

POLLUTANT REDUCTION PLAN (PRP) / TMDL PLAN FINAL REPORT

Before completing this report please review the instructions, which are located within the Annual MS4 Status Report Instructions (3800-FM-BCW0491)

PRP / TMDL PLAN SUMMARY

Permittee Name: Cumberland Township			Permit	No.:	PAG133748				
PRP TMDL Plan Combined PR	P / TMDL Plar	ı							
Plan Approval Date: 6/1/2018 Required Completion Date: 3/15/2023									
Joint Plan? 🗌 Yes 🛛 No If Yes, identii	fy all participat	ting permitt	ees as an attach	ment	to this report				
Surface Waters Addressed by Plan: Marsh Creek Watershed & Rock Creek Watershed									
Permittee's Planning Area (acres): 2153 Total Planning Area (Joint Plans): 0 acres									
Pollutant Load Reduction Calculation Methodology:									
Simplified Method Dapshed D M	odelMyWater	shed 🗌	Other:						
	TSS	6	TN		TP				
Baseline Pollutant Load – Planning Area	796532	lbs/yr	N/A II	os/yr	N/A	lbs/yr			
Pollutant Load Reduction Requirement (%)	10	%		%		%			
Pollutant Load Reduction Requirement (lbs/yr)	79653	lbs/yr	I	bs/yr		lbs/yr			
WLA Reduction Requirement (TMDL Plan only)		lbs/yr	1	bs/yr		lbs/yr			

BMP IMPLEMENTATION

		Pollutant Load Reductions Achieved (Credit)								
ВМР Туре	No. of BMPs	TS	S	TN		T	D			
Structural BMPs	12	80318	lbs/yr	N/A	lbs/yr	N/A	lbs/yr			
Non-Structural BMPs			lbs/yr		lbs/yr		lbs/yr			
Total	12	80318	lbs/yr		lbs/yr		lbs/yr			

Pollutant Load Reductions are documented on the following attachments:

Attachment A – Infiltration BMPs No.: 8

Attachment B – BMP Retrofits No.: 2

Attachment C – Stream and/or Floodplain Restoration No.: 2

Attachment D – Street Sweeping or Storm Drain Solids Removal No.:

Attachment E – Tree Planting No.:

Attachment F – Non-structural (Annual Practice) BMPs No.:

BMP(s) have been implemented for which there are no attachments (attach calculations)

COMPLIANCE DETERMINATION

Were the pollutant load reduction requirements of the permit met? Xes No

If the pollutant load reduction requirements of the permit were **not met**, report the required load reductions remaining in lbs/yr and as a percentage of the total required load reduction.

	TSS	TN	TP
Load Reduction Remaining	lbs/yr	lbs/yr	lbs/yr
Percent of Required Load Reduction Remaining	%	%	%

If the pollutant load reduction requirements of the permit were not met, attach an explanation and provide a schedule for completing implementation of the PRP or TMDL Plan, including interim milestones.

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowledge of violations. See 18 Pa. C.S. § 4904 (relating to unsworn falsification).

David Blocher

Responsible Official Name

Township Manager

Official Title

12/6/22

Signature

Date Signed

	ATTACHMEN	Γ A – INFILT	RATION BMPs							
	GENE	RAL INFORM	ATION							
Permittee Name:	Cumberland Township		Permit No.:	PAG133748						
BMP Name:	Bioretention/Raingarden @ C1	Municipal Cor	nplex Latitude:	39.823275						
Surface Waters:	Marsh Creek Watershed		Longitude:	-77.261307						
Municipality:	Cumberland Township		County:	Adams						
Construction of the BMP is Complete. Date Construction Completed: 4/2022										
Photograph	s, Drawings, and O&M Plan are at	ttached. Inspe	ection/Monitoring Frequen	cy: Annually						
Permits or Appro	vals Obtained: N/A									
Party Responsibl	le for Long-Term O&M: 🛛 🛛 Perm	nittee 🗌 Oth	er:							
Joint BMP?] Yes 🛛 No 🛛 If Yes, attach a	list of other peri	mittees sharing credit for t	he BMP						
Type of BMP (see	e instructions): Bioretention - Ra	aingarden (C/D	soils with underdrain)							
BMP Effectivenes	ss Values: TSS: 25 %	TN: 45 9	% TP: <u>55</u> %							
Effectiveness Va	lues Source: 🛛 DEP 🗌 CB	Expert Panel Re	eport Other:							
	BM		ΓΙΟΝ							
BMP Infiltrating S	Surface Area (ft ²): 304	Ponding Do	epth (ft): 0	🛛 Underdrain						
Media Descriptio	n: 50% Topsoil, 25% Sand, & 25	5% Compost	Media Depth (ft): 1.25						
Vegetated	Loading Ratio (see instruction	ns): 348	WQ Storage Volume	(ft ³): 114						
	TSS LOA	DELIVERED	ТО ВМР							
Total Drainage A	rea Treated by BMP: 2.43	acres (Treatm	ent Area)							
TSS Load Delive	ered to BMP – Simplified Metho	d] Calculations attached						
Pollutant	Land Cover	Area (acres)	Loading Rate (lbs/ac/yr)	Delivered Load (lbs/yr)						
T99	Impervious	2.14	1398.77	2994						
100	Pervious	0.29	207.67	60						
	Tot	tal TSS Load D	elivered to BMP (lbs/yr) =	3054						
TSS Load Delive	ered to BMP – Land Cover-Base	d Calculation	Method	Calculations attached						
Pollutant	Land Cover	Area (acres)	Loading Rate (lbs/ac/yr)	Delivered Load (lbs/yr)						
TSS										
	Tot	tal TSS Load D	elivered to BMP (lbs/yr) =							
	TSS LOA		N CREDIT							
TSS Load Delive	red to BMP (3054 lbs/yr) v TSS F	ffectiveness Va	lue (55%) - 1679	lbe/vr TSS Credit						

TSS Load Delivered to BMP (3054 lbs/yr) x TSS Effectiveness Value (55%) = 1679 lbs/yr ISS Credit _____

Permittee Credit for Joint BMPs (if applicable): _____ % or

lbs/yr TSS Credit

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Watershed Model Schematic

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023



<u>Legend</u>

Hyd.OriginDescription1SCS RunoffDA to Bioretention/RG@CT Bldg2ReservoirBioretention/RG

Project: Bioretention-RG @ CT.gpw

Hydrograph Return Period Recap Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd.	Hydrograph	Inflow				Peak Ou	Hydrograph				
NO.	(origin)	nya(s)	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	Description
1	SCS Runoff			8.994							DA to Bioretention/RG @ CT Bldg
1 2	Reservoir	1		6.660							Bioretention/RG @ CT Blog
_											

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	8.994	2	718	22,037				DA to Bioretention/RG @ CT Bldg
2	Reservoir	6.660	2	722	22,035	1	<mark>537.40</mark>	1,650	Bioretention/RG
Bio	retention-RG	@ CT.gp	w		Return F	P <mark>eriod: 2 Ye</mark>	ear)	Wednesday	y, 12 / 6 / 2023

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd. No. 1

DA to Bioretention/RG @ CT Bldg

Hydrograph type	= SCS Runoff	Peak discharge	= 8.994 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 22,037 cuft
Drainage area	= 2.430 ac	Curve number	= 95*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.30 min
Total precip.	= 3.05 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(2.140 x 98) + (0.290 x 74)] / 2.430



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd. No. 1

DA to Bioretention/RG @ CT Bldg

Description	A		<u>B</u>		<u>C</u>		<u>Totals</u>
Sheet Flow Manning's n-value Flow length (ft) Two-year 24-hr precip. (in) Land slope (%)	= 0.150 = 80.0 = 3.05 = 3.44		0.011 80.0 3.05 2.81		0.011 0.0 0.00 0.00		
Travel Time (min)	= 6.76	+	0.91	+	0.00	=	7.66
Shallow Concentrated Flow Flow length (ft) Watercourse slope (%) Surface description Average velocity (ft/s)	= 55.00 = 7.73 = Unpave =4.49	d	140.00 6.96 Paved 5.36		0.00 0.00 Paved 0.00		
Travel Time (min)	= 0.20	+	0.44	+	0.00	=	0.64
Channel Flow X sectional flow area (sqft) Wetted perimeter (ft) Channel slope (%) Manning's n-value Velocity (ft/s)	= 0.00 = 0.00 = 0.015 =0.00		0.00 0.00 0.00 0.015 0.00		0.00 0.00 0.00 0.015 0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	= 0.00	+	0.00	+	0.00	=	0.00
Total Travel Time, Tc							8.30 min

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Wednesday, 12 / 6 / 2023

Hyd. No. 2

Bioretention/RG

Hydrograph type	= Reservoir	Peak discharge	= 6.660 cfs
Storm frequency	<mark>= 2 yrs</mark>	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 22,035 cuft
Inflow hyd. No.	= 1 - DA to Bioretention/RG @		<mark>= 537.40 ft</mark>
Reservoir name	= Bioretention/RG @ CT Munici	plalaBiloStorage	= 1,650 cuft

Storage Indication method used.



Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Pond No. 1 - Bioretention/RG @ CT Municipal Bldg

Pond Data

UG Chambers -Invert elev. = 533.75 ft, Rise x Span = 0.33 x 0.33 ft, Barrel Len = 38.00 ft, No. Barrels = 1, Slope = 0.00%, Headers = No Epotesensetuls encentrative elevation = 535.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	533.75	n/a	0	0
0.12	533.87	n/a	12	12
0.25	534.00	n/a	12	24
0.37	534.12	n/a	12	36
0.50	534.25	n/a	11	48
0.62	534.37	n/a	11	59
0.74	534.49	n/a	11	70
0.87	534.62	n/a	11	81
0.99	534.74	n/a	11	93
1.12	534.87	n/a	11	104
1.24	534.99	n/a	11	115
1.25	535.00	304	2	117
2.25	536.00	504	404	521
3.25	537.00	736	620	1,141
4.25	538.00	1,000	868	2,009
	000.00	.,	500	_,000

Culvert / Orifice Structures

[A] [B] [C] [PrfRsr] [A] [B] [C] [D] 4.00 Rise (in) = 12.00 0.00 0.00 Crest Len (ft) = 12.00 90.00 0.00 0.00 538.00 = 12.00 4.00 0.00 = 535.00 0.00 0.00 0.00 Crest El. (ft) Span (in) No. Barrels = 1 0 0 Weir Coeff. = 3.33 2.60 3.33 3.33 1 533.75 Invert El. (ft) = 533.75 0.00 0.00 Weir Type = Broad 1 Length (ft) = 57.00 0.00 0.00 0.00 Multi-Stage = Yes No No No Slope (%) = 14.00 0.00 0.00 n/a N-Value = .013 .013 .013 n/a = 0.000 (by Wet area) Orifice Coeff. = 0.60 0.60 0.60 0.60 Exfil.(in/hr) Multi-Stage = n/aYes No No TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Weir Structures

Stage / Storage / Discharge Table Stage Storage Elevation Clv A Clv B CIv C PrfRsr Wr A Wr B Wr C Wr D Exfil User Total cuft ft cfs cfs cfs cfs ft cfs cfs cfs cfs cfs cfs cfs 0.00 0 533.75 0.00 0.00 0.00 0.00 0.000 0.01 1 533.76 0.00 ic 0.00 ic ---0.00 0.00 ----0.000 ---------------0.02 2 533.77 0.00 ic 0.00 ic -------0.00 0.00 ---___ ------0.001 0.04 4 533.79 0.00 ic 0.00 ic -------0.00 0.00 -------------0.003 5 0.05 533.80 0.01 ic 0.01 ic 0.00 0.00 0.005 ------------------0.06 6 533.81 0.01 ic 0.01 ic ____ ---0.00 0.00 -------------0.008 7 0.07 533.82 0.01 ic 0.01 ic 0.00 0.00 ---0.011 ---------------8 0.09 533.84 0.02 ic 0.02 ic ------0.00 0.00 ------------0.015 10 533.85 ---0.00 ---0.020 0.10 0.02 ic 0.02 ic ---0.00 ---------533.86 0.02 ic 0.00 0.00 ----0.024 0.11 11 0.03 ic ---------------0.12 12 533.87 0.03 ic 0.03 ic ------0.00 0.00 --------------0.030 13 533.89 0.04 ic 0 04 ic 0.00 0.00 ----0.036 0 14 ----------------0.15 15 533.90 0.04 ic 0.04 ic ------0.00 0.00 ---------0.043 ----16 533.91 0.05 ic 0.05 ic 0.00 0.00 0.048 0.16 ------------------0.17 17 533.92 0.06 ic 0.06 ic -------0.00 0.00 ---____ -------0.056 18 0.00 0.19 533.94 0.06 ic 0.06 ic 0.00 0.063 ------------------20 533.95 0.07 ic 0.07 ic 0.00 0.00 0.071 0.20 -------------------21 0.21 533.96 0.08 ic 0.08 ic ---____ 0.00 0.00 ------0 079 ------0.22 22 533.97 0.09 ic 0.09 ic ----0.00 0.00 ---0.087 ------------0 24 23 533 99 0 10 ic 0 10 ic 0.00 0.00 0.096 ------------------0.25 24 534.00 0.11 ic 0.10 ic ---0.00 0.00 ---0.104 -------------0.26 26 534.01 0.11 ic 0.00 0.00 0.113 0.11 ic ------------------0.27 27 534.02 0.12 ic 0.12 ic 0.00 0.00 ----0.121 ---------28 0.29 534.04 0 13 ic 0 13 ic -------0.00 0.00 -------------0.130 0.30 29 534.05 0.14 ic 0.14 ic ------0.00 0.00 --------------0.139 0.31 30 534.06 0.15 ic 0.15 ic 0.00 0.00 0.146 --------------------0.32 32 534.07 0.16 ic 0.15 ic ____ ---0.00 0.00 ------------0.153

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Bioretention/RG @ CT Municipal Bldg Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.33	33	534.08	0.16 ic	0.16 ic			0.00	0.00					0.159
0.35	34	534.10	0.17 ic	0.16 ic			0.00	0.00					0.165
0.36	35	534.11	0.17 ic	0.17 ic			0.00	0.00					0.169
0.37	36	534.12	0.18 ic	0.17 ic			0.00	0.00					0.174
0.38	37	534.13	0.18 IC	0.18 IC			0.00	0.00					0.1/9
0.40	38	534.15	0.19 IC	0.18 IC			0.00	0.00					0.183
0.41	40	534.10	0.1910	0.1910			0.00	0.00					0.189
0.42	41	534.17	0.20 IC	0.191C			0.00	0.00					0.192
0.45	42	534.10	0.20 ic	0.20 ic			0.00	0.00					0.190
0.45	43	534.20	0.20 ic	0.20 ic			0.00	0.00					0.201
0.40	45	534 22	0.21 ic	0.21 ic			0.00	0.00					0.200
0.48	46	534 23	0.21 ic	0.21 ic			0.00	0.00					0.214
0.50	48	534.25	0.22 ic	0.22 ic			0.00	0.00					0.218
0.51	49	534.26	0.22 ic	0.22 ic			0.00	0.00					0.223
0.52	50	534.27	0.23 ic	0.23 ic			0.00	0.00					0.226
0.53	51	534.28	0.24 ic	0.23 ic			0.00	0.00					0.231
0.55	52	534.30	0.24 ic	0.24 ic			0.00	0.00					0.235
0.56	53	534.31	0.24 ic	0.24 ic			0.00	0.00					0.238
0.57	54	534.32	0.25 ic	0.24 ic			0.00	0.00					0.242
0.58	55	534.33	0.25 ic	0.25 ic			0.00	0.00					0.246
0.60	57	534.35	0.25 ic	0.25 ic			0.00	0.00					0.250
0.61	58	534.36	0.26 IC	0.25 IC			0.00	0.00					0.253
0.62	59	534.37	0.26 IC	0.26 IC			0.00	0.00					0.257
0.03	6U 61	534.38	0.26 IC	0.26 IC			0.00	0.00					0.201
0.04	62	534.39	0.2010	0.20 10			0.00	0.00					0.204
0.00	63	534.41	0.28 ic	0.27 ic			0.00	0.00					0.207
0.07	64	534.42	0.20 ic	0.27 ic			0.00	0.00					0.271
0.60	66	534 44	0.20 ic	0.20 ic			0.00	0.00					0.278
0.71	67	534.46	0.29 ic	0.28 ic			0.00	0.00					0.281
0.72	68	534.47	0.29 ic	0.28 ic			0.00	0.00					0.285
0.73	69	534.48	0.29 ic	0.29 ic			0.00	0.00					0.289
0.74	70	534.49	0.29 ic	0.29 ic			0.00	0.00					0.292
0.76	71	534.51	0.31 ic	0.29 ic			0.00	0.00					0.294
0.77	72	534.52	0.31 ic	0.30 ic			0.00	0.00					0.298
0.78	74	534.53	0.31 ic	0.30 ic			0.00	0.00					0.302
0.79	75	534.54	0.31 ic	0.31 ic			0.00	0.00					0.305
0.81	76	534.56	0.31 ic	0.31 ic			0.00	0.00					0.308
0.82	//	534.57	0.32 IC	0.31 IC			0.00	0.00					0.310
0.83	78	534.58	0.32 ic	0.31 IC			0.00	0.00					0.314
0.04	79	534.59	0.32 10	0.32 10			0.00	0.00					0.317
0.00	80 81	534.01	0.32 10	0.32 ic			0.00	0.00					0.321
0.07	83	534.02	0.32 ic	0.32 ic			0.00	0.00					0.325
0.00	84	534 64	0.34 ic	0.33 ic			0.00	0.00					0.329
0.91	85	534.66	0.34 ic	0.33 ic			0.00	0.00					0.332
0.92	86	534.67	0.34 ic	0.34 ic			0.00	0.00					0.335
0.93	87	534.68	0.34 ic	0.34 ic			0.00	0.00					0.338
0.94	88	534.69	0.34 ic	0.34 ic			0.00	0.00					0.340
0.95	89	534.70	0.35 ic	0.34 ic			0.00	0.00					0.343
0.97	91	534.72	0.35 ic	0.35 ic			0.00	0.00					0.346
0.98	92	534.73	0.35 ic	0.35 ic			0.00	0.00					0.350
0.99	93	534.74	0.35 ic	0.35 ic			0.00	0.00					0.352
1.00	94	534.75	0.35 ic	0.35 ic			0.00	0.00					0.355
1.02	95	534.77	0.37 ic	0.36 ic			0.00	0.00					0.357
1.03	96	534.78	0.37 IC	0.36 IC			0.00	0.00					0.360
1.04	97	534.79	0.37 IC	0.30 IC			0.00	0.00					0.303
1.05	90	534.0U	0.37 10	0.37 10			0.00	0.00					0.300
1.07	100	534.82	0.37 ic	0.37 ic			0.00	0.00					0.309
1.00	101	534.84	0.37 ic	0.37 ic			0.00	0.00					0.371
1.00	102	534 85	0.39 ic	0.38 ic			0.00	0.00					0.376
1.12	104	534 87	0.39 ic	0.38 ic			0.00	0.00					0.379
1.13	105	534.88	0.39 ic	0.38 ic			0.00	0.00					0.382
1.14	106	534.89	0.39 ic	0.38 ic			0.00	0.00					0.385
1.15	107	534.90	0.39 ic	0.39 ic			0.00	0.00					0.387
1.17	109	534.92	0.39 ic	0.39 ic			0.00	0.00					0.389
1.18	110	534.93	0.40 ic	0.39 ic			0.00	0.00					0.392
1.19	111	534.94	0.40 ic	0.39 ic			0.00	0.00					0.394
1.20	112	534.95	0.40 ic	0.40 ic			0.00	0.00					0.397
1.22	113	534.97	0.40 ic	0.40 ic			0.00	0.00					0.400

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Bioretention/RG @ CT Municipal Bldg Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
1.23	114	534.98	0.40 ic	0.40 ic			0.00	0.00					0.403
1.24	115	534.99	0.40 ic	0.40 ic			0.00	0.00					0.405
1.24	116	534.99	0.40 ic	0.40 ic			0.00	0.00					0.405
1.24	116	534.99	0.41 ic	0.41 ic			0.00	0.00					0.405
1.24	116	534.99	0.41 ic	0.41 ic			0.00	0.00					0.405
1.24	116	534.99	0.41 ic	0.41 ic			0.00	0.00					0.405
1.24	116	534.99	0.41 ic	0.41 ic			0.00	0.00					0.406
1.25	116	535.00	0.41 ic	0.41 ic			0.00	0.00					0.406
1.25	116	535.00	0.41 ic	0.41 ic			0.00	0.00					0.406
1.25	117	535.00	0.41 ic	0.41 ic			0.00	0.00					0.406
1.25	117	535.00	0.41 ic	0.41 ic			0.00	0.00					0.406
1.25	117	535.00	0.41 ic	0.41 ic			0.00	0.00					0.406
1.35	157	535.10	1.61 ic	0.34 ic			1.26	0.00					1.607
1.45	198	535.20	3.42 ic	0.15 ic			3.27 s	0.00					3.423
1.55	238	535.30	3.79 ic	0.09 ic			3.70 s	0.00					3.786
1.65	279	535.40	4.01 ic	0.06 ic			3.94 s	0.00					4.009
1.75	319	535.50	4.20 ic	0.05 ic			4.15 s	0.00					4.198
1.85	359	535.60	4.38 ic	0.04 ic			4.33 s	0.00					4.365
1.95	400	535.70	4.54 ic	0.03 ic			4.49 s	0.00					4.527
2.05	440	535.80	4.70 ic	0.03 ic			4.67 s	0.00					4.696
2.15	481	535.90	4.85 ic	0.03 ic			4.78 s	0.00					4.805
2.25	521	536.00	5.00 ic	0.02 ic			4.93 s	0.00					4.955
2.35	583	536.10	5.14 ic	0.02 ic			5.10 s	0.00					5.123
2.45	645	536.20	5.28 ic	0.02 ic			5.17 s	0.00					5.184
2.55	707	536.30	5.41 ic	0.02 ic			5.29 s	0.00					5.310
2.65	769	536.40	5.54 ic	0.02 ic			5.47 s	0.00					5.484
2.75	831	536.50	5.67 ic	0.01 ic			5.57 s	0.00					5.588
2.85	893	536.60	5.79 ic	0.01 ic			5.64 s	0.00					5.658
2.95	955	536.70	5.92 ic	0.01 ic			5.81 s	0.00					5.826
3.05	1,017	536.80	6.04 ic	0.01 ic			5.94 s	0.00					5.951
3.15	1,079	536.90	6.15 ic	0.01 ic			6.01 s	0.00					6.026
3.25	1,141	537.00	6.27 ic	0.01 ic			6.18 s	0.00					6.196
3.35	1,228	537.10	6.38 ic	0.01 ic			6.16 s	0.00					6.167
3.45	1,315	537.20	6.49 ic	0.01 ic			6.05 s	0.00					6.057
3.55	1,401	537.30	6.60 ic	0.01 ic			6.35 s	0.00					6.364
3.65	1,488	537.40	6.71 ic	0.01 ic			6.66 s	0.00					6.673
3.75	1,575	537.50	6.82 ic	0.01 ic			6.41 s	0.00					6.414
3.85	1,662	537.60	6.92 ic	0.01 ic			6.69 s	0.00					6.699
3.95	1,749	537.70	7.02 ic	0.01 ic			6.98 s	0.00					6.987
4.05	1,835	537.80	7.12 ic	0.01 ic			6.70 s	0.00					6.711
4.15	1,922	537.90	7.22 ic	0.01 ic			6.97 s	0.00					6.978
4.25	2,009	538.00	7.32 ic	0.01 ic			6.73 s	0.00					6.741

...End

Hydraflow Rainfall Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Wednesday, 12 / 6 / 2023

Return Period	Intensity-Duration-Frequency Equation Coefficients (FHA)									
(Yrs)	В	D	E	(N/A)						
1	44.2751	10.5000	0.8683							
2	60.8168	11.7000	0.8947							
3	0.0000	0.0000	0.0000							
5	52.4952	10.0000	0.8116							
10	53.7769	9.6000	0.7855							
25	51.0833	8.6000	0.7354							
50	47.1524	7.5000	0.6898							
100	44.6585	6.6000	0.6521							

File name: Cumberland.IDF

Intensity = B / (Tc + D)^E

Return	Intensity Values (in/hr)											
(Yrs)	5 min	10	15	20	25	30	35	40	45	50	55	60
1	4.10	3.21	2.66	2.28	2.00	1.78	1.61	1.47	1.35	1.26	1.17	1.10
2	4.90	3.87	3.22	2.76	2.42	2.16	1.95	1.78	1.64	1.52	1.42	1.33
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	5.83	4.62	3.85	3.32	2.93	2.63	2.39	2.19	2.03	1.89	1.77	1.67
10	6.55	5.19	4.35	3.76	3.32	2.99	2.72	2.51	2.32	2.17	2.04	1.92
25	7.49	5.95	5.00	4.34	3.85	3.48	3.18	2.94	2.73	2.56	2.41	2.28
50	8.26	6.55	5.50	4.79	4.27	3.87	3.55	3.29	3.07	2.88	2.72	2.58
100	9.03	7.15	6.02	5.26	4.70	4.27	3.93	3.65	3.41	3.21	3.04	2.89

Tc = time in minutes. Values may exceed 60.

name: F:\E	ngineering\Municipal	Clients\Cumberland	Township\MS4\2023 [DEP PRP Report\F	lydraflow\Cumberlan	d.pcp

	Rainfall Precipitation Table (in)											
Storm Distribution	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr				
SCS 24-hour	2.54	3.05	0.00	3.80	4.47	5.52	6.49	7.64				
SCS 6-Hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				



Bioretention/Raingarden at Cumberland Township Municipal Complex <u>Post-Construction Photo May 25, 2022</u>





















MAINTENANCE OF BEST MANAGEMENT PRACTICE (BMP)

CUMBERLAND TOWNSHIP SHALL BE SOLELY RESPONSIBLE FOR THE OPERATION AND MAINTENANCE OF ALL STORMWATER MANAGEMENT FACILITIES. CUMBERLAND TWP SHALL FOLLOW THE FOLLOWING MAINTENANCE SCHEDULE OUTLINED BELOW. 'STORM EVENT' DEFINED AS TOTALING ONE INCH OR MORE IN 24 HOURS.

BIORETENTION BASIN/RAINGARDEN WITH SOIL AMENDMENTS AND UNDERDRAIN

INSPECT OUTLET STRUCTURE FOR CONDITION AND CLOGGING. CHECK BASIN UNDERDRAIN FOR CLOGGING.

MOW AND TRIM VEGETATION AS NEEDED ON EMBANKMENTS AND ON BASIN FLOOR, RECOMMENDED TWICE A YEAR, TO ALLOW FOR INSPECTION. PREVENT AND REMOVE NOXIOUS AND INVASIVE PLANTS AND ANY TREE/SHRUB GROWTH ON EMBANKMENTS.

REPLACE ANY MISSING RIP RAP OR MATTING FROM INFLOWS TO BASINS FROM THE STORM DRAIN SYSTEM.

IF THE BASIN FAILS TO DEWATER IN 72 HOURS, CONSULT THE DESIGN ENGINEER. FLUSH THE STORM PIPING SYSTEM AND CLEAR ANY SEDIMENT OR DEBRIS. IF DEWATERING OF THE BASIN STILL FAILS TO OCCUR. THE MEDIA AND STONE WILL NEED TO BE REPLACED. UPON APPROVAL OF THE DESIGN ENGINEER. THE MEDIA COULD BE EXCAVATED AND ITS PERMEABILITY RESTORED BY MIXING IN SAND OR COMPOST. UPON APPROVAL OF THE DESIGN ENGINEER, THE STONE COULD ALSO BE EXCAVATED AND WASHED FOR REUSE. HOWEVER, IF THE STONE AND MEDIA ARE NOT APPROVED FOR REUSE, REMOVE AND REPLACE THE AMENDED SOILS AND STONE ENCASEMENT OF THE BASIN IN-KIND. THE UNDERDRAIN CAN BE REUSED BUT THE MEDIA AND STONE SHOULD BE COMPLETELY DISPOSED OF (NOT REUSED).

AMENDED SOILS:

- INSPECT ONCE PER YEAR AND AFTER ALL STORM EVENTS TOTALING ONE INCH OR MORE IN A 24-HOUR PERIOD.
- 2. CHECK FOR ACCUMULATION OF SEDIMENT AND DEBRIS, REMOVE AS NECESSARY.
- 3. CHECK FOR EROSION AND STREAM BANK STABILITY, REPAIR AS NECESSARY.
- CHECK VEGETATIVE CONDITIONS, REPAIR AS NECESSARY. 4.
- 5. CHECK FOR INVASIVE SPECIES, REMOVE AS NECESSARY.

ALL WASTES AND MATERIALS DEPOSITED IN AND REMOVED FROM POST-CONSTRUCTION STORMWATER MANAGEMENT (PCSM) BMP FACILITIES DURING OPERATION AND MAINTENANCE SHALL BE REMOVED FROM THE SITE AND PROPERLY DISPOSED OF IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS AT 25 PA. CODE 260.1 ET.SEQ., 271.1, AND 287.1 ET.SEQ. NO WASTE MATERIALS SHALL BE BURNED, BURIED, DUMPED, OR DISCHARGED AT THE SITE.

2X4 INLET WITH **4" UNDERDRAIN** INLET PIPES 12" OUTLET PIPE

15" DEEP SOIL MIXTURE: 50% SUITABLE TOPSOIL, 25% SAND (ASTM C-33), 25% COMPOST

UNDERDRAIN / AMENDED SOIL DETAIL NTS

PROJECT NO.	NO. DATE	DESCRIPTION	CUMBERLAND TOWNSHIP	
DRAWN BY: MK				
DESIGNED BY: BG				
CHECKED BY: BG				
DATE: 12/6/23				I FCHNOLOGY
SHEET: 1 OF 1			MS4 PRP REPORT	ENGINEERING . PLANNING . SURVEYING

GENERAL INFORMATION									
Permittee Nam	e: Cumberland Township		Permit No.:	PAG133748					
BMP Name:	Dry Extended Detention Basin Complex	@ CT Municipa	al Latitude:	39.822465					
Surface Water	: Marsh Creek Watershed	Marsh Creek Watershed Longitude:							
Municipality:	County:	Adams							
Construct	on of the BMP is Complete.	Date	Construction Completed:	4/2022					
Photograp	ohs, Drawings, and O&M Plan are a	ttached. Inspe	ection/Monitoring Frequency	y: Annually					
Permits or Approvals Obtained: N/A									
Party Responsible for Long-Term O&M:									
Joint BMP? Yes No If Yes, attach a list of other permittees sharing credit for the BMP									
Type of BMP (see instructions): Dry Extended Detention Basin									
BMP Effectiveness Values: TSS: 60 % TN: 20 % TP: 20 %									
Effectiveness Values Source: 🛛 DEP 🗌 CB Expert Panel Report 🔲 Other:									
BMP CONSTRUCTION									
BMP Infiltrating Surface Area (ft ²): 224 Ponding Depth (ft): 3 Underdrain									
Media Description: 50% Topsoil, 25% Sand, & 25% Compost Media Depth (ft): 1.25									
Vegetated Loading Ratio <i>(see instructions)</i> : 404 WQ Storage Volume (ft ³): 1620									
TSS LOAD DELIVERED TO BMP									
Total Drainage	Area Treated by BMP: 2.08	acres (Treatm	ent Area)						
TSS Load Del	ivered to BMP – Simplified Metho	d		Calculations attached					
Pollutant	Land Cover	Area (acres)	Loading Rate (lbs/ac/yr)	Delivered Load (lbs/yr)					
тоо	Impervious	1.61	1398.77	2252					
155	Pervious	0.47	207.67	98					
	То	tal TSS Load D	elivered to BMP (lbs/yr) =	2350					
TSS Load Del	ivered to BMP – Land Cover-Base	ed Calculation	Method	Calculations attached					
Pollutant	Land Cover	Area (acres)	Loading Rate (lbs/ac/yr)	Delivered Load (lbs/yr)					
TSS									
Total TSS Load Delivered to BMP (lbs/yr) =									
TSS LOAD REDUCTION CREDIT									
TSS Load Deli	TSS Load Delivered to BMP (2350 lbs/yr) x TSS Effectiveness Value (60%) = 1410 lbs/vr TSS Credit								
Permittee Crec	Permittee Credit for Joint BMPs (if applicable): % or Ibs/vr TSS Credit								

ATTACHMENT A – INFILTRATION BMPs

Watershed Model Schematic

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023



Legend

<u>Hyd.</u>	<u>Origin</u>	Description
1	SCS Runoff	DA to Dry Ext. Det. Basin
2	Reservoir	Dry Ext. Det. Basin

Project: Dry Ext. Det. Basin @ CT.gpw

Hydrograph Return Period Recap Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd.	d. Hydrograph Inflow Peak Outflow (cfs)									Hydrograph		
NO.	(origin)	nyu(s)	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	Description	
1	SCS Runoff			5.415							DA to Dry Ext. Det. Basin	
2	Reservoir	1		5.413							Dry Ext. Det. Basin	
<u> </u>				-								

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	5.415	2	724	17,380				DA to Dry Ext. Det. Basin
2	Reservoir	5.413	2	724	15,610	1	524.06	1,822	Dry Ext. Det. Basin
Dry	· Ext. Det. Bas	sin @ CT.	.gpw	1	Return P	eriod: 2 Ye	ear	Tuesday, 1	2 / 5 / 2023

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd. No. 1

DA to Dry Ext. Det. Basin

Hydrograph type =	= SCS Runoff	Peak discharge	= 5.415 cfs
Storm frequency =	= 2 yrs	Time to peak	= 12.07 hrs
Time interval =	= 2 min	Hyd. volume	= 17,380 cuft
Drainage area	= 2.080 ac	Curve number	= 93*
Basin Slope =	= 0.0 %	Hydraulic length	= 0 ft
Tc method =	= TR55	Time of conc. (Tc)	= 19.00 min
Total precip.	= 3.05 in	Distribution	= Type II
Storm duration =	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.610 x 98) + (0.470 x 74)] / 2.080



Tuesday, 12 / 5 / 2023

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd. No. 1

DA to Dry Ext. Det. Basin

Description	<u>A</u>		<u>B</u>		<u>C</u>		<u>Totals</u>
Sheet Flow Manning's n-value Flow length (ft) Two-year 24-hr precip. (in) Land slope (%)	= 0.011 = 80.0 = 3.05 = 2.50		0.240 150.0 3.05 3.50		0.011 0.0 0.00 0.00		
Travel Time (min)	= 0.95	+	16.16	+	0.00	=	17.11
Shallow Concentrated Flow Flow length (ft) Watercourse slope (%) Surface description Average velocity (ft/s)	= 60.00 = 6.25 = Paved =5.08		60.00 5.00 Unpave 3.61	ed	380.00 5.00 Paved 4.55		
Travel Time (min)	= 0.20	+	0.28	+	1.39	=	1.87
Channel Flow X sectional flow area (sqft) Wetted perimeter (ft) Channel slope (%) Manning's n-value Velocity (ft/s)	= 0.00 = 0.00 = 0.00 = 0.015 =0.00		0.00 0.00 0.00 0.015 0.00		0.00 0.00 0.00 0.015 0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	= 0.00	+	0.00	+	0.00	=	0.00
Total Travel Time, Tc							19.00 min

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Tuesday, 12 / 5 / 2023

Hyd. No. 2

Dry Ext. Det. Basin

Hydrograph type	= Reservoir	Peak discharge	= 5.413 cfs
Storm frequency	<mark>= 2 yrs</mark>	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 15,610 cuft
Inflow hyd. No.	= 1 - DA to Dry Ext. Det. Basin	Max. Elevation	<mark>= 524.06 ft</mark>
Reservoir name	= Dry Extended Detention Basir	Max. Storage	= 1,822 cuft

Storage Indication method used.



Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Pond No. 1 - Dry Extended Detention Basin

Pond Data

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	519.75	n/a	0	0
0.12	519.87	n/a	30	30
0.25	520.00	n/a	30	60
0.37	520.12	n/a	30	89
0.50	520.25	n/a	30	119
0.62	520.37	n/a	30	149
0.74	520.49	n/a	30	179
0.87	520.62	n/a	30	208
0.99	520.74	n/a	30	238
1.12	520.87	n/a	30	268
1.24	520.99	n/a	30	298
1.25	521.00	224	1	299
2.25	522.00	384	304	603
3.25	523.00	576	480	1,083
4.25	524.00	800	688	1,771
5.25	525.00	800	800	2,571

Culvert / Orifice Structures

Weir Structures

	[A]	[B]	[C]	[PrfRsr]		[A]	[B]	[C]	[D]
Rise (in)	= 0.00	0.00	0.00	0.00	Crest Len (ft)	= 80.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00	Crest El. (ft)	= <mark>524.00</mark>	0.00	0.00	0.00
No. Barrels	= 0	0	0	0	Weir Coeff.	= 3.33	3.33	3.33	3.33
Invert El. (ft)	= 0.00	0.00	0.00	0.00	Weir Type	= Broad			
Length (ft)	= 0.00	0.00	0.00	0.00	Multi-Stage	= No	No	No	No
Slope (%)	= 0.00	0.00	0.00	n/a					
N-Value	= .013	.013	.013	n/a					
Orifice Coeff.	= 0.60	0.60	0.60	0.60	Exfil.(in/hr)	= 0.000 (by	Contour)		
Multi-Stage	= n/a	No	No	No	TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s). Stace / Storace / Discharce Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	519.75					0.00						0.000
0.01	3	519.76					0.00						0.000
0.02	6	519.77					0.00						0.000
0.04	9	519.79					0.00						0.000
0.05	12	519.80					0.00						0.000
0.06	15	519.81					0.00						0.000
0.07	18	519.82					0.00						0.000
0.09	21	519.84					0.00						0.000
0.10	24	519.85					0.00						0.000
0.11	27	519.86					0.00						0.000
0.12	30	519.87					0.00						0.000
0.14	33	519.89					0.00						0.000
0.15	36	519.90					0.00						0.000
0.16	39	519.91					0.00						0.000
0.17	42	519.92					0.00						0.000
0.19	45	519.94					0.00						0.000
0.20	48	519.95					0.00						0.000
0.21	51	519.96					0.00						0.000
0.22	54	519.97					0.00						0.000
0.24	57	519.99					0.00						0.000
0.25	60	520.00					0.00						0.000
0.26	63	520.01					0.00						0.000
0.27	65	520.02					0.00						0.000
0.29	68	520.04					0.00						0.000
0.30	71	520.05					0.00						0.000
0.31	74	520.06					0.00						0.000

Continues on next page ...

Dry Extended Detention Basin Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.32	77	520.07					0.00						0.000
0.33	80	520.08					0.00						0.000
0.35	83	520.10					0.00						0.000
0.36	86	520.11					0.00						0.000
0.37	89 02	520.12 520.13					0.00						0.000
0.30	92	520.15					0.00						0.000
0.41	98	520.16					0.00						0.000
0.42	101	520.17					0.00						0.000
0.43	104	520.18					0.00						0.000
0.45	107	520.20					0.00						0.000
0.46	110	520.21					0.00						0.000
0.47	113	520.22					0.00						0.000
0.40	110	520.25					0.00						0.000
0.50	122	520.25					0.00						0.000
0.52	125	520.27					0.00						0.000
0.53	128	520.28					0.00						0.000
0.55	131	520.30					0.00						0.000
0.56	134	520.31					0.00						0.000
0.57	137	520.32					0.00						0.000
0.58	140	520.33					0.00						0.000
0.60	143	520.35					0.00						0.000
0.01	140	520.30					0.00						0.000
0.63	152	520.38					0.00						0.000
0.64	155	520.39					0.00						0.000
0.66	158	520.41					0.00						0.000
0.67	161	520.42					0.00						0.000
0.68	164	520.43					0.00						0.000
0.69	167	520.44					0.00						0.000
0.71	170	520.46					0.00						0.000
0.72	173	520.47					0.00						0.000
0.75	170	520.40					0.00						0.000
0.74	182	520.51					0.00						0.000
0.77	185	520.52					0.00						0.000
0.78	188	520.53					0.00						0.000
0.79	191	520.54					0.00						0.000
0.81	193	520.56					0.00						0.000
0.82	196	520.57					0.00						0.000
0.83	199	520.58					0.00						0.000
0.04	202	520.59					0.00						0.000
0.00	203	520.01					0.00						0.000
0.88	211	520.63					0.00						0.000
0.89	214	520.64					0.00						0.000
0.91	217	520.66					0.00						0.000
0.92	220	520.67					0.00						0.000
0.93	223	520.68					0.00						0.000
0.94	226	520.69					0.00						0.000
0.95	229	520.70					0.00						0.000
0.98	235	520.72					0.00						0.000
0.99	238	520.74					0.00						0.000
1.00	241	520.75					0.00						0.000
1.02	244	520.77					0.00						0.000
1.03	247	520.78					0.00						0.000
1.04	250	520.79					0.00						0.000
1.05	253	520.80					0.00						0.000
1.07	250	520.82					0.00						0.000
1.00	209 262	520.03					0.00						0.000
1 10	265	520.85					0.00						0.000
1.12	268	520.87					0.00						0.000
1.13	271	520.88					0.00						0.000
1.14	274	520.89					0.00						0.000
1.15	277	520.90					0.00						0.000
1.17	280	520.92					0.00						0.000
1.18	283	520.93					0.00						0.000
1.19	286	520.94					0.00						0.000
1.20	289	520.95					0.00						0.000

Continues on next page...

Dry Extended Detention Basin Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
1.22	292	520.97					0.00						0.000
1.23	295	520.98					0.00						0.000
1.24	298	520.99					0.00						0.000
1.24	298	520.99					0.00						0.000
1.24	298	520.99					0.00						0.000
1.24	298	520.99					0.00						0.000
1.24	298	520.99					0.00						0.000
1.24	298	520.99					0.00						0.000
1.25	298	521.00					0.00						0.000
1.25	298	521.00					0.00						0.000
1.25	299	521.00					0.00						0.000
1.25	299	521.00					0.00						0.000
1.25	299	521.00					0.00						0.000
1.35	329	521.10					0.00						0.000
1.45	360	521.20					0.00						0.000
1.55	390	521.30					0.00						0.000
1.65	420	521.40					0.00						0.000
1.75	451	521.50					0.00						0.000
1.85	481	521.60					0.00						0.000
1.95	512	521.70					0.00						0.000
2.05	542	521.80					0.00						0.000
2.15	572	521.90					0.00						0.000
2.25	603	522.00					0.00						0.000
2.35	651	522.10					0.00						0.000
2.45	699	522.20					0.00						0.000
2.55	747	522.30					0.00						0.000
2.65	795	522.40					0.00						0.000
2.75	843	522.50					0.00						0.000
2.85	891	522.60					0.00						0.000
2.95	939	522.70					0.00						0.000
3.05	987	522.80					0.00						0.000
3.15	1,035	522.90					0.00						0.000
3.25	1,083	523.00					0.00						0.000
3.35	1,152	523.10					0.00						0.000
3.45	1,220	523.20					0.00						0.000
3.55	1,289	523.30					0.00						0.000
3.65	1,358	523.40					0.00						0.000
3.75	1,427	523.50					0.00						0.000
3.85	1,496	523.60					0.00						0.000
3.95	1,564	523.70					0.00						0.000
4.05	1,633	523.80					0.00						0.000
4.15	1,702	523.90					0.00						0.000
4.25	1,771	524.00					0.00						0.000
4.35	1,851	524.10					8.42						8.421
4.45	1,931	524.20					23.82						23.82
4.55	2,011	524.30					43.76						43.76
4.65	2,091	524.40					67.37						67.37
4.75	2,171	524.50					94.15						94.15
4.85	2,251	524.60					123.77						123.77
4.95	2,331	524.70					155.96						155.96
5.05	2,411	524.80					190.55						190.55
5.15	2,491	524.90					227.37						227.37
5.25	2,571	525.00					266.40						266.40

...End

Hydraflow Rainfall Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Tuesday, 12 / 5 / 2023

Return Period	Intensity-Duration-Frequency Equation Coefficients (FHA)											
(Yrs)	В	D	E	(N/A)								
1	44.2751	10.5000	0.8683									
2	60.8168	11.7000	0.8947									
3	0.0000	0.0000	0.0000									
5	52.4952	10.0000	0.8116									
10	53.7769	9.6000	0.7855									
25	51.0833	8.6000	0.7354									
50	47.1524	7.5000	0.6898									
100	44.6585	6.6000	0.6521									

File name: Cumberland.IDF

Intensity = B / (Tc + D)^E

Return		Intensity Values (in/hr)													
(Yrs)	5 min	10	15	20	25	30	35	40	45	50	55	60			
1	4.10	3.21	2.66	2.28	2.00	1.78	1.61	1.47	1.35	1.26	1.17	1.10			
2	4.90	3.87	3.22	2.76	2.42	2.16	1.95	1.78	1.64	1.52	1.42	1.33			
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
5	5.83	4.62	3.85	3.32	2.93	2.63	2.39	2.19	2.03	1.89	1.77	1.67			
10	6.55	5.19	4.35	3.76	3.32	2.99	2.72	2.51	2.32	2.17	2.04	1.92			
25	7.49	5.95	5.00	4.34	3.85	3.48	3.18	2.94	2.73	2.56	2.41	2.28			
50	8.26	6.55	5.50	4.79	4.27	3.87	3.55	3.29	3.07	2.88	2.72	2.58			
100	9.03	7.15	6.02	5.26	4.70	4.27	3.93	3.65	3.41	3.21	3.04	2.89			

Tc = time in minutes. Values may exceed 60.

name: F:\E	ngineering\Municipal	Clients\Cumberland	Township\MS4\2023 DEP	PRP Report\Hyd	draflow\Cumberland.pcp

	Rainfall Precipitation Table (in)												
Storm Distribution	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr					
SCS 24-hour	2.54	3.05	0.00	3.80	4.47	5.52	6.49	7.64					
SCS 6-Hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					



Dry Extended Detention Basin at Cumberland Township Municipal Building <u>Post-Construction Photos May 25, 2022</u>



Post-Construction Photos November 22, 2023















NTS

MAINTENANCE OF BEST MANAGEMENT PRACTICE (BMP)

CUMBERLAND TOWNSHIP SHALL BE SOLELY RESPONSIBLE FOR T OF ALL STORMWATER MANAGEMENT FACILITIES. CUMBERLAND TV MAINTENANCE SCHEDULE OUTLINED BELOW. 'STORM EVENT' DEF MORE IN 24 HOURS.

DRY EXTENDED DETENTION BASIN WITH SOIL AMENDMENTS

MOW AND TRIM VEGETATION AS NEEDED ON EMBANKMENTS AND TWICE A YEAR, TO ALLOW FOR INSPECTION. PREVENT AND REMOV TREES/SHRUB GROWTH ON EMBANKMENTS.

REPLACE ANY MISSING RIP RAP OR MATTING FROM INFLOWS TO E SYSTEM.

IF THE BASIN FAILS TO DEWATER IN 72 HOURS, CONSULT THE DES SYSTEM AND CLEAR ANY SEDIMENT OR DEBRIS. IF DEWATERING O MEDIA WILL NEED TO BE REPLACED. UPON APPROVAL OF THE DES EXCAVATED AND ITS PERMEABILITY RESTORED BY MIXING IN SANI NOT APPROVED FOR REUSE, REMOVE, DISPOSE, AND REPLACE TH

AMENDED SOILS:

- 1. INSPECT ONCE PER YEAR AND AFTER ALL STORM EVENTS TOT PERIOD.
- 2. CHECK FOR ACCUMULATION OF SEDIMENT AND DEBRIS, REMO
- 3. CHECK FOR EROSION AND STREAM BANK STABILITY, REPAIR A
- 4. CHECK VEGETATIVE CONDITIONS, REPAIR AS NECESSARY.
- 5. CHECK FOR INVASIVE SPECIES, REMOVE AS NECESSARY.

