Drainage Report:

Earth Removal Operation Teel Road Winchendon, MA

Submitted to:

Town of Winchendon Planning Board & Conservation Commission

February 19, 2024

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Earth Removal Operation Teel Road Winchendon, Massachusetts STORM WATER MANAGEMENT DESIGN February 19, 2024

INTRODUCTION

The proposed project site is located off Teel Road located in Winchendon, Massachusetts and is situated in the Industrial (I) zoning district. An active earth removal operation was previously conducted on this property, however the earth removal permit is no longer transferable upon the sale of the land, therefore a new permit application is being sought by the land owner. The site is bound by Teel Road to the North, Bemis Road to the West, and undeveloped land to the South and East. Refer to **Figure 1** for the Locus Plan.

The proposed project includes the development of this property to support a gravel manufacturing and processing operation for Powell Stone & Gravel. Though portions of the property were previously an active earth removal operation and has remained open since the 1990s, the existing conditions for the site were molded as if it was entirely comprised of woods. Under the proposed condition the site will be modeled as stabilized with loam & seed.

The hydrologic study area is comprised of approximately 23.4 acres. Based on the USDA Natural Resources Conservation Service soil survey the site is comprised of Becket-Skerry Association which is a Hydrologic Soil Group (HSG) "C" Soil, unclassified Gravel Pits, Colton gravelly loamy sand, which is a HSG "A" Soil, and Naumburg find sandy loam, which is a HSG "A". Soil borings were conducted in July of 2023 by Geosearch, Inc. and their findings determined that the site contained sand with gravel. Individual test pits have not yet been conducted within the proposed infiltration basin locations, however once the earth removal operations are completed in their vicinity they will be conducted, and the information will be provided for their review to validate the drainage design. Based on the findings of Geosearch, Inc., the Rawls Rate for an "A" sand soil (8.27 in/hr) has been used in this analysis for the at grade infiltration basins as detailed within the MA Stormwater Handbook. Refer to **Appendix A** for the NRCS soil survey and boring information.

EXISTING CONDITIONS

As described above, the existing site is a former earth removal operation on an undeveloped site and has been modeled entirely as woods with the exception of the gravel access road to the property. As such, the existing hydrologic study area is comprised of approximately 23.06 acres of woods and 0.34 acres of gravel. The existing site is made up of seven watershed areas.

Area 1 includes the western most cleared area as you enter the site from Teel Road and is located between the A-series and P-series wetlands. This area sheet flows to A-series wetland system, which is considered Point of Analysis 1 (POA-1).

Area 2 includes the northern area of the cleared land adjacent to the F-series wetlands. This area sheet flows to POA-1.

Area 3 includes the southern area immediately adjacent to Area 2. This area sheet flows to the E-series wetland system, which is considered Point of Analysis 2 (POA-2).

Area 4 includes the southern most area immediately adjacent to Area 3 and surrounded by the D-series wetland system. This area sheet flows directly to the D-series wetland system which is considered Point of Analysis 3 (POA-3).

Area 5 includes the eastern most side of the parcel. This area sheet flows directly to POA-2.

Area 6 includes the area immediately adjacent to Area 5. This area sheet flows directly to POA-3.

Area 7 includes the gravel access roadway leading into the property. This area sheet flows directly to POA-1. Refer to **Figure 2** – Existing Watershed Plan.

PROPOSED CONDITIONS

Under proposed conditions, the site is comprised of approximately 22.92 acres of grass and 0.48 acres of gravel road. The post-development run-off rates will be mitigated to less than the pre-development run-off rates for all design storm events. The proposed site is comprised of 6 watershed areas.

Area 1 includes the majority of western most cleared area as you enter the site from Teel Road. This area sheet flows to infiltration basin 1. This basin is then conveyed to infiltration basin 2, and ultimately to the A-series wetland system, which is considered Point of Analysis 1 (POA-1).

Area 2 includes the area north of Area 1. This area sheet flows to infiltration basin 2. Ultimately, this basin discharges to POA-1

Area 3 includes the majority of the developed area between the P-series and F-series. This area sheet flows to infiltration basin 3. Ultimately, this basin discharges to POA-1. Area 4 includes the area south of Area 3. This area sheet flows to infiltration basin 4. Ultimately, this basin discharges to the D-series wetland, which is considered Point of Analysis 3 (POA-3).

Area 5 includes the eastern most side of the parcel. This area sheet flows infiltration basin 5. Ultimately, this basin discharges to POA-2.

Area 6 includes the gravel access roadway leading into the property. This area sheet flows directly to POA-1. Refer to **Figure 3** – Proposed Watershed Plan.

STORMWATER MANAGEMENT

The proposed drainage design was based on the Massachusetts Department of Environmental Protection (MADEP) Stormwater Management Standards (Stormwater Policy, latest edition). The standards have been revised to promote increased stormwater recharge, the treatment of more runoff from polluting land uses, pollution prevention, the removal of illicit discharges to stormwater management systems, and improved operation and maintenance of stormwater best management practices (BMP's). The following summarizes the proposed project's compliance with both the MADEP Stormwater Management Standards and the Town of Westminster Stormwater Bylaws.

Standard #1 Untreated Storm Water: No new untreated storm water conveyances have been proposed to discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth. Storm water Best Management Practices (BMP's), such as infiltration trenches and at grade infiltration basins are proposed within the project to provide stormwater quality control prior to discharging runoff from the site.

Standard #2 Post-Development Peak Discharge Rates: Storm water BMP's have been developed to attenuate the peak discharge rates for the 2, 10, 25, 50 and 100 year, 24-hour storm events. Refer to **Table 1** for the pre and post-development peak discharge rates.

Standard #3 Recharge to Groundwater: As there is no impervious area proposed for this project, there will be no loss of recharge.

Standard #4 80 Percent TSS Removal: As there is no impervious area proposed for this project, there will be no TSS removal required. However, the proposed infiltration trenches and infiltration basins have been designed to pretreat the stormwater runoff prior to infiltrating into the ground.

Standard #5 Higher Potential Pollutant Loads: The proposed project is not classified by the DEP as a source for higher pollutant loads. Though the proposed work includes the removal of sand and gravel, the site is not located within a Zone II or Zone A and removal will not occur within 4 feet of the historical high water table.

Standard #6 Protection of Critical Areas: The project site is not considered a critical area as defined by the MA DEP.

Standard #7 Redevelopment Project: The project is not considered a redevelopment site.

Standard #8 Erosion/Sediment Control: Erosion and sediment controls are incorporated into the project design to prevent erosion, control sediment movement, and stabilize exposed soils during construction. During construction, control practices will be utilized such as the placement of straw wattles / bales barriers, silt fencing, and the implementation of soil stabilization practices. These control measures will be periodically checked and maintained as necessary throughout the entire construction duration.

Standard #9 Operation/Maintenance Plan: A long term operation and maintenance plan has been developed to ensure the stormwater management system will function as designed. See **Appendix A** for the Operation and Maintenance Plan.

Standard #10 Illicit Discharges to Stormwater Management System: The Stormwater Management System associated with this property has been designed such that prior to storm water runoff discharging from the site, it is treated through a series of best management practices. To the Engineer's knowledge, there are no known or designed non-storm water discharges that are or will be connected to the storm water collection system that would convey pollutants directly to groundwater or surface waters. Refer to **Appendix A** for the Illicit Discharge Compliance Statement.

The proposed design meets **all** applicable DEP Stormwater Management Standards and the Town of Westminster Stormwater Bylaws. Refer to **Appendix A** for the MADEP Stormwater Checklist.

DRAINAGE COLLECTION SYSTEM DESIGN

The proposed drain pipe network is composed of a 12" RCP pipe that connects the two infiltration basins located in the phase 5 area. The pipe layout is depicted on the Phase 5 Plan in the plan set.

Pipe size was determined using the Rational Method to determine contributing flows to catch basin, as well as the Manning's Equation to calculate pipe flows (refer to **Appendix A** for pipe sizing calculations.)

The following criteria were used to design the pipe network:

- Pipe sizes are based on flows for the 100-year storm frequency.
- Storm drain pipe shall be RCP unless otherwise noted.
- Pipe flow velocities are maintained at a maximum of 12 fps.

STORMWATER QUANTITY

The stormwater facilities proposed will include at grade infiltration basins and infiltration trenches. The proposed basins will attenuate the peak runoff rates for the 2, 10, 25, 50 and 100-year, 24-hour storm events, and all discharges will be mitigated to below existing conditions.

Hydrologic analyses were performed utilizing the computer program, HydroCAD[©]. In order to determine the peak rate of discharge for existing and proposed conditions, runoff hydrographs were generated for the 2-, 10-, 25-, 50- and 100-year, 24-hour storm events using the SCS TR-20 Method and Type III rainfall distribution (refer to **Appendix B** for the existing and proposed HydroCAD models). Under proposed conditions, the post development runoff hydrographs were flood routed through the proposed stormwater management facilities.

Table 1 compares peak runoff rates for the 2-year, 10-year, 25-year, 50-year and 100-year storm events for existing and proposed conditions.

Storm Event	Existing Flow (cfs)	Proposed Flow (cfs)	Existing Flow (cfs)	<u> </u>		Proposed Flow (cfs)
	POA-1	POA-1	POA-2	POA-2	POA-3	POA-3
2-Year	0.51	0.00	0.00	0.00	0.00	0.00
10-Year	1.24	0.00	0.00	0.00	0.00	0.00
25-Year	1.88	0.00	0.08	0.00	0.02	0.00
50-Year	2.51	0.00	0.33	0.00	0.07	0.00
100-Year	3.28	2.43	1.77	0.00	0.39	0.00

Table 1 Comparison of Peak Runoff Rates

As shown in Table 1, peak runoff rates under proposed conditions are less than existing conditions for the 2-, 10-, 25-, 50-year and 100-year storm events. Therefore, the proposed stormwater design complies with Standard #2 of the MA DEP Stormwater Management Policy.

STORMWATER QUALITY

Stormwater runoff will be treated to address water quality concerns through the use of MADEP approved BMP's. The following BMP's will be provided on-site and when combined will achieve 80% TSS removal: infiltration trenches and infiltration basins. (See **Appendix A** for TSS Removal Worksheets)

Infiltration Trenches

- The stone filter layer shall be inspected every 6 months and after every major storm event to verify no erosion has occurred and the system is functioning as desired.
- If it is found that the stone filter layer is clogged with sediment, the pea stone and filter fabric should be replaced on an as needed basis.
- All sediments and hydrocarbons will be properly handled and disposed of off-site, in accordance with local, state, and federal guidelines and regulations.

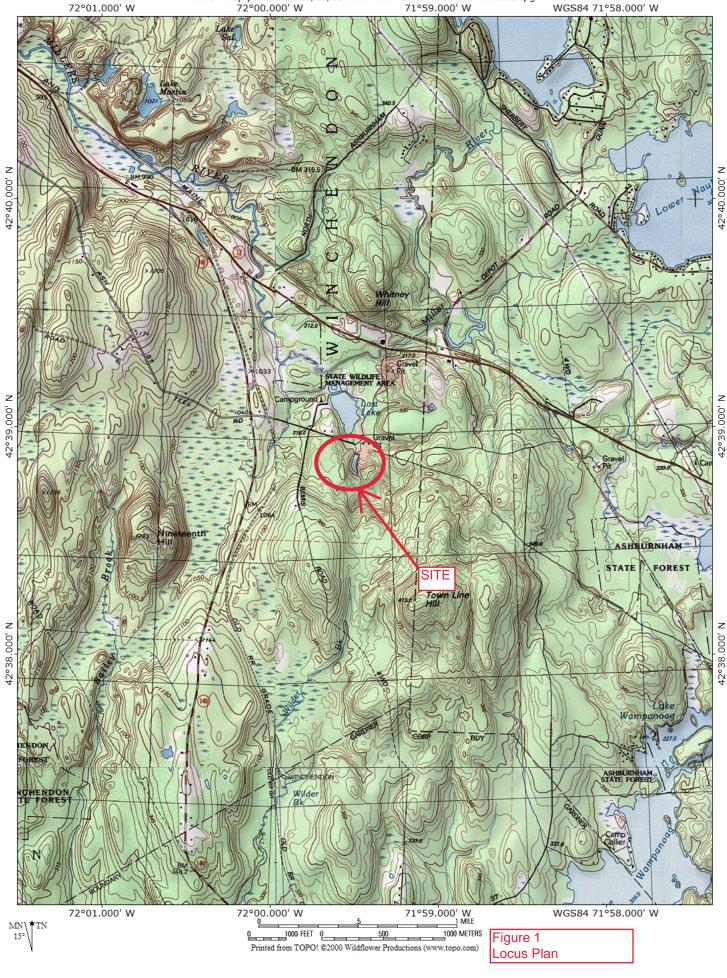
At Grade Infiltration Basin

The infiltration basin will be inspected after several storm events to confirm drainage system functions, bank stability, and vegetation growth. Any problems will be addressed immediately. The basin will be inspected for property operation at least once per year. Inspections will be conducted during wet weather to determine if the basin is functioning properly. At least twice during the growing season, the upper-stage, side slopes, and embankment will be mowed. Accumulated trash and debris will be removed. Sediment will be removed from the basin as necessary, at least once every 10 years.

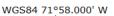
CONCLUSION

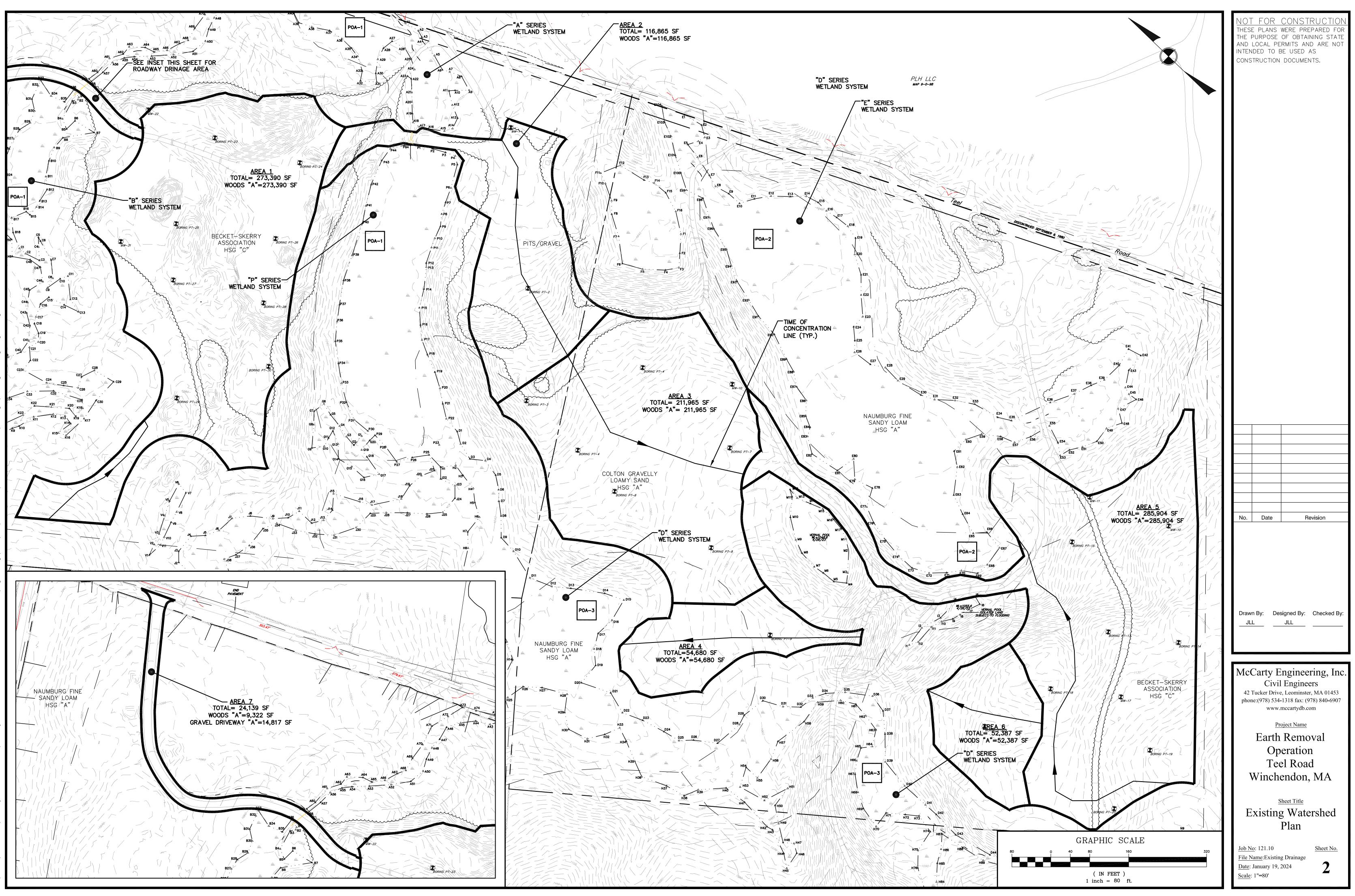
The proposed stormwater management plan for the project addresses both water quantity and quality and conforms to the standards outlined in the MADEP Stormwater Management Policy.

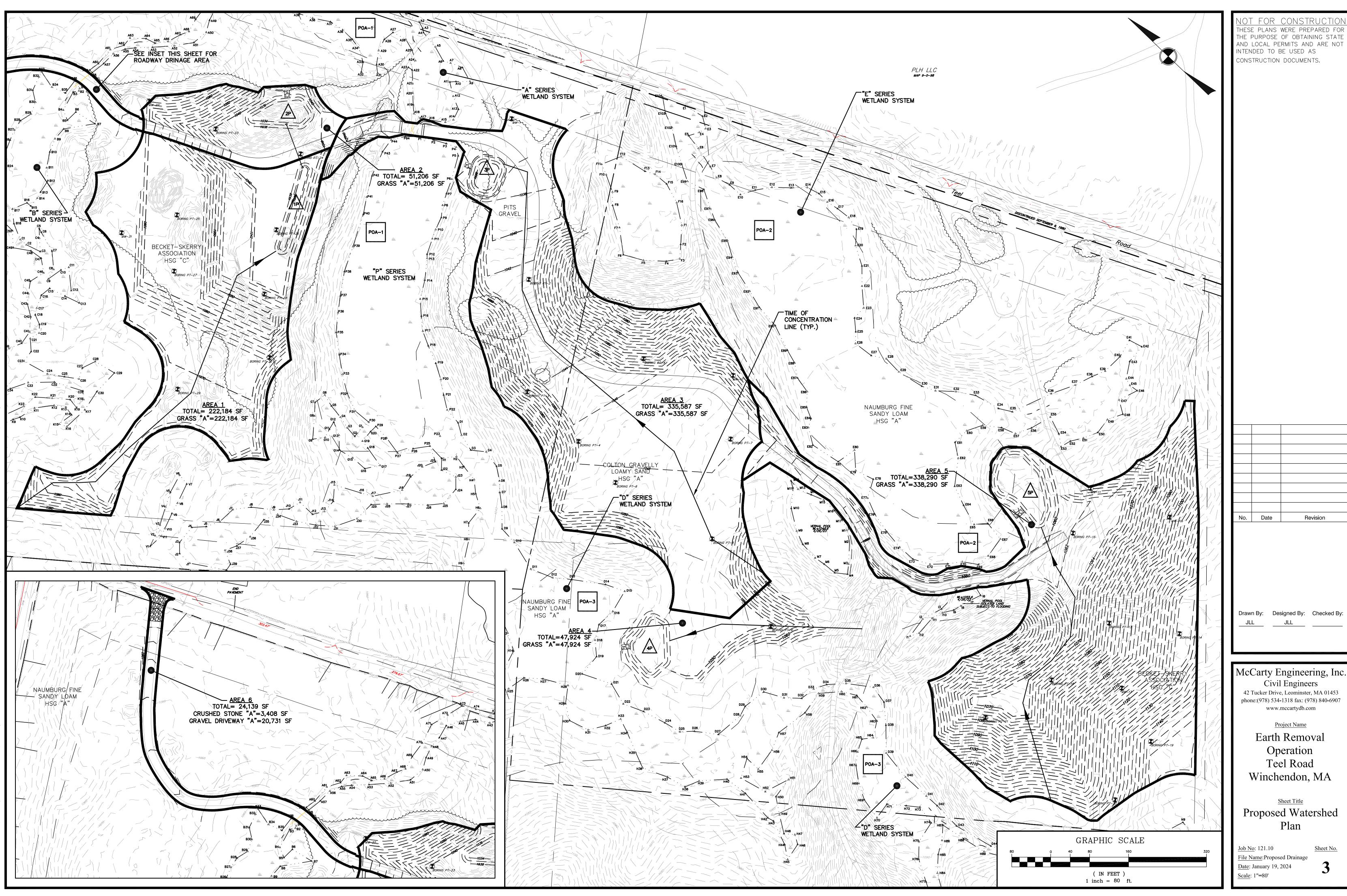
Figures



TOPO! map printed on 10/20/23 from "NRTHEAST.TPO" and "Untitled.tpg" 72°00.000' W 71°59.000' W





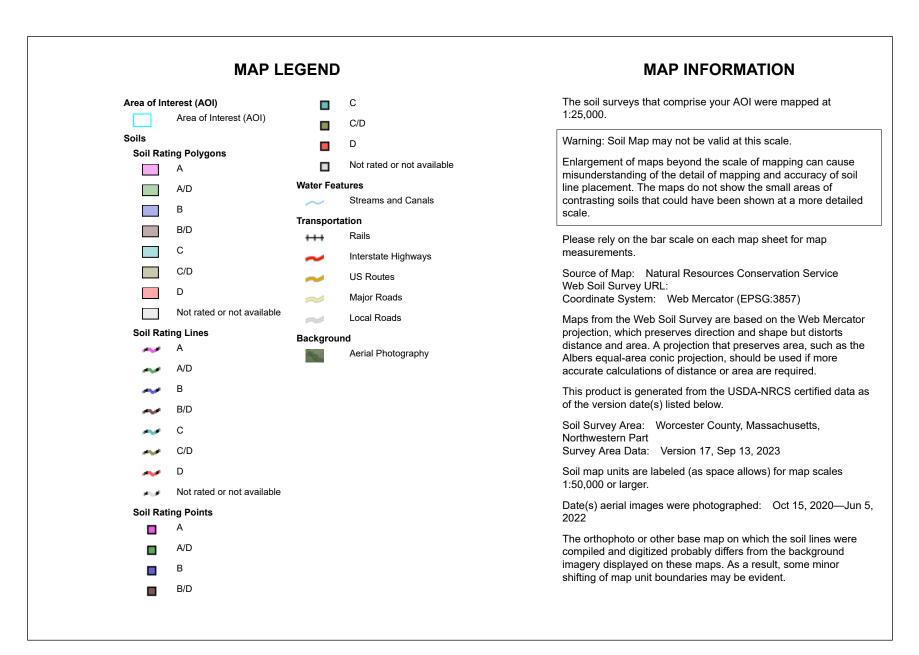


Appendix A

NRCS Soil Survey



USDA Natural Resources Conservation Service





Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
29B	Naumburg fine sandy loam, 0 to 5 percent slopes	A/D	9.9	12.2%
282B	Colton gravelly loamy sand, 3 to 8 percent slopes	A	8.8	10.8%
282C	Colton gravelly loamy sand, 8 to 15 percent slopes	A	15.4	19.0%
600	Pits, gravel		8.7	10.7%
905C	Peru-Marlow association, 3 to 15 percent slopes, extremely stony	C/D	2.1	2.6%
908C	Becket-Skerry association, 0 to 15 percent slopes, extremely stony	С	36.3	44.7%
Totals for Area of Inter	rest	81.3	100.0%	

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition Component Percent Cutoff: None Specified Tie-break Rule: Higher Soil Borings

Clien	nt:	Powell Stone &	Gravel			Date:	7/10/23	B Page #	1 of 1	
Loca	tion	Teel Road, Win	chendown, MA							
Borin		Ground	Date	Date		Drilling		Eng/Hydrol		
No. B	1	Elev	Start 7/10/23	Complete		Foreman:	Mike DeAmicis	Geologist:		
D		Sam	ple Data		~ ·	~				
E P		Sample	Blows	Rec.	Casing	Strata		111	• • • • • •	
-	NO.	Depth(ft.)	6" Penetration	Inches	Blows	Change	VI	isual Identificat	ion of Soil	and/or Rock Strata
Н			2 4 2 2		Per Ft.	Depth				
	1	0-2'	3-4-3-3	19"			Dry, loose,	FINE SAND		
_			25.20.10.20				_			
5	2	5'-7'	25-30-18-20	17"			Dry, dense,	COARSE GRA	AVEL and	fine sand, trace silt
10	3	10'-12'	16-21-20-24	20"			Dry, dense,	COARSE GRA	AVEL and	fine sand, trace silt
							B1 Auger r	ofucal at 13'		
							-			
								d 6' <i>away</i> Aug		at 12
15							No water up	oon completion		
20										
25										
30										
35										
-										
Type Of Boring: Casing Size Hollow Stem Auger Size 4.25"							Standard Pene	tration Test (ST) =	140lb hamm	er falling 30"
Proportion Percentages Granular Soils (blows per ft.))			oils (blows p		
		ace 0 to 10%	0 to 4 Very Loose		30 to 50 l			0 to 2 Very		8 to 15 Stiff
	Son	ne 10 to 40%	4 to 10 Loose		Over 50	Very Dens	e	2 to 4 Soft		15 to 30 Very Stiff
	An	d 40 to 50%	10 to 30 Medium De	nse				4 to 8 Medi	ium Stiff	Over 30 Hard
	And 40 to 50% 10 to 50 Medium Dense Blows are per 6" taken with an 24" long						V 1 3/8" I D			

Clie	nt:	Powell Stone &	Gravel			Date:	7/10/23 Page # 1 of 1	
Loca	tion	Teel Road, Win	chendown, MA				ž.	
Borin	g	Ground	Date	Date		Drilling	Eng/Hydrol.	
#MW	1	Elev	Start 7/10/23	Complete		Foreman:	: Mike DeAmicis Geologist:	
D E		Sam	ple Data	D	a · ·	<u>.</u>		
ь Р		Sample	Blows	Rec.	Casing Blows	Strata Change	Visual Identification of Soil and/or Rock Strata	
-	NO.	Depth(ft.)	6" Penetration	Inches	Per Ft.	Depth	v isual fuentification of Son anu/or Rock Strata	
н			1122	40"	TCI FL	Depti		
	1	0-2'	1-1-2-2	18"			Dry, loose, FINE SAND	
-	-		4 12 14 14	0.4"		1100		
5	2	5'-7'	4-12-14-14	21"			Wet, medium dense, FINE TO MEDIUM SAND, some silt,	
							little gravel	
40	2	401.401	2244	0.4"				
10	3	10'-12'	3-3-4-4	24"			Wet, loose, FINE SAND, some silt, trace gravel	
							Set MW-1 at 13' (10' screen 7'riser)	
							END OF BORING AT 13'	
45								
15								
~ ~								
20								
05								
25								
30								
~-								
35				L				
Type Of Boring: Casing Size Hollow Stem Auger Size 4.25"								
							Standard Penetration Test (ST) = 140lb hammer falling 30"	
P		tion Percentages		Soils (blo			Cohesive Soils (blows per ft.)	
	•		30 to 50 l		0 to 2 Very Soft 8 to 15 Stiff se 2 to 4 Soft 15 to 30 Very Stiff			
		ne 10 to 40%	4 to 10 Loose		Over 50	Very Dens		
And 40 to 50% 10 to 30 Medium Dense Blows are per 6" taken with an 24"						X 1" OD	4 to 8 Medium Stiff Over 30 Hard	

Clier	ent: Powell Stone & Gravel Date: 7/10/23 Page # 1 of 1										
Loca	tion	Teel Road, Win	chendown, MA					C			
Borin		Ground	Date	Date		Drilling		Eng/Hydrol.			
#MW	10	Elev	Start 7/10/23	Complete		Foreman:	Mike DeAmicis	Geologist:			
D		Sam	ple Data		~ .	~					
E P		Sample	Blows	Rec.	Casing	Strata	T 71	111	60.11		
	NO.	Depth(ft.)	6" Penetration	Inches	Blows	Change	Vis	sual Identification	n of Soil :	and/or Rock Strata	
Н	110.				Per Ft.	Depth					
	1	0-2'	2-3-3-2	18"			Dry, loose, F	INE SAND, little	e gravel		
5	2	5'-7'	3-11-13-19	14"			Drv medium	dense MEDIU	м то со	DARSE SAND and gravel,	
•	_	<u> </u>	0 11 10 17								
							trace silt				
10	2	101 101	4-3-4-5	18"							
10	3	10'-12'	4-3-4-3	18							
15	4	15'-17'	6-14-16-14	13"							
20	5	20'-22'	7-11-17-15	17"		H2O	Wet, mediun	n dense, FINE S	SAND, litt	tle gravel, trace silt	
										-	
25	6	25'-27'	4-7-13-15	17"			Wet, mediun	n dense, FINE T	O MEDI	UM COARSE SAND	
							and gravel, t				
	7	27'-29'	12-12-14-13	20"			_		011	· ~)	
	7	27-29	12-12-14-13	20			Set IVIV-10 a	at 27' (10'screer		,	
								END OF	BORING	G AT 27'	
30											
35											
55											
Type	Of R4	oring: Casing Size	Hollow Sto	m Auger S	l Size 4 25"		Standard Penet	ration Test (ST) = 14	0lh hamme	r falling 30"	
Type Of Boring: Casing Size Hollow Stem Auger Size 4.25" Proportion Percentages Granular Soils (blows per ft.)						1		Cohesive Soil			
1	-	ace 0 to 10%	0 to 4 Very Loose	5013 (010	30 to 50 l			0 to 2 Very So		8 to 15 Stiff	
					Very Dens	e	2 to 4 Soft	***	15 to 30 Very Stiff		
	And 40 to 50% 10 to 30 Medium Dense			nse	5701 50	, cry Dells	~	4 to 8 Medium	n Stiff	Over 30 Hard	
	4 11		Blows are per 6" tak		n 24" Iona	X 2" OD	X 1 3/8" I.D.	7 to o Micului		Stor of Haru	

Clien	nt:	Powell Stone &	Gravel			Date:	7/ /2023 Page # 1 of 1
Loca	tion	Teel Road, Win	chendown, MA				
Borin	g	Ground	Date	Date		Drilling	Eng/Hydrol.
#MW	-11	Elev	Start 7/ /2023	Complete		Foreman:	: Mike DeAmicis Geologist:
D		Sam	ple Data	-	a ·	<u>.</u>	
E P		Sample	Blows	Rec.	Casing	Strata	Visual Identification of Soil and/or Rock Strata
Т	NO.	Depth(ft.)	6" Penetration	Inches	Blows Per Ft.	Change Depth	v isual Identification of Soil and/of Rock Strata
Н		0-2"	1-1-1-1	16"	TCI FL	Depti	
	1	0-2	1-1-1-1	10			Moist, very loose, FINE TO MEDIUM SAND, some gravel,
							trace silt
5	2	5'-6'8"	11-36-60/2"	11"			Moist, very dense, FINE TO MEDIUM COARSE SAND and
5	2	0-00	11 50 00/2				-
							gravel, trace silt
							FINE SAND at 7'
						H2O	
10	3	10'-12'	17-35-41-45	17"			Wet,very dense, FINE SAND, trace silt
10	5	10-12	17-33-41-43	17			Wet, very dense, Thive OAND, trace she
15	4	15'-17'	10-30-31-35	22"			Wet, very dense, FINE SAND, trace silt
15	4	13-17	10-30-31-33	22			
							Set MW-11 at 15' (10' screen, 9' riser)
							END OF BORING AT 17'
							PT-11 Very boney 0-7'
20							· · · · · · · · · · · · · · · · · · ·
20							
				<u> </u>			
			I				
Type	Fype Of Boring: Casing Size Hollow Stem Auger Size 4.25'						Standard Penetration Test (ST) = 140lb hammer falling 30"
		tion Percentages		Soils (blo			Cohesive Soils (blows per ft.)
	-	-	0 to 4 Very Loose		30 to 50 I		0 to 2 Very Soft 8 to 15 Stiff
					Very Dens		
		d 40 to 50%	10 to 30 Medium De		5.01.00	. e. j Dens	4 to 8 Medium Stiff Over 30 Hard
			Rlows are ner 6" tak		1 24" long	X 2" OD	

Clier	nt:	Powell Stone &	Gravel			Date:	7/ /2023	3 Page #	1 of 1	
Loca	ation	Teel Road, Win	chendown, MA							
Borin		Ground	Date	Date		Drilling		Eng/Hydrol.		
#MW	-17	Elev	Start 7/ /2023	Complete		Foreman:	Mike DeAmicis	Geologist:		
D		Sam	ple Data		~ .	~				
E P		Sample	Blows	Rec.	Casing	Strata				
-	NO.	Depth(ft.)	6" Penetration	Inches	Blows	Change	Vi	sual Identification	n of Soil a	and/or Rock Strata
Н	110.				Per Ft.	Depth				
	1	0-2"	2-4-3-6	17"			Dry, loose, F	FINE SAND, trace	e silt	
5	2	5'-7'	4-6-7-8	24"			Dry mediun	n dense, FINE SA		
5	2	5-1	-0-7-0	24			Dry, mealan			
10	3	10'-12'	3-5-7-8	21"						
15	4	15'-17'	4-5-6-6	20"						
10	-	10-17	+ 5 0 0	20						
20	5	20'-22'	15-15-19-19	13"			Moist, dense	e, TIGHT SOIL, f	ine sand	, some silt
25	6	25'-26'8"	33-44-60/2"	14"		H2O	Wet verv de	ense FINE SANI	D little ar	ravel, some silt, tight till
20	0	20 200	55 11 00/2	17		1120	wei, very de		s, indo gi	
							Set MW-17	at 27' (15' screer	า, 14' rise	er)
30										
		<u> </u>								
			ļ							
35										
			•							
Туре	Of B	oring: Casing Size	e Hollow Ste	m Auger S	ize 4.25"		Standard Penet	ration Test (ST) = 14	Olb hammer	r falling 30"
		tion Percentages		Soils (blo				Cohesive Soils		
		ace 0 to 10%	0 to 4 Very Loose		30 to 50 1			0 to 2 Very So		8 to 15 Stiff
					Very Dens	e l	2 to 4 Soft		15 to 30 Very Stiff	
	And 40 to 50% 10 to 30 Medium Dense			5701 50	. cry Dens	~	4 to 8 Medium	n Stiff	Over 30 Hard	
	All	u to to 30 /0	Blows are per 6" tak		1 24" long	X 2" OD	X 1 3/8" I D		. Suit	Stel 50 Halu

Clien	nt:	Powell Stone &	Gravel			Date:	7/10/23	B Page # 1 of 1	
Loca	tion	Teel Road, Win	chendown, MA						
Borin	g	Ground	Date	Date		Drilling		Eng/Hydrol.	
#MW	22	Elev	Start 7/10/23	Complete		Foreman:	Mike DeAmicis	Geologist:	
D E			ple Data	Dee	Casing	Strata			
Р		Sample	Blows	Rec.	Blows	Change	Vi	sual Identification of So	il and/or Rock Strata
T H	NO.	Depth(ft.)	6" Penetration	Inches	Per Ft.	Depth	, , ,	sual fuction of 50	ii anu/or Kock Strata
	1	0-2'	7-4-6-6	19"		1	Dry loose	FINE SAND, some grav	el trace silt
	-	02	1100	10			D1, y, 10000, 1		
5	2	5'-7'	13-19-27-34	19"			Drv dense	COARSE GRAVEL and	t sand
0	2	0 /	15 17 27 51	10			Dry, denee,		loand
						H2O			
10	3	10'-10'8"	23-60/2"	8"			Wet. verv de	ense. COARSE GRAVE	L and fine sand, some silt
	-			-				at 11' (9' screen, 5' rise	
								•	n) Auger Terusar at TT
							END OF BC	ORING AT 11'	
15									
20									
20									
25									
20									
30									
00									
35									
			1						
Type	Of B	oring: Casing Size	e Hollow Ste	m Auger S	ize 4.25"		Standard Pene	tration Test (ST) = 140lb ham	ner falling 30"
Proportion Percentages Granular Soils (blows per ft.))		Cohesive Soils (blows	
			0 to 4 Very Loose	. (0	30 to 50 1			0 to 2 Very Soft	8 to 15 Stiff
	-				Very Dens	e	2 to 4 Soft	15 to 30 Very Stiff	
		d 40 to 50%	10 to 30 Medium De			•		4 to 8 Medium Stiff	Over 30 Hard
			Blows are per 6" tak		1 24" long	X 2" OD	X 1 3/8" I.D.		

