WHITESTONE
ASSOCIATES, INC.
Environmental & Geotechnical Engineers & Consultants

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March 27, 2018

via email

MADISON MARQUETTE REALTY SERVICES
300 Cookman Avenue, Suite 1
Asbury Park, New Jersey 07712

Attention: Mr. John Muly
Vice President, Project Management

Regarding: STORMWATER MANAGEMENT AREA EVALUATION
PROPOSED MIXED USE DEVELOPMENT
N.J.S.H. ROUTE 206 & GEORGETOWN-FRANKLIN TURNPIKE
MONTGOMERY TOWNSHIP, SOMERSET COUNTY, NEW JERSEY
WHITESTONE PROJECT NO.: GP1815322.000

Dear Mr. Muly:

Whitestone Associates, Inc. (Whitestone) is pleased to submit this *Stormwater Management* (SWM) *Area Evaluation* report in support of the proposed mixed-use development referenced above. Whitestone previously performed subsurface investigations and evaluations at the proposed site, and the data presented in the May 1, 2006 *Stormwater Basin Subsurface Evaluation Services* in particular was utilized for this report.

Additionally, this preliminary SWM evaluation was based on the June 3, 2016 (last revised January 2, 2018) *Overall Drainage Plan* prepared by Bohler and was performed in accordance with February 16, 2018 proposal to Madison Marquette Realty Services.

PROJECT DESCRIPTION

The site is located southwest of the intersection of New Jersey State Highway Route 206 and Georgetown-Franklin Turnpike in Montgomery Township, Somerset County, New Jersey. At the time of the subsurface evaluation, the subject site consisted of a mostly undeveloped parcel, with areas of remnant pavement situated between brush and grass vegetation.

The proposed site development relative to this preliminary evaluation includes a three above-ground SWM facilities located within the northern, eastern, and southern portions of the site. Based on a review of the aforementioned *Overall Drainage Plan*, the proposed bottom elevation for the northern SWM facility is approximately 140 feet above the North American Vertical Datum-1988 (NAVD88); the proposed bottom elevation for the eastern SWM facility is approximately 145 feet above NAVD88; and the proposed bottom elevation for the southern SWM facility ranges between approximately 123 feet above NAVD88 and 129 feet above NAVD88. These elevations ranged between two feet above and eight feet below proposed existing grades.

SUMMARY OF FINDINGS AND RECOMMENDATIONS

The field investigation included the evaluation of 10 test pits (identified as STP-1 through STP-10) that extended to depths ranging between approximately 15 feet below ground surface (fbgs) to 18 fbgs. In addition, ten *in-situ* infiltration tests (identified as P-1 through P-10) were performed at the proposed bottom of basin elevations. The investigation and infiltration testing were performed in general accordance with standards presented in the New Jersey Department of Environmental Protection (NJDEP) *Stormwater Best Management Practices Manual* (BMP Manual). The testing locations are shown on the *Test Location Plan* included as Figure 1. Detailed soil descriptions are included on the *Records of Subsurface Exploration* included as Appendix A. In addition, the previously performed test pit logs are included in Appendix A.

Subsurface Soil Profile: The soil profile disclosed by the test pits included approximately one inch to eight inches of surficial topsoil/ploughed horizon underlain by residual materials (STP-1 through STP-6), alluvial materials (STP-7 and STP-8), and existing fill materials (STP-9 and STP-10). The existing fill materials encountered generally consisted of sandy clay loam with lesser amounts of asphalt, concrete, and gravel fragments. Underlying the existing fill materials were alluvial soils consisting of sandy clay loam with up to approximately 10 percent gravel content. The residual soils consisted of silty clay loam and clay loam with varying amounts of gravel. Weathered rock (shale) was encountered within two locations (STP-7 and STP-8) at depths of 16.5 fbgs and 12.5 fbgs, respectively. These depths correspond to approximate elevations of 134.5 feet above NAVD88 and 135.5 feet above NAVD88, respectively.

Groundwater: Static groundwater was encountered in approximately half of the test pits, with all of the test locations that encountered groundwater located within the areas of lower elevation, southern portion of the site. Groundwater was encountered at depths ranging between 13.5 fbgs and 16.0 fbgs, corresponding to approximate elevations ranging between 114.5 feet above NAVD88 and 116.0 feet above NAVD88. Indications of estimated seasonal high groundwater levels, where encountered, are noted on the *Records of Subsurface Exploration*. In addition, impeded drainage was noted above the very stiff silty clay materials in STP-1 and STP-2 at approximate depths of four fbgs and five fbgs, respectively.

Infiltration Test Results & Conclusion: A total of ten *in-situ* infiltration tests were performed within the proposed SWM facility at depths corresponding with the proposed bottom elevation of basins (as shown on the aforementioned *Overall Drainage Plan.* Detailed infiltration test results are included in Appendix B.

The results of the investigation and infiltration testing (including the results from the 2006 investigation) indicated that the site soils are relatively impermeable and not conducive to infiltration design.

Whitestone's geotechnical division appreciates the opportunity to be of service to Madison Marquette Realty Services. Please contact us at (215) 712-2700 with any questions regarding this supplemental report.

Sincerely,

WHITESTONE ASSOCIATES, INC.

James M. Morgan
Senior Project Manager

Laurence W. Keller, P.E.
Principal, Geotechnical Services

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Enclosures
Copy: Bradford A. Bohler, P.E., Bohler Engineering NJ, LLC

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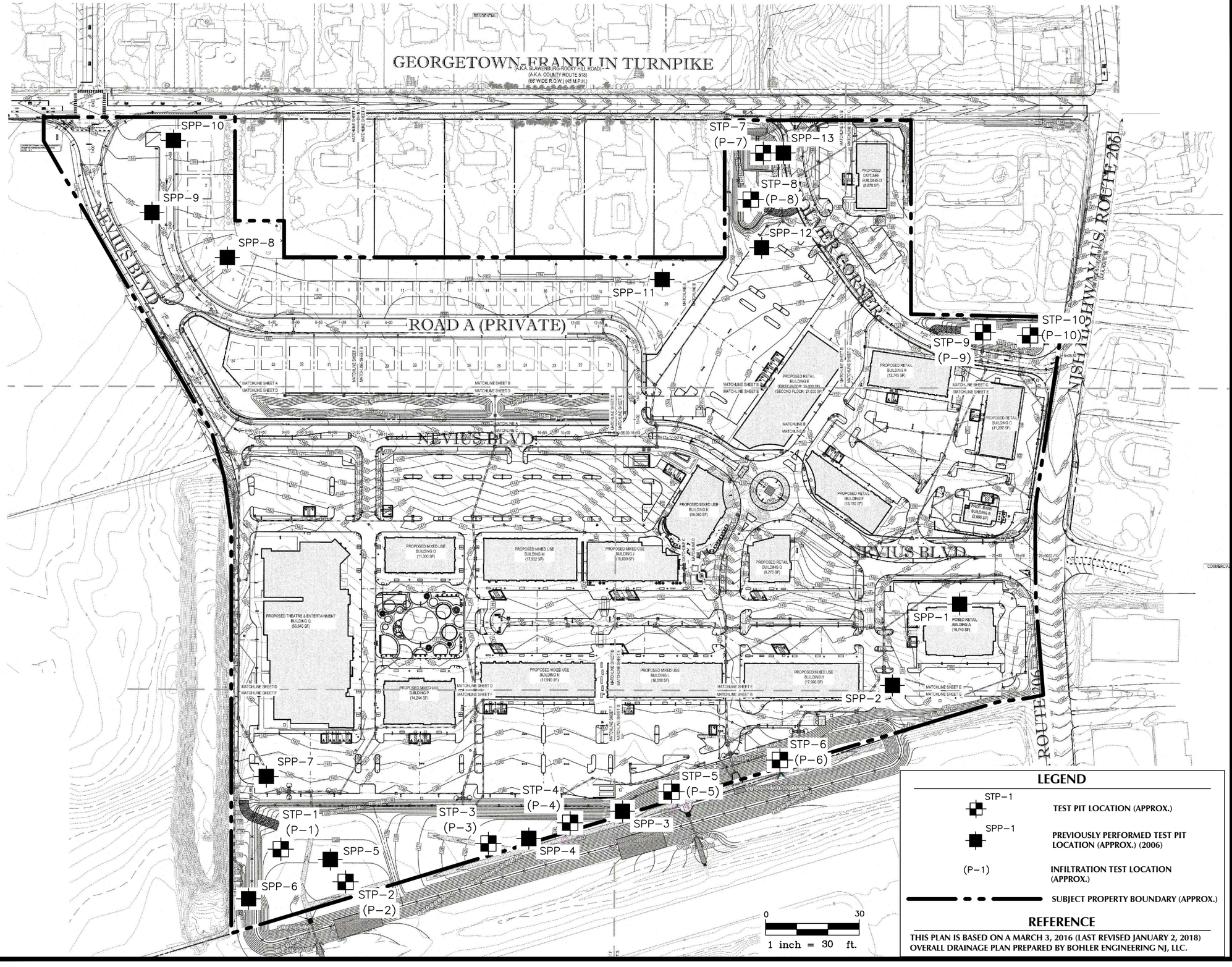
FIGURE 1
Test Location Plan



LEGEND

STP–1	TEST PIT LOCATION (APPROX.)
SPP–1	PREVIOUSLY PERFORMED TEST PIT LOCATION (APPROX.) (2006)
(P–1)	INFILTRATION TEST LOCATION (APPROX.)
	SUBJECT PROPERTY BOUNDARY (APPROX.)