ALL WASTES AND MATERIALS DEPOSITED IN AND REMOVED FROM MANAGEMENT (PCSM) BMP FACILITIES DURING OPERATION AND M THE SITE AND PROPERLY DISPOSED OF IN ACCORDANCE WITH TH MANAGEMENT REGULATIONS AT 25 PA. CODE 260.1 ET.SEQ., 271.1, SHALL BE BURNED, BURIED, DUMPED, OR DISCHARGED AT THE SIT

 15" DEEP SOIL MIXTURE: 50% SUITABLE TOPSOIL, 25% SAND (ASTM C-33), 25% COMPOST 					IECHNOLOC	ENGINEERING . PLANNING . SURVE		
THE OPERATION AND MAINTENANCE TWP SHALL FOLLOW THE FOLLOWING FINED AS TOTALING ONE INCH OR D ON BASIN FLOOR, RECOMMENDED OVE NOXIOUS AND INVASIVE PLANTS AND ANY	CUMBERLAND TOWNSHIP			URY EXT. DETENTION BASIN @ CT MUNICIPAL BLUG		MS4 PRP REPORT		
BASINS FROM THE STORM DRAIN	7							
SIGN ENGINEER. FLUSH THE STORM PIPING OF THE BASIN STILL FAILS TO OCCUR, THE ESIGN ENGINEER, THE MEDIA COULD BE ND OR COMPOST. HOWEVER, IF THE MEDIA IS THE AMENDED SOILS OF THE BASIN IN-KIND.	DESCRIPTION							
TALING ONE INCH OR MORE IN A 24-HOUR	ATE							
AS NECESSARY.	NO. E							
M POST-CONSTRUCTION STORMWATER MAINTENANCE SHALL BE REMOVED FROM HE DEPARTMENT'S SOLID WASTE 1, AND 287.1 ET.SEQ. NO WASTE MATERIALS SITE.	PROJECT NO.	DRAWN BY: MK	DESIGNED BY: BG	CHECKED BY: BG	DATE: 12/6/23	SHEET: 1 OF 1		
GENERAL INFORMATION								
---------------------	---	--	--------------------	---------------	-------------------	-------------------------	--	--
Permittee Na	me:	Cumberland Township			Permit No.:	PAG133748		
BMP Name:		Bioretention/Raingarden #7 @ Phase 2A	Cumberland V	illage	Latitude:	39.825309		
Surface Wate	ers:	Marsh Creek Watershed			Longitude:	-77.276647		
Municipality:		Cumberland Township			County:	Adams		
Construe	ction c	of the BMP is Complete.	Date	Construction	Completed:	3/2021		
Photogra	aphs,	Drawings, and O&M Plan are at	ttached. Inspe	ection/Monito	oring Frequency	: Biannually		
Permits or Ap	prova	Is Obtained: NPDES (PAC01	0029A-1)					
Party Respor	nsible	for Long-Term O&M: 🛛 Perm	nittee 🛛 Oth	er: J.A. My	vers Homes / C	umberland Village HOA		
Joint BMP?		Yes 🛛 No 🛛 If Yes, attach a	list of other peri	nittees shari	ng credit for the	e BMP		
Type of BMP	(see i	nstructions): Bioretention - Ra	aingarden (C/D	soils with ur	derdrain)			
BMP Effective	eness	Values: TSS: 25 %	TN: 45	% TP: 5	5 %			
Effectiveness	s Value	es Source: 🛛 DEP 🗌 CB	Expert Panel Re	eport 🗌 C	ther:			
		BM		ΓΙΟΝ				
BMP Infiltratir	BMP Infiltrating Surface Area (ft ²): 9440 Ponding Depth (ft): 0 🛛 Underdrain							
Media Descri	ption:	Bioretention Soil		Ν	ledia Depth (ft)	: 1		
Vegetate	ed	Loading Ratio (see instruction	ns): 39.13	WQ Sto	rage Volume (ft	³): 2,832		
		TSS LOA	D DELIVERED	ТО ВМР				
Total Drainag	ge Are	a Treated by BMP: 8.48	acres (Treatm	ent Area)				
TSS Load De	elivere	ed to BMP – Simplified Metho	d			Calculations attached		
Pollutant		Land Cover	Area (acres)	Loading Ra	ite (lbs/ac/yr)	Delivered Load (lbs/yr)		
TOO		Impervious	2.77	139	98.77	3875		
155		Pervious	5.71	207.67		1185		
		To	tal TSS Load D	elivered to B	MP (lbs/yr) =	5060		
TSS Load De	elivere	ed to BMP – Land Cover-Base	d Calculation	Method		Calculations attached		
Pollutant		Land Cover	Area (acres)	Loading Ra	te (lbs/ac/yr)	Delivered Load (lbs/yr)		
TSS								
		Tot	tal TSS Load D	elivered to B	MP (lbs/yr) =			
		TSS LOA						
TSS Load De	elivere	d to BMP (5060 lbs/yr) x TSS E	ffectiveness Va	lue (55%) =	2783	lbs/yr TSS Credit		
			0/		" / TOO O			

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Summary for Pond 7P: Bio-retention #7

Inflow Area =	8.476 ac, 3	2.68% Impervious, Inflo	tow Depth = $1.42''$ for 2 year event	
Inflow =	16.35 cfs @	12.06 hrs, Volume=	1.002 af	
Outflow =	0.72 cfs @	14.18 hrs, Volume=	1.002 af. Atten= 96% Lag= 127 6 mi	n
Discarded =	0.10 cfs @	14.18 hrs, Volume=	0.476 af	
Primary =	0.62 cfs @	14.18 hrs, Volume=	0.526 af	
Secondary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs Peak Elev= 569.43' @ 14.18 hrs Surf.Area= 12,768 sf Storage= 27,529 cf

Plug-Flow detention time= 1,290.7 min calculated for 1.002 af (100% of inflow) Center-of-Mass det. time= 1,290.8 min (2,133.1 - 842.3)

Volume	lnver	t Avail.Sto	rage Storage	Description			
#1	567.00	' 99,3	14 cf Custom	Stage Data (Pris	matic) Listed below		
	-						
Elevati	on S	urf.Area	Inc.Store	Cum.Store			
(te	et)	(sq-ft)	(cubic-feet)	(cubic-feet)			
567.	00	9,440	0	0			
568.	00	10,785	10,113	10,113			
570.0	00	13,557	24,342	34,455			
5/2.0	00	18,234	31,791	66,246			
5/3.	75	19,559	33,069	99,314			
Device	Routing	Invert	Outlet Devices	6			
#1	Primary	564.25'	30.0" Round	Culvert			
			L= 40.0' RCF	, square edge he	adwall, Ke= 0.500		
			Inlet / Outlet Ir	nvert= 564.25' / 56	3.85' S= 0.0100 '/' Cc= 0.900		
			n= 0.012, Flor	w Area= 4.91 sf			
#2	Discarded	567.00'	0.333 in/hr Exfiltration over Surface area				
#3	Device 1	567.00'	1.5" Vert. Orifice/Grate C= 0.600				
#4 #E	Device 1	569.33	62.0" W x 4.0	H Vert. Orifice/G	Grate C= 0.600		
440 446	Device 1	570.75	70.0" W x 6.0	H Vert. Orifice/C	Frate C= 0.600		
#0	Device I	572.25	24.0" X /0.0" I	Horiz. Orifice/Gra	te $C = 0.600$		
#7	Secondary	571 60	Limited to Weir	flow at low heads			
πi	Secondary	571.00	9.0 long x 20	.9 breadth Broad	d-Crested Rectangular Weir		
			Coof (Englight	20 0.40 0.60 0.8	SU 1.00 1.20 1.40 1.60		
			Coel. (English	1 2.00 2.10 2.10	2.04 2.03 2.04 2.64 2.63		

Discarded OutFlow Max=0.10 cfs @ 14.18 hrs HW=569.43' (Free Discharge)

Primary OutFlow Max=0.62 cfs @ 14.18 hrs HW=569.43' (Free Discharge) 1=Culvert (Passes 0.62 cfs of 46.86 cfs potential flow) -3=Orifice/Grate (Orifice Controls 0.09 cfs @ 7.41 fps)

-4=Orifice/Grate (Orifice Controls 0.53 cfs @ 1.02 fps)

-5=Orifice/Grate (Controls 0.00 cfs)

6=Orifice/Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=567.00' (Free Discharge)



Bioretention Basin #7 at Cumberland Village Phase IIA <u>Post-Construction Photos December 6, 2023</u>







D 1/2 11		GENE			D 11.1.1		
Permittee Na	me:	Cumberland Township			Permit No.:	PAG133748	
BMP Name:		Bioretention/Raingarden #8 @ Phase 2A	Cumberland V	illage	Latitude:	39.825341	
Surface Wate	ers:	Marsh Creek Watershed			Longitude:	-77.275238	
Municipality:		Cumberland Township			County:	Adams	
Construc	ction c	of the BMP is Complete.	Date	Construction	Completed:	3/2021	
Photogra	aphs,	Drawings, and O&M Plan are at	ttached. Inspe	ection/Monito	oring Frequency	r: Biannually	
Permits or Ap	oprova	ls Obtained: NPDES (PAC01	0029A-1)				
Party Respon	nsible	for Long-Term O&M:	nittee 🛛 Oth	er: J.A. My	/ers Homes / C	umberland Village HOA	
Joint BMP?		Yes 🛛 No 🛛 If Yes, attach a	list of other peri	nittees shari	ng credit for the	e BMP	
Type of BMP	(see i	nstructions): Bioretention - Ra	aingarden (C/D	soils with un	derdrain)		
BMP Effective	eness	Values: TSS: 25 %	TN: 45	% TP: 5	5 %		
Effectiveness	s Value	es Source: 🛛 DEP 🗌 CB	Expert Panel Re	eport 🗌 C	other:		
		BM		ΓΙΟΝ			
BMP Infiltratir	ng Sur	face Area (ft ²): 32,894	Ponding D	epth (ft): 0).25	Underdrain	
Media Descri	ption:	Bioretention Soil		N	/ledia Depth (ft)	: 2	
Vegetate	ed	Loading Ratio (see instruction	ns): 14.42	WQ Sto	rage Volume (ft	³): 27,960	
		TSS LOA		ТО ВМР			
Total Drainag	ge Are	a Treated by BMP: 10.89	acres (Treatm	ent Area)			
TSS Load De	elivere	ed to BMP – Simplified Metho	d			Calculations attached	
Pollutant		Land Cover	Area (acres)	Loading Ra	ate (lbs/ac/yr)	Delivered Load (lbs/yr)	
TOO		Impervious	2.53	139	98.77	3539	
155		Pervious	8.36	207.67		1736	
		Tot	tal TSS Load D	elivered to B	MP (lbs/yr) =	5275	
TSS Load De	elivere	ed to BMP – Land Cover-Base	d Calculation	Method		Calculations attached	
Pollutant		Land Cover	Area (acres)	Loading Ra	ate (lbs/ac/yr)	Delivered Load (lbs/yr)	
TSS							
-							
		To	tal TSS Load D	elivered to B	MP (lbs/yr) =		
		TSS LOA	D REDUCTIO				
TSS Load De	elivere	d to BMP (5275 lbs/yr) x TSS Et	ffectiveness Va	lue (55%) =	2901	lbs/yr TSS Credit	

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Summary for Pond 8P: Bio-retention #8 with MRC

Inflow Are	a =	10.891 ac,	23.23% Impervie	ous, Inflow [Depth = 1.2	3" for 2 ye	ar event
Inflow	=	16.14 cfs @	12.10 hrs, Vol	ume=	1.112 af	•	
Outflow	=	0.70 cfs @	15.15 hrs, Vol	ume=	0.885 af,	Atten= 96%,	Lag= 183.3 min
Primary	=	0.70 cfs @	15.15 hrs, Vol	ume=	0.885 af		-
Secondar	/ =	0.00 cfs @	0.00 hrs, Vol	ume=	0.000 af		

Routing by Stor-Ind method, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs Peak Elev= 574.38' @ 15.15 hrs Surf.Area= 33,811 sf Storage= 29,993 cf

Plug-Flow detention time= 680.2 min calculated for 0.885 af (80% of inflow) Center-of-Mass det. time= 592.8 min (1,447.9 - 855.1)

Volume	Invert	Avai	I.Storage	Storage Descrip	otion	
#1	572.10'	1	73,691 cf	Custom Stage I	Data (Prismatic)	Listed below
		<i>.</i>				
Elevatio	in Si	Irf.Area	Voids	Inc.Store	Cum.Store	
(tee	t)	(sq-ft)	(%)	(cubic-feet)	(cubic-feet)	
572.1	0	32,894	0.0	0	0	
572.1	1	32,894	30.0	99	99	
573.1	0	32,894	30.0	9,770	9,868	
574.0	9	32,894	30.0	9,770	19,638	
574.1	0	32,894	100.0	329	19,967	
576.0	0	39,152	100.0	68,444	88,410	
578.0	0	46,129	100.0	85,281	173,691	
Device	Pouting	In	wort Ou	tlat Daviaca		
Device #1	Drimony					
#1	Primary	501	.59 30.	C OL DOD	[16-0.500
				65.0 RCP, squar	e edge neadwall	, Ke= 0.500
			Inte			S= 0.0100 7 Cc= 0.900
#2	Davias 1	E70	101 40	U.U.I.Z, FIOW Area=	= 4.91 ST	
#Z #2	Device 1	575	25' 50	Vert. Urifice/Gra	$\frac{1}{100} = 0.000$	X 0 00 0- 0 000
4+3 4+4	Device 1	574	.30 52.	0" W X 14.0" H Ve	rt. Orifice/Grate	X 2.00 C= 0.600
#4	Device 1	574	.30 24.		. Orifice/Grate A	2.00 C= 0.600
#3	Device I	5/6	.50 24.	U X 70.0 HOFIZ. C	Driffice/Grate C	= 0.600
#6	Cocondon	EZO		lited to well flow at	low neads	
#0	Secondary	5/6	.00 8.0	long x 22.0 brea	adth Broad-Cres	ted Rectangular Weir
		•.	He	ad (feet) 0.20 0.4		
			Co	er. (Englisn) 2.68	2.70 2.70 2.64	2.63 2.64 2.64 2.63
Primary	OutFlow M	ax=0.64	cfs @ 15	15 hrs HW=574	38' (Free Disch	arge)
1=Cul	vert (Passe	0.64 c	fs of 80 2	9 cfs notential flow		arge
	Orifice/Grat	e (Orific	e Control	s 0 44 cfs @ 5 08	fns)	
-3=	Orifice/Grat	e (Orific	e Control	s 0.13 cfs @ 0.54	fns)	

-4=Orifice/Grate (Orifice Controls 0.06 cfs @ 0.54 fps)

-5=Orifice/Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=572.10' (Free Discharge)



Bioretention Basin #8 at Cumberland Village Phase IIA <u>Post-Construction Photos December 6, 2023</u>

4.





		GENE	KAL INFORM	ATION			
Permittee Na	me:	Cumberland Township			Permit No.:	PAG133748	
BMP Name:		Bioretention/Raingarden #9 @ Phase 2A	Cumberland V	illage	Latitude:	39.827408	
Surface Wate	ers:	Marsh Creek Watershed			Longitude:	-77.27384	
Municipality:		Cumberland Township			County:	Adams	
Construe	ction c	of the BMP is Complete.	Date	Construction	Completed:	3/2021	
Photogra	aphs,	Drawings, and O&M Plan are at	ttached. Inspe	ection/Monite	oring Frequency	: Biannually	
Permits or Ap	oprova	Is Obtained: NPDES (PAC01	0029A-1)				
Party Respor	nsible	for Long-Term O&M: 🛛 Perm	nittee 🛛 Oth	er: J.A. My	/ers Homes / C	umberland Village HOA	
Joint BMP?		Yes 🛛 No 🛛 If Yes, attach a	list of other peri	mittees shari	ing credit for the	e BMP	
Type of BMP	(see i	nstructions): Bioretention - Ra	aingarden (C/D	soils with ur	nderdrain)		
BMP Effective	eness	Values: TSS: 25 %	TN: 45	% TP: 5	5 %		
Effectiveness	s Value	es Source: 🛛 DEP 🗌 CB	Expert Panel R	eport 🗌 C)ther:		
		BM	P CONSTRUC	ΓΙΟΝ			
BMP Infiltratir	ng Sur	rface Area (ft ²): 7768	Ponding D	epth (ft): 0)	Underdrain	
Media Descri	iption:	Bioretention Soil		N	Media Depth (ft)	: 1	
Vegetate	ed	Loading Ratio (see instruction	ns): 37.29	WQ Sto	rage Volume (fl	³): 2330	
		TSS LOA	AD DELIVERED	ТО ВМР			
Total Drainag	ge Are	a Treated by BMP: 6.65	acres (Treatm	ent Area)			
TSS Load De	elivere	ed to BMP – Simplified Metho	d			Calculations attached	
Pollutant		Land Cover	Area (acres)	Loading Ra	ate (lbs/ac/yr)	Delivered Load (lbs/yr)	
TOO		Impervious	1.57	139	98.77	2196	
155		Pervious	5.08	207.67		1055	
·		То	tal TSS Load D	elivered to B	MP (lbs/yr) =	3251	
TSS Load De	elivere	ed to BMP – Land Cover-Base	d Calculation	Method		Calculations attached	
Pollutant		Land Cover	Area (acres)	Loading Ra	ate (lbs/ac/yr)	Delivered Load (lbs/yr)	
TSS							
		То	tal TSS Load D	elivered to B	MP (lbs/yr) =		
		TSS LOA	AD REDUCTIO	N CREDIT			
TSS Load De	elivere	d to BMP (3251 lbs/yr) x TSS E	ffectiveness Va	lue (55%) =	1788	lbs/yr TSS Credit	

Summary for Pond 9P: Bio-retention #9

Inflow Area =	6.651 ac, 23.67% Impervious, Inflow	Depth = 1.23" for 2 year event
Inflow =	10.11 cfs @ 12.09 hrs, Volume=	0.679 af
Outflow =	0.79 cfs @ 13.31 hrs, Volume=	0.679 af, Atten= 92%, Lag= 73.5 min
Discarded =	0.08 cfs @ 13.31 hrs, Volume=	0.279 af
Primary =	0.71 cfs @ 13.31 hrs, Volume=	0.401 af
Secondary =	0.00 cfs @ 0.00 hrs, Volume=	0.000 af

Routing by Stor-Ind method, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs Peak Elev= 571.42' @ 13.31 hrs Surf.Area= 10,631 sf Storage= 16,119 cf

Plug-Flow detention time= 831.6 min calculated for 0.679 af (100% of inflow) Center-of-Mass det. time= 831.8 min (1,686.2 - 854.4)

Volume	Invert	Avail.Stor	age Storage	Description			
#1	569.75'	79,52	2 cf Custom	n Stage Data (Pr	ismatic) Listed below		
- 1					-		
Elevation	Surf./	Area	Inc.Store	Cum.Store			
(feet)	(S	q-ft)	(cubic-feet)	(cubic-feet)			
569.75	7,	768	0	0			
570.00	8	214	1,998	1,998			
572.00	11,	607	19,821	21,819			
574.00	15,	516	27,123	48,942			
575.75	19,	433	30,580	79,522			
Device R	Routing	Invert	Outlet Device	es			
#1 P	rimary	567.50'	30.0" Round	Culvert			
	-		L= 39.0' RC	P, square edge h	neadwall, Ke= 0.500		
			Inlet / Outlet I	nvert= 567.50' /	567.11' S= 0.0100 '/' Cc= 0.900		
			n= 0.012, Flo	ow Area= 4.91 sf			
#2 D	Device 1	569.75'	1.7" Vert. Ori	fice/Grate C=	0.600		
#3 D	evice 1	571.33'	70.0" W x 28.	0" H Vert. Orific	e/Grate C= 0.600		
#4 S	econdary	574.00'	10.0' long x'	18.5' breadth Br	oad-Crested Rectangular Weir		
			Head (feet) C).20 0.40 0.60	0.80 1.00 1.20 1.40 1.60		
			Coef. (English	h) 2.68 2.70 2.1	70 2.64 2.63 2.64 2.64 2.63		
#5 D	evice 1	574.67'	24.0" W x 70.	0" H Vert. Orific	e/Grate C= 0.600		
#6 D	liscarded	569.75'	0.333 in/hr Ex	xfiltration over S	Surface area		
Discarded ^{≏6=Exfilt}	Discarded OutFlow Max=0.08 cfs @ 13.31 hrs HW=571.42' (Free Discharge) 						

Primary OutFlow Max=0.64 cfs @ 13.31 hrs HW=571.42' (Free Discharge)

- **1=Culvert** (Passes 0.64 cfs of 38.66 cfs potential flow)
 - -2=Orifice/Grate (Orifice Controls 0.10 cfs @ 6.10 fps)
 - -3=Orifice/Grate (Orifice Controls 0.55 cfs @ 0.99 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=569.75' (Free Discharge)



Bioretention Basin #9 at Cumberland Village Phase IIA <u>Post-Construction Photos December 6, 2023</u>





	GEN	ERAL INFORM	GENERAL INFORMATION							
Permittee Na	ne: Cumberland Township		Permit No.:	PAG133748						
BMP Name:	Bioretention/Raingarden #10 Phase 2A	@ Cumberland	Village Latitude:	39.8284						
Surface Wate	rs: Marsh Creek Watershed		Longitude:	-77.273607						
Municipality:	Cumberland Township		County:	Adams						
Construe	tion of the BMP is Complete.	Date	Construction Completed:	3/2021						
Photogra	phs, Drawings, and O&M Plan are a	ttached. Inspe	ection/Monitoring Frequen	cy: Biannually						
Permits or Ap	provals Obtained: NPDES (PAC0	10029A-1)								
Party Respon	sible for Long-Term O&M: 🛛 Perr	nittee 🛛 Oth	er: J.A. Myers Homes /	Cumberland Village HOA						
Joint BMP?	🗌 Yes 🛛 No 🛛 If Yes, attach a	list of other peri	mittees sharing credit for th	ne BMP						
Type of BMP	(see instructions): Bioretention - F	aingarden (C/D	soils with underdrain)							
BMP Effective	eness Values: TSS: 25 %	TN: 45	% TP: 55 %							
Effectiveness	Values Source: 🛛 DEP 🗌 CE	BExpert Panel R	eport Other:							
	BM		ΓΙΟΝ							
BMP Infiltratir	g Surface Area (ft ²): 2737	Ponding D	epth (ft): 0	Underdrain						
Media Descri	otion: Bioretention Soil	_	Media Depth (ťt): 1						
Vegetate	d Loading Ratio (see instruction	ns): 17.98	WQ Storage Volume	(ft ³): 821						
	TSS LO	AD DELIVERED	ТО ВМР							
Total Drainag	e Area Treated by BMP:1.13	acres (Treatm	ent Area)							
TSS Load De	livered to BMP – Simplified Metho	od		Calculations attached						
Pollutant	Land Cover	Area (acres)	Loading Rate (lbs/ac/yr)	Delivered Load (lbs/yr)						
TOO	Impervious	0.10	1398.77	140						
133	Pervious	1.03	207.67	214						
	Тс	otal TSS Load D	elivered to BMP (lbs/yr) =	354						
TSS Load De	livered to BMP – Land Cover-Bas	ed Calculation	Method	Calculations attached						
Pollutant	Land Cover	Area (acres)	Loading Rate (lbs/ac/yr)	Delivered Load (lbs/yr)						
TSS										
	Тс	otal TSS Load D	elivered to BMP (lbs/yr) =							
	TSS LO									
TSS Load De	ivered to BMP (354 lbs/yr) x TSS Ef	fectiveness Valu	ie (55%) = 195	lbs/yr TSS Credit						
			· · · · · · · · · · · · · · · · · · ·							

Summary for Pond 10P: Bio-retention #10

Inflow Area =	1.134 ac,	8.47% Impervious, Inflow E	Depth = 0.99" for 2 year event
Inflow =	1.75 cfs @	12.02 hrs, Volume=	0.094 af
Outflow =	0.75 cfs @	12.14 hrs, Volume=	0.094 af, Atten= 57%, Lag= 7.6 min
Discarded =	0.02 cfs @	12.14 hrs, Volume=	0.019 af
Primary =	0.73 cfs @	12.14 hrs, Volume=	0.075 af
Secondary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af

Routing by Stor-Ind method, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs Peak Elev= 580.28' @ 12.14 hrs Surf.Area= 3,014 sf Storage= 1,052 cf

Plug-Flow detention time= 34.0 min calculated for 0.094 af (100% of inflow) Center-of-Mass det. time= 34.0 min (895.5 - 861.5)

Volume	Invert	Avail.Sto	rage Storage D	escription			
#1	580.00'	14,2	11 cf Custom S	tage Data (Pris	smatic) Listed below	_	
Elevatior (feet	n Su :)	rf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)			
580.00 582.00 583.25	0 0 5	2,737 4,692 6,159	0 7,429 6,782	0 7,429 14,211			
Device	Routing	Invert	Outlet Devices				
#1	Primary	575.35'	15.0'' Round C L= 47.0' RCP, Inlet / Outlet Inv	ulvert square edge h ert= 575.35' / 5 Area= 1 23 sf	eadwall, Ke= 0.500 574.88' S= 0.0100 '/' Cc= 0.900	-	
#2 #3 #4 #5	Discarded Device 1 Device 1 Device 1	580.00' 580.00' 581.33' 582.67'	0.333 in/hr Exfi 18.0" W x 6.0" H 24.0" W x 4.0" H 24.0" x 45.2" Ho Limited to weir f	Itration over Si Vert. Orifice/ Vert. Orifice/ Oriz. Orifice/Gr	urface area Grate C= 0.600 Grate C= 0.600 rate C= 0.600		
#6	Secondary	582.00'	8.0' long x 15.5 Head (feet) 0.2 Coef. (English)	breadth Broa 0 0.40 0.60 0 2.68 2.70 2.7	ad-Crested Rectangular Weir 0.80 1.00 1.20 1.40 1.60 0 2.64 2.63 2.64 2.64 2.63		
Discarde 2=Exfi	Discarded OutFlow Max=0.02 cfs @ 12.14 hrs HW=580.28' (Free Discharge)						
Primary C 1=Culv -3=C	Primary OutFlow Max=0.73 cfs @ 12.14 hrs HW=580.28' (Free Discharge) 1=Culvert (Passes 0.73 cfs of 12.26 cfs potential flow) -3=Orifice/Grate (Orifice Controls 0.73 cfs @ 1.71 fps)						

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=580.00' (Free Discharge)



Bioretention Basin #10 at Cumberland Village Phase IIA <u>Post-Construction Photos December 6, 2023</u>

8.







10.

GENERAL INFORMATION								
Permittee Na	ne: Cumberland Township	Perr	nit No.:	PAG133748				
BMP Name:	Bioretention/Raingarden #11 (Phase 2A	Bioretention/Raingarden #11 @ Cumberland Village Latitude:						
Surface Wate	s: Marsh Creek Watershed		Lonę	gitude:	-77.272124			
Municipality:	Cumberland Township		Cou	nty:	Adams			
Construc	tion of the BMP is Complete.	Date	Construction Com	pleted:	3/2021			
Photographs, Drawings, and O&M Plan are attached. Inspection/Monitoring Frequency: Biannually								
Permits or Ap	provals Obtained: NPDES (PAC0	10029A-1)						
Party Respon	sible for Long-Term O&M:	nittee 🛛 Oth	er: J.A. Myers ⊢	lomes / C	umberland Village HOA			
Joint BMP?	☐ Yes ⊠ No If Yes, attach a	list of other per	nittees sharing cre	edit for the	e BMP			
Type of BMP	see instructions): Bioretention - R	aingarden (C/D	soils with underdr	ain)				
BMP Effective	ness Values: TSS: 25 %	TN: 45	% TP: 55	%				
Effectiveness	Values Source: 🛛 DEP 🗌 CB	Expert Panel R	eport 🗌 Other:					
	BM	P CONSTRUC	TION					
BMP Infiltrating Surface Area (ft ²): 18482 Ponding Depth (ft): 0 🛛 Underdrain								
Media Descri	tion: Bioretention Soil	-	Media	Depth (ft)	: 2			
Vegetated Loading Ratio <i>(see instructions)</i> : 32.57 WQ Storage Volume (ft ³): 11089								
TSS LOAD DELIVERED TO BMP								
Total Drainag	e Area Treated by BMP: 13.82	acres (Treatm	ent Area)					
TSS Load Delivered to BMP – Simplified Method Calculations attached								
Pollutant	Land Cover	Area (acres)	Loading Rate (lb	s/ac/yr)	Delivered Load (lbs/yr)			
TOO	Impervious	4.60	1398.77		6434			
155	Pervious	9.22	207.67		1915			
Total TSS Load Delivered to BMP (lbs/yr) = 8349								
TSS Load Delivered to BMP – Land Cover-Based Calculation Method								
Pollutant	Land Cover	Area (acres)	Loading Rate (Ib	s/ac/yr)	Delivered Load (lbs/yr)			
TSS								
Total TSS Load Delivered to BMP (lbs/yr) =								
TSS LOAD REDUCTION CREDIT								
TSS Load Delivered to BMP (8349 lbs/yr) x TSS Effectiveness Value (55%) = 4592 lbs/yr TSS Credit								

Summary for Pond 11P: Bio-retention #11 with MRC

Inflow Area =	13.815 ac, 33.30% Impervious, Inflow Depth =	1.23" for 2 year event
Inflow =	23.16 cfs @ 12.06 hrs, Volume= 1.410) af
Outflow =	2.33 cfs @ 12.77 hrs, Volume= 1.283	af, Atten= 90%, Lag= 42.7 min
Primary =	2.33 cfs @ 12.77 hrs, Volume= 1.283	Baf
Secondary =	0.00 cfs @ 0.00 hrs, Volume= 0.000	af

Routing by Stor-Ind method, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs Peak Elev= 577.84' @ 12.77 hrs Surf.Area= 20,746 sf Storage= 29,858 cf

Plug-Flow detention time= 414.7 min calculated for 1.283 af (91% of inflow) Center-of-Mass det. time= 367.6 min (1,219.4 - 851.8)

Volume	Invert	Avail.Sto	orage	Storage Descript	ion		
#1	574.90'	140,4	75 cf	Custom Stage D	ata (Prismatic)	Listed below	
Elevation	Surf.	Area Vo	ids	Inc.Store	Cum.Store		
(teet)	· (S	q-ft) (%)	(cubic-feet)	(cubic-feet)		
574.90	18,	482	0.0	0	0		
574.91	18,	482 3	0.0	55	55		
575.90	18,	482 3	0.0	5,489	5,545		
576.89	18,	482 3	0.0	5,489	11,034		
576.90	18,	482 10	0.0	185	11,219	÷.	
578.00	21,	128 10	0.0	21,786	33,004		
580.00	26,	546 100	0.0	47,674	80,678		
582.00	33,	251 10	0.0	59,797	140,475		
Device Re	outing	Invert	Outle	et Devices		3	
#1 Pr #2 De #3 De #4 De	evice 1 evice 1 evice 1 evice 1	570.00' 575.90' 577.50' 580.50'	30.0 L= 5 Inlet n= 0 4.0" 33.0 24.0 Limit	" Round Culvert 9.0' RCP, square / Outlet Invert= 57 .012, Flow Area= Vert. Orifice/Grate " W x 24.0" H Vert " x 45.2" Horiz. Or ted to weir flow at I	e edge headwall, 70.00' / 569.41' 4.91 sf e C= 0.600 t. Orifice/Grate rifice/Grate C= low heads	Ke= 0.500 S= 0.0100 '/' Cc= 0.900 C= 0.600 = 0.600)
#5 Se	econdary	580.75'	20.0 Head Coef	l long x 22.0' brea d (feet) 0.20 0.40 f. (English) 2.68 2	adth Broad-Cres 0.60 0.80 1.00 2.70 2.70 2.64	sted Rectangular Weir 0 1.20 1.40 1.60 2.63 2.64 2.64 2.63	
Primary Ou 1=Culve -2=Ori -3=Ori -4=Ori	itFlow Max= rt (Passes 2 ifice/Grate (ifice/Grate (ifice/Grate (2.32 cfs .32 cfs o Orifice Co Orifice Co Controls	@ 12.7 60.68 ontrols ontrols 0.00 c	77 hrs HW=577.84 cfs potential flow) 0.56 cfs @ 6.41 fp 1.76 cfs @ 1.87 fp fs)	4' (Free Discha os) os)	rge)	
Secondary	OutFlow Ma	ax=0.00 c	fs @ 0).00 hrs HW=574.	90' (Free Disch	narge)	

¹−5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



Bioretention Basin #11 at Cumberland Village Phase IIA <u>Post-Construction Photos December 6, 2023</u>









GENERAL INFORMATION								
Dormittoo No	mai	Cumberland Townshin		Dormit No.	DAC100740			
Permilee Na	line.	Cumberiand Township	Permit NO	PAG133746				
BMP Name:		Phase 2A	Latitude:	39.831288				
Surface Wate	ers:	Marsh Creek Watershed			Longitude:	-77.27241		
Municipality:		Cumberland Township			County:	Adams		
Construe	ction c	of the BMP is Complete.	Date	Construction	Completed:	3/2021		
Photographs, Drawings, and O&M Plan are attached. Inspection/Monitoring Frequency: Biannually								
Permits or Ap	oprova	Is Obtained: NPDES (PAC01	0029A-1)					
Party Respor	nsible	for Long-Term O&M: 🛛 Perm	nittee 🛛 Oth	er: J.A. M	yers Homes / C	umberland Village HOA		
Joint BMP?	□ [,]	Yes 🛛 No 🛛 If Yes, attach a	list of other peri	nittees shar	ing credit for the	e BMP		
Type of BMP	(see i	nstructions): Bioretention - Ra	aingarden (C/D	soils with ur	nderdrain)			
BMP Effective	eness	Values: TSS: 25 %	TN: 45	% TP: 5	55 %			
Effectiveness	s Value	es Source: 🛛 DEP 🗌 CB	Expert Panel R	eport 🗌 C	Other:			
BMP CONSTRUCTION								
BMP Infiltrating Surface Area (ft^2): 6413 Ponding Depth (ft): 0 \Box Underdrain								
Media Description: Bioretention Soil Media Depth (ft): 1								
Vegetated Loading Ratio <i>(see instructions)</i> : 13.45 WQ Storage Volume (ft ³): 1924								
TSS LOAD DELIVERED TO BMP								
Total Drainag	ge Are	a Treated by BMP: 1.98	acres (Treatm	ent Area)				
TSS Load Delivered to BMP – Simplified Method								
Pollutant		Land Cover	Area (acres)	Loading Ra	ate (lbs/ac/yr)	Delivered Load (lbs/yr)		
TOO		Impervious	0.52	139	98.77	728		
155		Pervious	1.46	20	7.67	303		
	1	То	tal TSS Load D	elivered to E	BMP (lbs/yr) =	1031		
TSS Load Delivered to BMP – Land Cover-Based Calculation Method								
Pollutant		Land Cover	Area (acres)	Loading Ra	ate (lbs/ac/yr)	Delivered Load (lbs/yr)		
TSS								
Total TSS Load Delivered to BMP (lbs/yr) =								
TSS LOAD REDUCTION CREDIT								
TSS Load Delivered to BMP (1031 lbs/yr) x TSS Effectiveness Value (55%) = 567 lbs/yr TSS Credit								

Summary for Pond 12P: Bio-retention #12							
Inflow Area Inflow Outflow Discarded	a = 1.97 = 4.20 = 0.08 = 0.06	7 <mark>6 ac,</mark> 26.0 cfs @ 12 cfs @ 18 cfs @ 18	6% Impervious, Ir .00 hrs, Volume= .07 hrs, Volume= .07 hrs, Volume=	nflow Der ((oth = 1.29" 0.212 af 0.212 af, Att 0.163 af	for 2 year en= 98%, L	event ag= 364.3 min
Primary Secondary	= 0.02 / = 0.00	cfs @ 18 cfs @ 0	.07 hrs, Volume= .00 hrs, Volume=	(0.049 af <mark>0.000 af</mark>		
Routing by Peak Elev=	v Stor-Ind met = 592.55' @ 1	hod, Time 8.07 hrs	Span= 0.00-192.00 Surf.Area= 7,471 s	0 hrs, dt= sf Storag	0.01 hrs ge= 6,053 cf		
Plug-Flow Center-of-N	detention time Mass det. time	e= 852.8 m e= 852.8 m	n calculated for 0. in (1,696.8 - 844.0	.212 af (1 0)	00% of inflo	w)	
Volume	Invert	Avail.Stor	ige Storage Des	cription			
#1	591.75'	41,79	o cf Custom Stag	ge Data ((Prismatic) L	isted below	
Elevation (feet)	Surf.A (so	vrea a-ft)	Inc.Store (cubic-feet) (Cum.Stor	re et)		
591.75	6,	413	0		0		
592.00	6,	726	1,642	1,64	2		
594.00	9,	460	16,186	17,82	28		
596.00	14,	507	23,967	41,79	95		
Device R	louting	Invert	Outlet Devices				·
#1 P	rimary	590.40'	15.0" Round Cul L= 39.0' RCP, so Inlet / Outlet Inven n= 0.012, Flow Ar	vert quare edg t= 590.40 rea= 1.23	ge headwall,)' / 590.01' \$ 3 sf	Ke= 0.500 S= 0.0100 '/'	Cc= 0.900
#2 D	evice 1	591.75'	1.0" Vert. Orifice/	Grate C	C= 0.600		
#3 D	evice 1	593.25'	16.0" W x 10.0" H	Vert. Or	ifice/Grate	C= 0.600	
#4 S	econdary	595.00'	8.0' long x 18.0' k Head (feet) 0.20 Coef. (English) 2	oreadth E 0.40 0.6 68 2 70	Broad-Creste 0 0.80 1.00 2 70 2 64 2	ed Rectangu 1.20 1.40 2.63 2.64 2	ılar Weir 1.60 64 2.63
#5 D	evice 1	595.67'	24.0" x 45.2" Horiz. Orifice/Grate C= 0.600				
#6 D	iscarded	591.75'	0.333 in/hr Exfiltra	ation ove	er Surface ar	rea	
Discarded OutFlow Max=0.06 cfs @ 18.07 hrs HW=592.55' (Free Discharge) —6=Exfiltration (Exfiltration Controls 0.06 cfs)							
Drimony Or	ItElow Max-	0 02 of a	10 07 hrs LIM-E	02 EE! /I	Tree Discher		

Primary OutFlow Max=0.02 cfs @ 18.07 hrs HW=592.55' (Free Discharge)

-2=Orifice/Grate (Orifice Controls 0.02 cfs @ 4.18 fps)

-3=Orifice/Grate (Controls 0.00 cfs)

-5=Orifice/Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=591.75' (Free Discharge)



Bioretention Basin #12 at Cumberland Village Phase IIA <u>Post-Construction Photos December 6, 2023</u>





POST CONSTRUCTION STORMWATER MANAGEMENT PLANS FOR CUMBERLAND VILLAGE - PHASE IIA A PLANNED RESIDENTIAL COMMUNITY CUMBERLAND TOWNSHIP, ADAMS COUNTY, PENNSYLVANIA

SOIL DESCRIPTIONS ACCORDING TO THE LATEST NRCS SOIL SURVEY OF ADAMS COUNTY, PENNSYLVANIA,

Abb DESIGNATED SOIL PERMEABILITY IS MODERATE IN THE SOLUM ABOVE THE FRAGIPAN, SLOW IN THE FRAGIPAN, AND MODERATELY SLOW OR SLOW IN THE SUBSTRATUM. AVAILABLE WATER CAPACITY IS MODERATE, AND SURFACE RUNOFF IS VERY HIGH. THE SEASONAL HIGH WATER TABLE IS AT A DEPTH OF 6 TO 18 INCHES. IN UNLIMED AREAS THIS SOIL IS EXTREMELY ACID TO STRONGLY ACID IN THE UPPER PART OF THE SOLUM AND STRONGLY ACID TO SLIGHTLY ACID IN THE LOWER PART AND IN HE SUBSTRATUM. THE SEASONAL HIGH WATER TABLE AND THE FRAGIPAN RESTRICT ROOT PENETRATION.

ABLE 5 INDICATES THE LAND CAPABILITY CLASSIFICATION IS 3W. CLASS 3 MEANS SOILS HAVE SEVERE LIMITATIONS THAT RESTRICT THE CHOICE OF PLANTS OR THAT REQUIRE SPECIAL CONSERVATION PRACTICES, OR BOTH; 'W' MEANS THAT THE SOIL IS LIMITED MAINLY BECAUSE WATER IN OR ON THE SOIL INTERFERES WITH PLANT GROWTH OR CULTIVATION. TABLE 14 INDICATES THAT THIS SOIL CONTAINS HYDRIC INCLUSIONS.

TABLE 15A INDICATES THAT DWELLINGS WITH BASEMENTS ARE VERY LIMITED DUE TO DEPTH TO

APPROXIMATELY 8,600 SQUARE FEET (LESS THAN 1% OF THE DISTURBED AREA).

SATURATED ZONE AND DEPTH TO HARD BEDROCK.

TABLE 15B INDICATES THAT LOCAL ROADS ARE VERY LIMITED DUE TO FROST ACTION AND DEPTH TO SATURATED ZONE. SHALLOW EXCAVATIONS ARE VERY LIMITED DUE TO DEPTH TO SATURATED ZONE, DEPTH TO HARD BEDROCK, AND CUTBANKS CAVE. LAWNS AND LANDSCAPING ARE VERY LIMITED DUE O DEPTH TO CEMENTED PAN AND DEPTH TO SATURATED ZONE.

ABLE 18 INDICATES THAT THIS SOIL TYPE IS SOMEWHAT LIMITED FOR POND RESERVOIR AREAS DUE TO DEPTH TO CEMENTED PAN, SEEPAGE, AND DEPTH TO BEDROCK. EMBANKMENT CONSTRUCTION IS VERY LIMITED DUE TO DEPTH TO SATURATED ZONE, PIPING, AND THIN LAYER. PROPOSED DISTURBANCES IN THIS SOIL DESIGNATION ARE VERY MINOR IN AREAL EXTENT,

CrA DESIGNATED SOIL PERMEABILITY IS MODERATE OR MODERATELY SLOW ABOVE THE FRAGIPAN AND SLOW OR VERY SLOW IN THE FRAGIPAN AND IN THE SUBSTRATUM. AVAILABLE WATER CAPACITY IS MODERATE OR HIGH. SURFACE RUNOFF IS LOW TO PONDED. THE FRAGIPAN IS AT A DEPTH OF 15 TO 25 INCHES. THE SEASONAL HIGH WATER TABLE IS WITHIN 6 INCHES OF THE SURFACE, MAINLY IN WINTER AND IN EARLY SPRING. IN UNLIMED AREAS THIS SOIL IS VERY STRONGLY ACID OR STRONGLY ACID IN THE UPPER PART OF THE SOLUM AND VERY STRONGLY ACID TO MODERATELY ACID IN THE LOWER PART AND IN THE SUBSTRATUM. THE FRAGIPAN RESTRICTS ROOT PENETRATION.

TABLE 5 INDICATES THE LAND CAPABILITY CLASSIFICATION IS 4W. CLASS 4 MEANS SOILS HAVE VERY SEVERE LIMITATIONS THAT RESTRICT THE CHOICE OF PLANTS OR THAT REQUIRE VERY CAREFUL MANAGEMENT. OR BOTH: 'W' MEANS THAT THE SOIL IS LIMITED MAINLY BECAUSE WATER IN OR ON THE SOIL INTERFERES WITH PLANT GROWTH OR CULTIVATION. TABLE 13 INDICATES THAT THIS SOIL CONTAINS HYDRIC COMPONENTS.

ABLE 15A INDICATES THAT DWELLINGS WITH BASEMENTS ARE VERY LIMITED DUE TO DEPTH TO SATURATED ZONE, PONDING, AND DEPTH TO HARD BEDROCK. TABLE 15B INDICATES THAT LOCAL ROADS ARE VERY LIMITED DUE TO DEPTH TO SATURATED ZONE, FROST ACTION, LOW STRENGTH, AND PONDING. SHALLOW EXCAVATIONS ARE VERY LIMITED DUE TO

DEPTH TO SATURATED ZONE, PONDING, DEPTH TO HARD BEDROCK, AND CUTBANKS CAVE. LAWNS AND LANDSCAPING ARE VERY LIMITED DUE TO DEPTH TO SATURATED ZONE, PONDING, AND DEPTH TO CEMENTED PAN. ABLE 18 INDICATES THAT THIS SOIL TYPE IS SOMEWHAT LIMITED FOR POND RESERVOIR AREAS DUE TO DEPTH TO CEMENTED PAN, DEPTH TO BEDROCK, AND SEEPAGE. EMBANKMENT CONSTRUCTION IS

VERY LIMITED DUE TO DEPTH TO SATURATED ZONE, PONDING, PIPING, AND THIN LAYER. PROPOSED DISTURBANCES IN THIS SOIL DESIGNATION ARE VERY MINOR IN AREAL EXTENT. APPROXIMATELY 90,100 SQUARE FEET (4% OF THE DISTURBED AREA

KnB DESIGNATED SOIL PERMEABILITY IS MODERATELY RAPID. AVAILABLE WATER CAPACITY IS VERY LOW. SURFACE RUNOFF IS MEDIUM. IN UNLIMED AREAS THIS SOIL IS VERY STRONGLY ACID TO MODERATELY ACID. SHALLOW DEPTH TO BEDROCK RESTRICTS ROOT PENETRATION. ABLE 5 INDICATES THE LAND CAPABILITY CLASSIFICATION IS 3E. CLASS 3 MEANS SOILS HAVE

SEVERE LIMITATIONS THAT RESTRICT THE CHOICE OF PLANTS OR THAT REQUIRE SPECIAL CONSERVATION PRACTICES, OR BOTH; 'E' MEANS THAT THE MAIN HAZARD IS THE RISK OF EROSION UNLESS CLOSE-GROWING PLANT COVER IS MAINTAINED. TABLE 15A INDICATES THAT DWELLINGS WITH BASEMENTS ARE VERY LIMITED DUE TO DEPTH TO HARD

ABLE 15B INDICATES THAT LOCAL ROADS ARE VERY LIMITED DUE TO DEPTH TO DEPTH TO HARD BEDROCK AND FROST ACTION. SHALLOW EXCAVATIONS ARE VERY LIMITED DUE TO DEPTH TO HARD

BEDROCK AND CUTBANKS CAVE. LAWNS AND LANDSCAPING ARE VERY LIMITED DUE TO DEPTH TO BEDROCK, DROUGHTY, GRAVEL CONTENT. CONTENT OF LARGE STONES. TABLE 18 INDICATES THAT THIS SOIL TYPE IS VERY LIMITED FOR POND RESERVOIR AREAS DUE TO DEPTH TO BEDROCK AND SEEPAGE. EMBANKMENT CONSTRUCTION IS VERY LIMITED DUE TO THIN LAYER AND SEEPAGE.

PROPOSED DISTURBANCES IN THIS SOIL DESIGNATION ARE MAJOR IN AREAL EXTENT, APPROXIMATELY 1,203,800 SQUARE FEET (55% OF THE DISTURBED AREA). KnC DESIGNATED SOIL PERMEABILITY IS MODERATELY RAPID, AND AVAILABLE WATER CAPACITY IS VERY LOW. SURFACE RUNOFF IS MEDIUM. IN UNLIMED AREAS THIS SOIL IS VERY STRONGLY ACID TO

MODERATELY ACID. SHALLOW DEPTH TO BEDROCK RESTRICTS ROOT PENETRATION. ABLE 5 INDICATES THE LAND CAPABILITY CLASSIFICATION IS 4E. CLASS 4 MEANS SOILS HAVE VERY SEVERE LIMITATIONS THAT RESTRICT THE CHOICE OF PLANTS OR THAT REQUIRE VERY CAREFUL

MANAGEMENT, OR BOTH; 'E' MEANS THAT THE MAIN HAZARD IS THE RISK OF EROSION UNLESS

CLOSE-GROWING PLANT COVER IS MAINTAINED. TABLE 15A INDICATES THAT DWELLINGS WITH BASEMENTS ARE VERY LIMITED DUE TO DEPTH TO HARD BEDROCK AND SLOPE. ABLE 15B INDICATES THAT LOCAL ROADS ARE VERY LIMITED DUE TO DEPTH TO DEPTH TO HAR

BEDROCK, SLOPE, AND FROST ACTION. SHALLOW EXCAVATIONS ARE VERY LIMITED DUE TO DEPTH TO HARD BEDROCK. SLOPE. AND CUTBANKS CAVE. LAWNS AND LANDSCAPING ARE VERY LIMITED DUE TO DEPTH TO BEDROCK, DROUGHTY, GRAVEL CONTENT, SLOPE, CONTENT OF LARGE STONES. TABLE 18 INDICATES THAT THIS SOIL TYPE IS VERY LIMITED FOR POND RESERVOIR AREAS DUE T DEPTH TO BEDROCK, SEEPAGE, AND SLOPE. EMBANKMENT CONSTRUCTION IS VERY LIMITED DUE TO

THIN LAYER AND SEEPAGE. PROPOSED DISTURBANCES IN THIS SOIL DESIGNATION ARE MODERATE IN AREAL EXTENT, APPROXIMATELY 623,100 SQUARE FEET (28% OF THE DISTURBED AREA). RFB DESIGNATED SOIL PERMEABILITY IS MODERATE IN THE SURFACE LAYER AND SLOW IN THE SUBSOIL

AND STUSTRATUM. AVAILABLE WATER CAPACITY IS LOW OR VERY LOW. SURFACE RUNOFF IS VERY HIGH. THE SEASONAL HIGH WATER TABLE IS AT A DEPTH OF 16 TO 36 INCHES. IN UNLIMED AREAS THIS SOIL IS STRONGLY ACID TO SLIGHTLY ACID. DEPTH TO BEDROCK AND THE SEASONAL HIGH WATER TABLE RESTRICT ROOT PENETRATION. TABLE 5 INDICATES THE LAND CAPABILITY CLASSIFICATION IS 3W. CLASS 3 MEANS SOILS HAVE

SEVERE LIMITATIONS THAT RESTRICT THE CHOICE OF PLANTS OR THAT REQUIRE SPECIAL CONSERVATION PRACTICES, OR BOTH; 'W' MEANS THAT THE SOIL IS LIMITED MAINLY BECAUSE WATER IN OR ON THE SOIL INTERFERES WITH PLANT GROWTH OR CULTIVATION. TABLE 14 INDICATES THAT THIS SOIL CONTAINS HYDRIC INCLUSIONS.

TABLE 15A INDICATES THAT DWELLINGS WITH BASEMENTS ARE VERY LIMITED DUE TO DEPTH TO SATURATED ZONE AND DEPTH TO HARD BEDROCK. TABLE 15B INDICATES THAT LOCAL ROADS ARE VERY LIMITED DUE TO FROST ACTION, DEPTH TO HARD BEDROCK, AND DEPTH TO SATURATED ZONE. SHALLOW EXCAVATIONS ARE VERY LIMITED DUE TO DEPTH O HARD BEDROCK, DEPTH TO SATURATED ZONE, AND CUTBANKS CAVE. LAWNS AND LANDSCAPING ARE SOMEWHAT LIMITED DUE TO DEPTH TO BEDROCK, DEPTH TO SATURATED ZONE, DROUGHTY, AND

TABLE 18 INDICATES THAT THIS SOIL TYPE IS SOMEWHAT LIMITED FOR POND RESERVOIR AREAS DUE TO DEPTH TO BEDROCK AND SEEPAGE. EMBANKMENT CONSTRUCTION IS VERY LIMITED DUE TO DEPTH TO SATURATED ZONE, PIPING, AND THIN LAYER.

PROPOSED DISTURBANCES IN THIS SOIL DESIGNATION ARE MODERATE IN AREAL EXTENT, APPROXIMATELY 271,800 SQUARE FEET (12% OF THE DISTURBED AREA). Pob designated soil permeability of the penn soil is moderate or moderately rapid, and available water capacity is low or moderate. Permeability of the klinesville soil is

MODERATELY RAPID, AND AVAILABLE WATER CAPACITY IS VERY LOW. SURFACE RUNOFF IS LOW ON THE PENN SOIL AND MEDIUM ON THE KLINESVILLE SOIL, IN UNLIMED AREAS THE PENN SOIL IS EXTREMEL' ACID TO STRONGLY ACID IN THE UPPER PART OF THE SOLUM, STRONGLY ACID OR MODERATELY ACID IN THE LOWER PART OF THE SOLUM. AND STRONGLY ACID TO SLIGHTLY ACID IN THE SUBSTRATUM. IN UNLIMED AREAS THE KLINESVILLE SOIL IS VERY STRONGLY ACID TO MODERATELY ACID.

ABLE 5 INDICATES THE LAND CAPABILITY CLASSIFICATION IS 3E. CLASS 3 MEANS SOILS HAVE SEVERE LIMITATIONS THAT RESTRICT THE CHOICE OF PLANTS OR THAT REQUIRE SPECIAL CONSERVATION PRACTICES, OR BOTH; 'E' MEANS THAT THE MAIN HAZARD IS THE RISK OF EROSION UNLESS CLOSE-GROWING PLANT COVER IS MAINTAINED. TABLE 14 INDICATES THAT THIS SOIL CONTAINS HYDRIC INCLUSIONS.

TABLE 15A INDICATES THAT DWELLINGS WITH BASEMENTS ARE VERY LIMITED DUE TO DEPTH TO HARD BFDROCK TABLE 15B INDICATES THAT LOCAL ROADS ARE VERY LIMITED DUE TO DEPTH TO HARD BEDROCK AND FROST ACTION. SHALLOW EXCAVATIONS ARE VERY LIMITED DUE TO DEPTH TO HARD BEDROCK, SLOPE,

AND CUTBANKS CAVE. LAWNS AND LANDSCAPING ARE VERY LIMITED DUE TO DEPTH TO BEDROCK, DROUGHTY, GRAVEL CONTENT, SLOPE, AND CONTENT OF LARGE STONES. TABLE 18 INDICATES THAT THIS SOIL TYPE IS VERY LIMITED FOR POND RESERVOIR AREAS DUE TO DEPTH TO BEDROCK AND SEEPAGE. EMBANKMENT CONSTRUCTION IS VERY LIMITED DUE TO THIN

PROPOSED DISTURBANCES IN THIS SOIL DESIGNATION ARE VERY MINOR IN AREAL EXTENT, APPROXIMATELY 12,200 SQUARE FEET (LESS THAN 1% OF THE DISTURBED AREA).

SOIL PROPERTIES

SOIL TYPES, DEPICTED WITHIN THE LOD AND TAKEN FROM SOIL SURVEY OF ADAMS COUNTY, PENNSYLVANIA BY THE US DEPARTMENT OF AGRICULTURE, ARE AS FOLLOWS: *AbB - ABBOTSTOWN SILT LOAM, 3 TO 8% SLOPES, HSG 'C' +CrA – CROTON SILT LOAM, 0 TO 3% SLOPES, HSG 'D'

KnB - KLINESVILLE CHANNERY SILT LOAM, 3 TO 8% SLOPES, HSG 'C' KnC - KLINESVILLE CHANNERY SILT LOAM, 8 TO 15% SLOPES, HSG 'C' PoB - PENN-KLINESVILLE CHANNERY SILT LOAMS, 3 TO 8% SLOPES, HSG 'C' *RfB - REAVILLE CHANNERY SILT LOAM, 3 TO 8% SLOPES, HSG 'C'

+LISTED ON TABLE 13 AS "MAP UNITS WITH HYDRIC COMPONENTS" * LISTED ON TABLE 14 AS "MAP UNITS WITH HYDRIC INCLUSIONS" FOR MORE DETAILED SOIL INFORMATION, REFER TO "SOIL SURVEY OF ADAMS

COUNTY, PENNSYLVANIA" BY U.S.D.A. AND THE EROSION & SEDIMENT POLLUTION CONTROL REPORT DEVELOPED FOR THIS PROJECT

A BRIEF LISTING OF THE SOILS AND THEIR LIMITATIONS AND ALTERNATIVES ALSO FOLLOWS. THE ALTERNATIVES PROVIDED ARE NOT INTENDED TO BE ABSOLUTE, BUT ARE PROVIDED AS GUIDANCE ONLY

SOIL LIMITATION RESOLUTIONS

- THE FOLLOWING ALTERNATIVES ARE OFFERED AS POSSIBLE SOLUTIONS TO THE ABOVE DESCRIBEDLIMITATIONS AND ARE NOT ABSOLUTE:
- 1. SOIL TESTING SHOULD BE CONDUCTED TO DETERMINE LIME APPLICATION RATES: LIMING THE SOIL IS PART OF TEMPORARY AND PERMANENT SEEDING SPECIFICATIONS.
- 2. SUPPLEMENTAL DRAINAGE AND SLOPE GRADING WILL MITIGATE WET SOIL ISSUES FOR REESTABLISHING VEGETATIVE COVER. PROPOSED SITE GRADING IN CONJUNCTION WITH TEMPORARY AND PERMANENT SEEDING PER THE EROSION AND SEDIMENT POLLUTION CONTROL PLAN WILL MITIGATE VEGETATIVE STABILIZATION
- ISSUES. THE AREAS TO BE PERMANENTLY VEGETATED MAY REQUIRE ADDITIONAL TOPSOIL AND/OR SOIL AMENDMENT. 4. ANY FLOODING THAT MIGHT OCCUR WILL BE IN AN AREA THAT WILL NOT BE PROBLEMATIC. BEDROCK, FRAGIPAN, CEMENTED PAN WILL BE FRACTURED BY USING STANDARD CONSTRUCTION
- TECHNIQUES, SUCH AS DRILLING OR BLASTING, IN ORDER TO ACCOMPLISH THE PROPOSED IMPROVEMENTS. FROST ACTION CAN BE ADDRESSED THROUGH PROPER COMPACTION AND DRAINAGE: SOIL
- REINFORCEMENT MAY BE REQUIRED 7. BECAUSE OF ADVERSE SOIL CONDITIONS, THIS PROJECT MAY REQUIRE THAT AN EXPERIENCED GEOTECHNICAL ENGINEER EVALUATE SOIL CONDITIONS FOR ALL PROPOSED IMPROVEMENTS.
- 8. OSHA REQUIRES THAT THE CONTRACTOR INSTALL SHORING OF TRENCHES OVER A SPECIFIED 9. SITE SOIL TESTING HAS BEEN PERFORMED TO DETERMINE PERCOLATION CAPABILITIES.
- 10. SEEPAGE, PIPING, AND EMBANKMENT LIMITATIONS SHALL BE ADDRESSED BY A GEOTECHNICAL ENGINEER. 11. SLOPE AND PONDING ISSUES HAVE BEEN ADDRESSED VIA THE DEPICTED GRADING AND SPECIFIED
- STABILIZATION. 12. IF HIGH WATER TABLE IS PROBLEMATIC, THE FOLLOWING SOLUTIONS ARE OFFERED: DURING
- CONSTRUCTION, WATER SHALL BE REMOVED VIA PUMPING OPERATIONS TO A FILTER BAG OR OTHER ACCEPTED SEDIMENT REMOVING DEVICE; FOUNDATION DRAINS AND SUMP PUMPS WITH BACKUF GENERATORS ARE RECOMMENDED: ACCESSORY STRUCTURES SHOULD BE ELEVATED SLAB-ON-GRADE CONSTRUCTION; STONE BACKFILL ON UTILITY TRENCHES WILL ALSO HELP SOMEWHAT WITH HIGH WATER TABLE ISSUES.