Clie	ient: Powell Stone & Gravel Date: 7/ /2023 Page # 1 of 1										
Loca	tion	Teel Road, Win	chendown, MA								
Borin	-	Ground	Date	Date		Drilling		Eng/Hydrol.			
#MW	31	Elev	Start 7/10/23	Complete		Foreman:	Mike DeAmicis	is Geologist:			
D E			ple Data Blows	Rec.	Casing	Strata					
Р		Sample	6" Penetration	Rec. Inches	Blows	Change	Vi	Visual Identification of Soil and/or Rock Strata			
T H	NO.	Depth(ft.)	o [®] Penetration	Inches	Per Ft.	Depth		isual fuction of Son and/or Rock Strata			
	1	0-2'	3-3-2-3	22"			Dry loose	, FINE SAND, little gravel, trace silt			
	1	02	5525				Diy, 10000, 1				
5	2	5'-7'	11-23-50/5	16"			Dry very de	dense, COARSE GRAVEL, fine sand, trace silt			
5	2	0-1	11 25 50/5	10			Dry, very de				
							Auger refus	ısal at 7' Boulders			
							Set MW-31	1 at 9' (8' screen, 5' riser) Auger refusal at 9'			
10								BORING AT 9'			
10											
15											
15											
20											
20											
25											
20											
30											
30											
35											
აე											
Type Of Boring: Casing Size Hollow Stem Auger Size 4.25"							Standard D	netwotion Toot (ST) = 1401 + f-11: 2011			
			1				Standard Pene	netration Test (ST) = 140lb hammer falling 30"			
P		tion Percentages ace 0 to 10%	Granular 0 to 4 Very Loose	Soils (blo	ws per 1t.) 30 to 50 l			Cohesive Soils (blows per ft.) 0 to 2 Very Soft 8 to 15 Stiff			
	5			Dense Very Dense		-					
				Over 50	very Denso	C .	2 to 4 Soft15 to 30 Very Stiff4 to 8 Medium StiffOver 30 Hard				
And 40 to 50% 10 to 30 Medium Dense Blows are per 6" taken with an 24" long					1 24" long	X 2" OD	X 1 3/8" I D	+ to o medium sum Over so naru			

Client: Powell Stone & Gravel Date: 7/ /2023 Page # 1 of 1										
Location: Teel Road, Winchendown, MA										
Borin	oring Ground Date Date			Drilling		Eng/Hydrol.				
#PT-2	2	Elev	Start 7/ /2023	Complete	-	Foreman:	Mike DeAmicis	Geologist:		
D E		Sam	ple Data	D	Casing	Strata				
Р		Sample	Blows	Rec.	Blows	Change	V	anal Idantificati	ion of Soil	and/or Rock Strata
T H	NO.	Depth(ft.)	6" Penetration	Inches	Per Ft.	Depth	VI	sual fuentificati	1011 01 5011	and/or Nock Strata
п		0-2"	1-1-2-2	17"	10110	Depth				
	1	0-2	1-1-2-2	17			Dry, very lo	ose, FINE SAN	D	
5	2	5'-7'	15-25-22-20	20"			Dry donco	FINE SAND ar	nd aravol	traco silt
5	2	5-7	13-23-22-20	20			Diy, delise,	FINE SAND a	iu gravei,	
10	3	10'-12"	6-7-6-6	14"			Dry modiur	n donco EINE		d gravel, trace silt
10	5	10-12	0-7-0-0	14			Dry, mediai			d gravel, trace sit
15	4	15'-17'	5-5-8-8	16"			Wet mediu	m dense MED		RSE SAND some gravel
10	-	10-17	5500	10						NOE OAND, Some gravel,
				H2O some silt						
20	5	20'-22'	9-35-26-23	2∩"			Wet very d	onco EINE SAI	ND some	silt some gravel
20	5	20-22)-33-20-23	20	<u> </u>	-				
							END OF BC	DRING AT 22'		
25										
20										
30										
00										
35				L						
	1	<u> </u>	ļ	ļ						
Type	Of B	oring: Casing Size	e Hollow Ste	m Auger S	ize 4.25"		Standard Pene	tration Test (ST) =	140lb hamm	er falling 30"
Type Of Boring:Casing SizeHollow Stem Auger Size 4.25"Standard Penetration Test (ST) = 140lb hammer falling 30"Proportion PercentagesGranular Soils (blows per ft.)Cohesive Soils (blows per ft.)										
			30 to 50 l			0 to 2 Very	. –	8 to 15 Stiff		
			4 to 10 Loose	-				2 to 4 Soft		15 to 30 Very Stiff
And 40 to 50%			10 to 30 Medium De	nse				4 to 8 Medi	um Stiff	Over 30 Hard
			Blows are ner 6" tak		1 24" long	X 2" OD	X 1 3/8" I D			

Clie	nt•	Powell Stone &	Gravel			Date:	7/ /2023 Page # 1 of 2				
Client: Powell Stone & Gravel Date: Date:							1112020 1 age π 1 012				
Boring Ground Date Date							ing Eng/Hydrol.				
#PT-3		Elev	Start 7/10/23	Complete		-	: Mike DeAmicis Geologist:				
D		Sam	ample Data								
E P	Sample		Blows	Rec.	Casing	Strata	Visual Identification of Soil and/or Rock Strata				
Т	NO.	Depth(ft.)	6" Penetration	Inches	Blows Per Ft.	Change Depth	v isual identification of Son and/or Rock Strata				
Н			1122	21"	rei ri.	Deptii					
	1	0-2'	1-1-2-2	21			Dry, very loose, FINE SAND				
						1					
5	2	5'-7'	2-3-3-4	22"			Dry, loose, FINE SAND				
5	2	5-7	2-3-3-4	<u> </u>	 	-	Dry, loose, fine sand				
Í						1					
10	3	10'-12'	2-3-4-5	20"		1					
		10-12		20		ł					
	┝─┤					}					
	\square					ļ					
					<u> </u>	ļ					
15	4	15'-17'	5-5-6-6	19"		1	Dry, medium dense, FINE SAND				
	┝─┤		•	-		1					
Í	┝─┤					ł					
Í	\vdash					-					
Í	\vdash					ļ					
Í											
20	5	20'-22'	5-7-8-7	21"							
Í						1					
Í	┝─┤										
Í	┝─┤										
Í	\vdash					ł					
						l					
25	6 25'-27' 6-6-7-8- 22"						Dry, medium dense, FINE SAND, trace silt				
Í											
Í						1					
Í	┝─┤					ł					
	\vdash					ł					
Í	\vdash					ł					
30	7	30'-32'	6-8-8-8	21"		ļ					
Í	LĪ										
Í											
Í						1					
Í	┝─┤					ł					
		a=: a=:	(10.0.0			}					
35	8	35'-37'	6-10-8-9	23"			Dry, medium dense, FINE SAND, some silt				
	Of Bo		1	-		Standard Penetration Test (ST) = 140lb hammer falling 30"					
Proportion Percentages Granular Soils (blows per ft.)							Cohesive Soils (blows per ft.)				
		ace 0 to 10%	0 to 4 Very Loose		30 to 50 l		0 to 2 Very Soft 8 to 15 Stiff				
		ne 10 to 40%	4 to 10 Loose		Over 50	Very Dens					
And 40 to 50% 10 to 30 Medium Dense Blows are per 6" taken with an 24" log					1 24" long	T Y 2" OP	4 to 8 Medium Stiff Over 30 Hard				
 			prows are per o tai	sen with al	1 2 4 1011	/ A 1 J/U 1.D.					

Clie	nt:	Powell Stone &	Gravel			Date:	7/ /2023	Page # 2 of 2	
Loca	tion	Teel Road, Win	chendown, MA						
Borin		Ground	Date	Date		Drilling		Eng/Hydrol.	
#PT-3		Elev	Start 7/10/23	Complete		Foreman:	Mike DeAmicis	Geologist:	
D E P T H	NO.	Sample Depth(ft.)	ple Data Blows 6" Penetration	Rec. Inches	Casing Blows Per Ft.	Strata Change Depth	Visual Ic	dentification of Soil	and/or Rock Strata
40	9	40'-42'	6-10-12-10	22"			Dry, medium dens	se, FINE SAND, sc	me silt
45	10	45'-47'	6-8-10-11	18"			Moist, medium de	ense, FINE SAND	
50	11	50'-52'	6-9-10-9	24"		H2O	Wet, medium den	nse, FINE SAND, se	ome silt
	12	52'-54'	6-9-15-17	22"			END OF BORING	G AT 54'	
Туре	Of Bo	oring: Casing Size	e Hollow Ste	m Auger S	ize 4.25"		Standard Penetration	Test (ST) = 140lb hamm	er falling 30"
		tion Percentages		-)		Cohesive Soils (blows pe	
	Trace 0 to 10% 0 to 4 Very Loose 30 to 50 E				0 to 2 Very Soft 2 to 4 Soft 4 to 8 Medium Stiff	8 to 15 Stiff 15 to 30 Very Stiff Over 30 Hard			
1	And 40 to 50% 10 to 30 Medium Dense Blows are per 6" taken with an 24" lor				1 24" long	X 2" OD			

Clier	nt:	Powell Stone &	Gravel			Date:	7/ /2023 Page # 1 of 2
		Teel Road, Win					~
Borin	-	Ground	Date	Date		Drilling	
#PT-4 D	1	Elev	Start 7/ /2023	Complete		Foreman:	n: Mike DeAmicis Geologist:
E			Blows	Rec.	Casing	Strata	
P T		Sample	6" Penetration	Inches	Blows	Change	
Ĥ	NO.	Depth(ft.)			Per Ft.	Depth	
	1	0-2'	1-2-2-3	20"			Dry, very loose, FINE TO MEDIUM SAND, some silt
5	2	5'-7'	13-28-34-33	17"			Dry, very dense, FINE SAND and gravel, trace silt
5	2	5-1	13-20-34-33	17		•	Dry, very dense, i nue onivo and gravel, trace sit
10	3	10'-12'	14-5-5-6	17"			Dry, loose, FINE SAND, trace silt
						1	
15	4	15'-17'	5-6-6-8	20"			Dry, medium dense. FINE SAND, trace silt
15	4	13-17	5-0-0-8	20			Dry, medium dense. Time SAND, trace sit
20	5	20'-22'	6-8-8-9	17"			
25	6	25'-27'	10-10-10-11	22"			
20	0	20-21	10 10 10 11				
	$ \vdash $						
30	7	30'-32'	7-7-8-9	20"			Moist, medium dense, FINE SAND, trace silt
35	8	35'-37'	4-7-18-15-	23"		H2O	Wet, dense, FINE SAND, trace silt
			· · · · · · · · · · · · · · · · · · ·				
Туре	Of Bo	oring: Casing Size	e Hollow Ste	m Auger S	lize 4.25"		Standard Penetration Test (ST) = 140lb hammer falling 30"
Р		tion Percentages		Soils (blo			Cohesive Soils (blows per ft.)
	Trace 0 to 10% 0 to 4 Very Loose 30 to 50 I					0 to 2 Very Soft 8 to 15 Stiff	
			Over 50	Very Dens			
And 40 to 50% 10 to 30 Medium Dense Blows are per 6" taken with an 24" long X						X 2" OD	4 to 8 Medium Stiff Over 30 Hard
ļ			pions are per o tai	an with a	124 10118	, 12 00	

Clie	nt:	Powell Stone &	Gravel			Date:	7/ /2023	Page # 2 of 2	
		Teel Road, Win						0	
Borin		Ground	Date	Date		Drilling		Eng/Hydrol.	
# PT- 4	ł	Elev	Start 7/ /2023	Complete		Foreman:	Mike DeAmicis	Geologist:	
D		Sam	ple Data						
E P		Sample	Blows	Rec.	Casing	Strata	¥.7•		
	NO.	Depth(ft.)	6" Penetration	Inches	Blows	Change	Visu	al Identification of Soil	and/or Rock Strata
Н	110.	Deptn(11.)			Per Ft.	Depth			
	9	37-39'	13-17-15-15	20"					
	-								
							END OF BOF	RING AT 39'	
40									
	\square								
	\vdash								
	\vdash								
Ture	Of D	oring: Casing Size	Uollow Star	m Augar C	izo 4 25"		Standard Panator	ntion Tost (ST) - 14016 harrow	or falling 30"
							Stanuard renetra	ation Test (ST) = 140lb hamm	
P		tion Percentages		Soils (blo				Cohesive Soils (blows p	
Trace 0 to 10% 0 to 4 Very Loose 30 to 50 I					0 to 2 Very Soft	8 to 15 Stiff			
		ne 10 to 40%	4 to 10 Loose		Over 50	Very Dense	e	2 to 4 Soft	15 to 30 Very Stiff
	An	d 40 to 50%	10 to 30 Medium De					4 to 8 Medium Stiff	Over 30 Hard
	Blows are per 6" taken with an 24" lo					X 2" OD	X 1 3/8" I.D.		

Clie	lient: Powell Stone & Gravel Date: 7/ /2023 Page # 1 of 1										
		Teel Road, Win	chendown, MA								
Borin	-	Ground	Date	Date		Drilling		Eng/Hydrol			
#PT-5	5	Elev	Start 7/ /2023	Complete	1	Foreman:	Mike DeAmicis	Geologist:			
D E			ple Data Blows	Rec.	Casing	Strata					
Р		Sample	6" Penetration	Inches	Blows	Change	Vi	sual Identificat	ion of Soil	and/or Rock Strata	
T H	NO.	Depth(ft.)	o renetration	inches	Per Ft.	Depth		suur ruentineut		and/of Rock Strata	
	1	0-2'	3-2-2-2	17"			Dry very log	ose, FINE SAN	D some s	silt	
	-	02	5222				Diy, voi y iot	500, 1 mt2 0/ mt	2, 001110 0		
5	2	5'-7'	6-6-5-7	21"			Dry mediun	n dense, FINE	SAND so	me silt	
Ŭ		01	0057	21			Bry, moulai		0, 110, 00		
10	3	10'-12'	6-8-7-7	21"							
	-										
15	4	15'-17'	4-7-8-12	19"							
	-		. ,								
20	5	20'-22'	5-6-6-11	20"			Moist, medi	um dense, FIN	E SAND,	some silt, some clay	
										· · · · ·	
25	6	25'-27'	5-7-13-15	22"		H2O	Wet, mediu	m dense, FINE	SAND, tr	ace silt	
	7	27'-29'	12-12-14-13	20"							
			12 12 11 10								
							END OF BC	ORING AT 29'			
30											
	\vdash										
35											
35											
						a					
		oring: Casing Size		-			Standard Penet	tration Test (ST) =			
P	-	tion Percentages		Soils (blo					oils (blows pe		
Trace 0 to 10% 0 to 4 Very Loose 30 to 50 De 0 104 104 0 50 Ne					0 to 2 Very	Soft	8 to 15 Stiff				
Some 10 to 40% 4 to 10 Loose Over 50 V			very Dens	e	2 to 4 Soft 4 to 8 Modi	um 64:66	15 to 30 Very Stiff Over 30 Hard				
	And 40 to 50% 10 to 30 Medium			Medium Dense re per 6" taken with an 24" long X 2" OD				4 to 8 Medi	um stiff	over su flara	
			intervention are per ullar	cu with al	u ⊿−r 10112	A 2 UD	ALI J/O I.D.				

Clier	lient: Powell Stone & Gravel Date: 7/ /2023 Page # 1 of 1										
		Teel Road, Win	chendown, MA								
Borin	-	Ground	Date	Date		Drilling		Eng/Hydrol.			
#PT-6		Elev	Start 7/ /2023	Complete		Foreman:	Mike DeAmicis	s Geologist:			
D E			ple Data Blows	Rec.	Casing	Strata					
P		Sample	6" Penetration	Inches	Blows	Change	Vi	isual Identification of Soil and/or Rock S	strata		
T H	NO.	Depth(ft.)	o i cheti ation	menes	Per Ft.	Depth					
	1	0-2'	1-1-1-2	16"			Dry, very lo	ose, FINE SAND, trace silt			
							5, 5				
5	2	5'-7'	3-5-9-11	21"			Dry, mediur	m dense, FINE SAND, trace silt			
							57				
10	3	10'-12'	4-5-6-9	23"							
15	4	15'-17'	2-3-4-4	18"		H2O	Wet, loose,	FINE SAND			
20	5	20'-22'	6-13-23-24	19"			Wet, dense	e, MEDIUM COARSE SAND and gravel			
	6	22'-24'	17-20-18-23	21"							
	-										
							END OF BU	ORING AT 24'			
25											
			l								
30											
25											
35											
Turne Of Dening: Casing Size Hallow Stars Array Circ 4.251 Of Laboratory (Circ								stration Tast (ST) = 1401b hammar falling 201			
Type Of Boring:Casing SizeHollow Stem Auger Size 4.25"Standard Penetration Test (ST) = 140lb hammer falling 30"Proportion PercentagesGranular Soils (blows per ft.)Cohesive Soils (blows per ft.)											
P				50115 (D10)				Cohesive Soils (blows per ft.) 0 to 2 Very Soft 8 to 15 Stiff			
	Trace 0 to 10% 0 to 4 Very Loose 30 to 50 D Some 10 to 40% 4 to 10 Loose Over 50 V				۹	2 to 4 Soft 15 to 30 Very S	tiff				
	Some 10 to 40% 4 to 10 Loose Over 50 * And 40 to 50% 10 to 30 Medium Dense				5701 50	, cry Dells	~	4 to 8 Medium Stiff Over 30 Hard			
	And 40 to 50% 10 to 30 Medium D Blows are per 6" t				1 24" long	X 2" OD	X 1 3/8" I D	i i i i i i i i i i i i i i i i i i i			

Clie	nt:	Powell Stone &	Gravel			Date:	7/ /202	3 Page # 1 of 1	
Loca	tion	Teel Road, Win	chendown, MA						
Borin		Ground	Date	Date		Drilling		Eng/Hydrol.	
#PT-7	7	Elev	Start 7/ /2023	Complete		Foreman:	Mike DeAmicis	Geologist:	
D E			ple Data Blows	Rec.	Casing	Strata			
Р		Sample			Blows	Change	Vi	sual Identification of Soil	and/or Rock Strata
T H	NO.	Depth(ft.)	6" Penetration	Inches	Per Ft.	Depth		sual fuction of 50h	anu/or Kock Strata
	1	0-2'	1-2-2-2	23"			Dry very loc	ose, FINE SAND, some s	ilt
	1	02	1 2 2 2	20			Dry, very loc		
5	2	5'-7'	10-7-13-12	15"			Dry mediun	n dense, FINE SAND and	aravel some silt
5	2	5-7	10-7-13-12	15			Dry, medium		gravel, some sit
						H2O			
10	3	10'-12'	4-4-8-9	18"			Wet mediu	m dense, FINE SAND, so	ome gravel
10	5	10-12	4407	10			wet, meala		
15	4	15'-17'	4-6-8-16	22"					
15	-	10-17	4-0-0-10	22					
							END OF BC	RING AT 17'	
20									
20									
25									
25									
30									
50									
35	35								
Type Of Boring: Casing Size Hollow Stem Auger Size 4.25"					ize 4.25"		Standard Pepet	tration Test (ST) = 140lb hamme	er falling 30"
Type Of Boring: Casing Size Hollow Stem Auger Size 4.25" Proportion Percentages Granular Soils (blows per ft.))		Cohesive Soils (blows pe			
		ace 0 to 10%	0 to 4 Very Loose	(30 to 50 1			0 to 2 Very Soft	8 to 15 Stiff
			Very Dens	e	2 to 4 Soft	15 to 30 Very Stiff			
	Some 10 to 40% 4 to 10 Loose Over 50 And 40 to 50% 10 to 30 Medium Dense				•		4 to 8 Medium Stiff	Over 30 Hard	
And 40 to 50% 10 to 30 Medium Dense Blows are per 6" taken with an 24"				24" long	x 2" OD	X 1 3/8" I D			

Clie	lient: Powell Stone & Gravel Date: 7/ /2023 Page # 1 of 1									
		Teel Road, Win								
Borin	-	Ground	Date	Date		Drilling		Eng/Hydrol.		
#PT-8	3	Elev	Start 7/ /2023	Complete		Foreman:	Mike DeAmicis	Geologist:		
D E			ple Data Blows	Rec.	Casing	Strata				
P		Sample	6" Penetration	Inches	Blows	Change	Vi	sual Identification of Soil	and/or Rock Strata	
T H	NO.	Depth(ft.)	o renetration	menes	Per Ft.	Depth				
	1	0-2'	1-1-1-2	18"			Drv. verv lo	ose, FINE SAND		
	_						,	,		
5	2	5'-7'	5-15-13-13	21"			Drv mediur	n dense, FINE TO MEDIL	JM SAND_trace silt	
Ŭ	~	0.1	0 10 10 10				Dry, moulai			
							-	n dense, MEDIUM TO CO	JARSE SAND and	
							gravel, trace	e silt		
10	3	10'-12'	2-3-3-4	19"		H2O	Wet. loose.	FINE SAND, trace silt		
	-						,	,		
15	4	15'-17'	4-4-5-8	17"			Wet, loose.	FINE SAND, trace silt		
	-						,	,		
							END OF BC	DRING AT 17'		
20										
25										
			<u> </u>							
30										
			<u> </u>							
35	35									
Туре	Of B	oring: Casing Size	e Hollow Ste	m Auger S	ize 4.25"	·	Standard Pene	tration Test (ST) = 140lb hamme	er falling 30"	
		tion Percentages					-	Cohesive Soils (blows pe		
	Proportion PercentagesGranular Soils (blows per ft.)Trace 0 to 10%0 to 4 Very Loose30 to 50 De					0 to 2 Very Soft	8 to 15 Stiff			
	Some 10 to 40% 4 to 10 Loose Over 50 V		Very Dens	e	2 to 4 Soft	15 to 30 Very Stiff				
	Some 10 to 40% 4 to 10 Loose Over 50 And 40 to 50% 10 to 30 Medium Dense					4 to 8 Medium Stiff	Over 30 Hard			
			Blows are per 6" tal	on with a	24" long	X 2" OD	X 1 3/8" I D			

Clie	ient: Powell Stone & Gravel Date: 7/ /2023 Page # 1 of 2												
Loca Borin		Teel Road, Wir Ground	Date Date	Date		Drilling		Eng/Hydrol.					
#PT-9	-	Elev		Complete		-	Mike DeAmicis						
D		San	<u>iple Data</u>		~ .			0					
E P		Sample	Blows	Rec.	Casing	Strata	¥7:	sual Identification of Soil and/or Rock Strata					
T H	NO.	Depth(ft.)	6" Penetration	Inches	Blows Per Ft.	Change Depth	V I	sual identification of Son and/or Nock Strata					
	1	0-2'	2-2-2-3	17"			Dry very loc	ose, FINE SAND					
	1	02					Dry, vory loc						
5	2	5'-7'	3-3-4-4	14"			Dry, loose, I	MEDIUM TO COARSE SAND and gravel					
			1		<u> </u>								
10	3	10'-12'	2-2-3-2	14"									
10	3	10-12	2-2-3-2	14									
15	4	15'-17'	14-18-15-13	18"			Dry, dense,	COARSE SAND and gravel, trace silt					
							3 7	C ·					
20	5	20'-22'	9-7-8-8	15"									
25	6	25'-27'	60/6"	no rec			Large Cobb						
20	0	20-21	00/0				Large Cobb						
30	7	30'-32'	4-4-5-6	20"			Dry, loose, F	FINE SAND					
			1										
0.5	0		10010	40"		H2O	\/						
35 8 35'-37' 4-8-8-10 19" H							vvet, mediui	m dense, FINE SAND, some gravel, trace silt					
Type Of Boring: Casing Size Hollow Stem Auger Size 4.25"							Standard D (tration Tost (ST) = 1401b however falling 201					
Type Of Boring: Casing Size Hollow Stem Auger Size 4.25" Proportion Percentages Granular Soils (blows per ft.)							Stanuard Penet	tration Test (ST) = 140lb hammer falling 30" Cohesive Soils (blows per ft.)					
							0 to 2 Very Soft 8 to 15 Stiff						
	-		4 to 10 Loose	-				2 to 4 Soft5 to 15 Suff2 to 4 Soft15 to 30 Very Stiff					
				0 to 30 Medium Dense				4 to 8 Medium Stiff Over 30 Hard					
	And 40 to 50% 10 to 30 Medium Dense Blows are per 6" taken with an 24" log												

	Client: Powell Stone & Gravel Date: 7/ /2023 Page # 2 of 2											
		Teel Road, Win		-		5						
Borin	-	Ground	Date	Date		Drilling						
#PT-9 D	7	Elev	Start 7/ /2023	Complete		Foreman:	n: Mike DeAmicis Geologist:					
E			Blows	Rec.	Casing	Strata						
P		Sample	6" Penetration		Blows	Change						
T H	NO.	Depth(ft.)	o renetration	menes	Per Ft.	Depth						
н 40		40'-41'			Per Ft.		Wet, very dense, COARSE GRAVEL and sand END OF BORING AT 41' 9"					
	\vdash											
Type Of Boring: Casing Size Hollow Stem Auger Size 4.25"							Standard Penetration Test (ST) = 140lb hammer falling 30"					
							Cohesive Soils (blows per ft.)					
Proportion Percentages Granular Soils (blows per ft.)												
			30 to 50 l		0 to 2 Very Soft 8 to 15 Stiff							
			4 to 10 Loose		Over 50 V	Very Dens						
	An	d 40 to 50%	10 to 30 Medium De				4 to 8 Medium Stiff Over 30 Hard					
			Blows are per 6" taken with an 24" long X 2" C				D X 1 3/8" I.D.					

