MEASURING POINT: Ring Rim Indicator Mark DEPTH OF TEST: 3' BGS

TIME	ELAPSED TIME SINCE START OF TEST (minutes)	WATER LEVEL DROP, INNER RING OR PERCOLATION HOLE (inches)	VOLUME OF WATER ADDED AT EACH CYCLE, INNER RING (liters)	REMARKS
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PRESOAK DATA

0851	0	-----	4.1	<del>0.902 DROP 2 9/16 ADD 1.15 L</del> KS
0921	30	2 10/16	1.3	
0951	60	2 8/16	2.3	

TEST DATA 10 MIN TEST

0951	0 (60)	-----	2.3	
1001	10 (70)	1 9/16	0.600	
1011	20 (80)	1 4/16	0.400	
1021	30 (90)	1 4/16	0.400	
1031	40 (100)	1 4/16	—	TEST COMPLETE

< 0.5" OF RAIN OVER LAST 24 HRS

SEE ALSO PHOTOS & SOIL LOG



Tetra Tech, Inc.

# INFILTRATION TEST DATA SHEET

B

HIGH STREET VAULT

PROJECT NAME: SUNOCO LOGISTICS TEST AREA ID: IT-B-DEEP  
 PROJECT NUMBER: 112 IC 05958 - 17 PERSONNEL: K. SIMPSON, J. MARLOW, S. ANDERSON

TEST METHOD: Double Ring Infiltrometer Percolation  
 Single Ring Infiltrometer

Location Coordinates or Description:

INNER RING INSIDE DIAMETER/HEIGHT: 6" x 10"  
 OUTER RING INSIDE DIAMETER/HEIGHT: 10" x 10"

40.43253  
-078.26414

NEW

MVLED DUE TO GAS LINE

PERCOLATION HOLE DIAMETER: NA (If performing an open hole perc test)

DATE(s): 10/3/16

Distance from the bottom of the inner ring/hole to measuring point (minimum water column of 6-8 inches): 7"

MEASURING POINT: Ring Rim Indicator Mark

DEPTH OF TEST: 1' BGS (1 FOOT)

TIME	ELAPSED TIME SINCE START OF TEST (minutes)	WATER LEVEL DROP, INNER RING OR PERCOLATION HOLE (inches)	VOLUME OF WATER ADDED AT EACH CYCLE, INNER RING (liters)	REMARKS
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PRESOAK DATA

0847	0	-----	4.1	09.02 DROP 2 1/16 ADD 1.15L
0917	30	2 3/16	2.0	3" DROP @ 09.40 ADD 1.6L
0947	60	<del>KS</del> 12/16	0.4	

TEST DATA 10 MIN. TEST

0947	0 (60)	-----	0.4	
0957	10 (70)	1	0.4	
10 07	20 (80)	14/16	0.4	
10 17	30 (90)	15/16	0.4	
10 27	40 (100)	15/16	0.4	TEST COMPLETE, STABILIZED

<0.5" OVER LAST 24 HRS

LISTED AS 3 TEST - HOT ROCK @ ~18"

SEE ALSO PHOTOS & SOIL LOG