PCSM MAINTENANCE PROGRAM

THE PROPOSED PCSM DEVICES SHALL BE INSPECTED BY THE LAND OWNER/DEVELOPER OR RESPONSIBLE ENTITY (INCLUDING THE MUNICIPAL ENGINEER FOR DEDICATED FACILITIES) ON THE FOLLOWING BASIS: 1.BIO-RETENTION

- a.MAINTENANCE IS NECESSARY TO ENSURE PROPER FUNCTIONALITY OF THE BIO-RETENTION FACILITY AND SHOULD TAKE PLACE TWICE ANNUALLY. A BIO-RETENTION MAINTENANCE PLAN SHOULD BE DEVELOPED WHICH INCLUDES THE FOLLOWING MEASURES: b.WHILE VEGETATION IS BEING ESTABLISHED, PRUNING AND WEEDING MAY BE REQUIRED.
- c.DETRITUS MAY ALSO NEED TO BE REMOVED EVERY YEAR. d.BIO-RETENTION AREAS SHOULD BE INSPECTED AT LEAST TWO TIMES PER YEAR FOR SEDIMENT BUILDUP, EROSION, VEGETATIVE CONDITIONS, ETC.
- e.DURING PERIODS OF EXTENDED DROUGHT, BIO-RETENTION AREAS MAY REQUIRE WATERING. f.INSPECT OUTLET STRUCTURE, PIPING, AND UNDERDRAIN FOR FUNCTIONALITY AND SOUNDNESS ANNUALLY.
- 2.VEGETATED SWALE
- a.MAINTENANCE ACTIVITIES TO BE DONE ANNUALLY AND WITHIN 48 HOURS AFTER EVERY MAJOR STORM EVENT (>1 INCH RAINFALL DEPTH):
- b.INSPECT AND CORRECT EROSION PROBLEMS, DAMAGE TO VEGETATION, AND SEDIMENT AND DEBRIS ACCUMULATION (ADDRESS WHEN > 3 INCHES AT ANY SPOT OR COVERING VEGETATION) c.INSPECT VEGETATION ON SIDE SLOPES FOR EROSION AND FORMATION OF RILLS OR GULLIES,
- CORRECT AS NEEDED. d.INSPECT FOR POOLS OF STANDING WATER; DEWATER AND DISCHARGE TO AN APPROVED LOCATION
- AND RESTORE TO DESIGN GRADE. e.MOW AND TRIM VEGETATION TO ENSURE SAFETY, AESTHETICS, PROPER SWALE OPERATION, OR TO SUPPRESS WEEDS AND INVASIVE VEGETATION; DISPOSE OF CUTTINGS IN A LOCAL COMPOSTING
- FACILITY; MOW ONLY WHEN SWALE IS DRY TO AVOID RUTTING. f. INSPECT FOR LITTER; REMOVE PRIOR TO MOWING g.INSPECT FOR UNIFORMITY IN CROSS-SECTION AND LONGITUDINAL SLOPE, CORRECT AS NEEDED.
- h.INSPECT SWALE INLET (CURB CUTS, PIPES, ETC.) AND OUTLET FOR SIGNS OF EROSION OR BLOCKAGE, CORRECT AS NEEDED.
- . MAINTENANCE ACTIVITIES TO BE DONE AS NEEDED: j. PLANT ALTERNATIVE GRASS SPECIES IN THE EVENT OF UNSUCCESSFUL ESTABLISHMENT. k.RESEED BARE AREAS; INSTALL APPROPRIATE EROSION CONTROL MEASURES WHEN NATIVE SOIL IS
- EXPOSED OR EROSION CHANNELS ARE FORMING. I. ROTOTILL AND REPLANT SWALE IF DRAW DOWN TIME IS MORE THAN 48 HOURS. m. INSPECT AND CORRECT CHECK DAMS WHEN SIGNS OF ALTERED WATER FLOW (CHANNELIZATION,
- OBSTRUCTIONS, EROSION, ETC.) ARE IDENTIFIED. n.WATER DURING DRY PERIODS, FERTILIZE, AND APPLY PESTICIDE ONLY WHEN ABSOLUTELY NECESSARY.
- o.WINTER CONDITIONS ALSO NECESSITATE ADDITIONAL MAINTENANCE CONCERNS, WHICH INCLUDE THE FOLLOWING: D.INSPECT SWALE IMMEDIATELY AFTER THE SPRING MELT, REMOVE RESIDUALS (E.G. SAND) AND
- REPLACE DAMAGED VEGETATION WITHOUT DISTURBING REMAINING VEGETATION. g.IF ROADSIDE OR PARKING LOT RUNOFF IS DIRECTED TO THE SWALE, MULCHING AND/OR SOIL AERATION/MANIPULATION MAY BE REQUIRED IN THE SPRING TO RESTORE SOIL STRUCTURE AND
- MOISTURE CAPACITY AND TO REDUCE THE IMPACTS OF DEICING AGENTS. r. USE NONTOXIC, ORGANIC DEICING AGENTS, APPLIED EITHER AS BLENDED, MAGNESIUM CHLORIDE-BASED LIQUID PRODUCTS OR AS PRETREATED SALT. s.USE SALT-TOLERANT VEGETATION IN SWALES.
- 3. RIPRAP APRON a.INSPECT THE RIPRAP AREA FOR INTRUSION OF NOXIOUS AND ANY OTHER WOODY VEGETATION. REMOVE AS NECESSARY b.INSPECT THE DOWNSLOPE ARE TO ASSURE THE RECEIVING AREA IS NOT BEING ERODED. c.REPAIR ANY SETTLED AREAS TO MAINTAIN A LEVEL DISCHARGE AREA.
- 4.SOIL AMENDMENT & RESTORATION INSPECT AND MONITOR TO ASSURE SOILS ARE NOT COMPACTED AND/OR SETTLED.
- 5.LANDSCAPE RESTORATION a.PLANTINGS NEED DEEP REGULAR WATERING DURING THE FIRST GROWING SEASON, EITHER NATURAL WATERING VIA RAINFALL, OR PLANNED WATERING, VIA CARETAKER. b.MULCH WILL ASSIST IN MOISTURE RETENTION IN THE ROOT ZONE OF PLANTING, MODERATE SOIL TEMPERATURE, PROVIDE SOME WEED SUPPRESSION AND RETARD EVAPORATION. APPLY 2-4 INCH LAYER ANNUALLY, LEAVING AIR SPACE AROUND TREE TRUNK TO PREVENT FUNGUS GROWTH. C.CONTROL WEEDS THROUGH HERBICIDES OR PERIODIC MOWING AS NECESSARY.
- d.REMOVE INVASIVE PLANTS AS NECESSARY. e.REPAIR BROKEN STAKES, TIGHTEN STAKE LINES, AND REPAIR TREE SHELTERS AS NECESSARY. THE ENTITY CONDUCTING THE INSPECTION IS REQUIRED TO SUBMIT A REPORT TO THE MUNICIPALITY REGARDING THE CONDITION OF THE FACILITY AND RECOMMENDING NECESSARY REPAIRS, IF NEEDED.

PAPER, AND PLASTICS. A LEGALLY BINDING AND ENFORCEABLE MAINTENANCE AGREEMENT BETWEEN WOODHAVEN BUILDING & DEVELOPMENT, INC. AND THE RESPONSIBLE AGENCY MUST BE RECORDED AT THE ADAMS COUNT COURTHOUSE WITH A COPY OF THE AGREEMENT BEING FILED WITH CUMBERLAND TOWNSHIP TO ENSURE SUSTAINED MAINTENANCE EXECUTION. 8 12/23/19 PER TOWNSHIP ENGINEER COMMENTS 7 11/25/19 PER ACCD COMMENTS 6 10/14/19 PER FINAL TOWNSHIP ENGINEER COMMENTS

NO. DATE



CONTENT OF LARGE STONES.

LAYER AND SEEPAGE.

2 09/18/17 PER ACCD TECHNICAL COMMENTS

TEMPORARY SEEDING SPECIFICATIONS

THESE NOTES APPLY TO GRADED OR CLEARED AREAS THAT ARE LIKELY TO BE RE-DISTURBED, OR WHERE A SHORT TERM VEGETATIVE COVER IS NEEDED. SEEDBED PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISCING, OR OTHER ACCEPTABLE MEANS BEFORE SEEDING. PERFORM ALL CULTIVATION AT RIGHT ANGLES TO THE SLOPE. SOIL AMENDMENTS: APPLY 1 TON OF AGRICULTURAL-GRADE LIMESTONE PER ACRE, PLUS FERTILIZER AT THE RATE OF 50-50-50 PER ACRE, AND WORK INTO THE SOIL. SEEDING:

SPRING (UNTIL JUNE 15) ANNUAL RYEGRASS 40 LB/ACRE; OR SPRING OATS 96 LB/ACRE; OR SPRING OATS PLUS RYEGRASS 64 LB/ACRE; PLUS 20 LB/ACRE ANNUAL OR PERENNIAL RYEGRASS; OR WINTER WHEAT 180 LB/ACRE; OR WINTER RYE 168 LB/ACRE LATE SPRING/SUMMER (JUNE 16 THRU AUGUST 15)

ANNUAL RYEGRASS 40 LB/ACRE; OR JAPANESE OR FOXTAIL MILLET 35 LB/ACRE; OR SUDANGRASS 40 LB/ACRE; OR SPRING OATS 96 LB/ACRE; OR WINTER WHEAT 180 LB/ACRE; OR WINTER RYE 168 LB/ACRE

LATE SUMMER/FALL (AUGUST 16 AND LATER) ANNUAL RYEGRASS 40 LB/ACRE; OR WINTER RYE 168 LB/ACRE; OR WINTER WHEAT 180 LB/ACRE AT OTHER TIMES OF THE YEAR, PROTECT THE SITE BY APPLYING 3 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS PRACTICABLE; OR BY USING SOD.

MULCHING: APPLY 3 TONS PER ACRE OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION BY USING MULCHING TOOL; OR APPLY 218 GALLONS/ACRE (5 GAL/1000 SF) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON 2:1 SLOPES OR GREATER, USE 350 GALLONS OF ASPHALT PER ACRE (8 GAL/1000 SF) FOR PROPER ANCHORING. THE FOLLOWING METHODS OF ANCHORING MULCH MATERIALS ARE ACCEPTABLE ALTERNATES TO ASPHALT ANCHORING IF APPLIED UNDER THE PROPER CONDITIONS: 1. TRACKING: THE PROCESS OF CUTTING MULCH INTO THE SOIL VIA EQUIPMENT THAT RUNS ON TRACKS IS EMPLOYED PRIMARILY ON SLOPES 3:1 OR STEEPER.

- 2. MULCH NETTING: STAPLE LIGHTWEIGHT, BIODEGRADABLE PAPER, PLASTIC, OR COTTON NETTING OVER THE MULCH ACCORDING TO THE MANUFACTURER RECOMMENDATIONS. 3. SYNTHETIC BINDERS: SYNTHETIC BINDERS, SUCH AS ACRYLIC DLR (AGRI-TAC), DCA-70, PETROSET, OR TERRATACK, MAY BE USED AT RATES RECOMMENDED BY THE MANUFACTURER TO ANCHOR MULCH
- MATERIAL. 4. WOOD CELLULOSE FIBER: THE FIBER BINDER SHALL BE APPLIED AT A NET DRY WEIGHT OF 750 LB/AC. THE WOOD CELLULOSE FIBER SHALL BE MIXED WITH WATER, AND THE MIXTURE SHALL CONTAIN A MAXIMUM OF 50 LBS OF WOOD CELLULOSE FIBER PER 100 GALLONS.
- 5. PEG & TWINE: DRIVE 8 TO 10 INCH WOODEN PEGS TO WITHIN 2 TO 3 INCHES OF THE SOIL SURFACE EVERY 4 FEET IN ALL DIRECTIONS. STAKES MAY BE DRIVEN BEFORE OR AFTER APPLYING MULCH. SECURE MULCH TO SURFACE BY STRETCHING TWINE BETWEEN PEGS IN A CRISSCROSS WITHIN A SQUARE PATTERN. SECURE TWINE AROUND EACH PEG WITH TWO OR MORE TURNS. MAINTENANCE: INSPECT ALL SEEDED AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS, AND RESEEDINGS TO INSURE SITE STABILIZATION.

BIO-RETENTION SEEDING SPECIFICATIONS (ERNMX-180) SEEDING RATE: 20 POUNDS PER ACRE PLUS 30 POUNDS PER ACRE GRAIN RYE

(ANDROPOGON SCOPARIUS), FORT INDIANTOWN GAP-PA

(RIVERBANK WILDRYE, PA ECOTYPE)

(AUTUMN BENTGRASS, PA ECOTYPE)

(BLUNT BROOM SEDGE, PA ECOTYPE

(SWAMP MILKWEED, PA ECOTYPE

ASTER, NY ECOTYPE

ASTER, PA ECOTYPE)

(WILD SENNA, VA & WV ECOTYPE

(EARLY GOLDENROD, PA ECOTYPE)

(PATH RUSH, PA ECOTYPE

(FOX SEDGE, PA ECOTYPE)

(PURPLE CONEFLOWER)

(LANCELEAF COREOPSIS)

(BLACKEYED SUSAN)

PA ECOTYPE

(SOFT RUSH)

ECOTYPE)

ECOTYPE (LITTLE BLUESTEM, FORT INDIANTOWN

(P. STIPITATUM), COASTAL PLAIN NC ECOTYPE (REDTOP

CASSIA F.), PA ECOTYPE (PARTRIDGE PEA, PA ECOTYPE)

(CONOCLINIUM C.), VA ECOTYPE (MISTFLOWER, VA

(MARSH (DENSE) BLAZING STAR (SPIKED GAYFEATHER),

(SYMPHYOTRICHUM LAEVE), NY ECOTYPE (SMOOTH BLUE

ECOTYPE (WILD BERGAMOT, FORT INDIANTOWN GAP-PA

(SYMPHYOTRICHUM N.), PA ECOTYPE (NEW ENGLAND

(TALL WHITE BEARDTONGUE, PA ECOTYPE)

(BLUE FALSE INDIGO, SOUTHERN WV ECOTYPE)

ECOTYPE (ORANGE CONEFLOWER, NORTHERN VA

PANICGRASS, COASTAL PLAIN NC ECOTYPE)

31.7% SCHIZACHYRIUM SCOPARIUM 20.0% ELYMUS RIPARIUS, PA ECOTYPE

- 10.0% CAREX VULPINOIDEA, PA ECOTYPE 10.0% PANICUM RIGIDULUM 4.0% ECHINACEA PURPUREA 3.0% COREOPSIS LANCEOLATA 3.0% RUDBECKIA HIRTA
- 2.0% AGROSTIS PERENNANS. PA ECOTYPE 2.0% CAREX SCOPARIA, PA ECOTYPE 2.0% CHAMAECRISTA FASCICULATA 2.0% EUPATORIUM COELESTINUM
- 2.0% LIATRIS SPICATA, PA ECOTYPI 1.0% ASCLEPIAS INCARNATA, PA ECOTYPE 1.0% ASTER LAEVIS
- 1.0% ASTER NOVAE-ANGLIAE 1.0% JUNCUS EFFUSUS
- 1.0% JUNCUS TENUIS, PA ECOTYPE 1.0% PENSTEMON DIGITALIS, PA ECOTYPE 0.5% BAPTISIA AUSTRALIS, SOUTHERN WV ECOTYPE
- 0.5% MONARDA FISTULOSA, FORT INDIANTOWN GAP-PA 0.5% RUDBECKIA FULGIDA VAR. FULGIDA, NORTHERN VA 0.5% SENNA HEBECARPA (CASSIA H.), VA & WV ECOTYPE
- 0.3% SOLIDAGO JUNCEA, PA ECOTYPE

THIS SEEDING MIX IS SPECIFIED FOR PERMANENT STABILIZATION OF THE BIO-RETENTION DEVICE BOTTOM AND INSIDE SLOPES UP TO THE SPILLWAY ELEVATION. THE REMAINDER OF THE GARDEN SHALL BE STABILIZED IN ACCORDANCE WITH PERMANENT SEEDING SPECIFICATIONS. SEEDING MIX AVAILABLE FROM FRNST CONSERVATION SEEDS 9006 MERCER PIKE MEADVILLE, PA 16335 PHONE: 800-873-332

WWW.ERNSTSEED.COM THE CONTRACTOR SHALL FOLLOW THE MANUFACTURER GUIDELINES, OUTLINED BELOW.

SITE PREPARATION INVASIVE SPECIES, PARTICULARLY THOSE THAT WILL ADAPT TO WET CONDITIONS, SHOULD BE REMOVED OR SPRAYED BEFORE THEY BECOME INCORPORATED INTO THE SITE. NORMAL VEGETATION CAN BE WORKED INTO THE TOPSOIL, WHICH SHOULD BE STOCKPILED UNTIL THE FINAL GRADE HAS BEEN ESTABLISHED. THE INFILTRATION AND PLANT GROWTH AREAS SHOULD BE LOOSE AND FRIABLE, HIGH IN ORGANIC MATTER, COMPLETED WITHOUT COMPACTIONS FROM HEAVY EQUIPMENT. BY USING THE "DIG AND DROF METHOD, ONE CAN USE AN EXCAVATOR TO DIG AND DROP EACH AREA OF THE BOTTOM SOIL IN A LOOSE MANNER. AT THIS POINT, ONE CAN INCORPORATE LIME, COMPOSTED LEAVES, AND/OR GRASS CLIPPINGS. HE EXCAVATION MACHINE DOES NOT MOVE OVER THE FINISHED SURFACE, THUS AVOIDING UNNECESSARY COMPACTION. NATIVE VEGETATION CAN BE PLANTED OR SEEDED OVER THIS UNEVEN, ABSORBENT SURFACE

SEEDING AND PLANTING METHODS SFEDING AND PLANTING SHOULD BEGIN IMMEDIATELY UPON COMPLETION OF THE SITE PREPARATION WHEN HE SOIL IS STILL FRIABLE AND BEFORE INVASIVE WEEDS EMERGE. PLAN SEEDING AND PLANTING WHEN THE BASIN IS DRY. BROADCAST SEED EVENLY BY HAND SEEDING OR HYDROSEEDING. SEEDING RATES ARE GENERALLY LOW (1/2 LB PER 1,000 SQ FT). THE USE OF A SEED FILLER; I.E., PAM-12, CAN BE USED TO CREATE A MIX OF 10 LB PER 1,000 SQ FT (I.E., 9-1/2 LB OF PAM-12 MIXED WITH 1/2 LB OF SFED). WHICH CAN BE BROADCAST EVENLY OVER THE AREA. BARLEY, OATS, OR RYE CAN PROVIDE TEMPORARY VEGETATION TO PROTECT THE SOIL LINTIL PERMANENT VEGETATION CAN BE ESTABLISHED. THE USE OF NATIVE SPECIES: I.E., VIRGINIA WILD RYE, CAN CREATE AN INTERMEDIATE VEGETATIVE COVER THA SUCCEEDS TO NATIVE LONG-TERM VEGETATION AN EROSION CONTROL BLANKET SHALL BE INSTALLED TO PREVENT EROSION AND PROTECT EMERGING SEEDLINGS FROM EXTREME TEMPERATURES AND DRYING OUT. IRRIGATION OF SEEDED AREAS IS OF VALUE UNTIL SEEDLINGS BECOME ESTABLISHED.

<u>GENERAL MAINTENANCE</u> IN ADDITION TO STRUCTURAL MAINTENANCE, SILTATION NEEDS TO BE REMOVED AS NEEDED. PLANTS NEED TO BE TRIMMED BACK TO MAINTAIN AESTHETIC VALUE AND INVASIVE SPECIES NEED TO BE CONTROLLED. CLOSE MOWING OR EXTENSIVE CHEMICAL USE IS NOT CONDUCIVE TO WATER QUALITY IMPROVEMENT AND WILDLIFE HABITAT

WASTE MATERIAL RECYCLE NOTE

ALL BUILDING MATERIALS AND WASTES MUST BE REMOVED FROM THE SITE AND RECYCLED OR DISPOSED IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS AT PA CODE SECTION 260.1 ET SEQ., SECTION 271.1 ET SEQ., AND SECTION 287.1 ET SEQ. NO BUILDING MATERIALS SHALL BE BURNED, BURIED, DUMPED, OR DISCHARGED AT THE SITE.

CONSTRUCTION/DEMOLITION WASTES ARE DEFINED AS SOLID WASTES RESULTING FROM CONSTRUCTION OR DEMOLITION OF BUILDINGS AND OTHER STRUCTURES, INCLUDING, BUT NOT LIMITED TO, WOOD, PLASTER, METALS, ASPHALTIC SUBSTANCES, BRICKS, BLOCKS, AND UNSEGREGATED CONCRETE. THE TERM DOES NOT INCLUDE THE FOLLOWING, IF SEPARATE FROM OTHER WASTES, AND USED AS CLEAN FILL: UNCONTAMINATED SOIL, ROCK, STONE, GRAVEL, BRICK AND BLOCK, CONCRETE, AND USED ASPHALT; AND WASTES FROM LAND CLEARING, GRUBBING, AND EXCAVATION, INCLUDING TREES, BRUSH, STUMPS, AND VEGETATIVE MATERIAL. SALVAGED MATERIALS ARE SEPARATED TO BE USED OR RE-USED FOR THEIR INTENDED FUNCTION AND ARE NOT WASTES, INCLUDING BATHROOM FIXTURES, CEILING PANELS, DOORS, FLOORING, LIGHTING FIXTURES, WINDOWS, ETC. SOURCE SEPARATE RECYCLE MATERIALS ARE NOT WASTES, AND INCLUDE CARDBOARD, GLASS, METALS,

WASTES THAT REQUIRE SPECIAL HANDLING INCLUDE, BUT ARE NOT LIMITED TO, ASBESTOS, FLUORESCENT BULBS, MERCURY SWITCHES, AND TRITIUM "EXIT" SIGNS (REFER TO PADEP FOR APPROPRIATE PROCEDURES).

XREFS REVISIONS Know what's **below**. DESCRIPTION QUAD-0220 Call before you dig. 07/18/17 PER ACCD ADMINISTRATIVE COMMENTS 3 05/28/19 PER TOWNSHIP ENGINEER COMMENTS NNSYLVANIA ACT 287 (1974) AS AMENDED BY PENNSYLVANIA A 4 06/27/19 PER ADDITIONAL TOWNSHIP ENGINEER COMMENTS 21 (2008) REQUIRES NO LESS THAN THREE (3) WORKING DAYS AND NO MORE THAN (10) WORKING DAYS NOTICE TO UTILITIES BEFORE YOU EXCAVATE, DRILL, BLAST OR DEMOLISH. 5 08/14/19 PER ADDITIONAL TOWNSHIP ENGINEER COMMENTS

GENERAL EROSION AND SEDIMENTATION NOTES ALL EARTH DISTURBANCES, INCLUDING CLEARING AND GRUBBING AS WELL AS CUTS AND FILLS SHALL

- SUBMITTAL OF THOSE CHANGES FOR REVIEW AND APPROVAL AT ITS DISCRETION. 2. AT LEAST 7 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, INCLUDING CLEARING AND GRUBBING. THE OWNER AND/OR OPERATOR SHALL INVITE ALL CONTRACTORS. THE LANDOWNER. APPROPRIATE MUNICIPAL OFFICIALS, THE E&S PLAN PREPARER, THE PCSM PLAN PREPARER, THE
- PRECONSTRUCTION MEETING. 3. AT LEAST 3 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, OR EXPANDING INTO AN AREA PREVIOUSLY UNMARKED, THE PENNSYLVANIA ONE CALL SYSTEM INC. SHALL BE NOTIFIED AT
- 1-800-242-1776 FOR THE LOCATION OF EXISTING UNDERGROUND UTILITIES. 4. ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE SEQUENCE PROVIDED
- THE LOCAL CONSERVATION DISTRICT OR BY THE DEPARTMENT PRIOR TO IMPLEMENTATION. 5. AREAS TO BE FILLED ARE TO BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL.
- 6. CLEARING, GRUBBING, AND TOPSOIL STRIPPING SHALL BE LIMITED TO THOSE AREAS DESCRIBED IN EACH STAGE OF THE CONSTRUCTION SEQUENCE. GENERAL SITE CLEARING, GRUBBING AND TOPSOIL STRIPPING MAY NOT COMMENCE IN ANY STAGE OR PHASE OF THE PROJECT UNTIL THE E&S BMPS SPECIFIED BY THE BMP SEQUENCE FOR THAT STAGE OR PHASE HAVE BEEN INSTALLED AND ARE FUNCTIONING AS DESCRIBED IN THIS E&S PLAN.
- FENCED OFF BEFORE CLEARING AND GRUBBING OPERATIONS BEGIN. 8. TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE STOCKPILED AT THE
- EXCEED 35 FEET. STOCKPILE SLOPES SHALL BE 2H:1V OR FLATTER. 9. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR
- 10. ALL OFF-SITE WASTE AND BORROW AREAS MUST HAVE AN E&S PLAN APPROVED BY THE LOCAL CONSERVATION DISTRICT OR THE DEPARTMENT FULLY IMPLEMENTED PRIOR TO BEING ACTIVATED.
- DESCRIBED IN THIS PLAN, OVER UNDISTURBED VEGETATED AREAS. 12 VEHICLES AND FOURPMENT MAY NEITHER ENTER DIRECTLY NOR EXIT DIRECTLY FROM THE CONSTRUCTION SITE EXCEPT AS ALLOWED DURING THE SEQUENCE OF CONSTRUCTION AND VIA A ROCK CONSTRUCTION
- FNTRANCE. 13. UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENT BMPS SHALL BE MAINTAINED PROPERLY. MODIFICATIONS OF THOSE INSTALLED WILL BE REQUIRED.
- HE DATE THEY WERE CORRECTED SHALL BE MAINTAINED ON THE SITE AND BE MADE AVAILABLE TO REGULATORY AGENCY OFFICIALS AT THE TIME OF INSPECTION.
- DITCH, STORM SEWER, OR SURFACE WATER. 16. ALL SEDIMENT REMOVED FROM BMPS SHALL BE DISPOSED OF IN THE MANNER DESCRIBED ON THE PLAN DRAWINGS.
- 17. AREAS WHICH ARE TO BE TOPSOILED SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 3 TO 5 INCHES MULCHING. FILL OUTSLOPES SHALL HAVE A MINIMUM OF 2 INCHES OF TOPSOIL.
- 19. ALL EARTHEN FILLS SHALL BE PLACED IN COMPACTED LAYERS NOT TO EXCEED 9 INCHES IN THICKNESS.
- 20. FILL MATERIALS SHALL BE FREE OF FROZEN PARTICLES, BRUSH, ROOTS, SOD, OR OTHER FOREIGN OR
- 21. FROZEN MATERIALS OR SOFT, MUCKY, OR HIGHLY COMPRESSIBLE MATERIALS SHALL NOT BE INCORPORATED INTO FILLS.
- 22. FILL SHALL NOT BE PLACED ON SATURATED OR FROZEN SURFACES. 23. SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED IN ACCORDANCE WITH
- THE STANDARD AND SPECIFICATION FOR SUBSURFACE DRAIN OR OTHER APPROVED METHOD. 24. ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY UPON REACHING FINISHED GRADE. CUT SLOPES IN COMPETENT BEDROCK AND ROCK FILLS NEED NOT BE VEGETATED. SEEDED AREAS WITHIN 50 FEET OF A SURFACE WATER, OR AS OTHERWISE SHOWN ON THE PLAN DRAWINGS, SHALL BE BLANKETED ACCORDING TO THE STANDARDS OF THIS PLAN.
- 25. IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITIES CEASE IN ANY AREA OR SUBAREA OF THE PROJECT GRADE, WHICH WILL BE REACTIVATED WITHIN 1 YEAR, MAY BE STABILIZED IN ACCORDANCE WITH THE YEAR SHALL BE STABILIZED IN ACCORDANCE WITH THE PERMANENT STABILIZATION SPECIFICATIONS. 26. PERMANENT STABILIZATION IS DEFINED AS A MINIMUM UNIFORM, PERENNIAL 70% VEGETATIVE COVER OR
- OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED EROSION. CUT AND FILL SLOPES SHALL BE CAPABLE OF RESISTING FAILURE DUE TO SLUMPING, SLIDING. OR OTHER MOVEMENTS
- CONSERVATION DISTRICT OR THE DEPARTMENT. 28. UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE OWNER AND/OR OPERATOR SHALL CONTACT THE LOCAL CONSERVATION DISTRICT
- FOR AN INSPECTION PRIOR TO REMOVAL/CONVERSION OF THE E&S BMPS. 29. AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AND SEDIMENT BMPS MUST
- TO BE DONE ONLY DURING THE GERMINATING SEASON. 30. UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL TO SCHEDULE A FINAL INSPECTION.
- 31. FAILURE TO CORRECTLY INSTALL E&S BMPS, FAILURE TO PREVENT SEDIMENT-LADEN RUNOFF FROM LAW. THE CLEAN STREAMS LAW PROVIDES FOR UP TO \$10,000 PER DAY IN CIVIL PENALTIES, UP TO FOR EACH VIOLATION.
- 32. CONCRETE WASH WATER SHALL BE HANDLED IN THE MANNER DESCRIBED ON THE PLAN DRAWINGS. IN NO CASE SHALL IT BE ALLOWED TO ENTER ANY SURFACE WATERS OR GROUNDWATER SYSTEMS. 33. ALL CHANNELS SHALL BE KEPT FREE OF OBSTRUCTIONS INCLUDING BUT NOT LIMITED TO FILL, ROCKS,
- MATERIAL/WASTES. 34. UNDERGROUND UTILITIES CUTTING THROUGH ANY ACTIVE CHANNEL SHALL BE IMMEDIATELY BACKFILLED
- THIS PLAN UNTIL SUCH RESTORATION IS COMPLETE. 35. SEDIMENT BASINS AND/OR TRAPS SHALL BE KEPT FREE OF ALL CONSTRUCTION WASTE, WASH WATER, AND OTHER DEBRIS HAVING POTENTIAL TO CLOG THE BASIN/TRAP OUTLET STRUCTURES AND/OR POLLUTE THE SURFACE WATERS.
- 36. SEDIMENT BASINS SHALL BE PROTECTED FROM UNAUTHORIZED ACTS BY THIRD PARTIES. 37. ANY DAMAGE THAT OCCURS IN WHOLE OR IN PART AS A RESULT OF BASIN OR TRAP DISCHARGE SHA MUNICIPALITY, LOCAL CONSERVATION DISTRICT, AND THE OWNER OF THE DAMAGED PROPERTY.
- THE DEPARTMENT.
- AND/OR DETAIL SHEETS.
- - - 38. UPON REQUEST, THE APPLICANT OR HIS CONTRACTOR SHALL PROVIDE AN AS-BUILT (RECORD DRAWING)
 - 39. EROSION CONTROL BLANKETING SHALL BE INSTALLED ON ALL SLOPES 3H:1V OR STEEPER WITHIN 50
 - 40. FILL MATERIAL FOR EMBANKMENTS SHALL BE FREE OF ROOTS, OR OTHER WOODY VEGETATION, ORGANIC COMPACTED IN MAXIMUM 8" LAYERED LIFTS AT 97% DENSITY.





BE DONE IN ACCORDANCE WITH THE APPROVED E&S PLAN. A COPY OF THE APPROVED DRAWINGS (STAMPED, SIGNED AND DATED BY THE REVIEWING AGENCY) MUST BE AVAILABLE AT THE PROJECT SITE AT ALL TIMES. THE REVIEWING AGENCY SHALL BE NOTIFIED OF ANY CHANGES TO THE APPROVED PLAN PRIOR TO IMPLEMENTATION OF THOSE CHANGES. THE REVIEWING AGENCY MAY REQUIRE A WRITTEN

LICENSED PROFESSIONAL RESPONSIBLE FOR OVERSIGHT OF CRITICAL STAGES OF IMPLEMENTATION OF THE PCSM PLAN, AND A REPRESENTATIVE FROM THE LOCAL CONSERVATION DISTRICT TO AN ON-SITE

ON THE PLAN DRAWINGS. DEVIATION FROM THAT SEQUENCE MUST BE APPROVED IN WRITING FROM

7. AT NO TIME SHALL CONSTRUCTION VEHICLES BE ALLOWED TO ENTER AREAS OUTSIDE THE LIMIT OF DISTURBANCE BOUNDARIES SHOWN ON THE PLAN MAPS. THESE AREAS MUST BE CLEARLY MARKED AND

LOCATION(S) SHOWN ON THE PLAN MAPS(S) IN THE AMOUNT NECESSARY TO COMPLETE THE FINISH GRADING OF ALL EXPOSED AREAS THAT ARE TO BE STABILIZED BY VEGETATION. EACH STOCKPILE SHALL BE PROTECTED IN THE MANNER SHOWN ON THE PLAN DRAWINGS. STOCKPILE HEIGHTS SHALL NOT

ACCELERATED EROSION AND/OR SEDIMENT POLLUTION. THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO MINIMIZE THE POTENTIAL FOR EROSION AND SEDIMENT POLLUTION AND NOTIFY THE LOCAL CONSERVATION DISTRICT AND/OR THE REGIONAL OFFICE OF THE DEPARTMENT. . ALL PUMPING OF WATER FROM ANY WORK AREA SHALL BE DONE ACCORDING TO THE PROCEDURE

MAINTENANCE SHALL INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENT BMPS AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT REPAIR REPLACEMENT REGRADING RESERVING REMULCHING AND RENETTING MUST BI PERFORMED IMMEDIATELY. IF THE E&S BMPS FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMPS, OR 14. A LOG SHOWING DATES THAT E&S BMPS WERE INSPECTED AS WELL AS ANY DEFICIENCIES FOUND AND

15. SEDIMENT TRACKED ONTO ANY PUBLIC ROADWAY OR SIDEWALK SHALL BE RETURNED TO THE ONSTRUCTION SITE BY THE END OF EACH WORK DAY AND DISPOSED IN THE MANNER DESCRIBED IN THIS PLAN. IN NO CASE SHALL THE SEDIMENT BE WASHED, SHOVELED, OR SWEPT INTO ANY ROADSIDE

-- 6 TO 12 INCHES ON COMPACTED SOILS -- PRIOR TO PLACEMENT OF TOPSOIL. AREAS TO BE VEGETATED SHALL HAVE A MINIMUM 4 INCHES OF TOPSOIL IN PLACE PRIOR TO SEEDING AND 18. ALL FILLS SHALL BE COMPACTED AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS. FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES AND CONDUITS, ETC. SHALL BE COMPACTED IN ACCORDANCE WITH LOCAL REQUIREMENTS OR CODES. OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY

THE OPERATOR SHALL STABILIZE ALL DISTURBED AREAS. DURING NON-GERMINATING MONTHS, MULCH OR PROTECTIVE BLANKETING SHALL BE APPLIED AS DESCRIBED IN THE PLAN. AREAS NOT AT FINISHED

TEMPORARY STABILIZATION SPECIFICATIONS. THOSE AREAS WHICH WILL NOT BE REACTIVATED WITHIN ceq

27. E&S BMPS SHALL REMAIN FUNCTIONAL AS SUCH UNTIL ALL AREAS TRIBUTARY TO THEM ARE PERMANENTLY STABILIZED OR UNTIL THEY ARE REPLACED BY ANOTHER BMP APPROVED BY THE LOCAL

BE REMOVED OR CONVERTED TO PERMANENT POST CONSTRUCTION STORMWATER MANAGEMENT BMPS. AREAS DISTURBED DURING REMOVAL OR CONVERSION OF THE BMPS SHALL BE STABILIZED IMMEDIATELY IN ORDER TO ENSURE RAPID REVEGETATION OF DISTURBED AREAS, SUCH REMOVAL/CONVERSIONS ARE

DISTURBED AREAS, THE OWNER AND/OR OPERATOR SHALL CONTACT THE LOCAL CONSERVATION DISTRICT LEAVING THE CONSTRUCTION SITE, OR FAILURE TO TAKE IMMEDIATE CORRECTIVE ACTION TO RESOLVE FAILURE OF E&S BMPS MAY RESULT IN ADMINISTRATIVE, CIVIL, AND/OR CRIMINAL PENALTIES BEING INSTITUTED BY THE DEPARTMENT AS DEFINED IN SECTION 602 OF THE PENNSYLVANIA CLEAN STREAMS

\$10,000 IN SUMMARY CRIMINAL PENALTIES, AND UP TO \$25,000 IN MISDEMEANOR CRIMINAL PENALTIES LEAVES, WOODY DEBRIS, ACCUMULATED SEDIMENT, EXCESS VEGETATION, AND CONSTRUCTION

AND THE CHANNEL RESTORED TO ITS ORIGINAL CROSS-SECTION AND PROTECTIVE LINING. ANY BASE FLOW WITHIN THE CHANNEL SHALL BE CONVEYED PAST THE WORK AREA IN THE MANNER DESCRIBED IN

BE IMMEDIATELY REPAIRED BY THE PERMITTEE IN A PERMANENT MANNER SATISFACTORY TO THE FOR ANY SEDIMENT BASIN OR TRAP TO THE MUNICIPAL INSPECTOR, LOCAL CONSERVATION DISTRICT OR

FEET OF A SURFACE WATER AND ON ALL OTHER DISTURBED AREAS SPECIFIED ON THE PLAN MAPS MATERIAL, LARGE STONES, AND OTHER OBJECTIONABLE MATERIALS. THE EMBANKMENT SHALL BE SPECIAL "CLEAN FILL MATERIAL" NOTES

- 1. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ANY MATERIAL BROUGHT ON SITE IS CLEAN FILL. FORM FP-001 MUST BE RETAINED BY THE PROPERTY OWNER FOR ANY FILL MATERIAL AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE BUT QUALIFYING AS CLEAN FILL DUE TO ANALYTICAL TESTING.
- 2. IF THE SITE REQUIRES IMPORTING OF FILL MATERIAL, THE RESPONSIBILITY OF CLEAN FILI DETERMINATION AND ENVIRONMENTAL DUE DILIGENCE RESIDES WITH THE OPERATOR. 3. IF THE SITE HAS EXCESS FILL MATERIAL THAT WILL BE EXPORTED, THE RESPONSIBILITY OF CLEAN
- FILL DETERMINATION AND ENVIRONMENTAL DUE DILIGENCE RESTS UPON THE APPLICANT. 4. "CLEAN FILL" IS DEFINED AS: UNCONTAMINATED, NON-WATER SOLUBLE, NON-DECOMPOSABLE, INERT, SOLID MATERIAL. THE TERM INCLUDES SOIL, ROCK, STONE, DREDGED MATERIAL, USED ASPHALT, AND
- BRICK, BLOCK, AND CONCRETE FROM CONSTRUCTION AND DEMOLITION ACTIVITIES THAT IS SEPARATE FROM OTHER WASTE AND IS RECOGNIZABLE AS SUCH. THE TERM DOES NOT INCLUDE MATERIALS PLACED IN OR ON WATERS OF THE COMMONWEALTH UNLESS OTHERWISE AUTHORIZED. (THE TERM "USED ASPHALT" DOES NOT INCLUDE MILLED ASPHALT OR ASPHALT THAT HAS BEEN PROCESSED FOR RE-USE).
- 5. ENVIRONMENTAL DUE DILIGENCE: INVESTIGATIVE TECHNIQUES, INCLUDING, BUT NOT LIMITED TO VISUAL PROPERTY INSPECTIONS, ELECTRONIC DATA BASE SEARCHES, REVIEW OF PROPERTY OWNERSHIP, REVIEW OF PROPERTY USE HISTORY, SANBORN MAPS, ENVIRONMENTAL QUESTIONNAIRES, TRANSACTION SCREENS, ANALYTICAL TESTING, ENVIRONMENTAL ASSESSMENTS OR AUDITS. ANALYTICAL TESTING IS NOT REQUIRED UNLESS VISUAL INSPECTION AND/OR REVIEW OF THE PAST LAND USE OF THE PROPERTY INDICATES THAT THE FILL MAY HAVE BEEN SUBJECTED TO A SPILL OR RELEASE OF A REGULATED SUBSTANCE. IF THE FILL MAY HAVE BEEN AFFECTED BY A SPILL OR RELEASE OF REGULATED SUBSTANCE, IT MUST BE TESTED TO DETERMINE IF IT QUALIFIES AS CLEAN FILL TESTING SHOULD BE PERFORMED IN ACCORDANCE WITH APPENDIX A OF THE DEPARTMENT O ENVIRONMENTAL PROTECTIONS POLICY "MANAGEMENT OF FILL".

RECEIVING WATER CLASSIFICATION

THE PROJECT LANDS DRAIN WESTWARD TOWARD AN UN-NAMED TRIBUTARY (UNT) OF MARSH CREEK WHICH IS A DESIGNATED CWF (COLD WATER FISHES) STREAM AND EASTWARD TOWARD AN UNT OF WILLOUGHBY RUN WHICH IS A DESIGNATED WWE (WARM WATER FISHES) STREAM NEITHER UNT MARSH CREEK NOR UNT WILLOUGHBY RUN HAS AN EXISTING USE CLASSIFICATION PURSUANT TO PENNSYLVANIA CODE, CHAPTER 93 AND THE "STATEWIDE EXISTING USE LISTING". THIS SITE IS IN THE MONOCACY RIVER SUBWATERSHED OF THE POTOMAC RIVER BASIN.

<u>UTILITY NOTES</u>

- 1. THE CONTRACTOR SHALL OPEN ONLY THAT SECTION OF TRENCH THAT CAN BE BACKFILLED AND STABILIZED EACH DAY. IF ANY TRENCH MUST REMAIN OPEN LONGER THAN ONE DAY, SILT FENCE SHALL BE PLACED DOWNSLOPE OF TRENCH.
- 2. PLACE ALL EXCAVATED MATERIAL UPSLOPE OF TRENCH. 3. ANY SEDIMENT CONTROL MEASURES DISTURBED BY UTILITY INSTALLATION SHALL BE REPAIRED
- 4. ANY EXCAVATED MATERIAL THAT MUST BE LOADED ONTO TRUCKS AND REMOVED FROM THE TRENCHING AREA MUST BE DEPOSITED WITHIN THE ONSITE PERIMETER CONTROLS.
- 5. ANY AREA DISTURBED BY OFF-SITE UTILITY INSTALLATIONS SHALL BE STABILIZED AS SOON AS PRACTICAL AFTER TRENCH BACKFILLING AND TOPSOIL REPLACEMENT ARE COMPLETED.
- 6. STABILIZATION SHALL BE IN FULL ACCORDANCE WITH THE PERMANENT SEEDING NOTES. 7. IF TRENCH DEWATERING IS REQUIRED, A FILTER BAG FOR PUMPED WATER SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAIL AND MUST OUTLET TO A STABILIZED AREA.

MISCELLANEOUS STABILIZATION NOTES

- 1. IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITIES CEASE, THE OPERATOR SHALL STABILIZE THE DISTURBED AREAS. DURING NON-GERMINATING PERIODS, MULCH MUST BE APPLIED AT THE SPECIFIED RATES. DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND WHICH WILL BE RE-DISTURBED WITHIN 1 YEAR MUST BE STABILIZED IN ACCORDANCE WITH THE TEMPORARY VEGETATIVE STABILIZATION SPECIFICATIONS. DISTURBED AREAS WHICH ARE AT FINAL GRADE OR WHICH WILL NOT BE RE-DISTURBED WITHIN 1 YEAR MUST BE STABILIZED IN ACCORDANCE WITH THE PERMANENT VEGETATIVE STABILIZATION SPECIFICATIONS.
- 2. AN EROSION CONTROL BLANKET WILL BE INSTALLED ON ALL DISTURBED SLOPES STEEPER THAN 3:1, ALL AREAS OF CONCENTRATED FLOWS, AND DISTURBED AREAS WITHIN 50' OF WATERS OF THE COMMONWEALTH.

GEOLOGIC SOIL CONDITIONS

THERE ARE NO IDENTIFIED NATURALLY OCCURRING GEOLOGIC FORMATIONS OR SOIL CONDITIONS THAT MAY HAVE THE POTENTIAL TO CAUSE POLLUTION AFTER EARTH DISTURBANCE ACTIVITIES ARE COMPLETED.

NPDES PERMIT BOUNDARY

THE NPDES PERMIT BOUNDARY FOR THIS PROJECT IS THE OVERALL PROPERTY BOUNDARY LINE AND MINOR OFF-SITE DISTURBANCES, AN AREA OF APPROXIMATELY 106.6± ACRES.

CRITICAL STAGES OF CONSTRUCTION

- A LICENSED PROFESSIONAL OR DESIGNEE OF SHARRAH DESIGN GROUP, INC. SHALL BE ON SITE DURING THE FOLLOWING CRITICAL STAGES OF CONSTRUCTION TO ENSURE PROPER TECHNIQUE: 1. DURING INSTALLATION OF SEDIMENT TRAPS, SEDIMENT BASINS, AND ASSOCIATED OUTFALLS.
- 2. DURING CONSTRUCTION OF PERMANENT CHANNELS, INSTALLATION OF TURF REINFORCEMENT MATTING,
- AND FINAL STABILIZATION. 3. DURING CONVERSION OF SEDIMENT TRAPS AND SEDIMENT BASINS INTO PERMANENT BIO-RETENTION FACILITIES AND MRC DEVICES.
- 4. DURING INSTALLATION OF AMENDED SOILS.

CLEARING AND GRUBBING NOTE

ANY WOODY DEBRIS ACCUMULATED DURING THE CLEARING AND GRUBBING OPERATIONS FOR THIS PROJECT SHALL BE GROUND INTO MULCH; STOCKPILED BESIDE DESIGNATED STOCKPILE AREAS; TRANSPORTED FROM THE SITE FOR ACCEPTED USES; OR SHALL BE USED FOR MULCHING EROSION AND SEDIMENT POLLUTION CONTROL MEASURES ONSITE. THE CONTRACTOR IS ADVISED TO THE OFFICE OF ADAMS COUNTY SOLID WASTE MANAGEMENT FOR INFORMATION AND GUIDANCE RELATIVE TO THIS MATTER.

POTENTIAL THERMAL IMPACTS

THIS PROJECT USES A NUMBER OF INFILTRATION BMPS TO REDUCE THE THERMAL IMPACTS TO UNT MARSH CREEK AND UNT WILLOUGHBY RUN. THESE DEVICES INCLUDE SIX (6) BIO-RETENTION FACILITIES, VEGETATED CHANNELS, AMENDED SOILS, AND MAINTAINING EXISTING VEGETATION TO THE MAXIMUM EXTENT FEASIBLE. THERMAL IMPACTS. BOTH DURING AND AFTER CONSTRUCTION WILL E MINIMIZED BY LIMITING THE DISTURBED AREA, MAINTAINING AS MUCH SHEET FLOW AS POSSIBLE, AND MOST IMPORTANTLY, USE OF THE BIO-RETENTION FACILITIES.

STOCKPILE NOTES

1. STOCKPILING WILL NOT BE ALLOWED ON ANY IMPERVIOUS AREA. 2. ALL STOCKPILES LEFT AT THE END OF THE DAY MUST BE TEMPORARILY STABILIZED UNTIL THEY ARE AGAIN DISTURBED, UNLESS THEY ARE WITHIN EXISTING PERIMETER CONTROLS.