Clie	lient: Powell Stone & Gravel Date: 7/ /2023 Page # 1 of 2												
		Teel Road, Win				Date:	11 1202	J Fage # 1012					
Borin		Ground	Date	Date		Drilling		Eng/Hydrol.					
#PT-1	-	Elev	Start 7/ /2023	Complete		-	Mike DeAmicis						
D E			ple Data Blows	Rec.	Casing	Strata							
Р		Sample	6" Penetration		Blows	Change	Vi	isual Identification of Soil and/or Rock Strata					
T H	NO.	Depth(ft.)	o renetration	inches	Per Ft.	Depth							
	1	0-2"	1-2-2-1	20"			Dry, very lo	ose, FINE SAND					
						1							
5	2	5'-7'	2-4-4-5	19"			Dry, loose,	FINE SAND					
							3 / /						
						•							
Í						ł							
40	2	101 401	2254	00"	L								
10	3	10'-12'	2-3-5-4	20"									
	\vdash												
					L								
15	4	15'-17'	3-3-5-6	22"									
						1							
20	5	20'-22'	6-6-6-6	24"			Dry, mediur	m dense, FINE SAND					
							57						
						•							
25	6	25'-27'	19-10-10-7	18"			Dru modium	m dense FINE SAND, some groupt trace sit					
25	6	29-21	19-10-10-7	18		-	Dry, mediur	m dense, FINE SAND, some gravel, trace silt					
30	7	30'-32'	6-10-15-13	17"									
Í													
35	8	35'36'	48-60/6"	4"		1	Dry, very de	ense, FINE SAND, some gravel, trace silt					
			•	•									
								tration Test (ST) = 140lb hammer falling 30"					
Proportion Percentages Granular Soils (blows per ft.)								Cohesive Soils (blows per ft.)					
		ace 0 to 10%	0 to 4 Very Loose		30 to 50			0 to 2 Very Soft 8 to 15 Stiff					
Í	Some 10 to 40% And 40 to 50%		4 to 10 Loose 10 to 30 Medium De		Over 50	Very Dens	e	2 to 4 Soft15 to 30 Very Stiff4 to 8 Medium StiffOver 30 Hard					
	An	u 40 10 3070	Blows are per 6" tal		1 24" long	- X 2" OD	X 1 3/8" I D	+ to o meaning suite Over 50 Hard					
μ			Low are per o tai	with al									

Clier	nt:	Powell Stone &	Gravel			7/ /2023 Page # 2 of 2		
		Teel Road, Win	chendown, MA				-	
Borin		Ground	Date	Date		Drilling	Eng/Hydrol.	
#PT-1	3	Elev	Start 7/ /2023	Complete		Foreman:	Mike DeAmicis Geologist:	
D E			ple Data Blows	Rec.	Casing	Strata		
P		Sample	6" Penetration		Blows	Change	Visual Identification of Soil and/or Rock Strata	
T H	NO.	Depth(ft.)	o renetration	menes	Per Ft.	Depth		
						H2O		
40	9	40'-41'	47-60/6"	6"			Moist, very dense, TILL LAYER, some silt	
							AUGER REFUSAL AT 42'	
			ļ					
т	Ot p	aning Casing St	Пай 64	m Ang 0	izo 4 25"		Standard Danstration Test (ST) = 1401 how f-11 201	
Туре							Standard Penetration Test (ST) = 140lb hammer falling 30"	
P		tion Percentages ace 0 to 10%		Soils (bloy			Cohesive Soils (blows per ft.)	
			0 to 4 Very Loose 4 to 10 Loose		30 to 50 l		e 0 to 2 Very Soft 8 to 15 Stiff 2 to 4 Soft 15 to 30 Very Stiff	
					Over 50	Very Dens	e 2 to 4 Soft 15 to 30 Very Stiff 4 to 8 Medium Stiff Over 30 Hard	
And 40 to 50% 10 to 30 Medium Dense Blows are per 6" taken with an 24			1 24" long	X 2" OD				

Clie	Client: Powell Stone & Gravel Date: 7/ /2023 Page # 1 of 1									
Loca	tion	Teel Road, Win	chendown, MA							
Borin		Ground	Date	Date		Drilling		Eng/Hydrol.		
#PT-1	4	Elev	Start 7/ /2023	Complete		Foreman:	Mike DeAmicis	Geologist:		
DE		Sam	ple Data	D	c ·	<u>.</u>				
E P		Sample	Blows	Rec.	Casing	Strata	17:000	al Identification of Soil a	and/an Dash Stuata	
T H	NO.	Depth(ft.)	6" Penetration	Inches	Blows Per Ft.	Change Depth	v isu	ial Identification of Son a	anu/or Rock Strata	
н		0-2"	2-5-4-3	15"	Ter Pt.	Depti				
	1	0-2	2-3-4-3	15			Dry, 100se, 54	AND, some silt		
							PT-14 Auger ı	refusal at 3'		
							5			
5	2	5'-5'8"	12-60/2"	8"			Dry very dens	se, MEDIUM TO COAR	SE SAND and gravel	
Ŭ	2	0.00	12 00/2	0						
							some silt			
10	3	10'-11'2"	12-22-60/2"	15"			Moist verv de	ense, FINE TO MEDIUM	ISAND some gravel	
10	5	10-112	12-22-00/2	15			-		i SAND, some gravel,	
							trace silt			
							PT-14A Auger	r refusal at 10'7"		
							Water at 7' up	oon completion		
15								·		
15										
20										
20										
25										
25										
20										
30										
					·					
25										
35							ļ			
T	015	• • • • •	11 P. C.	. ~					C II: 2011	
		oring: Casing Size					Standard Penetra	tion Test (ST) = 140lb hammer		
P		tion Percentages		Soils (blov				Cohesive Soils (blows per		
Trace 0 to 10% 0 to 4 Very Loose 30 to 50 Der 0 104 104 0 50 Very					0 to 2 Very Soft	8 to 15 Stiff 15 to 20 Vorm Stiff				
	Some 10 to 40% 4 to 10 Loose Over 50 V			very Dens	e l	2 to 4 Soft	15 to 30 Very Stiff			
	An		10 to 30 Medium De Blows are per 6" tal		2411 1	V 11 OP	V 1 2/011 L D	4 to 8 Medium Stiff	Over 30 Hard	

Clier	nt:	Powell Stone &	Gravel			Date:	7/25/23	Page # 1 of 1
Loca	ation	Teel Road, Win	chendown, MA					*
Borin		Ground	Date	Date		Drilling		Eng/Hydrol.
#PT-1	5	Elev	Start 7/25/23	Complete	7/25/23	Foreman:	Mike DeAmicis	Geologist:
D E			ple Data Blows	Rec.	Casing	Strata		
Р		Sample			Blows	Change	Vi	sual Identification of Soil and/or Rock Strata
T H	NO.	Depth(ft.)	6" Penetration	Inches	Per Ft.	Depth	V 1.	sual fuction of son and/of frock Strata
- 11	1	0-2"	1-1-2-2	18"			Moist very l	oose, FINE TO MEDIUM SAND and gravel,
	1	0-2	1-1-2-2	10			-	ouse, Fine TO MEDIUM SAND and gravel,
							some silt	
F	2	5'-7'	9-21-32-31	24"			Dry yory da	nee FINE SAND come silt trace group
5	2	J-1	9-21-32-31	24			Dry, very de	nse, FINE SAND, some silt, trace gravel
10	3	10'-12"	9-36-39-43	20"				noo EINE SAND troop group came all
10	3	10-12	9-30-39-43	20			Dry, very de	nse, FINE SAND, trace gravel, some silt
45	4		60/41	0"				
15	4	15'-15'4"	60/4"	0"				
						H2O		
~~	_		24 21 26 40	0.4"				
20	5	20'-22'	24-31-36-40	21"			Wet, very de	ense, FINE SAND, some silt, some gravel
							END OF BO	RING AT 22'
05								
25								
	\vdash							
	\vdash							
30	\square							
				ļ				
a-	\vdash							
35								
		oring: Casing Size		-			Standard Penet	ration Test (ST) = 140lb hammer falling 30"
Proportion Percentages Granular Soils (blows per ft.)								Cohesive Soils (blows per ft.)
		ace 0 to 10%	0 to 4 Very Loose		30 to 50 l			0 to 2 Very Soft 8 to 15 Stiff
		ne 10 to 40%	4 to 10 Loose		Over 50	Very Dens	e	2 to 4 Soft 15 to 30 Very Stiff
	And 40 to 50% 10 to 30 Medium					** * *		4 to 8 Medium Stiff Over 30 Hard
			Blows are per 6" tal	en with ar	n 24" long	3 X 2" OD	X 1 3/8" I.D.	

Clier	nt:	Powell Stone &	Gravel			Date:	7/ /202	3 Page # 1 of 1	
Loca	tion	Teel Road, Win	chendown, MA					0	
Borin		Ground	Date	Date		Drilling		Eng/Hydrol.	
#PT-1	6	Elev	Start 7/ /2023	Complete		Foreman:	Mike DeAmicis	Geologist:	
D		Sam	ple Data						
E P		Sample	Blows	Rec.	Casing	Strata			
- m	NO.		6" Penetration	Inches	Blows	Change	Vi	sual Identification of So	il and/or Rock Strata
Н	NO.				Per Ft.	Depth			
	1	0-2"	1-2-2-3	18"			Dry, very loo	ose, FINE SAND, some	silt
							DT 16 Aug	r refue al at 2'C"	
							PI-16 Auge	er refusal at 2'6"	
	2	4'-5'	31-60/6"	10"			Moist, very o	dense, MEDIUM TO CO	DARSE SAND and gravel,
5							trace silt		-
5								6	
							PT-16 (2) A	uger refusal 5'7"	
	3	9'-9"	29-60/3"				Wat yory d	ana FINE SAND and	arevel come cilt
	3	9-9	29-00/3				vvel, very de	ense, FINE SAND and	graver, some sin
10									
							PT-16 (3) A	uger refusal 11'8"	
								DRING AT 11'8"	
15									
_									
20									
25									
20									
30									
35	35								
Type Of Boring: Casing Size Hollow Stem Auger Size 4.25" Standard						Standard Penet	ration Test (ST) = 140lb ham	mer falling 30"	
Type Of Boring: Casing Size Hollow Stem Auger Size 4.25" Proportion Percentages Granular Soils (blows per ft.))		Cohesive Soils (blows	
- '	Proportion Percentages Granular Soils (bl Trace 0 to 10% 0 to 4 Very Loose			30 to 50 1			0 to 2 Very Soft	8 to 15 Stiff	
			4 to 10 Loose			Very Dense	e	2 to 4 Soft	15 to 30 Very Stiff
			10 to 30 Medium De		5,0100	. ery Dense	-	4 to 8 Medium Stiff	Over 30 Hard
	And 40 to 50%		Blows are per 6" tak		1 24" long	X 2" OD	X 1 3/8" L.D.	. to o meaning out	C. C. C. FRIER

Clier	ient: Powell Stone & Gravel Date: 7/26/23 Page # 1 of 2											
		Teel Road, Win				Date.	1120123	$-1 ag (\pi + 1) 012$				
Borin	g	Ground	Date	Date		Drilling		Eng/Hydrol.				
#PT-1	8	Elev	Start 7/26/23	Complete	7/26/23	Foreman:	Mike DeAmicis	Geologist:				
D E			ple Data Blows	Rec.	Casing	Strata						
P		Sample	6" Penetration		Blows	Change	Vi	sual Identification of Soil and/or Rock Strata				
H	NO.	Depth(ft.)			Per Ft.	Depth						
	1	0-2"	2-4-3-4	16"			Dry, loose, l	FINE SAND and gravel, trace silt				
5	2	5'-7'	5-5-5-5	19"			Dry, mediun	n dense FINE SAND, trace silt				
				ļ	ļ	1						
10	3	10'-12"	2-2-4-4	16"			Dry loose	FINE SAND, trace silt				
	5	10 12										
15	4	15'-17'	6-13-14-8	11"			Dry modium	n danaa EINE SAND, traaa silt				
15	4	15-17	0-13-14-0	11			Dry, medium	n dense, FINE SAND, trace silt				
						-						
20	5	20'-22'	5-6-6-5	19"								
						-						
25	6	25'-27'	6-8-12-17	22"			Dry, mediun	n dense, COARSE GRAVEL and fine sand,				
							trace silt					
30	7	30'-32'	27-21-19-12	17"			Dry, dense,	COARSE GRAVEL and fine sand, trace silt				
35	8	35'-37'	8-10-17-16	19"			Dry, mediun	n dense, COARSE GRAVEL, fine sand, trace silt				
					<u> </u>		a					
		oring: Casing Size		-)	Standard Penet	tration Test (ST) = 140lb hammer falling 30"				
P	Proportion PercentagesGranular Soils (blows per ftTrace 0 to 10%0 to 4 Very Loose30 to 50							Cohesive Soils (blows per ft.) 0 to 2 Very Soft 8 to 15 Stiff				
	Some 10 to 10%		4 to 10 Loose			Very Dens	e	2 to 4 Soft 15 to 30 Very Stiff				
			10 to 30 Medium Dense					4 to 8 Medium Stiff Over 30 Hard				
			Blows are per 6" tal	ken with a	n 24" long	g X 2" OD	X 1 3/8" I.D.					

Clie		Powell Stone &				Date:	7/26/23 Page # 2 of 2
		Teel Road, Win					
Borin	-	Ground	Date	Date		Drilling	
PT-1	8	Elev	Start 7/26/23	Complete	7/26/23	Foreman:	: Mike DeAmicis Geologist:
D		Sam	ple Data	n	a ·	<u>.</u>	
E P		Sample	Blows	Rec.	Casing	Strata	
The second secon	NO.		6" Penetration	Inches	Blows	Change	Visual Identification of Soil and/or Rock Strata
Н	NU.	Deptii(It.)			Per Ft.	Depth	
40	0	401 401	0 11 12 12	0.0"			Dry medium dense FINE CAND trace silt
40	9	40'-42'	9-11-13-13	22"			Dry, medium dense, FINE SAND, trace silt
45	10	151 171	11 10 10 20	0.0"			Dry dance FINE SAND trace sit
45	10	45'-47'	11-18-18-20	23"			Dry, dense, FINE SAND, trace silt
						1	
	┝──┦						
-	11		0 10 12 12	04"			
50	11	50'-52'	9-10-12-12	21"			Dry, medium dense, FINE SAND, trace silt
55	10	55'-57'	8-14-16-15	23"			
55	12	55-57	8-14-10-13	23			
	13	57'-59'	16-16-17-15	21"			Dry, dense, FINE SAND, trace silt
	_					•	
60							Auger refusal at 60' END OF BORING AT 60'
							5
							NO WATER UPON COMPLETION
						ł	
	┝──┦						
						ł	
				L			
						1	
	┝──┦					ł	
			<u>.</u>				
٧n٥	Of R	oring: Casing Size	e Hollow Ste	m Auger S	ize 4 25"	1	Standard Penetration Test (ST) = 140lb hammer falling 30"
P		tion Percentages		Soils (blo			Cohesive Soils (blows per ft.)
Trace 0 to 10% 0 to 4 Very Loose 30 to 50 C 104 104 2 50							0 to 2 Very Soft 8 to 15 Stiff
					Over 50	Very Dens	
And 40 to 50% 10 to 30 Medium Dense							4 to 8 Medium Stiff Over 30 Hard
			Blows are per 6" tal	en with a	1 24" long	D X 1 3/8" I.D.	

Clier	lient: Powell Stone & Gravel Date: 7/ /2023 Page # 1 of 1										
Loca	tion	Teel Road, Win	chendown, MA					0			
Borin		Ground	Date	Date		Drilling		Eng/Hydrol.			
#PT-1	9	Elev	Start 7/ /2023	Complete		Foreman:	Mike DeAmicis	Geologist:			
D		Sam	ple Data		α.	~					
E P		Sample	Blows	Rec.	Casing	Strata	¥7•	111	60.1		
	NO.	Depth(ft.)	6" Penetration	Inches	Blows	Change	V 1S	ual Identificatio	on of Soil	and/or Rock Strata	
Н	110.				Per Ft.	Depth					
	1	0-2"	5-16-15-16	9"			Dry, dense, N	AEDIUM TO C	OARSES	SAND and gravel	
5	2	5'-7'	14-22-22-16	16"			Dry, dense, C	COARSE SANI	D and gra	ivel, trace silt	
						H2O					
10	3	10'-10'9"	4-39-60/3"	21"			Wet, very de	nse, COARSE	SAND ar	nd gravel	
							Auger refusa	11'			
							, lager renaed				
15											
20											
25											
20											
30											
00											
			ļ								
35											
T	ype Of Boring: Casing Size Hollow Stem Auger Size 4.25" Standard Penetration Test (ST) = 140lb hammer falling 30"										
							Stanuard Penetr				
P	Proportion Percentages Granular Soils (blows p					Cohesive Soi					
			0 to 4 Very Loose 4 to 10 Loose	-				0 to 2 Very S 2 to 4 Soft	011	8 to 15 Stiff 15 to 30 Youry Stiff	
					Over 50	Very Dens	t l		m Stiff	15 to 30 Very Stiff Over 30 Hard	
	And 40 to 50%			10 to 30 Medium Dense Blows are per 6" taken with an 24" long							

Clier	lient: Powell Stone & Gravel Date: 7/ /2023 Page # 1 of 1									
Loca	tion	Teel Road, Win	chendown, MA				~			
Borin	g	Ground	Date	Date		Drilling	Eng/Hydrol.			
#PT-2	20	Elev	Start 7/ /2023	Complete		Foreman:	: Mike DeAmicis Geologist:			
D		Sam	ple Data		α.	~				
E P		Sample	Blows	Rec.	Casing	Strata				
Т	NO.	Depth(ft.)	6" Penetration	Inches	Blows	Change	Visual Identification of Soil and/or Rock Strata			
H	110.				Per Ft.	Depth				
	1	0-2"	1-1-1-2	17"			Dry, very loose, MEDIUM TO COARSE SAND and gravel			
5	2	5'-7'	5-26-26-30	17"			Dry, very dense, MEDIUM TO COARSE SAND and gravel,			
							some silt			
						8'	Wet, FINE SAND, some silt, little gravel			
10	3	10'-12'	4-7-9-13	15"		H2O	Wet, medium dense, FINE SAND, some silt			
10	5	10 12	17715	10		1120				
45	4	451 471	4-8-21-33	17"			Wet medium dense FINE CAND			
15	4	15'-17'	4-8-21-33	17			Wet, medium dense, FINE SAND			
							END OF BORING AT 17'			
20										
25										
30										
35										
				<u> </u>			1			
Туре	Of B	oring: Casing Size	e Hollow Ste	m Auger S	ize 4.25"		Standard Penetration Test (ST) = 140lb hammer falling 30"			
						Cohesive Soils (blows per ft.)				
	Trace 0 to 10% 0 to 4 Very Loose			30 to 50 l		0 to 2 Very Soft 8 to 15 Stiff				
			4 to 10 Loose			Very Dens				
	Some 10 to 40% And 40 to 50%		10 to 30 Medium De	nse			4 to 8 Medium Stiff Over 30 Hard			
	And 40 to 50%		Blows are per 6" tak		1 24" long	X 2" OD				

Clie	nt:	Powell Stone &	Gravel			Date:	7/27/23 Page # 1 of 2					
		Teel Road, Wir										
Borin	-	Ground	Date	Date	<i></i>	Drilling	Eng/Hydrol.					
#PT-2 D	21	Elev San	Start 7/26/23	Complete	7/27/23	Foreman:	Mike DeAmicis Geologist:					
Е			Blows	Rec.	Casing	Strata						
P T		Sample	6" Penetration	Inches	Blows	Change	Visual Identification of Soil and/or Rock Strata					
Ĥ	NO.	Depth(ft.)			Per Ft.	Depth						
	1	0-2"	2-2-3-4	18"			Dry, loose, FINE SAND, some gravel, trace silt					
_			0.5.5.11									
5	2	5'-7'	3-5-7-11	20"			Dry, medium dense FINE SAND, some gravel, trace silt					
	\vdash											
10	3	10'-12'	4-7-5-7	16"								
	3	10-12	/-/-/	10								
15	4	15'-17'	21-21-14-15	13"			Dry, dense, MEDIUM TO COARSE GRAVEL and sand,					
							trace silt					
20	5	20'-22'	8-5-3-4	12"			Dry, loose, MEDIUM TO COARSE GRAVEL and sand,					
							trace silt					
						23'						
			-			25						
25	6	25'-27'	4-5-7-7	24"			Dry, medium dense, FINE SAND, trace silt					
			l									
20	7	201 201	14 14 10 21	04"								
30	7	30'-32'	14-14-19-21	21"			Dry, dense COARSE GRAVEL, fine sand, trace silt					
	Щ											
]											
35	8	35'-37'	12-21-21-18	13"								
	0	00 01	12 21 21 10			ļ						
Туре	Of Bo	oring: Casing Siz	e Hollow Ste	m Auger S	ize 4.25"		Standard Penetration Test (ST) = 140lb hammer falling 30"					
		tion Percentages	1	Soils (blo)	Cohesive Soils (blows per ft.)					
	Trace 0 to 10% 0 to 4 Very Loose 30 to 50						0 to 2 Very Soft 8 to 15 Stiff					
		ne 10 to 40%	4 to 10 Loose		Over 50	Very Dens						
			10 to 30 Medium De	5			4 to 8 Medium Stiff Over 30 Hard					
			Blows are per 6" tal	ken with an	n 24" long	X 2" OD	X 1 3/8" I.D.					
_		Blows are per 6" taken with an 24" long X 2" OD X 1 3/8" I.D.										

Clie		Powell Stone &				Date:	7/27/23 Page # 2 of 2
Loca Borin		Teel Road, Win Ground	Date Date	Date		Drilling	Eng/Hydrol.
PT-2	-	Elev	Start 7/26/23		7/27/23	-	Mike DeAmicis Geologist:
D E	┝──		nple Data Blows	Rec.	Casing	Strata	
P T		Sample	6" Penetration		Blows	Change	Visual Identification of Soil and/or Rock Strata
H	NO.	Depth(ft.)			Per Ft.	Depth	
40	9	40'-42'	16-19-21-21	18"			Dry, dense, FINE SAND, some gravel, trace silt
45	10	45'-47'	6-11-12-15	17"			Dry, medium dense, FINE SAND, some gravel, trace silt
	<u> </u>						
			14.25.24.21				
50	11	50'-52'	14-37-24-21	16"			Dry, very dense, COARSE GRAVEL and fine sand, trace silt
			5 0 10 10				
55	12	55'-57'	7-9-12-13	20"			Moist, medium dense, FINE SAND
	<u> </u>						
	<u> </u>					1100	
						H2O	
60	12	60'-62'	5-6-13-12				Wat madium danag FINE SAND some silt
50	13	00-02	5-0-15-12				Wet, medium dense, FINE SAND, some silt
	<u> </u>						END OF BORING AT 62'
			!	ļ			
		oring: Casing Size		-			Standard Penetration Test (ST) = 140lb hammer falling 30"
Proportion PercentagesGranular Soils (blows per final for the second							Cohesive Soils (blows per ft.)
		ace 0 to 10% ne 10 to 40%	0 to 4 Very Loose 4 to 10 Loose		30 to 50 l	Dense Very Dens	e 0 to 2 Very Soft 8 to 15 Stiff 2 to 4 Soft 15 to 30 Very Stiff
	And 40 to 50% 10 to 30 Medi				5.00		4 to 8 Medium Stiff Over 30 Hard
			Blows are per 6" tal	ken with a	n 24" long	X 2" OD	X 1 3/8" I.D.

Clie	nt:	Powell Stone &	Gravel			Date:	7/27/23	B Page # 1 of 1	
Loca	ation	Teel Road, Win	chendown, MA						
Borin		Ground	Date	Date		Drilling		Eng/Hydrol.	
#PT-2	23	Elev	Start 7/27/23	Complete	7/27/23	Foreman:	Mike DeAmicis	Geologist:	
D E		Sam	ple Data	-		<u>.</u>			
E P		Sample	Blows	Rec.	Casing	Strata	17	and I dout! Cootion of Se	il and/an Daala Strata
Т	NO.		6" Penetration	Inches	Blows Per Ft.	Change Depth	V I	isual Identification of So	in and/or Rock Strata
Н		0-2'	3-7-5-5	20"	TCI FL	Depti	Dan (and a diver		
	1	0-2	5-7-5-5	20			Dry, mediur	n dense, FINE SAND a	ind gravel, trace sit
5	2	5'-7'	14-8-8-9	13"					
5	2	5-7	14-0-0-9	13					
10	3	10'-12'	3-5-18-9	16"			Maiat madi	um dense, FINE SAND	trace cilt
10	3	10-12	3-3-10-9	10			woist, meui	uni dense, fine SANL	
1									
15	4	15'-15'9"	43-50/3"	9"		H2O	Wet verv d	ense FINE TO MEDIU	M COARSE SAND and
10	-	10 10 0	15 50/5	0		1120	-		
							gravel		
							Auger refus	al at 16'6"	
20									
	\vdash								
	\vdash								
Type Of Boring: Casing Size Hollow Stem Auger Size 4.25" Standard Penetration Test (ST) = 140lb hammer falling 30"									
Proportion Percentages Granular Soils (blows per ft.)								Cohesive Soils (blows	
Trace 0 to 10%0 to 4 Very Loose30 to 50 Der								0 to 2 Very Soft	8 to 15 Stiff
	Some 10 to 40% 4 to 10 Loose Over 50 V And 40 to 50% 10 to 30 Medium Dense						e	2 to 4 Soft	15 to 30 Very Stiff
	An	nd 40 to 50%		2.411.1	V ALL OF	V 1 2/08 I D	4 to 8 Medium Stiff	Over 30 Hard	
			Blows are per 6" tal	сеп with ят	n 74 - 1000	• x z* (DD)	A 1 3/8° 1.D		

Clie	Plient: Powell Stone & Gravel Date: 7/27/23 Page # 1 of 1											
		Teel Road, Win				Date.						
Borin	g	Ground	Date	Date		Drilling						
#PT-2	24	Elev	Start 7/27/23	Complete	7/27/23	Foreman:	: Mike DeAmicis Geologist:					
D E	├──		ple Data Blows	Rec.	Casing	Strata						
P T	<u> </u>	Sample	6" Penetration	Inches	Blows	Change	Visual Identification of Soil and/or Rock Strata					
H	NO.	Depth(ft.)			Per Ft.	Depth						
	1	0-2'	5-5-4-6	21"			Dry, loose, FINE SAND, some gravel, trace silt					
5	2	5'-7'	7-8-6-7	19"								
						•						
10	3	10'-12'	2-2-3-6	16"			Moist, medium dense, FINE SAND, trace silt					
	5	10-12	2-2-5-0	10								
	\vdash											
	\vdash											
4-			2 4 5 5	4		1100						
15	4	15'-17'	3-4-5-5	15"		H2O	Wet, loose, FINE SAND, trace silt					
			ļ									
	\square		ļ				END OF BORING AT 17'					
	Щ											
20												
						1						
						1						
	\vdash											
	\vdash											
	\vdash											
	$\left - \right $											
			<u> </u>									
Type	Of R4	oring: Casing Size	e Hollow Ste	m Augor S	ize 4 25"		Standard Penetration Test (ST) = 140lb hammer falling 30"					
		tion Percentages		Soils (blo	Cohesive Soils (blows per ft.)							
		ace 0 to 10%	0 to 4 Very Loose		30 to 50 l		0 to 2 Very Soft 8 to 15 Stiff					
	Son	ne 10 to 40%	4 to 10 Loose		Over 50	Very Dens						
	An	d 40 to 50%	10 to 30 Medium De				4 to 8 Medium Stiff Over 30 Hard					
			Blows are per 6" tal	ken with a	n 24" long	g X 2" OD) X 1 3/8" I.D.					

Clier	lient: Powell Stone & Gravel Date: 7/ /2023 Page # 1 of 1									
		Teel Road, Win						0		
Borin		Ground	Date	Date		Drilling		Eng/Hydrol.		
#PT-2	-	Elev	Start 7/ /2023	Complete		-	Mike DeAmicis	Geologist:		
D		Sam	ple Data					0		
E P		Sample	Blows	Rec.	Casing	Strata				
	NO		6" Penetration	Inches	Blows	Change	Visu	al Identificatio	on of Soil	and/or Rock Strata
T H	NO.	Depth(ft.)			Per Ft.	Depth				
	1	0-2"	2-5-4-7	21"			Dry, loose, FII	NE SAND, little	e gravel,	trace silt
5	2	5'-6'9"	8-17-60/3"	15"		H2O	Wet verv den	se COARSE	GRAVEI	₋ and sand, some silt
•	_		0 17 0070				-			
							-		• •	ed 5' Refusal 4'6"
							(3) Moved 5'	Auger refusa	I 5'6" (4) Moved 5' Refusal 7'
							END OF BOR	ING AT 7'		
40										
10										
15										
20										
25										
30										
35										
-										
Туре	Of Bo	oring: Casing Size	e Hollow Ste	m Auger S	ize 4.25"		Standard Penetra	tion Test (ST) = 14	40lb hamm	er falling 30"
		tion Percentages						Cohesive Soi		
Proportion PercentagesGranular Soils (blows per ft.)Trace 0 to 10%0 to 4 Very Loose30 to 50 De					0 to 2 Very S		8 to 15 Stiff			
		Over 50	Very Dens	e	2 to 4 Soft		15 to 30 Very Stiff			
		id 40 to 50%	10 to 30 Medium Dense					4 to 8 Mediu	m Stiff	Over 30 Hard
			Blows are per 6" tak		1 24" long	X 2" OD	X 1 3/8" I.D.	-		

Client: Powell Stone & Gravel Date: 7/27/23 Page # 1 of 1										
Loca	ation	Teel Road, Win	chendown, MA							
Borin	-	Ground	Date	Date		Drilling		Eng/Hydrol.		
#PT-2	26	Elev	Start 7/27/23	Complete	7/27/23	Foreman:	Mike DeAmicis	Geologist:		
D E		Sam	ple Data	D	Casing	Strata				
Р		Sample	Blows	Rec.	Blows	Change	V	isual Identification of Soil	and/or Dool: Strata	
T H	NO.	Depth(ft.)	6" Penetration	Inches	Per Ft.	Depth	• • •	isual fuentification of Son a	anu/or Kock Strata	
-11	1	0-2'	5-7-4-4	16"	10110	Depen	Dry mediur	n dense, FINE SAND, so	me gravel, trace silt	
	1	0-2	3-7-4-4	10			Dry, mediui	II delise, fine SAND, sol	ne graver, trace sit	
5	2	5'-7'	3-4-9-13	17"						
5	2	5-7	5-4-7-15	17						
10	3	10'-12'	5-5-6-9	16"		H2O	Wet mediu	m dense, FINE SAND		
10	5	10 12	5507	10		1120	Wet, media			
I										
15	4	15'-17'	17-27-25-28	15"			Wet verv d	ense, COARSE SAND an	d gravel, some silt	
	-		1, 2, 20 20							
							END OF BC	DRING AT 17'		
20										
	\vdash									
Type Of Boring:Casing SizeHollow Stem Auger Size 4.25"Standard Penetration Test (ST) = 140lb hammer falling 30"Proportion PercentagesGranular Soils (blows per ft.)Cohesive Soils (blows per ft.)										
Р		tion Percentages						Cohesive Soils (blows per		
Trace 0 to 10% 0 to 4 Very Loose 30 to 50 Den 0 10 / 10 / 10 / 10 / 10 / 10 / 10 / 10 /								0 to 2 Very Soft	8 to 15 Stiff	
	Some 10 to 40% 4 to 10 Loose Over 50 V And 40 to 50% 10 to 30 Medium Dense					very Dens	e	2 to 4 Soft 4 to 8 Medium Stiff	15 to 30 Very Stiff Over 30 Hard	
	An	iu 40 10 3070	Blows are per 6" tal		n 24" long	X 2" OD	X 1 3/8" I D	4 to o meanum Sun	over 50 naru	

Clie	nt:	Powell Stone &	Gravel			Date:	7/27/23	3 P	age # 1 of 1		
Loca	ation	Teel Road, Win	chendown, MA						-		
Borin	g	Ground	Date	Date		Drilling			Hydrol.		
#PT-2	27	Elev	Start 7/27/23	Complete	7/27/23	Foreman:	Mike DeAmicis	Geol	ogist:		
D E		Sam	ple Data	D	Carina	Strata					
P		Sample	Blows	Rec.	Casing Blows	Strata Change	V	anal Idan	tification of Cail	and/or Rock Strata	
T H	NO.	Depth(ft.)	6" Penetration	Inches	Per Ft.	Depth	v I	isual lucili	incation of Son	and/of Rock Strata	
п	1	0-2'	2-2-3-3	21"	10110	Depth			ULP IN SOIL, f	inc cond	
	1	0-2	2-2-3-3	21			Diy, 100se, 1		ULP IN SOIL, I		
5	2	5'-7'	25-28-23-27	20"			Dry yory de			oarse gravel, trace silt	
5	2	5-1	23-20-23-21	20			Diy, very de	EIISE, FIINI		alse glavel, trace sit	
10	3	10'-12'	23-23-19-20	21"			Dry very de	nco CR/	AVEL and sand		
10	5	10-12	25-25-17-20	21			Dry, very de	, OIV			
l											
15	4	15'-17'	25-48-49-60/3"	19"		H2O	Wet verv d	ense CO	ARSE GRAVE	L and sand, some silt	
10		10 11	23-40-49-00/3	10		1120	wet, very a	000			
							Auger refus	al at 17'	END OF BOI	RING AT 17'	
20											
			•								
Туре	Of B	oring: Casing Size	e Hollow Ste	m Auger S	Size 4.25"		Standard Pene	tration Test	(ST) = 140lb hamm	er falling 30"	
Р	ropor	tion Percentages	Granular	Soils (blo	ws per ft.)			Coh	esive Soils (blows p	er ft.)	
	Tra	ace 0 to 10%	0 to 4 Very Loose		30 to 50 l			0 to	2 Very Soft	8 to 15 Stiff	
	Son	ne 10 to 40%	4 to 10 Loose		Over 50 V	Very Dens	e	2 to	4 Soft	15 to 30 Very Stiff	
	And 40 to 50% 10 to 30 Medium Dense							4 to	8 Medium Stiff	Over 30 Hard	
			Blows are per 6" tal	en with a	1 24" long	X 2" OD	X 1 3/8" L.D.				