REFERENCE

THIS PLAN IS BASED ON A MARCH 3, 2016 (LAST REVISED JANUARY 2, 2018) OVERALL DRAINAGE PLAN PREPARED BY BOHLER ENGINEERING NJ, LLC.

WHITESTONE ASSOCIATES, INC.
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DRAWING TITLE: **TEST LOCATION PLAN**

CLIENT: **MADISON MARQUETTE REALTY SERVICES**

PROJECT: **PROPOSED MIXED-USE DEVELOPMENT**
N.J.S.H. ROUTE 206 & GEORGETOWN - FRANKLIN TURNPIKE
MONTGOMERY TOWNSHIP, SOMERSET COUNTY, NJ

PROJECT #: GP1815322.000	
DESIGNED BY: GR	PROJ. MGR.: JMM
DATE: 3/6/18	FIGURE: 1
SCALE: 1" = 30'	

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APPENDIX A
Records of Subsurface Exploration

WHITESTONE ASSOCIATES, INC.

RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: SPP-1

Project:	**Proposed Commercial/Residential Development**	WAI Project No.:	**WJ05-8098**
Location:	**Route 206 and Route 518; Montgomery, Somerset, NJ**	Client:	**Bohler Engineering, P.C. (NJ)**

				Water Depths/Elevations (feet bgs / feet msl)	**Estimated Seasonal High Groundwater Depths/Elevations (feet bgs / feet msl)**
Surface Elevation:	**146.00 feet msl**	Date Started:	**10/03/05**		
Termination Depth:	**12.0 feet bgs**	Date Completed:	**10/03/05**		
Proposed Location:	**SWM**	Logged By:	**P. Howell**		
Excavating/Test Method:	**Test Pit Excavation/ Visual Observation**	Contractor:	**Carroccia**	While Excavating: **NE**	ESHGW: **NE**
		Equipment:	**Deere 310G**	8 Hours: **NE**	

SAMPLE NUMBER	HORIZON/ DEPTH (feet)	DESCRIPTION OF MATERIALS (Classification)	REMARKS
	0.0 - 0.75 (TS)	Topsoil	
S-1 @ 3.0' (Bag)	0.75 - 3.9 (1)	Reddish-Brown (7.5 YR 6/6) Silt Loam; 10% Gravel, 2% Cobbles; Strong, Angular Blocky Structure; Very Firm; Few Light Gray (10 YR 7/1) and Brownish-Yellow (10 YR 6/8) Mottles	
S-2 @ 4.0' (Bag)	3.9 - 4.7 (2)	Red (2.5 YR 5/8) Silty Clay Loam; 5% Gravel, 2% Cobbles; Moderate, Angular Blocky Structure; Moist; Firm	Unable to Obtain Tube Sample
S-3 @ 6.0' (Bag)	4.7 - 12.0 (3)	Dark Red (2.5 YR 3/6) Silty Clay; Moist; Friable	30% Shale
		Soil Profile Pit SPP-1 Terminated at a Depth of 12.0 Feet Below Ground Surface	

NOTES: ESHGW = Estimated Seasonal High Groundwater, NE = Not Encountered, NA = Not Applicable

WHITESTONE ASSOCIATES, INC.

RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: SPP-2

Project:	**Proposed Commercial/Residential Development**	WAI Project No.:	**WJ05-8098**
Location:	**Route 206 and Route 518; Montgomery, Somerset, NJ**	Client:	**Bohler Engineering, P.C. (NJ)**

				Water Depths/Elevations (feet bgs / feet msl)		**Estimated Seasonal High Groundwater Depths/Elevations (feet bgs / feet msl)**
Surface Elevation:	**139.00 feet msl**	Date Started:	**10/03/05**			
Termination Depth:	**13.0 feet bgs**	Date Completed:	**10/03/05**			
Proposed Location:	**SE Parcel**	Logged By:	**P. Howell**			
Excavating/Test Method:	**Test Pit Excavation/ Visual Observation**	Contractor:	**Carroccia**	While Excavating:	**NE**	ESHGW: **NE**
		Equipment:	**Deere 310G**	8 Hours:	**NE**	

SAMPLE NUMBER	HORIZON/ DEPTH (feet)	DESCRIPTION OF MATERIALS (Classification)	REMARKS
	0.0 - 1.5 (Ploughed)	Brown Silt Loam, Moderate Medium Subangular Blocky Structure, Moist	
S-1 @ 5.0' (Tube)	1.5 - 9.0 (2)	Reddish-Brown (2.5 YR 4/6) Silty Clay Loam; Coarse, Angular Blocky Structure; Moist; Friable	25% Shale Few Fine Roots to 3.9 fbgs
S-2 @ 5.5' (Bag)	9.0 - 13.0	As Above, Increased Shale Fraction	60% Coarse to Fine Shale
		Soil Profile Pit SPP-2 Terminated at a Depth of 13.0 Feet Below Ground Surface	

NOTES: ESHGW = Estimated Seasonal High Groundwater, NE = Not Encountered, NA = Not Applicable

WHITESTONE ASSOCIATES, INC.

RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: SPP-3

Project:	**Proposed Commercial/Residential Development**	WAI Project No.:	**WJ05-8098**
Location:	**Route 206 and Route 518; Montgomery, Somerset, NJ**	Client:	**Bohler Engineering, P.C. (NJ)**

				Water Depths/Elevations (feet bgs / feet msl)	**Estimated Seasonal High Groundwater Depths/Elevations (feet bgs / feet msl)**
Surface Elevation:	**131.00 feet msl**	Date Started:	**10/03/05**		
Termination Depth:	**12.6 feet bgs**	Date Completed:	**10/03/05**		
Proposed Location:	**SE Parcel**	Logged By:	**P. Howell**		
Excavating/Test Method:	**Test Pit Excavation/ Visual Observation**	Contractor:	**Carroccia**	While Excavating: **NE**	ESHGW: **NE**
		Equipment:	**Deere 310G**	8 Hours: **NE**	

SAMPLE NUMBER	HORIZON/ DEPTH (feet)	DESCRIPTION OF MATERIALS (Classification)	REMARKS
	0.0 - 0.8 (TS)	Dark Grayish-Brown Topsoil	
S-1 @ 2.0' (Bag)	0.8 - 2.5 (1)	Reddish-Yellow (7.5 YR 6/6) Silt Loam; 15% Gravel; Angular Blocky Structure; Dry; Hard; Few Light Gray (10 YR 7/1) and Brownish-Yellow (10 YR 6/8) Mottles	
S-2 @ 3.3' (Bag) S-3 @ 4.0' (Tube)	2.5 - 7.9 (2)	Dark Red (7.5 YR 3/6) Silty Clay Loam, Moderate Medium Angular Blocky Structure, Moist, Firm	25% Shale
	7.9 - 12.6 (3)	Dark Red (2.5 YR 3/6) Silty Clay Loam; Angular Blocky Structure; Moist; Friable	25% Shale
		Soil Profile Pit SPP-3 Terminated at a Depth of 12.6 Feet Below Ground Surface	

NOTES: ESHGW = Estimated Seasonal High Groundwater, NE = Not Encountered, NA = Not Applicable

WHITESTONE ASSOCIATES, INC.

RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: SPP-4

Project:	**Proposed Commercial/Residential Development**	WAI Project No.:	**WJ05-8098**
Location:	**Route 206 and Route 518; Montgomery, Somerset, NJ**	Client:	**Bohler Engineering, P.C. (NJ)**

				Water Depths/Elevations (feet bgs / feet msl)		**Estimated Seasonal High Groundwater Depths/Elevations (feet bgs / feet msl)**
Surface Elevation:	**129.00 feet msl**	Date Started:	**10/03/05**			
Termination Depth:	**13.5 feet bgs**	Date Completed:	**10/03/05**			
Proposed Location:	**SW Basin**	Logged By:	**P. Howell**			
Excavating/Test Method:	**Test Pit Excavation/ Visual Observation**	Contractor:	**Carroccia**	While Excavating:	**12.9/116.1**	ESHGW: **10.0/119.0**
		Equipment:	**Deere 310G**	8 Hours:	**10.0/119.0**	

SAMPLE NUMBER	HORIZON/ DEPTH (feet)	DESCRIPTION OF MATERIALS (Classification)	REMARKS
	0.0 - 0.9 (Ploughed)	Brown (10 YR 4/4) Silt Loam; 10% Angular/Subround Gravel, Moderate Medium Angular Blocky Structure, Moist, Friable	
S-1 @ 6.0' (Tube) S-2 @ 6.0' (Bag)	0.9 - 7.0 (1)	Reddish-Brown (2.5 YR 4/6) Silt Clay; 30% Gravel, 1% Cobbles; Strong, Medium Angular Blocky Structure; Moist; Firm	Angular and Subround Gravel/Cobbles
	7.0 - 13.5	As Above; Moist; Friable	Rapid Water Infiltration @ 12.9 fbgs
		Soil Profile Pit SPP-4 Terminated at a Depth of 13.5 Feet Below Ground Surface	

NOTES: ESHGW = Estimated Seasonal High Groundwater, NE = Not Encountered, NA = Not Applicable

WHITESTONE ASSOCIATES, INC.

RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: SPP-5

Project:	**Proposed Commercial/Residential Development**	WAI Project No.:	**WJ05-8098**
Location:	**Route 206 and Route 518; Montgomery, Somerset, NJ**	Client:	**Bohler Engineering, P.C. (NJ)**

				Water Depths/Elevations (feet bgs / feet msl)		**Estimated Seasonal High Groundwater Depths/Elevations (feet bgs / feet msl)**
Surface Elevation:	**126.50 feet msl**	Date Started:	**10/03/05**			
Termination Depth:	**13.0 feet bgs**	Date Completed:	**10/03/05**			
Proposed Location:	**SW Basin**	Logged By:	**P. Howell**			
Excavating/Test Method:	**Test Pit Excavation/ Visual Observation**	Contractor:	**Carroccia**	While Excavating:	**10.0/116.5**	ESHGW: **7.0/119.5**
		Equipment:	**Deere 310G**	8 Hours:	**9.0/117.5**	

SAMPLE NUMBER	HORIZON/ DEPTH (feet)	DESCRIPTION OF MATERIALS (Classification)	REMARKS
	0.0 - 1.5 (Ploughed)	Brown (10 YR 4/4) Silty Loam; Few Fine Gravel; Wet	Surrounding Surface Ponding Water from Rain 2 Day Prior
S-1 @ 3.0' (Bag)	1.5 - 5.9 (1)	Yellowish Brown (10 YR 5/0) Silty Clay Loam; 25% Gravel, 2% Cobbles; Strong, Coarse Angular Blocky Structure; Firm; Wet; Slightly Plastic; Many Coarse Light Gray (10 YR 7/1) and Brownish-Yellow (10 YR 6/8) Mottles	Very Slow Seepage from 2.4 fbgs to 3.0 fbgs
S-2 @ 6.0' (Tube) S-3 @ 6.0' (Bag)	5.9 - 7.0 (2)	Reddish-Brown (2.5 YR 4/6) Silty Clay Loam; 10% Gravel, 2% Cobbles; Angular Blocky Structure; Extremely Firm	
S-4 @ 7.5'	7.0 - 8.0	Light Gray (5 YR 7/1) Silty Clay; 2% Gravel; Massive Structure; Extremely Firm	Rounded Gravel
S-5 @ 11.0'	8.0 - 13.0	Reddish-Brown (2.5 YR 5/4) Silty Clay Loam; 80% Gravel; Moderate, Angular Blocky Structure; Moist; Friable	Wet and Sticky @ 11.0 fbgs
		Soil Profile Pit SPP-5 Terminated at a Depth of 13.0 Feet Below Ground Surface	

NOTES: ESHGW = Estimated Seasonal High Groundwater, NE = Not Encountered, NA = Not Applicable

WHITESTONE ASSOCIATES, INC.

RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: SPP-6

Project:	**Proposed Commercial/Residential Development**	WAI Project No.:	**WJ05-8098**
Location:	**Route 206 and Route 518; Montgomery, Somerset, NJ**	Client:	**Bohler Engineering, P.C. (NJ)**

				Water Depths/Elevations (feet bgs / feet msl)	**Estimated Seasonal High Groundwater Depths/Elevations (feet bgs / feet msl)**
Surface Elevation:	**126.00 feet msl**	Date Started:	**10/03/05**		
Termination Depth:	**12.3feet bgs**	Date Completed:	**10/03/05**		
Proposed Location:	**SWBasin**	Logged By:	**P. Howell**		
Excavating/Test Method:	**Test Pit Excavation/ Visual Observation**	Contractor:	**Carroccia**	While Excavating: **NE**	ESHGW: **NE**
		Equipment:	**Deere 310G**	8 Hours: **NE**	

SAMPLE NUMBER	HORIZON/ DEPTH (feet)	DESCRIPTION OF MATERIALS (Classification)	REMARKS
	0.0 - 1.5 (TS)	Dark Grayish-Brown Topsoil	
S-1 @ 2.5' (Bag)	1.5 - 4.2 (1)	Yellowish-Brown (5 YR 5/8) Silty Loam; Angular Blocky; Dry; Hard; Many Brownish-Yellow (10 YR 6/8) and Light Gray (10 YR 7/1) Mottling Between 3.2 fbgs and 4.2 fbgs	
S-2 @ 5.0' (Bag) S-3 @ 5.0' (Tube)	4.2 - 7.3 (2)	Dark Red (2.5 YR 2/6) Sandy Clay/Loam; 30% Gravel; Subangular Blocky Structure; Moist; Firm	Rounded Gravel
S-4 @ 8.0' (Bag)	7.3 - 12.3 (3)	Dark Red (2.5 YR 3/6) Silty Clay Loam; Massive; Moist; Firm	30% Shale
		Soil Profile Pit SPP-6 Terminated at a Depth of 12.25 Feet Below Ground Surface	

NOTES: ESHGW = Estimated Seasonal High Groundwater, NE = Not Encountered, NA = Not Applicable

WHITESTONE ASSOCIATES, INC.

RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: SPP-7

Project:	**Proposed Commercial/Residential Development**	WAI Project No.:	**WJ05-8098**
Location:	**Route 206 and Route 518; Montgomery, Somerset, NJ**	Client:	**Bohler Engineering, P.C. (NJ)**

				Water Depths/Elevations (feet bgs / feet msl)		**Estimated Seasonal High Groundwater Depths/Elevations (feet bgs / feet msl)**
Surface Elevation:	**131.00 feet msl**	Date Started:	**10/03/05**			
Termination Depth:	**12.6 feet bgs**	Date Completed:	**10/03/05**			
Proposed Location:	**SW Basin**	Logged By:	**P. Howell**			
Excavating/Test Method:	**Test Pit Excavation/ Visual Observation**	Contractor:	**Carroccia**	While Excavating:	**NE**	ESHGW: **NE**
		Equipment:	**Deere 310G**	8 Hours:	**NE**	

SAMPLE NUMBER	HORIZON/ DEPTH (feet)	DESCRIPTION OF MATERIALS (Classification)	REMARKS
	0.0 - 1.5 (FILL)	Brown (10 YR 4/4) Loam; Structureless; Moist; Firm	
S-1 @ 5.0' (Tube) S-2 @ 5.0' (Bag)	1.5 - 5.0 (2)	Dark Red (2.5 YR 3/6) Silty Clay Loam; Subangular Blocky Structure; Moist; Firm	Bands of Rounded Gravel, Few Fine Roots to 5.0 fbgs
S-3 @ 8.0' (Bag)	5.0 - 12.6 (3)	Dark Red (2.5 YR 3/6) Silty Clay Loam; Subangular Blocky Structure; Moist; Firm	15% Shale
		Soil Profile Pit SPP-7 Terminated at a Depth of 12.6 Feet Below Ground Surface	

NOTES: ESHGW = Estimated Seasonal High Groundwater, NE = Not Encountered, NA = Not Applicable

WHITESTONE ASSOCIATES, INC.

RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: SPP-8

Project:	**Proposed Commercial/Residential Development**	WAI Project No.:	**WJ05-8098**
Location:	**Route 206 and Route 518; Montgomery, Somerset, NJ**	Client:	**Bohler Engineering, P.C. (NJ)**

				Water Depths/Elevations (feet bgs / feet msl)	**Estimated Seasonal High Groundwater Depths/Elevations (feet bgs / feet msl)**
Surface Elevation:	**151.00 feet msl**	Date Started:	**10/03/05**		
Termination Depth:	**13.0 feet bgs**	Date Completed:	**10/03/05**		
Proposed Location:	**NW Basin**	Logged By:	**P. Howell**		
Excavating/Test Method:	**Test Pit Excavation/ Visual Observation**	Contractor:	**Carroccia**	While Excavating: **NE**	ESHGW: **NE**
		Equipment:	**Deere 310G**	8 Hours: **NE**	

SAMPLE NUMBER	HORIZON/ DEPTH (feet)	DESCRIPTION OF MATERIALS (Classification)	REMARKS
	0.0 - 2.0 (FILL)	Brown (10 YR 4/4) Loamy Sand; 10% Gravel; Structureless; Moist; Friable	
S-1 @ 2.5' (Bag)	2.0 - 3.9 (2)	Yellowish-Brown (5 YR 5/8) Silt Loam; 2% Gravel; Angular Blocky Structure; Moist; Friable; Few Fine Light Gray (10 YR 7/1) Mottles	
S-2 @ 4.2' (Bag) S-3 @ 4.2' (Tube)	3.9 - 7.0 (3)	Red (2.5 YR 4/6) Silty Clay Loam; Angular Blocky Structure; Moist; Friable	
S-4 @ 8.0' (Bag)	7.0 - 13.0 (4)	Dark Red (2.5 YR 3/6) Silty Clay Loam; Angular Blocky Structure; Moist; Friable	30% Shale
		Soil Profile Pit SPP-8 Terminated at a Depth of 13.0 Feet Below Ground Surface	

NOTES: ESHGW = Estimated Seasonal High Groundwater, NE = Not Encountered, NA = Not Applicable

WHITESTONE ASSOCIATES, INC.

RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: SPP-9

Project:	**Proposed Commercial/Residential Development**	WAI Project No.:	**WJ05-8098**
Location:	**Route 206 and Route 518; Montgomery, Somerset, NJ**	Client:	**Bohler Engineering, P.C. (NJ)**

				Water Depths/Elevations (feet bgs / feet msl)		**Estimated Seasonal High Groundwater Depths/Elevations (feet bgs / feet msl)**
Surface Elevation:	**155.00 feet msl**	Date Started:	**10/03/05**			
Termination Depth:	**14.5 feet bgs**	Date Completed:	**10/03/05**			
Proposed Location:	**NW Basin**	Logged By:	**P. Howell**			
Excavating/Test Method:	**Test Pit Excavation/ Visual Observation**	Contractor:	**Carroccia**	While Excavating:	**NE**	ESHGW: **NE**
		Equipment:	**Deere 310G**	8 Hours:	**NE**	

SAMPLE NUMBER	HORIZON/ DEPTH (feet)	DESCRIPTION OF MATERIALS (Classification)	REMARKS
	0.0 - 1.3 (Ploughed)	Brown (10 YR 4/4) Silt Loam	
S-1 @ 2.0' (Bag)	1.3 - 3.9	Yellowish-Red (5 YR 5/6) Silt Loam; 20% Gravel; Massive Structure; Friable	
	3.9 - 8.0	Strong Brown (7.5 YR 5/6) Silty Clay Loam; 25% Gravel; Moderate, Medium Angular Blocky Structure; Slightly Wet; Slightly Plastic	
	8.0 - 12.0	Strong Brown (7.5 YR 5/6) Sandy Clay Loam; 75% Gravel; Subangular Blocky Structure; Moist; Friable	
	12.0 - 14.5	Dark Reddish-Brown (2.5 YR 3/2) Silty Clay Loam; 90% Gravel; Strong, Coarse Angular Blocky Structure; Moist; Firm	
		Soil Profile Pit SPP-9 Terminated at a Depth of 14.5 Feet Below Ground Surface	

NOTES: ESHGW = Estimated Seasonal High Groundwater, NE = Not Encountered, NA = Not Applicable

WHITESTONE ASSOCIATES, INC.

RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: SPP-10

Project:	**Proposed Commercial/Residential Development**	WAI Project No.:	**WJ05-8098**
Location:	**Route 206 and Route 518; Montgomery, Somerset, NJ**	Client:	**Bohler Engineering, P.C. (NJ)**

				Water Depths/Elevations (feet bgs / feet msl)		**Estimated Seasonal High Groundwater Depths/Elevations (feet bgs / feet msl)**
Surface Elevation:	**156.00 feet msl**	Date Started:	**10/03/05**			
Termination Depth:	**14.0 feet bgs**	Date Completed:	**10/03/05**			
Proposed Location:	**SWM**	Logged By:	**P. Howell**			
Excavating/Test Method:	**Test Pit Excavation/ Visual Observation**	Contractor:	**Carroccia**	While Excavating:	**12.5/143.5**	ESHGW: **12.5/143.5**
		Equipment:	**Deere 310G**	1 Hour:	**12.5/143.5**	

SAMPLE NUMBER	HORIZON/ DEPTH (feet)	DESCRIPTION OF MATERIALS (Classification)	REMARKS
	0.0 - 1.0 (Ploughed)	Brown (10 YR 4/4) Silty Loam; Moderate Medium Subangular Blocky Structure, Moist, Friable	
S-1 @ 5.0' (Tube) S-2 @ 5.0' (Bag)	1.0 - 6.9	Strong Brown (7.5 YR 5/6) Silty Loam; 25% Gravel; Slightly Wet; Plastic	Rounded Gravel
S-3 @ 7.5' (Bag) S-4 @ 7.5' (Tube)	6.9 - 8.0	Strong Brown (7.5 YR 5/6) Sandy Clay/Loam; 75% Gravel; Moist; Friable	Rounded/Weathered Gravel
S-3 @ 8.5'	8.0 - 9.0	Reddish-Yellow (7.5 YR 6/8) Sandy Loam; 75% Gravel; Moist; Friable	Rounded/Weathered Gravel
	9.0 - 14.0	Dark Reddish-Brown (2.5 YR 3/2) Silty Clay; 95% Gravel; Moist Becoming Wet @ 12.5 fbgs; Firm	Shale
		Soil Profile Pit SPP-10 Terminated at a Depth of 12.0 Feet Below Ground Surface	

NOTES: ESHGW = Estimated Seasonal High Groundwater, NE = Not Encountered, NA = Not Applicable

WHITESTONE ASSOCIATES, INC.

RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: SPP-11

Project:	**Proposed Commercial/Residential Development**	WAI Project No.:	**WJ05-8098**
Location:	**Route 206 and Route 518; Montgomery, Somerset, NJ**	Client:	**Bohler Engineering, P.C. (NJ)**

				Water Depths/Elevations (feet bgs / feet msl)		**Estimated Seasonal High Groundwater Depths/Elevations (feet bgs / feet msl)**
Surface Elevation:	**152.00 feet msl**	Date Started:	**10/03/05**			
Termination Depth:	**13.5 feet bgs**	Date Completed:	**10/03/05**			
Proposed Location:	**Northern Property**	Logged By:	**P. Howell**			
Excavating/Test Method:	**Test Pit Excavation/ Visual Observation**	Contractor:	**Carroccia**	While Excavating:	**NE**	ESHGW: **NE**
		Equipment:	**Deere 310G**	0.5 Hours:	**NE**	

SAMPLE NUMBER	HORIZON/ DEPTH (feet)	DESCRIPTION OF MATERIALS (Classification)	REMARKS
	0.0 - 1.0 (Ploughed)	Brown (10 YR 4/4) Silty Loam, Moderate Medium Subangular Blocky Structure, Moist, Friable	
	1.0 - 2.5	Brownish Yellow (10 YR 5/3) Silty Clay Loam; 5% Gravel; Massive Structure; Firm	
	2.5 - 6.0	Strong Brown (7.5 YR 5/6) Silty Clay Loam; Angular Blocky to Massive Structure; Slightly Wet; Slightly Plastic	
	6.0 - 11.0	Strong Brown (7.5 YR 5/6) Sandy Clay/Loam; 60% Gravel, Angular Blocky Structure, Moist, Firm	
	11.0 - 13.5	Reddish-Brown (2.5 YR 4/6) Silty Clay Loam; 85% Gravel; Strong, Coarse Angular Blocky Structure; Moist; Firm	
		Soil Profile Pit SPP-11 Terminated at a Depth of 1325.0 Feet Below Ground Surface	

NOTES: ESHGW = Estimated Seasonal High Groundwater, NE = Not Encountered, NA = Not Applicable

WHITESTONE ASSOCIATES, INC.

RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: SPP-12

Project:	**Proposed Commercial/Residential Development**	WAI Project No.:	**WJ05-8098**
Location:	**Route 206 and Route 518; Montgomery, Somerset, NJ**	Client:	**Bohler Engineering, P.C. (NJ)**

				Water Depths/Elevations (feet bgs / feet msl)	**Estimated Seasonal High Groundwater Depths/Elevations (feet bgs / feet msl)**
Surface Elevation:	**150.00 feet msl**	Date Started:	**10/03/05**		
Termination Depth:	**13.5 feet bgs**	Date Completed:	**10/03/05**		
Proposed Location:	**NW Basin**	Logged By:	**P. Howell**		
Excavating/Test Method:	**Test Pit Excavation/ Visual Observation**	Contractor:	**Carroccia**	While Excavating: **7.0/143.0** (P)	ESHGW: **7.0/143.00 (P)**
		Equipment:	**Deere 310G**	Hours: ---	

SAMPLE NUMBER	HORIZON/ DEPTH (feet)	DESCRIPTION OF MATERIALS (Classification)	REMARKS
	0.0 - 1.0 (Ploughed)	Brown (10 YR 4/4) Silty Loam, Moderate Medium Subangular Blocky Structure, Moist, Friable	
	1.0 - 2.8	Yellowish-Red (5 YR 5/6) Silt Loam; 20% Gravel; Strong, Coarse Angular Blocky Structure; Moist; Friable	Rounded Gravel
	2.8 - 7.0	Strong Brown (7.5 YR 5/6) Silty Clay Loam; 15% Gravel; Massive Structure; Moist; Firm	
	7.0 - 12.0	Strong Brown (7.5 YR 5/6) Sandy Clay/Loam; 60% Gravel; Weak, Fine Subangular Blocky Structure; Slightly Wet; Slightly Sticky	Slow Seepage from South Wall @ 7.0 fbgs
	12.0 - 13.5	Reddish-Brown (2.5 YR 4/6) Silty Clay; 90% Gravel; Moderate, Medium Angular Blocky Structure; Firm	
		Soil Profile Pit SPP-12 Terminated at a Depth of 13.5 Feet Below Ground Surface	

NOTES: ESHGW = Estimated Seasonal High Groundwater, NE = Not Encountered, NA = Not Applicable

WHITESTONE ASSOCIATES, INC.

RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: SPP-13

Project:	**Proposed Commercial/Residential Development**	WAI Project No.:	**WJ05-8098**
Location:	**Route 206 and Route 518; Montgomery, Somerset, NJ**	Client:	**Bohler Engineering, P.C. (NJ)**

				Water Depths/Elevations (feet bgs / feet msl)	**Estimated Seasonal High Groundwater Depths/Elevations (feet bgs / feet msl)**
Surface Elevation:	**144.00 feet msl**	Date Started:	**10/03/05**		
Termination Depth:	**14.0 feet bgs**	Date Completed:	**10/03/05**		
Proposed Location:	**SWM**	Logged By:	**P. Howell**		
Excavating/Test Method:	**Test Pit Excavation/ Visual Observation**	Contractor:	**Carroccia**	While Excavating: **NE**	ESHGW: **NE**
		Equipment:	**Deere 310G**	8 Hours: **NE**	

SAMPLE NUMBER	HORIZON/ DEPTH (feet)	DESCRIPTION OF MATERIALS (Classification)	REMARKS
	0.0 - 1.5 (Ploughed)	Brown (10 YR 4/4) Silt Loam, Moderate Medium Subangular Blocky Structure, Moist	
S-1 @ 2.0' (Bag)	1.5 - 3.9	Strong Brown (7.5 YR 5/6) Silty Clay Loam; 20% Gravel; Angular Blocky Structure; Massive Structure; Firm	
S-2 @ 6.0'	3.9 - 14.0	Reddish-Brown (2.5 YR 4/6) Silty Clay Loam; Angular Blocky Structure; Massive Structure; Firm	
		Soil Profile Pit SPP-13 Terminated at a Depth of 14.0 Feet Below Ground Surface	

NOTES: ESHGW = Estimated Seasonal High Groundwater, NE = Not Encountered, NA = Not Applicable

WHITESTONE ASSOCIATES, INC.

RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: STP-1

Project:	Proposed Mixed-Use Development	**WAI Project No.:**	GP1815322.000
Location:	NJSH Route 206 & Georgetown-Franklin Turnpike; Montgomery Township, Somerset Co., NJ	**Client:**	Madison Marquette Realty

Surface Elevation:	± 126.3 feet	**Date Started:**	2/27/2018		**Water Depth (feet bgs)**	**Elevation (feet)**	**Estimated Seasonal High Groundwater Depth (feet bgs)** / **Elevation (feet)**
Termination Depth:	15.0 feet bgs	**Date Completed:**	2/27/2018				
Proposed Location:	SWM Basin South	**Logged By:**	CAW	**During:**	12.0(P)	114.3	
Excavating Method:	Test Pit Excavation	**Contractor:**	CE	**At Completion:**	---	---	**At Completion:** NE / ---
Test Method:	Visual Observation	**Rig Type:**	JD410	**24 Hours:**	---	---	

SAMPLE INFORMATION			DEPTH	HORIZON	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	Number	Type	feet			
			0.0			
				TOPSOIL/PLOUGHED HORIZON	Dark Reddish-Gray (5YR 4/2) SILT LOAM; 5% Gravel; Weak, Granular Structure; Slightly Moist to Moist; Friable; Common Fine Roots; No Mottling; Clear Boundary	
			0.8	RESIDUAL	Reddish-Brown (2.5YR 3/4) SILTY CLAY LOAM; 10% Gravel; Subangular Blocky Structure; Moist to Wet @ 4.0 fbgs; Firm; Sticky; No Roots; No Mottling	
			1.5			Indications of Impeded Drainage @ 4.0 fbgs to ~4.5 fbgs
			4.5			
			5.0		Reddish-Brown (2.5YR 3/4) SILTY CLAY; 5% Gravel; Strong, Massive Structure; Moist; Firm; Plastic; No Roots; No Mottling	
			10.0			
			13.0		Reddish-Brown (2.5YR 3/4) SILTY CLAY LOAM; 20% Gravel; Subangular Blocky Structure; Wet; Firm; No Roots; No Mottling	
			15.0			
					Soil Profile Pit STP-1 Terminated at a Depth of 15.0 Feet Below Ground Surface	
			20.0			
			25.0			

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE ASSOCIATES, INC.

RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: STP-2

Project:	Proposed Mixed-Use Development	**WAI Project No.:**	GP1815322.000
Location:	NJSH Route 206 & Georgetown-Franklin Turnpike; Montgomery Township, Somerset Co., NJ	**Client:**	Madison Marquette Realty

Surface Elevation:	± 125.8 feet	**Date Started:**	2/27/2018		**Water Depth (feet bgs)**	**Elevation (feet)**	**Estimated Seasonal High Groundwater Depth (feet bgs)** / **Elevation (feet)**
Termination Depth:	16.0 feet bgs	**Date Completed:**	2/27/2018				
Proposed Location:	SWM Basin South	**Logged By:**	CAW	**During:**	(P) 5.0	120.8	
Excavating Method:	Test Pit Excavation	**Contractor:**	CE	**At Completion:**	---	---	**At Completion:** --- / ---
Test Method:	Visual Observation	**Rig Type:**	JD410	**24 Hours:**	---	---	

SAMPLE INFORMATION			DEPTH	HORIZON	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	Number	Type	feet			
			0.0	PLOUGHED HORIZON	Dark Brown (5YR 4/2) SILT LOAM; 5% Gravel; Weak, Granular Structure; Moist; Friable; Few Medium Roots; No Mottling; Clear Boundary	
			0.5	RESIDUAL	Reddish-Brown (5YR 4/4) SILTY CLAY LOAM; 10% Gravel; Moist; Few Fine Roots; No Mottling; Clear Boundary	
			5.0 ▽		SILTY CLAY; 10% Gravel; Strong, Massive Structure; Moist; Firm; Sticky; No Mottling; Clear Boundary	Indications of Impeded Drainage @ 4.5 fbgs to 5.5 fbgs
			10.0			
			15.0			
			16.0		Soil Profile Pit STP-2 Terminated at a Depth of 16.0 Feet Below Ground Surface	
			20.0			
			25.0			

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE ASSOCIATES, INC.

RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: STP-3

Project:	Proposed Mixed-Use Development	**WAI Project No.:**	GP1815322.000
Location:	NJSH Route 206 & Georgetown-Franklin Turnpike; Montgomery Township, Somerset Co., NJ	**Client:**	Madison Marquette Realty

Surface Elevation:	± 128.8 feet	**Date Started:**	2/27/2018		**Water Depth (feet bgs)**	**Elevation (feet)**
Termination Depth:	18.0 feet bgs	**Date Completed:**	2/27/2018			
Proposed Location:	SWM Basin South	**Logged By:**	CAW	**During:**	13.5	115.3
Excavating Method:	Test Pit Excavation	**Contractor:**	CE	**At Completion:**	13.5	115.3
Test Method:	Visual Observation	**Rig Type:**	JD410	**24 Hours:**	---	---

Estimated Seasonal High Groundwater Depth (feet bgs) | Elevation (feet)
At Completion: 13.5 | 115.3

SAMPLE INFORMATION			DEPTH	HORIZON	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	Number	Type	feet			
			0.0			
				PLOUGHED HORIZON	Dark Reddish-Gray (5YR 4/2) SILT LOAM; 5% Gravel; Weak, Granular Structure; Moist; Friable; Many Fine Roots; No Mottling; Clear Boundary	
			0.8	RESIDUAL	Strong Brown (7.5YR 5/8) SILTY CLAY LOAM; 5% Gravel; Moderate, Subangular Blocky Structure; Moist; Firm; No Roots; No Mottling; Clear Boundary	
			3.0		Reddish-Brown (2.5YR 3/4) SILTY CLAY LOAM; 10% Gravel; Moderate, Angular Blocky Structure; Firm; No Roots; No Mottling; Smooth Boundary	
			5.0			
			10.0			
			12.0		Reddish-Brown (2.5YR 3/4) SILTY CLAY LOAM; 20% Gravel; Strong, Angular Blocky Structure; Firm; No Roots; No Mottling; Smooth Boundary	
			15.0			
			18.0			
					Soil Profile Pit STP-3 Terminated at a Depth of 18.0 Feet Below Ground Surface	
			20.0			
			25.0			

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE ASSOCIATES, INC.

RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: STP-4

Project:	Proposed Mixed-Use Development	**WAI Project No.:**	GP1815322.000
Location:	NJSH Route 206 & Georgetown-Franklin Turnpike; Montgomery Township, Somerset Co., NJ	**Client:**	Madison Marquette Realty

Surface Elevation:	± 129.0 feet	**Date Started:**	2/27/2018		**Water Depth (feet bgs)**	**Elevation (feet)**	**Estimated Seasonal High Groundwater Depth (feet bgs)** / **Elevation (feet)**
Termination Depth:	15.0 feet bgs	**Date Completed:**	2/27/2018				
Proposed Location:	SWM Basin South	**Logged By:**	CAW	**During:**	13.5	115.5	
Excavating Method:	Test Pit Excavation	**Contractor:**	CE	**At Completion:**	13.5	115.5	**At Completion:** 13.5 / 115.5
Test Method:	Visual Observation	**Rig Type:**	JD410	**24 Hours:**	---	---	

SAMPLE INFORMATION			DEPTH	HORIZON	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	Number	Type	feet			
			0.0			
				PLOUGHED HORIZON	Reddish-Gray (5YR 4/2) SILT LOAM; 5% Gravel; Weak, Granular Structure; Slightly Moist; Friable; Few Medium Roots; No Mottling; Clear Smooth Boundary	
			0.7	RESIDUAL	Reddish-Brown (2.5YR 3/4) SILTY CLAY LOAM; 10% Gravel; Moderate, Medium Subangular Blocky Structure; Moist to Wet; Firm; No Roots; No Mottling; Clear Boundary	
			5.0			
			10.0			
			15.0		Soil Profile Pit STP-4 Terminated at a Depth of 15.0 Feet Below Ground Surface	
			20.0			
			25.0			

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE ASSOCIATES, INC.

RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: STP-5

Project:	Proposed Mixed-Use Development	**WAI Project No.:**	GP1815322.000
Location:	NJSH Route 206 & Georgetown-Franklin Turnpike; Montgomery Township, Somerset Co., NJ	**Client:**	Madison Marquette Realty

Surface Elevation:	± 128.5 feet	**Date Started:**	2/27/2018		**Water Depth (feet bgs)**	**Elevation (feet)**	**Estimated Seasonal High Groundwater Depth (feet bgs)** / **Elevation (feet)**
Termination Depth:	15.0 feet bgs	**Date Completed:**	2/27/2018				
Proposed Location:	SWM Basin South	**Logged By:**	CAW	**During:**	14.0	114.5	
Excavating Method:	Test Pit Excavation	**Contractor:**	CE	**At Completion:**	14.0	114.5	**At Completion:** 14.0 / 114.5
Test Method:	Visual Observation	**Rig Type:**	JD410	**24 Hours:**	---	---	

SAMPLE INFORMATION			DEPTH	HORIZON	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	Number	Type	feet			
			0.0	TOPSOIL	Dark Reddish-Brown (5YR 4/2) SILT LOAM; 10% Gravel; Weak, Granular Structure; Slightly Moist; Friable; Few to Common Roots; No Mottling; Clear Boundary	
			0.1	FILL	Reddish-Brown (5YR 4/4) SILT CLAY LOAM; 10% Gravel; Structureless; Slightly Moist; No Roots; No Mottling; Irregular Boundary	Some Concrete Debris (<2 inches) Fill @ ~4.0 fbgs on ?
			2.5	RESIDUAL	Reddish-Brown (2.5YR 3/4) SILTY CLAY LOAM; 10% Gravel; Moderate, Medium Subangular Blocky Structure; Moist to Wet; Firm; No Roots; No Mottling; Clear Boundary	
			5.0			
			10.0			
			15.0		Soil Profile Pit STP-5 Terminated at a Depth of 15.0 Feet Below Ground Surface	
			20.0			
			25.0			

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE ASSOCIATES, INC.

RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: STP-6

Project:	Proposed Mixed-Use Development	**WAI Project No.:**	GP1815322.000
Location:	NJSH Route 206 & Georgetown-Franklin Turnpike; Montgomery Township, Somerset Co., NJ	**Client:**	Madison Marquette Realty

Surface Elevation:	± 131.0 feet	**Date Started:**	2/27/2018		**Water Depth (feet bgs)**	**Elevation (feet)**	**Estimated Seasonal High Groundwater Depth (feet bgs)** / **Elevation (feet)**
Termination Depth:	17.0 feet bgs	**Date Completed:**	2/27/2018				
Proposed Location:	SWM Basin South	**Logged By:**	CAW	**During:**	16.0	115.0	
Excavating Method:	Test Pit Excavation	**Contractor:**	CE	**At Completion:**	15.0	116.0	**At Completion:** 15.0 / 116.0
Test Method:	Visual Observation	**Rig Type:**	JD410	**24 Hours:**	---	---	

SAMPLE INFORMATION			DEPTH	HORIZON	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	Number	Type	feet			
			0.0	TOPSOIL	Dark Reddish-Gray (5YR 4/2) SILT LOAM; 5% Gravel; Weak, Granular Structure; Slightly Moist; Friable; Few Fine Roots; No Mottling; Wavy Boundary	
			0.3	RESIDUAL	Reddish-Brown (5YR 4/4) SILTY CLAY LOAM; 5% Gravel; Moderate, Medium Subangular Blocky Structure; Slightly Moist; Firm; No Roots; No Mottling; Gradual Boundary	
			3.0		Reddish-Brown (2.5YR 3/4) SILTY CLAY; 5% Gravel; Moderate, Massive Structure; Moist; Firm; NO Roots; No Mottling; Gradual Boundary	
			5.0			
			10.0			
			15.0 ▽			
			▼			
			17.0		Soil Profile Pit STP-6 Terminated at a Depth of 17.0 Feet Below Ground Surface	
			20.0			
			25.0			

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE ASSOCIATES, INC.

RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: STP-7

Project:	Proposed Mixed-Use Development	**WAI Project No.:**	GP1815322.000
Location:	NJSH Route 206 & Georgetown-Franklin Turnpike; Montgomery Township, Somerset Co., NJ	**Client:**	Madison Marquette Realty

Surface Elevation:	± 146.0 feet	**Date Started:**	2/28/2018		**Water Depth (feet bgs)**	**Elevation (feet)**	**Estimated Seasonal High Groundwater Depth (feet bgs)** / **Elevation (feet)**
Termination Depth:	17.5 feet bgs	**Date Completed:**	2/28/2018				
Proposed Location:	SWM Basin North	**Logged By:**	CAW	**During:**	NE	---	
Excavating Method:	Test Pit Excavation	**Contractor:**	CE	**At Completion:**	---	---	**At Completion:** NE / ---
Test Method:	Visual Observation	**Rig Type:**	JD410	**24 Hours:**	---	---	

SAMPLE INFORMATION			DEPTH	HORIZON	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	Number	Type	feet			
			0.0	TOPSOIL	Dark Reddish-Gray (5YR 4/2) SILT LOAM; 10% Gravel; Weak, Subangular Blocky to Granular Structure; Moist; Friable; Few Medium Roots; No Mottling; Gradual Boundary	
			0.2	ALLUVIAL	Strong Brown (7.5YR 5/8) SANDY CLAY LOAM; 15% Gravel, 5% Cobbles; Subangular Blocky Structure; Slightly Moist; Firm; Slightly Cemented; Sticky; No Roots; No Mottling; Gradual Boundary	
			4.5			
			5.0	RESIDUAL	Reddish-Brown (2.5YR 3/4) SILTY CLAY LOAM; 10% Gravel; Subangular Blocky Structure; Moist; Firm; Sticky; No Roots; No Mottling; Clear Boundary	
			10.0			
			15.0			
			16.5	RESIDUAL/WR	Reddish-Brown (2.5YR 3/4) SILTY CLAY LOAM; 60% Gravel	
			17.5			
					Soil Profile Pit STP-7 Terminated at a Depth of 17.5 Feet Below Ground Surface	
			20.0			
			25.0			

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE ASSOCIATES, INC.

RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: STP-8

Project:	Proposed Mixed-Use Development	**WAI Project No.:**	GP1815322.000
Location:	NJSH Route 206 & Georgetown-Franklin Turnpike; Montgomery Township, Somerset Co., NJ	**Client:**	Madison Marquette Realty

Surface Elevation:	± 148.0 feet	**Date Started:**	2/28/2018		**Water Depth (feet bgs)**	**Elevation (feet)**	**Estimated Seasonal High Groundwater Depth (feet bgs)** / **Elevation (feet)**
Termination Depth:	16.0 feet bgs	**Date Completed:**	2/28/2018				
Proposed Location:	SWM Basin North	**Logged By:**	CAW	**During:**	NE	---	
Excavating Method:	Test Pit Excavation	**Contractor:**	CE	**At Completion:**	---	---	**At Completion:** NE / ---
Test Method:	Visual Observation	**Rig Type:**	JD410	**24 Hours:**	---	---	

SAMPLE INFORMATION			DEPTH	HORIZON	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	Number	Type	feet			
			0.0	TOPSOIL	Very Dark Brown (7.5YR 2.5/3) SILT LOAM; 5% Gravel; Weak, Granular Structure; Slightly Moist; Friable; Few Fine Roots; No Mottling; Gradual Boundary	
			0.2	ALLUVIAL	Strong Brown (7.5YR 5/8) SANDY CLAY LOAM; 10% Gravel; Moderate, Granular Structure; Firm; Sticky; No Roots; No Mottling; Gradual Boundary	
			5.0			
			9.5			
			10.0	RESIDUAL	Reddish-Brown (2.5YR 3/4) SILTY CLAY LOAM; 10% Gravel; Subangular Blocky Structure; Moist; Very Firm; No Roots; No Mottling; Gradual Boundary	
			12.5			
				WEATHERED ROCK	Very Dark Red (10YR 2.5/2) SILTY CLAY LOAM; 80% Gravel; Moderate, Strong Platy to Massive Structure; Moist to Dry; Firm; Hard; No Roots; No Mottling; Irregular Boundary	
			15.0			
			16.0			
					Soil Profile Pit STP-8 Terminated at a Depth of 16.0 Feet Below Ground Surface	
			20.0			
			25.0			

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE ASSOCIATES, INC.

RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: STP-9

Project:	Proposed Mixed-Use Development	**WAI Project No.:**	GP1815322.000
Location:	NJSH Route 206 & Georgetown-Franklin Turnpike; Montgomery Township, Somerset Co., NJ	**Client:**	Madison Marquette Realty

Surface Elevation:	± 152.0 feet	**Date Started:**	2/28/2018		**Water Depth (feet bgs)**	**Elevation (feet)**	**Estimated Seasonal High Groundwater Depth (feet bgs)** / **Elevation (feet)**
Termination Depth:	16.0 feet bgs	**Date Completed:**	2/28/2018				
Proposed Location:	SWM Basin East	**Logged By:**	CAW	**During:**	NE	---	
Excavating Method:	Test Pit Excavation	**Contractor:**	CE	**At Completion:**	---	---	**At Completion:** NE / ---
Test Method:	Visual Observation	**Rig Type:**	JD410	**24 Hours:**	---	---	

SAMPLE INFORMATION			DEPTH	HORIZON	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	Number	Type	feet			
			0.0			
				FILL	Multicolored Yellowish-Brown (10YR 5/6) SANDY CLAY LOAM; 15% Gravel; Structureless; Moist; Firm; No Roots; No Mottling; Irregular Boundary	Asphalt, Brick, Concrete Debris
			5.0			
				ALLUVIAL	Strong Brown (7.5YR 5/8) SANDY CLAY LOAM; 10% Gravel; Moderate, Subangular Blocky to Single Grain Structure; Moist; Firm; Sticky; No Roots; No Mottling; Clear Boundary	
			10.0			
			12.0			
				RESIDUAL	Reddish-Brown (2.5YR 3/4) SILTY CLAY LOAM; 15% Gravel; Moderate, Subangular Blocky Structure; Moist; Firm; Sticky; No Roots; No Mottling	
			15.0			
			16.0			
					Soil Profile Pit STP-9 Terminated at a Depth of 16.0 Feet Below Ground Surface	
			20.0			
			25.0			

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE ASSOCIATES, INC.

RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: STP-10

Project:	Proposed Mixed-Use Development	**WAI Project No.:**	GP1815322.000
Location:	NJSH Route 206 & Georgetown-Franklin Turnpike; Montgomery Township, Somerset Co., NJ	**Client:**	Madison Marquette Realty

Surface Elevation:	± 152.0 feet	**Date Started:**	2/28/2018		**Water Depth (feet bgs)**	**Elevation (feet)**	**Estimated Seasonal High Groundwater Depth (feet bgs)** / **Elevation (feet)**
Termination Depth:	16.0 feet bgs	**Date Completed:**	2/28/2018				
Proposed Location:	SWM Basin East	**Logged By:**	CAW	**During:**	NE	---	
Excavating Method:	Test Pit Excavation	**Contractor:**	CE	**At Completion:**	---	---	**At Completion:** --- / ---
Test Method:	Visual Observation	**Rig Type:**	JD410	**24 Hours:**	---	---	

SAMPLE INFORMATION			DEPTH	HORIZON	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	Number	Type	feet			
			0.0			
				FILL	Multicolored Yellowish-Brown (10YR 5/6) SANDY CLAY LOAM; 20% Gravel; Structureless; Friable	Concrete and Brick Debris
			5.0			
			6.0	ALLUVIAL	Strong Brown (7.5YR 5/8) SANDY CLAY LOAM; 10% Gravel; Subangular Blocky Structure; Moist; Firm; Sticky; No Roots; No Mottling; Gradual Boundary	
			10.0			
			14.0	RESIDUAL	Reddish-Brown (2.5YR 3/4) SILTY CLAY LOAM; 15% Gravel; Subangular Blocky Structure; Moist; Firm; No Roots; No Mottling; Gradual Boundary	
			15.0			
			16.0			
					Soil Profile Pit STP-10 Terminated at a Depth of 1.0 Feet Below Ground Surface	
			20.0			
			25.0			

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE ASSOCIATES, INC.

APPENDIX B
Infiltration Test Results

WHITESTONE ASSOCIATES, INC.

INFILTRATION TEST

Client: Madison Marquette Realty Services

Project: Proposed Mixed Use Development

Location: Rte 206 & Georgetown-Franklin Hwy Montgomery Twp, New Jersey

File No.: GP1815322.000

Surf. Elev.: ±126.3 feet

Test Hole No.: P-1 @ STP-1

Date: February 27, 2018

Weather: Clear – 45 to 56 (°F)

Field Engineer: C. Weinhold

Test Depth/Elev.: ±1.0 fbgs/±125.3 feet

Reading No.	Time		Water Level Reading		Water Level Fall (Inches)	Time Interval (Minutes)	Rate of Flow (Minutes/Inch)
	Start	Finish	Start	Finish			
PS	12:25 PM	1:25 PM	12.0	12.0	0.0	60	> 60
1	1:25 PM	3:25 PM	7.0	7.0	0.0	120	> 120
							K = 0.0 iph

WHITESTONE ASSOCIATES, INC.

INFILTRATION TEST

Client: Madison Marquette Realty Services

Project: Proposed Mixed Use Development

Location: Rte 206 & Georgetown-Franklin Hwy Montgomery Twp, New Jersey

File No.: GP1815322.000

Surf. Elev.: ±125.8 feet

Test Hole No.: P-2 @ STP-2

Date: February 27, 2018

Weather: Clear – 45 to 56 (°F)

Field Engineer: C. Weinhold

Test Depth/Elev.: ±1.0 fbgs/±124.8 feet

Reading No.	Time		Water Level Reading		Water Level Fall (Inches)	Time Interval (Minutes)	Rate of Flow (Minutes/Inch)
	Start	Finish	Start	Finish			
PS	12:02 PM	1:02 PM	12.0	12.0	0.0	60	> 60
1	1:02 PM	3:02 PM	7.0	7.0	0.0	120	> 120
							K = 0.0 iph

WHITESTONE ASSOCIATES, INC.

INFILTRATION TEST

Client: Madison Marquette Realty Services

Project: Proposed Mixed Use Development

Location: Rte 206 & Georgetown-Franklin Hwy Montgomery Twp, New Jersey

File No.: GP1815322.000

Surf. Elev.: ±128.8 feet

Test Hole No.: P-3 @ STP-3

Date: February 27, 2018

Weather: Clear – 45 to 56 (°F)

Field Engineer: C. Weinhold

Test Depth/Elev.: ±3.8 fbgs/±125.0 feet

Reading No.	Time		Water Level Reading		Water Level Fall (Inches)	Time Interval (Minutes)	Rate of Flow (Minutes/Inch)
	Start	Finish	Start	Finish			
PS	11:25 PM	12:25 PM	12.0	11.5	0.5	60	120
1	12:25 PM	2:25 PM	7.0	7.0	0.0	120	> 120
							K = 0.0 iph

WHITESTONE ASSOCIATES, INC.

INFILTRATION TEST

Client: Madison Marquette Realty Services

Project: Proposed Mixed Use Development

Location: Rte 206 & Georgetown-Franklin Hwy Montgomery Twp, New Jersey

File No.: GP1815322.000

Surf. Elev.: ±129.0 feet

Test Hole No.: P-4 @ STP-4

Date: February 27, 2018

Weather: Clear – 45 to 56 (°F)

Field Engineer: C. Weinhold

Test Depth/Elev.: ±4.0 fbgs/±124.0 feet

Reading No.	Time		Water Level Reading		Water Level Fall (Inches)	Time Interval (Minutes)	Rate of Flow (Minutes/Inch)
	Start	Finish	Start	Finish			
PS	10:12 AM	11:12 AM	12.0	12.0	0.0	60	> 60
1	11:12 AM	1:12 PM	7.0	7.0	0.0	120	> 120
							K = 0.0 iph

WHITESTONE ASSOCIATES, INC.