PCSM	TITLE S	HEE
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OWNER/DEVELOPER

WOODHAVEN BUILDING & DEVELOPMENT, INC. 4175 HANOVER PIKE MANCHESTER, MD 21102 PHONE: (410) 239-8331

PLAN PRE	EPARATION	PCSM TITLE SHEET AND NOTES
DRAWN BY: WRD	DATE: 17 APRIL 2017	CUMBERLAND VILLAGE - PHAS
DESIGNED BY: WRD	FILE NO.: 0220	A PLANNED RESIDENTIAL COMMUNITY
CHECKED BY: RAS	DWG NO.: PC1 TI01-PH2A-0220	CUMBERLAND TOWNSHIP ~ ADAMS COUNTY ~ PENNSYLVANIA
Land Surveying & Design	20 Chambersburg Street Gettysburg, PA 17325 Phone: (717) 334-5400 © copyright 2016 Fax: (717) 334-0922	ENGINEER PE-070775 V V S Y L V A
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AMENDED SOILS SPECIFICATIONS AND SEQUENCE

- 1. SCOPE A. THIS SPECIFICATION COVERS THE USE OF COMPOST FOR SOIL AMENDMENT AND THE MECHANICAL RESTORATION OF COMPACTED, ERODED AND NON-VEGETATED SOILS. SOIL AMENDMENT AND RESTORATION IS NECESSARY WHERE EXISTING SOIL HAS BEEN DEEMEL UNHEALTHY IN ORDER TO RESTORE SOIL STRUCTURE AND FUNCTION, INCREASE INFILTRATION POTENTIAL AND SUPPORT HEALTHY VEGETATIVE COMMUNITIES. B. SOIL AMENDMENT PREVENTS AND CONTROLS EROSION BY ENHANCING THE SOIL SURFACE TO
- PREVENT THE INITIAL DETACHMENT AND TRANSPORT OF SOIL PARTICLES. 2. COMPOST MATERIALS A. COMPOST PRODUCTS SPECIFIED FOR USE IN THIS APPLICATION ARE DESCRIBED IN TABLE 1 THE PRODUCT'S PARAMETERS WILL VARY BASED ON WHETHER VEGETATION WILL BE ESTABLISHED ON THE TREATED SLOPE.
- B. ONLY COMPOST PRODUCTS THAT MEET ALL APPLICABLE STATE AND FEDERAL REGULATIONS PERTAINING TO ITS PRODUCTION AND DISTRIBUTION MAY BE USED IN THIS APPLICATION. APPROVED COMPOST PRODUCTS MUST MEET RELATED STATE AND FEDERAL CHEMICAL CONTAMINANT (e.g., HEAVY METALS, PESTICIDES, ETC.) AND PATHOGEN LIMIT STANDARDS PERTAINING TO THE FEEDSTOCKS (SOURCE MATERIALS) IN WHICH IT IS DERIVED.
- C. VERY COARSE COMPOST SHOULD BE AVOIDED FOR SOIL AMENDMENT AS IT WILL MAKE PLANTING AND CROP ESTABLISHMENT MORE DIFFICULT. D. SPECIFYING THE USE OF COMPOST PRODUCTS THAT ARE CERTIFIED BY THE U.S. COMPOSTING
- COUNCIL'S SEAL OF TESTING (STA) PROGRAM (www.compostingcouncil.org) WILL ALLOW FOR THE ACQUISITION OF PRODUCTS THAT ARE ANALYZED ON A ROUTINE BASIS, USING THE SPECIFIEI TEST METHODS. STA PARTICIPANTS ARE ALSO REQUIRED TO PROVIDE A STANDARD PRODUCT LABEL TO ALL CUSTOMERS, ALLOWING EASY COMPARISON TO OTHER PRODUCTS. 3. SUB-SOILING TO RELIEVE COMPACTION
- C. BEFORE THE TIME THE COMPOST IS PLACED AND PREFERABLY WHEN EXCAVATION IS COMPLETED, THE SUBSOIL SHALL BE IN A LOOSE, FRIABLE CONDITION TO A DEPTH OF 20 INCHES BELOW FINAL TOPSOIL GRADE AND THERE SHALL BE NO EROSION RILLS OR WASHOUTS IN THE SUBSOIL SURFACE EXCEEDING 3 INCHES IN DEPTH
- D. TO ACHIEVE THIS CONDITION, SUBSOILING, RIPPING, OR SCARIFICATION OF THE SUBSOIL WILL BE REQUIRED AS DIRECTED BY THE OWNERS REPRESENTATIVE, WHEREVER THE SUBSOIL HAS BEEN COMPACTED BY EQUIPMENT OPERATION OR HAS BECOME DRIED OUT AND CRUSTED, AND WHERE NECESSARY TO OBLITERATE EROSION RILLS. SUB-SOILING SHALL BE REQUIRED TO REDUCE SOIL COMPACTION IN ALL AREAS WH4ERE PLANT ESTABLISHMENT IS PLANNED. SUB—SOILING SHALL BE PERFORMED BY THE PRIME OR EXCAVATING CONTRACTOR AND SHALL OCCUR BEFORE COMPOST PLACEMENT.
- E. SUBSOILED AREAS SHALL BE LOOSENED TO LESS THAN 1400 kPa (200 psi) TO A DEPTH OF 20 INCHES BELOW FINAL TOPSOIL GRADE. WHEN DIRECTED BY THE OWNER'S REPRESENTATIVE, THE CONTRACTOR SHALL VERIFY THAT THE SUB-SOILING WORK CONFORMS TO THE SPECIFIED
- F. SUB-SOILING SHALL FORM A TWO-DIRECTIONAL GRID. CHANNELS SHALL BE CREATED BY A COMMERCIALLY AVAILABLE, MULTI-SHANKED, PARALLELOGRAM IMPLEMENT (SOLID SHANK RIPPER) E EQUIPMENT SHALL BE CAPABLE OF EXERTING A PENETRATION FORCE NECESSARY FOR TH SITE. NO DISC CULTIVATORS, CHISEL PLOWS, OR SPRING-LOADED EQUIPMENT WILL BE ALLOWED. GRID CHANNELS SHALL BE SPACED A MINIMUM OF 12 INCHES TO A MAXIMUM OF 36 INCHES APART, DEPENDING ON EQUIPMENT, SITE CONDITIONS, AND THE SOIL MANAGEMENT PLAN. THE CHANNEL DEPTH SHALL BE A MINIMUM OF 20 INCHES OR AS SPECIFIED IN THE SOIL MANAGEMENT PLAN. IF SOILS ARE SATURATED, THE CONTRACTOR SHALL DELAY OPERATIONS UNTIL THE SOIL WILL NOT HOLD A BALL WHEN SQUEEZED. ONLY ONE PASS SHALL BE PERFORMED ON ERODIBLE SLOPES GREATER THAN 1 VERTICAL TO 3 HORIZONTAL, WHEN ONL
- ONE PASS IS USED, WORK SHOULD BE AT RIGHT ANGLES TO THE DIRECTION OF SURFACE DRAINAGE, WHENEVER PRACTICAL. G. EXCEPTIONS TO SUB-SOILING INCLUDE AREAS WITHIN THE DRIP LINE OF ANY EXISTING TREES, OVER UTILITY INSTALLATIONS WITHIN 30 INCHES OF THE SURFACE, WHERE TRENCHING/DRAINAGE LINES ARE INSTALLED, WHERE COMPACTION IS BY DESIGN (ABUTMENTS, FOOTINGS, OR IN SLOPES), AND ON INACCESSIBLE SLOPES. AS APPROVED BY THE OWNER'S REPRESENTATIVE. IN CASES WHERE DIRECTED BY THE OWNER'S REPRESENTATIVE. ARCHEOLOGICAL CLEARANCES MAY BE REQUIRED IN SOME INSTANCES
- 4. COMPOST SOIL AMENDMENT QUALITY A. THE FINAL, RESULTING COMPOST SOIL AMENDMENT MUST MEET ALL OF THE MANDATORY CRITERIA IN TABLE 4. 5. COMPOST SOIL AMENDMENT INSTALLATION
- A. SPREAD 2-3 INCHES OF APPROVED COMPOST ON EXISTING SOIL. TILL ADDED SOIL INTO EXISTING SOIL WITH A ROTARY TILLER THAT IS SET TO A DEPTH OF 6 INCHES. ADD AN ADDITIONAL 4 INCHES OF APPROVED COMPOST TO BRING THE AREA UP TO GRADE B. AFTER PERMANENT PLANTING/SEEDING, 2-3 INCHES OF COMPOST BLANKET WILL BE APPLIED TO ALL AREAS NOT PROTECTED BY GRASS OR OTHER PLANTS

CONSTRUCTION SEQUENCE FOR VEGETATED SWALE

- 1 BEGIN VEGETATED SWALE CONSTRUCTION ONLY WHEN THE LIPGRADIENT TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES ARE IN PLACE. VEGETATED SWALES SHOULD BE CONSTRUCTED AND STABILIZED EARLY IN THE CONSTRUCTION SCHEDULE. PREFERABLY BEFORE MASS EARTHWORK AND PAVING INCREASE THE RATE AND VOLUME OF RUNOFF. (EROSION AND SEDIMENT CONTROL METHODS SHALL ADHERE TO THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION'S EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL, MARCH 2000 OR LATES FDITION
- 2. ROUGH GRADE THE VEGETATED SWALE. EQUIPMENT SHALL AVOID EXCESSIVE COMPACTION AND/OR LAND DISTURBANCE. EXCAVATING EQUIPMENT SHOULD OPERATE FROM THE SIDE OF THE SWALE AND NEVER ON THE BOTTOM. IF EXCAVATION LEADS TO SUBSTANTIAL COMPACTION OF THE SUBGRADE (WHERE AN INFILTRATION TRENCH IS NOT PROPOSED), 18 INCHES SHALL BE REMOVED AND REPLACED WITH A BLEND OF TOPSOIL AND SAND TO PROMOTE INFILTRATION AND BIOLOGICAL GROWTH. AT THE VERY LEAST, TOPSOIL SHALL BE THOROUGHLY DEEP PLOWED INTO THE SUBGRADE I ORDER TO PENETRATE THE COMPACTED ZONE AND PROMOTE AERATION AND THE FORMATION OF MACROPORES. FOLLOWING THIS, THE AREA SHOULD BE DISKED PRIOR TO FINAL GRADING OF TOPSOIL.
- 3. CONSTRUCT CHECK DAMS, IF REQUIRED. 4. FINE GRAD THE VEGETATED SWALE. ACCURATE GRADING IS CRUCIAL FOR SWALES. EVEN THE SMALLEST NON-CONFORMITIES MAY COMPROMISE FLOW CONDITIONS
- 5. SEED, VEGETATE AND INSTALL PROTECTIVE LINING AS PER APPROVED PLANS AND ACCORDING TO FINAL PLANTING LIST. PLANT THE SWALE AT A TIM OF THE YEAR WHEN SUCCESSFUL ESTABLISHMENT WITHOUT IRRIGATION IS MOST LIKELY, HOWEVER, TEMPORARY IRRIGATION MAY BE NEEDED IN PERIODS OF LITTLE RAIN OR DROUGHT. VEGETATION SHOULD BE ESTABLISHED AS SOON AS POSSIBLE TO PREVENT EROSION AND SCOUR.
- 6. ONCE ALL TRIBUTARY AREAS ARE SUFFICIENTLY STABILIZED. REMOVE THE TEMPORARY EROSION AND SEDIMENT CONTROLS. IT IS VERY IMPORTANT THAT THE SWALE BE STABILIZED BEFORE RECEIVING UPLAND STORMWATER FLOW

NOTE: IF A VEGETATED SWALE IS USED FOR RUNOFF CONVEYANCE DURING CONSTRUCTION. IT SHOULD BE REGRADED AND RESEEDED IMMEDIATELY AFTER CONSTRUCTION AND STABILIZATION HAS OCCURRED. ANY DAMAGED AREAS SHOULD BE FULLY RESTORED TO ENSURE FUTURE FUNCTIONALITY OF THE SWALE

BASIN EMBANKMENT SPECIFICATIONS

- 1. REMOVE TOPSOIL OVER PROPOSED EMBANKMENT AREA PRIOR TO PLACING FILL. ALL UNSUITABLE FOUNDATION MATERIAL SHALL BE REMOVED AND BROUGHT BACK TO GRADE WITH EMBANKMENT MATERIAL. PLACE FILL IN 8-INCH LIFTS AND COMPACT TO 90-95% OF MAXIMUM DRY DENSITY.
- 2. THE EMBANKMENT MATERIAL SHALL BE CLEAN AND FREE OF SOD, ROOTS, VEGETATION, ROCKS, OR OTHER OBJECTIONABLE MATERIAL THAT COULD PREVENT THE DESIRED COMPACTION. FILL MATERIAL
- SHALL CONTAIN SUFFICIENT MOISTURE TO FORM A BALL WITHOUT CRUMBLING WHEN SQUEEZED BY HAND. IF WATER CAN BE SQUEEZED OUT OF THE BALL, IT IS TOO WET. 3. DO NOT USE FROZEN MATERIAL, OR PLACE FILL ON FROZEN FOUNDATIONS.
- 4. SPREAD TOPSOIL OVER ROUGH GRADED AREAS TO ESTABLISH VEGETATIVE COVER ON EMBANKMENTS AND BASIN FLOOR.
- 5. THE HEIGHT OF THE EMBANKMENT SHALL BE INCREASED APPROXIMATELY 10% TO ENSURE THAT THE DESIGN TOP ELEVATION WOULD BE MAINTAINED AFTER SETTLEMENT.
- 6. THE EMBANKMENT OUTLET SHALL BE AS SHOWN ON APPROVED PLANS.

ALTERNATIVES IN THE EVENT OF A BMP FAILURE

IN THE EVENT THAT ANY BMP (BEST MANAGEMENT PRACTICE) UTILIZED ON THIS PROJECT FAILS, THE DESIGNER OR OTHER QUALIFIED PROFESSIONAL, AS WELL AS THE ADAMS COUNTY CONSERVATION DISTRICT AND TOWNSHIP OF CUMBERLAND, SHOULD BE CONSULTED AS THERE MAY BE SEVERAL WAYS TO REMEDY A "FAILURE", DEPENDING ON THE NATURE OF THE FAILURE. **BIO-RETENTION FACILITY WITH UNDERDRAIN**

IN THE EVENT THE FACILITY DOES NOT DRAIN WITHIN 72 HOURS OR PLANTINGS/TURF ARE DEAD OR DYING, INSPECT THE AMENDED SOILS FOR SATURATION WITH SEDIMENT. IF SEDIMENT IS OBSERVED, REMOVE THE MATERIAL AND REPLACE WITH NEW AMENDED SOIL TO THE DESIGN GRADES. ALTERNATIVELY, IF THE SOIL APPEARS CLEAN AND IN GENERAL CONFORMANCE WITH THE DESIGN MIXTURE, OPEN THE UNDERDRAIN CAP TO PROVIDE A GRAVITY DISCHARGE. INSTALLING PLANT MATERIAL SUCH AS PLUGS. TREES AND BUSHES THAT THRIVE IN WET CONDITIONS COULD ALSO ASSIST WITH EVAPOTRANSPIRATION OF RETAINED RUNOFF. CONSULT A LANDSCAPE ARCHITECT OF OTHER QUALIFIED PROFESSIONAL FOR ASSISTANCE WITH PLANT SELECTION.

MANAGED RELEASE BIORETENTION FACILITY

IN THE EVENT THE FACILITY DOES NOT DRAIN WITHIN 72 HOURS OR PLANTINGS/TURF ARE DEAD OR DYING, INSPECT THE BIORETENTION SOILS FOR SATURATION WITH SEDIMENT. IF SEDIMENT IS OBSERVED, REMOVE THE MATERIAL AND REPLACE WITH NEW AMENDED SOIL TO THE DESIGN GRADES. ALTERNATIVELY, IF THE SOIL APPEARS CLEAN AND IN GENERAL CONFORMANCE WITH THE DESIGN MIXTURE. INSTALLING PLANT MATERIAL SUCH AS PLUGS. TREES AND BUSHES THAT THRIVE IN WET CONDITIONS COULD ALSO ASSIST WITH EVAPOTRANSPIRATION OF RETAINED RUNOFF. CONSULT A LANDSCAPE ARCHITECT OF OTHER QUALIFIED PROFESSIONAL FOR ASSISTANCE WITH PLANT SELECTION. AMENDED SOILS

IF THE AMENDED SOILS BECOME SATURATED AND SEDIMENT FILLED OR PLANTINGS/TURF ARE DEAD OR DYING, REMOVE AND REPLACE OR AMEND SOIL; RE—SEED OR PROVIDE PLANT PLUGS IN TURF AREAS, INSPECT FOR EROSION AND REPAIR AS NECESSARY. IN SLOPE AREAS, PLACE EROSION CONTROL MATTING AFTER INSTALLING NEW SEED. IF INVASIVE SPECIES ARE OBSERVED IN AMENDED SOIL AREAS, REMOVE AND/OR SPOT TREAT. RIPRAP APRON

ROCK THAT IS DISPLACED BY UNEXPECTED VELOCITIES OR OTHER UNANTICIPATED CONDITIONS SHALL BE REPLACED IMMEDIATELY. IF THE FILTER CLOTH IS UNDERMINED OR DESTROYED/DISTURBED, IT SHALL BE REPLACED IMMEDIATELY. AFTER REPAIRS, BRING THE APRON CONFIGURATION INTO CONFORMANCE WITH THE DESIGN DIMENSIONS. TURF

IF TURF GRASS DIES DUE TO DISEASE. CONSULT A QUALIFIED PROFESSIONAL FOR APPROPRIATE DISEASE TREATMENT. IN THE EVENT OF PROLONGED DROUGHT, PROVIDE WATER UNIFORMLY. IF OVERCOME BY WEEDS/INVASIVES, TREAT TO KILL THE WEEDS/INVASIVES AND RE-SEED AND MULCH TO RETURN THICK TURF.

8 12/23/19 PER TOWNSHIP ENGINEER COMMENTS 7 11/25/19 PER ACCD COMMENTS

6 10/14/19 PER FINAL TOWNSHIP ENGINEER COMMENTS

		REVISIONS	XREFS
NO.	DATE	DESCRIPTION	
1	07/18/17	PER ACCD ADMINISTRATIVE COMMENTS	
2	09/18/17	PER ACCD TECHNICAL COMMENTS	
3	05/28/19	PER TOWNSHIP ENGINEER COMMENTS	
4	06/27/19	PER ADDITIONAL TOWNSHIP ENGINEER COMMENTS	
5	08/14/19	PER ADDITIONAL TOWNSHIP ENGINEER COMMENTS	

SEQUENCE OF CONSTRUCTION

- E&S INSTALLATION: 1. THE DEVELOPER SHALL SCHEDULE A PRE-CONSTRUCTION CONFERENCE WITH THE FOLLOWING AT LEAST SEVEN WORKING DAYS PRIOR TO BEGINNING SITE WORK: ADAMS COUNTY CONSERVATION DISTRICT CUMBERLAND TOWNSHIP
- KPI TECHNOLOGY (TOWNSHIP ENGINEER) PROJECT ENGINEER - SHARRAH DESIGN GROUP, INC. DEVELOPER - WOODHAVEN BUILDING & DEVELOPMENT, INC. CONTRACTOR - TO BE DETERMINED
- NOTIFY PENNSYLVANIA ONE CALL SYSTEM AT 1-800-242-1776 TO FIELD DELINEATE THE LOCATION OF EXISTING UNDERGROUND UTILITIES. ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE FOLLOWING
- FOLLOWING STAGE IS INITIATED. CLEARING. GRUBBING AND TOPSOIL STRIPPING SHALL BE LIMITED ONLY TO THOSE AREAS DESCRIBED IN EACH STAGE AND ALL MATERIALS TO BE STOCKPILED IN THE DESIGNATED AND PROTECTED STOCKPILE AREA.
- ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO ELIMINATE THE POTENTIAL FOR ACCELERATED FROSION AND/OR SEDIMENT POLITION.
- WORK BOUNDARIES AND TREE PROTECTION BOUNDARIES. ALL DISTURBANCES MUST BE CONFINED TO THE AREA WITHIN THE DELINEATED LIMITS OF DISTURBANCE. THE BOTTOM OF BIO-RETENTION POND #1, BIO-RETENTION POND #2, AND DRY EXTENDED DETENTION BASIN #1 SHALL BE DELINEATED WITH ORANGE BARRIER FENCING TO PREVENT CONSTRUCTION TRAFFIC FROM TRAVERSING AND COMPACTING THE INFILTRATION AREAS. CONSTRUCTION OF THESE DEVICES SHALL BE ACCOMPLISHED IN A MANNER THAT DOES NOT COMPACT UNDERLYING SOILS. PRESERVE AND PROTECT THESE DEVICES TO THE MAXIMUM EXTENT FEASIBLE FROM COMPACTION, SEDIMENTATION AND DEBRIS DEPOSITS.
- CONTACT UTILITY COMPANIES TO REMOVE/RELOCATE RESPECTIVE UTILITIES AND PREPARE FOR FUTURE SERVICE EXTENSIONS.
- PHASE IIA CLEAR, GRUB, AND STRIP TOPSOIL FROM THE ROCK CONSTRUCTION ENTRANCES #1 & #2 AND PLACE GEOTEXTILE FABRIC AND STONE AS PER STANDARD CONSTRUCTION DETAIL #16 AND ON THE PLANS. IF AT ANY TIME THE ROADWAY BECOMES UNSTABLE AND/OR EXCESSIVELY MUDDY, ADD STONE IMMEDIATELY
- DISTURB ONLY THAT AREA NECESSARY TO PROVIDE ACCESS TO PROPOSED FILTREXX FILTERSOXX LOCATIONS. PLEASE NOTE THAT THE FILTERSOXX ARE CREATED BY A MULCH BLOWING TRUCK WITH APPROXIMATELY 300 FEET OF HOSE. INSTALL ALL FILTERSOXX, MAKING ONLY THE NECESSARY DISTURBANCE TO ALLOW TRUCK ACCESS AS WORK PROGRESSES.
- CRITICAL STAGE REFER TO SEQUENCE OF CONSTRUCTION FOR SEDIMENT BASINS. CONSTRUCT SEDIMENT BASINS #7, #8, #9, & #11, AND SEDIMENT TRAPS #10, & #12 TO INCLUDE OUTFALLS (OUTLET STRUCTURE, PIPE, ANTI-SEEP COLLAR AS REQUIRED, TRASH RACK, AND BASIN DEWATERING FACILITY).
- 0. CRITICAL STAGE CLEAR, GRUB, STOCKPILE TOPSOIL, EXCAVATE AND STABILIZE SEDIMENT BASINS AND TRAPS PER PLAN AND DETAILS.
- CHANNEL ROCK APRONS WITHIN THE BASIN
- WITHIN THE BASIN
- CONTRIBUTING PERMANENT CHANNELS #B-10A & #B-10B AND CHANNEL ROCK APRON WITHIN THE BASIN
- CONTRIBUTING PERMANENT CHANNELS #B-11A & #B-11E AND CHANNEL ROCK APRONS WITHIN THE BASIN.
- 16. DEMOLISH EXISTING STRUCTURES AND CLEAR, GRUB, STRIP, AND STOCKPILE TOPSOIL FOR PHASE IIA WITHIN THE LIMITS OF DISTURBANCE. CONTRACTOR TO ENSURE SEDIMENT LADEN RUNOFF WILL BE DIRECTED TO SEDIMENT CONTROL BMP'S DURING ENTIRE CONSTRUCTION PROCESS.
- PRIOR TO THE END OF THAT DAY'S WORK, IF POSSIBLE, CONSISTENT WITH INSPECTION NEEDS. IF WATER ACCUMULATES IN UTILITY TRENCHES AND MUST BE REMOVED PRIOR TO CONTINUATION OF CONSTRUCTION, THE WATER WILL BE PUMPED OUT AND DIRECTED TOWARD THE SEDIMENT BASIN IF POSSIBLE; OTHERWISE, THE PUMPAGE WILL BE DIRECTED INTO A FILTER BAG AS SHOWN IN THE PLAN DETAILS.
- 18. MASS GRADE THE ENTIRE PHASE IIA, KEEPING TEMPORARY CHANNELS #B-7E & #B-7F IN SERVICE AS LONG AS POSSIBLE. INSTALL AND STABILIZE PERMANENT CHANNELS #B-7B, #B-7C, #B-7D, #B-11B, #B-11C, #B-11F, #B-11G, #B-11H, AND #B-11I AS WORK PROGRESSES, DIRECTING SEDIMENT LADEN RUNOFF TO THE SEDIMENT CONTROL BMP'S. STABILIZE SITE WITHIN 10 DAYS OF CEASED GRADING AND AGAIN UPON COMPLETION OF ROUGH GRADING OPERATIONS. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT SEDIMENT LADEN RUNDEE WILL REMAIN DIRECTED TO THE SEDIMENT CONTROL BMP'S DURING THE ENTIRE CONSTRUCTION PROCESS. THE CONTRACTOR SHALL INSTALL UNDER DRAIN AS NECESSARY TO PREVENT SPRING SEEPS AND
- PROVIDE ADEQUATE DRAINAGE 19. INSTALL GRAVITY SANITARY SEWER SYSTEM WORKING FROM DOWNSTREAM END AND WORKING UPGRADE. IMMEDIATELY REPAIR ANY SEDIMENT CONTROL MEASURE THAT WAS MOVED, DEGRADED, OR DAMAGED DURING CONSTRUCTION.
- SHALL INSTALL EARTHEN, STONE, AND ASPHALT BERMS, AS IS APPROPRIATE FOR THE CURRENT STAGE OF CONSTRUCTION. UNTIL FINAL ROADWAY WEARING COURSE IS INSTALLED. ROCK APRONS SHALL BE INSTALLED WHERE THE STORM SEWERS ENTER THE SEDIMENT BASINS AND TRAPS PER THE PLANS AND DETAILS. IMMEDIATELY REPAIR ANY SEDIMENT CONTROL MEASURE THAT WAS MOVED, DEGRADED, OR DAMAGED DURING CONSTRUCTION.
- ANY SEDIMENT CONTROL MEASURE THAT WAS MOVED, DEGRADED, OR DAMAGED DURING CONSTRUCTION. 22. FINAL GRADE THE ROADS AND ADJACENT LAWN AREAS. INSTALL CONCRETE CURBS AS SHOWN ON PLAN. PLACE STONE SUB-BASE ON THE SUB-GRADE TO PROTECT IT.
- 23. REMOVE REMAINING STOCKPILE MATERIAL AND IMMEDIATELY STABILIZE REMOVAL AREA. 24. CRITICAL STAGE - FINAL GRADE REMAINING AREAS DISTURBED FROM ROADWAY AND UTILITY INSTALLATIONS, INSTALL AMENDED SOILS PER THE PCSM PLAN, STABILIZE SITE IN ACCORDANCE WITH PERMANENT SEEDING SPECIFICATIONS AND INSTALL PERMANENT LANDSCAPING PLANTINGS PER THE LANDSCAPING PLAN.
- 25. BEGIN BUILDING CONSTRUCTION AND CONSTRUCT RECREATION AREAS. AS CONSTRUCTION PROGRESSES, THE CONTRACTOR SHALL ENSURE ANY SEDIMENT-LADEN RUNOFF IS DIVERTED TO A BMP. ANY SEDIMENT DEPOSITED ON THE STREETS SHALL BE IMMEDIATELY REMOVED BY CONTRACTOR AND PLACED AS PART OF THE SITE GRADING UPSLOPE OF A FUNCTIONING BMP TO
- PREVENT VEHICLE TRACKING OF SEDIMENT OFFSITE. 26. AFTER UPSLOPE AREAS HAVE ATTAINED A UNIFORM, PERENNIAL 70% VEGETATIVE COVER, REQUEST A SITE INSPECTION FROM ACCD. WITH ACCD APPROVAL REMOVE F&SPC BMP'S (SEE NOTES 1 AND 2 BELOW). REMOVE AND STABILIZE TEMPORARY CHANNELS CONTRIBUTING TO SEDIMENT BASIN #7.
- 27. CRITICAL STAGE REFER TO PCSM PLANS AND DETAILS FOR SEQUENCE FOR CONVERTING SEDIMENT BASINS AND TRAPS INTO PERMANENT WATER QUALITY/DETENTION BASINS AND CONVERT SEDIMENT BASINS #7, #8, #9, & #11, AND SEDIMENT TRAPS #10 & #12.
- PCSM INSTALLATION: AFTER UPSLOPE AREAS HAVE ATTAINED A UNIFORM, PERENNIAL 70% VEGETATIVE COVER, REQUEST A SITE INSPECTION FROM ACCD: WITH ACCD APPROVAL, REMOVE E&SPC BMP'S (SEE NOTES 1 AND 2 BELOW). REMOVE AND STABILIZE TEMPORARY CHANNELS CONTRIBUTING TO SEDIMENT BASIN #7
- 2. CRITICAL STAGE REFER TO PCSM PLANS AND DETAILS FOR SEQUENCE FOR CONVERTING SEDIMENT BASINS AND TRAPS INTO PERMANENT WATER QUALITY/DETENTION BASINS AND CONVERT
- SEDIMENT BASINS #7, #8, #9, & #11, AND SEDIMENT TRAPS #10 & #12. 3. CONDUCT STREET SWEEPING AND FLUSH STORM DRAIN SYSTEM.
- 4. CRITICAL STAGE UPON PERMISSION OF THE ACCD, CONVERT SEDIMENT BASINS #7, #8, #9, AND #11 INTO BIO-RETENTION #7, #8, #9, AND #11 AND SEDIMENT TRAPS #10 AND #12 INTO BIO-RETENTION #10 AND #12 AND VEGETATIVELY STABILIZE DISTURBED AREAS."
- CRITICAL STAGE INSTALL PERFORATED UNDERDRAINS AND REMOVABLE WATERTIGHT PLUG IN BIO-RETENTION FACILITIES. WITH THE PERMISSION OF THE ACCD, REMOVE THE REMAINING COMPOST FILTER SOCK, INLET
- PROTECTION DEVICES, ROCK CONSTRUCTION ENTRANCES, AND ANY OTHER TEMPORARY E&S MEASURE. INCORPORATE THE MULCH INTO THE SOIL. STABILIZE ANY AREA DISTURBED BY THIS OPERATION.
- 1. UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE OWNER AND/OR OPERATORS SHALL CONTACT THE ADAMS COUNTY CONSERVATION DISTRICT FOR A FINAL INSPECTION PRIOR TO THE REMOVAL OF THE REMAINING

NOTES

- PERMANENT STABILIZATION ACCORDING TO CHAPTER 102.22 IS "A MINIMUM UNIFORM 70% PERENNIAL VEGETATIVE COVER, WITH A DENSITY CAPABLE OF RESISTING ACCELERATED EROSION AND SEDIMENTATION", OR "AN ACCEPTABLE BMP WHICH PERMANENTLY MINIMIZES ACCELERATED FROSION AND SEDIMENTATION.
- 3. THE CONTRACTOR, OR THE DESIGNATED EROSION AND SEDIMENT CONTROL MANAGER, SHALL MAINTAIN A LOG OF MAINTENANCE ACTIVITIES WHILE THIS PROJECT IS UNDER CONSTRUCTION THE LOG SHALL INCLUDE ITEMS SUCH AS DATES, TIMES AND AMOUNTS OF PRECIPITATION, DATES OF INSPECTIONS, DESCRIPTIONS OF ANY MAINTENANCE PERFORMED, AS WELL AS ANY OTHER





12. CRITICAL STAGE – UPON COMPLETION OF SEDIMENT BASIN **#7, INSTALL AND STABILIZE** CONTRIBUTING TEMPORARY CHANNELS #B-7E & B-7F, PERMANENT CHANNEL #B-7A, AND 13. CRITICAL STAGE – UPON COMPLETION OF SEDIMENT BASIN #9, INSTALL AND STABILIZE CONTRIBUTING PERMANENT CHANNELS #B-9A, #B-9B, & #B-9C AND CHANNEL ROCK APRONS 14. CRITICAL STAGE – UPON COMPLETION OF SEDIMENT TRAP #10, INSTALL AND STABILIZE 15. CRITICAL STAGE - UPON COMPLETION OF SEDIMENT BASIN #11, INSTALL AND STABILIZE

17. DURING UTILITY INSTALLATION, NO MORE THAN 200 FT. OF UTILITY TRENCH WILL BE OPEN AT ANY ONE TIME. ALL TRENCH OPENED DURING ANY ONE CONSTRUCTION DAY WILL BE BACKFILLED

), INSTALL STORM DRAIN FROM DOWNSTREAM END AND WORKING UPGRADE. THE CONTRACTOR 21. INSTALL WATER SERVICE FROM CONNECTION TO EXISTING SYSTEM OUTWARD. IMMEDIATELY REPAIR

PERTINENT COMMENTS. THE LOG SHALL BE AVAILABLE FOR INSPECTION ONSITE AT ALL TIMES.

PERMANENT SEEDING SPECIFICATIONS

THESE NOTES APPLY TO GRADED OR CLEARED AREAS. NOT SUBJECT TO IMMEDIATE FURTHER DISTURBANCE, WHERE A PERMANENT, LONG-LIVED VEGETATIVE COVER IS NEEDED. SEEDBED PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISCING, OR OTHER ACCEPTABLE MEANS BEFORE SEEDING. PERFORM ALL OPERATIONS AT RIGHT ANGLES TO THE SLOPE. SOIL AMENDMENTS: IT IS RECOMMENDED THAT SITE SPECIFIC SOIL TESTING BE PERFORMED. IN LIEU OF SOIL TEST RECOMMENDATIONS, USE ONE THE FOLLOWING SCHEDULES

1. PREFERRED - APPLY 6 TON/ACRE DOLOMITIC LIMESTONE (275 LB/1000 SF) AND 600 LB/ACRE 10-20-20 FERTILIZER (14 LB/1000 SF) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL. AT TIME OF SEEDING, APPLY 400 LB/ACRE 30-0-0 UREAFORM FERTILIZER (91 LB/1000 SF).

2. ACCEPTABLE - APPLY 6 TON/ACRE DOLOMITIC LIMESTONE (275 LB/1000 SF) AND 100 LB/ACRE 10-20-20 FERTILIZER (23 LB/1000 SF) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL SEEDING: (USE PERTINENT FOLLOWING FORMULA(E))

FORMULA 1 - (ACCEPTABLE FOR ANY DISTURBED AREA NOT SPECIFIED OTHERWISE). SOW DURING THE PERIOD FROM MARCH 1 THROUGH MAY 31, OR THE PERIOD FROM AUGÚST 1 THROUGH SEPTEMBER 31 USING THE FOLLOWING MIXTURE RATIO OF PURE LIVE SEED (PLS); ANNUAL RYEGRASS 15 LB/AC, TALL FESCUE 75 LB/AC, REDTOP 3 LB/AC, AND PERENNIAL RYEGRASS 20 LB/AC. (CONSULT SUPPLIER AND SEED TAG FOR PURE LIVE SEED PERCENTAGES FOR EACH SEED). FORMULA 2 - (ACCEPTABLE FOR DISTURBED AREAS NOT DESIGNATED AS LAWN - PLS RATES)

SPRING - SPRING OATS 96 LB/ACRE; OR ANNUAL RYEGRASS 15 LB/ACRE FALL - ANNUAL RYEGRASS 15 LB/ACRE; OR WINTER WHEAT 120 LB/ACRE; OR WINTER RYE 112 LB/ACRE

COMBINE THE FOLLOWING, IN ADDITION TO THE ABOVE RATES: BIRDSFOOT TREFOIL 10 LB/ACRE PLUS TALL FESCUE 35 LB/ACRE FORMULA 3 - LAWNS - TURF-TYPE PERENNIAL RYEGRASS 200 LB/ACRE

DURING OTHER PERIODS OF THE YEAR, APPLY 3.0 TON/ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS PRACTICABLE; OR PLACE SOD ON DISTURBED SURFACES. MULCHING: APPLY 3 TON/ACRE OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING ANCHOR MULCH, USING MULCHING TOOL, IMMEDIATELY: OR APPLY 218 GAL/ACRE (5 GAL/1000 SF) OF EMULSIFIED ASPHALT ON FLAT AREAS: ON 2:1 SLOPES OR GREATER. USE 350 GAL/ACRE (8 GAL/1000 SF) FOR PROPER ANCHORING. THE FOLLOWING METHODS OF ANCHORING MULCH MATÉRIALS ARÉ ACCEPTABLE ALTERNATES TO ASPHALT ANCHORING IF APPLIED UNDER THE PROPER

1. TRACKING: THE PROCESS OF CUTTING MULCH INTO THE SOIL VIA EQUIPMENT THAT RUNS ON TRACKS IS EMPLOYED PRIMARILY ON SLOPES 3:1 OR STEEPER. 2. MULCH NETTINGS: STAPLE LIGHTWEIGHT BIODEGRADABLE PAPER, PLASTIC OR COTTON NETTING OVER

THE MULCH ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS. 3. SYNTHETIC BINDERS: SYNTHETIC BINDERS SUCH AS ACRYLIC DLR (AGRI–TAC), DCA–70, PETROSET OR TERRATACK MAY BE USED AT RATES RECOMMENDED BY THE MANUFACTURER TO ANCHOR MULCH

4. WOOD CELLULOSE FIBER: THE FIBER BINDER SHALL BE APPLIED AT A NET DRY WEIGHT OF 750

LB/AC. THE WOOD CELLULOSE FIBER SHALL BE MIXED WITH WATER, AND THE MIXTURE SHALL CONTAIN A MAXIMUM OF 50 LBS OF WOOD CELLULOSE FIBER PER 100 GALLONS.

5. PEG & TWINE: DRIVE 8 TO 10 INCH WOODEN PEGS TO WITHIN 2 TO 3 INCHES OF THE SOIL SURFACE EVERY 4 FEET IN ALL DIRECTIONS. STAKES MAY BE DRIVEN BEFORE OR AFTER APPLYIN MULCH. SECURE MULCH TO SURFACE BY STRETCHING TWINE BETWEEN PEGS IN A CRISSCROSS WITHIN A SQUARE PATTERN. SECURE TWINE AROUND EACH PEG WITH TWO OR MORE TURNS MAINTENANCE: INSPECT ALL SEEDED AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS, AND RESEEDINGS TO INSURE SITE STABILIZATION.

PERMANENT STABILIZATION USING SOL

PERMANENT STABILIZATION CAN BE QUICKLY ESTABLISHED BY PLACING GRASS SOD OVER A DISTURBED AREA. PERMANENT STABILIZATION USING SOD IS APPROPRIATE FOR: 1. RESIDENTIAL OR COMMERCIAL LAWNS AND GOLF COURSES WHERE PROMPT USE AND AESTHETICS ARE IMPORTANT 2. STEEP SLOPES (UP TO 2H:1V IF NOT MOWED, 3H:1V IF MOWED), WATERWAYS, AND CHANNELS HAVING INTERMITTENT FLOWS 3. AREAS AROUND DROP INLETS

SOD CAN BE LAID DURING TIMES OF THE YEAR WHEN SEEDED GRASSES ARE LIKELY TO FAIL. THE SOD SHOULD BE WATERED FREQUENTLY DURING THE FIRST FEW WEEKS AFTER INSTALLATION. THE TYPE OF SOD USED SHOULD BE COMPOSED OF PLANTS ADAPTED TO THE SITE CONDITIONS (E.G. DRY OR WET, FULL SUN OR SHADE, GENTLE SLOPES OR STEEP, ETC.). CARE MUST BE TAKEN TO FNSURE THAT THE SOD IS FREE OF NOXIOUS WEEDS, DISEASES, AND INSECTS, IT SHOULD BI MACHINE CUT AT A UNIFORM SOIL THICKNESS OF 0.5 TO 1.0 INCH -- EXCLUDING TOP GROWTH OI THATCH -- AT THE TIME OF INSTALLATION. FOR BEST RESULTS, THE SOD SHOULD BE HARVESTED, DELIVERED. AND INSTALLED WITHIN 36 HOURS. AVOID PLANTING WHEN SUBJECT TO FROST HEAVE TOPSOIL SHOULD BE APPLIED AND PREPARED AS DESCRIBED ABOVE PRIOR TO SOD PLACEMENT O PROPERLY PREPARE THE SOIL BEFORE SOD IS PLACED COULD RESULT IN FAILURE O FAILURE 1 THE SOD ITSELF. SOILS WITH EXCESSIVE SAND CONTENT MIGHT NOT PROVIDE SUFFICIENT MOISTURE HOLDING CAPACITY. SODDING SHOULD NOT BE DONE WHEN THE UNDERLYING SOIL IS EXCESSIVEL WET. THE SOD TYPE SHOULD CONSIST OF PLANT MATERIALS SUITABLE TO THE SITE CONDITIONS AS LISTED IN TABLE 11.5.

SOD STRIPS SHOULD BE LAID IN A STAGGERED PATTERN, AS SHOWN IN FIGURE 11.5, WITH THE ENDS BUTTED TIGHTLY TOGETHER. SOD STRIPS CUT BY AN AUTOMATIC SOD CUTTER SHOULD HAVE 1 ENDS MATCHED CORRECTLY AS SHOWN. ONCE THE SOD IS PLACED, IT SHOULD BE ROLLED OF AMPED TO ACHIEVE FIRM CONTACT WITH THE UNDERLYING SOIL. AFTER ROLLING, THE SOD SHOULD BE PEGGED OR STAPLED TO HOLD IT IN PLACE IF LOCATED ON A SLOPE. BEFORE MOWING, THE SOD SHOULD BE CAREFULLY INSPECTED TO ENSURE NO PEGS OR STAPLES ARE PROTRUDING. AFTER THE FIRST GROWING SEASON, THE SOD SHOULD BE INSPECTED TO DETERMINE IF ADDITIONAL

FERTILIZATION OR LIMING IS NEEDED. PERMANENT FINE TURF AREAS REQUIRE YEARLY MAINTENANCE FERTILIZATION. WARM SEASON GRASSES SHOULD BE FERTILIZED IN LATE SPRING TO EARLY SUMMER, WHILE COOL-SEASON GRASSES SHOULD BE FERTILIZED IN LATE WINTER AND AGAIN IN EARLY FALL.



BMP 6.4.5 - RAINGARDEN/BIORETENTION WITH MRC <u>CONSTRUCTION SEQUENC</u>

- . INSTALL TEMPORARY SEDIMENT CONTROL BMPS AS SHOWN ON THE PLANS. 2. COMPLETE SITE GRADING. IF APPLICABLE, CONSTRUCT CURB CUTS OR OTHER INFLOW ENTRANCE BUT PROVIDE PROTECTION SO THAT DRAINAGE IS PROHIBITED FROM ENTERING CONSTRUCTION
- 3. STABILIZE GRADING WITHIN THE LIMIT OF DISTURBANCE EXCEPT WITHIN THE RAIN GARDEN AREA. RAIN GARDEN BED AREAS MAY BE USED AS TEMPORARY SEDIMENT TRAPS PROVIDED THAT THE PROPOSED FINISH ELEVATION OF THE BED IS 12 INCHES LOWER THAN THE BOTTOM ELEVATION OF THE SEDIMENT TRAP.
- DO NOT COMPACT IN-SITU SOILS.
- ACCEPTABLE IF NECESSARY.
- 7. PRESOAK THE PLANTING SOIL PRIOR TO PLANTING VEGETATION TO AID IN SETTLEMENT.
- 9. PLANT VEGETATION ACCORDING TO PLANTING PLAN.

- BEEN STABILIZED.
- TWELVE (6"-12") INCHES USING A LIGHT TRACTOR.
- PLANTING SOIL/VOLUME STORAGE BED SPECIFICATIONS
- OF THE MIX. THE FOLLOWING STANDARDS SHALL APPLY:
- A. MOISTURE CONTENT: 35% 55% B. PARTICLE SIZE: PASS 1-INCH STANDARD SCREEN
- C. pH: 5.5 8.0
- D. SOLUBLE SALT CONCENTRATION: 3.0 dS MAXIMUM E. MAN-MADE FOREIGN MATTER: LESS THAN 1% BY WEIGHT
- AND MUST HAVE A GRAIN SIZE OF 0.02 TO 0.04 INCHES.
- 3. PLANTING SOIL MEDIUM (PADEP BMP MANUAL & PHILADELPHIA SWM GUIDANCE MANUAL)
- PIPETTE METHOD IN COMPLIANCE WITH ASTM F-1632, ARE AS FOLLOWS:
- CLAY (LESS THAN 0.002MM): 10% MAXIMUM • SAND (0.05 TO 2.0 MM): 50%
- COMPOST: 20% 30% • TOPSOIL: 20% - 30%
- E COMPOSED OF SOIL PEDS GREATER THAN ONE INCH.
- E. THE pH OF THE PLANTING SOIL SHOULD HAVE A RANGE OF 5.5 TO 6.5.
- NOT ACCEPTABLE FOR USE REGARDLESS OF AMENDMENT. WATER HOLDING CAPACITY.
- NONWOVEN POLYPROPYLÈNE FIBERS AND MEET THE FOLLOWING PROPERTIES: A. GRAB TENSILE STRENGTH (ASTM-D4632): \geq 120 LBS B. MULLEN BURST STRENGTH (ASTM-D3786): ≥ 225 PSI
- C. FLOW RATE (ASTM-D4491): ≥ 95 GAL/MIN/FT2 D. UV RESISTANCE AFTER 500 HOURS (ASTM-D4355): ≥ 70%
- E. HEAT-SET OR HEAT-CALENDARED FABRICS ARE NOT PERMITTED
- PRACTICE
- SPECIMENS.
- PLANTING. SEED MIX MUST BE FREE OF WEED SEEDS REFERRED TO APPENDIX B OF THE PADEP BMP MANUAL FOR PLANT LISTS.
- OUTLET CONTROL MATERIAL SPECIFICATIONS
- SHALL MEET AASHTO M252, TYPE S OR AASHTO M294, TYPE S. 2. STORM DRAIN INLETS AND STRUCTURES (PADEP BMP MANUAL)
- 1001, PENNDOT SPECIFICATIONS, 1990 OR LATEST EDITION.
- IN SUB-GRADE, WHEN SITUATED IN THE RECHARGE BED.
- GRATES, DEPENDING ON THEIR PLACEMENT (H-20 IF VEHICULAR LOADING).
- ASTM A615, GRADES 60 AND 40.
- MANUFACTURER SPECIFICATIONS.
- INSPECTION AND MAINTENANCE ACCESS MATERIAL SPECIFICATIONS

- 1. STORM DRAIN INLETS AND STRUCTURES:
- SITUATED IN THE RECHARGE BED.
- GRATES, DEPENDING ON THEIR PLACEMENT (H-20 IF VEHICULAR LOADING).
- ASTM A615, GRADES 60 AND 40.
- MANUFACTURERS' SPECIFICATIONS. 2. PROPRIETARY PRODUCTS:

CONSIDERED BY THE DESIGNER.

PLAN PREPARATION **POST-CONSTRUCTION SWM NOTES** DATE: 17 APRIL 2017 DRAWN BY: WRD **CUMBERLAND VILLAGE - PHASE** DESIGNED BY: WRD FILE NO.: 0220 A PLANNED RESIDENTIAL COMMUNITY DWG NO .: PC2 NT01-PH2A-0220 CUMBERLAND TOWNSHIP ~ ADAMS COUNTY ~ PENNSYLVANIA CHECKED BY: RAS

DENSE ROOT MAT FOR STRENGTH

4. EXCAVATE RAIN GARDEN TO PROPOSED INVERT DEPTH AND SCARIFY THE EXISTING SOIL SURFACES. 5. INSTALL UNDERDRAIN AND REMOVABLE WATERTIGHT CAP WITH ORIFICE AS SHOWN ON PCSM PLAN. 6. BACKFILL RAIN GARDEN WITH AMENDED SOIL AS SHOWN ON PLANS AND SPECIFICATIONS. OVERFILLING IS RECOMMENDED TO ACCOUNT FOR SETTLEMENT. LIGHT HAND TAMPING IS 8. COMPLETE FINAL GRADING TO ACHIEVE PROPOSED DESIGN ELEVATIONS, LEAVING SPACE FOR UPPER LAYER OF COMPOST, MULCH OR TOPSOIL AS SPECIFIED ON PLANS. 10. MULCH AND INSTALL EROSION PROTECTION AT SURFACE FLOW ENTRANCES WHERE NECESSARY. BMP 6.4.5 - RAINGARDEN/BIORETENTION WITH MRC SPECIFICATIONS 1. THE RAIN GARDEN SHALL BE CONSTRUCTED TO THE LINES AND GRADES INDICATED ON THE PLANS. SUBGRADE SHALL NOT BE COMPACTED AND SHALL NOT BE SUBJECTED TO CONSTRUCTION 3. INITIAL EXCAVATION CAN TAKE PLACE DURING GENERAL SITE GRADING. HOWEVER, FINAL GRADING SHALL NOT OCCUR UNTIL UPSLOPE DRAINAGE AREAS CONTRIBUTING TO THE RAIN GARDEN HAVE 4. IF SEDIMENT OR OTHER DEBRIS ACCUMULATES IN THE DEPRESSED AREA BETWEEN THE ROUGH GRADING AND THE FINAL GRADING TIME, IT SHALL BE REMOVED WITH LIGHT EQUIPMENT AND THE JNDERLYING SOILS SHALL BE SCARIFIED TO A MINIMUM DEPTH OF SIX 1. COMPOST (PENNDOT PUBLICATION 408, SECTION 808.2(f)) – COMPOST SHALL BE WELL DECOMPOSED. WEED FREE ORGANIC MATTER DERIVED FROM AGRICULTURE. FOOD. STUMP GRINDINGS AND YARD OR WOOD/BARK ORGANIC MATTER. IT SHALL BE AEROBICALLY COMPOSTED. THE COMPOST SHALL POSSESS NO OBJECTIONABLE ODOR. THE COMPOST SHALL NOT RESEMBLE HE RAW MATERIAL FROM WHICH IT IS DERIVED. WOOD AND BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS ARE NOT ACCEPTABLE AS THE ORGANIC COMPONENT 2. SAND (PADEP BMP MANUAL) - SAND SHALL BE ASTM C-33 FINE AGGREGATE CONCRETE SAND A. PLANTING SOIL SHOULD MEET ALL THE SPECIFICATIONS LISTED BELOW AND SHOULD BE A FERTILE, NATURAL SOIL, FREE FROM LARGE STONES, ROOTS, STICKS, CLODS, PLANTS, PEAT SOD, POCKETS OF COARSE SAND, PAVEMENT AND BUILDING DEBRIS, GLASS, NOXIOUS WEEDS INCLUDING INVASIVE SPECIES, INFESTATIONS OF UNDESIRABLE ORGANISMS AND DISEASE CAUSING PATHOGENS, AND OTHER EXTRANEOUS MATERIALS HARMFUL TO PLANT GROWTH. B. THE TEXTURE OF PLANTING SOIL SHOULD CONFORM TO THE CLASSIFICATION WITHIN THE UNITED STATES DEPARTMENT OF AGRICULTURE TRIANGLE FOR SANDY LOAM OR LOAMY SAND PLANTING SOIL SHOULD BE A MIXTURE OF SAND, SILT, AND CLAY PARTICLES AS REQUIRED TO MEET THE CLASSIFICATION. RANGES OF PARTICLE SIZE DISTRIBUTION, AS DETERMINED BY PLANTING SOIL SHOULD BE SCREENED AND FREE OF STONES LARGER THAN A HALF-INCH (12.7 MILLIMETERS) IN ANY DIMENSION. NO MORE THAN 10% OF THE SOIL VOLUME SHOULD D. CLODS, OR NATURAL CLUMPS OF SOILS, GREATER THAN THREE INCHES IN ANY DIMENSION SHOULD BE ABSENT FROM THE PLANTING SOIL. SMALL CLODS RANGING FROM ONE TO THREE INCHES AND PEDS. NATURAL SOIL CLUMPS UNDER ONE INCH IN ANY DIMENSION. MAY BE PRESENT BUT SHOULD NOT MAKE UP MORE THAN 10% OF THE SOIL BY VOLUME. 5. SOLUBLE SALTS SHOULD BE LESS THAN 2.0 MMHOS/CM (DS/M), TYPICALLY AS MEASURED BY 1:2 SOIL-WATER RATIO BASIC SOIL SALINITY TESTING. SODIC SOILS (EXCHANGEABLE SODIUM PERCENTAGE GREATER THAN 15 AND/OR SODIUM ADSORPTION RATIO GREATER THAN 13) ARE ORGANIC CONTENT OF 5% TO 10%. ADDITIONAL ORGANIC MATTER CAN BE ADDED TO INCREASE 5. NONWOVEN GEOTEXTILE (PADEP BMP MANUAL) - GEOTEXTILE FABRIC SHALL CONSIST OF NEEDLED PLANT MATERIAL SPECIFICATIONS (PADEP BMP MANUAL & PHILADELPHIA SWM GUIDANCE MANUAL) 1. TREES AND SHRUBS MUST BE FRESHLY DUG AND GROWN IN ACCORDANCE WITH GOOD NURSERY 2. PERENNIALS, GRASS-LIKE PLANTS, AND GROUNDCOVER PLANTS MUST BE HEALTHY, WELL-ROOTED 3. A NATIVE GRASS/WILDFLOWER SEED MIX CAN BE USED AS AN ALTERNATIVE TO GROUNDCOVER 4. USE OF INVASIVE PLANTS IS NOT PERMITTED. ALL PLANTS AND TREES MUST BE APPROPRIATE AND COMPATIBLE WITH SOIL, HYDROLOGIC, LIGHT, AND OTHER SITE CONDITIONS. THE DESIGNER IS 1. PIPE (PADEP BMP MANUAL) - UNDERDRAIN PIPE SHALL BE CONTINUOUSLY PERFORATED, SMOOTH INTERIOR, WITH A MINIMUM INSIDE DIAMETER OF 4-INCHES. HIGH-DENSITY POLYETHYLENE (HDPE) A. CONCRETE CONSTRUCTION: CONCRETE CONSTRUCTION SHALL BE IN ACCORDANCE WITH SECTION B. PRECAST CONCRETE INLETS AND MANHOLES: PRECAST CONCRETE INLETS MAY BE SUBSTITUTED FOR CAST-IN-PLACE STRUCTURES AND SHALL BE CONSTRUCTED AS SPECIFIED FOR CAST-IN-PLACE. PRECAST STRUCTURES MAY BE USED IN ONLY THOSE AREAS WHERE THERE IS NO CONFLICT WITH EXISTING UNDERGROUND STRUCTURES THAT MAY NECESSITATE REVISION OF INVERTS. TYPE M STANDARD PENNDOT INLET BOXES WILL BE MODIFIED TO PROVIDE MINIMUM 12 INCH SUMP STORAGE AND BOTTOM LEACHING BASINS, OPEN TO GRAVEL SUMPS C. ALL PVC CATCH BASINS/CLEANOUTS/INLINE DRAINS SHALL HAVE H-10 OR H-20 RATED D. STEEL REINFORCING BARS OVER THE TOP OF THE OUTLET STRUCTURE SHALL CONFORM TO E. PERMANENT TURF REINFORCEMENT MATTING SHALL BE INSTALLED ACCORDING TO 1. CLEANOUTS (PHILADELPHIA SWM GUIDANCE MANUAL) - CLEANOUTS MUST BE MADE OF RIGID MATERIAL WITH A SMOOTH INTERIOR HAVING A MINIMUM INNER DIAMETER OF FOUR INCHES. BMP 6.6.4 – WATER QUALITY FILTERS & HYDRODYNAMIC DEVICES CONSTRUCTION SEQUENCE 1. STABILIZE ALL CONTRIBUTING AREAS BEFORE INSTALLING AND CONNECTING PIPES TO THESE INLETS. 2. FOLLOW MANUFACTURER'S GUIDELINES FOR INSTALLATION. DO NOT USE WATER QUALITY INSERTS DURING CONSTRUCTION UNLESS PRODUCT IS DESIGNED PRIMARILY FOR SEDIMENT REMOVAL. (SOME PRODUCTS HAVE ADSORPTION COMPONENTS THAT SHOULD BE INSTALLED POST-CONSTRUCTION) <u>BMP 6.6.4 – WATER QUALITY FILTERS &</u> <u>HYDRODYNAMIC DEVICES SPECIFICATIONS</u> A. CONCRETE CONSTRUCTION: CONCRETE CONSTRUCTION SHALL BE IN ACCORDANCE WITH PENNDOT PUB. 408/2003 INCLUDING CURRENT SUPPLEMENTS OR LATEST EDITION. B. PRECAST CONCRETE INLETS AND MANHOLES: PRECAST CONCRETE INLETS MAY BE SUBSTITUTED FOR CAST-IN-PLACE STRUCTURES AND SHALL BE CONSTRUCTED AS SPECIFIED FOR CAST-IN-PLACE. STANDARD INLET BOXES WILL BE MODIFIED TO PROVIDE MINIMUM 12" SUMP STORAGE AND BOTTOM LEACHING BASINS, OPEN TO GRAVEL SUMPS IN SUB-GRADE, WHEN C. ALL PVC CATCH BASINS/CLEANOUTS/INLINE DRAINS SHALL HAVE H-10 OR H-20 RATED D. STEEL REINFORCING BARS OVER THE TOP OF THE OUTLET STRUCTURE SHALL CONFORM TO E. PERMANENT TURF REINFORCEMENT MATTING SHALL BE INSTALLED ACCORDING TO WATER QUALITY INLETS ARE STORMWATER INLETS THAT HAVE BEEN FITTED WITH A PROPRIETARY PRODUCT (OR THE PROPRIETARY PRODUCT REPLACES THE CATCH BASIN ITSELF). THEY ARE DESIGNED TO REDUCE LARGE SEDIMENT, SUSPENDED SOLIDS, OIL AND GREASE, AND OTHER POLLUTANTS, ESPECIALLY POLLUTANTS CONVEYED WITH SEDIMENT TRANSPORT. THEY CAN PROVIDE "HOTSPOT" CONTROL AND REDUCE SEDIMENT LOADS TO INFILTRATION DEVICES. THEY AR COMMONLY USED AS PRETREATMENT FOR OTHER BMPs. THE MANUFACTURER USUALLY PROVIDES HE MECHANICAL DESIGN, CONSTRUCTION, AND INSTALLATION INSTRUCTIONS. SELECTION OF THE MOST APPROPRIATE DEVICE AND DEVELOPMENT OF A MAINTENANCE PLAN SHOULD BE CAREFULLY

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REVISIONS		XRI	EFS			
	NO.	DATE	DESCRIPTION	ES00-PH2A-0220		
	1	07/18/17	PER ACCD ADMINISTRATIVE COMMENTS	EX00-0220		
	2	09/18/17	PER ACCD TECHNICAL COMMENTS	GR00-0220		
	3	05/28/19	PER TOWNSHIP ENGINEER COMMENTS	PC00-PH2A-0220		
	4	06/27/19	PER ADDITIONAL TOWNSHIP ENGINEER COMMENTS	T000-0220		
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PLAN PRE	EPARATION	PCSM PRE-DEVELOPMENT DRAINAGE ARE
DRAWN BY: WRD	DATE: 17 APRIL 2017	CUMBERLAND VILLAGE - PHASE
DESIGNED BY: WRD	FILE NO.: 0220	A PLANNED RESIDENTIAL COMMUNITY
CHECKED BY: RAS	DWG NO.: PC3 DA01-PH2A-0220	CUMBERLAND TOWNSHIP ~ ADAMS COUNTY ~ PENNSYLVANIA

	REVISIONS			EFS
NO.	DATE	DESCRIPTION	ES00-PH2A-0220	ST00-0220
1	07/18/17	PER ACCD ADMINISTRATIVE COMMENTS	EX00-0220	T000-0220
2	09/18/17	PER ACCD TECHNICAL COMMENTS	GR00-0220	
3	05/28/19	PER TOWNSHIP ENGINEER COMMENTS	PC00-PH2A-0220	
4	06/27/19	PER ADDITIONAL TOWNSHIP ENGINEER COMMENTS	PL00-0220	
5	08/14/19	PER ADDITIONAL TOWNSHIP ENGINEER COMMENTS	SD00-PH2A-0220	

PLAN PREPARATION		PCSM POST-DEVELOPMENT DRAINAGE AR
DRAWN BY: WRD	DATE: 17 APRIL 2017	CUMBERLAND VILLAGE - PHASE
DESIGNED BY: WRD	FILE NO.: 0220	A PLANNED RESIDENTIAL COMMUNITY
CHECKED BY: RAS	DWG NO.: PC4 DA01-PH2A-0220	CUMBERLAND TOWNSHIP ~ ADAMS COUNTY ~ PENNSYLVANIA

	NO. DATE 1 07/18/17 PER ACCE	REVISIONS DESCRIPTION	X ベヒトン ES00-PH2A-0220 EX00-0220	Know what's below. Call before you dig.	
	7 11/25/19 PER ACCE 6 10/14/19 PER FINAL	D COMMENTS L TOWNSHIP ENGINEER COMMENTS	SC	CALE: 1" = 100'	
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PER TOWNSHIP ENGINEER COMMENTS

5 08/14/19 PER ADDITIONAL TOWNSHIP ENGINEER COMMENTS

19 PER ADDITIONAL TOWNSHIP ENGINEER COMMENTS

PLAN PREPARATION		PCSM PRE-DEVELOPMENT SENSITIVE RESOU	
DRAWN BY: WRD	DATE: 17 APRIL 2017	CUMBERIAND VILLAGE - PHA	
DESIGNED BY: WRD	FILE NO.: 0220	A PLANNED RESIDENTIAL COMMUNITY	
CHECKED BY: RAS	DWG NO.: PC5 SA01-PH2A-0220	CUMBERLAND TOWNSHIP ~ ADAMS COUNTY ~ PENNSYLVANIA	

		REVISIONS	XRI	FFS
NO.	DATE	DESCRIPTION	ES00-PH2A-0220	SD00-PH2A-0220
1	07/18/17	PER ACCD ADMINISTRATIVE COMMENTS	EX00-0220	ST00-0220
2	09/18/17	PER ACCD TECHNICAL COMMENTS	GR00-0220	T000-0220
3	05/28/19	PER TOWNSHIP ENGINEER COMMENTS	PC00-PH2A-0220	HA00-0220-REV
4	06/27/19	PER ADDITIONAL TOWNSHIP ENGINEER COMMENTS	PL00-0220	LS00-PH2A-0220
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PLAN PREPARATION		PCSM POST-DEVELOPMENT SENSITIVE RESOU
DRAWN BY: WRD	DATE: 17 APRIL 2017	CUMBERLAND VILLAGE - PHASE
DESIGNED BY: WRD	FILE NO.: 0220	A PLANNED RESIDENTIAL COMMUNITY
CHECKED BY: RAS	DWG NO.: PC6 SA01-PH2A-0220	CUMBERLAND TOWNSHIP ~ ADAMS COUNTY ~ PENNSYLVANIA

		REVISIONS	XREFS
NO.	DATE	DESCRIPTION	
1	07/18/17	PER ACCD ADMINISTRATIVE COMMENTS	
2	09/18/17	PER ACCD TECHNICAL COMMENTS	
3	05/28/19	PER TOWNSHIP ENGINEER COMMENTS	
4	06/27/19	PER ADDITIONAL TOWNSHIP ENGINEER COMMENTS	
5	08/14/19	PER ADDITIONAL TOWNSHIP ENGINEER COMMENTS	

PLAN PRE	PARATION	POST-CONSTRUCTION SWM DETAIL
DRAWN BY: WRD	DATE: 17 APRIL 2017	CUMBERLAND VILLAGE - PHAS
DESIGNED BY: WRD	FILE NO.: 0220	A PLANNED RESIDENTIAL COMMUNITY
CHECKED BY: RAS	DWG NO.: PC7-10 DT02-PH2A-0220	CUMBERLAND TOWNSHIP ~ ADAMS COUNTY ~ PENNSYLVANIA

Phone: (717) 334-5400

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4 06/27/19 PER ADDITIONAL TOWNSHIP ENGINEER COMMENTS

5 08/14/19 PER ADDITIONAL TOWNSHIP ENGINEER COMMENTS

PENNSYLVANIA ACT 287 (1974) AS AMENDED BY PENNSYLVANIA ACT 121 (2008) REQUIRES NO LESS THAN THREE (3) WORKING DAYS AND NO MORE THAN (10) WORKING DAYS NOTICE TO UTILITIES BEFORE YOU EXCAVATE, DRILL, BLAST OR DEMOLISH.