Clie	nt:	Powell Stone &	Gravel			Date:	7/ /2023	3 Page # 1 of 1	
Loca	tion	Teel Road, Win	chendown, MA						
Borin	-	Ground	Date	Date		Drilling		Eng/Hydrol.	
#PT-2	.9	Elev	Start 7/ /2023	Complete		Foreman:	Mike DeAmicis	Geologist:	
D E			ple Data	Dee	Casing	Strata			
Р		Sample	Blows	Rec.	Blows	Change	Vi	sual Identification of Soil and/or Roc	k Strata
T H	NO.	Depth(ft.)	6" Penetration	Inches	Per Ft.	Depth	V 1.	sual fuentification of 50n and/of Koc	K Sti ata
п	1	0-2"	2-5-4-5	17"	10110	Depti		FINE SAND, little gravel, trace silt	
	1	0-2	2-3-4-3	17			Diy, 100se, r	FINE SAND, IIIIE gravel, liace sil	
F	2	5'-7'	18-60/3"	9"			Dry yory do	and FINE SAND and gravel trace	ailt
5	2	0- <i>1</i>	18-00/3	9			Dry, very de	ense, FINE SAND and gravel, trace	SIIL
40	2	401.401	0 14 16 40	40"					
10	3	10'-12'	9-14-16-48	19"			ivioist, dense	e, COARSE GRAVEL, fine sand, so	me slit
						H2O			
							Auger refusa	al at 12'	
45									
15									
20									
25									
			ļ						
30									
				ļ					
35									
		oring: Casing Size					Standard Penet	tration Test (ST) = 140lb hammer falling 30"	
P		tion Percentages		Soils (blo				Cohesive Soils (blows per ft.)	
		ace 0 to 10%	0 to 4 Very Loose		30 to 50 l			0 to 2 Very Soft 8 to 15 Stiff	
		ne 10 to 40%	4 to 10 Loose		Over 50	Very Dens	e	2 to 4 Soft 15 to 30 Ver	
	An	d 40 to 50%	10 to 30 Medium De					4 to 8 Medium Stiff Over 30 H	ard
			Blows are ner 6" tak	on with a	24" long	X 2" OD	X 1 3/8" I D		

Cliei		Powell Stone &				Date:	7/27/23 Page # 1 of 1
		Teel Road, Wir					
Borin	-	Ground	Date	Date	7/07/00	Drilling	Eng/Hydrol.
#PT-3 D	U	Elev San	Start 7/27/23	Complete	1/27/23	Foreman:	Mike DeAmicis Geologist:
Е		Sample	Blows	Rec.	Casing	Strata	
P T			6" Penetration	Inches	Blows	Change	Visual Identification of Soil and/or Rock Strata
H	NO.	Depth(ft.)			Per Ft.	Depth	
	1	0-2'	2-2-2-3	23"			Dry, loose, FINE SAND, some gravel, trace silt
-	-	<u> </u>		4.01			
5	2	5'-7'	4-4-6-6	18"			Dry, medium dense, FINE SAND, trace silt
10	3	10'-12'	3-3-5-5	21"			Dry, loose, FINE SAND, trace silt
10	5	10-12	5-5-5-5	<u> </u>			bry, 10030, I HAL OCHED, LIQUE SIL
			<u> </u>				
15	4	15'-17'	5-6-6-7	22"			Dry, medium dense, FINE SAND, trace silt
20	5	20'-22'	5-5-7-7	21"			
<u>م</u> ح	(051 071	4-8-15-22	40"			
25	6	25'-27'	4-8-13-22	19"			Moist, medium dense, FINE SAND, little gravel, some silt
	I					H2O	
30	7	30'-32'	39-41-43-49	20"			Wet, very dense, COARSE GRAVEL and fine sand, some silt
	,	00 02					
			<u> </u>				
							END OF BORING AT 32'
		oring: Casing Siz					Standard Penetration Test (ST) = 140lb hammer falling 30"
P	-	tion Percentages		Soils (blo			Cohesive Soils (blows per ft.)
		ace 0 to 10%	0 to 4 Very Loose		30 to 50 l		0 to 2 Very Soft 8 to 15 Stiff
		ne 10 to 40%	4 to 10 Loose		Over 50	Very Dens	
	An	d 40 to 50%	10 to 30 Medium De		. 24" 1	VALOP	4 to 8 Medium Stiff Over 30 Hard
			Blows are per 6" tal	ken with ai	1 24" Iong	, а 2°° ОД	A 1 3/0 1.D.

Drawdown Analysis

BASIN 1 DRAWDOWN

Type III 24-hr 100-Year Rainfall=8.34" Printed 2/19/2024

2024-02-19 ProposedType IIIPrepared by McCarty Engineering, Inc.HydroCAD® 10.00-26 s/n 02034 © 2020 HydroCAD Software Solutions LLC

Hydrograph for Pond 1P: Basin 1

T :	I	01		0	Discondered	Duine and	
Time	Inflow	Storage	Elevation	Outflow	Discarded	Primary	
<u>(hours)</u> 0.00	(cfs) 0.00	(cubic-feet)	(feet)	<u>(cfs)</u> 0.00	(cfs)	(cfs)	
1.00	0.00	0 0	1,035.00 1,035.00	0.00	0.00 0.00	0.00 0.00	
2.00	0.00	0	1,035.00	0.00	0.00	0.00	
3.00	0.00	0	1,035.00	0.00	0.00	0.00	
4.00	0.00	0	1,035.00	0.00	0.00	0.00	
5.00	0.00	0	1,035.00	0.00	0.00	0.00	
6.00	0.00	0	1,035.00	0.00	0.00	0.00	
7.00	0.00	0	1,035.00	0.00	0.00	0.00	
8.00	0.00	Ő	1,035.00	0.00	0.00	0.00	
9.00	0.00	Ő	1,035.00	0.00	0.00	0.00	
10.00	0.00	Ő	1,035.00	0.00	0.00	0.00	
11.00	0.00	0 0	1,035.00	0.00	0.00	0.00	
12.00	1.41	104	1,035.05	0.42	0.42	0.00	
13.00	1.06	2,292	1,035.88	1.37	0.68	0.69	
14.00	0.75	1,767	1,035.71	0.84	0.62	0.21	
15.00	0.60	1,521	1,035.62	0.66	0.59	0.07	
16.00	0.44	1,223	1,035.51	0.56	0.56	0.00	
17.00	0.36	749	1,035.33	0.50	0.50	0.00	
18.00	0.28	232	1,035.11	0.43	0.43	0.00	
19.00	0.26	13	1,035.01	0.26	0.26	0.00	
20.00	0.24	12	1,035.01	0.24	0.24	0.00	
21.00	0.22	11	1,035.01	0.22	0.22	0.00	
22.00	0.20	10	1,035.00	0.20	0.20	0.00	
23.00	0.18	9	1,035.00	0.18	0.18	0.00	
24.00	0.16	8	1,035.00	0.16	0.16	0.00	
25.00	0.00	0	1,035.00	0.00	0.00	0.00	
26.00	0.00	0	1,035.00	0.00	0.00	0.00	
27.00	0.00	0	1,035.00	0.00	0.00	0.00	
28.00	0.00	0	1,035.00	0.00	0.00	0.00	
29.00	0.00	0	1,035.00	0.00	0.00	0.00	
30.00	0.00	0	1,035.00	0.00	0.00	0.00	Time of Drawdown
31.00	0.00	0	1,035.00	0.00	0.00	0.00	
32.00	0.00	0	1,035.00	0.00	0.00	0.00	
33.00	0.00	0	1,035.00	0.00	0.00	0.00	
34.00	0.00	0	1,035.00	0.00	0.00	0.00	
35.00	0.00	0	1,035.00	0.00	0.00	0.00	
36.00	0.00	0	1,035.00	0.00	0.00	0.00	
37.00	0.00	0	1,035.00	0.00	0.00	0.00	
38.00	0.00	0	1,035.00	0.00	0.00	0.00	
39.00	0.00	0	1,035.00	0.00	0.00	0.00	
40.00	0.00	0	1,035.00	0.00	0.00	0.00	
41.00	0.00	0	1,035.00	0.00	0.00	0.00	
42.00	0.00	0	1,035.00	0.00	0.00	0.00	
43.00 44.00	0.00 0.00	0	1,035.00 1,035.00	0.00 0.00	0.00	0.00 0.00	
45.00	0.00	0 0	1,035.00	0.00	0.00 0.00	0.00	
45.00 46.00	0.00	0	1,035.00	0.00	0.00	0.00	
46.00	0.00	0	1,035.00	0.00	0.00	0.00	
48.00	0.00	0	1,035.00	0.00	0.00	0.00	
40.00	0.00	0	1,035.00	0.00	0.00	0.00	

BASIN 2 DRAWDOWN

2024-02-19 Proposed

Type III 24-hr 100-Year Rainfall=8.34" Printed 2/19/2024

Prepared by McCarty Engineering, Inc. HydroCAD® 10.00-26 s/n 02034 © 2020 HydroCAD Software Solutions LLC

Hydrograph for Pond 2P: Basin 2

Time	Inflow	Storage	Elevation	Outflow	Discarded	Primary	
(hours)	(cfs)	(cubic-feet)	(feet)	(cfs)	(cfs)	(cfs)	
0.00	0.00	0	1,034.00	0.00	0.00	0.00	
1.00	0.00	Ő	1,034.00	0.00	0.00	0.00	
2.00	0.00	0 0	1,034.00	0.00	0.00	0.00	
3.00	0.00	0	1,034.00	0.00	0.00	0.00	
4.00	0.00	0	1,034.00	0.00	0.00	0.00	
5.00	0.00	0 0	1,034.00	0.00	0.00	0.00	
6.00	0.00	0 0	1,034.00	0.00	0.00	0.00	
7.00	0.00	0 0	1,034.00	0.00	0.00	0.00	
8.00	0.00	0	1,034.00	0.00	0.00	0.00	
9.00	0.00	0	1,034.00	0.00	0.00	0.00	
10.00	0.00	0	1,034.00	0.00	0.00	0.00	
11.00	0.00	0	1,034.00	0.00	0.00	0.00	
12.00	0.43	17	1,034.00	0.33	0.33	0.00	
13.00	0.93	3,446	1,034.82	0.92	0.92	0.00	
14.00	0.39	2,289	1,034.56	0.86	0.86	0.00	
15.00	0.21	392	1,034.10	0.76	0.76	0.00	
16.00	0.10	5	1,034.00	0.10	0.10	0.00	
17.00	0.08	4	1,034.00	0.08	0.08	0.00	
18.00	0.07	3	1,034.00	0.07	0.07	0.00	
19.00	0.06	3	1,034.00	0.06	0.06	0.00	
20.00	0.05	3	1,034.00	0.05	0.05	0.00	
21.00	0.05	3	1,034.00	0.05	0.05	0.00	
22.00	0.05	2	1,034.00	0.05	0.05	0.00	
23.00	0.04	2	1,034.00	0.04	0.04	0.00	
24.00	0.04	2	1,034.00	0.04	0.04	0.00	
25.00	0.00	0	1,034.00	0.00	0.00	0.00	
26.00	0.00	0	1,034.00	0.00	0.00	0.00	$\mathbf{\Lambda}$
27.00	0.00	0	1,034.00	0.00	0.00	0.00	
28.00	0.00	0	1,034.00	0.00	0.00	0.00	
29.00	0.00	0	1,034.00	0.00	0.00	0.00	
30.00	0.00	0	1,034.00	0.00	0.00	0.00	Time of Drawdown
31.00	0.00	0	1,034.00	0.00	0.00	0.00	
32.00	0.00	0	1,034.00	0.00	0.00	0.00	
33.00	0.00	0	1,034.00	0.00	0.00	0.00	
34.00	0.00	0	1,034.00	0.00	0.00	0.00	
35.00	0.00	0	1,034.00	0.00	0.00	0.00	
36.00	0.00	0	1,034.00	0.00	0.00	0.00	
37.00	0.00	0	1,034.00	0.00	0.00	0.00	
38.00	0.00	0	1,034.00	0.00	0.00	0.00	
39.00	0.00	0	1,034.00	0.00	0.00	0.00	
40.00	0.00	0	1,034.00	0.00	0.00	0.00	
41.00	0.00	0	1,034.00	0.00	0.00	0.00	
42.00	0.00	0	1,034.00	0.00	0.00	0.00	
43.00	0.00	0	1,034.00	0.00	0.00	0.00	
44.00	0.00	0	1,034.00	0.00	0.00	0.00	
45.00	0.00	0	1,034.00	0.00	0.00	0.00	
46.00	0.00	0	1,034.00	0.00	0.00	0.00	
47.00	0.00	0	1,034.00	0.00	0.00	0.00	
48.00	0.00	0	1,034.00	0.00	0.00	0.00	

BASIN 3 DRAWDOWN

Type III 24-hr 100-Year Rainfall=8.34" Printed 2/19/2024

2024-02-19 ProposedType IIIPrepared by McCarty Engineering, Inc.HydroCAD® 10.00-26 s/n 02034 © 2020 HydroCAD Software Solutions LLC

Hydrograph for Pond 3P: Basin 3

Time	Inflow	Storage	Elevation	Outflow	Discarded	Primary	
(hours)	(cfs)	(cubic-feet)	(feet)	(cfs)	(cfs)	(cfs)	
0.00	0.00	0	1,030.00	0.00	0.00	0.00	
1.00	0.00	0	1,030.00	0.00	0.00	0.00	
2.00	0.00	0	1,030.00	0.00	0.00	0.00	
3.00	0.00	0	1,030.00	0.00	0.00	0.00	
4.00	0.00	0	1,030.00	0.00	0.00	0.00	
5.00	0.00	0	1,030.00	0.00	0.00	0.00	
6.00	0.00	0	1,030.00	0.00	0.00	0.00	
7.00	0.00	0	1,030.00	0.00	0.00	0.00	
8.00	0.00	0	1,030.00	0.00	0.00	0.00	
9.00	0.00	0	1,030.00	0.00	0.00	0.00	
10.00	0.00	0	1,030.00	0.00	0.00	0.00	
11.00	0.00	0	1,030.00	0.00	0.00	0.00	
12.00	0.94	49	1,030.02	0.41	0.41	0.00	
13.00	1.68	10,700	1,033.40	1.01	1.01	0.00	
14.00	1.15	11,809	1,033.65	1.06	1.06	0.00	
15.00	0.92	11,672	1,033.62	1.06	1.06	0.00	
16.00	0.68	10,833	1,033.43	1.02	1.02	0.00	
17.00	0.55	9,487	1,033.11	0.95	0.95	0.00	
18.00	0.44	7,989	1,032.72	0.87	0.87	0.00	
19.00	0.39	6,467	1,032.31	0.79	0.79	0.00	
20.00	0.36	5,110	1,031.90	0.71	0.71	0.00	
21.00	0.33	3,891	1,031.51	0.65	0.65	0.00	
22.00	0.30	2,804	1,031.14	0.59	0.59	0.00	
23.00	0.27	1,833	1,030.77	0.53	0.53	0.00	
24.00	0.25	961	1,030.42	0.48	0.48	0.00	
25.00 26.00	0.00 0.00	0	1,030.00 1,030.00	0.00 0.00	0.00 0.00	0.00	
27.00	0.00	0	1,030.00	0.00	0.00	0.00	
28.00	0.00	0	1,030.00	0.00	0.00	0.00	
29.00	0.00	0	1,030.00	0.00	0.00	0.00	
30.00	0.00	0	1,030.00	0.00	0.00	0.00	
31.00	0.00	0	1,030.00	0.00	0.00	0.00	Time of Drawdown
32.00	0.00	0	1,030.00	0.00	0.00	0.00	
33.00	0.00	Ő	1,030.00	0.00	0.00	0.00	
34.00	0.00	0 0	1,030.00	0.00	0.00	0.00	
35.00	0.00	0	1,030.00	0.00	0.00	0.00	
36.00	0.00	0	1,030.00	0.00	0.00	0.00	
37.00	0.00	0	1,030.00	0.00	0.00	0.00	
38.00	0.00	0	1,030.00	0.00	0.00	0.00	
39.00	0.00	0	1,030.00	0.00	0.00	0.00	
40.00	0.00	0	1,030.00	0.00	0.00	0.00	
41.00	0.00	0	1,030.00	0.00	0.00	0.00	
42.00	0.00	0	1,030.00	0.00	0.00	0.00	
43.00	0.00	0	1,030.00	0.00	0.00	0.00	
44.00	0.00	0	1,030.00	0.00	0.00	0.00	
45.00	0.00	0	1,030.00	0.00	0.00	0.00	
46.00	0.00	0	1,030.00	0.00	0.00	0.00	
47.00	0.00	0	1,030.00	0.00	0.00	0.00	
48.00	0.00	0	1,030.00	0.00	0.00	0.00	

BASIN 4 DRAWDOWN

Type III 24-hr 100-Year Rainfall=8.34" Printed 2/19/2024

2024-02-19 ProposedType IIIPrepared by McCarty Engineering, Inc.HydroCAD® 10.00-26 s/n 02034 © 2020 HydroCAD Software Solutions LLC

Hydrograph for Pond 4P: Basin 4

Time	Inflow	Storage	Elevation	Outflow	Discarded	Primary	
(hours)	(cfs)	(cubic-feet)	(feet)	(cfs)	(cfs)	(cfs)	
0.00	0.00	0	1,044.00	0.00	0.00	0.00	
1.00	0.00	0	1,044.00	0.00	0.00	0.00	
2.00	0.00	0	1,044.00	0.00	0.00	0.00	
3.00	0.00	0	1,044.00	0.00	0.00	0.00	
4.00	0.00	0	1,044.00	0.00	0.00	0.00	
5.00	0.00	0	1,044.00	0.00	0.00	0.00	
6.00	0.00	0	1,044.00	0.00	0.00	0.00	
7.00	0.00	0	1,044.00	0.00	0.00	0.00	
8.00	0.00	0	1,044.00	0.00	0.00	0.00	
9.00	0.00	0	1,044.00	0.00	0.00	0.00	
10.00	0.00	0	1,044.00	0.00	0.00	0.00	
11.00	0.00	0	1,044.00	0.00	0.00	0.00	
12.00	0.40	16	1,044.00	0.31	0.31	0.00	
13.00	0.22	12	1,044.00	0.23	0.23	0.00	
14.00	0.16	8	1,044.00	0.16	0.16	0.00	
15.00	0.13	7	1,044.00	0.13	0.13	0.00	
16.00	0.09	5	1,044.00	0.10	0.10	0.00	
17.00	0.08	4	1,044.00	0.08	0.08	0.00	
18.00	0.06	3	1,044.00	0.06	0.06	0.00	
19.00	0.06	3	1,044.00	0.06	0.06	0.00	
20.00	0.05	3	1,044.00	0.05	0.05	0.00	
21.00	0.05	2	1,044.00	0.05	0.05	0.00	
22.00	0.04	2	1,044.00	0.04	0.04	0.00	
23.00	0.04	2	1,044.00	0.04	0.04	0.00	
24.00 25.00	0.03	2	1,044.00	0.03	0.03	0.00	
26.00	0.00	0	1,044.00	0.00	0.00	0.00	
27.00	0.00	0	1,044.00	0.00	0.00	0.00	
28.00	0.00	0	1,044.00	0.00	0.00	0.00	
29.00	0.00	0	1,044.00	0.00	0.00	0.00	
30.00	0.00	0	1,044.00	0.00	0.00	0.00	Time of Drawdown
31.00	0.00	Ő	1,044.00	0.00	0.00	0.00	
32.00	0.00	Ő	1,044.00	0.00	0.00	0.00	
33.00	0.00	Ő	1,044.00	0.00	0.00	0.00	
34.00	0.00	0	1,044.00	0.00	0.00	0.00	
35.00	0.00	0	1,044.00	0.00	0.00	0.00	
36.00	0.00	0	1,044.00	0.00	0.00	0.00	
37.00	0.00	0	1,044.00	0.00	0.00	0.00	
38.00	0.00	0	1,044.00	0.00	0.00	0.00	
39.00	0.00	0	1,044.00	0.00	0.00	0.00	
40.00	0.00	0	1,044.00	0.00	0.00	0.00	
41.00	0.00	0	1,044.00	0.00	0.00	0.00	
42.00	0.00	0	1,044.00	0.00	0.00	0.00	
43.00	0.00	0	1,044.00	0.00	0.00	0.00	
44.00	0.00	0	1,044.00	0.00	0.00	0.00	
45.00	0.00	0	1,044.00	0.00	0.00	0.00	
46.00	0.00	0	1,044.00	0.00	0.00	0.00	
47.00	0.00	0	1,044.00	0.00	0.00	0.00	
48.00	0.00	0	1,044.00	0.00	0.00	0.00	

BASIN 5 DRAWDOWN

Type III 24-hr 100-Year Rainfall=8.34" Printed 2/19/2024

2024-02-19 ProposedType IIIPrepared by McCarty Engineering, Inc.HydroCAD® 10.00-26 s/n 02034 © 2020 HydroCAD Software Solutions LLC

Hydrograph for Pond 5P: Basin 5

Time	Inflow	Storago	Elevation	Outflow	Discarded	Drimony	
(hours)	(cfs)	Storage (cubic-feet)	(feet)	(cfs)	(cfs)	Primary (cfs)	
0.00	0.00	0	1,052.00	0.00	0.00	0.00	
1.00	0.00	0	1,052.00	0.00	0.00	0.00	
2.00	0.00	0	1,052.00	0.00	0.00	0.00	
3.00	0.00	0	1,052.00	0.00	0.00	0.00	
4.00	0.00	0	1,052.00	0.00	0.00	0.00	
5.00	0.00	0	1,052.00	0.00	0.00	0.00	
6.00	0.00	0	1,052.00	0.00	0.00	0.00	
7.00	0.00	0	1,052.00	0.00	0.00	0.00	
8.00	0.00	0	1,052.00	0.00	0.00	0.00	
9.00	0.00	0	1,052.00	0.00	0.00	0.00	
10.00	0.00	0	1,052.00	0.00	0.00	0.00	
11.00	0.00	0	1,052.00	0.00	0.00	0.00	
12.00	2.84	136	1,052.00	1.53	1.53	0.00	
13.00	1.58	7,765	1,052.02	1.55	1.33	0.00	
14.00	1.13	6,223	1,052.74	1.72	1.72	0.00	
15.00	0.91	3,806	1,052.46	1.65	1.65	0.00	
16.00	0.91	3,800 902	1,052.40	1.55	1.55	0.00	
17.00	0.55	29	1,052.00	0.55	0.55	0.00	
18.00	0.33	23	1,052.00	0.33	0.33	0.00	
19.00	0.43	20	1,052.00	0.43	0.43	0.00	
20.00	0.39	19	1,052.00	0.39	0.35	0.00	
21.00	0.30	17	1,052.00	0.30	0.30	0.00	
22.00	0.33	16	1,052.00	0.33	0.33	0.00	
23.00	0.30	14				0.00	
23.00	0.27	14	1,052.00	0.28 0.25	0.28 0.25	0.00	
25.00	0.25	0	1,052.00	0.23	0.25	0.00	
26.00	0.00	0	1,052.00	0.00	0.00	0.00	
27.00	0.00	0	1,052.00	0.00	0.00	0.00	
28.00	0.00	0	1,052.00	0.00	0.00	0.00	
29.00	0.00	0	1,052.00	0.00	0.00	0.00	
30.00	0.00	0	1,052.00	0.00	0.00	0.00	Time of Drawdown
31.00	0.00	0	1,052.00	0.00	0.00	0.00	
32.00	0.00	0	1,052.00	0.00	0.00	0.00	
33.00	0.00	0	1,052.00	0.00	0.00	0.00	
34.00	0.00	0	1,052.00	0.00	0.00	0.00	
35.00	0.00	Ő	1,052.00	0.00	0.00	0.00	
36.00	0.00	Ő	1,052.00	0.00	0.00	0.00	
37.00	0.00	Ŭ Ŭ	1,052.00	0.00	0.00	0.00	
38.00	0.00	Ő	1,052.00	0.00	0.00	0.00	
39.00	0.00	Ő	1,052.00	0.00	0.00	0.00	
40.00	0.00	Ő	1,052.00	0.00	0.00	0.00	
41.00	0.00	Ő	1,052.00	0.00	0.00	0.00	
42.00	0.00	Ő	1,052.00	0.00	0.00	0.00	
43.00	0.00	Ő	1,052.00	0.00	0.00	0.00	
44.00	0.00	0	1,052.00	0.00	0.00	0.00	
45.00	0.00	0	1,052.00	0.00	0.00	0.00	
46.00	0.00	0	1,052.00	0.00	0.00	0.00	
47.00	0.00	0	1,052.00	0.00	0.00	0.00	
48.00	0.00	Ő	1,052.00	0.00	0.00	0.00	
		•	.,	0.00	0.00	0.00	

Operation and Maintenance Plan

Earth Removal Operation Teel Road Winchendon, Massachusetts Operation and Maintenance Plan

The site contractor will be responsible for the operation and maintenance of the stormwater collection system including deep sump catch basins and an at grade infiltration basin during construction. After construction, the Property Owner is responsible for the operation and maintenance of the proposed stormwater collection system. The following long-term Operation and Maintenance Plan for the project is proposed in accordance with DEP Stormwater Management Standard No. 9 to ensure that the stormwater collection and treatment system operates in accordance with the MADEP Stormwater Management Policy.

Schedule for Inspection and Maintenance after Construction:

Stormwater Management System Owner/Operator

- The property owner will be the owner and operator of the proposed stormwater collection system on site.
- If the property is sold, a copy of this Operation and Maintenance Plan will be transferred to the new property owners.

At Grade Infiltration Basins

- Once constructed, the basin will be inspected at a minimum after several storm events to confirm drainage system functions, bank stability, and vegetation growth. Problems will be addressed immediately.
- During the first six months of operation, the basin will be inspected immediately after significant storm events and cleaned to remove sediment buildup.
- The outlet structure will be inspected and repaired where sediment appears to have clogged the invert.
- A stake shall be placed at the bottom of the pond with marks at 1" increments to measure the sediment accumulation. Sediment will be removed from ponds at a minimum when accumulation is at 4", but as often as necessary, and at least once every 10 years.
- At least twice during the growing season, the side slopes will be mowed, and accumulated trash and debris removed. Accumulated sediment in forebay will also be removed at this time.

Infiltration Trench

• The stone filter layer shall be inspected every 6 months and after every major storm event to verify no erosion has occurred and the system is functioning as desired.

- If it is found that the stone filter layer is clogged with sediment, the pea stone and filter fabric should be replaced on an as needed basis.
- All sediments and hydrocarbons will be properly handled and disposed of off-site, in accordance with local, state, and federal guidelines and regulations.

The routine and non-routine maintenance tasks to be undertaken after construction and a schedule for implementing those task.

• A site maintenance log will be kept. This log will record the dates when maintenance tasks were completed, the person who completed the task, and any observations of malfunctions in components of the stormwater management system. A sample maintenance log form is attached.

Estimated Operations and Maintenance Budget

• Operation and maintenance costs for the project are expected to be approximately \$5,000/year

Proposed Development Teel Road Westminster, Massachusetts Operation and Maintenance Plan

Operation and Maintenance Schedule

ВМР	Frequency	Date Performed	Comments	Cleaning/ Repair Needed? Yes/No	Date of Cleaning/ Repair	Performed By
Above Grade Infiltration Basins	Annual Inspections and after each major storm event. Banks mowed twice a year. Cleaning as needed (Min once every 10 years)					
Infiltration Trench	Inspection after each major storm event for the first year Replace fabric and stone filter layer as needed					

Site Maintenance Supervisor:

Date:



MADEP Stormwater Checklist

Massachusetts Department of Environmental Protection Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

A. Introduction

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.¹ This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8²
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

¹ The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

² For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

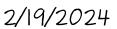
Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



marchet

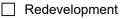


Signature and Date

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

New development



Mix of New Development and Redevelopment

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

\boxtimes	No disturbance to any Wetland Resource Areas
	Site Design Practices (e.g. clustered development, reduced frontage setbacks)
	Reduced Impervious Area (Redevelopment Only)
	Minimizing disturbance to existing trees and shrubs
	LID Site Design Credit Requested:
	Credit 1
	Credit 2
	Credit 3
	Use of "country drainage" versus curb and gutter conveyance and pipe
	Bioretention Cells (includes Rain Gardens)
	Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
	Treebox Filter
	Water Quality Swale
	Grass Channel
	Green Roof
	Other (describe):

Standard 1: No New Untreated Discharges

 \boxtimes No new untreated discharges

- Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Checklist (continued)

Standard 2: Peak Rate Attenuation

- Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.
- Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

Calculations provided to show that post-development peak discharge rates do not exceed predevelopment rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24hour storm.

Standard 3: Recharge

Soil Analysis provided.

- Required Recharge Volume calculation provided.
- Required Recharge volume reduced through use of the LID site Design Credits.
- Sizing the infiltration, BMPs is based on the following method: Check the method used.

Static Simple Dynamic

Dynamic Field¹

- Runoff from all impervious areas at the site discharging to the infiltration BMP.
- Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

Recharge BMPs h	ave been sized	to infiltrate the	Required F	Recharge Volume.

Recharge BMPs have been sized to infiltrate the Required Recharge Volume only to the maximum
extent practicable for the following reason:

- Site is comprised solely of C and D soils and/or bedrock at the land surface
- M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- Solid Waste Landfill pursuant to 310 CMR 19.000
- Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.
- Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis i	is is included.
--------------------------------------------------------------------------------------------	-----------------

¹ 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

Checklist (continued)

Standard 3: Recharge (continued)

The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- · Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.
- A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.
- Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:
 - is within the Zone II or Interim Wellhead Protection Area
 - is near or to other critical areas
 - is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
 - involves runoff from land uses with higher potential pollutant loads.
- The Required Water Quality Volume is reduced through use of the LID site Design Credits.
- Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

Standard 4: Water Quality (continued)

	The ½"	or 1"	Water	Quality	Volume	or
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The equivalent flow rate associated with the Water Quality Volume and documentation is
provided showing that the BMP treats the required water quality volume.

- ☐ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.
- A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

- The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.
- The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted **prior to** the discharge of stormwater to the post-construction stormwater BMPs.
- The NPDES Multi-Sector General Permit does *not* cover the land use.
- LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.
- All exposure has been eliminated.
- All exposure has *not* been eliminated and all BMPs selected are on MassDEP LUHPPL list.
- The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

- The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.
- Critical areas and BMPs are identified in the Stormwater Report.

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the	ne Standards only to the maximum
extent practicable	

The project is subject to the Stormwater Management Standards only to the maximum Exten
Practicable as a:

Limited	Proje	ect
---------	-------	-----

Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.

Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area

Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff

- Bike Path and/or Foot Path
- Redevelopment Project

Redevelopment portion of mix of new and redevelopment.

Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☐ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

The project is highly complex and information is included in the Stormwater Report that explains why
it is not possible to submit the Construction Period Pollution Prevention and Erosion and
Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and
Erosion and Sedimentation Control has <i>not</i> been included in the Stormwater Report but will be
submitted <i>before</i> land disturbance begins.

- The project is *not* covered by a NPDES Construction General Permit.
- The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.
- The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

- The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:
 - Name of the stormwater management system owners;
 - Party responsible for operation and maintenance;
 - Schedule for implementation of routine and non-routine maintenance tasks;
 - Plan showing the location of all stormwater BMPs maintenance access areas;
 - Description and delineation of public safety features;
 - Estimated operation and maintenance budget; and
 - Operation and Maintenance Log Form.
- The responsible party is *not* the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:
 - A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
 - A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

- The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;
- An Illicit Discharge Compliance Statement is attached;
- NO Illicit Discharge Compliance Statement is attached but will be submitted *prior to* the discharge of any stormwater to post-construction BMPs.

Illicit Discharge Compliance Statement

Earth Removal Operation Teel Road Winchendon, Massachusetts

Illicit Discharge Compliance Statement

The Stormwater Management System associated with the redevelopment of Teel Road in Winchendon, MA has been designed such that prior to storm water runoff discharging from the site, it is treated through a series of best management practices. To the Engineer's knowledge, there are no known or designed non-storm water discharges that are or will be connected to the storm water collection system that would convey pollutants directly to groundwater or surface waters.

Name: Brian Marchetti, P.E.