INFILTRATION TEST

Client: Madison Marquette Realty Services

Project: Proposed Mixed Use Development

Location: Rte 206 & Georgetown-Franklin Hwy Montgomery Twp, New Jersey

File No.: GP1815322.000

Surf. Elev.: ±128.5 feet

Test Hole No.: P-5 @ STP-5

Date: February 27, 2018

Weather: Clear – 45 to 56 (°F)

Field Engineer: C. Weinhold

Test Depth/Elev.: ±5.5 fbgs/±123.0 feet

Reading No.	Time		Water Level Reading		Water Level Fall (Inches)	Time Interval (Minutes)	Rate of Flow (Minutes/Inch)
	Start	Finish	Start	Finish			
PS	9:07 AM	10:07 AM	12.0	12.0	0.0	60	> 60
1	10:07 AM	12:07 PM	7.0	7.0	0.0	120	> 120
							K = 0.0 iph

WHITESTONE ASSOCIATES, INC.

INFILTRATION TEST

Client: Madison Marquette Realty Services

Project: Proposed Mixed Use Development

Location: Rte 206 & Georgetown-Franklin Hwy Montgomery Twp, New Jersey

File No.: GP1815322.000

Surf. Elev.: ±131.0 feet

Test Hole No.: P-6 @ STP-6

Date: February 27, 2018

Weather: Clear – 45 to 56 (°F)

Field Engineer: C. Weinhold

Test Depth/Elev.: ±8.0 fbgs/±123.0 feet

Reading No.	Time		Water Level Reading		Water Level Fall (Inches)	Time Interval (Minutes)	Rate of Flow (Minutes/Inch)
	Start	Finish	Start	Finish			
PS	8:15 AM	9:15 AM	12.0	11.0	1.0	60	60
1	9:15 AM	11:15 AM	7.0	7.0	0.0	120	> 120
							K = 0.0 iph

WHITESTONE ASSOCIATES, INC.

INFILTRATION TEST

Client: Madison Marquette Realty Services

Project: Proposed Mixed Use Development

Location: Rte 206 & Georgetown-Franklin Hwy Montgomery Twp, New Jersey

File No.: GP1815322.000

Surf. Elev.: ±146.0 feet

Test Hole No.: P-7 @ STP-7

Date: February 28, 2018

Weather: Clear – 37 to 61 (°F)

Field Engineer: C. Weinhold

Test Depth/Elev.: ±6.0 fbgs/±140.0 feet

Reading No.	Time		Water Level Reading		Water Level Fall (Inches)	Time Interval (Minutes)	Rate of Flow (Minutes/Inch)
	Start	Finish	Start	Finish			
PS	10:45 AM	11:45 AM	12.0	12.0	0.0	60	> 60
1	11:45 AM	1:25 PM	7.0	7.0	0.0	120	> 120
							K = 0.0 iph

WHITESTONE ASSOCIATES, INC.

INFILTRATION TEST

Client: Madison Marquette Realty Services

Project: Proposed Mixed Use Development

Location: Rte 206 & Georgetown-Franklin Hwy Montgomery Twp, New Jersey

File No.: GP1815322.000

Surf. Elev.: ±148.0 feet

Test Hole No.: P-8 @ STP-8

Date: February 28, 2018

Weather: Clear – 37 to 61 (°F)

Field Engineer: C. Weinhold

Test Depth/Elev.: ±8.0 fbgs/±140.0 feet

Reading No.	Time		Water Level Reading		Water Level Fall (Inches)	Time Interval (Minutes)	Rate of Flow (Minutes/Inch)
	Start	Finish	Start	Finish			
PS	11:26 AM	12:26 PM	12.0	12.0	0.0	60	> 60
1	12:26 PM	2:26 PM	7.0	7.0	0.0	120	> 120
							K = 0.0 iph

WHITESTONE ASSOCIATES, INC.

INFILTRATION TEST

Client: Madison Marquette Realty Services

Project: Proposed Mixed Use Development

Location: Rte 206 & Georgetown-Franklin Hwy Montgomery Twp, New Jersey

File No.: GP1815322.000

Surf. Elev.: ±152.0 feet

Test Hole No.: P-9 @ STP-9

Date: February 28, 2018

Weather: Clear – 37 to 61 (°F)

Field Engineer: C. Weinhold

Test Depth/Elev.: ±7.0 fbgs/±145.0 feet

Reading No.	Time		Water Level Reading		Water Level Fall (Inches)	Time Interval (Minutes)	Rate of Flow (Minutes/Inch)
	Start	Finish	Start	Finish			
PS	8:35 AM	9:35 AM	12.0	10.0	2.0	60	30
1	9:35 AM	10:35 AM	7.0	6.5	0.5	60	120
2	10:35 AM	11:35	7.0	6.75	0.25	60	240
3	11:35 AM	11:35 PM	7.0	7.0	0.0	60	> 120
							K = 0.0 iph

WHITESTONE ASSOCIATES, INC.

INFILTRATION TEST

Client: Madison Marquette Realty Services

Project: Proposed Mixed Use Development

Location: Rte 206 & Georgetown-Franklin Hwy Montgomery Twp, New Jersey

File No.: GP1815322.000

Surf. Elev.: ±152.0 feet

Test Hole No.: P-10 @ STP-10

Date: February 28, 2018

Weather: Clear – 37 to 61 (°F)

Field Engineer: C. Weinhold

Test Depth/Elev.: ±7.0 fbgs/±145.0 feet

Reading No.	Time		Water Level Reading		Water Level Fall (Inches)	Time Interval (Minutes)	Rate of Flow (Minutes/Inch)
	Start	Finish	Start	Finish			
PS	8:50 AM	9:50 AM	12.0	12.0	0.0	60	> 60.0
1	9:50 AM	11:50 AM	7.0	7.0	0.0	120	> 120.0
							K = 0.0 iph

WHITESTONE ASSOCIATES, INC.

APPENDIX C
Supplemental Information (USCS, Terms and Symbols)

WHITESTONE ASSOCIATES, INC.
Environmental & Geotechnical Engineers & Consultants

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UNIFIED SOIL CLASSIFICATION SYSTEM

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
			GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS	CLEAN SAND (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMITS LESS THAN 50	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMITS GREATER THAN 50	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS FOR SAMPLES WITH 5% TO 12% FINES

GRADATION*

% FINER BY WEIGHT

TRACE..... 1% TO 10%
LITTLE..... 10% TO 20%
SOME..... 20% TO 35%
AND..... 35% TO 50%

COMPACTNESS*
Sand and/or Gravel

RELATIVE DENSITY

LOOSE. ..... 0% TO 40%
MEDIUM DENSE.... 40% TO 70%
DENSE..... 70% TO 90%
VERY DENSE..... 90% TO 100%

CONSISTENCY*
Clay and/or Silt

RANGE OF SHEARING STRENGTH IN POUNDS PER SQUARE FOOT

VERY SOFT..... LESS THAN 250
SOFT..... ..... 250 TO 500
MEDIUM..... 500 TO 1000
STIFF..... 1000 TO 2000
VERY STIFF..... 2000 TO 4000
HARD..... GREATER THAN 4000

** VALUES ARE FROM LABORATORY OR FIELD TEST DATA, WHERE APPLICABLE. WHEN NO TESTING WAS PERFORMED, VALUES ARE ESTIMATED.*

L:\Geotechnical Forms and References\Reports\USCSTRMSSYM PA.docx

Other Office Locations:

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GEOTECHNICAL TERMS AND SYMBOLS

SAMPLE IDENTIFICATION

The Unified Soil Classification System is used to identify the soil unless otherwise noted.

SOIL PROPERTY SYMBOLS

N: Standard Penetration Value: Blows per ft. of a 140 lb. hammer falling 30" on a 2" O.D. split-spoon.
Qu: Unconfined compressive strength, TSF.
Qp: Penetrometer value, unconfined compressive strength, TSF.
Mc: Moisture content, %.
LL: Liquid limit, %.
PI: Plasticity index, %.
δd: Natural dry density, PCF.
▼: Apparent groundwater level at time noted after completion of boring.

DRILLING AND SAMPLING SYMBOLS

NE: Not Encountered (Groundwater was not encountered).
SS: Split-Spoon - 1 ⅜" I.D., 2" O.D., except where noted.
ST: Shelby Tube - 3" O.D., except where noted.
AU: Auger Sample.
OB: Diamond Bit.
CB: Carbide Bit
WS: Washed Sample.

RELATIVE DENSITY AND CONSISTENCY CLASSIFICATION

Term (Non-Cohesive Soils)	Standard Penetration Resistance
Very Loose	0-4
Loose	4-10
Medium Dense	10-30
Dense	30-50
Very Dense	Over 50

Term (Cohesive Soils)	Qu (TSF)
Very Soft	0 - 0.25
Soft	0.25 - 0.50
Firm (Medium)	0.50 - 1.00
Stiff	1.00 - 2.00
Very Stiff	2.00 - 4.00
Hard	4.00+

PARTICLE SIZE

Boulders	8 in.+	Coarse Sand	5mm-0.6mm	Silt	0.074mm-0.005mm
Cobbles	8 in.-3 in.	Medium Sand	0.6mm-0.2mm	Clay	-0.005mm
Gravel	3 in.-5mm	Fine Sand	0.2mm-0.074mm		

Other Office Locations:

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