PLAN PRE	PARATION	POST-CONSTRUCTION SWM DETAILS		
DRAWN BY: WRD	DATE: 17 APRIL 2017	CUMBERLAND VILLAGE - PHASE 1		
DESIGNED BY: WRD	FILE NO.: 0220	A PLANNED RESIDENTIAL COMMUNITY		
CHECKED BY: RAS	DWG NO.: PC7-10 DT03-PH2A-0220	CUMBERLAND TOWNSHIP ~ ADAMS COUNTY ~ PENNSYLVANIA		

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8.00	3	3	NAG W3000	
27.00	10	10	NAG P300	
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23.00	10	10	NAG S75	
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10.00	4	4	NAG W3000	
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15.00	4	4	NAG P300	
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SCALE AS NOTED SHEET NO. PC-8

	<u>EX. SURF. EL. = 569.0</u> $DEPTH = 0.00'$	EX. SURF. EL. = 573.3 $DEPTH = 0.00'$	<u>EX. SURF. EL. = 582.2</u> $DEPTH = 0.00'$	EX. SURF. EL. = 584.5 $DEPTH = 0.00'$	$\underline{EX. SURF. EL. = 584.6} \qquad \underline{DEPTH = 0.00'} \qquad \underline{EX. SURF. E}$
	BRN TOPSOIL, MOIST, ROOTS <i>DEPTH = 0.66</i> '	MEDIUM BRN TOPSOIL, MOIST ROOTS DEPTH = 0.50'	MED. BRN TOPSOIL, ROOTS DEPTH = 0.60'	$\frac{\text{MED BRN TOPSOL, MOIST,}}{\text{ROOTS } DEPTH = 0.83'}$	MED. BRN TOPSOIL, MOIST, ROOTS
	RED BRN TO SILTY CLAY, BLOCKY ROOTS SOME	GRAY BROWN SILTY CLAY, BLOCKY MOIST SOME	DK BRN SILT LOAM, BLOCKY BOOTS BLACK	BRN GRAY CLAY LOAM, ROOTS, MOIST, BLOCKY	$\frac{DEPTH = 0.67}{\text{STONY SILT LOAM, BLACK}}$
STORMWATER POLITITION PREVENTION PLAN	BLACK COATS, MOIST DEPTH = 1.16'	BLACK SOATS, ROOTS DEPTH = 0.83'	$\frac{\text{COATS}}{\text{DEPTH} = 1.00'}$	$\frac{DEPTH = 1.50}{MOTTLES DEPTH = 1.50'}$	COATS, ANGULAR, MOIST
	MOTTLES DEPTH = 1.25'	$\underbrace{MOTTLES}_{DEPTH} = 0.92'$	RED BRN SILT LOAM, BLOCKY,	GRAY YELLOW CLAY SILT, ANGULAR, MOIST, SOME ROOTS	$\frac{\text{INFIL. TEST EL. 582.6}}{\text{OEPTH} = 2.33'} \qquad \frac{\text{INFIL. TEST}}{\text{INFIL. TEST}}$
DAYS SINCE LAST PRECIPITATION:		GRAY BROWN GRAVELY CLAY, SOME BLACK COATS, MOIST	DEPTH = 1.50'	SOME WEATHERED SHALE <u>DEPTH = 2.66'</u>	$\frac{DEPTH = 2.33'}{DEPTH = 2.33'}$ END OF TES
	BRN RED CLAY SILT, VERY STONY LAYERED SHALE	$\frac{DEPTH = 2.17'}{2.17'}$	INFIL, TEST EL, 579.9 $MOTTLES DEPTH = 1.50'$	INFIL. TEST EL. 580.5 BROWN/PURPLE/GRAY CLAY S BLOCKY, SOME STONE, DRY,	ILT, PURPLE/GRAY CLAY SILT, BLOCKY, DECOMPOSING SHALE,
BEST MANAGEMENT PRACTICE W/DESIGN EFFECTIVE	THE TEST LE. GOOLD VERT STORT, BATERED STALE	RED GRAY GRAVELY CLAY, WEATHERED SHALE TO HARD	RED BROWN CLAY SILT, WEATHERED SHALE	END OF TEST EL. = 580.2 HARD ROCK	DRY, VERY TIGHT
BIO-RETENTION YES NO YES NO	END OF TEST EL. = 565.9 DEPTH = $3.08'$	END OF TEST EL. = 568.6 DEPTH = 4.67	END OF TEST EL. = 578.0 $DEPTH = 4.17'$		END OF TEST EL. = 580.8 $DEPTH = 3.83'$
STRUCTURES CLEAR OF SEDIMENT YES NO YES NO STRUCTURES STRUCTURALLY SOUND YES NO YES NO	INFILIRATION TEST AT 2.20 < 48"/h TP-1	TP-2	INFILIRATION TEST AT 2.3 < 48 /hr TP-3	INFILIRATION TEST AT $4.00^{\circ} = 10.00^{\circ}/hr$ TP-4	TP-5
SURFACE VEGETATION HEALTHYYESNOYESNOEROSION PRESENTYESNOYESNO	NOT TO SCALE	NOT TO SCALE	NOT TO SCALE	NOT TO SCALE	NOT TO SCALE
SOIL CONTAMINATION YES NO YES NO SLOPE STABILITY YES NO YES NO STANDING WATER LONGER THAN 72 HOURS YES NO YES NO	$FY SUPE EI = 5653 \qquad DFPTH = 0.00'$	$FY SUPE EI = 560.0 \qquad DEPTH = 0.00'$	FY SUPE EI = 556 R DFPTH = 0.00'	$FY SUPE EI = 555.3 \qquad DFPTH = 0.00'$	EVISURE EL -5464 DFPTH = 0.00' EVISURE
VEGETATED SWALE	MED BRN TOPSOIL, MOIST	MED BRN TOPSOIL, MOIST,	MED BRN TOPSOIL, MOIST,	MED BRN TOPSOIL, MOIST, BOOTS	$\frac{1}{10000000000000000000000000000000000$
VEGETATION MAINTAINEDYESNOYESNOSLOPE STABILITYYESNOYESNO	STONY, ANGULAR SILT	$\frac{\text{ROOTS} DEPTH = 0.67'}{\text{MED BRN SILT LOAM,}}$	$\frac{ROUIS}{DEPTH = 0.67'}$ BRN SILTY CLAY, MOIST,	$\frac{10013}{\text{MED BRN CLAY LOAM,}}$	LIGHT BRN SILT LOAM,
SURFACE VEGETATION HEALTHY YES NO YES NO EROSION PRESENT YES NO YES NO	LOAM, SOM ROOTS	ANGULAR, SOME ROOTS DEPTH = 1.67	SOME ROOTS DEPTH = 1.33'	<u>INFIL. TEST EL. 552.0</u> <u>INFIL. TEST EL. 552.0</u> <u>DEPTH = 3.33</u>	$\frac{DEDUCKT, ROUTS}{DEPTH = 1.67'}$
DEBRIS/SEDIMENT PRESENT YES NO YES NO	$\frac{DEPTH = 1.17'}{MOTTLES}$		$\frac{\text{MOTTLES}}{\text{DEPTH} = 1.33'}$	BRN ORANGE BLOCKY SILT	STONE $\underline{DEPTH = 3.17'}$
RIPRAP APRON YES NO NOXIOUS VEGETATION PRESENT YES NO	$\frac{DEPTH = 1.17'}{DEPTH = 1.17'}$	MORE STONE, BLACK COATS	BLOCKY	LUAM	$\frac{\text{MOTTLES}}{\text{LIGHT BENJ CLAY SUT BLOCKY}}$
STRUCTURALLY STABLEYESNOYESNOSETTLEMENT EVIDENTYESNOYESNO	VERY STONY, 90%	END OF TEST EL. = 557.7 DEPTH = $2.33'$	$\underline{\text{END OF TEST EL.} = 554.0} \qquad \underline{\text{DEPTH} = 2.83}$	END OF TEST EL. = 549.1 $DEPTH = 4.33$	INFIL. TEST EL. 541.3 MOIST DEPTH = 5.67'
AMENDED SOILS VES NO VES NO	Those interest of the second sec	90% COARSE FRAGMENTS	ROCK	MOTTLES	BRN CLAY SILT, STONY, INFIL. TES WATER @ 80'
SLOPE STABILITY YES NO YES NO SURFACE VEGETATION HEALTHY YES NO YES NO	END OF TEST EL. = 560.8 DEPTH = 4.50°	$\sum_{i=1}^{n} \sum_{j=1}^{n} \frac{1}{2} \frac{1}$	NO INFILTRATION TEST CONDUCTED	INFILIDATION TEST AT 3.30' < 48"/br	END OF TEST EL. = 539.6 $DEPTH = 6.67'$ END OF T
EROSION PRESENT YES NO YES NO WATER STANDING LONGER THAN 48 HOURS YES NO YES NO	TP-7	$\frac{TP-8}{P}$	<u>TP-9</u>	<u>TP-10</u>	$\frac{TP-11}{TP-11}$
DEBRIS/SEDIMENT PRESENTYESNOYESNOCOMPACTION EVIDENTYESNOYESNO	NOT TO SCALE	NOT TO SCALE	NOT TO SCALE	NOT TO SCALE	NOT TO SCALE
LANDSCAPE RESTORATION	EX. SURF. FL = 547.4 DEPTH = $0.00'$	EX. SURE. EL. = 571.8 DEPTH = $0.00'$	EX SURE FL = 567.2 DEPTH = $0.00'$	EX. SURE EL = 587.6 DEPTH = $0.00'$	FX. SURF. FI. = 581.1 $DEPTH = 0.00'$ FX. SURF. F
SLOPE STABILITY YES NO YES NO SURFACE VEGETATION HEALTHY YES NO YES NO	MEDIUM BROWN TOPSOIL,	MEDIUM BROWN TOPSOIL,	DK BRN TOPSOIL, ROOTS	MED BRN TOPSOIL, ROOTS	MED BRN TOPSOIL, ROOTS DEPTH = 0.50
EROSION PRESENT YES NO YES NO NOXIOUS VEGETATION PRESENT YES NO YES NO	$\frac{DEPTH = 0.50'}{BRN_SILT_LOAM_BLOCKY}$	$\frac{\text{MOOTO } DEPTH = 0.33}{\text{MED BRN SILTY CLAY,}}$	DARK BRN SILT LOAM,	VERY STONY SILT LOAM	MED BRN TO YELLOW CLAY LOAM, ROOTS, BLOCKY
	ROOTS $DEPTH = 1.00'$	$\frac{DEPTH = 0.75'}{DEPTH = 0.75'}$	DEPTH = 0.75'		$\frac{DEPTH = 1.17'}{MED BRN CLAY LOAM, BLOCKY,}$
	VERY STONY SILT LOAM	$\frac{\text{MOTTLES}}{\text{DEPTH} = 0.75'}$	WATER ENTERING HOLE		STONY, ROOTS <i>DEPTH = 2.33'</i> MOTTLES
		GRAY BRN CLAY SILT, BLOCK STONYM MOIST	$\underline{\qquad DEPIH = 0.75}$		$\frac{DEPTH = 2.33'}{PRN CLAY SULT VERY STONY}$ INFIL. TEST
	<u>END OF TEST EL. = 544.2</u> $DEPTH = 6.33'$	<u>END OF TEST EL. = 567.8</u> $DEPTH = 4.00'$	BRN CLAY SILT, BLOCKY, WET,		BRN CLAT SILT, VERT STUNT
	BEDROCK	BEDROCK	SOME STONE	INFIL. TEST EL. 585.6	
		NO INFILITRATION TEST CONDUCTED	END OF TEST EL. = 563.2 $DEPTH = 4.00'$	END OF TEST EL. = 585.6 $DEPTH = 2.00'$	END OF TEST EL. = 575.3 $DEPTH = 5.83'$ END OF TEST NO INFILITRATION TEST CONDUCTED
	<u>TP-13</u>	<u>TP-14</u>	<u>TP-15</u>	<u>TP-16</u>	<u>TP-17</u>
	NOT TO SCALE	NOT TO SCALE	NOT TO SCALE	NOT TO SCALE	NOT TO SCALE
	<u>EX. SURF. EL. = 580.0</u> <u>$DEPTH = 0.00'$</u>	EX. SURF. EL. = 575.1 DEPTH = $0.00'$	EX. SURF. EL. = 574.9 DEPTH = $0.00'$	EX. SURF. EL. = 586.3 DEPTH = $0.00'$	<u>EX. SURF. EL. = 593.2</u> <u>DEPTH = 0.00'</u> <u>EX. SURF</u>
	RED BRN TOPSOIL, ROOTS	MED BRN TOPSOIL, ROOTS 	DARK BRN TOPSOIL, ROOTS DEPTH = 0.50'	INFIL. TEST EL. 586.0 DARK BRN TOPSOIL, MOIST, ROOTS $DEPTH = 0.67'$	DARK BRN TOPSOIL, ROOTS MOIST DEPTH = 0.67
	RED BRN CLAY SILT, BLOCKY, SOME STONE	MED BRN SILT LOAM, BLOCKY, ROOTS	STONY SILT LOAM, BLOCKY	DARK BRN SILT LOAM,	MED BRN CLAY SILT, MOIST, BLOCKY
	$\frac{DEDTH}{DEPTH} = 0.83'$	$\frac{DEPTH = 1.17'}{MOTTLES}$	DEPTH = 1.17'	BLOCKY, MOIST, ROOTS	$\frac{DEPTH = 1.17'}{MOTTLES}$
	$\frac{DEPTH = 0.83'}{DEPTH = 0.83'}$	$\frac{DEPIH = 1.17}{\text{GRAY CLAY SILT, STONY}}$	WATER DEPTH = 5.50'		VERY STONY CLAY SILT
	VERT STUNT CLAT SILT	<i>DEPTH = 1.50'</i> MED BRN CLAY SILT, BLOCK	Y VERY STONY SILTY CLAY, TIGHT, SOME LARGE LAYERED		
CUMBERLAND VILLAGE - PHASE II INFILTRATION RATE SUMMARY CHART	END OF TEST EL. = 577.8 $DEPTH = 2.17'$	DEPTH = 2.33'	STONE		END OF TEST EL. = 589.9 $DEPTH = 2.33'$ END OF
Test Number (inches/time increment) Limiting El. Time Increment 1 2 3 4 5 6 7 Final Notes		TIGHT CLAY SILT, BLOCKY			BEDROCK
567.8 566.8 10.0 8.000 8.000 8.000 8.000 48.000 Use 10"/hr perc. Rate; Bio-retention #7 572.5 N/A N/A N/A N/A N/A N/A	NO INFILTRATION TEST CONDUCTED	$\underline{END OF TEST EL.} = 569.9 [\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ $	$\underline{END OF TEST EL.} = 569.2 \text{ M} \underline{DEPTH} = 5.67$ NO INFILTRATION TEST CONDUCTED	$\underline{END OF TEST EL.} = 584.5 \boxed{(100)} \underline{DEP IH} = 1.05$ $INFILTRATION TEST AT 0.3' = 1.25''/hr$	NO INFILTRATION TEST CONDUCTED
580.7 579.9 10.0 8.000 8.000 8.000 4.000 9.000 <th9< th=""><th><u>TP-19</u></th><th><u>TP-20</u></th><th><u>TP-21</u></th><th><u>TP-22</u></th><th><u>TP-23</u></th></th9<>	<u>TP-19</u>	<u>TP-20</u>	<u>TP-21</u>	<u>TP-22</u>	<u>TP-23</u>
582.3 582.6 10.0 8.000 8.000 8.000 8.000 8.000 0 48.000	NOT TO SCALE	NOT TO SCALE	NOT TO SCALE	NOT TO SCALE	NOT TO SCALE
558.6 558.9 10.0 1.000 0.750 0.750 4.500 Bio-retention #3 555.5 N/A N/A N/A V/A N/A Water in hole; Bio-retention #2	<u>EX. SURF. EL. = 595.6</u> $DEPTH = 0.00'$	<u>EX. SURF. EL. = 594.4</u> <u>DEPTH = 0.00'</u>	<u>EX. SURF. EL. = 596.8</u> $DEPTH = 0.00'$	<u>EX. SURF. EL. = 596.7</u> $DEPTH = 0.00'$	<u>EX. SURF. EL. = 589.2</u> <u>DEPTH = 0.00'</u> <u>EX. SURF. E</u>
551.0 552.0 10.0 8.000 8.000 8.000 48.000 Use 10"/hr perc. Rate; Bio-retention #2 543.2 541.3 10.0 3.500 2.500 2.000 2.000 12.000 Use 10"/hr perc. Rate; Bio-retention #1	DARK BRN TOPSOIL, ROOTS <i>DEPTH = 0.50</i> '	DARK BRN TOPSOIL, ROOTS <i>DEPTH = 0.50</i> '	MED BRN TOPSOIL, ROOTS <i>DEPTH = 0.50</i> '	INFIL. TEST EL. 596.5 ROOTS DEPTH = 0.50'	MED BRN TOPSOIL, ROOTS, LOOSE <i>DEPTH = 0.50'</i>
544.1 541.8 10.0 3.500 3.250 3.250 19.500 Ose 10 /m perc. Rate; Bio-retention #1 544.2 N/A N/A N/A N/A N/A Rock; Bio-retention #1 571.1 N/A N/A N/A N/A N/A N/A	DARK BRN SILT LOAM, BLOCKY MOIST SOME	DARK CLAY LOAM, BLOCKY	BRN TO YELLOW CLAY SILT, BLOCK	MED BROWN CLAY LOAM, BLOCKY ROOTS MOIST	LIGHT BROWN SILT LOAM,
566.5 N/A N/A N/A N/A N/A N/A N/A N/A N/A Water in hole; Bio-retention #8 N/A 585.6 10.0 1.000 1.000 0.750 4.500 4.500	$\frac{\text{ROOTS}}{\text{DEPTH} = 1.50'}$	$\frac{DEPTH = 1.17'}{1000000000000000000000000000000000000$	$\frac{DEPTH = 0.75'}{DEPTH = 0.75'}$	$\frac{DEPTH = 1.00'}{DEPTH = 1.00'}$	$\frac{DEPTH = 1.67'}{DEPTH}$
578.8 N/A N/A N/A N/A Water in hole; Bio-retention #9 572.9 569.0 10.0 8.000 8.000 8.000 48.000 Use 10"/hr perc. Rate; Bio-retention #9	$\frac{\text{MOTILES}}{\text{STONY SILT LOAM, TIGHT AT}}$	$\frac{\text{MOTILES}}{\text{GRAY VERY STONY CLAY SILT}}$	$\frac{MOTILES}{DEPTH} = 0.75'$ VERY TIGHT CLAY SILT. STONY	$\frac{\text{MOTILES}}{\text{GRAY CLAY SILT. STONY}}$	INFIL. TEST EL. 587.0 LIGHT BROWN SILT LOAM, BLOCKY, TIGHTER
579.2 N/A N/A N/A 573.9 N/A N/A N/A 573.7 N/A N/A N/A	INFIL. TEST EL. 593.6	DEPTH = 2.00'	END OF TEST EL. = 595.0 DEPTH = $1.67'$		$\frac{DEPTH = 3.17'}{1000000000000000000000000000000000000$
N/A 586.0 30.0 0.750 0.625 0.625 0.625 1.250 592.0 N/A N/A V/A N/A N/A N/A N/A		INFIL. TEST EL. 590.8 TIGHT	BEDROCK		$\frac{\text{MOTTLES } DEPTH = 3.17'}{\text{LIGHT BROWN SILT LOAM.}}$
592.2 N/A N/A N/A N/A Water in hole 594.1 593.6 10.0 3.500 2.500 2.500 2.250 13.500 Use 10"/hr perc. Rate	END OF TEST EL -502.1	END OF TEST EL -580.6 DEPTH = 4.8.3'		END OF TEST EL -5040	BLOCKY END OF TEST FL = 585.1 $DFPTH = 4.08'$ END OF TEST
595.2 590.8 10.0 8.000	$\frac{13.5^{\circ}}{hr}$	INFILTRATION TEST AT 3.6' < $48''/hr$	NO INFILTRATION TEST CONDUCTED	$\frac{1}{1000} = \frac{1}{1000} = 1$	$\frac{1}{1000} = \frac{1}{1000} = 1$
586.0 587.0 30.0 4.750 4.750 4.750 4.750 9.500 579.4 N/A N/A V V N/A	TP-25 NOT TO SCALE	TP-26	TP-27 NOT TO SCALE	TP-28 NOT TO SCALE	TP-29 NOT TO SCALE
578.2 N/A N/A N/A 578.1 N/A N/A N/A 578.1.2 N/A N/A N/A					
N/A N/A N/A N/A N/A 561.7 N/A N/A N/A	EX. SURF. EL. = 581.4 $DEPTH = 0.00'$	EX. SURF. EL. = 581.6 DEPTH = $0.00'$	EX. SURF. EL. = 583.4 $DEPTH = 0.00'$	<u>EX. SURF. EL. = 564.7</u> $DEPTH = 0.00'$	
	MOIST DEPTH = 0.33 RRN CRAY CLAY SUT	DARK BRN TOPSOIL, ROOTS, MOIST <u>DEPTH = 0.50</u>	RED BRN TOPSOIL, ROOTS, MOIST <u>DEPTH = 1.33'</u>	MED BROWN TOPSOIL, ROOT DUFF DEPTH = 0.25'	5
	ROOTS $DEPTH = 2.00'$	VERY STONY CLAY LOAM, BLOCKY	YELLOW BROWN CLAY LOAM, BLOCKY, TIGHT	LIGHT BRN SILT LOAM, LOOSE, BLOCKY, ROOTS	
	MED BRN CLAY SILT, SOME STONE, BLOCKY			LIGHT BROWN SILT LOAM,	
	$\frac{DEPTH = 3.17'}{MOTTLES}$			MOTTLES	
	$\frac{DEPIH = 3.17}{\text{MED BRN CLAY SILT, FEW}}$			$\frac{DEPTH = 3.00'}{BROWN YELLOW SILTY CLAY,}$	
	STUNES, HEHTER	$\frac{\text{END OF TEST EL.} = 578.1}{\text{MOTTLES}} \frac{\text{DEPTH} = 3.50}{\text{MOTTLES}}$	$\frac{\text{END OF TEST EL.} = 581.2}{\text{BEDROCK}} \frac{\text{DEPTH} = 2.17}{\text{BEDROCK}}$	$\frac{\text{SOME STUNES}}{\text{DEPTH} = 5.17'}$	
	END OF TEST EL. = 575.6 DEPTH = $5.83'$			END OF TEST EL. = 559.5	
	NO INFILTRATION TEST CONDUCTED	NO INFILTRATION TEST CONDUCTED	NO INFILTRATION TEST CONDUCTED	NO INFILTRATION TEST CONDUCTED	
	TP-31 NOT TO SCALE	TP-32 NOT TO SCALE	TP-33 NOT TO SCALE	TP-35 NOT TO SCALE	

	<u>EX. SURF. EL. = 569.0</u> $DEPTH = 0.00'$	$\underline{EX. SURF. EL. = 573.3} \qquad \underline{DEPTH = 0.00'}$	EX. SURF. EL. = 582.2 DEPTH = $0.00'$	EX. SURF. EL. = 584.5 $DEPTH = 0.00'$	$\underline{EX. SURF. EL. = 584.6} \qquad \underline{DEPTH = 0.00'} \qquad \underline{EX. SURF. E}$
	BRN TOPSOIL, MOIST, ROOTS <i>DEPTH = 0.66</i>	MOIST ROOTS DEPTH = 0.50'	MED. BRN TOPSOIL, ROOTS 	$\frac{\text{ROOTS}}{\text{RON}} \frac{DEPTH}{DERTH} = 0.83'$	MED. BRN TOPSOIL, MOIST, ROOTS
INSPECTION REPORT FOR	RED BRN TO SILTY CLAY, BLOCKY, ROOTS, SOME	GRAY BROWN SILTY CLAY, BLOCKY, MOIST, SOME	DK BRN SILT LOAM, BLOCKY, ROOTS, BLACK	ROOTS, MOIST, BLOCKY DEPTH = 1.50'	STONY SILT LOAM, BLACK
STORMWATER POLLUTION PREVENTION PLAN	BLACK COATS, MOIST <i>DEPTH = 1.16'</i>	BLACK SOATS, ROOTS <i>DEPTH = 0.83'</i>	$\frac{\text{COATS}}{\text{DEPTH} = 1.00'}$	MOTTLES DEPTH = $1.50'$	INFIL. TEST EL. 582.6
DATE: INSPECTOR: SITE CONDITIONS:	$\frac{\text{MOTILES}}{\text{DEPTH} = 1.25'}$	$\frac{\text{MOTTLES}}{\text{DEPTH} = 0.92'}$	RED BRN SILT LOAM, BLOCKY, ROOTS, MOIST	ANGULAR, MOIST, SOME ROOTS	S, $DEPTH = 2.33'$ INFIL. TEST MOTTLES
DAYS SINCE LAST PRECIPITATION:AMOUNT OF LAST PRECIPITATION:		SOME BLACK COATS, MOIST	$\frac{DEPTH = 1.50'}{MOTTLES DEPTH = 1.50'}$	<u>INFIL. TEST EL. 580.5</u> <u>INFIL. TEST EL. 580.5</u> BROWN/PURPLE/GRAY CLAY S	SILT, $\frac{DEPTH = 2.33'}{PURPLE/GRAY CLAY SILT,} = END OF TES$
BEST MANAGEMENT PRACTICE CONFORMANCE W/DESIGN EFFECTIVE	INFIL. TEST EL. 566.8 VERY STONY, LAYERED SHALE	RED GRAY GRAVELY CLAY,	INFIL. TEST EL. 579.9 RED BROWN CLAY SILT, WEATHERED SHALE	BLOCKY, SOME STONE, DRY, VERY TIGHT END OF TEST EL. = 580.2 DEPTH = 4.25'	BLOCKY, DECOMPOSING SHALE, DRY, VERY TIGHT
BIO-RETENTION	<u>END OF TEST EL. = 565.9</u> $DEPTH = 3.08'$	END OF TEST EL. = 568.6 SHALE DEPTH = 4.67	END OF TEST EL. = 578.0 DEPTH = $4.17'$	HARD ROCK	<u>END OF TEST EL. = 580.8</u> $DEPTH = 3.83'$
STRUCTURES CLEAR OF DEBRIS YES NO YES NO STRUCTURES CLEAR OF SEDIMENT YES NO YES NO	INFILTRATION TEST AT 2.20' < 48"/H	hr NO INFILTRATION TEST CONDUCTED	INFILTRATION TEST AT 2.3' < 48"/hr	INFILTRATION TEST AT $4.00' = 10.00''/hr$	INFILTRATION TEST AT 2.00' < 48"/hr
STRUCTURES STRUCTURALLY SOUND YES NO YES NO SURFACE VEGETATION HEALTHY YES NO YES NO FROSION PRESENT YES NO YES NO	NOT TO SCALE	NOT TO SCALE	NOT TO SCALE	NOT TO SCALE	NOT TO SCALE
SOIL CONTAMINATIONYESNOYESNOSLOPE STABILITYYESNOYESNO				· · · · · · · · · · · · · · · · · · ·	
STANDING WATER LONGER THAN 72 HOURS YES NO YES NO	EX. SURF. EL. = 565.3 $DEPTH = 0.00'$ MED BRN TOPSOIL, MOIST	$\underbrace{EX. SURF. EL. = 560.9}_{MED BRN TOPSOIL, MOIST,}$	EX. SURF. EL. = 556.8 $DEPTH = 0.00'$ MED BRN TOPSOIL, MOIST,	EX. SURF. EL. = 555.3 MED BRN TOPSOIL, MOIST,	$\underbrace{EX. SURF. EL. = 546.4}_{\text{LIGHT BRN TOPSOIL, ROOTS}} \underbrace{EX. SURF}_{\text{EX. SURF}}$
VEGETATED SWALE YES NO YES NO VEGETATION MAINTAINED YES NO YES NO SLOPE STABILITY YES NO YES NO	$\frac{\text{ROOTS}}{\text{STONY}} = 0.67'$	$\frac{\text{ROOTS}}{\text{MED} \text{ RPN} \text{ SUT I OAM}}$	$\frac{\text{ROOTS} DEPTH = 0.67'}{\text{RON SUTY CLAY MOIST}}$	$\frac{\text{ROOTS}}{\text{MED} \text{ RED}} \frac{\text{DEPTH} = 1.00'}{\text{DEPTH}}$	$\frac{DEPTH = 0.67'}{\text{LIGHT BRN SILT LOAM,}}$
SURFACE VEGETATION HEALTHYYESNOYESNOEROSION PRESENTYESNOYESNO	LOAM, SOM ROOTS	ANGULAR, SOME ROOTS DEPTH = 1.67	SOME ROOTS DEPTH = 1.33'	INFIL. TEST EL. 552.0	BLOCKY, ROOTS $\frac{DEPTH = 1.67'}{2}$
WATER STANDING LONGER THAN 48 HOURS YES NO YES NO DEBRIS/SEDIMENT PRESENT YES NO YES NO	$\frac{DEPTH = 1.17'}{MOTTLES}$		$\frac{\text{MOTTLES}}{\text{DEPTH} = 1.33'}$	BRN ORANGE BLOCKY SILT	$\frac{\text{LIGHT BROWN SILT LOAM, SOME}}{\text{STONE}}$
RIPRAP APRON YES NO YES NO	$\frac{DEPTH = 1.17'}{DEPTH = 1.17'}$	MORE STONE, BLACK COATS	BLOCKY	LOAM	$\frac{\text{MOTTLES}}{\text{LIGHT BRN CLAY SUT BLOCKY}}$
STRUCTURALLY STABLE YES NO YES NO SETTLEMENT EVIDENT YES NO YES NO	VERY STONY, 90%	END OF TEST EL. = 557.7 $DEPTH = 2.33'$	$\underline{\text{END OF TEST EL.} = 554.0} \qquad \underline{\text{DEPTH} = 2.83}$	END OF TEST EL. = 549.1 $DEPTH = 4.33$	INFIL. TEST EL. 541.3 MOIST DEPTH = 5.67'
AMENDED SOILS YES NO YES NO		90% COARSE FRAGMENTS	ROCK		BRN CLAY SILT, STONY, <u>INFIL. TES</u> WATER © 80'
SLOPE STABILITY YES NO YES NO SURFACE VEGETATION HEALTHY YES NO YES NO	$\underline{PDEPTH} = 4.50^{\circ}$ NO INFILTRATION TEST CONDUCTED	INFILTRATION TEST AT 2.00' = 4.5"/hr	NO INFILTRATION TEST CONDUCTED	INFILTRATION TEST AT 3.30' < 48"/hr	END OF TEST EL. = 539.6 INFILTRATION TEST AT $5.1' = 12''/hr$
EROSION PRESENT YES NO YES NO WATER STANDING LONGER THAN 48 HOURS YES NO YES NO DEEDING SEDIMENT DESENT YES NO YES NO	<u>TP-7</u>	<u>TP-8</u>	<u>TP-9</u>	<u>TP-10</u>	<u>TP-11</u>
DEBRIS/SEDIMENT PRESENT TES NO TES NO COMPACTION EVIDENT YES NO YES NO	NOT TO SCALE	NOT TO SCALE	NOT TO SCALE	NOT TO SCALE	NOT TO SCALE
LANDSCAPE RESTORATION YES NO YES NO VEGETATION MAINTAINED YES NO YES NO	<u>EX. SURF. EL. = 547.4</u> $DEPTH = 0.00'$	<u>EX. SURF. EL. = 571.8</u> $DEPTH = 0.00'$	EX. SURF. EL. = 567.2 DEPTH = $0.00'$	EX. SURF. EL. = 587.6 DEPTH = 0.00'	EX. SURF. EL. = 581.1 $DEPTH = 0.00'$ EX. SURF. E
SLOPE STABILITY YES NO YES NO SURFACE VEGETATION HEALTHY YES NO YES NO FROSION PRESENT YES NO YES NO	MEDIUM BROWN TOPSOIL, MOIST, ROOTS DEPTH = 0.50'	MEDIUM BROWN TOPSOIL, ROOTS <i>DEPTH = 0.33'</i>	DK BRN TOPSOIL, ROOTS <u> DEPTH = 0.50'</u>	MED BRN TOPSOIL, ROOTS 	$\frac{DEPTH = 0.50}{MED BRN TO YELLOW CLAY}$
NOXIOUS VEGETATION PRESENT YES NO YES NO	BRN SILT LOAM, BLOCKY, ROOTS	MED BRN SILTY CLAY, BLOCKY	DARK BRN SILT LOAM, ROOTS, WET	VERY STONY SILT LOAM	LOAM, ROOTS, BLOCKY DEPTH = 1.17'
	$\underline{\qquad DEPTH = 1.00'}$	$\frac{DEPTH = 0.75'}{MOTTLES}$	$\frac{DEPTH = 0.75'}{WATER ENTERING HOLE}$		MED BRN CLAY LOAM, BLOCKY, STONY, ROOTS
	VERY STONY SILT LOAM	GRAY BRN CLAY SILT, BLOCK	$\frac{DEPTH = 0.75'}{DEPTH = 0.75'}$		$\frac{DLI III = 2.33}{\text{MOTTLES}}$
	END OF TEST FL = 544 2 $DEPTH = 6.33'$	END OF TEST FL = 567 8 $DEPTH = 4.00'$			BRN CLAY SILT, VERY STONY INFIL. TEST
	BEDROCK	BEDROCK	BRN CLAY SILT, BLOCKY, WET, SOME STONE		
			END OF TEST EL. = 563.2 DEPTH = $4.00'$	INFIL. TEST EL. 585.6 END OF TEST EL. = 585.6 DEPTH = 2.00'	END OF TEST EL. = 575.3 DEPTH = $5.83'$ END OF TEST
	NO INFILTRATION TEST CONDUCTED	NO INFILTRATION TEST CONDUCTED	NO INFILTRATION TEST CONDUCTED	INFILTRATION TEST AT 2.0' = 4.50"/hr TP-16	NO INFILTRATION TEST CONDUCTED
	NOT TO SCALE	NOT TO SCALE	NOT TO SCALE	NOT TO SCALE	NOT TO SCALE
	EX. SURE. FL = 580.0 DEPTH = $0.00'$	EX. SURE. EL. = 575.1 DEPTH = $0.00'$	FX. SURF. FL. = 574.9 DEPTH = $0.00'$	FX. SURF. FL. = 586.3 <i>DEPTH</i> = $0.00'$	FX. SURF. FL. = 593.2 $DEPTH = 0.00'$ FX. SURF
	RED BRN TOPSOIL, ROOTS	MED BRN TOPSOIL, ROOTS DEPTH = 0.50'	DARK BRN TOPSOIL, ROOTS	INFIL. TEST EL. 586.0	DARK BRN TOPSOIL, ROOTS MOIST DEPTH = 0.67
	RED BRN CLAY SILT, BLOCKY SOME STONE	MED BRN SILT LOAM, BLOCKY, ROOTS	STONY SILT LOAM, BLOCKY	DARK BRN SILT LOAM,	MED BRN CLAY SILT, MOIST, BLOCKY
	$\frac{DEPTH = 0.83'}{MOTTLES}$	$\frac{DEPTH = 1.17'}{MOTTLES}$	DEPTH = 1.17'	BLOCKY, MOIST, ROOTS	$\frac{DEPTH = 1.17'}{MOTTLES}$
	$\frac{DEPTH = 0.83'}{VERY STONY CLAY SUIT}$	GRAY CLAY SILT, STONY	WATER $DEPTH = 5.50'$		VERY STONY CLAY SILT
		<i>DEPTH = 1.50'</i> MED BRN CLAY SILT, BLOCK	VERY STONY SILTY CLAY, TIGHT, SOME LARGE LAYERED STONE		
CUMBERLAND VILLAGE - PHASE II INFILTRATION RATE SUMMARY CHART	$\underline{\text{END OF TEST EL.} = 577.8}$ $\underline{\text{DEPTH} = 2.17'}$ $BEDROCK$	$\frac{DEPTH = 2.33'}{TICHT CLAX SUT PLOCKX}$			END OF TEST EL. = 589.9 $DEPTH = 2.33'$ END OF
Test Pit Ex. Grade Limiting El. Test El. Time Increment 1 2 3 4 5 6 7 Final Notes		END OF TEST EL. = 569.9 $DEPTH = 5.17'$	END OF TEST EL. = 569.2 DEPTH = $5.67'$	END OF TEST EL. = 584.5 DEPTH = $1.83'$	BEDROCK
1 569.0 567.8 566.8 10.0 8.000 8.000 8.000 8.000 8.000 9.00	NO INFILTRATION TEST CONDUCTED			INFILTRATION TEST AT $0.3' = 1.25''/hr$	NO INFILTRATION TEST CONDUCTED
4 584.5 583.0 N/A 10.0 2.500 2.250 1.500 3.500 4.000 5.000 30.000 Perc. rate unstable; Use 10"/hr perc. Rate 5 584.6 582.3 582.6 10.0 8.000 8.000 8.000 4.000 5.000 30.000 Use 10"/hr perc. Rate	IP-19 NOT TO SCALE	IP-20 NOT TO SCALE	NOT TO SCALE	NOT TO SCALE	IP-23 NOT TO SCALE
6 575.6 573.1 573.6 10.0 7.000 4.000 4.250 4.000 24.000 Use 10"/hr perc. Rate 7 565.3 564.1 N/A N/A N/A Image: Second					
9 556.8 555.5 N/A N/A N/A Image: N/A N/A Water in hole; Bio-retention #2 10 555.3 551.0 552.0 10.0 8.000 8.000 8.000 48.000 Use 10"/hr perc. Rate; Bio-retention #2	$\underline{EX. SURF. EL. = 595.6}$ $\underline{DEPTH = 0.00'}$ DARK BRN TOPSOIL,	$\underbrace{EX. SURF. EL. = 594.4}_{DARK BRN TOPSOIL,} \underbrace{DEPTH = 0.00'}_{DARK BRN TOPSOIL,}$	EX. SURF. EL. = 596.8 $DEPTH = 0.00'$ MED BRN TOPSOIL,	EX. SURF. EL. = 596.7 $DEPTH = 0.00'$ INFIL. TEST EL. 596.5 DARK BRN TOPSOIL,	$\underbrace{EX. SURF. EL. = 589.2}_{MED BRN TOPSOIL, ROOTS,} \underbrace{EX. SURF. E}_{EX. SURF. E}$
11 546.4 543.2 541.3 10.0 3.500 2.500 2.000 2.250 2.000 12.000 Use 10"/hr perc. Rate; Bio-retention #1 12 547.1 544.1 541.8 10.0 3.500 3.250 3.250 19.500 Use 10"/hr perc. Rate; Bio-retention #1 13 547.4 544.2 N/A N/A N/A N/A N/A N/A	$\frac{\text{ROOTS}}{\text{DAPK} \text{ BPN SILT LOAM}}$	$\frac{\text{ROOTS}}{\text{DARK}} = 0.50'$	$\frac{\text{ROOTS}}{\text{BRN TO YELLOW CLAY SUT}}$	$\frac{\text{ROOTS}}{\text{MED} \text{ BROWN CLAX LOAM}}$	$\frac{\text{LOOSE } DEPTH = 0.50'}{\text{LIGHT BROWN SUT LOAM}}$
14 571.8 571.1 N/A N/A N/A N/A 15 567.2 566.5 N/A N/A N/A N/A N/A Water in hole; Bio-retention #8	BLOCKY, MOIST, SOME ROOTS DEPTH = 1.50'	DFPTH = 1.17'	BLOCK DEPTH = 0.75'	BLOCKY, ROOTS, MOIST DFPTH = 1.00'	BLOCKY, LOOSE DFPTH = 1.67'
16 587.6 N/A 585.6 10.0 1.000 1.000 0.750 4.500 17 581.1 578.8 N/A N/A N/A N/A N/A N/A N/A 18 574.1 572.9 569.0 10.0 8.000 8.000 8.000 48.000 Use 10"/hr perc. Bate: Bio-retention #9	$\frac{DEFTH = 1.50^{\circ}}{DEPTH = 1.50^{\circ}}$	$\frac{DEPTH = 1.17'}{DEPTH = 1.17'}$	$\frac{DEFTH}{DEPTH} = 0.75'$	$\frac{DEFTH}{DEPTH} = 1.00'$	INFIL. TEST EL. 587.0
10 11<	STONY SILT LOAM, TIGHT AT BOTTOM	GRAY VERY STONY CLAY SILT	VERY TIGHT CLAY SILT, STONY	GRAY CLAY SILT, STONY	BLOCKY. TIGHTER DEPTH = 3.17'
21 574.9 573.7 N/A N/A N/A N/A N/A Water in hole; Bio-retention #11 22 586.3 N/A 586.0 30.0 0.750 0.625 0.625 0.625 1.250 23 593.2 592.0 N/A N/A N/A N/A N/A		INFIL. TEST EL. 590.8	BEDROCK		$\frac{\text{MOTTLES}}{\text{DEPTH}} = 3.17'$
24 592.9 592.2 N/A N/A N/A N/A N/A N/A Water in hole 25 595.6 594.1 593.6 10.0 3.500 2.500 2.500 2.250 13.500 Use 10"/hr perc. Rate					BLOCKY
26 594.4 593.2 590.8 10.0 8.000 8.000 8.000 48.000 Use 10"/hr perc. Rate; Bio-retention #12 27 596.8 596.1 N/A N/A N/A N/A N/A N/A 28 596.7 595.7 596.5 30.0 1.000 1.250 1.125 2.250	$\frac{\text{END OF TEST EL.} = 592.1 \text{KM}}{\text{INFILTRATION TEST AT 2.00'} = 13.5''/\text{hr}}$	$\frac{\text{END OF TEST EL.} = 589.6 \text{(N)}}{\text{INFILTRATION TEST AT 3.6'} < 48''/hr}$	NO INFILTRATION TEST CONDUCTED	$\frac{\text{END OF TEST EL.} = 594.9 \text{KM}}{\text{INFILTRATION TEST AT 0.20'} = 2.5''/\text{hr}}$	$\frac{\text{END OF TEST EL.} = 585.1}{\text{INFILTRATION TEST AT 2.2'} = 9.5"/hr}$
29 589.2 586.0 587.0 30.0 4.750 4.750 4.750 9.500 30 581.9 579.4 N/A N/A V/A N/A N/A	TP-25	TP-26	TP-27	TP-28	TP-29
31 581.4 578.2 N/A N/A N/A N/A Water in hole; Bio-retention #6 32 581.6 578.1 N/A N/A N/A N/A N/A Water in hole; Bio-retention #6 33 583.4 581.2 N/A N/A N/A N/A N/A					
33 N/A N/A N/A N/A 34 N/A N/A N/A N/A 35 564.7 561.7 N/A N/A N/A	EX. SURF. EL. = 581.4 $DEPTH = 0.00'$	EX. SURF. EL. = 581.6 $DEPTH = 0.00'$	EX. SURF. EL. = 583.4 $DEPTH = 0.00'$	EX. SURF. EL. = 564.7 $DEPTH = 0.00'$	c
	$\frac{\text{MOIST} DEPTH = 0.33}{\text{BRN GRAY CLAY SILT,}}$	$\frac{\text{DARK BRIN IOPSOIL, ROUTS,}}{\text{MOIST}}$	$\frac{\text{MOIST}}{\text{DEPTH} = 1.33'}$	DUFF DEPTH = 0.25'	
	$\frac{\text{ROOTS}}{\text{DEPTH} = 2.00'}$	VERY STONY CLAY LOAM, BLOCKY	YELLOW BROWN CLAY LOAM, BLOCKY, TIGHT	LIGHT DRIV SILT LOAM, LOOSE, BLOCKY, ROOTS DEPTH = 2.17'	
	MED BRN CLAY SILT, SOME STONE, BLOCKY DEPTH = .3.17'			LIGHT BROWN SILT LOAM, TIGHTER, SOME ROOTS	
	MOTTLES $DEPTH = 3.17'$			$\frac{DEPIH = 3.00^{\circ}}{MOTTLES} DEPTH = 3.00^{\circ}$	
	MED BRN CLAY SILT, FEW STONES, TIGHTER	END OF TEST EL. = 578.1	<u>END OF TEST EL. = 58</u> 1.2 $DEPTH = 2.17$	BROWN YELLOW SILTY CLAY, SOME STONES	
		MOTTLES	BEDROCK	$\frac{DEPIH = 5.17}{BEDROCK}$	
	END OF TEST EL. = 575.6 DEPTH = $5.83'$			END OF TEST EL. = 559.5	
	TP-31	TP-32	TP-33	TP-35	
	NOT TO SCALE	NOT TO SCALE	NOT TO SCALE	NOT TO SCALE	

Sharrah Design Group, Inc. 20 Chambersburg Street Gettysburg, PA 17325 Phone: (717) 334-5400 Fax: (717) 334-0922 © COPYRIGHT 2016 Land Surveying & Design

8 12/23/19 PER TOWNSHIP ENGINEER COMMENTS 7 11/25/19 PER ACCD COMMENTS

6 10/14/19 PER FINAL TOWNSHIP ENGINEER COMMENTS

		REVISIONS	XREFS
NO.	DATE	DESCRIPTION	
1	07/18/17	PER ACCD ADMINISTRATIVE COMMENTS	
2	09/18/17	PER ACCD TECHNICAL COMMENTS	
3	05/28/19	PER TOWNSHIP ENGINEER COMMENTS	
4	06/27/19	PER ADDITIONAL TOWNSHIP ENGINEER COMMENTS	
5	08/14/19	PER ADDITIONAL TOWNSHIP ENGINEER COMMENTS	

PLAN PR	EPARATION	POST-CONSTRUCTION SWM DETAIL
DRAWN BY: WRD	DATE: 17 APRIL 2017	CUMBERLAND VILLAGE - PHASE
DESIGNED BY: WRD	FILE NO.: 0220	A PLANNED RESIDENTIAL COMMUNITY
CHECKED BY: RAS	DWG NO.: PC7-10 DT04-PH2A-0220	CUMBERLAND TOWNSHIP ~ ADAMS COUNTY ~ PENNSYLVANIA

			PLANTING SCHEDULE		
SYMBOL	QUANTITY	COMMON NAME	BOTANICAL NAME	SIZE	COMMENTS
AM	48	ARMSTRONG MAPLE	ACER RUBRUM 'ARMSTROMG'	2" CAL.	B&B
RM	20	RED MAPLE	ACER RUBRUM 'OCTOBER GLORY'	2" CAL.	B&B
SM	15	SUGAR MAPLE	ACER SACCHARUM 'GREEN MOUNTAIN'	2" CAL.	B&B
HB	6	HORNBEAM	CARPINUS CAROLINIANA	2" CAL.	B&B
RB	10	REDBUD	CERCIS CANADENSIS	2" CAL.	B&B
ΥW	11	YELLOWWOOD	CLADRASTIS KENTUCKEA 'PERKINS PINK'	2" CAL.	B&B
HL	13	HONEYLOCUST	GLEDITSIA TRIACANTHOS 'SHADEMASTER'	2" CAL.	B&B
SG	16	SWEETGUM	LIQUIDAMBAR STYRACIFLUA 'ROTUNDILOBA'	2" CAL.	B&B
CR	18	CRABAPPLE	MALUS 'PRAIREFIRE'	2" CAL.	B&B
LP	16	LONDON PLANE TREE	PLANTANUS X ACERIFOLIA 'BLOODGOOD'	2" CAL.	B&B
СН	20	CHERRY	PRUNUS SARGENTII	2" CAL.	B&B
PO	6	PIN OAK	QUERCUS PALUSTRIS	2" CAL.	B&B
LT	7	LILAC TREE	SYRINGA RETICULATA 'IVORY SILK'	2" CAL.	B&B
EL	24	ELM	ULMUS PARVIFOLIA 'ALLEE'	2" CAL.	B&B
ZE	19	ZELKOVA	ZELKOVA SERRATA 'GREEN VASE'	2" CAL.	B&B
NS	58	NORWAY SPRUCE	PICEA ABIES	5' – 6'	B&B
CS	42	COLORADO SPRUCE	PICEA PUNGENS GLAUCA	5' – 6'	B&B
WP	23	WHITE PINE	PINUS STROBUS	5' – 6'	B&B

cover plants require only one inch (1") of mulch. Thoroughly soak planted area the same day of planting. 3) Maintenance and Replacement

Landscape Contractor shall be required to guarantee all plant materials for a period of one year after installation is complete and approved. At the end of one year, all plant material which is dead or dying shall be replaced at the Developer's expense with plant material of identical type, size and condition as originally specified.