Title: Vice President

Bu Marchits Signature:

Date: 2/19/2024

Pipe Sizing Calculations

Calculated By: JLL	Date:	2/19/2024
Checked By: BRM	Date:	2/19/2024

RCP Pipe n= 0.011

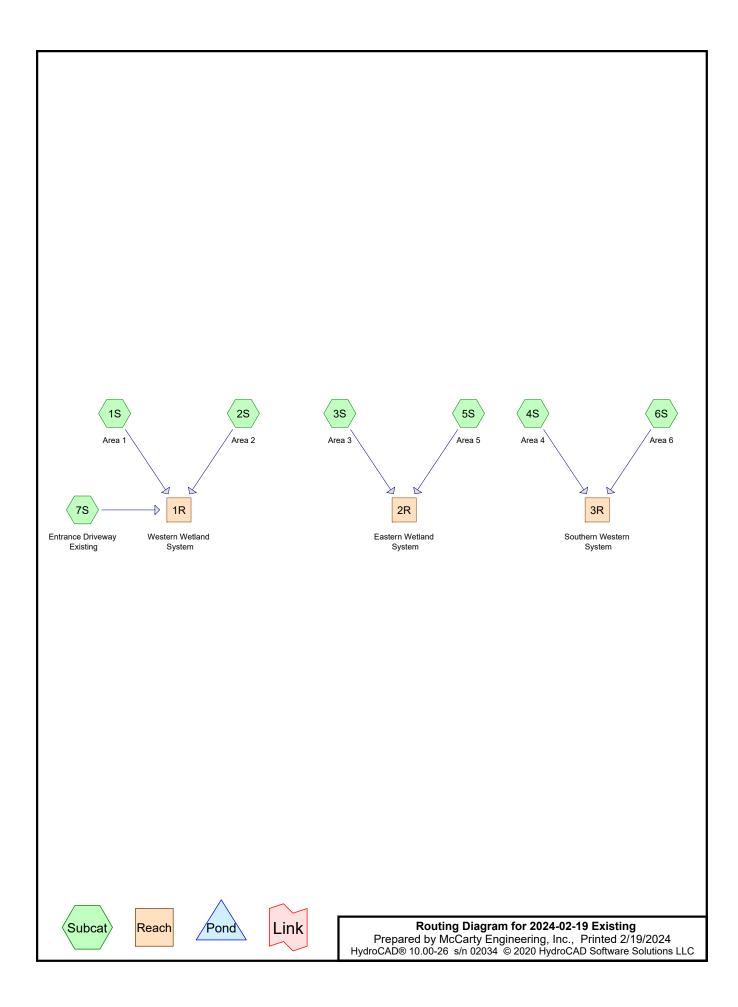
*Flows form the 100-year storm event from HydroCAD were

Culvert	Q	Qsum	Length	Slope	Dia.	Full-Flow Velocity	Full-Flow Capacity ²
(ID, Lot #)	(cfs)	(cfs)	(ft.)	(ft./ft.)	(in.)	(fps)	(cfs)
Pond 1 to Pond 2*	2.10		97.0	0.01	12	5.38	4.22 O.K

¹ V=1.49/n x R^{2/3} x S ^{1/2} ² Q=VA

Appendix B

Existing Conditions HydroCAD Model



Area Listing (all nodes)

CN	Description	
	(subcatchment-numbers)	
96	Gravel surface, HSG A (7S)	
30	Woods, Good, HSG A (1S, 2S, 3S, 4S, 5S, 6S, 7S)	
31	TOTAL AREA	
	96 30	

Soil Listing (all nodes)

Soil	Subcatchment
Group	Numbers
HSG A	1S, 2S, 3S, 4S, 5S, 6S, 7S
HSG B	
HSG C	
HSG D	
Other	
	TOTAL AREA
	Group HSG A HSG B HSG C HSG D

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.340	0.000	0.000	0.000	0.000	0.340	Gravel surface	7S
23.060	0.000	0.000	0.000	0.000	23.060	Woods, Good	1S, 2S, 3S, 4S, 5S, 6S, 7S
23.401	0.000	0.000	0.000	0.000	23.401	TOTAL AREA	

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points Runoff by SCS TR-20 method, UH=SCS, Weighted-CN Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Area 1	Runoff Area=273,390 sf 0.00% Impervious Runoff Depth=0.00" Flow Length=298' Tc=7.7 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 2S: Area 2	Runoff Area=116,865 sf 0.00% Impervious Runoff Depth=0.00" Flow Length=948' Tc=18.8 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 3S: Area 3	Runoff Area=211,965 sf 0.00% Impervious Runoff Depth=0.00" Flow Length=468' Tc=9.2 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 4S: Area 4	Runoff Area=54,680 sf 0.00% Impervious Runoff Depth=0.00" Flow Length=492' Tc=9.5 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 5S: Area 5	Runoff Area=285,904 sf 0.00% Impervious Runoff Depth=0.00" Flow Length=825' Tc=11.9 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 6S: Area 6	Runoff Area=52,387 sf 0.00% Impervious Runoff Depth=0.00" Flow Length=248' Tc=9.4 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment7S: Entrance Driveway	Runoff Area=24,139 sf 0.00% Impervious Runoff Depth=0.84" Tc=5.0 min CN=71 Runoff=0.51 cfs 0.039 af
Reach 1R: Western Wetland System	Inflow=0.51 cfs 0.039 af Outflow=0.51 cfs 0.039 af
Reach 2R: Eastern Wetland System	Inflow=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af
Reach 3R: Southern Western System	Inflow=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Total Runoff Area = 23.401 acRunoff Volume = 0.039 af
100.00% Pervious = 23.401 acAverage Runoff Depth = 0.02"
0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Area 1

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

_	A	rea (sf)	CN E	Description							
	2	73,390	30 V	0 Woods, Good, HSG A							
	2	73,390	1	00.00% Pe	ervious Are	а					
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description					
-	5.8	50	0.1400	0.14		Sheet Flow,					
	1.9	248	0.1800	2.12		Woods: Light underbrush n= 0.400 P2= 3.10" Shallow Concentrated Flow, Woodland Kv= 5.0 fps					
	7.7	298	Total								

Summary for Subcatchment 2S: Area 2

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

 A	rea (sf)	CN [Description		
1	16,865	30 \	Noods, Go	od, HSG A	
 1	16,865		100.00% Pe	ervious Are	a
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
 8.7	50	0.0500	0.10		Sheet Flow,
2.8	238	0.0800	1.41		Woods: Light underbrush n= 0.400 P2= 3.10" Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.2	136	0.1400	1.87		Shallow Concentrated Flow,
3.2	337	0.1200	1.73		Woodland Kv= 5.0 fps Shallow Concentrated Flow, Woodland Kv= 5.0 fps
2.9	187	0.0460	1.07		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
 18.8	948	Total			

Summary for Subcatchment 3S: Area 3

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

_	A	rea (sf)	CN E	Description		
_	2	11,965	30 V	Voods, Go	od, HSG A	
	2	11,965	1	00.00% Pe	ervious Are	а
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
	4.6	50	0.2500	0.18		Sheet Flow,
	1.2	130	0.1300	1.80		Woods: Light underbrush n= 0.400 P2= 3.10" Shallow Concentrated Flow, Woodland Kv= 5.0 fps
	3.4	288	0.0800	1.41		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
	9.2	468	Total			

Summary for Subcatchment 4S: Area 4

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

A	rea (sf)	CN [Description							
	54,680	30 \	30 Woods, Good, HSG A							
	54,680		100.00% Pe	ervious Are	a					
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description					
3.5	50	0.5000	0.24	· · ·	Sheet Flow,					
6.0	442	0.0600	1.22		Woods: Light underbrush n= 0.400 P2= 3.10" Shallow Concentrated Flow, Woodland Kv= 5.0 fps					
9.5	492	Total								

Summary for Subcatchment 5S: Area 5

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

A	rea (sf)	CN E	Description		
2	285,904	30 V	Voods, Go	od, HSG A	
2	285,904	1	00.00% Pe	ervious Are	а
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	50	0.1700	0.16		Sheet Flow,
5.0	516	0.1200	1.73		Woods: Light underbrush n= 0.400 P2= 3.10" Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.6	259	0.2800	2.65		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
11.9	825	Total			·

Summary for Subcatchment 6S: Area 6

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

A	vrea (sf)	CN E	Description		
	52,387	30 V	Voods, Go	od, HSG A	
	52,387	1	00.00% Pe	ervious Are	a
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	50	0.0700	0.11		Sheet Flow,
1.1	87	0.0700	1.32		Woods: Light underbrush n= 0.400 P2= 3.10" Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.7	111	0.2500	2.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
9.4	248	Total			

Summary for Subcatchment 7S: Entrance Driveway Existing

Runoff = 0.51 cfs @ 12.08 hrs, Volume= 0.039 af, Depth= 0.84"

A	rea (sf)	CN	Description					
	9,322	30	Woods, Go	od, HSG A				
	14,817	96	Gravel surfa	ace, HSG A	١			
	24,139	71	Weighted Average					
	24,139		100.00% Pe	ervious Are	а			
То	Longth	Slond	Volocity	Capacity	Description			
Tc (min)	Length (feet)	Slope (ft/ft	,	Capacity (cfs)	Description			
		ווויו	, (1/300)	(013)	D'as et Estas			
5.0					Direct Entry,			

Summary for Reach 1R: Western Wetland System

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area	a =	9.513 ac,	0.00% Impervious, Inflow D	Depth = 0.05" for 2-Year event
Inflow	=	0.51 cfs @	12.08 hrs, Volume=	0.039 af
Outflow	=	0.51 cfs @	12.08 hrs, Volume=	0.039 af, Atten= 0%, Lag= 0.0 min

Summary for Reach 2R: Eastern Wetland System

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area	a =	11.429 ac,	0.00% Impervious, Inflow	Depth = 0.00"	for 2-Year event
Inflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Outflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Summary for Reach 3R: Southern Western System

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	2.458 ac,	0.00% Impervious, In	flow Depth = $0.00"$	for 2-Year event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Outflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Att	en= 0%, Lag= 0.0 min

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points Runoff by SCS TR-20 method, UH=SCS, Weighted-CN Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Area 1	Runoff Area=273,390 sf 0.00% Impervious Runoff Depth=0.00" Flow Length=298' Tc=7.7 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 2S: Area 2	Runoff Area=116,865 sf 0.00% Impervious Runoff Depth=0.00" Flow Length=948' Tc=18.8 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 3S: Area 3	Runoff Area=211,965 sf 0.00% Impervious Runoff Depth=0.00" Flow Length=468' Tc=9.2 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment4S: Area 4	Runoff Area=54,680 sf 0.00% Impervious Runoff Depth=0.00" Flow Length=492' Tc=9.5 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment 5S: Area 5	Runoff Area=285,904 sf 0.00% Impervious Runoff Depth=0.00" Flow Length=825' Tc=11.9 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment6S: Area 6	Runoff Area=52,387 sf 0.00% Impervious Runoff Depth=0.00" Flow Length=248' Tc=9.4 min CN=30 Runoff=0.00 cfs 0.000 af
Subcatchment7S: Entrance Driveway	Runoff Area=24,139 sf 0.00% Impervious Runoff Depth=1.88" Tc=5.0 min CN=71 Runoff=1.24 cfs 0.087 af
Reach 1R: Western Wetland System	Inflow=1.24 cfs 0.087 af Outflow=1.24 cfs 0.087 af
Reach 2R: Eastern Wetland System	Inflow=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af
Reach 3R: Southern Western System	Inflow=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Total Runoff Area = 23.401 acRunoff Volume = 0.087 af
100.00% Pervious = 23.401 acAverage Runoff Depth = 0.04"
0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Area 1

Runoff 0.00 cfs @ 24.04 hrs, Volume= 0.000 af, Depth= 0.00" =

A	rea (sf)	CN E	Description		
2	73,390	30 V	Voods, Go	od, HSG A	
2	73,390	1	00.00% Pe	ervious Are	a
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	50	0.1400	0.14		Sheet Flow,
1.9	248	0.1800	2.12		Woods: Light underbrush n= 0.400 P2= 3.10" Shallow Concentrated Flow, Woodland Kv= 5.0 fps
7.7	298	Total			

Summary for Subcatchment 2S: Area 2

Runoff = 0.00 cfs @ 24.15 hrs, Volume= 0.000 af, Depth= 0.00"

_	A	rea (sf)	CN I	Description		
	1	16,865	30 \	Woods, Go	od, HSG A	
	1	16,865		100.00% Pe	ervious Are	a
	Tc (min)	Length (feet)	Slope (ft/ft)		Capacity (cfs)	Description
_	8.7	50	0.0500	0.10		Sheet Flow,
	2.8	238	0.0800	1.41		Woods: Light underbrush n= 0.400 P2= 3.10" Shallow Concentrated Flow,
	-					Woodland Kv= 5.0 fps
	1.2	136	0.1400	1.87		Shallow Concentrated Flow,
	3.2	227	0 1 2 0 0	1 70		Woodland Kv= 5.0 fps
	3.2	337	0.1200	1.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
	2.9	187	0.0460	1.07		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
_	18.8	948	Total			

Summary for Subcatchment 3S: Area 3

Runoff = 0.00 cfs @ 24.06 hrs, Volume= 0.000 af, Depth= 0.00"

	Α	rea (sf)	CN I	Description		
	2	11,965	30 \	Noods, Go	od, HSG A	
	2	11,965		100.00% Pe	ervious Are	a
(m	Tc iin)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4	4.6	50	0.2500	0.18		Sheet Flow,
	1.2	130	0.1300	1.80		Woods: Light underbrush n= 0.400 P2= 3.10" Shallow Concentrated Flow, Woodland Kv= 5.0 fps
	3.4	288	0.0800	1.41		Shallow Concentrated Flow,
						Woodland Kv= 5.0 fps
ę	9.2	468	Total			

Summary for Subcatchment 4S: Area 4

Page 20

Runoff 0.00 cfs @ 24.06 hrs, Volume= 0.000 af, Depth= 0.00" =

A	rea (sf)	CN [Description		
	54,680	30 \	Noods, Go	od, HSG A	
	54,680		100.00% Pe	ervious Are	a
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	50	0.5000	0.24		Sheet Flow,
6.0	442	0.0600	1.22		Woods: Light underbrush n= 0.400 P2= 3.10" Shallow Concentrated Flow, Woodland Kv= 5.0 fps
9.5	492	Total			

Summary for Subcatchment 5S: Area 5

Runoff = 0.00 cfs @ 24.08 hrs, Volume= 0.000 af, Depth= 0.00"

	A	rea (sf)	CN E	escription		
	2	85,904	30 V	Voods, Go	od, HSG A	
	2	85,904	1	00.00% Pe	ervious Are	а
(Tc min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
	5.3	50	0.1700	0.16		Sheet Flow,
	5.0	516	0.1200	1.73		Woods: Light underbrush n= 0.400 P2= 3.10" Shallow Concentrated Flow, Woodland Kv= 5.0 fps
	1.6	259	0.2800	2.65		Shallow Concentrated Flow,
						Woodland Kv= 5.0 fps
	11.9	825	Total			

Summary for Subcatchment 6S: Area 6

Runoff = 0.00 cfs @ 24.06 hrs, Volume= 0.000 af, Depth= 0.00"

A	rea (sf)	CN E	Description		
	52,387	30 V	Voods, Go	od, HSG A	
	52,387	1	00.00% Pe	ervious Are	a
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	50	0.0700	0.11		Sheet Flow,
1.1	87	0.0700	1.32		Woods: Light underbrush n= 0.400 P2= 3.10" Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.7	111	0.2500	2.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
9.4	248	Total			

Summary for Subcatchment 7S: Entrance Driveway Existing

Runoff = 1.24 cfs @ 12.08 hrs, Volume= 0.087 af, Depth= 1.88"

A	rea (sf)	CN	Description				
	9,322	30	Woods, Go	od, HSG A			
	14,817	96	Gravel surfa	ace, HSG A	4		
	24,139	71	Weighted Average				
	24,139		100.00% Pe	ervious Are	a		
-		0	N/ 1 ···	0			
Тс	Length	Slope		Capacity	Description		
(min)	(feet)	(ft/ft) (ft/sec)	(cfs)			
5.0					Direct Entry,		

Summary for Reach 1R: Western Wetland System

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	9.513 ac,	0.00% Impervious, I	nflow Depth = 0.1	1" for 10-Year event
Inflow =	1.24 cfs @	12.08 hrs, Volume=	0.087 af	
Outflow =	1.24 cfs @	12.08 hrs, Volume=	0.087 af,	Atten= 0%, Lag= 0.0 min

Summary for Reach 2R: Eastern Wetland System

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area	a =	11.429 ac,	0.00% Impervious, Inflow	Depth = 0.00"	for 10-Year event
Inflow	=	0.00 cfs @	24.07 hrs, Volume=	0.000 af	
Outflow	=	0.00 cfs @	24.07 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Summary for Reach 3R: Southern Western System

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	2.458 ac,	0.00% Impervious, Inf	low Depth = 0.00"	for 10-Year event
Inflow =	0.00 cfs @	24.06 hrs, Volume=	0.000 af	
Outflow =	0.00 cfs @	24.06 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points Runoff by SCS TR-20 method, UH=SCS, Weighted-CN Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Area 1	Runoff Area=273,390 sf 0.00% Impervious Runoff Depth=0.06" Flow Length=298' Tc=7.7 min CN=30 Runoff=0.05 cfs 0.031 af
Subcatchment 2S: Area 2	Runoff Area=116,865 sf 0.00% Impervious Runoff Depth=0.06" Flow Length=948' Tc=18.8 min CN=30 Runoff=0.02 cfs 0.013 af
Subcatchment 3S: Area 3	Runoff Area=211,965 sf 0.00% Impervious Runoff Depth=0.06" Flow Length=468' Tc=9.2 min CN=30 Runoff=0.03 cfs 0.024 af
Subcatchment 4S: Area 4	Runoff Area=54,680 sf 0.00% Impervious Runoff Depth=0.06" Flow Length=492' Tc=9.5 min CN=30 Runoff=0.01 cfs 0.006 af
Subcatchment 5S: Area 5	Runoff Area=285,904 sf 0.00% Impervious Runoff Depth=0.06" Flow Length=825' Tc=11.9 min CN=30 Runoff=0.05 cfs 0.033 af
Subcatchment 6S: Area 6	Runoff Area=52,387 sf 0.00% Impervious Runoff Depth=0.06" Flow Length=248' Tc=9.4 min CN=30 Runoff=0.01 cfs 0.006 af
Subcatchment7S: Entrance Driveway	Runoff Area=24,139 sf 0.00% Impervious Runoff Depth=2.80" Tc=5.0 min CN=71 Runoff=1.88 cfs 0.129 af
Reach 1R: Western Wetland System	Inflow=1.88 cfs 0.174 af Outflow=1.88 cfs 0.174 af
Reach 2R: Eastern Wetland System	Inflow=0.08 cfs 0.057 af Outflow=0.08 cfs 0.057 af
Reach 3R: Southern Western System	Inflow=0.02 cfs 0.012 af Outflow=0.02 cfs 0.012 af

Total Runoff Area = 23.401 acRunoff Volume = 0.244 afAverage Runoff Depth = 0.12"100.00% Pervious = 23.401 ac0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Area 1

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Runoff 0.05 cfs @ 15.70 hrs, Volume= 0.031 af, Depth= 0.06" =

A	rea (sf)	CN E	Description		
2	73,390	30 V	Voods, Go	od, HSG A	
2	73,390	1	00.00% Pe	ervious Are	a
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	50	0.1400	0.14		Sheet Flow,
1.9	248	0.1800	2.12		Woods: Light underbrush n= 0.400 P2= 3.10" Shallow Concentrated Flow, Woodland Kv= 5.0 fps
7.7	298	Total			

Summary for Subcatchment 2S: Area 2

Runoff = 0.02 cfs @ 15.86 hrs, Volume= 0.013 af, Depth= 0.06"

_	A	rea (sf)	CN I	Description		
_	1	16,865	30 \	Woods, Go	od, HSG A	
	1	16,865		100.00% Pe	ervious Are	a
_	Tc (min)	Length (feet)	Slope (ft/ft)	•	Capacity (cfs)	Description
_	8.7	50	0.0500	0.10		Sheet Flow,
	2.8	238	0.0800	1.41		Woods: Light underbrush n= 0.400 P2= 3.10" Shallow Concentrated Flow, Woodland Kv= 5.0 fps
	1.2	136	0.1400	1.87		Shallow Concentrated Flow,
						Woodland Kv= 5.0 fps
	3.2	337	0.1200	1.73		Shallow Concentrated Flow,
_	2.9	187	0.0460	1.07		Woodland Kv= 5.0 fps Shallow Concentrated Flow, Woodland Kv= 5.0 fps
	18.8	948	Total			

Summary for Subcatchment 3S: Area 3

Runoff = 0.03 cfs @ 15.71 hrs, Volume= 0.024 af, Depth= 0.06"

	Α	rea (sf)	CN I	Description		
	2	11,965	30 \	Noods, Go	od, HSG A	
	2	11,965		100.00% Pe	ervious Are	a
(m	Tc iin)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4	4.6	50	0.2500	0.18		Sheet Flow,
	1.2	130	0.1300	1.80		Woods: Light underbrush n= 0.400 P2= 3.10" Shallow Concentrated Flow, Woodland Kv= 5.0 fps
	3.4	288	0.0800	1.41		Shallow Concentrated Flow,
						Woodland Kv= 5.0 fps
ę	9.2	468	Total			

Summary for Subcatchment 4S: Area 4

Runoff = 0.01 cfs @ 15.74 hrs, Volume= 0.006 af, Depth= 0.06"

A	rea (sf)	CN E	Description					
	54,680	30 V	Voods, Go	od, HSG A				
	54,680	1	100.00% Pervious Area					
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description			
3.5	50	0.5000	0.24		Sheet Flow,			
6.0	442	0.0600	1.22		Woods: Light underbrush n= 0.400 P2= 3.10" Shallow Concentrated Flow, Woodland Kv= 5.0 fps			
9.5	492	Total						

Summary for Subcatchment 5S: Area 5

Runoff = 0.05 cfs @ 15.75 hrs, Volume= 0.033 af, Depth= 0.06"

	A	rea (sf)	CN E	escription		
	2	85,904	30 V	Voods, Go	od, HSG A	
	2	85,904	1	00.00% Pe	ervious Are	а
(Tc min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
	5.3	50	0.1700	0.16		Sheet Flow,
	5.0	516	0.1200	1.73		Woods: Light underbrush n= 0.400 P2= 3.10" Shallow Concentrated Flow, Woodland Kv= 5.0 fps
	1.6	259	0.2800	2.65		Shallow Concentrated Flow,
						Woodland Kv= 5.0 fps
	11.9	825	Total			

Summary for Subcatchment 6S: Area 6

Runoff = 0.01 cfs @ 15.72 hrs, Volume= 0.006 af, Depth= 0.06"

A	rea (sf)	CN E	Description		
	52,387	30 V	Voods, Goo	od, HSG A	
	52,387	1	00.00% Pe	ervious Are	а
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	50	0.0700	0.11		Sheet Flow,
1.1	87	0.0700	1.32		Woods: Light underbrush n= 0.400 P2= 3.10" Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.7	111	0.2500	2.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
9.4	248	Total			

Summary for Subcatchment 7S: Entrance Driveway Existing

Runoff = 1.88 cfs @ 12.08 hrs, Volume= 0.129 af, Depth= 2.80"

A	rea (sf)	CN	Description				
	9,322	30	Woods, Go	od, HSG A			
	14,817	96	Gravel surfa	ace, HSG A	Α		
	24,139	71	Weighted Average				
	24,139		100.00% Pe	ervious Are	a		
Тс	Length	Slope	e Velocity	Capacity	Description		
(min)	(feet)	(ft/ft		(cfs)	Decemption		
5.0					Direct Entry,		

Summary for Reach 1R: Western Wetland System

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area	=	9.513 ac,	0.00% Impervious,	Inflow Depth = 0.2	2" for 25-Year event
Inflow =	=	1.88 cfs @	12.08 hrs, Volume	= 0.174 af	
Outflow =	=	1.88 cfs @	12.08 hrs, Volume	= 0.174 af,	Atten= 0%, Lag= 0.0 min

Summary for Reach 2R: Eastern Wetland System

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area	=	11.429 ac,	0.00% Impervious, Inflov	v Depth = 0.06"	for 25-Year event
Inflow =	=	0.08 cfs @	15.75 hrs, Volume=	0.057 af	
Outflow =	=	0.08 cfs @	15.75 hrs, Volume=	0.057 af, Atte	en= 0%, Lag= 0.0 min

Summary for Reach 3R: Southern Western System

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	2.458 ac,	0.00% Impervious, Inflov	v Depth = 0.06"	for 25-Year event
Inflow =	0.02 cfs @	15.74 hrs, Volume=	0.012 af	
Outflow =	0.02 cfs @	15.74 hrs, Volume=	0.012 af, Atte	en= 0%, Lag= 0.0 min

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points Runoff by SCS TR-20 method, UH=SCS, Weighted-CN Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Area 1	Runoff Area=273,390 sf 0.00% Impervious Runoff Depth=0.21" Flow Length=298' Tc=7.7 min CN=30 Runoff=0.18 cfs 0.111 af
Subcatchment 2S: Area 2	Runoff Area=116,865 sf 0.00% Impervious Runoff Depth=0.21" Flow Length=948' Tc=18.8 min CN=30 Runoff=0.08 cfs 0.047 af
Subcatchment 3S: Area 3	Runoff Area=211,965 sf 0.00% Impervious Runoff Depth=0.21" Flow Length=468' Tc=9.2 min CN=30 Runoff=0.14 cfs 0.086 af
Subcatchment4S: Area 4	Runoff Area=54,680 sf 0.00% Impervious Runoff Depth=0.21" Flow Length=492' Tc=9.5 min CN=30 Runoff=0.04 cfs 0.022 af
Subcatchment 5S: Area 5	Runoff Area=285,904 sf 0.00% Impervious Runoff Depth=0.21" Flow Length=825' Tc=11.9 min CN=30 Runoff=0.19 cfs 0.116 af
Subcatchment6S: Area 6	Runoff Area=52,387 sf 0.00% Impervious Runoff Depth=0.21" Flow Length=248' Tc=9.4 min CN=30 Runoff=0.03 cfs 0.021 af
Subcatchment7S: Entrance Driveway	Runoff Area=24,139 sf 0.00% Impervious Runoff Depth=3.72" Tc=5.0 min CN=71 Runoff=2.51 cfs 0.172 af
Reach 1R: Western Wetland System	Inflow=2.51 cfs 0.330 af Outflow=2.51 cfs 0.330 af
Reach 2R: Eastern Wetland System	Inflow=0.33 cfs 0.202 af Outflow=0.33 cfs 0.202 af
Reach 3R: Southern Western System	Inflow=0.07 cfs 0.043 af Outflow=0.07 cfs 0.043 af

Total Runoff Area = 23.401 acRunoff Volume = 0.576 af
100.00% Pervious = 23.401 acAverage Runoff Depth = 0.30"
0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Area 1

Runoff = 0.18 cfs @ 13.80 hrs, Volume= 0.111 af, Depth= 0.21"

A	rea (sf)	CN E	Description						
2	273,390	30 Woods, Good, HSG A							
2	273,390	1	00.00% Pe	ervious Are	а				
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
5.8	50	0.1400	0.14	(/ /	Sheet Flow,				
1.9	248	0.1800	2.12		Woods: Light underbrush n= 0.400 P2= 3.10" Shallow Concentrated Flow, Woodland Kv= 5.0 fps				
7.7	298	Total							

Summary for Subcatchment 2S: Area 2

Runoff = 0.08 cfs @ 13.97 hrs, Volume= 0.047 af, Depth= 0.21"

_	A	rea (sf)	CN	Description		
	1	16,865	30	Woods, Go	od, HSG A	
	1	16,865		100.00% Pe	ervious Are	а
_	Tc (min)	Length (feet)	Slope (ft/ft)		Capacity (cfs)	Description
_	8.7	50	0.0500	0.10		Sheet Flow,
	2.8	238	0.0800	1.41		Woods: Light underbrush n= 0.400 P2= 3.10" Shallow Concentrated Flow, Woodland Kv= 5.0 fps
	1.2	136	0.1400	1.87		Shallow Concentrated Flow,
	3.2	337	0.1200	1.73		Woodland Kv= 5.0 fps Shallow Concentrated Flow, Woodland Kv= 5.0 fps
	2.9	187	0.0460	1.07		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
_	18.8	948	Total			

Summary for Subcatchment 3S: Area 3

Runoff = 0.14 cfs @ 13.81 hrs, Volume= 0.086 af, Depth= 0.21"

	Α	rea (sf)	CN I	Description		
	2	11,965	30 \	Noods, Go	od, HSG A	
	2	11,965		100.00% Pe	ervious Are	a
(m	Tc iin)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4	4.6	50	0.2500	0.18		Sheet Flow,
	1.2	130	0.1300	1.80		Woods: Light underbrush n= 0.400 P2= 3.10" Shallow Concentrated Flow, Woodland Kv= 5.0 fps
	3.4	288	0.0800	1.41		Shallow Concentrated Flow,
						Woodland Kv= 5.0 fps
ę	9.2	468	Total			

Summary for Subcatchment 4S: Area 4

Runoff = 0.04 cfs @ 13.82 hrs, Volume= 0.022 af, Depth= 0.21"

A	rea (sf)	CN E	Description							
	54,680	54,680 30 Woods, Good, HSG A								
	54,680	1	00.00% Pe	ervious Are	a					
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description					
3.5	50	0.5000	0.24		Sheet Flow,					
6.0	442	0.0600	1.22		Woods: Light underbrush n= 0.400 P2= 3.10" Shallow Concentrated Flow, Woodland Kv= 5.0 fps					
9.5	492	Total								

Summary for Subcatchment 5S: Area 5

Runoff = 0.19 cfs @ 13.87 hrs, Volume= 0.116 af, Depth= 0.21"

_	A	rea (sf)	CN E	Description		
	2	85,904	30 V	Voods, Go	od, HSG A	
	285,904		100.00% Pervious Area			a
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
	5.3	50	0.1700	0.16		Sheet Flow,
	5.0	516	0.1200	1.73		Woods: Light underbrush n= 0.400 P2= 3.10" Shallow Concentrated Flow, Woodland Kv= 5.0 fps
	1.6	259	0.2800	2.65		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
	11.9	825	Total			

Summary for Subcatchment 6S: Area 6

Runoff = 0.03 cfs @ 13.82 hrs, Volume= 0.021 af, Depth= 0.21"

	A	rea (sf)	CN E	Description					
	52,387 30 Woods, Good, HSG A								
		52,387	1	00.00% Pe	ervious Are	a			
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description			
	7.6	50	0.0700	0.11		Sheet Flow,			
	1.1	87	0.0700	1.32		Woods: Light underbrush n= 0.400 P2= 3.10" Shallow Concentrated Flow, Woodland Kv= 5.0 fps			
	0.7	111	0.2500	2.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps			
_	9.4	248	Total						

Summary for Subcatchment 7S: Entrance Driveway Existing

Runoff = 2.51 cfs @ 12.08 hrs, Volume= 0.172 af, Depth= 3.72"

A	rea (sf)	CN	Description				
	9,322	30	Woods, Go	od, HSG A			
	14,817	96	Gravel surfa	ace, HSG A	λ		
	24,139	71	Weighted Average				
	24,139		100.00% Pe	ervious Are	a		
Та	Longth	Clan	Volocity	Consoitu	Description		
Tc (min)	Length	Slope		Capacity	Description		
(min)	(feet)	(ft/ft) (ft/sec)	(cfs)			
5.0					Direct Entry,		

Summary for Reach 1R: Western Wetland System

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area	a =	9.513 ac,	0.00% Impervious, Inflow I	Depth = 0.42"	for 50-Year event
Inflow	=	2.51 cfs @	12.08 hrs, Volume=	0.330 af	
Outflow	=	2.51 cfs @	12.08 hrs, Volume=	0.330 af, Atte	en= 0%, Lag= 0.0 min

Summary for Reach 2R: Eastern Wetland System

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area :	=	11.429 ac,	0.00% Impervious, Infl	ow Depth = 0.21 "	for 50-Year event
Inflow =	=	0.33 cfs @	13.87 hrs, Volume=	0.202 af	
Outflow =	=	0.33 cfs @	13.87 hrs, Volume=	0.202 af, Atte	en= 0%, Lag= 0.0 min

Summary for Reach 3R: Southern Western System

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area	a =	2.458 ac,	0.00% Impervious,	Inflow Depth = 0.2	21" for 50-Year event
Inflow	=	0.07 cfs @	13.82 hrs, Volume	= 0.043 af	
Outflow	=	0.07 cfs @	13.82 hrs, Volume	= 0.043 af,	Atten= 0%, Lag= 0.0 min

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points Runoff by SCS TR-20 method, UH=SCS, Weighted-CN Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Area 1	Runoff Area=273,390 sf 0.00% Impervious Runoff Depth=0.50" Flow Length=298' Tc=7.7 min CN=30 Runoff=1.02 cfs 0.261 af
Subcatchment 2S: Area 2	Runoff Area=116,865 sf 0.00% Impervious Runoff Depth=0.50" Flow Length=948' Tc=18.8 min CN=30 Runoff=0.37 cfs 0.112 af
Subcatchment 3S: Area 3	Runoff Area=211,965 sf 0.00% Impervious Runoff Depth=0.50" Flow Length=468' Tc=9.2 min CN=30 Runoff=0.78 cfs 0.203 af
Subcatchment 4S: Area 4	Runoff Area=54,680 sf 0.00% Impervious Runoff Depth=0.50" Flow Length=492' Tc=9.5 min CN=30 Runoff=0.20 cfs 0.052 af
Subcatchment 5S: Area 5	Runoff Area=285,904 sf 0.00% Impervious Runoff Depth=0.50" Flow Length=825' Tc=11.9 min CN=30 Runoff=1.00 cfs 0.273 af
Subcatchment 6S: Area 6	Runoff Area=52,387 sf 0.00% Impervious Runoff Depth=0.50" Flow Length=248' Tc=9.4 min CN=30 Runoff=0.19 cfs 0.050 af
Subcatchment7S: Entrance Driveway	Runoff Area=24,139 sf 0.00% Impervious Runoff Depth=4.88" Tc=5.0 min CN=71 Runoff=3.28 cfs 0.225 af
Reach 1R: Western Wetland System	Inflow=3.28 cfs 0.598 af Outflow=3.28 cfs 0.598 af
Reach 2R: Eastern Wetland System	Inflow=1.77 cfs 0.476 af Outflow=1.77 cfs 0.476 af
Reach 3R: Southern Western System	Inflow=0.39 cfs 0.102 af Outflow=0.39 cfs 0.102 af

Total Runoff Area = 23.401 acRunoff Volume = 1.176 afAverage Runoff Depth = 0.60"100.00% Pervious = 23.401 ac0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Area 1

Runoff = 1.02 cfs @ 12.41 hrs, Volume= 0.261 af, Depth= 0.50"

A	rea (sf)	CN E	Description		
2	73,390	30 V	Voods, Go	od, HSG A	
2	273,390 100.00% Pervious Area				a
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	50	0.1400	0.14		Sheet Flow,
1.9	248	0.1800	2.12		Woods: Light underbrush n= 0.400 P2= 3.10" Shallow Concentrated Flow, Woodland Kv= 5.0 fps
7.7	298	Total			

Summary for Subcatchment 2S: Area 2

Runoff = 0.37 cfs @ 12.58 hrs, Volume= 0.112 af, Depth= 0.50"

_	A	rea (sf)	CN I	Description		
	1	16,865	30 \	Woods, Go	od, HSG A	
	1	16,865		100.00% Pe	ervious Are	a
	Tc (min)	Length (feet)	Slope (ft/ft)		Capacity (cfs)	Description
_	8.7	50	0.0500	0.10		Sheet Flow,
	2.8	238	0.0800	1.41		Woods: Light underbrush n= 0.400 P2= 3.10" Shallow Concentrated Flow,
	-					Woodland Kv= 5.0 fps
	1.2	136	0.1400	1.87		Shallow Concentrated Flow,
	3.2	227	0 1 2 0 0	1 70		Woodland Kv= 5.0 fps
	3.2	337	0.1200	1.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
	2.9	187	0.0460	1.07		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
_	18.8	948	Total			

Summary for Subcatchment 3S: Area 3

Runoff = 0.78 cfs @ 12.44 hrs, Volume= 0.203 af, Depth= 0.50"

	Α	rea (sf)	CN I	Description		
	2	11,965	30 \	Noods, Go	od, HSG A	
	2	11,965		100.00% Pe	ervious Are	a
(m	Tc iin)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4	4.6	50	0.2500	0.18		Sheet Flow,
	1.2	130	0.1300	1.80		Woods: Light underbrush n= 0.400 P2= 3.10" Shallow Concentrated Flow, Woodland Kv= 5.0 fps
	3.4	288	0.0800	1.41		Shallow Concentrated Flow,
						Woodland Kv= 5.0 fps
ę	9.2	468	Total			

Summary for Subcatchment 4S: Area 4

Runoff = 0.20 cfs @ 12.44 hrs, Volume= 0.052 af, Depth= 0.50"

A	rea (sf)	CN E	Description		
	54,680	30 V	Voods, Go	od, HSG A	
	54,680 100.00% Pervious Area				a
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	50	0.5000	0.24		Sheet Flow,
6.0	442	0.0600	1.22		Woods: Light underbrush n= 0.400 P2= 3.10" Shallow Concentrated Flow, Woodland Kv= 5.0 fps
9.5	492	Total			

Summary for Subcatchment 5S: Area 5

Runoff = 1.00 cfs @ 12.48 hrs, Volume= 0.273 af, Depth= 0.50"

	A	rea (sf)	CN E	escription		
	2	85,904	30 V	Voods, Go	od, HSG A	
	285,904		1	00.00% Pe	ervious Are	а
(Tc min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
	5.3	50	0.1700	0.16		Sheet Flow,
	5.0	516	0.1200	1.73		Woods: Light underbrush n= 0.400 P2= 3.10" Shallow Concentrated Flow, Woodland Kv= 5.0 fps
	1.6	259	0.2800	2.65		Shallow Concentrated Flow,
						Woodland Kv= 5.0 fps
	11.9	825	Total			

Summary for Subcatchment 6S: Area 6

Runoff = 0.19 cfs @ 12.44 hrs, Volume= 0.050 af, Depth= 0.50"

	Area (sf)	CN E	Description		
	52,387	30 V	Voods, Go	od, HSG A	
	52,387	1	00.00% Pe	ervious Are	a
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	50	0.0700	0.11		Sheet Flow,
1.1	87	0.0700	1.32		Woods: Light underbrush n= 0.400 P2= 3.10" Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.7	111	0.2500	2.50		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
9.4	248	Total			

Summary for Subcatchment 7S: Entrance Driveway Existing

Runoff = 3.28 cfs @ 12.07 hrs, Volume= 0.225 af, Depth= 4.88"

a (sf) CN	N D	escription		
,322 30	0 V	voods, Goo	od, HSG A	
,817 96	6 G	Fravel surfa	ace, HSG A	
,139 7 ⁻	1 V	Veighted A	verage	
,139	1	а		
•				Description
(feet) ((ft/ft)	(ft/sec)	(cfs)	
				Direct Entry,
	,322 30 ,817 90 ,139 7 ,139 sength S	,322 30 W , <u>817 96 G</u> ,139 71 W ,139 1 ength Slope	,322 30 Woods, Goo ,817 96 Gravel surfa ,139 71 Weighted A ,139 100.00% Pe ength Slope Velocity	,322 30 Woods, Good, HSG A ,817 96 Gravel surface, HSG A ,139 71 Weighted Average ,139 100.00% Pervious Are- ength Slope Velocity Capacity

Summary for Reach 1R: Western Wetland System

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area	ı =	9.513 ac,	0.00% Impervious, In	flow Depth = 0.75"	for 100-Year event
Inflow	=	3.28 cfs @	12.07 hrs, Volume=	0.598 af	
Outflow	=	3.28 cfs @	12.07 hrs, Volume=	0.598 af, Att	en= 0%, Lag= 0.0 min

Summary for Reach 2R: Eastern Wetland System

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[40] Hint: Not Described (Outflow=Inflow)

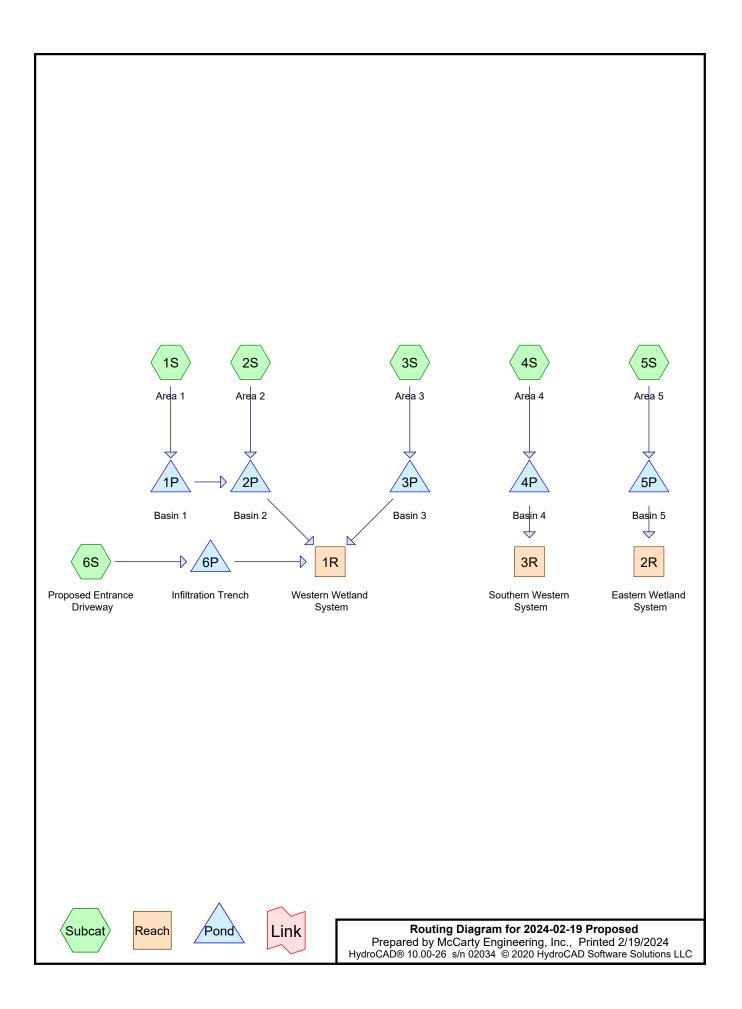
Inflow Area	=	11.429 ac,	0.00% Impervious, I	Inflow Depth = 0.50)" for 100-Year event
Inflow	=	1.77 cfs @	12.46 hrs, Volume=	0.476 af	
Outflow	=	1.77 cfs @	12.46 hrs, Volume=	• 0.476 af, <i>i</i>	Atten= 0%, Lag= 0.0 min

Summary for Reach 3R: Southern Western System

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	2.458 ac,	0.00% Impervious, Inf	low Depth = 0.50 "	for 100-Year event
Inflow =	0.39 cfs @	12.44 hrs, Volume=	0.102 af	
Outflow =	0.39 cfs @	12.44 hrs, Volume=	0.102 af, Atte	en= 0%, Lag= 0.0 min

Proposed Conditions HydroCAD Model



Area Listing (all nodes)

Area	CN	Description
(acres)		(subcatchment-numbers)
22.925	39	>75% Grass cover, Good, HSG A (1S, 2S, 3S, 4S, 5S, 6S)
0.476	96	Gravel surface, HSG A (6S)
23.401	40	TOTAL AREA

Soil Listing (all nodes)

Area	Soil	Subcatchment
(acres)	Group	Numbers
23.401	HSG A	1S, 2S, 3S, 4S, 5S, 6S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
23.401		TOTAL AREA

2024-02-19 Proposed

Prepared by McCarty Engine	eering, Inc.
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Ground Covers (an nodes)										
HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers			
 22.925	0.000	0.000	0.000	0.000	22.925	>75% Grass cover, Good	1S, 2S, 3S, 4S, 5S, 6S			
0.476 23.401	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.476 23.401	Gravel surface TOTAL AREA	6S			

Ground Covers (all nodes)

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Pipe Listing (all nodes)									
Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)

1,035.50

1,034.50

1 1P

97.0 0.0103 0.011

12.0

0.0

0.0

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points Runoff by SCS TR-20 method, UH=SCS, Weighted-CN Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Area 1			ea=222,184 i=798' Tc=	•		
Subcatchment 2S: Area 2		Runoff Ar	rea=51,206 Tc=	0% Imper CN=39		
Subcatchment3S: Area 3			ea=335,587 ,136' Tc=1			
Subcatchment4S: Area 4		Runoff Ar	rea=47,924 Tc=	0% Imper CN=39		
Subcatchment 5S: Area 5		Runoff Are	ea=338,290 Tc=	0% Imper CN=39		
Subcatchment6S: Propos	sed Entrance	Runoff Ar	rea=24,139 Tc=	0% Imper CN=88		
Reach 1R: Western Wetla	nd System				Inflow= Outflow=	0.000 af 0.000 af
Reach 2R: Eastern Wetlar	nd System				Inflow= Outflow=	0.000 af 0.000 af
Reach 3R: Southern West	ern System				Inflow= Outflow=	0.000 af 0.000 af
Pond 1P: Basin 1	Discarded=0.00 cfs		Elev=1,035 Primary=0.			
Pond 2P: Basin 2	Discarded=0.00 cfs		Elev=1,034 Primary=0.			
Pond 3P: Basin 3	Discarded=0.00 cfs		Elev=1,030 Primary=0.			
Pond 4P: Basin 4	Discarded=0.00 cfs		Elev=1,044 Primary=0.			
Pond 5P: Basin 5	Discarded=0.00 cfs		Elev=1,052 Primary=0.			
Pond 6P: Infiltration Tren	ch Discarded=0.69 cfs		k Elev=1.21 Primary=0.			
Total Runof	F Area = 23.401 ac 100		Volume = vious = 2:			

Summary for Subcatchment 1S: Area 1

Runoff = 0.00 cfs @ 24.06 hrs, Volume= 0.000 af, Depth= 0.00"

_	A	rea (sf)	CN [Description		
	2	22,184	39 >	>75% Gras	s cover, Go	bod, HSG A
	2	22,184		100.00% Pe	ervious Are	a
_	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
_	0.8	50	0.3300	1.08		Sheet Flow,
						Fallow n= 0.050 P2= 3.10"
	0.4	114	0.0700	4.26		Shallow Concentrated Flow,
	0.0	407	0.0400	4 70		Unpaved Kv= 16.1 fps
	3.8	407	0.0120	1.76		Shallow Concentrated Flow,
	0.3	120	0.2000	7.20		Unpaved Kv= 16.1 fps Shallow Concentrated Flow,
	0.5	120	0.2000	1.20		Unpaved Kv= 16.1 fps
	0.9	107	0.0150	1.97		Shallow Concentrated Flow,
	510		0.0100			Unpaved Kv= 16.1 fps
	6.2	798	Total			· · ·

Summary for Subcatchment 2S: Area 2

Runoff = 0.00 cfs @ 24.04 hrs, Volume= 0.000 af, Depth= 0.00"

Are	ea (sf)	CN E	Description						
5	1,206	39 >	>75% Grass cover, Good, HSG A						
5	1,206	100.00% Pervious Area							
Tc l (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
5.0					Direct Entry,				

Summary for Subcatchment 3S: Area 3

Runoff = 0.00 cfs @ 24.10 hrs, Volume= 0.000 af, Depth= 0.00"

A	Area (sf)	CN D	escription		
	335,587	39 >	75% Gras	s cover, Go	ood, HSG A
	335,587	1	00.00% Pe	ervious Are	a
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	50	0.3300	1.08		Sheet Flow,
9.2	1,086	0.0150	1.97		Fallow n= 0.050 P2= 3.10" Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
10.0	1,136	Total			

Summary for Subcatchment 4S: Area 4

Runoff = 0.00 cfs @ 24.04 hrs, Volume= 0.000 af, Depth= 0.00"

A	rea (sf)	CN [Description				
	47,924	39 >	>75% Grass cover, Good, HSG A				
	47,924	1	100.00% Pervious Area				
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description		
5.0					Direct Entry,		

Summary for Subcatchment 5S: Area 5

Runoff 0.00 cfs @ 24.04 hrs, Volume= 0.000 af, Depth= 0.00" =

Area (sf)	CN	Description				
338,290	39	>75% Gras	>75% Grass cover, Good, HSG A			
338,290		100.00% Pervious Area				
Tc Length (min) (feet)	Slop (ft/f	,	Capacity (cfs)	Description		
5.0				Direct Entry,		

Summary for Subcatchment 6S: Proposed Entrance Driveway

Runoff = 1.30 cfs @ 12.07 hrs, Volume= 0.089 af, Depth= 1.93"

	Area (sf)	CN	Description				
	3,408	39	>75% Gras	s cover, Go	ood, HSG A		
	20,731	96	Gravel surfa	ace, HSG A	Α		
	24,139	88	Weighted Average				
	24,139		100.00% Pervious Area				
Tc	Length	Slope	e Velocity	Capacity	Description		
(min)	(feet)	(ft/ft) (ft/sec)	(cfs)			
5.0					Direct Entry,		
					•		

Summary for Reach 1R: Western Wetland System

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	14.534 ac,	0.00% Impervious, Inflo	by Depth = $0.00"$	for 2-Year event
Inflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Outflow =	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Summary for Reach 2R: Eastern Wetland System

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area	a =	7.766 ac,	0.00% Impervious, Inflow I	Depth = 0.00"	for 2-Year event
Inflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Outflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Summary for Reach 3R: Southern Western System

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area	a =	1.100 ac,	0.00% Impervious, Inflow I	Depth = 0.00"	for 2-Year event
Inflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Outflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Summary for Pond 1P: Basin 1

Inflow A Inflow Outflow Discarde Primary	= = ed =	0.00 cfs @ 2 0.00 cfs @ 2 0.00 cfs @ 2	00% Imperviou 4.06 hrs, Volur 4.07 hrs, Volur 4.07 hrs, Volur 0.00 hrs, Volur	me= 0.0 me= 0.0 me= 0.0	e = 0.00" for 2-Yea 000 af 000 af, Atten= 7%, La 000 af 000 af				
	Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Peak Elev= 1,035.00' @ 24.07 hrs Surf.Area= 2,095 sf Storage= 0 cf								
	of-Mass de	t. time= 0.9 mir	n calculated for n (1,445.3 - 1,4 prage Storage	,	of inflow)				
#1	1,035.0				rismatic)Listed below	(Recalc)			
π I	1,055.0	0 11,5	So of Custon	i Stage Data (F	Institutio Listed below				
Elevatio	on	Surf.Area	Inc.Store	Cum.Store					
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)					
1,035.0	00	2,095	0	0					
1,036.0	00	3,228	2,662	2,662					
1,038.0	00	5,663	8,891	11,553					
Device	Routing	Invert	Outlet Device	S					
#1	Discarde			xfiltration over	Surface area				
		.,			Elevation = 1,030.00'	Phase-In= 0.01'			
#2	Primary	1,035.50'	12.0" Round		,				
	-				orojecting, Ke= 0.200				
			Inlet / Outlet I	nvert= 1,035.50	0' / 1,034.50' S= 0.01	03 '/' Cc= 0.900			
			n= 0.011 Co	ncrete pipe, stra	ight & clean, Flow Ar	rea= 0.79 sf			

Discarded OutFlow Max=0.00 cfs @ 24.07 hrs HW=1,035.00' (Free Discharge) **1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,035.00' TW=1,034.00' (Dynamic Tailwater) 2=Culvert (Controls 0.00 cfs)

Summary for Pond 2P: Basin 2

Inflow A Inflow Outflow Discarde Primary	= = ed =	0.00 cfs @ 2 0.00 cfs @ 2 0.00 cfs @ 2	00% Impervious 4.04 hrs, Volun 4.06 hrs, Volun 4.06 hrs, Volun 0.00 hrs, Volun	ne= 0.00 ne= 0.00	= 0.00" for 00 af 00 af, Atten= 00 af 00 af			
	Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Peak Elev= 1,034.00' @ 24.06 hrs Surf.Area= 3,850 sf Storage= 0 cf							
Center-o	Plug-Flow detention time= 0.9 min calculated for 0.000 af (100% of inflow) Center-of-Mass det. time= 0.9 min (1,444.1 - 1,443.3)							
Volume	Inve	ert Avall.Sto	rage Storage	Description				
#1	1,034.0	00' 22,64	43 cf Custom	Stage Data (P	rismatic)Listed	d below ((Recalc)	
Elevatio	n	Surf.Area	Inc.Store	Cum.Store				
(fee		(sq-ft)	(cubic-feet)	(cubic-feet)				
1,034.0	,	3,850	0	0				
1,034.0		,	9,454	9,454				
,		5,604	'	,				
1,038.0	00	7,585	13,189	22,643				
Device	Routing	Invert	Outlet Devices	3				
#1	Discarde	d 1,034.00'	8.270 in/hr Ex	filtration over	Surface area			
		·	Conductivity to	o Groundwater I	Elevation = 1,0)20.00'	Phase-In=	0.01'
#2	Primary	1,037.50'		10.0' breadth B				
	-		Head (feet) 0	.20 0.40 0.60	0.80 1.00 1.2	20 1.40	1.60	
) 2.49 2.56 2.				
			、 5	/				
Discarded OutFlow Max=0.00 cfs @ 24.06 hrs HW=1,034.00' (Free Discharge)								

Discarded OutFlow Max=0.00 cfs @ 24.06 hrs HW=1,034.00' (Free Discharge) **1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,034.00' TW=0.00' (Dynamic Tailwater) **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 3P: Basin 3

Inflow Area =	7.704 ac,	0.00% Impervious, Inflow De	epth = 0.00" for 2-Year event
Inflow =	0.00 cfs @	24.10 hrs, Volume=	0.000 af
Outflow =	0.00 cfs @	24.12 hrs, Volume=	0.000 af, Atten= 3%, Lag= 0.9 min
Discarded =	0.00 cfs @	24.12 hrs, Volume=	0.000 af
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Peak Elev= 1,030.00' @ 24.12 hrs Surf.Area= 2,144 sf Storage= 0 cf

Plug-Flow detention time= 0.9 min calculated for 0.000 af (100% of inflow) Center-of-Mass det. time= 0.9 min (1,448.7 - 1,447.9)

Volume	Invert	Avail.Sto	rage Storag	e Description			
#1	1,030.00'	18,4 <i>°</i>	7 cf Custo	m Stage Data (P	rismatic)Listed below	(Recalc)	
Elevatio (fee 1,030.0 1,032.0 1,034.0 1,035.0	e <u>t)</u> 00 00 00	urf.Area (sq-ft) 2,144 3,287 4,657 5,427	Inc.Store (cubic-feet) 0 5,431 7,944 5.042	Cum.Store (cubic-feet) 0 5,431 13,375 18,417			
·		, 	,				
Device	Routing	Invert	Outlet Devic				
#1	Discarded	1,030.00'	8.270 in/hr l	Exfiltration over	Surface area		
#2	Primary	1,034.50'	10.0' long Head (feet)	10.0' breadth B 0.20 0.40 0.60	Elevation = 1,020.00' Froad-Crested Rectan 0.80 1.00 1.20 1.40 70 2.69 2.68 2.69 2.	gular Weir 1.60	

Discarded OutFlow Max=0.00 cfs @ 24.12 hrs HW=1,030.00' (Free Discharge) **1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,030.00' TW=0.00' (Dynamic Tailwater) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 4P: Basin 4

Inflow A Inflow Outflow Discarde Primary	= = ed =	0.00 cfs @ 2 0.00 cfs @ 2 0.00 cfs @ 2	.00% Impervious 4.04 hrs, Volum 4.06 hrs, Volum 4.06 hrs, Volum 0.00 hrs, Volum	ne= 0.00 ne= 0.00 ne= 0.00	= 0.00" for 2-Year event 00 af 00 af, Atten= 9%, Lag= 0.8 min 00 af 00 af
				0-48.00 hrs, dt= 742 sf Storage	
Center-o	of-Mass det	. time= 0.9 mii	n (1,444.1 - 1,44		of inflow)
Volume	Invei	rt Avail.Sto	orage Storage	Description	
#1	1,044.00)' 26,1	70 cf Custom	Stage Data (Pr	r ismatic) Listed below (Recalc)
Elevatio	-n (Surf.Area	Inc.Store	Cum.Store	
(fee		(sq-ft)	(cubic-feet)	(cubic-feet)	
1,044.0		4,742	0	0	
1,046.0		6,486	11,228	11,228	
1,048.0		8,456	14,942	26,170	
·		,		·	
Device	Routing	Invert	Outlet Devices	3	
#1	Discarded	1,044.00	8.270 in/hr Ex	filtration over S	Surface area
					Elevation = 1,020.00' Phase-In= 0.01
#2	Primary	1,047.50'			oad-Crested Rectangular Weir
					0.80 1.00 1.20 1.40 1.60 1.80 2.00
				50 4.00 4.50 5.	
					70 2.68 2.68 2.67 2.65 2.65 2.65
			2.65 2.66 2.6	6 2.67 2.69 2.	.12 2.16 2.83
<u>.</u>					

Discarded OutFlow Max=0.00 cfs @ 24.06 hrs HW=1,044.00' (Free Discharge) **1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,044.00' TW=0.00' (Dynamic Tailwater) **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 5P: Basin 5

Inflow Ar Inflow Outflow Discarde Primary	= =	0.00 cfs @ 2 0.00 cfs @ 2 0.00 cfs @ 2	.00% Imperviou 24.04 hrs, Volu 24.06 hrs, Volu 24.06 hrs, Volu 0.00 hrs, Volu	me= 0.00 me= 0.00 me= 0.00	= 0.00" for 2-Year event 00 af 00 af, Atten= 9%, Lag= 0.8 min 00 af 00 af		
				00-48.00 hrs, dt= 7,945 sf Storage			
Center-c	of-Mass de	t. time= 0.9 mi	n (1,444.1 - 1,4	,	of inflow)		
Volume	Inve	rt Avail.Sto	orage Storage	Description			
#1	1,052.0	0' 41,3	18 cf Custon	n Stage Data (Pr	ismatic) Listed below (Recalc)		
Elevatio	n	Surf.Area	Inc.Store	Cum.Store			
				-			
(fee	1	(sq-ft)	(cubic-feet)	(cubic-feet)			
1,052.0	00	7,945	0	0			
1,054.0	00	10,273	18,218	18,218			
1,056.0	00	12,827	23,100	41,318			
Device	Routing	Invert	Outlet Device	ès			
#1	Discarde	d 1,052.00'	8.270 in/hr E	xfiltration over S	Surface area		
		,		to Groundwater F	Elevation = 1,020.00' Phase-In= 0.01'		
#2	Primary	1,055.50'			road-Crested Rectangular Weir		
<i>""</i>	i innary	1,000.00			0.80 1.00 1.20 1.40 1.60		
					70 2.69 2.68 2.69 2.67 2.64		
				1) 2.43 2.30 2.1	10 2.03 2.00 2.03 2.01 2.04		
	Discarded OutFlow Max=0.00 cfs @ 24.06 hrs HW=1,052.00' (Free Discharge) -1=Exfiltration (Controls 0.00 cfs)						

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,052.00' TW=0.00' (Dynamic Tailwater) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 6P: Infiltration Trench

1.30 cfs @ 12 0.69 cfs @ 12 0.69 cfs @ 12	2.07 hrs, Volume 2.19 hrs, Volume 2.19 hrs, Volume	e= 0.089 e= 0.089 e= 0.089	9 af 9 af, Atten= 47%, Lag= 7.2 min 9 af					
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Peak Elev= 1.21' @ 12.19 hrs Surf.Area= 3,395 sf Storage= 280 cf								
			inflow)					
t Avail.Sto	rage Storage D	escription						
)' 2,71			smatic) Listed below (Recalc) Voids					
Surf.Area	Inc.Store	Cum.Store						
	(cubic-feet)	-						
3,395	0	0						
3,395	6,790	6,790						
Invert	Outlet Devices							
1.00'								
#2 Primary 2.75'		Conductivity to Groundwater Elevation = -2.00' Phase-In= 0.01' 200.0' long x 3.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32						
	1.30 cfs @ 12 0.69 cfs @ 12 0.00 cfs @ 12 0.00 cfs @ 12 0.00 cfs @ 12 r-Ind method, 1 2 12.19 hrs Su n time= 1.7 min t Avail.Sto y 2,7 Surf.Area (sq-ft) 3,395 3,395 3,395 1.00'	1.30 cfs @ 12.07 hrs, Volume 0.69 cfs @ 12.19 hrs, Volume 0.69 cfs @ 12.19 hrs, Volume 0.00 cfs @ 0.00 hrs, Volume 0.00 cfs @ 0.00 hrs, Volume or line = 1.7 min calculated for 0.1 1 time= 1.7 min (816.7 - 815.0) t Avail.Storage Storage D 0' 2,716 cf Custom S 6,790 cf C Surf.Area Inc.Store (sq-ft) (cubic-feet) 3,395 0 3,395 0,790 Invert Outlet Devices 1.00' 8.270 in/hr Exf Conductivity to 2.75' 200.0' long x 3 Head (feet) 0.2 2.50 3.00 3.50 Coef. (English)	0.69 cfs @ 12.19 hrs, Volume= 0.089 0.00 cfs @ 0.00 hrs, Volume= 0.000 r-Ind method, Time Span= 0.00-48.00 hrs, dt= 0 0.000 y 12.19 hrs Surf.Area= 3,395 sf Storage= 280 n time= 1.7 min calculated for 0.089 af (100% of . time= 1.7 min (816.7 - 815.0) t Avail.Storage Storage Description y' 2,716 cf Custom Stage Data (Pris 6,790 cf Overall x 40.0% Surf.Area Inc.Store Cum.Store (sq-ft) (cubic-feet) (cubic-feet) 0 3,395 0 0 3,395 0 0 1.00' 8.270 in/hr Exfiltration over S Conductivity to Groundwater El 2.75' 200.0' long x 3.0' breadth Bro Head (feet) 0.20 0.40 0.60 2.50 3.00 3.50 4.00					

Discarded OutFlow Max=0.69 cfs @ 12.19 hrs HW=1.21' (Free Discharge) **1=Exfiltration** (Controls 0.69 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1.00' TW=0.00' (Dynamic Tailwater) **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs) Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points Runoff by SCS TR-20 method, UH=SCS, Weighted-CN Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Area 1			ea=222,184 s =798' Tc=6			
Subcatchment 2S: Area 2		Runoff Ai	ea=51,206 s Tc=5			oth=0.14" 0.014 af
Subcatchment 3S: Area 3			ea=335,587 s ,136' Tc=10			
Subcatchment4S: Area 4		Runoff Ai	ea=47,924 s Tc=5			oth=0.14" 0.013 af
Subcatchment 5S: Area 5		Runoff Are	a=338,290 s Tc=5			oth=0.14" 0.091 af
Subcatchment6S: Propos	sed Entrance	Runoff Ai	ea=24,139 s Tc=5			oth=3.37" 0.155 af
Reach 1R: Western Wetla	nd System					0.000 af 0.000 af
Reach 2R: Eastern Wetlar	nd System					0.000 af 0.000 af
Reach 3R: Southern West	ern System					0.000 af 0.000 af
Pond 1P: Basin 1	Discarded=0.10 cfs		Elev=1,035.0 Primary=0.0			
Pond 2P: Basin 2	Discarded=0.02 cfs		Elev=1,034.0 Primary=0.0			
Pond 3P: Basin 3	Discarded=0.15 cfs		Elev=1,030.0 Primary=0.0			
Pond 4P: Basin 4	Discarded=0.02 cfs		Elev=1,044.0 Primary=0.0			
Pond 5P: Basin 5	Discarded=0.15 cfs		Elev=1,052.0 Primary=0.0			
Pond 6P: Infiltration Tren	ch Discarded=0.80 cfs		k Elev=1.71' Primary=0.0			
Total Runof	f Area = 23.401 ac 100		Volume = 0 vious = 23.			oth = 0.22" = 0.000 ac

Summary for Subcatchment 1S: Area 1

Runoff = 0.10 cfs @ 13.77 hrs, Volume= 0.060 af, Depth= 0.14"

_	A	rea (sf)	CN [Description		
	2	22,184	39 >	>75% Gras	s cover, Go	bod, HSG A
	2	22,184		100.00% Pe	ervious Are	a
_	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
_	0.8	50	0.3300	1.08		Sheet Flow,
						Fallow n= 0.050 P2= 3.10"
	0.4	114	0.0700	4.26		Shallow Concentrated Flow,
	0.0	407	0.0400	4 70		Unpaved Kv= 16.1 fps
	3.8	407	0.0120	1.76		Shallow Concentrated Flow,
	0.3	120	0.2000	7.20		Unpaved Kv= 16.1 fps Shallow Concentrated Flow,
	0.5	120	0.2000	1.20		Unpaved Kv= 16.1 fps
	0.9	107	0.0150	1.97		Shallow Concentrated Flow,
	510		0.0100			Unpaved Kv= 16.1 fps
	6.2	798	Total			· · ·

Summary for Subcatchment 2S: Area 2

Runoff = 0.02 cfs @ 13.76 hrs, Volume= 0.014 af, Depth= 0.14"

Are	ea (sf)	CN E	Description					
5	51,206	39 >	39 >75% Grass cover, Good, HSG A					
5	51,206	1	00.00% Pe	ervious Are	ea			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description			
5.0					Direct Entry,			

Summary for Subcatchment 3S: Area 3

Runoff = 0.15 cfs @ 13.83 hrs, Volume= 0.090 af, Depth= 0.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 10-Year Rainfall=4.68"

_	A	rea (sf)	CN E	Description		
	3	35,587	39 >	75% Gras	s cover, Go	bod, HSG A
	3	35,587	1	00.00% Pe	ervious Are	a
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
-	0.8	50	0.3300	1.08	()	Sheet Flow, Fallow n= 0.050 P2= 3.10"
_	9.2	1,086	0.0150	1.97		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
	40.0	4 4 9 9	T ()			

10.0 1,136 Total

Summary for Subcatchment 4S: Area 4

Runoff = 0.02 cfs @ 13.76 hrs, Volume= 0.013 af, Depth= 0.14"

Area	(sf) C	CN D	escription				
47,9	924 🗧	39 >75% Grass cover, Good, HSG A					
47,9	924	1(00.00% Pe	ervious Are	ea		
Tc Leı (min) (f	ngth eet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description		
5.0					Direct Entry,		

Summary for Subcatchment 5S: Area 5

Runoff = 0.15 cfs @ 13.76 hrs, Volume= 0.091 af, Depth= 0.14"

Area	(sf) C	N D	escription					
338,	290 3	39 >7	9 >75% Grass cover, Good, HSG A					
338,	290	1(00.00% Pe	ervious Are	a			
Tc Le (min) (ngth S feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description			
5.0					Direct Entry,			

Summary for Subcatchment 6S: Proposed Entrance Driveway

Runoff = 2.22 cfs @ 12.07 hrs, Volume= 0.155 af, Depth= 3.37"

A	rea (sf)	CN	Description					
	3,408	39	>75% Grass cover, Good, HSG A					
	20,731	96	Gravel surfa	ace, HSG A	4			
	24,139	88	Weighted A	verage				
	24,139		100.00% Pe	ervious Are	a			
-		01		0				
Tc	Length	Slope		Capacity	Description			
(min)	(feet)	(ft/ft)) (ft/sec)	(cfs)				
5.0					Direct Entry,			

Summary for Reach 1R: Western Wetland System

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area	ı =	14.534 ac,	0.00% Impervious, Inflow	v Depth = 0.00"	for 10-Year event
Inflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Outflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Summary for Reach 2R: Eastern Wetland System

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area	a =	7.766 ac,	0.00% Impervious, Inflow I	Depth = 0.00"	for 10-Year event
Inflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Outflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Summary for Reach 3R: Southern Western System

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area	a =	1.100 ac,	0.00% Impervious, Inflo	w Depth = 0.00"	for 10-Year event
Inflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Outflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Summary for Pond 1P: Basin 1