PLAN PI	REPARATION	LANDSCAPE PLAN			
DRAWN BY: WRD	DATE: 17 APRIL 2017	CUMBERLAND VILLAGE - PHASE			
DESIGNED BY: WRD	FILE NO.: 0220	A PLANNED RESIDENTIAL COMMUNITY			
CHECKED BY: RAS	DWG NO.: LS01-PH2A-0220	CUMBERLAND TOWNSHIP ~ ADAMS COUNTY ~ PENNSYLVANIA			

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B B
NAME AND A DECIMANT
#9 4" PERF. PVC - 30" RCP
9.75) 4.69) BERM 310
101 51
<u>SCAPE NOTES</u>
_
conform to "American Standard for sified by the American Association of
be subject to inspection by the
ize, and trueness to species. Any ny and vigorous or has indication of
pest infestation, and/or physical epted. Rejected plants shall be
e specified plants shall be permitted.
or specified plant sizes are tion will be given to related varieties
ailable size. Approval shall be granted
S
and specifications shall conform to n Guidelines for Baltimore-Washinaton
and specifications shall conform to n Guidelines for Baltimore-Washington
and specifications shall conform to n Guidelines for Baltimore-Washington consist of 100 lbs. of dehydrated cow f peat moss or 2 cu. yds. of peat
and specifications shall conform to n Guidelines for Baltimore-Washington consist of 100 lbs. of dehydrated cow f peat moss or 2 cu. yds. of peat of topsoil. This specified backfill soil both planting beds and individual plants.
and specifications shall conform to n Guidelines for Baltimore-Washington consist of 100 lbs. of dehydrated cow f peat moss or 2 cu. yds. of peat of topsoil. This specified backfill soil both planting beds and individual plants. clanting beds and individual planting ose to a depth of four to six (4-6)
and specifications shall conform to n Guidelines for Baltimore-Washington consist of 100 lbs. of dehydrated cow f peat moss or 2 cu. yds. of peat of topsoil. This specified backfill soil both planting beds and individual plants. clanting beds and individual planting ose to a depth of four to six (4-6) and individual plants with three inches

ΤΙΛ	SCALE 1"=50'	
IIA	SHEET NO. PC-10	

	REVISIONS		XRI	EFS	
NO.	DATE	DESCRIPTION			
1	07/18/17	PER ACCD ADMINISTRATIVE COMMENTS			(
2	09/18/17	PER ACCD TECHNICAL COMMENTS			
3	05/28/19	PER TOWNSHIP ENGINEER COMMENTS			
4	06/27/19	PER ADDITIONAL TOWNSHIP ENGINEER COMMENTS			PE 121
5	08/14/19	PER ADDITIONAL TOWNSHIP ENGINEER COMMENTS			NO

	SIZE	COMMENTS
GLORY	2" CAL.	B&B
N MOUNTAIN'	2" CAL.	B&B
	2" CAL.	B&B
	2" CAL.	B&B
'PERKINS PINK'	2" CAL.	B&B
SHADEMASTER'	2" CAL.	B&B
A 'ROTUNDILOBA'	2" CAL.	B&B
	2" CAL.	B&B
A 'BLOODGOOD'	2" CAL.	B&B
	2" CAL.	B&B
	2" CAL.	B&B
RY SILK'	2" CAL.	B&B
E'	2" CAL.	B&B
N VASE'	2" CAL.	B&B
	5' – 6'	B&B
	5' - 6'	B&B
	5' - 6'	B&B

 SCALE 1"=50'
SHEET NO. PC-11

<u>SWM BASIN PLANTING NOTES</u>

- 1. Planting of the SWM basin must occur after the addition of the amended soils. 2. Plant the trees & shrubs as shown on the plan. Water throughly and place a mulch
- ring around all trees & shrubs. Install 2" of aged hardwood mulch over the planting areas. Plant the plugs and quart materials through the mulch layer. Water throughly and topdress with additional hardwood mulch.
- 4. Monitor SWM basin to insure that plants are becoming established and thriving.

BASIN 7 PLANTING SCHEDULE – HERBACEOUS PLANTS SYMBOL QUANTITY COMMON NAME BOTANICAL NAME SIZE COMMENTS	SWM BASIN MAINTENANCE SCHEDULE	BASIN 8 PLANTING SCHED
600 SWAMP MILKWEED ASCLEPIAS INCARNATA 2" PLUG 1.5' OC 500 NEW ENGLAND ASTER ASTER NOVAE-ANGLIAE 2" PLUG 1.5' OC	1. While vegetation in SWM basin is being established, pruning and weeding may be required.	////////////////////////////////////
Image: 150NORTHERN SEA OATSCHASMANTHIUM LATIFOLIUM2" PLUG2' OC350TURTLEHEADCHELONE GLABRA2" PLUG2' OC	2. Perennials and grasses must be cut back to within 6-8 of the ground at the end of each growing season. Weeding must occur regularly to control invasive plants.	800 TURTLEHEAD OOOO 80 JOE PYE WEED E
⊙⊙ ⊙30JOE PYE WEEDEUPATORIUM MACULATUMQUART3' OC200 20003000SWITCHGRASSPANICUM VIRGATUMQUART3' OC	5. Mulch should be replenished as needed and re-spread when erosion is evident. Once every 2 to 3 years the entire rain garden should be mulched again.	AUDICALAUDICALSWITCHGRASSAUDICAL2000BLACK-EYED SUSAN
Image: Solution of the second secon	 4. SWM basins should be inspected at least two times per year for sediment buildup, erosion, vegetation conditions, etc. 5. During periods of extended drought basing may require watering. 	ØØØ 75 IRONWEED VE
BASIN 7 PLANTING SCHEDULE – TREES & SHRUBS	0 20 40 60	BASIN 8 PLANTING SCHE
SD 25 SILKY DOGWOOD CORNUS AMOMUM 2' - 3' #2 CONT. WD 15 WINTERPEREY U EX MEDICULATA 3' - 4' #3 CONT.	$\begin{array}{rcl} \text{GRAPHIC SCALE} \\ 1 &=& 20' \end{array}$	BR 12 RIVER BIRCH SD 60 SILKY DOGWOOD WD 50 WINTERDERBY
WB TS WINTERBERRT TLEX VERTICILLATA S = 4 #3 CONT. SW 8 SWEETBAY MAGNOLIA MAGNOLIA VIRGINIANA 4' - 5' #7 CONT.		SW 15 SWEETBAY MAGNOLIA
		24
		EGREI
	$\frac{1}{580}$	
5 - 5		ST / NUL
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	(SD) (SD) (SD) (SD) (SD) (SD) (SD) (SD)	
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HARDWOOD MULCH		BR SD SD
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75 -		
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PCSM BASIN #7		PCS

7 11/25/19 PER ACCD COMMENTS 6 10/14/19 PER FINAL TOWNSHIP ENGINEER COMMENTS

		REVISIONS	XREFS
NO.	DATE	DESCRIPTION	
1	07/18/17	PER ACCD ADMINISTRATIVE COMMENTS	
2	09/18/17	PER ACCD TECHNICAL COMMENTS	
3	05/28/19	PER TOWNSHIP ENGINEER COMMENTS	
4	06/27/19	PER ADDITIONAL TOWNSHIP ENGINEER COMMENTS	
5	08/14/19	PER ADDITIONAL TOWNSHIP ENGINEER COMMENTS	

Know what's below. Call before you dig. PENNSYLVANIA ACT 287 (1974) AS AMENDED BY PENNSYLVANIA ACT 121 (2008) REQUIRES NO LESS THAN THREE (3) WORKING DAYS AND NO MORE THAN (10) WORKING DAYS NOTICE TO UTILITIES BEFORE YOU EXCAVATE, DRILL, BLAST OR DEMOLISH.

PLAN PRE	EPARATION	POST-CONSTRUCTION SWM BASIN PLANT
RAWN BY: WRD	DATE: 17 APRIL 2017	CUMBERLAND VILLAGE - PHASE
DESIGNED BY: WRD	FILE NO.: 0220	A PLANNED RESIDENTIAL COMMUNITY
CHECKED BY: RAS	DWG NO.: LS02-PH2A-0220	CUMBERLAND TOWNSHIP ~ ADAMS COUNTY ~ PENNSYLVANIA

SWM BASIN PLANTING NOTES

- 1. Planting of the SWM basin must occur after the addition of the amended soils. 2. Plant the trees & shrubs as shown on the plan. Water throughly and place a mulch
- ring around all trees & shrubs. Install 2" of aged hardwood mulch over the planting areas. Plant the plugs and quart materials through the mulch layer. Water throughly and topdress with additional
- hardwood mulch.
- 4. Monitor SWM basin to insure that plants are becoming established and thriving.

SYMBOL	QUANTITY	COMMON NAME	BOTANICAL NAME	SIZE	COMMENTS
	300	SWAMP MILKWEED	ASCLEPIAS INCARNATA	2"PLUG	1.5' OC
	350	NEW ENGLAND ASTER	ASTER NOVAE-ANGLIAE	2"PLUG	1.5' OC
	75	TURTLEHEAD	CHELONE GLABRA	2"PLUG	2' OC
$\odot \odot \odot$	25	JOE PYE WEED	EUPATORIUM MACULATUM	QUART	3' OC
**	100	SWITCHGRASS	PANICUM VIRGATUM	QUART	3' OC
* * * * * * * * * * * * *	250	BLACK–EYED SUSAN	RUDBECKIA HIRTA	2"PLUG	1.5' OC
OOO	10	IRONWEED	VERNONIA NOVEBORACENSIS	QUART	3' OC
BASIN 9 PLANTING SCHEDULE – TREES & SHRUBS					
BR	5	RIVER BIRCH	BETULA NIGRA	4' – 5'	#7 CONT.
SD	15	SILKY DOGWOOD	CORNUS AMOMUM	2' - 3'	#2 CONT.
WB	11	WINTERBERRY	ILEX VERTICILLATA	3' – 4'	#3 CONT.
SW	5	SWEETBAY MAGNOLIA	MAGNOLIA VIRGINIANA	4' – 5'	#7 CONT.

		REVISIONS	XRE	FS
NO.	DATE	DESCRIPTION		
1	07/18/17	PER ACCD ADMINISTRATIVE COMMENTS		
2	09/18/17	PER ACCD TECHNICAL COMMENTS		
3	05/28/19	PER TOWNSHIP ENGINEER COMMENTS		
4	06/27/19	PER ADDITIONAL TOWNSHIP ENGINEER COMMENTS		
5	08/11/10	DEP ADDITIONAL TOWNSHIP ENCINEER COMMENTS		

PLAN PRE	PARATION	POST-CONSTRUCTION SWM BASIN PLANT
DRAWN BY: WRD	DATE: 17 APRIL 2017	CUMBERLAND VILLAGE - PHASE
DESIGNED BY: WRD	FILE NO.: 0220	A PLANNED RESIDENTIAL COMMUNITY
CHECKED BY: RAS	DWG NO.: LS02-PH2A-0220	CUMBERLAND TOWNSHIP ~ ADAMS COUNTY ~ PENNSYLVANIA

<u>SWM BASIN PLANTING NOTES</u>

- 1. Planting of the SWM basin must occur after the addition of the amended soils. 2. Plant the trees & shrubs as shown on the plan. Water throughly and place a mulch ring around all trees & shrubs.
- Install 2" of aged hardwood mulch over the planting areas. Plant the plugs and quart materials through the mulch layer. Water throughly and topdress with additional hardwood mulch.
- 4. Monitor SWM basin to insure that plants are becoming established and thriving.

SYMBOL	QUANTITY	COMMON NAME	BOTANICAL NAME	SIZE	
11111111	1300	SWAMP MILKWEED	ASCLEPIAS INCARNATA	2" PLUG	1.5'0
	1000	NEW ENGLAND ASTER	ASTER NOVAE-ANGLIAE	2" PLUG	1.5'0
	350	TURTLEHEAD	CHELONE GLABRA	2" PLUG	2'00
$\odot \odot \odot$	50	JOE PYE WEED	EUPATORIUM MACULATUM	QUART	3' 00
* *	150	SWITCHGRASS	PANICUM VIRGATUM	QUART	3' 00
· · · · · · · · · · · · · · · · · · ·	1200	BLACK-EYED SUSAN	RUDBECKIA HIRTA	2" PLUG	1.5'0
	BASIN	N 11 PLANTING S	CHEDULE – TREES & S	HRUBS	
BR	8	RIVER BIRCH	BETULA NIGRA	4' - 5'	#7 CON
SD	35	SILKY DOGWOOD	CORNUS AMOMUM	2' - 3'	#2 CON
WB	30	WINTERBERRY	ILEX VERTICILLATA	3' - 4'	#3 CON

Know what's **below.**

		REVISIONS	XR	EFS
NO.	DATE	DESCRIPTION		
1	07/18/17	PER ACCD ADMINISTRATIVE COMMENTS		
2	09/18/17	PER ACCD TECHNICAL COMMENTS		
3	05/28/19	PER TOWNSHIP ENGINEER COMMENTS		
4	06/27/19	PER ADDITIONAL TOWNSHIP ENGINEER COMMENTS		
5	08/14/19	PER ADDITIONAL TOWNSHIP ENGINEER COMMENTS		

PENNSYLVANIA ACT 287 (1974) AS AMENDED BY PENNSYLVANIA ACT 121 (2008) REQUIRES NO LESS THAN THREE (3) WORKING DAYS AND NO MORE THAN (10) WORKING DAYS NOTICE TO UTILITIES BEFORE YOU EXCAVATE, DRILL, BLAST OR DEMOLISH.

SWM BAS	SIN MAINTENANCE	SCHEDULE		BASIN	12 PLANTING SC	CHEDULE – HERBACEOUS	S PLANTS	
 While vegetation in SWM Perennials and grasses each growing season. Mulch should be replenis Once every 2 to 3 year 	basin is being established, pru must be cut back to within 6" Weeding must occur regularly shed as needed and re-spread ars the entire rain garden shoul	ning and weeding may be required. -8" of the ground at the end of to control invasive plants. when erosion is evident. d be mulched again.	SYMBOL 	QUANTITY 100 50 125	COMMON NAME NORTHERN SEA OATS JOE PYE WEED SWITCHGRASS	BOTANICAL NAME CHASMANTHIUM LATIFOLIUM EUPATORIUM MACULATUM PANICUM VIRGATUM	SIZE CO 2" PLUG QUART QUART	2' OC 3' OC 3' OC
 SWM basins should be in vegetation conditions, e 	nspected at least two times pe	r year for sediment buildup, erosion,		750	BLACK-EYED SUSAN	RUDBECKIA HIRTA	2" PLUG	1.5'OC
5. During periods of extend	ded drought, basins may require	e watering.		BASIN	I 12 PLANTING S	CHEDULE – TREES & S	SHRUBS	
			SD SW	25 8	SILKY DOGWOOD SWEETBAY MAGNOLIA	CORNUS AMOMUM MAGNOLIA VIRGINIANA	2' - 3' # 4' - 5' #	2 CONT.
		5. SLCOD				600 M		
	HARDWOOD MU	LCH	SW SD SW SD SW SD	SD SD SD SD SD SD SD SD SD SD SV SD SV				
598	* AREA 6200	SF.						
					PC	SM BASIN	#12	
		POST-CONSTRUCT	ION S	SWM]	BASIN PLA	NTING PLAN	SCALI 1"=20	E 0'
DESIGNED BY: WRD	FILE NO.: 0220	CUMBERLA	ND V NED RF	ILLA	GE - PHA	SE IIA	SHEET	NO.
CHECKED BY: RAS	DWG NO.: LS02-PH2A-0220	CUMBERLAND TOV	WNSHIP ~	ADAMS CO	DUNTY ~ PENNSYLVA	NIA	PC-1	4

PLAN PREPARATION		POST-CONSTRUCTION SWM BASIN PLAN
DRAWN BY: WRD	DATE: 17 APRIL 2017	CUMBERLAND VILLAGE - PHASE
DESIGNED BY: WRD	FILE NO.: 0220	A PLANNED RESIDENTIAL COMMUNITY
CHECKED BY: RAS	DWG NO.: LS02-PH2A-0220	CUMBERLAND TOWNSHIP ~ ADAMS COUNTY ~ PENNSYLVANIA

PER TOW PER FIN/	NSHIP ENGINE AL TOWNSHIP E 7 08/14/19 6 04/08/19	ER COMMENTS (PHASE IIA) ENGINEER COMMENTS (PHASE IIA) PER ADDITIONAL TOWNSHIP ENGINEER COMMENTS PER WAIVER REQUESTS/APPROVALS		
		REVISIONS	XREFS	
	NO. DATE	DESCRIPTION	PRSD-PH2-0220	Call before you dig.
	2 03/13/07	PER ACCD COMMENTS		
	3 11/23/07	PER TWP. ENGINEER COMMENTS		
	4 11/17/10	PER TWP. ENGINEER COMMENTS		PENNSYLVANIA ACT 287 (1974) AS AMENDED BY PENNSYLVANIA ACT 121 (2008) REQUIRES NO LESS THAN THREE (3) WORKING DAYS AND NO ADDE THAN (20) WORKING DAYS NOTICE TO LITHER FERDER YOU
	5 12/13/18	PER TWP. ENGINEER COMMENTS		NO MORE IMAN (10) WORKING DATS NOTICE TO UTILITIES BEFORE YOU EXCAVATE, DRILL, BLAST OR DEMOLISH.

T/G T/G 587.23 587.23

45

600

590

PROP.__ GRADE

(PHASE IIA)

8 10/14/19 PER FINAL TOWNSHIP ENGINEER COMMENTS
7 08/14/19 PER ADDITIONAL TOWNSHIP ENGINEER COMMENTS
6 04/08/19 PER WAIVER REQUESTS/APPROVALS

9 12/23/19 PER TOWNSHIP ENGINEER COMMENTS

 REVISIONS
 XREFS

 NO.
 DATE
 DESCRIPTION
 PRSD-PH2-0220

 1
 02/27/07
 PER TWP. ENGINEER COMMENTS
 Call before you dig.

 2
 03/13/07
 PER ACCD COMMENTS
 Call before you dig.

 3
 11/23/07
 PER TWP. ENGINEER COMMENTS
 Call before you dig.

 4
 11/17/10
 PER TWP. ENGINEER COMMENTS
 Description

 5
 12/13/18
 PER TWP. ENGINEER COMMENTS
 Description

		BASIN 8
PLAN PREPARATION		STORM DRAIN PROFILES
DRAWN BY: JVM	DATE: 11/14/06	CUMBERIAND VILLAGE - PH
DESIGNED BY: RAS	FILE NO.: 0220	A PLANNED RESIDENTIAL COMMUNITY
CHECKED BY: RAS DWG NO.: PC12-16 PRSD02-PH2A		CUMBERLAND TOWNSHIP ~ ADAMS COUNTY ~ PENNSYLVANIA

EW-25 THRU I-6: (Phase IIA)

	<u> </u>	.,,			
	REVISIONS			XR	EFS
ľ	NO.	DATE	DESCRIPTION	PRSD-PH2-0220	
ľ	1	02/27/07	PER TWP. ENGINEER COMMENTS		
	2	03/13/07	PER ACCD COMMENTS		
	3	11/23/07	PER TWP. ENGINEER COMMENTS		
	4	11/17/10	PER TWP. ENGINEER COMMENTS		
ſ	5	12/13/18	PER TWP. ENGINEER COMMENTS		

8 Know what's **below.**Call before you dig. PENNSYLVANIA ACT 287 (1974) AS AMENDED BY PENNSYLVANIA ACT 121 (2008) REQUIRES NO LESS THAN THREE (3) WORKING DAYS AND NO MORE THAN (10) WORKING DAYS NOTICE TO UTILITIES BEFORE YOU EXCAVATE, DRILL, BLAST OR DEMOLISH.

<mark>д 610 г</mark>

		BASINS 9, 10 & 12
PLAN PREPARATION		STORM DRAIN PROFILES
DRAWN BY: JVM	DATE: 11/14/06	CUMBERIAND VILLAGE - PH
DESIGNED BY: RAS	FILE NO.: 0220	A PLANNED RESIDENTIAL COMMUNITY
CHECKED BY: RAS	DWG NO.: PC12-16 PRSD03-PH2A	CUMBERLAND TOWNSHIP ~ ADAMS COUNTY ~ PENNSYLVANIA

T/G 595.67

PROPOSED_ GRADE

50.00 LF

4" PERF. PVC

@ 0.00%

39.00 LF

15" RCP

@ 1.00%

(FW)

620

620

7 6	08/14/19 04/08/19	PER ADDITIONAL TOWNSHIP ENGINEER COMMENTS PER WAIVER REQUESTS/APPROVALS	
		REVISIONS	
			P

			REVISIONS	XREFS			(
	NO.	DATE	DESCRIPTION	PRSD-PH2-0220			
	1	02/27/07	PER TWP. ENGINEER COMMENTS				
	2	03/13/07	PER ACCD COMMENTS				
	3	11/23/07	PER TWP. ENGINEER COMMENTS			l	
	4	11/17/10	PER TWP. ENGINEER COMMENTS				PENNSY 121 (20

MH-21 THRU I-75 (PHASE IIA)

PLAN PREPARATION		STORM DRAIN PROFILES
DRAWN BY: JVM	DATE: 11/14/06	CUMBERIAND VILLAGE - PH
DESIGNED BY: RAS	FILE NO.: 0220	A PLANNED RESIDENTIAL COMMUNITY
CHECKED BY: RAS	DWG NO.: PC12-16 PRSD04-PH2A	CUMBERLAND TOWNSHIP ~ ADAMS COUNTY ~ PENNSYLVANIA

NGA	SIZE IN INCHES			
NUMBER	MAX	AVE (1)	MIN (2)	
R-1	1.5	.75	(NO.8)	
R-2	3	1.5	1	
R-3	6	3	2	
R-4	12	6	3	
R-5	18	9	5	
R-6	24	12	7	
R-7	30	15	12	
R-8	48	24	15	

(1) "AVERAGE SIZE" IS THAT SIZE EXCEEDED BY AT LEAST 50% OF THE TOTAL WEIGHT OF THE TONNAGE SHIPPED; i.e. 50% OF THE TONNAGE SHALL CONSIST OF PIECES LARGER THAN THE "AVERAGE" SIZE (NORMALLY HALF OF THE SPECIFIED NOMINAL TOP SIZE).

(2) PIECES SMALLER THAN THE MINIMUM SIZE SHALL NOT EXCEED 15% OF THE TONNAGE SHIPPED.

The anticipated velocity (V) should not exceed the maximum permissible shown in the Program Manual for the proposed riprap protection.

EW-2 EW-2

EW-2 EW-2

9 12/23/1 8 10/14/1 7 08/14/ 1	9 PER TOWNSHIP ENGINEER COMMENTS 9 PER FINAL TOWNSHIP ENGINEER COMMENTS 9 PER ADDITIONAL TOWNSHIP ENGINEER COMMENTS		NOTE: WEEP HOLES S PRECAST INLETS.
6 04/08/	9 PER WAIVER REQUESTS/APPROVALS		
	REVISIONS	XREFS	
NO. DATE	DESCRIPTION	PRSD-PH2-0220	
1 02/27/0	7 PER TWP. ENGINEER COMMENTS		
2 03/13/0	7 PER ACCD COMMENTS		
3 11/23/0	7 PER TWP. ENGINEER COMMENTS		
4 11/17/ [.]	0 PER TWP. ENGINEER COMMENTS		PENNSYLVANIA ACT 287 (1974) AS AMENDED 121 (2008) REQUIRES NO LESS THAN THREE
5 12/13/	8 PER TWP. ENGINEER COMMENTS		NO MORE THAN (10) WORKING DAYS NOTICE T EXCAVATE, DRILL, BLAST OR D

SHALL BE PROVIDED IN ALL

PRECAST INLET BOX 2' X 6' NOT TO SCALE

2' X 6' TYPE M INLET TOP (NOT TO SCALE)

NOTE: WEEP HOLES SHALL BE PROVIDED IN ALL PRECAST INLETS.

DOD IN

PENNDOT

PLAN PRE	EPARATION	STORM DRAIN DETAILS
DRAWN BY: JVM	DATE: 11/14/06	CUMBERIAND VILLAGE - PH
DESIGNED BY: RAS	FILE NO.: 0220	A PLANNED RESIDENTIAL COMMUNITY
CHECKED BY: RAS	DWG NO.: PC12-16 PRSD05-PH2A	CUMBERLAND TOWNSHIP ~ ADAMS COUNTY ~ PENNSYLVANIA

ATTACHMENT	B – BMP	RETROFITS
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GENERAL INFORMATION											
Permittee Name: Cumberland Township Permit No.: PAG133748											
BMP Name: Basin Retrofit @ Longview Boulevard West Latitude: 39.870162											
Surface Waters: Rock Creek Watershed Longitude: -77.245118											
Municipality: Cumberland Township County: Adams											
Construction of the BMP is Complete. Date Construction Completed: 10/2022											
Photographs, Drawings, and O&M Plan are attached. Inspection/Monitoring Frequency: Annually											
Permits or Approvals Obtained: N/A											
Party Responsible for Long-Term O&M: 🗌 Permittee 🛛 Other: Longview HOA											
Joint BMP? Yes X No If Yes, attach a list of other permittees sharing credit for the BMP											
Effectiveness Values Source:											
DEP: BMP Type (Pre): Dry Detention Basin BMP Type (Post): Bioretention - Raingarden (C/D soils with underdrain)											
Retrofit TSS Effectiveness Value: 45 % (Post – Pre Effectiveness Values)											
CB Expert Panel Report: Runoff Reduction (RR) Sediment Treatment (ST)											
RS (ac-ft): IA (ac): R/IA (in): Retrofit TSS Effectiveness Value: %											
BMP CONSTRUCTION											
BMP Infiltrating Surface Area (ft ²): 3700 Ponding Depth (ft): 0 🛛 Underdrain											
Media Description: 50% Topsoil, 25% Sand, & 25% Compost Media Depth (ft): 1											
\boxtimes Vegetated Loading Ratio <i>(see instructions)</i> : 246.4 WQ Storage Volume (ft ³): 1110											
TSS LOAD DELIVERED TO BMP											
Total Drainage Area Treated by BMP: 20.93 acres (Treatment Area)											
TSS Load Delivered to BMP – Simplified Method Calculations attached											
Pollutant Land Cover Area (acres) Loading Rate (lbs/ac/yr) Delivered Load (lbs/yr)											
Impervious 1.26 1398.77 1762											
Pervious 19.67 207.67 4085											
Total TSS Load Delivered to BMP (lbs/yr) = 5847											
Sediment Load Delivered to BMP – Land Cover-Based Calculation Method											
Pollutant Land Cover Area (acres) Loading Rate (lbs/ac/yr) Delivered Load (lbs/yr)											
TSS											
Total TSS Load Delivered to BMP (lbs/yr) =											
TSS Load Delivered to BMP (lbs/vr) x TSS Effectiveness Value – 2631 lbs/vr TSS Credit											

Watershed Model Schematic

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

<u>Legend</u>

Hyd.OriginDescription1SCS RunoffDA to Longview Blvd West Basin2ReservoirLongview Blvd West

Project: Longview Blvd West.gpw

Hydrograph Return Period Recap Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

. Hydrograph Inflow Peak Outflow (cfs)							Hydrograph			
(origin)	nya(s)	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	Description
SCS Runoff			16.52							DA to Longview Blvd West Basin
Reservoir	1		13.89							Longview Blvd West
								<u> </u>		
	Hydrograph (origin) SCS Runoff Reservoir	Hydrograph type (origin)Inflow hyd(s)SCS Runoff Reservoir 1	Hydrograph (origin) Inflow hyd(s) Image: Image	Hydrograph type (origin) Inflow hyd(s) I-yr 2-yr SCS Runoff 16.52 13.89 Reservoir 1 13.99 Image: Signal state	Hydrograph type (origin) Inflow hyd(s) 2-yr 3-yr SCS Runoff 16.52 Reservoir 1 13.89 Image: Ima	Hydrograph type (origin) Inflow hyd(s) 2-yr 3-yr 5-yr SCS Runoff 16.52 Reservoir 1 13.89 SCS Runoff 1 13.89 Reservoir 1 13.89 Image: state	Hydrograph type (origin) Inflow hyd(s) I-yr 2-yr 3-yr 5-yr 10-yr SCS Runoff 1 16.52 Reservoir 1 13.89 Image: speed of the speed of	Hydrograph (origin) Inflow hyde (origin) Inflow hyde 1 1 5-yr 10-yr 25-yr SCS Runoff 1 13.89 SCS Runoff 1 13.89 SCS Runoff 1 13.89 SCS Runoff 1 13.89 SCS Runoff 1 13.89 SCS Runoff SCS Runoff SCS Runoff SCS Runoff	Hydrograph (origin) Inflow (origin) 1-yr 2-yr 3-yr 5-yr 10-yr 25-yr 50-yr SCS Runoff 1 16.52	Hydrograph (origin) Infor (origin) Infor Infor Syr 10 yr 25 yr 50 yr 10 yr SCS Runoff 1 1 16.52

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	16.52	2	734	76,436				DA to Longview Blvd West Basin
2	Reservoir	13.89	2	744	74,920	1	<mark>(564.84</mark>)	9,772	Longview Blvd West
Lor	ngview Blvd W	/est.gpw		1	Return P	eriod: 2 Ye	ear)	Wednesday	/, 11 / 29 / 2023

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Wednesday, 11 / 29 / 2023

Hyd. No. 1

DA to Longview Blvd West Basin

Hydrograph type =	SCS Runoff	Peak discharge	= 16.52 cfs
Storm frequency =	2 yrs	Time to peak	= 12.23 hrs
Time interval =	2 min	Hyd. volume	= 76,436 cuft
Drainage area =	20.930 ac	Curve number	= 75*
Basin Slope =	0.0 %	Hydraulic length	= 0 ft
Tc method =	TR55	Time of conc. (Tc)	= 32.10 min
Total precip. =	3.05 in	Distribution	= Type II
Storm duration =	24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.260 x 98) + (19.670 x 74)] / 20.930

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd. No. 1

DA to Longview Blvd West Basin

Description	<u>A</u>		<u>B</u>		<u>C</u>		<u>Totals</u>
Sheet Flow Manning's n-value Flow length (ft) Two-year 24-hr precip. (in) Land slope (%)	= 0.240 = 300.0 = 3.05 = 3.67 = 27.61	Ŧ	0.011 0.0 0.00 0.00		0.011 0.0 0.00 0.00	_	27 61
	- 27.01	•	0.00	•	0.00	_	27.01
Shallow Concentrated Flow Flow length (ft) Watercourse slope (%) Surface description Average velocity (ft/s)	= 110.00 = 7.27 = Unpave =4.35	d	430.00 14.88 Unpave 6.22	ed	440.00 2.48 Unpave 2.54	ed	
Travel Time (min)	= 0.42	+	1.15	+	2.89	=	4.46
Channel Flow X sectional flow area (sqft) Wetted perimeter (ft) Channel slope (%) Manning's n-value Velocity (ft/s)	= 0.00 = 0.00 = 0.00 = 0.015 =0.00		0.00 0.00 0.00 0.015 0.00		0.00 0.00 0.00 0.015 0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	= 0.00	+	0.00	+	0.00	=	0.00
Total Travel Time, Tc							32.10 min

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Wednesday, 11 / 29 / 2023

Hyd. No. 2

Longview Blvd West

Hydrograph type	= Reservoir	Peak discharge	= 13.89 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.40 hrs
Time interval	= 2 min	Hyd. volume	= 74,920 cuft
Inflow hyd. No.	= 1 - DA to Longview Blvd West	Blassin Elevation	<mark>= 564.84 ft</mark>
Reservoir name	= Longview Blvd West	Max. Storage	= 9,772 cuft

Storage Indication method used.

Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Pond No. 1 - Longview Blvd West

Pond Data

UG Chambers -Invert elev. = 561.77 ft, Rise x Span = 0.33 x 0.33 ft, Barrel Len = 60.00 ft, No. Barrels = 1, Slope = 0.00%, Headers = No Epictemeter Statistic Content in the content of t

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	561.60	n/a	0	0
0.15	561.75	n/a	164	164
0.30	561.90	n/a	165	329
0.45	562.05	n/a	166	494
0.60	562.20	n/a	164	658
0.74	562.34	n/a	164	822
0.89	562.49	n/a	164	985
1.04	562.64	n/a	164	1,149
1.19	562.79	n/a	164	1,313
1.34	562.94	n/a	164	1,476
1.49	563.09	n/a	164	1,640
1.50	563.10	3,687	18	1,658
2.40	564.00	4,739	3,792	5,450
3.40	565.00	5,564	5,151	10,602
4.40	566.00	6,337	5,951	16,552
4.90	566.50	6,337	3,169	19,721

Culvert / Orifice Structures

[B] [C] [PrfRsr] [A] [C] [D] [A] [B] Rise (in) = 30.00 15.00 4.00 0.00 Crest Len (ft) = 9.40 8.00 0.00 0.00 Span (in) = 30.00 15.00 4.00 0.00 Crest El. (ft) = 566.91 566.00 0.00 0.00 No. Barrels = 1 1 1 0 Weir Coeff. = 3.33 2.60 3.33 3.33 = 562.97 561.77 Weir Type Invert El. (ft) 563.12 0.00 = 1 Broad ___ Length (ft) = 30.00 0.00 40.00 0.00 Multi-Stage = Yes No No No Slope (%) = 1.10 0.00 1.00 n/a = .013 .013 .013 N-Value n/a Orifice Coeff. = 0.60 0.60 0.60 0.60 Exfil.(in/hr) = 0.000 (by Contour) TW Elev. (ft) Multi-Stage = n/a Yes Yes No = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s). Stace / Storace / Discharce Table

Weir Structures

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	561.60	0.00	0.00	0.00		0.00	0.00					0.000
0.01	16	561.61	0.00	0.00	0.00		0.00	0.00					0.000
0.03	33	561.63	0.00	0.00	0.00		0.00	0.00					0.000
0.04	49	561.64	0.00	0.00	0.00		0.00	0.00					0.000
0.06	65	561.66	0.00	0.00	0.00		0.00	0.00					0.000
0.07	82	561.67	0.00	0.00	0.00		0.00	0.00					0.000
0.09	98	561.69	0.00	0.00	0.00		0.00	0.00					0.000
0.10	115	561.70	0.00	0.00	0.00		0.00	0.00					0.000
0.12	131	561.72	0.00	0.00	0.00		0.00	0.00					0.000
0.13	147	561.73	0.00	0.00	0.00		0.00	0.00					0.000
0.15	164	561.75	0.00	0.00	0.00		0.00	0.00					0.000
0.16	180	561.76	0.00	0.00	0.00		0.00	0.00					0.000
0.18	197	561.78	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.19	213	561.79	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.21	230	561.81	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.22	246	561.82	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.24	263	561.84	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.25	279	561.85	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.27	296	561.87	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.28	312	561.88	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.30	329	561.90	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.31	345	561.91	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.33	362	561.93	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.34	378	561.94	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.36	395	561.96	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.37	411	561.97	0.00	0.00	0.00 ic		0.00	0.00					0.000

Continues on next page ...

Longview Blvd West Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.39	428	561.99	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.40	444	562.00	0.00	0.00	0.00		0.00	0.00					0.000
0.42	461	562.02	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.43	478	562.03	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.45	494	562.05	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.46	511	562.06	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.48	527	562.08	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.49	543	562.09	0.00	0.00	0.00 IC		0.00	0.00					0.000
0.51	500	562.11	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.52	503	562.12	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.54	609	562.14	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.55	625	562.10	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.58	642	562.18	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.60	658	562.20	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.61	674	562.21	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.63	691	562.23	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.64	707	562.24	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.66	724	562.26	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.67	740	562.27	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.69	756	562.29	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.70	773	562.30	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.72	789	562.32	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.73	805	562.33	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.74	822	562.34	0.00	0.00	0.00 IC		0.00	0.00					0.000
0.70	838	562.30	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.77	004 971	562.37 562.30	0.00	0.00	0.00 IC		0.00	0.00					0.000
0.79	887	562.39	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.00	904	562.40	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.83	920	562.42	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.85	936	562.45	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.86	953	562.46	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.88	969	562.48	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.89	985	562.49	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.91	1,002	562.51	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.92	1,018	562.52	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.94	1,034	562.54	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.95	1,051	562.55	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.97	1,067	562.57	0.00	0.00	0.00 ic		0.00	0.00					0.000
0.98	1,084	562.58	0.00	0.00	0.00 IC		0.00	0.00					0.000
1.00	1,100	562.60	0.00	0.00	0.00 IC		0.00	0.00					0.000
1.01	1,110	562.63	0.00	0.00	0.00 ic		0.00	0.00					0.000
1.03	1,133	562.63	0.00	0.00	0.00 ic		0.00	0.00					0.000
1.04	1,145	562.66	0.00	0.00	0.00 ic		0.00	0.00					0.000
1.00	1 182	562.60	0.00	0.00	0.00 ic		0.00	0.00					0.000
1.09	1,198	562.69	0.00	0.00	0.00 ic		0.00	0.00					0.000
1.10	1,214	562.70	0.00	0.00	0.00 ic		0.00	0.00					0.000
1.12	1,231	562.72	0.00	0.00	0.00 ic		0.00	0.00					0.000
1.13	1,247	562.73	0.00	0.00	0.00 ic		0.00	0.00					0.000
1.15	1,264	562.75	0.00	0.00	0.00 ic		0.00	0.00					0.000
1.16	1,280	562.76	0.00	0.00	0.00		0.00	0.00					0.000
1.18	1,296	562.78	0.00	0.00	0.00 ic		0.00	0.00					0.000
1.19	1,313	562.79	0.00	0.00	0.00 ic		0.00	0.00					0.000
1.21	1,329	562.81	0.00	0.00	0.00 ic		0.00	0.00					0.000
1.22	1,345	562.82	0.00	0.00	0.00 ic		0.00	0.00					0.000
1.24	1,362	562.84	0.00	0.00	0.00 IC		0.00	0.00					0.000
1.20	1,378	562.85	0.00	0.00	0.00 ic		0.00	0.00					0.000
1.27	1,394	562.88	0.00	0.00	0.00 ic		0.00	0.00					0.000
1.20	1 427	562.00	0.00	0.00	0.00 ic		0.00	0.00					0.000
1.30	1 444	562.90	0.00	0.00	0.00 ic		0.00	0.00					0.000
1.33	1 460	562.93	0.00	0.00	0.00 ic		0.00	0.00					0.000
1.34	1.476	562.94	0.00	0.00	0.00 ic		0.00	0.00					0.000
1.36	1,493	562.96	0.00	0.00	0.00 ic		0.00	0.00					0.000
1.37	1,509	562.97	0.00 ic	0.00	0.00 ic		0.00	0.00					0.000
1.39	1,525	562.99	0.00 ic	0.00	0.00		0.00	0.00					0.002
1.40	1,542	563.00	0.01 ic	0.00	0.00		0.00	0.00					0.008
1.42	1,558	563.02	0.02 ic	0.00	0.00		0.00	0.00					0.017
1.43	1,574	563.03	0.03 ic	0.00	0.00		0.00	0.00					0.026
1.45	1,591	563.05	0.04 ic	0.00	0.00		0.00	0.00					0.045

Continues on next page...

Longview Blvd West Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
1.46	1,607	563.06	0.06 ic	0.00	0.00		0.00	0.00					0.063
1.48	1,624	563.08	0.08 ic	0.00	0.00		0.00	0.00					0.085
1.49	1,640	563.09	0.11 ic	0.00	0.00		0.00	0.00					0.111
1.49	1,642	563.09	0.11 ic	0.00	0.00		0.00	0.00					0.112
1.49	1,644	563.09	0.11 ic	0.00	0.00		0.00	0.00					0.112
1.49	1,645	563.09	0.11 ic	0.00	0.00		0.00	0.00					0.113
1.49	1,647	563.09	0.11 ic	0.00	0.00		0.00	0.00					0.113
1.49	1,649	563.09	0.11 ic	0.00	0.00		0.00	0.00					0.114
1.50	1,651	563.10	0.11 ic	0.00	0.00		0.00	0.00					0.114
1.50	1,653	563.10	0.11 ic	0.00	0.00		0.00	0.00					0.115
1.50	1,655	563.10	0.13 ic	0.00	0.00		0.00	0.00					0.127
1.50	1,657	563.10	0.13 ic	0.00	0.00		0.00	0.00					0.127
1.50	1,658	563.10	0.13 ic	0.00	0.00		0.00	0.00					0.128
1.59	2,038	563.19	0.35 ic	0.00	0.00		0.00	0.00					0.355
1.68	2,417	563.28	0.67 ic	0.00	0.00		0.00	0.00					0.671
1.77	2,796	563.37	1.13 ic	0.00	0.00		0.00	0.00					1.126
1.86	3,175	563.46	1.66 ic	0.00	0.00		0.00	0.00					1.663
1.95	3,554	563.55	2.24 ic	0.00	0.00		0.00	0.00					2.240
2.04	3,933	563.64	3.03 ic	0.00	0.00		0.00	0.00					3.027
2.13	4,313	563.73	3.82 ic	0.00	0.00		0.00	0.00					3.825
2.22	4,692	563.82	4.72 ic	0.00	0.00		0.00	0.00					4.723
2.31	5,071	563.91	5.72 ic	0.00	0.00		0.00	0.00					5.717
2.40	5,450	564.00	6.55 oc	0.00	0.00		0.00	0.00					6.549
2.50	5,965	564.10	7.42 oc	0.00	0.00		0.00	0.00					7.425
2.60	6,480	564.20	8.31 oc	0.00	0.00		0.00	0.00					8.315
2.70	6,996	564.30	9.38 oc	0.00	0.00		0.00	0.00					9.384
2.80	7,511	564.40	10.26 oc	0.00	0.00		0.00	0.00					10.26
2.90	8,026	564.50	11.12 oc	0.00	0.00		0.00	0.00					11.12
3.00	8,541	564.60	11.94 oc	0.00	0.00		0.00	0.00					11.94
3.10	9,056	564.70	12.87 oc	0.00	0.00		0.00	0.00					12.87
3.20	9.571	564.80	13.59 oc	0.00	0.00		0.00	0.00					13.59
3.30	10,086	564.90	14.37 oc	0.00	0.00		0.00	0.00					14.37
3.40	10.602	565.00	15.05 oc	0.00	0.00		0.00	0.00					15.05
3.50	11,197	565.10	15.72 oc	0.00	0.00		0.00	0.00					15.72
3.60	11,792	565.20	16.31 oc	0.00	0.00		0.00	0.00					16.31
3.70	12.387	565.30	16.75 oc	0.00	0.00		0.00	0.00					16.75
3.80	12,982	565.40	17.03 oc	0.00	0.00		0.00	0.00					17.03
3.90	13.577	565.50	17.74 oc	0.00	0.00		0.00	0.00					17.74
4 00	14 172	565 60	20.05 oc	0.00	0.00		0.00	0.00					20.05
4 10	14 767	565 70	22 12 oc	0.00	0.00		0.00	0.00					22.12
4 20	15,362	565.80	24 02 00	0.00	0.00		0.00	0.00					24 02
4 30	15 957	565.90	25 77 oc	0.00	0.00		0.00	0.00					25.77
4 40	16,552	566.00	27 42 00	0.00	0.00		0.00	0.00					27 42
4 4 5	16,869	566.05	28 20 00	0.00	0.00		0.00	0.23					28 44
4.50	17 186	566 10	28.97 oc	0.00	0.00		0.00	0.20					29.63
4 55	17,503	566 15	29 71 00	0.00	0.00		0.00	1 21					30.92
4.00	17,800	566.20	30.44 oc	0.00	0.00		0.00	1.21					32.30
4.65	18 136	566.25	31 15 00	0.00	0.00		0.00	2.60					33 75
4 70	18 453	566.30	31.84 oc	0.00	0.00		0.00	3 42					35.26
4.75	18 770	566 35	32 52 00	0.00	0.00		0.00	4 31					36.83
4.75	10,770	566 40	33 10 00	0.00	0.00		0.00	5.26					38.45
4.85	10 404	566 45	33.84 00	0.00	0.00		0.00	6.28					40 12
4 00	10 701	566 50	34 48 00	0.00	0.00		0.00	7 25					11 Q2
4.50	19,121	300.30	34.40 00	0.00	0.00		0.00	1.55					41.00

...End

Hydraflow Rainfall Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Wednesday, 11 / 29 / 2023

Return Period	Intensity-Du	Intensity-Duration-Frequency Equation Coefficients (FHA)										
(Yrs)	В	D	E	(N/A)								
1	44.2751	10.5000	0.8683									
2	60.8168	11.7000	0.8947									
3	0.0000	0.0000	0.0000									
5	52.4952	10.0000	0.8116									
10	53.7769	9.6000	0.7855									
25	51.0833	8.6000	0.7354									
50	47.1524	7.5000	0.6898									
100	44.6585	6.6000	0.6521									
	1	1	1	1								

File name: Cumberland.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	4.10	3.21	2.66	2.28	2.00	1.78	1.61	1.47	1.35	1.26	1.17	1.10
2	4.90	3.87	3.22	2.76	2.42	2.16	1.95	1.78	1.64	1.52	1.42	1.33
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	5.83	4.62	3.85	3.32	2.93	2.63	2.39	2.19	2.03	1.89	1.77	1.67
10	6.55	5.19	4.35	3.76	3.32	2.99	2.72	2.51	2.32	2.17	2.04	1.92
25	7.49	5.95	5.00	4.34	3.85	3.48	3.18	2.94	2.73	2.56	2.41	2.28
50	8.26	6.55	5.50	4.79	4.27	3.87	3.55	3.29	3.07	2.88	2.72	2.58
100	9.03	7.15	6.02	5.26	4.70	4.27	3.93	3.65	3.41	3.21	3.04	2.89

Tc = time in minutes. Values may exceed 60.

name: F:\E	ngineering\Municipal	Clients\Cumberland	Township\MS4\2023 [DEP PRP Report\H	ydraflow\Cumberland.p	оср

	Rainfall Precipitation Table (in)									
Storm Distribution	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr		
SCS 24-hour	2.54	3.05	0.00	3.80	4.47	5.52	6.49	7.64		
SCS 6-Hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		

Basin Retrofit at Longview Boulevard West <u>Pre-Construction Photos October 8, 2019</u>

Pre-Construction Photos April 7, 2022

4.

Basin Retrofit at Longview Boulevard West Post-Construction Photos December 8, 2022

10.

















N-171 RIM: 561.54 INV.: 551.14 (IN) INV.: 551.09 (OUT)



DATE:

SHEET:

06/01/2022

2

NOTES

- 1. CONTRACTOR TO MAINTAIN TRAFFIC FLOW BY PARKING ANY EQUIPMENT ALONG EDGE OF CARTWAY.
- 2. CONTRACTOR TO ENSURE THAT ENGINEER IS ON-SITE TO VERIFY SOIL MIXTURE
- MATERIALS AND SITE CONDITION PRIOR TO PLACEMENT.
- 3. AVOID COMPACTION OF BASIN BOTTOM AREAS BY MINIMIZING THE USE OF EQUIPMENT IN THE BASIN (AND BY USING TRACKED EQUIPMENT).

CONSTRUCTION SEQUENCE ESTABLISH LIMITS OF DISTURBANCE AND INSTALL PERIMETER EROSION CONTROL 1. MEASURES.

- PERFORM DEMOLITION AS NEEDED. 2.
- REMOVE AND STOCKPILE SIX INCHES OF TOPSOIL FROM BASIN BOTTOM.

EXCAVATE AND INSTALL UNDERDRAIN PIPE, STONE ENCASEMENT, AND INSPECTION PORTS. TILL REMAINING SOIL IN BASIN BOTTOM DOWN SIX INCHES MINIMUM. REMOVE ROCKS, ROOTS, ETC., AND SUPPLEMENT WITH STOCKPILED TOPSOIL AS NEEDED TO ESTABLISH DESIRED DEPTHS/ELEVATIONS. MIX WITH SAND AND COMPOST. USE LIGHT COMPACTION.

- INSTALL ENDWALL ON PIPE. INSTALL PLANTINGS. SEED REMAINING AREA CONSISTENT WITH PERMANENT
- SEEDING/STABILIZATION SPECIFICATIONS, OR APPROVED EQUAL. 8. PROVIDE PERMANENT STABILIZATION OF ALL DISTURBED AREAS, REMOVE EROSION CONTROL MEASURES.