Inflow A Inflow Outflow Discarde Primary	= = ed =	0.10 cfs @ 13 0.10 cfs @ 13 0.10 cfs @ 13	.00% Impervious, Inflow Depth = 0.14" for 10-Year event 3.77 hrs, Volume= 0.060 af 3.81 hrs, Volume= 0.060 af, Atten= 0%, Lag= 2.2 min 3.81 hrs, Volume= 0.060 af 0.00 hrs, Volume= 0.000 af						
	Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Peak Elev= 1,035.00' @ 13.81 hrs Surf.Area= 2,098 sf Storage= 5 cf								
			n calculated for 0.060 af (100% of inflow) n(1,037.0-1,036.2)						
Volume	Inve	rt Avail.Sto	prage Storage Description						
#1	1,035.0		53 cf Custom Stage Data (Prismatic)Listed below (Recalc)						
Elevatio		Surf.Area (sq-ft)	Inc.Store Cum.Store (cubic-feet) (cubic-feet)						
1,035.0	00	2,095	0 0						
1,036.0		3,228	2,662 2,662						
1,038.0	00	5,663	8,891 11,553						
Device	Routing	Invert							
#1	Discardeo	1,035.00'							
#2	Primary	1,035.50'	Conductivity to Groundwater Elevation = 1,030.00' Phase-In= 0.01' 12.0" Round Culvert L= 97.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 1,035.50' / 1,034.50' S= 0.0103 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf						
Dia a and		NA 0 40 5							

Discarded OutFlow Max=0.10 cfs @ 13.81 hrs HW=1,035.00' (Free Discharge) **1=Exfiltration** (Controls 0.10 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,035.00' TW=1,034.00' (Dynamic Tailwater) 2=Culvert (Controls 0.00 cfs)

Summary for Pond 2P: Basin 2

Inflow Area = Inflow = Outflow = Discarded = Primary =	0.02 cfs @ 0.02 cfs @	0.00% Impervious, 13.76 hrs, Volume 13.77 hrs, Volume 13.77 hrs, Volume 0.00 hrs, Volume	e= 0.014 e= 0.014 e= 0.014	af, Atten= 0%, Lag= 1.0 min af				
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Peak Elev= 1,034.00' @ 13.77 hrs Surf.Area= 3,850 sf Storage= 1 cf								
Plug-Flow detention time= 0.9 min calculated for 0.014 af (100% of inflow) Center-of-Mass det. time= 0.9 min(1,035.9 - 1,035.1)								
Volume	Invert Avail.St	orage Storage D	Description					
#1 1,	034.00' 22,	643 cf Custom S	Stage Data (Prisi	matic)Listed below (Recalc)				
Elevation	Surf.Area	Inc.Store	Cum.Store					
(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)					
1,034.00								
, , ,		0	0					
1,036.00	3,850 5,604	0 9,454	0 9,454					
,	· ·		-					
1,036.00 1,038.00	5,604	9,454 13,189	9,454					
1,036.00 1,038.00 Device Rou	5,604 7,585	9,454 13,189 t Outlet Devices	9,454	rface area				
1,036.00 1,038.00 <u>Device Rot</u> #1 Disc	5,604 7,585 ting Inver	9,454 13,189 <u>t Outlet Devices</u> ' 8.270 in/hr Ext Conductivity to	9,454 22,643 Tiltration over Su Groundwater Ele	vation = 1,020.00' Phase-In= 0.01'				
1,036.00 1,038.00 <u>Device Rot</u> #1 Disc	5,604 7,585 ting Inver	9,454 13,189 t Outlet Devices ' 8.270 in/hr Ext Conductivity to ' 10.0' long x 1 0	9,454 22,643 Filtration over Su Groundwater Ele 0.0' breadth Broa	vation = 1,020.00' Phase-In= 0.01' ad-Crested Rectangular Weir				
1,036.00 1,038.00 <u>Device Rot</u> #1 Disc	5,604 7,585 ting Inver carded 1,034.00	9,454 13,189 <u>t Outlet Devices</u> 8.270 in/hr Ext Conductivity to 10.0' long x 10 Head (feet) 0.2	9,454 22,643 Filtration over Su Groundwater Ele 0.0' breadth Broa 20 0.40 0.60 0.8	vation = 1,020.00' Phase-In= 0.01' ad-Crested Rectangular Weir 30 1.00 1.20 1.40 1.60				
1,036.00 1,038.00 <u>Device Rot</u> #1 Disc	5,604 7,585 ting Inver carded 1,034.00	9,454 13,189 <u>t Outlet Devices</u> 8.270 in/hr Ext Conductivity to 10.0' long x 10 Head (feet) 0.2	9,454 22,643 Filtration over Su Groundwater Ele 0.0' breadth Broa 20 0.40 0.60 0.8	vation = 1,020.00' Phase-In= 0.01' ad-Crested Rectangular Weir				

Discarded OutFlow Max=0.02 cfs @ 13.77 hrs HW=1,034.00' (Free Discharge) **1=Exfiltration** (Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,034.00' TW=0.00' (Dynamic Tailwater) **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 3P: Basin 3

Inflow Area =	7.704 ac,	0.00% Impervious, Inflow De	epth = 0.14" for 10-Year event
Inflow =	0.15 cfs @	13.83 hrs, Volume=	0.090 af
Outflow =	0.15 cfs @	13.86 hrs, Volume=	0.090 af, Atten= 0%, Lag= 1.6 min
Discarded =	0.15 cfs @	13.86 hrs, Volume=	0.090 af
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Peak Elev= 1,030.00' @ 13.86 hrs Surf.Area= 2,146 sf Storage= 8 cf

Plug-Flow detention time= 0.9 min calculated for 0.090 af (100% of inflow) Center-of-Mass det. time= 0.9 min (1,040.6 - 1,039.7)

Volume	Invert	Avail.Stor	rage Stora	age Description			
#1	1,030.00'	18,41	7 cf Cust	Custom Stage Data (Prismatic)Listed below (Recalc)			
Elevatio (fee 1,030.0 1,032.0 1,034.0 1,035.0	e <u>t)</u> 00 00 00	urf.Area (sq-ft) 2,144 3,287 4,657 5,427	Inc.Store (cubic-feet) 0 5,431 7,944 5,042) (cubic-feet) 0 0 5,431 - 13,375			
Device #1	Routing Discarded	Invert 1,030.00'	Outlet Dev 8.270 in/h	vices r Exfiltration over	Surface area		
#2	,		Conductivity to Groundwater Elevation = 1,020.00' Phase-In= 0.01' 10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64				
<u>.</u>							

Discarded OutFlow Max=0.15 cfs @ 13.86 hrs HW=1,030.00' (Free Discharge) **1=Exfiltration** (Controls 0.15 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,030.00' TW=0.00' (Dynamic Tailwater) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 4P: Basin 4

	= = ed = = by Dyn-Sto	0.02 cfs @ 1 0.02 cfs @ 1 0.02 cfs @ 1 0.00 cfs @ pr-Ind method,	.00% Impervious 3.76 hrs, Volum 3.77 hrs, Volum 3.77 hrs, Volum 0.00 hrs, Volum Time Span= 0.0 s Surf.Area= 4,	ne= 0.0 ne= 0.0 ne= 0.0 ne= 0.0	013 af 013 af, Atto 013 af 000 af t= 0.01 hrs	en= 0%, Lag			
	Peak Elev= 1,044.00' @ 13.77 hrs Surf.Area= 4,742 sf Storage= 1 cf Plug-Flow detention time= 0.9 min calculated for 0.013 af (100% of inflow) Center-of-Mass det. time= 0.9 min (1,035.9 - 1,035.1) Volume Invert Avail.Storage Storage Description								
#1	1,044.00	0' 26,1	70 cf Custom	Stage Data (F	Prismatic)L	_isted below (Recalc)		
Elevatio (fee 1,044.0	et) 00	Surf.Area (sq-ft) 4,742	Inc.Store (cubic-feet) 0	Cum.Store (cubic-feet) 0	<u>)</u>)				
1,046.0		6,486	11,228	11,228					
1,048.0	0	8,456	14,942	26,170	1				
Device	Routing	Invert	Outlet Devices	3					
#1	Discardeo	d 1,044.00'					Phase-In= 0.01'		
#2	Primary	1,047.50'	10.0' long x 6	5.0' breadth B .20 0.40 0.60 50 4.00 4.50) 2.37 2.51 2	road-Crest 0 0.80 1.00 5.00 5.50 2.70 2.68	ted Rectange 0 1.20 1.40 2.68 2.67 2.	u lar Weir 1.60 1.80 2.00		
_					/F D:				

Discarded OutFlow Max=0.02 cfs @ 13.77 hrs HW=1,044.00' (Free Discharge) **1=Exfiltration** (Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,044.00' TW=0.00' (Dynamic Tailwater) **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 5P: Basin 5

Inflow Area = Inflow = Outflow = Discarded = Primary =	0.15 cfs @ 1 0.15 cfs @ 1 0.15 cfs @ 1	00% Impervious, 3.76 hrs, Volume 3.77 hrs, Volume 3.77 hrs, Volume 0.00 hrs, Volume	e= 0.091 af, Atten= 0%, Lag= 1.0 min e= 0.091 af						
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Peak Elev= 1,052.00' @ 13.77 hrs Surf.Area= 7,946 sf Storage= 8 cf									
	Plug-Flow detention time= 0.9 min calculated for 0.091 af (100% of inflow) Center-of-Mass det. time= 0.9 min (1,035.9 - 1,035.1)								
Volume	nvert Avail.Sto	rage Storage D	Description						
#1 1,05	52.00' 41,3°	18 cf Custom S	Stage Data (Prismatic)Listed below (Recalc)						
Elevation	Surf.Area	Inc.Store	Cum.Store						
(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)						
1,052.00	7,945	0	0						
1,054.00	10,273	18,218	18,218						
1,056.00	12,827	23,100	41,318						
Device Routi	ng Invert	Outlet Devices							
Device Routi #1 Disca	<u>u</u>	-	iltration over Surface area						
	<u>u</u>	8.270 in/hr Exf	filtration over Surface area Groundwater Elevation = 1,020.00' Phase-In= 0.0						
	rded 1,052.00'	8.270 in/hr Exf Conductivity to)1'					
#1 Disca	rded 1,052.00'	8.270 in/hr Exf Conductivity to 10.0' long x 10	Groundwater Elevation = 1,020.00' Phase-In= 0.0)1'					
#1 Disca	rded 1,052.00'	8.270 in/hr Exf Conductivity to 10.0' long x 10 Head (feet) 0.2	Groundwater Elevation = 1,020.00' Phase-In= 0.0 0.0' breadth Broad-Crested Rectangular Weir)1'					

Discarded OutFlow Max=0.15 cfs @ 13.77 hrs HW=1,052.00' (Free Discharge) **1=Exfiltration** (Controls 0.15 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,052.00' TW=0.00' (Dynamic Tailwater) **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 6P: Infiltration Trench

Inflow A Inflow Outflow Discarde Primary	= 2 = (ed = (2.22 cfs @ 1 0.80 cfs @ 1 0.80 cfs @ 1	00% Impervious 2.07 hrs, Volum 2.32 hrs, Volum 2.32 hrs, Volum 0.00 hrs, Volum	e= 0.1 e= 0.1 e= 0.1	= 3.37" for 10-Year event 55 af 55 af, Atten= 64%, Lag= 14.9 min 55 af 00 af			
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Peak Elev= 1.71' @ 12.32 hrs Surf.Area= 3,395 sf Storage= 969 cf								
	Plug-Flow detention time= 5.8 min calculated for 0.155 af (100% of inflow) Center-of-Mass det. time= 5.8 min (805.2 - 799.4) Volume Invert Avail.Storage Storage Description							
#1	Invert 1.00'				riemetic) istad balaw (Dasala)			
#1	1.00	2,1		Overall x 40.0	rismatic) Listed below (Recalc) % Voids			
			0,700 01 0					
Elevatio	on S	urf.Area	Inc.Store	Cum.Store				
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)				
1.0	00	3,395	0	0				
3.0	00	3,395	6,790	6,790				
Device	Routing	Invert	Outlet Devices					
#1	Discarded	1.00'	8.270 in/hr Ex	filtration over	Surface area			
			Conductivity to	Groundwater	Elevation = -2.00' Phase-In= 0.01'			
#2	Primary	2.75'			road-Crested Rectangular Weir			
					0.80 1.00 1.20 1.40 1.60 1.80 2.00			
			2.50 3.00 3.5					
					68 2.67 2.65 2.64 2.64 2.68 2.68			
			2.72 2.81 2.92	2 2.97 3.07 3	3.32			

Discarded OutFlow Max=0.80 cfs @ 12.32 hrs HW=1.71' (Free Discharge) **1=Exfiltration** (Controls 0.80 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1.00' TW=0.00' (Dynamic Tailwater) **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs) Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points Runoff by SCS TR-20 method, UH=SCS, Weighted-CN Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Area 1	Runoff Area=222,184 sf 0.00% Impervious Runoff Depth=0.41" Flow Length=798' Tc=6.2 min CN=39 Runoff=0.80 cfs 0.175 af
Subcatchment2S: Area 2	Runoff Area=51,206 sf 0.00% Impervious Runoff Depth=0.41" Tc=5.0 min CN=39 Runoff=0.19 cfs 0.040 af
Subcatchment3S: Area 3	Runoff Area=335,587 sf 0.00% Impervious Runoff Depth=0.41" Flow Length=1,136' Tc=10.0 min CN=39 Runoff=1.16 cfs 0.264 af
Subcatchment4S: Area 4	Runoff Area=47,924 sf 0.00% Impervious Runoff Depth=0.41" Tc=5.0 min CN=39 Runoff=0.17 cfs 0.038 af
Subcatchment 5S: Area 5	Runoff Area=338,290 sf 0.00% Impervious Runoff Depth=0.41" Tc=5.0 min CN=39 Runoff=1.23 cfs 0.266 af
Subcatchment6S: Propos	sed EntranceRunoff Area=24,139 sf0.00% ImperviousRunoff Depth=4.51"Tc=5.0 minCN=88Runoff=2.94 cfs0.208 af
Reach 1R: Western Wetla	nd System Inflow=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af
Reach 2R: Eastern Wetlar	nd System Inflow=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af
Reach 3R: Southern West	tern System Inflow=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af
Pond 1P: Basin 1	Peak Elev=1,035.18' Storage=388 cf Inflow=0.80 cfs 0.175 af Discarded=0.45 cfs 0.175 af Primary=0.00 cfs 0.000 af Outflow=0.45 cfs 0.175 af
Pond 2P: Basin 2	Peak Elev=1,034.00' Storage=10 cf Inflow=0.19 cfs 0.040 af Discarded=0.19 cfs 0.040 af Primary=0.00 cfs 0.000 af Outflow=0.19 cfs 0.040 af
Pond 3P: Basin 3	Peak Elev=1,030.47' Storage=1,070 cf Inflow=1.16 cfs 0.264 af Discarded=0.48 cfs 0.264 af Primary=0.00 cfs 0.000 af Outflow=0.48 cfs 0.264 af
Pond 4P: Basin 4	Peak Elev=1,044.00' Storage=9 cf Inflow=0.17 cfs 0.038 af Discarded=0.17 cfs 0.038 af Primary=0.00 cfs 0.000 af Outflow=0.17 cfs 0.038 af
Pond 5P: Basin 5	Peak Elev=1,052.01' Storage=64 cf Inflow=1.23 cfs 0.266 af Discarded=1.22 cfs 0.266 af Primary=0.00 cfs 0.000 af Outflow=1.22 cfs 0.266 af
Pond 6P: Infiltration Tren	Ch Peak Elev=2.21' Storage=1,648 cf Inflow=2.94 cfs 0.208 af Discarded=0.91 cfs 0.208 af Primary=0.00 cfs 0.000 af Outflow=0.91 cfs 0.208 af
Total Runof	f Area = 23.401 ac Runoff Volume = 0.992 af Average Runoff Depth = 0.51' 100.00% Pervious = 23.401 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Area 1

Runoff = 0.80 cfs @ 12.36 hrs, Volume= 0.175 af, Depth= 0.41"

_	A	rea (sf)	CN [Description		
	2	22,184	39 >	>75% Gras	s cover, Go	ood, HSG A
	2	22,184	-	100.00% Pe	ervious Are	a
_	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
	0.8	50	0.3300	1.08		Sheet Flow,
	0.4	114	0.0700	4.26		Fallow n= 0.050 P2= 3.10" Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
	3.8	407	0.0120	1.76		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
	0.3	120	0.2000	7.20		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
	0.9	107	0.0150	1.97		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
	6.2	798	Total			

Summary for Subcatchment 2S: Area 2

Runoff = 0.19 cfs @ 12.34 hrs, Volume= 0.040 af, Depth= 0.41"

Are	ea (sf)	CN E	Description					
5	51,206	39 >	9 >75% Grass cover, Good, HSG A					
5	51,206	1	100.00% Pervious Area					
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description			
5.0					Direct Entry,			

Summary for Subcatchment 3S: Area 3

Runoff = 1.16 cfs @ 12.42 hrs, Volume= 0.264 af, Depth= 0.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Type III 24-hr 25-Year Rainfall=5.88"

_	A	rea (sf)	CN E	Description						
	3	35,587	39 >	39 >75% Grass cover, Good, HSG A						
	3	35,587	1	00.00% Pe	ervious Are	a				
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
-	0.8	50	0.3300	1.08	()	Sheet Flow, Fallow n= 0.050 P2= 3.10"				
_	9.2	1,086	0.0150	1.97		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps				
	40.0	4 4 9 9	T ()							

10.0 1,136 Total

Summary for Subcatchment 4S: Area 4

Runoff = 0.17 cfs @ 12.34 hrs, Volume= 0.038 af, Depth= 0.41"

Area	(sf) C	CN D	Description					
47,9	924 🗧	39 >7	>75% Grass cover, Good, HSG A					
47,9	924	100.00% Pervious Area						
Tc Leı (min) (f	ngth eet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description			
5.0					Direct Entry,			

Summary for Subcatchment 5S: Area 5

Runoff = 1.23 cfs @ 12.34 hrs, Volume= 0.266 af, Depth= 0.41"

Area (sf)	CN	Description					
338,290	39	>75% Grass cover, Good, HSG A					
338,290		100.00% Pervious Area					
Tc Length (min) (feet)	Slope (ft/ft	,	Capacity (cfs)	Description			
5.0				Direct Entry,			

Summary for Subcatchment 6S: Proposed Entrance Driveway

Runoff = 2.94 cfs @ 12.07 hrs, Volume= 0.208 af, Depth= 4.51"

	Area (sf)	CN	Description					
	3,408	39	>75% Gras	s cover, Go	ood, HSG A			
	20,731	96	Gravel surfa	Gravel surface, HSG A				
	24,139	88	Weighted Average					
	24,139		100.00% Pervious Area					
Tc	Length	Slope	e Velocity	Capacity	Description			
(min)	(feet)	(ft/ft) (ft/sec)	(cfs)				
5.0					Direct Entry,			
					•			

Summary for Reach 1R: Western Wetland System

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area	a =	14.534 ac,	0.00% Impervious, Inflow	v Depth = 0.00"	for 25-Year event
Inflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Outflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Summary for Reach 2R: Eastern Wetland System

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area	a =	7.766 ac,	0.00% Impervious, Inflow I	Depth = 0.00"	for 25-Year event
Inflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Outflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Summary for Reach 3R: Southern Western System

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area	a =	1.100 ac,	0.00% Impervious, Infle	ow Depth = $0.00"$	for 25-Year event
Inflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Outflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Summary for Pond 1P: Basin 1

Inflow A Inflow Outflow Discardo Primary	= = ed =	0.80 cfs @ 12 0.45 cfs @ 12 0.45 cfs @ 12	00% Impervious, Inflow Depth = 0.41" for 25-Year event 2.36 hrs, Volume= 0.175 af 2.60 hrs, Volume= 0.175 af, Atten= 43%, Lag= 14.7 min 2.60 hrs, Volume= 0.175 af 0.00 hrs, Volume= 0.000 af					
	Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Peak Elev= 1,035.18' @ 12.60 hrs Surf.Area= 2,295 sf Storage= 388 cf							
			n calculated for 0.175 af (100% of inflow) n (967.7 - 964.3)					
Volume	Inve	rt Avail.Sto	rage Storage Description					
#1	1,035.0	0' 11,55	53 cf Custom Stage Data (Prismatic)Listed below (Recalc)					
Elevatio	on	Surf.Area	Inc.Store Cum.Store					
(fee	et)	(sq-ft)	(cubic-feet) (cubic-feet)					
1,035.0	00	2,095	0 0					
1,036.0	00	3,228	2,662 2,662					
1,038.0	00	5,663	8,891 11,553					
Device	Routing	Invert	Outlet Devices					
#1	Discarde	d 1,035.00'	8.270 in/hr Exfiltration over Surface area					
# I								
#1			Conductivity to Groundwater Elevation = 1,030.00' Phase-In= 0.01'					
#1		1,035.50'	Conductivity to Groundwater Elevation = 1,030.00' Phase-In= 0.01' 12.0" Round Culvert					
	Primary	1,035.50'	- j					
		1,035.50'	12.0" Round Culvert					
		1,035.50'	12.0" Round Culvert L= 97.0' RCP, groove end projecting, Ke= 0.200					

Discarded OutFlow Max=0.45 cfs @ 12.60 hrs HW=1,035.18' (Free Discharge) **1=Exfiltration** (Controls 0.45 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,035.00' TW=1,034.00' (Dynamic Tailwater) **→2=Culvert** (Controls 0.00 cfs)

Summary for Pond 2P: Basin 2

Inflow Area = Inflow = Outflow = Discarded =	0.19 cfs @ 0.19 cfs @ 0.19 cfs @	12.34 hrs, Volume= 12.35 hrs, Volume= 12.35 hrs, Volume=	ow Depth = 0.08" for 25-Year event 0.040 af 0.040 af, Atten= 0%, Lag= 0.9 min 0.040 af
	or-Ind metho	0.00 hrs, Volume= d, Time Span= 0.00-48.(0.000 af 00 hrs, dt= 0.01 hrs

Peak Elev= 1,034.00' @ 12.35 hrs Surf.Area= 3,852 sf Storage= 10 cf

Plug-Flow detention time= 0.9 min calculated for 0.040 af (100% of inflow) Center-of-Mass det. time= 0.9 min (964.0 - 963.2)

Volume	Invert	Avail.Sto	rage Stora	ge Description				
#1	1,034.00'	22,64	43 cf Custo	om Stage Data (Prismatic)Listed below (Recalc)				
Elevatio (fee 1,034.0 1,036.0 1,038.0	et) 00 00	urf.Area (sq-ft) 3,850 5,604 7,585	Inc.Store (cubic-feet) 0 9,454 13,189	Cum.Store (cubic-feet) 0 9,454 22,643				
Device	Routing	Invert	Outlet Devi	ices				
#1	Discarded	1,034.00'	8.270 in/hr	Exfiltration over Surface area				
#2	Primary	1,037.50'	Conductivity to Groundwater Elevation = 1,020.00' Phase-In= 0.01' 10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64					
Discord	Discourded QuitElour May-0.19 of @ 12.25 bro HW-1.024.00' (Erec Discharge)							

Discarded OutFlow Max=0.18 cfs @ 12.35 hrs HW=1,034.00' (Free Discharge) **1=Exfiltration** (Controls 0.18 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,034.00' TW=0.00' (Dynamic Tailwater) **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 3P: Basin 3

Inflow Area =	7.704 ac,	0.00% Impervious, Inflow De	epth = 0.41" for 25-Year event
Inflow =	1.16 cfs @	12.42 hrs, Volume=	0.264 af
Outflow =	0.48 cfs @	13.32 hrs, Volume=	0.264 af, Atten= 58%, Lag= 53.8 min
Discarded =	0.48 cfs @	13.32 hrs, Volume=	0.264 af
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Peak Elev= 1,030.47' @ 13.32 hrs Surf.Area= 2,412 sf Storage= 1,070 cf

Plug-Flow detention time= 16.3 min calculated for 0.264 af (100% of inflow) Center-of-Mass det. time= 16.3 min (984.1 - 967.8)

Volume	Invert	Avail.Stor	rage Stora	age Description			
#1	1,030.00'	18,41	7 cf Cust	om Stage Data (P	rismatic)Listed below ((Recalc)	
Elevatio (fee		urf.Area (sq-ft)	Inc.Store (cubic-feet)	•			
1,030.0	1	2,144	0	i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i i _ i			
1,032.0		3,287	5,431	,			
1,034.0		4,657	7,944	,			
1,035.0	00	5,427	5,042	18,417			
Device	Routing	Invert	Outlet Dev	vices			
#1	Discarded	1,030.00'	8.270 in/h	r Exfiltration over	Surface area		
			Conductivi	ty to Groundwater	Elevation = 1,020.00'	Phase-In= 0.01'	
#2	Primary	1,034.50'			Broad-Crested Rectan	0	
			· ·	,	0.80 1.00 1.20 1.40		
			Coef. (Eng	llish) 2.49 2.56 2.	.70 2.69 2.68 2.69 2.	67 2.64	
Discorded QuitElow May-0.49 of @ 12.20 hrs. LIW-1.020.47! (Erec Discharge)							

Discarded OutFlow Max=0.48 cfs @ 13.32 hrs HW=1,030.47' (Free Discharge) **1=Exfiltration** (Controls 0.48 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,030.00' TW=0.00' (Dynamic Tailwater) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 4P: Basin 4

Inflow A Inflow Outflow Discarde Primary	= = ed =	0.17 cfs @ 1 0.17 cfs @ 1 0.17 cfs @ 1	00% Impervious, 2.34 hrs, Volume 2.35 hrs, Volume 2.35 hrs, Volume 0.00 hrs, Volume	e= 0.03 e= 0.03 e= 0.03	= 0.41" for 25-Year event 38 af 38 af, Atten= 0%, Lag= 0.9 min 38 af 00 af			
	Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Peak Elev= 1,044.00' @ 12.35 hrs Surf.Area= 4,744 sf Storage= 9 cf							
		t. time= 0.9 mir	n calculated for 0.0 n(964.0-963.2) rage Storage D		of inflow)			
#1	1,044.0				ismatic)Listed below (Recalc)			
π	1,044.0	20,1		lage Data (11				
Elevatio	on	Surf.Area	Inc.Store	Cum.Store				
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)				
1,044.0	00	4,742	0	0				
1,046.0		6,486	11,228	11,228				
1,048.0	00	8,456	14,942	26,170				
	-							
Device	Routing	Invert						
#1	Discarde	d 1,044.00'						
					Elevation = 1,020.00' Phase-In= 0.01'			
#2	Primary	1,047.50'			bad-Crested Rectangular Weir 0.80 1.00 1.20 1.40 1.60 1.80 2.00			
	2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65							
			2.65 2.66 2.66					
				2.00 L				

Discarded OutFlow Max=0.17 cfs @ 12.35 hrs HW=1,044.00' (Free Discharge) **1=Exfiltration** (Controls 0.17 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,044.00' TW=0.00' (Dynamic Tailwater) **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 5P: Basin 5

Inflow Area = Inflow = Outflow = Discarded = Primary =	1.23 cfs @ 1.22 cfs @ 1.22 cfs @	0.00% Impervious, Inflow I 12.34 hrs, Volume= 12.35 hrs, Volume= 12.35 hrs, Volume= 0.00 hrs, Volume=	Depth = 0.41" for 25-Year event 0.266 af 0.266 af, Atten= 0%, Lag= 0.9 min 0.266 af 0.000 af
2	C	d, Time Span= 0.00-48.00 h	

Peak Elev= 1,052.01' @ 12.35 hrs Surf.Area= 7,954 sf Storage= 64 cf

Plug-Flow detention time= 0.9 min calculated for 0.266 af (100% of inflow) Center-of-Mass det. time= 0.9 min (964.0 - 963.2)

Volume	Invert	Avail.Sto	rage S	torage De	escription			
#1	1,052.00'	41,3	18 cf C	ustom St	tage Data (P	rismatic)Listed below ((Recalc)	
Elevatio (fee 1,052.0 1,054.0 1,056.0	e <u>t)</u>)0)0	ırf.Area <u>(sq-ft)</u> 7,945 10,273 12,827	Inc.St (cubic-fe 18,2 23,	eet) 0 218	Cum.Store (cubic-feet) 0 18,218 41,318			
Device	Routing	Invert	Outlet I	Devices				
#1	Discarded	1,052.00'				Surface area		
#2	Primary	1,055.50'	Conductivity to Groundwater Elevation = 1,020.00' Phase-In= 0.07 10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64				1.60	

Discarded OutFlow Max=1.22 cfs @ 12.35 hrs HW=1,052.01' (Free Discharge) **1=Exfiltration** (Controls 1.22 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,052.00' TW=0.00' (Dynamic Tailwater) **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 6P: Infiltration Trench

Inflow A Inflow Outflow Discardo Primary	= = ed =	2.94 cfs @ 1 0.91 cfs @ 1 0.91 cfs @ 1	.00% Impervious, 2.07 hrs, Volume 2.37 hrs, Volume 2.37 hrs, Volume 0.00 hrs, Volume	e= 0.208 e= 0.208 e= 0.208	8 af, Atten= 69%, Lag= 18.0 min 8 af	
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Peak Elev= 2.21' @ 12.37 hrs Surf.Area= 3,395 sf Storage= 1,648 cf						
Plug-Flow detention time= 9.5 min calculated for 0.208 af (100% of inflow) Center-of-Mass det. time= 9.5 min (800.8 - 791.3) Volume Invert Avail.Storage Storage Description						
#11.00'2,716 cfCustom Stage Data (Prismatic)Listed below (Recalc) 6,790 cf Overall x 40.0% Voids						
Elevation Surf.Area I		Inc.Store	Cum.Store			
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)		
1.0	00	3,395	0	0		
3.0		3,395	6,790	6,790		
Device	Routing	Invert	Outlet Devices			
#1 Discarded 1.00'		8.270 in/hr Exfiltration over Surface area				
			Conductivity to	Groundwater El	levation = -2.00' Phase-In= 0.01'	
#2 Primary 2.75' 2 H 2 C		200.0' long x 3.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32				

Discarded OutFlow Max=0.91 cfs @ 12.37 hrs HW=2.21' (Free Discharge) **1=Exfiltration** (Controls 0.91 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1.00' TW=0.00' (Dynamic Tailwater) **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs) Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points Runoff by SCS TR-20 method, UH=SCS, Weighted-CN Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Area 1	Runoff Area=222,184 sf 0.00% Impervious Runoff Depth=0.77" Flow Length=798' Tc=6.2 min CN=39 Runoff=2.17 cfs 0.327 af
Subcatchment 2S: Area 2	Runoff Area=51,206 sf 0.00% Impervious Runoff Depth=0.77" Tc=5.0 min CN=39 Runoff=0.53 cfs 0.075 af
Subcatchment 3S: Area 3	Runoff Area=335,587 sf 0.00% Impervious Runoff Depth=0.77" Flow Length=1,136' Tc=10.0 min CN=39 Runoff=2.97 cfs 0.493 af
Subcatchment4S: Area 4	Runoff Area=47,924 sf 0.00% Impervious Runoff Depth=0.77" Tc=5.0 min CN=39 Runoff=0.49 cfs 0.070 af
Subcatchment 5S: Area 5	Runoff Area=338,290 sf 0.00% Impervious Runoff Depth=0.77" Tc=5.0 min CN=39 Runoff=3.48 cfs 0.497 af
Subcatchment6S: Propos	Red EntranceRunoff Area=24,139 sf0.00% ImperviousRunoff Depth=5.59"Tc=5.0 minCN=88Runoff=3.60 cfs0.258 af
Reach 1R: Western Wetla	Inflow=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af
Reach 2R: Eastern Wetlar	d System Inflow=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af
Reach 3R: Southern West	ern System Inflow=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af
Pond 1P: Basin 1	Peak Elev=1,035.78' Storage=1,987 cf Inflow=2.17 cfs 0.327 af Discarded=0.65 cfs 0.305 af Primary=0.39 cfs 0.022 af Outflow=1.04 cfs 0.327 af
Pond 2P: Basin 2	Peak Elev=1,034.01' Storage=34 cf Inflow=0.65 cfs 0.097 af Discarded=0.65 cfs 0.097 af Primary=0.00 cfs 0.000 af Outflow=0.65 cfs 0.097 af
Pond 3P: Basin 3	Peak Elev=1,031.89' Storage=5,060 cf Inflow=2.97 cfs 0.493 af Discarded=0.71 cfs 0.493 af Primary=0.00 cfs 0.000 af Outflow=0.71 cfs 0.493 af
Pond 4P: Basin 4	Peak Elev=1,044.01' Storage=25 cf Inflow=0.49 cfs 0.070 af Discarded=0.48 cfs 0.070 af Primary=0.00 cfs 0.000 af Outflow=0.48 cfs 0.070 af
Pond 5P: Basin 5	Peak Elev=1,052.26' Storage=2,112 cf Inflow=3.48 cfs 0.497 af Discarded=1.59 cfs 0.497 af Primary=0.00 cfs 0.000 af Outflow=1.59 cfs 0.497 af
Pond 6P: Infiltration Tren	Peak Elev=2.71' Storage=2,324 cf Inflow=3.60 cfs 0.258 af Discarded=1.02 cfs 0.258 af Primary=0.00 cfs 0.000 af Outflow=1.02 cfs 0.258 af
Total Runof	Area = 23.401 ac Runoff Volume = 1.721 af Average Runoff Depth = 0.88 100.00% Pervious = 23.401 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Area 1

Runoff = 2.17 cfs @ 12.15 hrs, Volume= 0.327 af, Depth= 0.77"

_	A	rea (sf)	CN [Description		
222,184 39 >75% Grass			>75% Gras	s cover, Go	bod, HSG A	
	222,184		100.00% Pervious Are			a
_	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
_	0.8	50	0.3300	1.08		Sheet Flow,
						Fallow n= 0.050 P2= 3.10"
	0.4	114	0.0700	4.26		Shallow Concentrated Flow,
	0.0	407	0.0400	4 70		Unpaved Kv= 16.1 fps
	3.8	407	0.0120	1.76		Shallow Concentrated Flow,
	0.3	120	0.2000	7.20		Unpaved Kv= 16.1 fps Shallow Concentrated Flow,
	0.5	120	0.2000	1.20		Unpaved Kv= 16.1 fps
	0.9	107	0.0150	1.97		Shallow Concentrated Flow,
	510		0.0100			Unpaved Kv= 16.1 fps
	6.2	798	Total			· · ·

Summary for Subcatchment 2S: Area 2

Runoff = 0.53 cfs @ 12.12 hrs, Volume= 0.075 af, Depth= 0.77"

A	rea (sf)	CN [Description				
	51,206	39 >	39 >75% Grass cover, Good, HSG A				
	51,206	100.00% Pervious Area			ea		
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description		
5.0					Direct Entry,		

Summary for Subcatchment 3S: Area 3

Runoff = 2.97 cfs @ 12.28 hrs, Volume= 0.493 af, Depth= 0.77"

A	Area (sf)	CN D	escription		
	335,587	39 >	75% Gras	s cover, Go	ood, HSG A
:	335,587	1	00.00% Pe	ervious Are	a
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	50	0.3300	1.08		Sheet Flow,
9.2	1,086	0.0150	1.97		Fallow n= 0.050 P2= 3.10" Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
10.0	1,136	Total			

Summary for Subcatchment 4S: Area 4

Runoff = 0.49 cfs @ 12.12 hrs, Volume= 0.070 af, Depth= 0.77"

Area	(sf) C	CN D	escription			
47,9	924 🗧	39 >7	75% Grass	s cover, Go	ood, HSG A	
47,9	924	100.00% Pervious Area				
Tc Leı (min) (f	ngth eet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description	
5.0					Direct Entry,	

Summary for Subcatchment 5S: Area 5

Runoff = 3.48 cfs @ 12.12 hrs, Volume= 0.497 af, Depth= 0.77"

Area (sf)	CN	Description					
338,290	39	>75% Grass cover, Good, HSG A					
338,290		100.00% P	ervious Are	28			
Tc Length (min) (feet)	Slope (ft/ft	,	Capacity (cfs)	Description			
5.0				Direct Entry,			

Summary for Subcatchment 6S: Proposed Entrance Driveway

Runoff = 3.60 cfs @ 12.07 hrs, Volume= 0.258 af, Depth= 5.59"

	Area (sf)	CN	Description				
	3,408	39	>75% Gras	s cover, Go	ood, HSG A		
	20,731	96	Gravel surfa	ace, HSG A	Α		
	24,139	88	Weighted Average				
	24,139		100.00% Pervious Area				
Tc	Length	Slope	e Velocity	Capacity	Description		
(min)	(feet)	(ft/ft) (ft/sec)	(cfs)			
5.0					Direct Entry,		
					•		

Summary for Reach 1R: Western Wetland System

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	=	14.534 ac,	0.00% Impervious, Inflo	w Depth = 0.00"	for 50-Year event
Inflow =	•	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Outflow =	•	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Att	en= 0%, Lag= 0.0 min

Summary for Reach 2R: Eastern Wetland System

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area	a =	7.766 ac,	0.00% Impervious, Inflow I	Depth = 0.00"	for 50-Year event
Inflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Outflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Summary for Reach 3R: Southern Western System

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area	a =	1.100 ac,	0.00% Impervious, Infl	ow Depth = $0.00"$	for 50-Year event
Inflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Outflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Summary for Pond 1P: Basin 1

Inflow Area = Inflow = Outflow = Discarded = Primary =	5.101 ac, 2.17 cfs @ 1.04 cfs @ 0.65 cfs @ 0.39 cfs @	12.15 hrs 12.56 hrs 12.56 hrs	s, Volume s, Volume s, Volume)=)=)=	0.327 af	' for 50-Year eve tten= 52%, Lag= 2		
0, ,	Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Peak Elev= 1,035.78' @ 12.56 hrs Surf.Area= 2,982 sf Storage= 1,987 cf							
Plug-Flow detention time= 20.7 min calculated for 0.327 af (100% of inflow) Center-of-Mass det. time= 20.7 min (951.7 - 931.0)								
Volume Inv	vert Avail.	Storage	Storage D	escription				
#1 1,035	00' 11	l,553 cf	Custom S	Stage Data	(Prismatic	Listed below (Reca	alc)	
Elevation (feet)	Surf.Area (sq-ft)	Inc. cubic)	Store feet)	Cum.Sto (cubic-fe				

 1,038.00
 5,663
 8,891
 11,553

 Device
 Routing
 Invert
 Outlet Devices

0

2,662

2,095

3,228

1,035.00

1,036.00

Device	rtouting	mont	Callet Devices
#1	Discarded	1,035.00'	8.270 in/hr Exfiltration over Surface area
			Conductivity to Groundwater Elevation = 1,030.00' Phase-In= 0.01'
#2	Primary	1,035.50'	12.0" Round Culvert
	-		L= 97.0' RCP, groove end projecting, Ke= 0.200
			Inlet / Outlet Invert= 1,035.50' / 1,034.50' S= 0.0103 '/' Cc= 0.900
			n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf

0

2,662

Discarded OutFlow Max=0.65 cfs @ 12.56 hrs HW=1,035.78' (Free Discharge) **1=Exfiltration** (Controls 0.65 cfs)

Primary OutFlow Max=0.39 cfs @ 12.56 hrs HW=1,035.78' TW=1,034.01' (Dynamic Tailwater) **→2=Culvert** (Barrel Controls 0.39 cfs @ 3.24 fps)

Summary for Pond 2P: Basin 2

Inflow Area =	6.276 ac,	0.00% Impervious, Inflow De	epth = 0.19" for 50-Year event
Inflow =	0.65 cfs @	12.49 hrs, Volume=	0.097 af
Outflow =	0.65 cfs @	12.51 hrs, Volume=	0.097 af, Atten= 0%, Lag= 0.9 min
Discarded =	0.65 cfs @	12.51 hrs, Volume=	0.097 af
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Peak Elev= 1,034.01' @ 12.51 hrs Surf.Area= 3,858 sf Storage= 34 cf

Plug-Flow detention time= 0.9 min calculated for 0.097 af (100% of inflow) Center-of-Mass det. time= 0.9 min (894.8 - 894.0)

Volume	Invert	Avail.Sto	rage	Storage D	Description			
#1	1,034.00'	22,64	43 cf	Custom S	Stage Data (P	rismatic)Listed below ((Recalc)	
Elevatio (fee 1,034.0	et) 00	ırf.Area (sq-ft) 3,850	(cubic	.Store c-feet) 0	Cum.Store (cubic-feet) 0			
1,036.0		5,604		9,454	9,454			
1,038.0	00	7,585	1	3,189	22,643			
Device	Routing	Invert	Outle	et Devices				
#1	Discarded	1,034.00'	8.27	0 in/hr Ext	filtration over	Surface area		
#2	Primary	1,037.50'	10.0 ' Head	long x 1 d (feet) 0.2	0.0' breadth B 20 0.40 0.60	Elevation = 1,020.00' Froad-Crested Rectan 0.80 1.00 1.20 1.40 70 2.69 2.68 2.69 2.	gular Weir 1.60	
Discord	Discourded OutFlow: Max-0.65 of $(2, 51)$ hrs. $HW=1.024.04!$ (Free Discharge)							

Discarded OutFlow Max=0.65 cfs @ 12.51 hrs HW=1,034.01' (Free Discharge) **1=Exfiltration** (Controls 0.65 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,034.00' TW=0.00' (Dynamic Tailwater) **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 3P: Basin 3

Inflow Area =	7.704 ac,	0.00% Impervious, Inflow De	epth = 0.77" for 50-Year event
Inflow =	2.97 cfs @	12.28 hrs, Volume=	0.493 af
Outflow =	0.71 cfs @	14.09 hrs, Volume=	0.493 af, Atten= 76%, Lag= 108.4 min
Discarded =	0.71 cfs @	14.09 hrs, Volume=	0.493 af
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Peak Elev= 1,031.89' @ 14.09 hrs Surf.Area= 3,222 sf Storage= 5,060 cf

Plug-Flow detention time= 76.7 min calculated for 0.493 af (100% of inflow) Center-of-Mass det. time= 76.7 min (1,011.2 - 934.5)

Volume	Invert	Avail.Sto	rage Stor	age Description			
#1	1,030.00'	18,4 <i>°</i>	17 cf Cus	cf Custom Stage Data (Prismatic)Listed below (Recalc)			
Elevatio (fee		ırf.Area (sq-ft)	Inc.Store (cubic-feet	• • • • • • • • • • • • • • • • • • • •			
1,030.0	00	2,144	(0 C			
1,032.0	00	3,287	5,43	1 5,431			
1,034.0	4,657		7,944	4 13,375			
1,035.0	00	5,427	5,042	2 18,417			
Device	Routing	Invert	Outlet De	vices			
#1	Discarded	1,030.00'	8.270 in/h	nr Exfiltration over	Surface area		
		,	Conductiv	vity to Groundwater	Elevation = 1,020.00'	Phase-In= 0.01'	
#2	Primary	1,034.50'			Broad-Crested Rectan		
			· ·	/	0.80 1.00 1.20 1.40		
			Coef. (En	glish) 2.49 2.56 2	.70 2.69 2.68 2.69 2.	67 2.64	
Discourd	ad OutFlaw	Max-0 74 af			(Free Discharge)		

Discarded OutFlow Max=0.71 cfs @ 14.09 hrs HW=1,031.89' (Free Discharge) **1=Exfiltration** (Controls 0.71 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,030.00' TW=0.00' (Dynamic Tailwater) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 4P: Basin 4

Inflow A Inflow Outflow Discarde Primary	= = ed =	0.49 cfs @ 1 0.48 cfs @ 1 0.48 cfs @ 1	00% Impervious 2.12 hrs, Volum 2.14 hrs, Volum 2.14 hrs, Volum 0.00 hrs, Volum	e= 0.0 e= 0.0 e= 0.0	070 af	for 50-Year event en= 2%, Lag= 1.0 min
			Time Span= 0.00 Surf.Area= 4,7			
		t. time= 0.9 mir	n calculated for 0 n (930.7 - 929.8 prage Storage [)	of inflow)	
#1	1,044.0				Prismatic)	isted below (Recalc)
	1,01110	20,1		0		
Elevatio	on	Surf.Area	Inc.Store	Cum.Store	ļ	
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)	<u>l</u>	
1,044.0	00	4,742	0	0	1	
1,046.0		6,486	11,228	11,228		
1,048.0	00	8,456	14,942	26,170	I	
Device	Routing	Invert	Outlet Devices			
#1	Discarde	d 1,044.00'	8.270 in/hr Ex	filtration over	r Surface a	irea
			Conductivity to			
#2	Primary	1,047.50'				ted Rectangular Weir
						0 1.20 1.40 1.60 1.80 2.00
			2.50 3.00 3.50			
			2.65 2.66 2.6			2.68 2.67 2.65 2.65 2.65
			2.05 2.00 2.00	0 2.01 2.09	2.12 2.10	2.00

Discarded OutFlow Max=0.48 cfs @ 12.14 hrs HW=1,044.01' (Free Discharge) **1=Exfiltration** (Controls 0.48 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,044.00' TW=0.00' (Dynamic Tailwater) **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 5P: Basin 5

Inflow Area = Inflow = Outflow = Discarded = Primary =	3.48 cfs @ 1.59 cfs @ 1.59 cfs @	0.00% Impervious, 12.12 hrs, Volume= 12.54 hrs, Volume= 12.54 hrs, Volume= 0.00 hrs, Volume=	= 0.497 af, Atte = 0.497 af	for 50-Year event en= 54%, Lag= 25.0 min			
0, ,		•	48.00 hrs, dt= 0.01 hrs 9 sf Storage= 2,112 c	f			
Plug-Flow detention time= 5.8 min calculated for 0.497 af (100% of inflow) Center-of-Mass det. time= 5.8 min (935.6 - 929.8)							

Volume	Invert	Avail.Sto	rage	Storage D	escription		
#1	1,052.00'	1,052.00' 41,318		cf Custom Stage Data (Prismatic)Listed below (Recalc)			(Recalc)
Elevatio (fee 1,052.0 1,054.0 1,056.0	<u>et)</u> 00 00	urf.Area (sq-ft) 7,945 10,273 12,827	(cubio	2.Store <u>c-feet)</u> 0 18,218 23,100	Cum.Store (cubic-feet) 0 18,218 41,318		
Device	Routing	Invert	Outle	et Devices			
#1	Discarded	1,052.00'	-	-	iltration over		
#2	Primary	1,055.50'	10.0 Head	' long x 10 d (feet) 0.2).0' breadth B 20 0.40 0.60	Elevation = 1,020.00' road-Crested Rectan 0.80 1.00 1.20 1.40 70 2.69 2.68 2.69 2.	gular Weir 1.60
			~ .				

Discarded OutFlow Max=1.59 cfs @ 12.54 hrs HW=1,052.26' (Free Discharge) **1=Exfiltration** (Controls 1.59 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,052.00' TW=0.00' (Dynamic Tailwater) **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 6P: Infiltration Trench

Inflow A Inflow Outflow Discarde Primary	= ; = ; ed = ;	3.60 cfs @ 12 1.02 cfs @ 12 1.02 cfs @ 12	00% Impervious 2.07 hrs, Volum 2.40 hrs, Volum 2.40 hrs, Volum 0.00 hrs, Volum	ne= 0.23 ne= 0.23 ne= 0.23	a = 5.59" for 50-Year event 258 af 258 af, Atten= 72%, Lag= 19.6 min 258 af 000 af
			Time Span= 0.0 urf.Area= 3,395		
		time= 12.9 m	in calculated for in (798.3 - 785. rage Storage	4)	6 of inflow)
#1	1.00				Prismatic)Listed below (Recalc)
"	1.00	۲,۲		Overall x 40.0%	
Elevatio		urf.Area	Inc.Store	Cum.Store	
(fee		(sq-ft)	(cubic-feet)	(cubic-feet)	
1.(3,395	0	0	
3.0	00	3,395	6,790	6,790	
Device	Routing	Invert	Outlet Devices	5	
#1	Discarded	1.00'	-	filtration over	Surface area
	Bioodiaou				Elevation = -2.00' Phase-In= 0.01'
#2	Primary	2.75'	200.0' long x	3.0' breadth B	Broad-Crested Rectangular Weir
					0.80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00 3.5		
					.68 2.67 2.65 2.64 2.64 2.68 2.68
			2.12 2.01 2.9	2 2.97 3.07 3	0.02

Discarded OutFlow Max=1.02 cfs @ 12.40 hrs HW=2.71' (Free Discharge) **1=Exfiltration** (Controls 1.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1.00' TW=0.00' (Dynamic Tailwater) **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs) Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points Runoff by SCS TR-20 method, UH=SCS, Weighted-CN Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Area 1		Runoff Area=22 w Length=798				
Subcatchment 2S: Area 2		Runoff Area=5			vious Runoff Runoff=1.29	
Subcatchment 3S: Area 3		Runoff Area=33 Length=1,136'				
Subcatchment4S: Area 4		Runoff Area=4	,		/ious Runoff Runoff=1.21	
Subcatchment 5S: Area 5	F	Runoff Area=33			/ious Runoff Runoff=8.54	
Subcatchment6S: Propos	ed Entrance	Runoff Area=2			/ious Runoff Runoff=4.39	
Reach 1R: Western Wetla	nd System				Inflow=2.43 Outflow=2.43	cfs 0.020 af cfs 0.020 af
Reach 2R: Eastern Wetlan	d System				Inflow=0.00 Outflow=0.00	cfs 0.000 af cfs 0.000 af
Reach 3R: Southern West	ern System				Inflow=0.00 Outflow=0.00	cfs 0.000 af cfs 0.000 af
Pond 1P: Basin 1	P Discarded=0.80 cfs(eak Elev=1,030 0.409 af Prima				
Pond 2P: Basin 2	P Discarded=0.92 cfs(eak Elev=1,03 0.272 af Prima				
Pond 3P: Basin 3	Pe Discarded=1.06 cfs(ak Elev=1,033 0.836 af Prima				
Pond 4P: Basin 4	Discarded=0.91 cfs(Peak Elev=1,0 0.119 af Prima				
Pond 5P: Basin 5	P Discarded=1.77 cfs(eak Elev=1,05 0.843 af Prima				
Pond 6P: Infiltration Trend	:h Discarded=1.04 cfs (Inflow=4.39 Outflow=3.46	
Total Runoff	Area = 23.401 ac	Runoff Volu	ne = 2.79	99 af Avera	age Runoff [Depth = 1.44

100.00% Pervious = 23.401 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Area 1

Runoff = 5.35 cfs @ 12.12 hrs, Volume= 0.554 af, Depth= 1.30"

_	A	rea (sf)	CN [Description		
	2	22,184	39 >	>75% Gras	s cover, Go	ood, HSG A
	2	22,184	-	100.00% Pe	ervious Are	a
_	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
	0.8	50	0.3300	1.08		Sheet Flow,
	0.4	114	0.0700	4.26		Fallow n= 0.050 P2= 3.10" Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
	3.8	407	0.0120	1.76		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
	0.3	120	0.2000	7.20		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
	0.9	107	0.0150	1.97		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
	6.2	798	Total			

Summary for Subcatchment 2S: Area 2

Runoff = 1.29 cfs @ 12.10 hrs, Volume= 0.128 af, Depth= 1.30"

Area (sf) CN	Description							
51,200	3 39	>75% Gras	s cover, Go	ood, HSG A					
51,206	6	100.00% Pervious Area							
Tc Leng (min) (fee		,	Capacity (cfs)	Description					
5.0				Direct Entry,					

Summary for Subcatchment 3S: Area 3

Runoff = 7.00 cfs @ 12.18 hrs, Volume= 0.836 af, Depth= 1.30"

A	Area (sf)	CN D	escription		
	335,587	39 >	75% Gras	s cover, Go	ood, HSG A
:	335,587	1	00.00% Pe	ervious Are	а
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	50	0.3300	1.08		Sheet Flow,
9.2	1,086	0.0150	1.97		Fallow n= 0.050 P2= 3.10" Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
10.0	1,136	Total			

Summary for Subcatchment 4S: Area 4

Runoff = 1.21 cfs @ 12.10 hrs, Volume= 0.119 af, Depth= 1.30"

Are	a (sf)	CN D	Description							
47	7,924	39 >	75% Grass	s cover, Go	ood, HSG A					
47	7,924	1	100.00% Pervious Area							
TcL (min)	ength (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)						
5.0					Direct Entry,					

Summary for Subcatchment 5S: Area 5

Runoff = 8.54 cfs @ 12.10 hrs, Volume= 0.843 af, Depth= 1.30"

Area (sf)	CN	Description							
338,290	39	>75% Gras	s cover, Go	ood, HSG A					
338,290		100.00% P	100.00% Pervious Area						
Tc Length (min) (feet)									
5.0				Direct Entry,					

Summary for Subcatchment 6S: Proposed Entrance Driveway

Runoff = 4.39 cfs @ 12.07 hrs, Volume= 0.319 af, Depth= 6.90"

	Area (sf)	CN	Description						
	3,408	39	>75% Gras	s cover, Go	ood, HSG A				
	20,731	96	Gravel surfa	ace, HSG A	Α				
	24,139	88	Weighted A	Weighted Average					
	24,139		100.00% Pervious Area						
Tc	Length	Slope	e Velocity	Capacity	Description				
(min)	(feet)	(ft/ft	t) (ft/sec) (cfs)						
5.0					Direct Entry,				
					•				

Summary for Reach 1R: Western Wetland System

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	14.534 ac,	0.00% Impervious,	Inflow Depth = 0.0	2" for 100-Year event
Inflow =	2.43 cfs @	12.14 hrs, Volume=	= 0.020 af	
Outflow =	2.43 cfs @	12.14 hrs, Volume=	= 0.020 af,	Atten= 0%, Lag= 0.0 min

Summary for Reach 2R: Eastern Wetland System

[40] Hint: Not Described (Outflow=Inflow)

Inflow Are	a =	7.766 ac,	0.00% Impervious, Inflow I	Depth = 0.00"	for 100-Year event
Inflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Outflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Summary for Reach 3R: Southern Western System

[40] Hint: Not Described (Outflow=Inflow)

Inflow Are	a =	1.100 ac,	0.00% Impervious, Inflow I	Depth = 0.00"	for 100-Year event
Inflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af	
Outflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atte	en= 0%, Lag= 0.0 min

Summary for Pond 1P: Basin 1

Inflow Area =	5.101 ac,	0.00% Impervious, Inflow D	epth = 1.30" for 100-Year event
Inflow =	5.35 cfs @	12.12 hrs, Volume=	0.554 af
Outflow =	2.89 cfs @	12.42 hrs, Volume=	0.554 af, Atten= 46%, Lag= 18.4 min
Discarded =	0.80 cfs @	12.42 hrs, Volume=	0.409 af
Primary =	2.10 cfs @	12.42 hrs, Volume=	0.144 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Peak Elev= 1,036.22' @ 12.42 hrs Surf.Area= 3,497 sf Storage= 3,404 cf

Plug-Flow detention time= 22.8 min calculated for 0.554 af (100% of inflow) Center-of-Mass det. time= 22.8 min (930.0 - 907.2)

Volume	Invert	Avail.Sto	rage Sto	orage De	escription		
#1	1,035.00'	11,5	53 cf Cu	stom S	tage Data (Pı	r ismatic) Listed below ((Recalc)
Elevatio (fee 1,035.0 1,036.0 1,038.0	e <u>t)</u>)0)0	urf.Area (sq-ft) 2,095 3,228 5,663	Inc.Sto (cubic-fee 2,66 8,89	et) 0 62	Cum.Store (cubic-feet) 0 2,662 11,553		
Device	Routing	Invert	Outlet D	evices			
#1	Discarded	1,035.00'				Surface area	
#2	Primary	1,035.50'					

Discarded OutFlow Max=0.80 cfs @ 12.42 hrs HW=1,036.22' (Free Discharge) **1=Exfiltration** (Controls 0.80 cfs)

Primary OutFlow Max=2.10 cfs @ 12.42 hrs HW=1,036.22' TW=1,034.45' (Dynamic Tailwater) ←2=Culvert (Barrel Controls 2.10 cfs @ 4.84 fps)

Summary for Pond 2P: Basin 2

Inflow Area =	6.276 ac,	0.00% Impervious, Inflow De	epth = 0.52" for 100-Year event
Inflow =	2.77 cfs @	12.38 hrs, Volume=	0.272 af
Outflow =	0.92 cfs @	13.01 hrs, Volume=	0.272 af, Atten= 67%, Lag= 37.5 min
Discarded =	0.92 cfs @	13.01 hrs, Volume=	0.272 af
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Peak Elev= 1,034.82' @ 13.01 hrs Surf.Area= 4,568 sf Storage= 3,446 cf

Plug-Flow detention time= 32.5 min calculated for 0.272 af (100% of inflow) Center-of-Mass det. time= 32.5 min (868.7 - 836.3)

Volume	Invert	Avail.Sto	rage	Storage I	Description			
#1	1,034.00'	22,64	43 cf	Custom	Stage Data (P	rismatic)Listed below	(Recalc)	
Elevatio (fee 1,034.0 1,036.0	et) 00	ırf.Area <u>(sq-ft)</u> 3,850 5,604	(cubic	.Store <u>c-feet)</u> 0 9,454	Cum.Store (cubic-feet) 0 9,454			
1,038.0		7,585	1	3,189	22,643			
Device	Routing	Invert	Outle	et Devices				
#1	Discarded	1,034.00'	8.27	0 in/hr Ex	filtration over	Surface area		
#2	Primary	1,037.50'	10.0 ' Head	Conductivity to Groundwater Elevation = 1,020.00' Phase-In= 0.01' 10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64				
Discord	Discorded OutFlow Mov-0.02 of a @ 12.01 bro. HW-1.024.92' (Erop Discharge)							

Discarded OutFlow Max=0.92 cfs @ 13.01 hrs HW=1,034.82' (Free Discharge) **1=Exfiltration** (Controls 0.92 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,034.00' TW=0.00' (Dynamic Tailwater) **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 3P: Basin 3

Inflow Area =	7.704 ac,	0.00% Impervious, Inflow D	epth = 1.30" for 100-Year event
Inflow =	7.00 cfs @	12.18 hrs, Volume=	0.836 af
Outflow =	1.06 cfs @	14.28 hrs, Volume=	0.836 af, Atten= 85%, Lag= 125.9 min
Discarded =	1.06 cfs @	14.28 hrs, Volume=	0.836 af
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Peak Elev= 1,033.66' @ 14.28 hrs Surf.Area= 4,426 sf Storage= 11,845 cf

Plug-Flow detention time= 140.3 min calculated for 0.836 af (100% of inflow) Center-of-Mass det. time= 140.3 min (1,051.0 - 910.7)

Volume	Invert	Avail.Sto	rage Storage	Description		
#1	1,030.00'	18,41	17 cf Custon	n Stage Data (P	rismatic)Listed below	(Recalc)
Elevatio (fee		urf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)		
1,030.0	00	2,144	0	0		
1,032.0	00	3,287	5,431	5,431		
1,034.0	00	4,657	7,944	13,375		
1,035.0	00	5,427	5,042	18,417		
Device	Routing	Invert	Outlet Device	S		
#1	Discarded	1,030.00'	8.270 in/hr E	xfiltration over	Surface area	
			Conductivity 1	to Groundwater	Elevation = 1,020.00'	Phase-In= 0.01'
#2	Primary	1,034.50'	10.0' long x	10.0' breadth B	road-Crested Rectan	gular Weir
			· · ·		0.80 1.00 1.20 1.40	
			Coef. (Englisl	h) 2.49 2.56 2.	70 2.69 2.68 2.69 2.	.67 2.64
Disservel		Max-4.00 af			(Free Discharge)	

Discarded OutFlow Max=1.06 cfs @ 14.28 hrs HW=1,033.66' (Free Discharge) **1=Exfiltration** (Controls 1.06 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,030.00' TW=0.00' (Dynamic Tailwater) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 4P: Basin 4

Inflow Are Inflow Outflow Discarde Primary	= = d =	1.21 cfs @ 1 0.91 cfs @ 1 0.91 cfs @ 1	00% Impervious 2.10 hrs, Volum 2.18 hrs, Volum 2.18 hrs, Volum 0.00 hrs, Volum	e= 0.1 e= 0.1 e= 0.1	= 1.30" for 100-Year event 19 af 19 af, Atten= 25%, Lag= 4.9 min 19 af 00 af
			Time Span= 0.00 s Surf.Area= 4,7		
Center-of	f-Mass det.	time= 1.1 mir	n calculated for 0 n (907.1 - 906.1)	of inflow)
Volume	Inver	t Avail.Sto	orage Storage D	Description	
#1	1,044.00	' 26,1	70 cf Custom	Stage Data (P	rismatic)Listed below (Recalc)
Elevatio	n S	urf.Area	Inc.Store	Cum.Store	
(feet		(sq-ft)	(cubic-feet)	(cubic-feet)	
	1				
1,044.0		4,742	0	0	
1,046.0		6,486	11,228	11,228	
1,048.0	0	8,456	14,942	26,170	
Device	Routing	Invert	Outlet Devices		
#1	Discarded	1,044.00'	8.270 in/hr Ex	filtration over	Surface area
		,	Conductivity to	Groundwater	Elevation = 1,020.00' Phase-In= 0.01'
#2	Primary	1,047.50'			oad-Crested Rectangular Weir
	,				0.80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00 3.50	0 4.00 4.50 5	5.00 5.50
			Coef. (English)	2.37 2.51 2.	.70 2.68 2.68 2.67 2.65 2.65 2.65
					2.72 2.76 2.83
.					

Discarded OutFlow Max=0.91 cfs @ 12.18 hrs HW=1,044.03' (Free Discharge) **1=Exfiltration** (Controls 0.91 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,044.00' TW=0.00' (Dynamic Tailwater) **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 5P: Basin 5

Inflow Area =	7.766 ac,	0.00% Impervious, Inflow De	epth = 1.30" for 100-Year event
Inflow =	8.54 cfs @	12.10 hrs, Volume=	0.843 af
Outflow =	1.77 cfs @	12.87 hrs, Volume=	0.843 af, Atten= 79%, Lag= 46.1 min
Discarded =	1.77 cfs @	12.87 hrs, Volume=	0.843 af
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Peak Elev= 1,052.92' @ 12.87 hrs Surf.Area= 9,017 sf Storage= 7,810 cf

Plug-Flow detention time= 34.0 min calculated for 0.843 af (100% of inflow) Center-of-Mass det. time= 34.0 min (940.1 - 906.1)

Volume	Invert	Avail.Sto	rage	Storage [Description			
#1	1,052.00'	41,3	18 cf	Custom	Stage Data (P	rismatic)Listed below	(Recalc)	
Elevatio (fee 1,052.0 1,054.0 1,056.0	<u>et)</u> 00 00	rf.Area (sq-ft) 7,945 10,273 12,827	(cubio	2.Store <u>c-feet)</u> 0 18,218 23,100	Cum.Store (cubic-feet) 0 18,218 41,318			
Device	Routing	Invert	Outle	et Devices				
#1	Discarded	1,052.00'	-	-	filtration over			
#2	Primary	1,055.50'	10.0 Head	' long x 1 d (feet) 0.2	0.0' breadth B 20 0.40 0.60	Elevation = 1,020.00' road-Crested Rectan 0.80 1.00 1.20 1.40 70 2.69 2.68 2.69 2.	1.60	
Disserve	Discourded Out Flow Max - 1 77 of a 2 12 07 hrs INV-1 052 021 (Free Discharge)							

Discarded OutFlow Max=1.77 cfs @ 12.87 hrs HW=1,052.92' (Free Discharge) **1=Exfiltration** (Controls 1.77 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,052.00' TW=0.00' (Dynamic Tailwater) **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 6P: Infiltration Trench

Inflow Area = Inflow = Outflow = Discarded = Primary =	4.39 cfs @ 3.46 cfs @ 1.04 cfs @	0.00% Impervious, Inflow 12.07 hrs, Volume= 12.14 hrs, Volume= 12.14 hrs, Volume= 12.14 hrs, Volume=	/ Depth = 6.90" for 100-Year event 0.319 af 0.319 af, Atten= 21%, Lag= 4.4 min 0.299 af 0.020 af				
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs Peak Elev= 2.78' @ 12.14 hrs Surf.Area= 3,395 sf Storage= 2,414 cf							
Plug-Flow detention time= 12.4 min calculated for 0.319 af (100% of inflow) Center-of-Mass det. time= 12.4 min (792.3 - 779.9)							

Volume	Invert	Avail.Stor	rage Storag	ge Description		
#1	1.00'	2,71		Custom Stage Data (Prismatic) Listed below (Recalc) 6,790 cf Overall x 40.0% Voids		
Elevatio (fee		rf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)		
1.0	00	3,395	0	0		
3.0	00	3,395	6,790	6,790		
Device	Routing	Invert	Outlet Devic	ces		
#1	Discarded	1.00'	8.270 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = -2.00' Phase-In= 0.01'			
#2	#2 Primary 2.75'		200.0' long Head (feet) 2.50 3.00 Coef. (Engli	00.0' long x 3.0' breadth Broad-Crested Rectangular Weir lead (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 .50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 .72 2.81 2.92 2.97 3.07 3.32		

Discarded OutFlow Max=1.04 cfs @ 12.14 hrs HW=2.78' (Free Discharge) **1=Exfiltration** (Controls 1.04 cfs)

Primary OutFlow Max=2.13 cfs @ 12.14 hrs HW=2.78' TW=0.00' (Dynamic Tailwater) **2=Broad-Crested Rectangular Weir** (Weir Controls 2.13 cfs @ 0.40 fps)