NTS

<u>G</u> 1.	ENERAL EROSION AND SEDIMENT CONTROL NOTES: ALL EARTH DISTURBANCES, INCLUDING CLEARING AND GRUBBING AS WELL AS CUTS AND FILLS SHALL BE DONE IN ACCORDANCE WITH THE APPROVED E&S PLAN. A COPY OF THE APPROVED DRAWINGS (STAMPED, SIGNED AND DATED BY THE REVIEWING AGENCY) MUST BE AVAILABLE AT THE PROJECT SITE AT ALL TIMES. THE REVIEWING AGENCY SHALL BE NOTIFIED OF ANY CHANGES TO THE APPROVED PLAN PRIOR TO IMPLEMENTATION OF THOSE CHANGES. THE REVIEWING AGENCY MAY REQUIRE A WRITTEN SUBMITTAL OF THOSE CHANGES FOR REVIEW AND APPROVAL AT ITS DISCRETION.	EROSION CC THE CONTRACTOR SH MINIMUM. MAINTENAN EROSION AND SEDIME FACILITY IS REMOVED	DNTF IALL IMI ICE SHA ENT COI
2.	AT LEAST 7 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, INCLUDING CLEARING AND GRUBBING, THE OWNER AND/OR OPERATOR SHALL INVITE ALL CONTRACTORS, THE LANDOWNER, APPROPRIATE MUNICIPAL OFFICIALS, THE E&S PLAN PREPARER, THE PCSM PLAN PREPARER, THE LICENSED PROFESSIONAL RESPONSIBLE FOR OVERSIGHT OF CRITICAL STAGES OF IMPLEMENTATION OF THE PCSM PLAN, AND A REPRESENTATIVE FROM THE LOCAL CONSERVATION DISTRICT TO AN ON-SITE PRECONSTRUCTION MEETING.	<u>MEASURE</u> SILT SOXX	<u>SC</u> DA ALL
3. 4.	AT LEAST 3 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, OR EXPANDING INTO AN AREA PREVIOUSLY UNMARKED, THE PENNSYLVANIA ONE CALL SYSTEM INC. SHALL BE NOTIFIED AT 1-800-242-1776 FOR THE LOCATION OF EXISTING UNDERGROUND UTILITIES. ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE SEQUENCE PROVIDED ON THE PLAN DRAWINGS. DEVIATION FROM THAT SEQUENCE MUST BE APPROVED IN WRITING FROM THE LOCAL CONSERVATION DISTRICT OR BY THE DEPARTMENT PRIOR TO IMPLEMENTATION	SEEDED/MULCHED	W
5. 6.	AREAS TO BE FILLED ARE TO BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL. CLEARING, GRUBBING, AND TOPSOIL STRIPPING SHALL BE LIMITED TO THOSE AREAS DESCRIBED IN EACH STAGE OF THE CONSTRUCTION		\\//
7.	SEQUENCE. GENERAL SITE CLEARING, GRUBBING AND TOPSOIL STRIPPING MAY NOT COMMENCE IN ANY STAGE OR PHASE OF THE PROJECT UNTIL THE E&S BMPS SPECIFIED BY THE BMP SEQUENCE FOR THAT STAGE OR PHASE HAVE BEEN INSTALLED AND ARE FUNCTIONING AS DESCRIBED IN THIS E&S PLAN. AT NO TIME SHALL CONSTRUCTION VEHICLES BE ALLOWED TO ENTER AREAS OUTSIDE THE LIMIT OF DISTURBANCE BOUNDARIES SHOWN	STOCKPILED SOIL MATERIAL	AL
8.	ON THE PLAN MAPS. THESE AREAS MUST BE CLEARLY MARKED AND FENCED OFF BEFORE CLEARING AND GRUBBING OPERATIONS BEGIN. TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE STOCKPILED AT THE LOCATION(S) SHOWN ON THE PLAN MAPS(S) IN THE AMOUNT NECESSARY TO COMPLETE THE FINISH GRADING OF ALL EXPOSED AREAS THAT ARE TO BE STABILIZED BY VEGETATION. EACH STOCKPILE SHALL BE PROTECTED IN THE MANNER SHOWN ON THE PLAN DRAWINGS. STOCKPILE HEIGHTS SHALL NOT EXCEED 35	INLET PROTECTION	WEE
9.	IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO MINIMIZE THE POTENTIAL FOR EROSION AND SEDIMENT POLLUTION AND NOTIFY THE LOCAL CONSERVATION DISTRICT AND/OR THE REGIONAL OFFICE OF THE DEPARTMENT.	STABILIZED CONSTRUCTION ENTRANCE	WEI
10. 11.	. ALL BUILDING MATERIALS AND WASTES SHALL BE REMOVED FROM THE SITE AND RECYCLED OR DISPOSED OF IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS AT 25 PA. CODE 260.1 ET SEQ., 271.1, AND 287.1 ET. SEQ. NO BUILDING MATERIALS OR WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURNED, BURIED, DUMPED, OR DISCHARGED AT THE SITE. . ALL OFF-SITE WASTE AND BORROW AREAS MUST HAVE AN E&S PLAN APPROVED BY THE LOCAL CONSERVATION DISTRICT OR THE	NOTE: UNTIL THE SITE MAINTAINED PROPERL SEDIMENT CONTROL B	IS STAE Y. MAII
12.	DEPARTMENT FULLY IMPLEMENTED PRIOR TO BEING ACTIVATED. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ANY MATERIAL BROUGHT ON SITE IS CLEAN FILL. FORM FP-001 MUST BE RETAINED BY THE PROPERTY OWNER FOR ANY FILL MATERIAL AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE BUT QUALIFYING AS CLEAN FILL DUE TO ANALYTICAL TESTING.	REVENTATIVE AND RE REPLACEMENT, REGRA PERFORMED IMMEDIAT AS EXPECTED, REPLAC REQUIRED.	EMEDIA ADING, TELY. I CEMEN
13. 14.	ALL PUMPING OF WATER FROM ANY WORK AREA SHALL BE DONE ACCORDING TO THE PROCEDURE DESCRIBED IN THIS PLAN, OVER UNDISTURBED VEGETATED AREAS. UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENT BMPS SHALL BE MAINTAINED PROPERLY. MAINTENANCE SHALL INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENT BMPS AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGRADING, RESERDING, REMULCHING AND REMETTING	PREPAREDN	JESS ISTS FO
15. 16.	MUST BE PERFORMED IMMEDIATELY. IF THE E&S BMPS FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMPS, OR MODIFICATIONS OF THOSE INSTALLED WILL BE REQUIRED. A LOG SHOWING DATES THAT E&S BMPS WERE INSPECTED AS WELL AS ANY DEFICIENCIES FOUND AND THE DATE THEY WERE CORRECTED SHALL BE MAINTAINED ON THE SITE AND BE MADE AVAILABLE TO REGULATORY AGENCY OFFICIALS AT THE TIME OF INSPECTION. SEDIMENT TRACKED ONTO ANY PUBLIC ROADWAY OR SIDEWALK SHALL BE RETURNED TO THE CONSTRUCTION SITE BY THE END OF EACH	RELEASE OF TOXIC, H CO-PERMITTEE MUST PLAN. THE PPC PLAN REGULATIONS. THE P LIMITED TO, WASTE M AND PERMANENT SP(IAZARD DEVEL SHALL PPC PL/ IANAGE OIL STC
17 18	INTO ANY ROADSIDE DITCH, STORM SEWER, OR SURFACE WATER. ALL SEDIMENT REMOVED FROM BMPS SHALL BE DISPOSED OF IN THE MANNER DESCRIBED ON THE PLAN DRAWINGS. AREAS WHICH ARE TO BE TOPSOILED SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 3 TO 5 INCHES 6 TO 12 INCHES ON COMPACTED SOILS PRIOR TO PLACEMENT OF TOPSOIL. AREAS TO BE VEGETATED SHALL HAVE A MINIMUM 4 INCHES OF TOPSOIL IN PLACE PRIOR TO SEEDING AND MULCHING. FILL OUTSLOPES SHALL HAVE A MINIMUM OF 2 INCHES OF TOPSOIL.	THAT MAY HAVE THE F CONDITIONS OF THIS TOXIC OR HAZARDOU SOLVENTS, ETC. BMP AREA. THE PPC PLAN AVAILABLE FOR REVIE	POTEN PERMI IS SUBS PS SHAL I SHALL EW AT
19.	. ALL FILLS SHALL BE COMPACTED AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS. FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES AND CONDUITS, ETC. SHALL BE COMPACTED IN ACCORDANCE WITH LOCAL REQUIREMENTS OR CODES.	request. <u>GENERAL N</u> (ΟΤΕ
20 21 22	. ALL EARTHEN FILLS SHALL BE PLACED IN COMPACTED LAYERS NOT TO EXCEED 9 INCHES IN THICKNESS. . FILL MATERIALS SHALL BE FREE OF FROZEN PARTICLES, BRUSH, ROOTS, SOD, OR OTHER FOREIGN OR OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY FILLS. . FROZEN MATERIALS OR SOFT, MUCKY, OR HIGHLY COMPRESSIBLE MATERIALS SHALL NOT BE INCORPORATED INTO FILLS.	1. A COPY OF THE APF AT THE PROJECT S 2. AT LEAST 7 DAYS B OPERATOR SHALL ALL APPROPRIATE	PROVE SITE AT EFORE INVITE
23 24	. FILL SHALL NOT BE PLACED ON SATURATED OR FROZEN SURFACES. . SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED IN ACCORDANCE WITH THE STANDARD AND SPECIFICATION FOR SUBSURFACE DRAIN OR OTHER APPROVED METHOD.	PREPARER, AND A ON-SITE, PRE-CON 3. AT LEAST 3 DAYS B	REPRE
25 26	. ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY UPON REACHING FINISHED GRADE. CUT SLOPES IN COMPETENT BEDROCK AND ROCK FILLS NEED NOT BE VEGETATED. SEEDED AREAS WITHIN 50 FEET OF A SURFACE WATER, OR AS OTHERWISE SHOWN ON THE PLAN DRAWINGS, SHALL BE BLANKETED ACCORDING TO THE STANDARDS OF THIS PLAN. IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITIES CEASE IN ANY AREA OR SUBAREA OF THE PROJECT, THE OPERATOR SHALL STABILIZE ALL DISTURBED AREAS. DURING NON-GERMINATING MONTHS, MULCH OR PROTECTIVE BLANKETING SHALL BE APPLIED AS	INVOLVED IN THOS INCORPORATED AT 4. ALL EARTH DISTURI SEQUENCE. EACH FOLLOWING STAGE ONLY TO THOSE AL	SE ACTI T 8-1-1 BANCE STAGE E IS INI REAS I
27	DESCRIBED IN THE PLAN. AREAS NOT AT FINISHED GRADE, WHICH WILL BE REACTIVATED WITHIN 1 YEAR, MAY BE STABILIZED IN ACCORDANCE WITH THE TEMPORARY STABILIZATION SPECIFICATIONS. THOSE AREAS WHICH WILL NOT BE REACTIVATED WITHIN 1 YEAR SHALL BE STABILIZED IN ACCORDANCE WITH THE PERMANENT STABILIZATION SPECIFICATIONS. . PERMANENT STABILIZATION IS DEFINED AS A MINIMUM UNIFORM, PERENNIAL 70% VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED EROSION. CUT AND FILL SLOPES SHALL BE CAPABLE OF	5. IMMEDIATELY UPON ACCELERATED ERC APPROPRIATE BES EROSION AND/OR \$	N DISCO OSION 3T MAN SEDIME
28 29 30	RESISTING FAILURE DUE TO SLUMPING, SLIDING, OR OTHER MOVEMENTS. . E&S BMPS SHALL REMAIN FUNCTIONAL AS SUCH UNTIL ALL AREAS TRIBUTARY TO THEM ARE PERMANENTLY STABILIZED OR UNTIL THEY ARE REPLACED BY ANOTHER BMP APPROVED BY THE LOCAL CONSERVATION DISTRICT OR THE DEPARTMENT. . UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE OWNER AND/OR OPERATOR SHALL CONTACT THE LOCAL CONSERVATION DISTRICT FOR AN INSPECTION PRIOR TO REMOVAL/CONVERSION OF THE E&S BMPS. AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED. TEMPORARY FROSION AND SEDIMENT BMPS MUST BE REMOVED OR CONVERTED TO	MAINTENAN THE PROPERTY M OPERATION AND M FOLLOW THE FOLL TOTALING ONE IN(CE (ANAG MAINT LOWIN CH OF
	PERMANENT POST CONSTRUCTION STORMWATER MANAGEMENT BMPS. AREAS DISTURBED DURING REMOVAL OR CONVERSION OF THE BMPS SHALL BE STABILIZED IMMEDIATELY. IN ORDER TO ENSURE RAPID REVEGETATION OF DISTURBED AREAS, SUCH REMOVAL/CONVERSIONS ARE TO BE DONE ONLY DURING THE GERMINATING SEASON.	REPRESENTATIVE HOURS FOR THE F	S OF
31 32	. UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE OWNER AND/OR OPERATOR SHALL CONTACT THE LOCAL CONSERVATION DISTRICT TO SCHEDULE A FINAL INSPECTION. . FAILURE TO CORRECTLY INSTALL E&S BMPS, FAILURE TO PREVENT SEDIMENT-LADEN RUNOFF FROM LEAVING THE CONSTRUCTION SITE, OR	BIORETENTION BA	SINS
33	CRIMINAL PENALTIES BEING INSTITUTED BY THE DEPARTMENT AS DEFINED IN SECTION 602 OF THE PENNSYLVANIA CLEAN STREAMS LAW. THE CLEAN STREAMS LAW PROVIDES FOR UP TO \$10,000 PER DAY IN CIVIL PENALTIES, UP TO \$10,000 IN SUMMARY CRIMINAL PENALTIES, AND UP TO \$25,000 IN MISDEMEANOR CRIMINAL PENALTIES FOR EACH VIOLATION. . CLEAN FILL IS DEFINED AS: UNCONTAMINATED, NON-WATER SOLUBLE, NON-DECOMPOSABLE, INERT, SOLID MATERIAL. THE TERM INCLUDES	INSPECT OUTLET S CLOGGING. WHILE VEGETATIC	STRU(
	SOIL, ROCK, STONE, DREDGED MATERIAL, USED ASPHALT, AND BRICK, BLOCK OR CONCRETE FROM CONSTRUCTION AND DEMOLITION ACTIVITIES THAT IS SEPARATE FROM OTHER WASTE AND IS RECOGNIZABLE AS SUCH. THE TERM DOES NOT INCLUDE MATERIALS PLACED IN OR ON THE WATERS OF THE COMMONWEALTH UNLESS OTHERWISE AUTHORIZED. (THE TERM "USED ASPHALT" DOES NOT INCLUDE MILLED ASPHALT OR ASPHALT THAT HAS BEEN PROCESSED FOR RE-USE.).	MOW AND TRIM VE TWICE A YEAR, TC	EGETA) ALLC
34	. UPON TEMPORARY CESSATION OF AN EARTH DISTURBANCE ACTIVITY OR ANY STAGE OR PHASE OF AN ACTIVITY WHERE A CESSATION OF EARTH DISTURBANCE ACTIVITIES WILL EXCEED 4 DAYS, THE SITE SHALL BE IMMEDIATELY SEEDED, MULCHED, OR OTHERWISE PROTECTED FROM ACCELERATED EROSION AND SEDIMENTATION PENDING FUTURE EARTH DISTURBANCE ACTIVITIES.	TREES AND SHRUE REPLANTING. PRE	BS SH
	VEGETATIVE STABILIZATION 1. ALL DISTURBED AREAS SHALL BE IMMEDIATELY STABILIZED, TEMPORARILY OR PERMANENTLY. 2. REMOVE COARSE ERACMENTS FROM SUBFACE	SYSTEM.	
	3. SOIL SHALL BE LOOSENED TO A MINIMUM DEPTH OF 3 INCHES BY RAKING, DISCING OR OTHER ACCEPTABLE MEANS PRIOR TO SEEDING.	FACILITIES, CONSU SEDIMENT OR DEE	ULT TI BRIS. I
4	4. SEEDING: APPLY SEED UNIFORMLY AT THE SPECIFIED RATE WITH A CYCLONE SEEDER, DRILL, CULTIPACKER SEEDER OR HYDROSEEDER. WHEN NOT USING A HYDROSEEDER, SEED SHOULD BE APPLIED TO A MAXIMUM DEPTH OF 1/4 INCLI ON CLAYEY SOILS AND 1/2 INCLI ON	WILL NEED TO BE EXCAVATED AND I THE DESIGN ENGI	REPL ITS PE NEER
	SANDY SOILS. WHEN USING A HYDROSEEDER, THE SEED AND FERTILIZER SHALL BE MIXED ON SITE AND THE SEEDING SHALL BE IMMEDIATE WITHOUT INTERRUPTION.	IF THE STONE AND SOILS AND STONE MEDIA AND STONE) MED E ENC/
; (5. DO NOT SOW IMMEDIATELY FOLLOWING RAIN OR WHEN GROUND IS TOO DRY DURING WINDY PERIODS. 6. ALL SEED SPECIFICATIONS SUCH AS PURITY, READY GERM, TOTAL GERM,	AMENDED SOILS	- 0110
-	ETC., SHALL BE IN ACCORDANCE WITH THE PENN STATE UNIVERSITY AGRONOMY GUIDE. 7. IF AREAS ARE TO REMAIN DISTURBED FROM NOVEMBER 1 THROUGH MARCH 1	1. INSPECT ONCE 24-HOUR PERIC	: PER DD.
٤	(NON-GROWING SEASON), THE CONTRACTOR SHALL PROTECT SAID AREAS BY SEEDING AND MULCHING, SODDING, OR BY PLACEMENT OF MATTING AS NECESSARY. THIS WORK SHALL BE DONE IN ACCORDANCE WITH THE SEQUENCE. MULCHING SHALL BE DONE AT RATE AS LISTED BELOW. 8. TEMPORARY STABILIZATION: SITE PREPARATION SHALL CONSIST OF APPLYING (1) TON OF LIME BER ACRE AND 600 L. BER ACRE OF 10.10.10	 CHECK FOR AC CHECK FOR ER CHECK VEGET CHECK FOR IN 	CUMI ≷OSIO ATIVE VASIV
	FERTILIZER. THE CONTRACTOR SHALL PROVIDE ANNUAL RYEGRASS AT A RATE OF 40 LB/AC, AND MULCH WITH HAY OR STRAW AT A RATE OF 3 TONS PER ACRE (PROPERLY ANCHORED BY TACKING, CRIMPING, ETC.).	ALL WASTES AND STORMWATER MA	MATE
<u>F</u>	PERMANENT STABILIZATION SEEDING MIXTURES SPECIES SEEDING RATE (LB/AC) ANNUAL WINTER RYE GRASS 40 TALL EESCLIE 60	BE REMOVED FRO SOLID WASTE MAN WASTE MATERIAL [®] PROVIDED BELOV	VM THI NAGEI S SHA V ARE
	FINE RED FESCUE 35 PERENNIAL RYE 15 FERTILIZER (10-10-10) 1000	THAT WILL REQUIF SEDIMENT FR WEEDS. BRAN	RE RE ROM T NCHE
	AGRICULTURAL GRADE LINE 3 TON/AC MULCH 3 TON/AC	ANY TRASH O GRASS CLIPP SEDIMENT FF)R LIT 'INGS
	CONTRACTOR MAT PROVIDE A SUITABLE ALTERNATE TO THE SPECIFIED SEED MIXTURE. THE SEED MIXTURE SHALL MEET THE SPECIFICATIONS OF THE PENN STATE AGRONOMY GUIDE. ANY ALTERNATIVES SHALL ALSO BE APPROVED BY THE OWNER AND/OR ADAMS COUNTY CONSERVATION DISTRICT. IN THE EVENT THAT VEGETATIVE COVER IS NOT ESTABLISHED, THE CONTRACTOR SHALL PROVIDE BIODEGRADABLE STABILIZATION MATTING TO HOLD SOIL MATERIAL UNTIL VEGETATIVE COVER IS ESTABLISHED.	 ANY MATERIA SYSTEMS 	4LS (N

ROL FACILITIES TEMPORARY MAINTENANCE SCHEDULE PLEMENT THE FOLLOWING MAINTENANCE SCHEDULE AT A

ALL BEGIN IMMEDIATELY FOLLOWING INSTALLATION OF THE NTROL MEASURES AND SHALL BE FOLLOWED UNTIL THE CORDANCE WITH THIS PLAN.

HEDULE Y OR AFTER STORM EVENTS	DESCRIPTION INSPECT, REPLACE OR RESECURE, REMOVE SEDIMENT WHEN ACCUMULATION REACHES 1/2 HEIGHT OF FENCE (ABOVE GROUND)
EKLY	INSPECT, REPLACE ANY MATERIALS NECESSARY; RE-SEED AS REQUIRED
EKLY AND AFTER STORM EVENTS	INSPECT, RE-SEED, REPAIR SILT FENCE IF IF NECESSARY, REMOVE SEDIMENT FROM SILT FENCE AT 1/2 HEIGHT OF FENCE
KLY AND AFTER STORM EVENTS	INSPECT AND REPAIR IMMEDIATELY
<ly.< td=""><td>INSPECT AND ADD ROCK AS NECESSARY TO MAINTAIN THICKNESS</td></ly.<>	INSPECT AND ADD ROCK AS NECESSARY TO MAINTAIN THICKNESS

BILIZED, ALL EROSION AND SEDIMENT CONTROL BMP'S MUST BE ITENANCE MUST INCLUDE INSPECTIONS OF ALL EROSION AND FTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, RESEEDING. REMULCHING AND RENETTING MUST BE EROSION AND SEDIMENT CONTROL BMP'S FAIL TO PERFORM BMP'S, OR MODIFICATIONS OF THOSE INSTALLED WILL BE

5, PREVENTION, AND CONTINGENCY (PPC) PLAN

R CAUSING ACCIDENTAL POLLUTION OF AIR, LAND, OR WATER, MENT OF PUBLIC HEALTH AND SAFETY THROUGH ACCIDENTAL OUS, OR OTHER POLLUTING MATERIALS, THE PERMITTEE OR OP A PREPAREDNESS, PREVENTION, AND CONTINGENCY (PPC) BE DEVELOPED IN ACCORDANCE WITH DEPARTMENT AN SHALL IDENTIFY AREAS WHICH MAY INCLUDE. BUT ARE NOT MENT AREAS, RAW MATERIAL STORAGE AREAS, TEMPORARY RAGE AREAS, MAINTENANCE AREAS, AND ANY OTHER AREAS TIAL TO CAUSE NON-COMPLIANCE WITH THE TERMS AND DUE TO THE STORAGE, HANDLING, OR DISPOSAL OF ANY STANCES SUCH AS OIL, GASOLINE, PESTICIDES, HERBICIDES, LL BE DEVELOPED AND IMPLEMENTED FOR EACH IDENTIFIED BE MAINTAINED ON-SITE AT ALL TIMES AND SHALL BE MADE THE DEPARTMENT'S OR COUNTY CONSERVATION DISTRICT'S

S FOR CONSTRUCTION SEQUENCE EROSION AND SEDIMENT CONTROL PLAN MUST BE AVAILABLE

ALL TIMES. STARTING ANY EARTH DISTURBANCE ACTIVITIES, THE OWNER AND/OR ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES, THE LANDOWNER, IPAL OFFICIALS, THE EROSION AND SEDIMENT CONTROL PLAN SENTATIVE OF THE ADAMS COUNTY CONSERVATION DISTRICT TO AN TION MEETING.

STARTING ANY EARTH DISTURBANCE ACTIVITIES, ALL CONTRACTORS VITIES SHALL NOTIFY THE PENNSYLVANIA ONE CALL SYSTEM FOR THE LOCATION OF EXISTING UNDERGROUND UTILITIES. ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE CONSTRUCTION

SHALL BE COMPLETED AND IMMEDIATELY STABILIZED BEFORE ANY FIATED. CLEARING, GRUBBING AND TOPSOIL STRIPPING SHALL BE LIMITED ESCRIBED IN EACH STAGE. VERING UNFORSEEN CIRCUMSTANCES POSING THE POTENTIAL FOR

AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT AGEMENT PRACTICES TO ELIMINATE THE POTENTIAL FOR ACCELERATED ENT POLLUTION.

OF BEST MANAGEMENT PRACTICES (BMP'S)

EMENT ASSOCIATION (PMA) SHALL BE SOLELY RESPONSIBLE FOR THE ENANCE OF ALL STORMWATER MANAGEMENT FACILITIES. THE PMA SHALL NG MAINTENANCE SCHEDULE OUTLINED BELOW. 'STORM EVENT' DEFINED AS MORE IN 24 HOURS.

CUMBERLAND TOWNSHIP MAY ACCESS THE SITE DURING NORMAL BUSINESS SE OF INSPECTING SWM FACILITIES.

WITH SOIL AMENDMENTS

CTURE FOR CONDITION AND CLOGGING. CHECK BASIN UNDERDRAIN FOR

BEING ESTABLISHED, PRUNING AND WEEDING MAY BE REQUIRED.

TION AS NEEDED ON EMBANKMENTS AND ON BASIN FLOOR, RECOMMENDED OW FOR INSPECTION.

HOULD BE INSPECTED TWICE A YEAR TO EVALUATE HEALTH AND NEED FOR AND REMOVE NOXIOUS AND INVASIVE PLANTS.

RIP RAP OR MATTING FROM INFLOWS TO BASINS FROM THE STORM DRAIN

INFILTRATION WITHIN 72 HOURS) OF THE STORMWATER MANAGEMENT HE DESIGN ENGINEER. FLUSH THE STORM PIPING SYSTEM AND CLEAR ANY F DEWATERING OF THE BASIN STILL FAILS TO OCCUR, THE MEDIA AND STONE ACED. UPON APPROVAL OF THE DESIGN ENGINEER, THE MEDIA COULD BE RMEABILITY RESTORED BY MIXING IN SAND OR COMPOST. UPON APPROVAL OF THE STONE COULD ALSO BE EXCAVATED AND WASHED FOR REUSE. HOWEVER, IA ARE NOT APPROVED FOR REUSE, REMOVE AND REPLACE THE AMENDED ASEMENT OF THE BASIN IN-KIND. THE UNDERDRAIN CAN BE REUSED BUT THE ULD BE COMPLETELY DISPOSED OF (NOT REUSED).

YEAR AND AFTER ALL STORM EVENTS TOTALING ONE INCH OR MORE IN A

ULATION OF SEDIMENT AND DEBRIS, REMOVE AS NECESSARY. IN AND STREAM BANK STABILITY, REPAIR AS NECESSARY. CONDITIONS, REPAIR AS NECESSARY.

E SPECIES, REMOVE AS NECESSARY.

RIALS DEPOSITED IN AND REMOVED FROM POST-CONSTRUCTION MENT (PCSM) BMP FACILITIES DURING OPERATION AND MAINTENANCE SHALL SITE AND PROPERLY DISPOSED OF IN ACCORDANCE WITH THE DEPARTMENT'S MENT REGULATIONS AT 25 PA. CODE 260.1 ET.SEQ., 271.1, AND 287.1 ET.SEQ. NO ALL BE BURNED, BURIED, DUMPED, OR DISCHARGED AT THE SITE.

THE POSSIBLE MATERIALS OBTAINED FROM OPERATION AND MAINTENANCE CYCLING AND/OR PROPER DISPOSAL:

HE BOTTOM OF THE BASINS , PRUNINGS, ETC. FROM MAINTENANCE OF THE BASIN VEGETATION

TER

AND LEAVES UMPED INLETS OR STORM PIPING

IEDIA, STONE, PIPING, ETC.) FROM FAILED STORMWATER MANAGEMENT



STABILIZED ROCK CONSTRUCTION ENTRANCE NOT TO SCALE



INSTALLATION GUIDE - SLOPES

- 1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING APPLICATION OF LIME, FERTILIZER, AND SEED.
- 2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A SIX INCH DEEP BY SIX FEET WIDE (6"x6') TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
- 3. INSTALL AN ANCHOR TRENCH AT THE BOTTOM OF SLOPE TO PREVENT WATER FROM GETTING UNDER THE EDGE OF THE FABRIC.
- 4. PLACE BLANKETS END OVER END (SHINGLE STYLE) WITH A SIX INCH (6") OVERLAP. USE A DOUBLE ROW OF STAGGERED STAPLES FOUR INCHES (4") APART TO SECURE BLANKETS.
- 5. FULL LENGTH EDGE OF BLANKETS AT TOP OF SIDE SLOPES MUST BE ANCHORED IN A SIX INCH DEEP BY SIX INCH WIDE (6"x6") TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
- 6. BLANKETS ON SIDE SLOPES MUST BE OVERLAPPED FOUR INCHES (4") OVER THE CENTER BLANKET AND STAPLED.
- 7. THE TERMINAL END OF THE BLANKETS MUST BE ANCHORED IN A SIX INCH DEEP BY SIX INCH WIDE (6"x6") TRENCH.
- NOTE: HORIZONTAL STAPLE SPACING SHOULD BE ALTERED IF NECESSARY TO ALLOW STAPLES TO SECURE THE CRITICAL POINTS ALONG THE SLOPE.

EROSION CONTROL - MATTING DETAIL N.T.S.



ATTACHMENT B -	- BMP RETROFITS
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GENERAL INFORMATION									
Permittee Nam	ne: Cumberland Township		Permit No.:	PAG133748					
BMP Name:	Basin Retrofit at Twin Lakes W	/est	Latitude:	39.823329					
Surface Water	s: Marsh Creek Watershed	Longitude:	-77.268162						
Municipality:	Cumberland Township		County:	Adams					
Construct	tion of the BMP is Complete.	Date	Construction Completed:	10/2022					
Photogra	phs, Drawings, and O&M Plan are a	ttached. Inspe	ection/Monitoring Frequence	cy: Annually					
Permits or App	provals Obtained: N/A								
Party Respons	sible for Long-Term O&M: 🛛 🗌 Pern	nittee 🛛 Oth	er: Twin Lakes HOA						
Joint BMP?	☐ Yes ⊠ No If Yes, attach a	list of other peri	mittees sharing credit for th	ne BMP					
Effectiveness	Values Source:								
DEP:	BMP Type (Pre): Dry Detention Ba	asin	BMP Type (Post): Bioret (C/D s	tention - Raingarden soils with underdrain)					
	Retrofit TSS Effectiveness Value: 4	5 % (Post – P	re Effectiveness Values)						
CB Expe	rt Panel Report: Runoff Re	duction (RR)	Sediment Treatment (S	ST)					
	RS (ac-ft): IA (ac):	R/IA (in):	Retrofit TSS Effectiv	veness Value: %					
BMP CONSTRUCTION									
BMP Infiltrating Surface Area (ft ²): 15500 Ponding Depth (ft): 0 🛛 Underdrain									
Media Description: 50% Topsoil, 25% Sand, & 25% Compost Media Depth (ft): 1									
Vegetate	d Loading Ratio (see instructio	ns): 88	WQ Storage Volume ((ft ³): 4650					
	TSS LO	AD DELIVERED	ТО ВМР						
Total Drainage	Area Treated by BMP: 31.14	acres (Treatm	ent Area)						
TSS Load Del	livered to BMP – Simplified Metho	d		Calculations attached					
Pollutant	Land Cover	Area (acres)	Loading Rate (lbs/ac/yr)	Delivered Load (lbs/yr)					
TOO	Impervious	9.34	1398.77	13065					
155 -	Pervious	21.80	207.67	4527					
	То	tal TSS Load D	elivered to BMP (lbs/yr) =	17592					
Sediment Loa	nd Delivered to BMP – Land Cover	-Based Calcul	ation Method	Calculations attached					
Pollutant	Land Cover	Area (acres)	Loading Rate (lbs/ac/yr)	Delivered Load (lbs/yr)					
TOO									
155									
	То	tal TSS Load D	elivered to BMP (lbs/yr) =						
TSS LOAD REDUCTION CREDIT									
TSS Load Delivered to BMP (lbs/yr) x TSS Effectiveness Value = 7916 lbs/yr TSS Credit									
Permittee Cree	dit for Joint BMPs (if applicable):	% or	lbs/yr TS	S Credit					



Watershed Model Schematic

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023



<u>Legend</u>

Hyd.OriginDescription1SCS RunoffDA to Twin Lakes West Basin2ReservoirTwin Lakes West

Project: Twin Lakes West.gpw

Hydrograph Return Period Recap Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd.	Hydrograph	Inflow				Hydrograph					
NO.	type (origin)	nya(s)	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	Description
1 2	SCS Runoff Reservoir	1		37.61 13.93							DA to Twin Lakes West Basin Twin Lakes West
Pro	j. file: Twin L	 akes Wes	t.gpw						 Tu	esday, 1	2 / 5 / 2023

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	37.61	2	732	152,832				DA to Twin Lakes West Basin
2	Reservoir	13.93	2	754	150,066	1	<mark>510.69</mark>	60,013	Twin Lakes West
Twin Lakes West.gpw			Return P	eriod: 2 Ye	' ear	Tuesday, 1	2 / 5 / 2023		

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd. No. 1

DA to Twin Lakes West Basin

Hydrograph type =	SCS Runoff	Peak discharge	= 37.61 cfs
Storm frequency =	= 2 yrs	Time to peak	= 12.20 hrs
Time interval =	= 2 min	Hyd. volume	= 152,832 cuft
Drainage area =	= 31.140 ac	Curve number	= 81*
Basin Slope =	= 0.0 %	Hydraulic length	= 0 ft
Tc method =	= TR55	Time of conc. (Tc)	= 29.40 min
Total precip. =	= 3.05 in	Distribution	= Type II
Storm duration =	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(9.340 x 98) + (21.800 x 74)] / 31.140



Tuesday, 12 / 5 / 2023

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd. No. 1

DA to Twin Lakes West Basin

Description	<u>A</u>		<u>B</u>		<u>C</u>		<u>Totals</u>
Sheet Flow Manning's n-value Flow length (ft) Two-year 24-hr precip. (in) Land slope (%)	= 0.240 = 300.0 = 3.05 = 8.67		0.011 0.0 0.00 0.00		0.011 0.0 0.00 0.00		
Travel Time (min)	= 19.58	+	0.00	+	0.00	=	19.58
Shallow Concentrated Flow Flow length (ft) Watercourse slope (%) Surface description Average velocity (ft/s)	= 280.00 = 3.93 = Unpave =3.20	d	1200.00 1.38 Paved 2.38		0.00 0.00 Paved 0.00		
Travel Time (min)	= 1.46	+	8.39	+	0.00	=	9.85
Channel Flow X sectional flow area (sqft) Wetted perimeter (ft) Channel slope (%) Manning's n-value Velocity (ft/s)	= 0.00 = 0.00 = 0.00 = 0.015 =0.00		0.00 0.00 0.00 0.015 0.00		0.00 0.00 0.00 0.015 0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	= 0.00	+	0.00	+	0.00	=	0.00
Total Travel Time, Tc							29.40 min

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Tuesday, 12 / 5 / 2023

Hyd. No. 2

Twin Lakes West

Hydrograph type Storm frequency	= Reservoir <mark>= 2 yrs</mark>	Peak discharge Time to peak	= 13.93 cfs = 12.57 hrs
Time interval	= 2 min	Hyd. volume	= 150,066 cuft
Inflow hyd. No.	= 1 - DA to Twin Lakes West Ba	asian Silevation	= 510.69 ft
Reservoir name	= Twin Lakes West	Max. Storage	= 60,013 cuft

Storage Indication method used.



Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Pond No. 1 - Twin Lakes West

Pond Data

UG Chambers -Invert elev. = 507.17 ft, Rise x Span = 0.33 x 0.33 ft, Barrel Len = 155.00 ft, No. Barrels = 3, Slope = 0.00%, Headers = No Epocasense bls-thruterflueter/com5007.020 fts:Widthrage@ethd0afteahteighbot=dse@lftpr/Voldsme 80100/%tion. Begining Elevation = 508.50 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	507.00	n/a	0	0
0.15	507.15	n/a	2,079	2,079
0.30	507.30	n/a	2,089	4,168
0.45	507.45	n/a	2,094	6,262
0.60	507.60	n/a	2,082	8,344
0.74	507.74	n/a	2,079	10,423
0.89	507.89	n/a	2,079	12,502
1.04	508.04	n/a	2,079	14,581
1.19	508.19	n/a	2,079	16,659
1.34	508.34	n/a	2,079	18,738
1.49	508.49	n/a	2,079	20,817
1.50	508.50	15,445	77	20,895
2.00	509.00	16,467	7,978	28,873
3.00	510.00	18,588	17,528	46,400
4.00	511.00	20,904	19,746	66,146
5.00	512.00	22,729	21,817	87,963
6.00	513.00	24,589	23,659	111,622

Culvert / Orifice Structures

[A] [B] [C] [PrfRsr] [A] [B] [C] [D] Rise (in) = 24.00 4.00 0.00 0.00 Crest Len (ft) = 10.00 0.00 0.00 0.00 0.00 = 24.00 4.00 0.00 = <u>512.00</u> 0.00 0.00 0.00 Crest El. (ft) Span (in) No. Barrels = 1 1 0 0 Weir Coeff. = 2.60 3.33 3.33 3.33 Weir Type = 508.50 507.17 0.00 0.00 Invert El. (ft) = Broad ---------= No Length (ft) = 37.00 57.00 0.00 0.00 Multi-Stage No No No Slope (%) = 1.00 1.00 0.00 n/a N-Value = .013 .013 .013 n/a = 0.60 0.60 0.60 = 0.000 (by Contour) Orifice Coeff. 0.60 Exfil.(in/hr) Multi-Stage = n/a No No No TW Elev. (ft) = 0.00

Weir Structures

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	507.00	0.00	0.00			0.00						0.000
0.01	208	507.01	0.00	0.00			0.00						0.000
0.03	416	507.03	0.00	0.00			0.00						0.000
0.04	624	507.04	0.00	0.00			0.00						0.000
0.06	832	507.06	0.00	0.00			0.00						0.000
0.07	1,039	507.07	0.00	0.00			0.00						0.000
0.09	1,247	507.09	0.00	0.00			0.00						0.000
0.10	1,455	507.10	0.00	0.00			0.00						0.000
0.12	1,663	507.12	0.00	0.00			0.00						0.000
0.13	1,871	507.13	0.00	0.00			0.00						0.000
0.15	2,079	507.15	0.00	0.00			0.00						0.000
0.16	2,288	507.16	0.00	0.00			0.00						0.000
0.18	2,497	507.18	0.00	0.00 ic			0.00						0.000
0.19	2,706	507.19	0.00	0.00 ic			0.00						0.001
0.21	2,915	507.21	0.00	0.00 ic			0.00						0.004
0.22	3,123	507.22	0.00	0.01 ic			0.00						0.007
0.24	3,332	507.24	0.00	0.01 ic			0.00						0.011
0.25	3,541	507.25	0.00	0.02 ic			0.00						0.017
0.27	3,750	507.27	0.00	0.02 ic			0.00						0.023
0.28	3,959	507.28	0.00	0.03 ic			0.00						0.030
0.30	4,168	507.30	0.00	0.04 ic			0.00						0.038
0.31	4,377	507.31	0.00	0.05 ic			0.00						0.046
0.33	4,587	507.33	0.00	0.06 ic			0.00						0.055
0.34	4,796	507.34	0.00	0.06 ic			0.00						0.065
0.36	5,005	507.36	0.00	0.07 ic			0.00						0.075

Tuesday, 12 / 5 / 2023

Continues on next page ...

Twin Lakes West Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	CIv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.37	5,215	507.37	0.00	0.09 ic			0.00						0.085
0.39	5,424	507.39	0.00	0.10 ic			0.00						0.096
0.40	5,634	507.40	0.00	0.11 ic			0.00						0.107
0.42	5,843	507.42	0.00	0.12 ic			0.00						0.117
0.43	6,052	507.43	0.00	0.13 ic			0.00						0.128
0.45	6,262	507.45	0.00	0.14 IC			0.00						0.139
0.40	6,470	507.40	0.00	0.15 IC			0.00						0.149
0.48	0,078	507.48	0.00	0.16 10			0.00						0.158
0.49	0,000	507.49	0.00	0.17 ic			0.00						0.107
0.51	7,095	507.51	0.00	0.17 10			0.00						0.173
0.52	7,505	507.52	0.00	0.10.00			0.00						0.170
0.55	7,311	507.55	0.00	0.10.00			0.00						0.100
0.57	7.927	507.57	0.00	0.18 oc			0.00						0.185
0.58	8.135	507.58	0.00	0.19 oc			0.00						0.187
0.60	8,344	507.60	0.00	0.19 oc			0.00						0.189
0.61	8,552	507.61	0.00	0.19 oc			0.00						0.191
0.63	8,759	507.63	0.00	0.19 oc			0.00						0.193
0.64	8,967	507.64	0.00	0.20 oc			0.00						0.195
0.66	9,175	507.66	0.00	0.20 oc			0.00						0.197
0.67	9,383	507.67	0.00	0.20 oc			0.00						0.199
0.69	9,591	507.69	0.00	0.20 oc			0.00						0.201
0.70	9,799	507.70	0.00	0.20 oc			0.00						0.203
0.72	10,007	507.72	0.00	0.21 oc			0.00						0.205
0.73	10,215	507.73	0.00	0.21 oc			0.00						0.207
0.74	10,423	507.74	0.00				0.00						0.209
0.70	10,031	507.76	0.00				0.00						0.211
0.77	10,030	507.77	0.00	0.21 00			0.00						0.215
0.75	11 254	507.80	0.00	0.21 00			0.00						0.213
0.00	11 462	507.82	0.00	0.22.00			0.00						0.217
0.83	11 670	507.83	0.00	0.22 00			0.00						0.210
0.85	11.878	507.85	0.00	0.22 oc			0.00						0.222
0.86	12,086	507.86	0.00	0.22 oc			0.00						0.224
0.88	12,294	507.88	0.00	0.23 oc			0.00						0.226
0.89	12,502	507.89	0.00	0.23 oc			0.00						0.227
0.91	12,709	507.91	0.00	0.23 oc			0.00						0.229
0.92	12,917	507.92	0.00	0.23 oc			0.00						0.231
0.94	13,125	507.94	0.00	0.23 oc			0.00						0.233
0.95	13,333	507.95	0.00	0.23 oc			0.00						0.234
0.97	13,541	507.97	0.00	0.24 oc			0.00						0.236
0.98	13,749	507.98	0.00	0.24 oc			0.00						0.238
1.00	13,957	508.00	0.00				0.00						0.239
1.01	14,100	508.03	0.00	0.24 00			0.00						0.241
1.03	14,575	508.03	0.00	0.24 00			0.00						0.243
1.04	14,301	508.04	0.00	0.24 00			0.00						0.244
1.00	14 996	508.07	0.00	0.25 oc			0.00						0.248
1.09	15.204	508.09	0.00	0.25 oc			0.00						0.249
1.10	15,412	508.10	0.00	0.25 oc			0.00						0.251
1.12	15,620	508.12	0.00	0.25 oc			0.00						0.252
1.13	15,828	508.13	0.00	0.25 oc			0.00						0.254
1.15	16,036	508.15	0.00	0.26 oc			0.00						0.256
1.16	16,244	508.16	0.00	0.26 oc			0.00						0.257
1.18	16,452	508.18	0.00	0.26 oc			0.00						0.259
1.19	16,659	508.19	0.00	0.26 oc			0.00						0.260
1.21	16,867	508.21	0.00	0.26 oc			0.00						0.262
1.22	17,075	508.22	0.00	0.26 oc			0.00						0.263
1.24	17,283	508.24	0.00	0.26 oc			0.00						0.265
1.25	17,491	508.25	0.00	0.27 00			0.00						0.266
1.27	17,699	500.27	0.00	0.27 00			0.00						0.200
1.20	18 115	508.20	0.00	0.27 00			0.00						0.209
1.30	18 323	508.31	0.00	0.27 00			0.00						0.271
1.33	18 531	508.33	0.00	0.27 00			0.00						0.272
1.34	18,738	508.34	0.00	0.28 oc			0.00						0.275
1.36	18,946	508.36	0.00	0.28 oc			0.00						0.277
1.37	19,154	508.37	0.00	0.28 oc			0.00						0.278
1.39	19,362	508.39	0.00	0.28 oc			0.00						0.280
1.40	19,570	508.40	0.00	0.28 oc			0.00						0.281
1.42	19,778	508.42	0.00	0.28 oc			0.00						0.282
1.43	19,986	508.43	0.00	0.28 oc			0.00						0.284

Continues on next page ...

Twin Lakes West

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
1.45	20,194	508.45	0.00	0.29 oc			0.00						0.285
1.46	20,402	508.46	0.00	0.29 oc			0.00						0.287
1.48	20,609	508.48	0.00	0.29 oc			0.00						0.288
1.49	20,817	508.49	0.00	0.29 oc			0.00						0.289
1.49	20,825	508.49	0.00	0.29 oc			0.00						0.289
1.49	20,833	508.49	0.00	0.29 oc			0.00						0.290
1.49	20,841	508.49	0.00	0.29 oc			0.00						0.290
1.49	20,848	508.49	0.00	0.29 oc			0.00						0.290
1.49	20,856	508.49	0.00	0.29 oc			0.00						0.290
1.50	20,864	508.50	0.00	0.29 oc			0.00						0.290
1.50	20,871	508.50	0.00	0.29 oc			0.00						0.290
1.50	20,879	508.50	0.00	0.29 oc			0.00						0.290
1.50	20,887	508.50	0.00	0.29 oc			0.00						0.290
1.50	20,895	508.50	0.00	0.29 oc			0.00						0.290
1.55	21,692	508.55	0.02 ic	0.29 oc			0.00						0.311
1.60	22,490	508.60	0.06 IC	0.30 00			0.00						0.363
1.65	23,288	508.65	0.14 IC	0.30 oc			0.00						0.446
1.70	24,086	508.70	0.25 IC	0.31 00			0.00						0.558
1.75	24,884	508.75	0.39 IC	0.31 00			0.00						0.701
1.80	25,681	508.80	0.55 IC	0.32 00			0.00						0.870
1.85	26,479	508.85	0.75 IC	0.32 00			0.00						1.066
1.90	27,277	508.90	0.97 IC	0.33 00			0.00						1.291
1.95	28,075	508.95	1.21 IC	0.33 00			0.00						1.541
2.00	28,873	509.00	1.48 IC	0.33 00			0.00						1.814
2.10	30,625	509.10	2.10 IC	0.34 00			0.00						2.439
2.20	32,378	509.20	2.80 IC	0.35 00			0.00						3.149
2.30	34,131	509.30	3.58 IC	0.36 00			0.00						3.932
2.40	35,884	509.40	4.44 IC	0.36 00			0.00						4.801
2.50	37,636	509.50	5.36 IC	0.37 00			0.00						5.730
2.60	39,389	509.60	6.24 OC	0.38 00			0.00						0.015
2.70	41,142	509.70	6.99 OC	0.39 00			0.00						1.3/1
2.80	42,895	509.80	7.71 OC	0.39 00			0.00						8.105
2.90	44,647	509.90	8.41 00	0.40 oc			0.00						8.808
3.00	40,400	510.00	9.06 00	0.41 00			0.00						9.470
3.10	40,373	510.10	9.07 00	0.41 00			0.00						10.00
3.20	50,349	510.20	10.21 00	0.42 00			0.00						11.03
3.30	52,324	510.30	10.00 00	0.43 00			0.00						11.00
2.40	56 272	510.40	10.97 00	0.43 00			0.00						11.41
3.50	58 248	510.50	12.36 oc	0.44 00			0.00						12.40
3.00	50,240 60,222	510.00	12.50 00	0.44 00			0.00						14.00
3.00	62 107	510.70	14.75 oc	0.45 00			0.00						14.00
3 00	6/ 172	510.00	15.82 oc	0.46 oc			0.00						16.28
1 00	66 1/6	511.00	16.81 oc	0.40 00			0.00						17.20
4.00	68 328	511.00	17 75 oc	0.47 00			0.00						18.23
4 20	70 509	511.10	18 64 oc	0.48 oc			0.00						10.20
4.20	72,601	511.20	19 50 00	0.40 00			0.00						10.12
4.00	74 873	511.00	20.31 oc	0.40 00			0.00						20.80
4.40	77,054	511.40	20.01 00	0.49.00			0.00						20.00
4.60	79,236	511.60	21.10.00	0.50 00			0.00						22.35
4 70	81 418	511.00	22 43 ic	0.50 00			0.00						22.00
4.80	83 599	511.80	22.40 ic	0.51 00			0.00						23.45
4.00	85 781	511.00	22.04 lo	0.52 oc			0.00						23.40
5.00	87 963	512.00	23 91 ic	0.52.00			0.00						20.00
5 10	90,329	512.00	24.39 ic	0.52.00			0.00						25.74
5.20	92 694	512 20	24 85 ic	0.53 oc			2.32						27 71
5.30	95 060	512.20	25.31 ic	0.54 oc			4 27						30 12
5 40	97 426	512.00	25.76 ic	0.54 oc			6.58						32.87
5.50	99 792	512 50	26.20 ic	0.55 oc			9 1 9						35.93
5.60	102 158	512.60	26.63 ic	0.55 oc			12 08						39.26
5 70	104 524	512 70	27 06 ic	0.56 00			15 22						42.83
5.80	106 890	512.80	27 47 ic	0.56 oc			18 60						46.63
5.90	109 256	512.90	27.89 ic	0.57 oc			22 19						50.65
6.00	111.622	513.00	28.30 ic	0.57 oc			26.00						54.87
	.,												

Hydraflow Rainfall Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Tuesday, 12 / 5 / 2023

Return Period	Intensity-Duration-Frequency Equation Coefficients (FHA)						
(Yrs)	В	D	E	(N/A)			
1	44.2751	10.5000	0.8683				
2	60.8168	11.7000	0.8947				
3	0.0000	0.0000	0.0000				
5	52.4952	10.0000	0.8116				
10	53.7769	9.6000	0.7855				
25	51.0833	8.6000	0.7354				
50	47.1524	7.5000	0.6898				
100	44.6585	6.6000	0.6521				

File name: Cumberland.IDF

Intensity = B / (Tc + D)^E

Return	Intensity Values (in/hr)											
Period (Yrs)	5 min	10	15	20	25	30	35	40	45	50	55	60
1	4.10	3.21	2.66	2.28	2.00	1.78	1.61	1.47	1.35	1.26	1.17	1.10
2	4.90	3.87	3.22	2.76	2.42	2.16	1.95	1.78	1.64	1.52	1.42	1.33
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	5.83	4.62	3.85	3.32	2.93	2.63	2.39	2.19	2.03	1.89	1.77	1.67
10	6.55	5.19	4.35	3.76	3.32	2.99	2.72	2.51	2.32	2.17	2.04	1.92
25	7.49	5.95	5.00	4.34	3.85	3.48	3.18	2.94	2.73	2.56	2.41	2.28
50	8.26	6.55	5.50	4.79	4.27	3.87	3.55	3.29	3.07	2.88	2.72	2.58
100	9.03	7.15	6.02	5.26	4.70	4.27	3.93	3.65	3.41	3.21	3.04	2.89

Tc = time in minutes. Values may exceed 60.

name: F:\E	ngineering\Municipal	Clients\Cumberland	Township\MS4\2023 DEF	PRP Report\Hy	draflow\Cumberland.p	ср

	Rainfall Precipitation Table (in)								
Storm Distribution	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
SCS 24-hour	2.54	3.05	0.00	3.80	4.47	5.52	6.49	7.64	
SCS 6-Hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	



Basin Retrofit at Twin Lakes West Pre-Construction Photos April 11, 2022









Pre-Construction Photos May 25, 2022



5.





Post-Construction Photos December 8, 2023

















GENERAL EROSION AND SEDIMENT CONTROL NOTES: 1. ALL EARTH DISTURBANCES, INCLUDING CLEARING AND GRUBBING AS WELL AS CUTS AND FILLS SHALL BE D APPROVED E&S PLAN. A COPY OF THE APPROVED DRAWINGS (STAMPED, SIGNED AND DATED BY THE REVIE AVAILABLE AT THE PROJECT SITE AT ALL TIMES. THE REVIEWING AGENCY SHALL BE NOTIFIED OF ANY CHAN PRIOR TO IMPLEMENTATION OF THOSE CHANGES. THE REVIEWING AGENCY MAY REQUIRE A WRITTEN SUBN REVIEW AND APPROVAL AT ITS DISCRETION.	OONE IN ACCORDANCE WITH THE EWING AGENCY) MUST BE NGES TO THE APPROVED PLAN MITTAL OF THOSE CHANGES FOR INTERNOVED IN ACTION OF THOSE CHANGES FOR
 AT LEAST 7 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, INCLUDING CLEARING AND GE OPERATOR SHALL INVITE ALL CONTRACTORS, THE LANDOWNER, APPROPRIATE MUNICIPAL OFFICIALS, THE PLAN PREPARER, THE LICENSED PROFESSIONAL RESPONSIBLE FOR OVERSIGHT OF CRITICAL STAGES OF IN PLAN, AND A REPRESENTATIVE FROM THE LOCAL CONSERVATION DISTRICT TO AN ON-SITE PRECONSTRUCT AT LEAST 3 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, OR EXPANDING INTO AN AREA DENNSYLVANIA ONE CALL SYSTEM INC. SHALL BE NOTIFIED AT 1,800,242,1776 FOR THE LOCATION OF EXIST 	RUBBING, THE OWNER AND/OR MEASURE S E&S PLAN PREPARER, THE PCSM DA MPLEMENTATION OF THE PCSM SILT SOXX TION MEETING. A PREVIOUSLY UNMARKED, THE
 ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE SEQUENCE PROVIDED OD DEVIATION FROM THAT SEQUENCE MUST BE APPROVED IN WRITING FROM THE LOCAL CONSERVATION DIST PRIOR TO IMPLEMENTATION. AREAS TO BE FILLED ARE TO BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGICIARIES AND STRIPPED OF TOPSOIL TO REMOVE TREES. 	ING UNDERGROUND UTILITIES. IN THE PLAN DRAWINGS. IRICT OR BY THE DEPARTMENT SEEDED/MULCHED W ETATION, ROOTS AND OTHER AREAS
 OBJECTIONABLE MATERIAL. 6. CLEARING, GRUBBING, AND TOPSOIL STRIPPING SHALL BE LIMITED TO THOSE AREAS DESCRIBED IN EACH S SEQUENCE. GENERAL SITE CLEARING, GRUBBING AND TOPSOIL STRIPPING MAY NOT COMMENCE IN ANY ST UNTIL THE E&S BMPS SPECIFIED BY THE BMP SEQUENCE FOR THAT STAGE OR PHASE HAVE BEEN INSTALLE DESCRIBED IN THIS E&S PLAN. 	TAGE OF THE CONSTRUCTION TEMPORARILY W AGE OR PHASE OF THE PROJECT STOCKPILED AI ED AND ARE FUNCTIONING AS SOIL MATERIAL
 AT NO TIME SHALL CONSTRUCTION VEHICLES BE ALLOWED TO ENTER AREAS OUTSIDE THE LIMIT OF DISTURNON THE PLAN MAPS. THESE AREAS MUST BE CLEARLY MARKED AND FENCED OFF BEFORE CLEARING AND GE TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE STOCKPILED AT THE LOCATION(S IN THE AMOUNT NECESSARY TO COMPLETE THE FINISH GRADING OF ALL EXPOSED AREAS THAT ARE TO BE EACH STOCKPILE SHALL BE PROTECTED IN THE MANNER SHOWN ON THE PLAN DRAWINGS. STOCKPILE HEIR 	RBANCE BOUNDARIES SHOWN GRUBBING OPERATIONS BEGIN.) SHOWN ON THE PLAN MAPS(S) STABILIZED BY VEGETATION. GHTS SHALL NOT EXCEED 35 INLET WE
 FEET. STOCKPILE SLOPES SHALL BE 2H:1V OR FLATTER. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERA SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES T EROSION AND SEDIMENT POLLUTION AND NOTIFY THE LOCAL CONSERVATION DISTRICT AND/OR THE REGIO DEPARTMENT. 	ATED EROSION AND/OR STABILIZED WE TO MINIMIZE THE POTENTIAL FOR CONSTRUCTION WAL OFFICE OF THE ENTRANCE
 ALL BUILDING MATERIALS AND WASTES SHALL BE REMOVED FROM THE SITE AND RECYCLED OR DISPOSED DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS AT 25 PA. CODE 260.1 ET SEQ., 271.1, AND 287.1 MATERIALS OR WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURNED, BURIED, DUMPED, OR DISCH, ALL OFF-SITE WASTE AND BORROW AREAS MUST HAVE AN E&S PLAN APPROVED BY THE LOCAL CONSERVA DEPARTMENT FULLY IMPLEMENTED PRIOR TO BEING ACTIVATED. 	OF IN ACCORDANCE WITH THE ET. SEQ. NO BUILDING NOTE: UNTIL THE SITE IS STA ARGED AT THE SITE. MAINTAINED PROPERLY. MA TION DISTRICT OR THE SEDIMENT CONTROL BMP'S A PREVENTATIVE AND REMEDI
 12. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ANY MATERIAL BROUGHT ON SITE IS CLEAN FILL. BY THE PROPERTY OWNER FOR ANY FILL MATERIAL AFFECTED BY A SPILL OR RELEASE OF A REGULATED S CLEAN FILL DUE TO ANALYTICAL TESTING. 13. ALL PUMPING OF WATER FROM ANY WORK AREA SHALL BE DONE ACCORDING TO THE PROCEDURE DESCRI UNDISTURBED VEGETATED AREAS 	FORM FP-001 MUST BE RETAINED UBSTANCE BUT QUALIFYING AS BED IN THIS PLAN, OVER
 UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENT BMPS SHALL BE MAINTAINED PROPERLY. MAINT INSPECTIONS OF ALL EROSION AND SEDIMENT BMPS AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGRADING, RESEEDING MUST BE PERFORMED IMMEDIATELY. IF THE E&S BMPS FAIL TO PERFORM AS EXPECTED, REPLACEMENT BM THOSE INSTALLED WILL BE REQUIRED. 	TENANCE SHALL INCLUDE S. ALL PREVENTATIVE AND , REMULCHING AND RENETTING IPS, OR MODIFICATIONS OF PREPAREDNES IF THE POTENTIAL EXISTS F OR FOR CAUSING ENDANGE RELEASE OF TOXIC, HAZARI CO-PERMITTEE MUST DEVE
 A LOG SHOWING DATES THAT E&S BMPS WERE INSPECTED AS WELL AS ANY DEFICIENCIES FOUND AND THE SHALL BE MAINTAINED ON THE SITE AND BE MADE AVAILABLE TO REGULATORY AGENCY OFFICIALS AT THE SEDIMENT TRACKED ONTO ANY PUBLIC ROADWAY OR SIDEWALK SHALL BE RETURNED TO THE CONSTRUCT WORK DAY AND DISPOSED IN THE MANNER DESCRIBED IN THIS PLAN. IN NO CASE SHALL THE SEDIMENT BE INTO ANY ROADSIDE DITCH, STORM SEWER, OR SURFACE WATER. 	E DATE THEY WERE CORRECTED TIME OF INSPECTION. TION SITE BY THE END OF EACH WASHED, SHOVELED, OR SWEPT CONDITIONS OF THIS PERM
 ALL SEDIMENT REMOVED FROM BMPS SHALL BE DISPOSED OF IN THE MANNER DESCRIBED ON THE PLAN DI AREAS WHICH ARE TO BE TOPSOILED SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 3 TO 5 INCHES 6 TO PRIOR TO PLACEMENT OF TOPSOIL. AREAS TO BE VEGETATED SHALL HAVE A MINIMUM 4 INCHES OF TOPS AND MULCHING. FILL OUTSLOPES SHALL HAVE A MINIMUM OF 2 INCHES OF TOPSOIL. ALL FILLS SHALL BE COMPACTED AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE 	TOXIC OR HAZARDOUS SUB 12 INCHES ON COMPACTED SOILS SOIL IN PLACE PRIOR TO SEEDING CE OR OTHER RELATED CE OR OTHER RELATED TOXIC OR HAZARDOUS SUB SOLVENTS, ETC. BMPS SHA AREA. THE PPC PLAN SHAL AVAILABLE FOR REVIEW AT REQUEST.
 PROBLEMS. FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES AND CONDUITS, ETC. SHALL BE COMPACT LOCAL REQUIREMENTS OR CODES. 20. ALL EARTHEN FILLS SHALL BE PLACED IN COMPACTED LAYERS NOT TO EXCEED 9 INCHES IN THICKNESS. 21. FILL MATERIALS SHALL BE FREE OF FROZEN PARTICLES, BRUSH, ROOTS, SOD, OR OTHER FOREIGN OR OBJU WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY FILLS. 	ECTIONABLE MATERIALS THAT ECTIONABLE MATERIALS
 22. FROZEN MATERIALS OR SOFT, MUCKY, OR HIGHLY COMPRESSIBLE MATERIALS SHALL NOT BE INCORPORAT 23. FILL SHALL NOT BE PLACED ON SATURATED OR FROZEN SURFACES. 24. SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED IN ACCORDANCE WITH THE SPECIFICATION FOR SUBSURFACE DRAIN OR OTHER APPROVED METHOD. 	ED INTO FILLS. OPERATOR SHALL INVITE ALL APPROPRIATE MUNIC PREPARER, AND A REPR ON-SITE, PRE-CONSTRUC 3. AT LEAST 3 DAYS BEFORE
 ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY UPON REACHING FINISHED GRADE BEDROCK AND ROCK FILLS NEED NOT BE VEGETATED. SEEDED AREAS WITHIN 50 FEET OF A SURFACE WAT ON THE PLAN DRAWINGS, SHALL BE BLANKETED ACCORDING TO THE STANDARDS OF THIS PLAN. IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITIES CEASE IN ANY AREA OR SUBAREA OF THE PROJECT, STABILIZE ALL DISTURBED AREAS. DURING NON-GERMINATING MONTHS, MULCH OR PROTECTIVE BLANKETI DESCRIBED IN THE PLAN. AREAS NOT AT FINISHED GRADE, WHICH WILL BE REACTIVATED WITHIN 1 YEAR, MULCH OR DESCRIBED IN THE FEMDERAL STABILIZE ALL DISTURBED AREAS NOT AT FINISHED GRADE, WHICH WILL BE REACTIVATED WITHIN 1 YEAR. 	. CUT SLOPES IN COMPETENT INVOLVED IN THOSE ACT ER, OR AS OTHERWISE SHOWN INCORPORATED AT 8-1-1 THE OPERATOR SHALL SEQUENCE. EACH STAGE NG SHALL BE APPLIED AS FOLLOWING STAGE IS IN AY BE STABILIZED IN ONLY TO THOSE AREAS IN
 ACCORDANCE WITH THE TEMPORARY STABILIZATION SPECIFICATIONS. THOSE AREAS WHICH WILL NOT BE SHALL BE STABILIZED IN ACCORDANCE WITH THE PERMANENT STABILIZATION SPECIFICATIONS. 27. PERMANENT STABILIZATION IS DEFINED AS A MINIMUM UNIFORM, PERENNIAL 70% VEGETATIVE COVER OR C NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED EROSION. CUT AND FILL S RESISTING FAILURE DUE TO SLUMPING, SLIDING, OR OTHER MOVEMENTS. 	ACCELERATED EROSION APPROPRIATE BEST MAN EROSION AND/OR SEDIM
 28. E&S BMPS SHALL REMAIN FUNCTIONAL AS SUCH UNTIL ALL AREAS TRIBUTARY TO THEM ARE PERMANENTLY REPLACED BY ANOTHER BMP APPROVED BY THE LOCAL CONSERVATION DISTRICT OR THE DEPARTMENT. 29. UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTU AND/OR OPERATOR SHALL CONTACT THE LOCAL CONSERVATION DISTRICT FOR AN INSPECTION PRIOR TO F E&S BMPS. 	Y STABILIZED OR UNTIL THEY ARE IMAIN I ENANCE JRBED AREAS, THE OWNER THE PROPERTY MANAGO REMOVAL/CONVERSION OF THE OPERATION AND MAINT FOLLOW THE FOLLOWING FOLLOW THE FOLLOWING
 AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AND SEDIMENT BMPS MUST PERMANENT POST CONSTRUCTION STORMWATER MANAGEMENT BMPS. AREAS DISTURBED DURING REMOV BMPS SHALL BE STABILIZED IMMEDIATELY. IN ORDER TO ENSURE RAPID REVEGETATION OF DISTURBED ARE REMOVAL/CONVERSIONS ARE TO BE DONE ONLY DURING THE GERMINATING SEASON. UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED. 	BE REMOVED OR CONVERTED TO /AL OR CONVERSION OF THE EAS, SUCH JRBED AREAS, THE OWNER
AND/OR OPERATOR SHALL CONTACT THE LOCAL CONSERVATION DISTRICT TO SCHEDULE A FINAL INSPECT 32. FAILURE TO CORRECTLY INSTALL E&S BMPS, FAILURE TO PREVENT SEDIMENT-LADEN RUNOFF FROM LEAVIN FAILURE TO TAKE IMMEDIATE CORRECTIVE ACTION TO RESOLVE FAILURE OF E&S BMPS MAY RESULT IN ADIN CRIMINAL PENALTIES BEING INSTITUTED BY THE DEPARTMENT AS DEFINED IN SECTION 602 OF THE PENNSY THE CLEAN STREAMS LAW PROVIDES FOR UP TO \$10,000 PER DAY IN CIVIL PENALTIES, UP TO \$10,000 IN SUM	ION. NG THE CONSTRUCTION SITE, OR MINISTRATIVE, CIVIL, AND/OR 'LVANIA CLEAN STREAMS LAW. MMARY CRIMINAL PENALTIES, BIORETENTION BASINS INSPECT OUTLET STRU CLOGGING.
 33. CLEAN FILL IS DEFINED AS: UNCONTAMINATED, NON-WATER SOLUBLE, NON-DECOMPOSABLE, INERT, SOLID SOIL, ROCK, STONE, DREDGED MATERIAL, USED ASPHALT, AND BRICK, BLOCK OR CONCRETE FROM CONSTINACTIVITIES THAT IS SEPARATE FROM OTHER WASTE AND IS RECOGNIZABLE AS SUCH. THE TERM DOES NOT OR ON THE WATERS OF THE COMMONWEALTH UNLESS OTHERWISE AUTHORIZED. (THE TERM "USED ASPH/ ACDIVITY OF ADDIVIDUATION.") 	MATERIAL. THE TERM INCLUDES WHILE VEGETATION IS RUCTION AND DEMOLITION T INCLUDE MATERIALS PLACED IN ALT" DOES NOT INCLUDE MILLED MOW AND TRIM VEGETA TWICE A YEAR. TO ALL
 34. UPON TEMPORARY CESSATION OF AN EARTH DISTURBANCE ACTIVITY OR ANY STAGE OR PHASE OF AN ACT EARTH DISTURBANCE ACTIVITIES WILL EXCEED 4 DAYS, THE SITE SHALL BE IMMEDIATELY SEEDED, MULCHE FROM ACCELERATED EROSION AND SEDIMENTATION PENDING FUTURE EARTH DISTURBANCE ACTIVITIES. 	TVITY WHERE A CESSATION OF ED, OR OTHERWISE PROTECTED TREES AND SHRUBS SH REPLANTING. PREVENT
VEGETATIVE STABILIZATION 1. ALL DISTURBED AREAS SHALL BE IMMEDIATELY STABILIZED, TEMPORARILY OR PERMANENTLY. 2. REMOVE COARSE FRAGMENTS FROM SURFACE. 3. SOIL SHALL BE LOOSENED TO A MINIMUM DEPTH OF 3 INCHES BY	REPLACE ANY MISSING SYSTEM. UPON FAILURE (LACK C
 RAKING, DISCING OR OTHER ACCEPTABLE MEANS PRIOR TO SEEDING. 4. SEEDING: APPLY SEED UNIFORMLY AT THE SPECIFIED RATE WITH A CYCLONE SEEDER, DRILL, CULTIPACKER SEEDER OR HYDROSEEDER. WHEN NOT USING A HYDROSEEDER, SEED SHOULD BE APPLIED TO A MAXIMUM DEPTH OF 1/4 INCH ON CLAYEY SOILS AND 1/2 INCH ON SANDY SOILS. WHEN USING A HYDROSEEDER, THE SEED AND FERTILIZER SHALL BE MIXED ON SITE AND THE SEEDING SHALL BE IMMEDIATE WITHOUT INTERRUPTION. 	SEDIMENT OR DEBRIS. WILL NEED TO BE REPL EXCAVATED AND ITS PE THE DESIGN ENGINEER IF THE STONE AND MEE SOILS AND STONE ENC MEDIA AND STONE SHO
 DO NOT SOW IMMEDIATELY FOLLOWING RAIN OR WHEN GROUND IS TOO DRY DURING WINDY PERIODS. ALL SEED SPECIFICATIONS SUCH AS PURITY, READY GERM, TOTAL GERM, ETC., SHALL BE IN ACCORDANCE WITH THE PENN STATE UNIVERSITY AGRONOMY GUIDE. 	AMENDED SOILS
 7. IF AREAS ARE TO REMAIN DISTURBED FROM NOVEMBER 1 THROUGH MARCH 1 (NON-GROWING SEASON), THE CONTRACTOR SHALL PROTECT SAID AREAS BY SEEDING AND MULCHING, SODDING, OR BY PLACEMENT OF MATTING AS NECESSARY. THIS WORK SHALL BE DONE IN ACCORDANCE WITH THE SEQUENCE. MULCHING SHALL BE DONE AT RATE AS LISTED BELOW. 8. TEMPORARY STABILIZATION: SITE PREPARATION SHALL CONSIST OF APPLYING (1) TON OF LIME PER ACRE AND 600 LB, PER ACRE OF 10 10 10 	24-HOUR PERIOD. 2. CHECK FOR ACCUM 3. CHECK FOR EROSIC 4. CHECK VEGETATIVE 5. CHECK FOR INVASIV
FERTILIZER. THE CONTRACTOR SHALL PROVIDE ANNUAL RYEGRASS AT A RATE OF 40 LB/AC, AND MULCH WITH HAY OR STRAW AT A RATE OF 3 TONS PER ACRE (PROPERLY ANCHORED BY TACKING, CRIMPING, ETC.). PERMANENT STABILIZATION SEEDING MIXTURES <u>SPECIES</u> <u>SPECIES</u> <u>ANNUAL WINTER RYE GRASS</u> <u>40</u>	ALL WASTES AND MATE STORMWATER MANAGE BE REMOVED FROM TH SOLID WASTE MANAGE WASTE MATERIALS SHA
TALL FESCUE60FINE RED FESCUE35PERENNIAL RYE15FERTILIZER (10-10-10)1000AGRICULTURAL GRADE LINE3 TON/ACMULCH3 TON/AC	 PROVIDED BELOW ARE THAT WILL REQUIRE RE SEDIMENT FROM T WEEDS, BRANCHE ANY TRASH OR LIT GRASS CLIPPINGS
CONTRACTOR MAY PROVIDE A SUITABLE ALTERNATE TO THE SPECIFIED SEED MIXTURE. THE SEED MIXTURE SHALL MEET THE SPECIFICATIONS OF THE PENN STATE AGRONOMY GUIDE. ANY ALTERNATIVES SHALL ALSO BE APPROVED BY THE OWNER AND/OR ADAMS COUNTY CONSERVATION DISTRICT. IN THE EVENT THAT VEGETATIVE COVER IS NOT ESTABLISHED, THE CONTRACTOR SHALL PROVIDE BIODEGRADABLE STABILIZATION MATTING TO HOLD SOIL MATERIAL UNTIL VEGETATIVE COVER IS ESTABLISHED.	 SEDIMENT FROM S ANY MATERIALS (N SYSTEMS

ROL FACILITIES TEMPORARY MAINTENANCE SCHEDULE PLEMENT THE FOLLOWING MAINTENANCE SCHEDULE AT A

ALL BEGIN IMMEDIATELY FOLLOWING INSTALLATION OF THE ONTROL MEASURES AND SHALL BE FOLLOWED UNTIL THE CORDANCE WITH THIS PLAN.

HEDULE Y OR AFTER STORM EVENTS	DESCRIPTION INSPECT, REPLACE OR RESECURE, REMOVE SEDIMENT WHEN ACCUMULATION REACHES 1/2 HEIGHT OF FENCE (ABOVE GROUND)
EKLY	INSPECT, REPLACE ANY MATERIALS NECESSARY; RE-SEED AS REQUIRED
EKLY AND AFTER STORM EVENTS	INSPECT, RE-SEED, REPAIR SILT FENCE IF IF NECESSARY, REMOVE SEDIMENT FROM SILT FENCE AT 1/2 HEIGHT OF FENCE
KLY AND AFTER STORM EVENTS	INSPECT AND REPAIR IMMEDIATELY
<ly.< td=""><td>INSPECT AND ADD ROCK AS NECESSARY TO MAINTAIN THICKNESS</td></ly.<>	INSPECT AND ADD ROCK AS NECESSARY TO MAINTAIN THICKNESS

BILIZED, ALL EROSION AND SEDIMENT CONTROL BMP'S MUST BE NTENANCE MUST INCLUDE INSPECTIONS OF ALL EROSION AND FTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, RESEEDING. REMULCHING AND RENETTING MUST BE F EROSION AND SEDIMENT CONTROL BMP'S FAIL TO PERFORM BMP'S, OR MODIFICATIONS OF THOSE INSTALLED WILL BE

5, PREVENTION, AND CONTINGENCY (PPC) PLAN

R CAUSING ACCIDENTAL POLLUTION OF AIR, LAND, OR WATER, RMENT OF PUBLIC HEALTH AND SAFETY THROUGH ACCIDENTAL DOUS, OR OTHER POLLUTING MATERIALS, THE PERMITTEE OR _OP A PREPAREDNESS, PREVENTION, AND CONTINGENCY (PPC) BE DEVELOPED IN ACCORDANCE WITH DEPARTMENT AN SHALL IDENTIFY AREAS WHICH MAY INCLUDE, BUT ARE NOT MENT AREAS, RAW MATERIAL STORAGE AREAS, TEMPORARY RAGE AREAS, MAINTENANCE AREAS, AND ANY OTHER AREAS TIAL TO CAUSE NON-COMPLIANCE WITH THE TERMS AND DUE TO THE STORAGE, HANDLING, OR DISPOSAL OF ANY STANCES SUCH AS OIL, GASOLINE, PESTICIDES, HERBICIDES, LL BE DEVELOPED AND IMPLEMENTED FOR EACH IDENTIFIED BE MAINTAINED ON-SITE AT ALL TIMES AND SHALL BE MADE THE DEPARTMENT'S OR COUNTY CONSERVATION DISTRICT'S

S FOR CONSTRUCTION SEQUENCE EROSION AND SEDIMENT CONTROL PLAN MUST BE AVAILABLE

ALL TIMES. E STARTING ANY EARTH DISTURBANCE ACTIVITIES, THE OWNER AND/OR ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES, THE LANDOWNER, IPAL OFFICIALS, THE EROSION AND SEDIMENT CONTROL PLAN ESENTATIVE OF THE ADAMS COUNTY CONSERVATION DISTRICT TO AN TION MEETING.

STARTING ANY EARTH DISTURBANCE ACTIVITIES, ALL CONTRACTORS VITIES SHALL NOTIFY THE PENNSYLVANIA ONE CALL SYSTEM FOR THE LOCATION OF EXISTING UNDERGROUND UTILITIES. ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE CONSTRUCTION

SHALL BE COMPLETED AND IMMEDIATELY STABILIZED BEFORE ANY TIATED. CLEARING, GRUBBING AND TOPSOIL STRIPPING SHALL BE LIMITED ESCRIBED IN EACH STAGE. OVERING UNFORSEEN CIRCUMSTANCES POSING THE POTENTIAL FOR

AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT AGEMENT PRACTICES TO ELIMINATE THE POTENTIAL FOR ACCELERATED ENT POLLUTION.

OF BEST MANAGEMENT PRACTICES (BMP'S)

EMENT ASSOCIATION (PMA) SHALL BE SOLELY RESPONSIBLE FOR THE ENANCE OF ALL STORMWATER MANAGEMENT FACILITIES. THE PMA SHALL NG MAINTENANCE SCHEDULE OUTLINED BELOW. 'STORM EVENT' DEFINED AS MORE IN 24 HOURS.

CUMBERLAND TOWNSHIP MAY ACCESS THE SITE DURING NORMAL BUSINESS SE OF INSPECTING SWM FACILITIES.

WITH SOIL AMENDMENTS

CTURE FOR CONDITION AND CLOGGING. CHECK BASIN UNDERDRAIN FOR

BEING ESTABLISHED, PRUNING AND WEEDING MAY BE REQUIRED.

TION AS NEEDED ON EMBANKMENTS AND ON BASIN FLOOR, RECOMMENDED OW FOR INSPECTION.

HOULD BE INSPECTED TWICE A YEAR TO EVALUATE HEALTH AND NEED FOR AND REMOVE NOXIOUS AND INVASIVE PLANTS.

RIP RAP OR MATTING FROM INFLOWS TO BASINS FROM THE STORM DRAIN

F INFILTRATION WITHIN 72 HOURS) OF THE STORMWATER MANAGEMENT HE DESIGN ENGINEER. FLUSH THE STORM PIPING SYSTEM AND CLEAR ANY F DEWATERING OF THE BASIN STILL FAILS TO OCCUR, THE MEDIA AND STONE ACED. UPON APPROVAL OF THE DESIGN ENGINEER, THE MEDIA COULD BE RMEABILITY RESTORED BY MIXING IN SAND OR COMPOST. UPON APPROVAL OF THE STONE COULD ALSO BE EXCAVATED AND WASHED FOR REUSE. HOWEVER, DIA ARE NOT APPROVED FOR REUSE, REMOVE AND REPLACE THE AMENDED ASEMENT OF THE BASIN IN-KIND. THE UNDERDRAIN CAN BE REUSED BUT THE ULD BE COMPLETELY DISPOSED OF (NOT REUSED).

YEAR AND AFTER ALL STORM EVENTS TOTALING ONE INCH OR MORE IN A

ULATION OF SEDIMENT AND DEBRIS, REMOVE AS NECESSARY. IN AND STREAM BANK STABILITY, REPAIR AS NECESSARY. CONDITIONS, REPAIR AS NECESSARY.

E SPECIES, REMOVE AS NECESSARY.

RIALS DEPOSITED IN AND REMOVED FROM POST-CONSTRUCTION MENT (PCSM) BMP FACILITIES DURING OPERATION AND MAINTENANCE SHALL E SITE AND PROPERLY DISPOSED OF IN ACCORDANCE WITH THE DEPARTMENT'S MENT REGULATIONS AT 25 PA. CODE 260.1 ET.SEQ., 271.1, AND 287.1 ET.SEQ. NO ALL BE BURNED, BURIED, DUMPED, OR DISCHARGED AT THE SITE.

THE POSSIBLE MATERIALS OBTAINED FROM OPERATION AND MAINTENANCE CYCLING AND/OR PROPER DISPOSAL:

HE BOTTOM OF THE BASINS S, PRUNINGS, ETC. FROM MAINTENANCE OF THE BASIN VEGETATION

TER

AND LEAVES UMPED INLETS OR STORM PIPING

IEDIA, STONE, PIPING, ETC.) FROM FAILED STORMWATER MANAGEMENT



STABILIZED ROCK CONSTRUCTION ENTRANCE NOT TO SCALE



INSTALLATION GUIDE - SLOPES

- 1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING APPLICATION OF LIME, FERTILIZER, AND SEED.
- 2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A SIX INCH DEEP BY SIX FEET WIDE (6"x6') TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
- 3. INSTALL AN ANCHOR TRENCH AT THE BOTTOM OF SLOPE TO PREVENT WATER FROM GETTING UNDER THE EDGE OF THE FABRIC.
- 4. PLACE BLANKETS END OVER END (SHINGLE STYLE) WITH A SIX INCH (6") OVERLAP. USE A DOUBLE ROW OF STAGGERED STAPLES FOUR INCHES (4") APART TO SECURE BLANKETS.
- 5. FULL LENGTH EDGE OF BLANKETS AT TOP OF SIDE SLOPES MUST BE ANCHORED IN A SIX INCH DEEP BY SIX INCH WIDE (6"x6") TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
- 6. BLANKETS ON SIDE SLOPES MUST BE OVERLAPPED FOUR INCHES (4") OVER THE CENTER BLANKET AND STAPLED.
- 7. THE TERMINAL END OF THE BLANKETS MUST BE ANCHORED IN A SIX INCH DEEP BY SIX INCH WIDE (6"x6") TRENCH.
- NOTE: HORIZONTAL STAPLE SPACING SHOULD BE ALTERED IF NECESSARY TO ALLOW STAPLES TO SECURE THE CRITICAL POINTS ALONG THE SLOPE.

EROSION CONTROL - MATTING DETAIL N.T.S.



GENERAL INFORMATION	l					
Permittee Name: Cumberland Township	Permit No.:	PAG133748				
BMP Name: Stream Restoration @ CT Municipal Complex	Latitude:	39.822296				
Surface Waters: Marsh Creek Watershed	Longitude:	-77.260999				
Municipality: Cumberland Township	County:	Adams				
Construction of the BMP is Complete. Date Constru	uction Completed:	3/2023				
Photographs, Drawings, and O&M Plan are attached*. Inspection	n/Monitoring Freque	ncy: Annually				
Permits or Approvals Obtained: General Permit 3 (GP030103122-002)) and General Permi	t 8 (GP080103122-0)02)			
Party Responsible for Long-Term O&M: 🛛 Permittee 🗌 Other:						
Joint BMP? Yes No If Yes, attach a list of other permittees	s sharing credit for th	e BMP				
STREAM RESTORATION TY	PE					
Stream Restoration – Default Rate: Expert Panel Report	Protocols (Select all	that apply):				
Simplified Method (44.88 lbs/ft/yr)	ented Sediment					
Mapshed/Model My Watershed (115 lbs/ft/yr) Protocol 2: Instre	eam and Riparian N	utrient Processing				
Protocol 3: Flood	dplain Reconnection					
Does the restoration meet all the minimum qualifying conditions for strea	m restoration? \Box	Yes 🗌 No				
TSS LOAD REDUCTION – DEFAULT RATE						
Total restoration length (center line of stream) (ft): 500						
Restoration length stabilized using hard armoring (if applicable) (ft): 0						
Restoration length armored by "Creditable w/Limits" practices (if applicab	ole) (ft): 0					
Percent of total restoration length armored by "Creditable w/Limits" practi	ices (%): 0					
Creditable restoration length (ft): 500						
TSS Credit: Creditable restoration length (500 ft) x Default Rate (44.88	lbs/ft/yr) = 22,4	40 lbs/yr TSS	3			
Permittee Credit for Joint BMPs (if applicable): % or	lbs/yr TSS Cre	edit				
POLLUTANT LOAD REDUCTIONS – EXPERT PANEL PROTOCOLS						
Total restoration length (ft): Floodplain area create	Total restoration length (ft): Floodplain area created (if applicable) (ac):					
Protocol 1 Pollutant Load Reduction: TSS: Ibs/yr	TN: Ibs/y	/r TP: I	bs/yr			
Protocol 2 Pollutant Load Reduction: TSS: lbs/yr	TN: lbs/y	/r TP: I	bs/yr			
Protocol 3 Pollutant Load Reduction: TSS: lbs/yr	TN: Ibs/y	/r TP:	lbs/yr			
Permittee Credit for Joint BMPs (if applicable): % or lbs/yr TSS Credit						
* See Annual MS4 Status Report Instructions (3800-FM-BCW0491) for	or additional requir	ed attachments.				



MS4 STREAM RESTORATION ELIGIBILITY CHECKLIST

Permittee Name: **Cumberland Township**

Stream Restoration @ Cumberland Project Name.: Township Municipal Complex

١.	ELIGIBILITY EVALUATION		
Α.	Siting Criteria (DEP Stream Restoration Eligibility Guidance)	Yes	No
1.	Did the permittee provide documentation that demonstrates existing channel or streambank erosion and an actively enlarging or incising urban stream condition prior to restoration?		
2.	Is the project location on a 1st - 3rd order stream?		
3.	Does the project address at least 100 linear feet of stream channel?	$\mathbf{\nabla}$	
4.	Did the permittee provide documentation that the impervious area upstream of the project is sufficiently treated to address peak flows that may exceed engineering design threshold or compromise channel form and function?		
5.	Does the project address both sides of the channel on sites where a need to do so is evident?	$\mathbf{\nabla}$	
В.	Restoration Techniques (DEP Stream Restoration Eligibility Guidance)	Yes	No
6.	Does the restoration design apply a comprehensive approach (i.e., a mix of techniques appropriate to the site) that will create long-term stability of the streambed, streambanks, and floodplain?	R	
7.	Does the restoration design avoid the use of hard armoring (i.e., armoring that involves the placement of hard structures along the stream channel for the express purpose of limiting the movement of a stream along its horizontal and/or vertical dimensions?	Ø	
8.	Does the restoration design maximize floodplain reconnection, with a minimal channel invert election increase required to achieve this objective? Is the restoration bank height ratio 1.0 or less?	Ø	
9.	Does the restoration design include a 35-foot (average width) minimum riparian buffer?	$\mathbf{\nabla}$	
10.	Does the restoration design include an operations and maintenance (O&M) plan that identifies O&M activities, frequencies, and responsible parties?		

Note: Stream restoration projects that satisfy all the siting and techniques criteria listed above may be credited as an MS4 BMP. If a restoration project does not satisfy all the eligibility criteria, DEP may still approve credit for a project if it can be demonstrated that the project will have long-term stability and improve water quality.

Comments:

2. Willoughby Run is a 3rd order stream

9. Riparian Buffer Plantings were incorporated in the design to supplement the existing natural buffer areas along the stream.

Clauser Environmental assisted in the selection and design of the stream bank projects. This firm has a wide range of experience with these types of projects.

Recommendation:

	aublo
110	шле
	91010

Ineligible

Insufficient information provided by permittee

Reviewer Name:

Date:

Stream Restoration at Cumberland Township Municipal Complex

Maintenance Frequency	Maintenance Activity
As Needed (Appuelly	Vegetation along the streambanks and within the floodplain
As Needed/Annually	should be maintained at 60 – 85 % cover; replant as needed
As Needed (Appually	Maintain any meadow pretreatment areas to a height of six to
As Needed/Annually	12 inches
As Needed (Appually	Revegetate and establish any eroded areas along the
As Needed/Annually	streambanks
As Needed/Annually	Remove weeds and invasive plants
	Replace diseased or dead plants; if specific species mortality is
As Needed/Annually	reoccurring, access cause and replace with an appropriate
	alternative species.
As Needed/Annually	Remove litter, trash, and debris
Annually/After Every Rainfall	Monitor and observe for continued functionality of the
Event Totaling One Inch or	restoration; contact KPI Technology if any failures are
More in a 24-hour Period	identified

Operations and Maintenance Plan

Operations and Maintenance of the Willoughby Run Stream Restoration is the responsibility of Cumberland Township

Cumberland Township 1370 Fairfield Road Gettysburg, PA 17325 Phone - 717-334-6485



Data Sources: Clauser Environmental, LLC www.pasda.psu.edu Willoughby Run Stream Restoration Site Photo Location Map Cumberland Township, Adams County, PA



Willoughby Run Stream Restoration Site Photos



Photo 1: Facing southwest near the center of the site. Viewing Willoughby Run.



Photo 2: Facing west near the center of the site. Viewing typical eroded streambanks along Willoughby Run.



Photo 3: Facing southwest from just north (upstream) of the treatment plant discharge to Willoughby Run. Viewing Willoughby Run at the discharge location.



Photo 4: Facing north in the southeast portion of the site. Viewing typical site uplands.



Photo 5: Facing southwest in the northwest portion of the site. Viewing typical site uplands.



Photo 6: Facing north along the eastern site boundary. Viewing typical site uplands.



Photo 7: Facing southwest from the northern site boundary. Viewing Willoughby Run.



Photo 8: Facing north from the northern property boundary. Looking upstream at Willoughby Run where it enters the site.


Stream Restoration at Cumberland Township Municipal Complex <u>Post-Construction Photos March 29, 2023</u>











Stream Restoration at Cumberland Township Municipal Complex <u>Post-Construction Photos November 22, 2023</u>































CROSS SECTION #1

CROSS SECTION #2



CONSTRUCTION SEQUENCE NOTES

THE OPERATOR SHALL ASSURE THAT THE APPROVED EROSION AND SEDIMENT CONTROL PLAN IS PROPERLY AND COMPLETELY IMPLEMENTED.

THE OPERATOR SHALL ASSURE THAT AN EROSION AND SEDIMENT CONTROL PLAN HAS BEEN PREPARED BY THE APPLICANT, SUBMITTED TO AND APPROVED BY THE ADAMS COUNTY CONSERVATION DISTRICT, AND IS BEING IMPLEMENTED AND MAINTAINED FOR ALL SOIL AND/OR ROCK SPOIL AND BORROW AREAS, REGARDLESS OF THEIR LOCATIONS.

BEFORE INITIATING ANY REVISIONS TO THE APPROVED EROSION AND SEDIMENT CONTROL PLAN OR REVISIONS TO OTHER PLANS WHICH MAY AFFECT THE EFFECTIVENESS OF THE APPROVED E&S CONTROL PLAN. THE OPERATOR MUST RECEIVE APPROVAL OF THE REVISIONS FROM THE ADAMS COUNTY CONSERVATION DISTRICT. ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE FOLLOWING SEQUENCE.

EACH STAGE SHALL BE COMPLETED BEFORE ANY FOLLOWING STAGE IS INITIATED. CLEARING AND GRUBBING SHALL BE LIMITED ONLY TO THOSE AREAS DESCRIBED IN EACH STAGE.

EROSION AND SEDIMENT BMPS MUST BE CONSTRUCTED, STABILIZED, AND FUNCTIONAL BEFORE SITE DISTURBANCE BEGINS WITHIN THE TRIBUTARY AREAS OF THOSE BMPS.

AT LEAST 7 DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES. THE OPERATOR SHALL INVITE ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES. THE LANDOWNER, ALL APPROPRIATE MUNICIPAL OFFICIALS, THE EROSION AND SEDIMENT CONTROL PLAN PREPARER, AND THE ADAMS COUNTY CONSERVATION DISTRICT TO AN ON-SITE MEETING. ALSO, AT LEAST 3 DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES, ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES SHALL NOTIFY THE PENNSYLVANIA ONE CALL SYSTEM INCORPORATED AT 1-800-242-1776 FOR BURIED UTILITIES LOCATIONS.

ALL WORK WITHIN THE STREAM CHANNEL SHALL BE COMPLETED DURING LOW FLOW CONDITIONS.

CONSTRUCTION SEQUENCE

- 1. STAKE/FLAG ALL LIMIT OF DISTURBANCE (LOD) LINES FOR THE PROJECT.
- 2. INSTALL ROCK CONSTRUCTION ENTRANCE AND COMPOST FILTER SOCK AT ALL LOCATIONS PROPOSED ON THE SITE. 3. PRE-POSITION MATERIALS ON-SITE FOR EACH WORK AREA SO THAT STABILIZATION MAY OCCUR IMMEDIATELY FOLLOWING GRADING OF EACH AREA. IT IS ANTICIPATED THAT GRADING AND STABILIZATION WILL OCCUR UPSTREAM TO DOWNSTREAM, BUT CONSTRUCTION CONDITIONS SHOULD BE TAKEN INTO ACCOUNT TO PROVIDE THE LEAST IMPACT TO THE SITE.
- THE ACTIVE WORKZONE SHALL BE STABILIZED BY THE END OF EACH WORK DAY. 4. INSTALL TEMPORARY FORD CROSSINGS AS ACCESS IS REQUIRED TO EACH SECTION OF STREAM CHANNEL.
- 5. INSTALL AND INSPECT ALL IN-STREAM STRUCTURES FOR FUNCTION. REPAIR ANY DEFICIENCIES.
- 6. REMOVE THE TEMPORARY FORD CROSSINGS AS WORK IS COMPLETED IN EACH SECTION OF THE STREAM CHANNEL DURING REMOVAL, BRING THE AREA OF THE TEMPORARY CROSSING TO FINAL GRADE AND STABILIZE.
- 7. AS WORK PROCEEDS. PROGRESSIVELY SEED AND MULCH FRESHLY GRADED AREAS AND REMOVE ANY CONSTRUCTION DEBRIS ALL STREAMBANKS SHOULD BE COMPACTED SO THAT THE SOIL IS NOT LOOSE BEFORE MATTING. REFER TO THE SEEDING SPECIFICATIONS NOTE ON THIS PAGE. EROSION CONTROL MATTING SHOULD BE INSTALLED IMMEDIATELY FOLLOWING GRADING OF EACH SECTION. THE EROSION CONTROL MATTING SHOULD BE INSTALLED SO THAT THE DOWNSLOPE EDGE IS JUST ABOVE THE NORMAL FLOW OF THE STREAM.
- 8. STABILIZE ALL DISTURBED AREAS WITH SEED, FERTILIZER, LIME, AND MULCH AS REQUIRED. 9. REMOVE THE ROCK CONSTRUCTION ENTRANCE AND ANY TEMPORARY SEDIMENT CONTROLS THAT WILL NOT BIODEGRADE. 10. STABILIZE ANY AREAS DISTURBED DURING REMOVAL OF THE TEMPORARY E&S CONTROLS.

11. ENSURE VEGETATION REACHES AT LEAST 70% UNIFORM, PERENNIAL COVER.

SOILS

Bo - BOWMANSVILLE SILT LOAM KnC - KLINESVILLE CHANNERY SILT LOAM, 8 TO 15 PERCENT SLOPES

LqB - LEGORE CHANNERY SILT LOAM, 3 TO 8 PERCENT SLOPES

SURVEY INFORMATION

- . TOPOGRAPHIC CONDITIONS SHOWN HEREON ARE BASED ON A FIELD SURVEY BY KPI TECHNOLOGY ON OCTOBER 27, 2021 2. UNDERGROUND UTILITIES ARE SHOWN BASED UPON SURFACE INDICATION, PRIOR PLANS PREPARED BY OTHERS, UTILITY COMPANY INFORMATION, AND RECORDED INFORMATION. AS SUCH, THESE LOCATIONS
- MUST BE CONSIDERED APPROXIMATE ONLY, AND MUST BE VERIFIED PRIOR TO ANY CONSTRUCTION ACTIVITY ON THIS SITE. 3. VERTICAL DATUM SHOWN HEREON IS BASED ON NORTH AMERICAN VERTICAL DATUM (NAVD88). 4. THIS PLAN DOES NOT REPRESENT AN ACTUAL BOUNDARY SURVEY.

WETLANDS

A WETLAND DELINEATION WAS CONDUCTED BY CLAUSER ENVIRONMENTAL, LLC. WETLANDS WERE NOT IDENTIFIED WITHIN THE PROJECT BOUNDARY.

ENVIRONMENTAL DUE DILLIGENCE

ENVIRONMENTAL DUE DILLIGENCE: THE APPLICANT MUST PERFORM ENVIRONMENTAL DUE DILLEGENCE TO DETERMINE IF THE FIL MATERIALS ASSOCIATED WITH THE PROJECT QUALIEY AS CLEAN FILL. ENVIRONMENTAL DUE DILLEGENCE IS DEFINED AS: INVESTIGATIVE TECHNIQUES. INCLUDING. BUT NOT LIMITED TO. ISUAL PROPERTY INSPECTIONS FLECTRONIC DATA BASE SEAR REVIEW OF PROPERTY OWNERSHIP REVIEW OF PROPERTY LISE HISTORY SANBORN MAPS, ENVIRONMENTAL QUESTIONNAIRES, TRANSACTION SCREENS, ANALYTICAL TESTING, ENVIRONMENTAL ASSESSMENTS OF AUDITS. ANALYTICAL TESTING IS NOT A REQUIRED PART OF DUE DILLIGENCE UNLESS VISUAL INSPECTION AND/OR REVIEW OF THE PAST LAND USE OF THE PROPERTY INDICATES THAT THE FILL MAY HAVE BEEN SUBJECTED TO A SPILL OR RELEASE OF REGULATED SUBSTANCE. IF THE FILL MAY HAVE BEEN AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE, IT MUST BE TESTED TO DETERMINE IF IT QUALIFIES AS CLEAN FILL. TESTING SHOULD BE PERFORMED IN ACCORDANCE WITH APPENDIX A OF THE DEPARTMENT'S POLICY "MANAGEMENT OF FILL".

LIABILITY NOTE

FAILURE TO CORRECTLY INSTALL SEDIMENT CONTROL FACILITIES OR FAILURE TO PREVENT SEDIMENT LADEN RUNOFF FROM LEAVING THE CONSTRUCTION SITE OR FAILURE TO TAKE CORRECTIVE ACTIONS TO IMMEDIATELY RESOLVE FAILURES OF SEDIMENT CONTROL FACILITIES MAY RESULT IN ADMINISTRATIVE, CIVIL AND/OR CRIMINAL PENALTIES BEING INSTITUTED BY THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION AS DEFINED IN SECTION 602 OF THE CLEAN STREAMS LAW OF PENNSYLVANIA. THE CLEAN STREAMS LAW PROVIDES FOR UP TO \$10,000 PER DAY IN CIVIL PENALTIES, UP TO \$10,000 IN SUMMARY CRIMINAL PENALTIES, AND UP TO \$25,000 IN MISDEMEANOR CRIMINAL PENALTIES FOR EACH VIOLATION.

THIS PLAN IS NOT TO BE CONSTRUED AS AN ENVIRONMENTAL AUDIT/ASSESSMENT PLAN. THIS SURVEY MAKES NO WARRANTY OR GUARANTEE EITHER EXPRESSED OR IMPLIED AS TO THE ENVIRONMENTAL CONDITIONS OF THE PREMISES HEREON DESCRIBED I.E., THE DETECTION OF SUBSURFACE CONTAMINANTS AS DEFINED IN D.E.P. TITLE 25-PA CODES.

DEFINITION OF CLEAN FILL

CLEAN FILL IS DEFINED AS: UNCONTAMINATED, NON-WATER SOLUBLE, NON-DECOMPOSABLE, INERT, SOLID MATERIAL. THE TERM INCLUDES SOIL, ROCK, STONE, DREDGED MATERIAL, USED ASPHALT, AND BRICK, BLOCK OR CONCRETE FROM CONSTRUCTION AND DEMOLITION ACTIVITIES THAT IS SEPARATE FROM OTHER WASTE AND IS RECOGNIZABLE AS SUCH. THE TERM DOES NOT INCLUDE MATERIALS PLACED IN OR ON THE WATERS OF THE COMMONWEALTH UNLESS OTHERWISE AUTHORIZED. (THE TERM "USED ASPHALT" DOES NOT INCLUDE MILLED ASPHALT OR ASPHALT THAT HAS BEEN PROCESS FOR RE-USE).

CLEAN FILL AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE: FILL MATERIALS AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE STILL QUALIFIES AS CLEAN FILL PROVIDED THE TESTING REVEALS THAT THE FILL MATERIAL CONTAINS CONCENTRATIONS OF REGULATED SUBSTANCES THAT ARE BELOW THE RESIDENTIAL LIMITS IN TABLES FP-1A AND FP-1B FOUND IN THE DEPARTMENT'S POLICY "MANAGEMENT OF FILL"

ANY PERSON PLACING CLEAN FILL THAT HAS BEEN AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE MUST USE FORM -001 TO CERTIFY THE ORIGIN OF THE FILL MATERIAL AND THE RESULTS OF THE ANALYTICAL TESTING TO QUALIFY THE MATERIAL AS CLEAN FILL. FORM FP-001 MUST BE RETAINED BY THE OWNER OF THE PROPERTY RECEIVING THE FILL. A COPY OF FORM FP-001 CAN BE FOUND AT THE END OF THESE INSTRUCTIONS.

INVASIVE AND NOXIOUS PLANTS:

- 1. CLEAN BOOT TREADS, CONSTRUCTION EQUIPMENT, AND VEHICLES THOROUGHLY (ESPECIALLY THE UNDERCARRIAGE AND WHEELS) BEFORE THEY ARE BROUGHT ON SITE AND WHEN LEAVING THIS SITE. THIS WILL REMOVE INVASIVE PLANT SEEDS AND INVASIVE EARTHWORMS/COCOONS
- THAT MAY HAVE BEEN PICKED UP. 2. DO NOT TRANSPORT UNSTERILIZED LEAVES, MULCH, COMPOST, OR SOIL TO THE SITE FROM
- ANOTHER LOCATION. . REVEGETATE OR COVER DISTURBED SOIL AND SOIL STOCKPILES AS SOON AS POSSIBLE TO
- DISCOURAGE THE GERMINATION OF INVASIVE PLANTS. IMPLEMENT PROPER EROSION CONTROL PRACTICES TO STABILIZE SOIL AND REDUCE RUNOFF. 4. DO NOT USE SEED MIXES THAT INCLUDE INVASIVE SPECIES. USE WEED-FREE STRAW OR HAY
- MIXES. MORE INFORMATION ABOUT INVASIVE SPECIES IN PENNSYLVANIA CAN BE FOUND AT THE FOLLOWING LINK: HTTP://WWW.DCNR.PA.GOV/CONSERVATION/WILDPLANTS/INVASIVEPLANTS/PAGES/DEFAULT.ASPX
- 5. REMOVE INVASIVE SPECIES WITH AN INTEGRATED PEST MANAGEMENT APPROACH BEFORE CONSTRUCTION AND ON AN ON-GOING BASIS AFTER CONSTRUCTION.

PLAN NOTES

- A. GENERAL EROSION AND SEDIMENT CONTROL GUIDELINES:
- 1. SPOIL MATERIALS ARE NOT TO BE DISPOSED OF IN FLOODPLAINS, FLOODWAYS, OR REGULATED WATERS OF THE COMMONWEALTH AND UNITED STATES INCLUDING RIVERS, LAKES AND WETLANDS.
- 2. ALL DISTURBED SOILS SHOULD BE SEEDED AND/OR PLANTED WITH RIPARIAN VEGETATION IMMEDIATELY AFTER ACHIEVING FINAL GRADE.
- 3. UPON PROJECT COMMENCEMENT, ALL EARTHWORK ASSOCIATED WITH THIS PROJECT, WITH THE EXCEPTION OF ADDITIONAL TREE AND SHRUB PLANTING, SHOULD BE COMPLETED IMMEDIATELY.
- 4. A COPY OF THIS E&S CONTROL PLAN SHALL BE KEPT AVAILABLE FOR INSPECTION ON THE CONSTRUCTION SITE AT ALL TIMES THROUGH THE TERMS OF THE PROJECT.
- 5. THE INTENT OF THIS PLAN/NARRATIVE IS TO INDICATE GENERAL MEANS OF COMPLIANCE WITH THE REQUIREMENTS OF THE RULES AND REGULATIONS OF CHAPTER 102 OF THE PENNSYLVANIA CLEAN STREAMS LAW, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO IMPLEMENT THESE METHODS PLUS ADDITIONAL METHODS AS MAY BE NECESSARY BECAUSE OF THE CONDITIONS CREATED BY LOCALIZED SITE CONDITIONS, AND/OR CONSTRUCTION PROCEDURES IN ORDER TO ASSURE COMPLIANCE WITH APPLICABLE LAW. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN ALL SEDIMENT AND EROSION CONTROL FACILITIES SO THAT THEY PERFORM AS REQUIRED BY LAW.
- B. GENERAL EROSION AND SEDIMENT CONTROL METHODS/PROCEDURES 1. IN ALL CASES, THE SMALLEST PRACTICAL AREA OF STABLE LAND SURFACE SHALL BE DISTURBED.
- ALL RELATED SEDIMENT AND EROSION CONTROL FACILITIES SHALL BE IN PLACE AND CAPABLE OF FUNCTIONING AS INTENDED PRIOR TO EARTHMOVING ACTIVITY.
- 3. BACKFILLED EXCAVATIONS SHALL BE RESTORED TO ORIGINAL TYPE OF COVER AND GRADE AS PER SPECIFICATIONS. SEEDING SHALL BE DONE ACCORDING TO SCHEDULE FOR PERMANENT SEEDING. TEMPORARY STABILIZATION IS REQUIRED OF ANY AND ALL ERODIBLE/SOLUBLE AREAS AND MATERIALS IMMEDIATELY.
- 4. CONSTRUCTION ACCESS INTO UNPAVED AREAS FROM PAVED AREAS OR STREETS (PUBLIC OR PRIVATE) SHALL BE VIA A ROCK CONSTRUCTION ENTRANCE.
- SEDIMENT SPILLED, DROPPED OR TRACKED ONTO PAVED SURFACES SHALL BE REMOVED IMMEDIATELY.
- 6. ALL SLOPES 3:1 OR STEEPER WILL UTILIZE EROSION CONTROL MATTING.
- 7. ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE CONSTRUCTION SEQUENCE. EACH STAGE SHALL BE COMPLETED BEFORE ANY FOLLOWING STAGE IS INITIATED. CLEARING AND GRUBBING SHALL BE LIMITED ONLY TO THOSE AREAS DESCRIBED IN EACH STAGE.
- 8. AT LEAST 7 DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES THE OPERATOR SHALL INVITE ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES INCLUDING BUT NOT LIMITED TO: THE LANDOWNER AND ALL APPROPRIATE MUNICIPAL OFFICIALS, A REPRESENTATIVE FROM THE COUNTY CONSERVATION DISTRICT FOR AN ON SITE PRE-CONSTRUCTION MEETING.
- 9. UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENTATION BMP'S MUST BE MAINTAINED PROPERLY. MAINTENANCE MUST INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENTATION BMP'S AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL SITE INSPECTIONS WILL BE DOCUMENTED IN AN INSPECTION LOG KEPT FOR THIS PURPOSE. THE COMPLIANCE ACTIONS AND THE DATE, TIME AND NAME OF THE PERSON CONDUCTING THE INSPECTION. THE INSPECTION LOG WILL BE KEPT ON SITE AT ALL TIMES AND MADE AVAILABLE TO THE DISTRICT UPON REQUEST.

ALL PREVENTIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGRADING, RESEEDING, REMULCHING AND REMATTING, MUST BE PREFORMED IMMEDIATELY. IF EROSION AND SEDIMENTATION BMPS FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMPS OR MODIFICATIONS OF THOSE INSTALLED WILL BE NEEDED.

WHERE BMPS ARE FOUND TO FAIL TO ALLEVIATE EROSION OR SEDIMENT POLLUTION THE PERMITTEE OR CO-PERMITTEE SHALL INCLUDE THE FOLLOWING INFORMATION:

- A. THE LOCATION AND SEVERITY OF THE BMPS FAILURE AND ANY POLLUTION EVENTS. B. ALL STEPS TAKEN TO, REDUCE, ELIMINATE AND PREVENT THE RECURRENCE
- OF THE NON-COMPLIANCE. C. THE TIME FRAME TO CORRECT THE NON-COMPLIANCE, INCLUDING THE EXACT DATES WHEN THE ACTIVITY WILL RETURN TO COMPLIANCE.

AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED. TEMPORARY EROSION AN SEDIMENT BMPS MUST BE REMOVED. AREAS DISTURBED DURING REMOVAL OF THE BMPS MUST BE STABILIZED IMMEDIATELY.

- 10. BEFORE INITIATING ANY REVISION TO THE APPROVED EROSION AND SEDIMENT CONTROL PLAN OR REVISIONS TO OTHER PLANS WHICH MAY AFFECT THE EFFECTIVENESS OF THE APPROVED E&S CONTROL PLAN, THE OPERATOR MUST RECEIVE APPROVAL OF THE REVISIONS FROM THE CHESTER COUNTY CONSERVATION DISTRICT. THE OPERATOR SHALL ASSURE THAT THE APPROVED EROSION AND SEDIMENT CONTROL PLAN IS PROPERLY AND COMPLETELY IMPLEMENTED. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO ELIMINATE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION.
- 11. ALL PUMPING OF SEDIMENT LADEN WATER OR POTENTIALLY SEDIMENT LADEN WATER SHALL BE THROUGH A SEDIMENT CONTROL BMP, SUCH AS A PUMPED WATER FILTER BAG DISCHARGING OVER NON-DISTURBED AREAS.
- 12. THE CONTRACTOR IS ADVISED TO BECOME THOROUGHLY FAMILIAR WITH THE PROVISIONS OF THE APPENDIX 64, EROSION CONTROL RULES AND REGULATIONS, TITLE 25, PART 1, DEPARTMENT OF ENVIRONMENTAL PROTECTION, SUBPART C, PROTECTION OF NATURAL RESOURCES, ARTICLE III, WATER RESOURCES, CHAPTER 102. EROSION CONTROL.
- 13. THE OPERATOR SHALL REMOVE FROM THE SITE, RECYCLE, OR DISPOSE OF ALL BUILDING MATERIALS AND WASTES IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS AT 25 PA. CODE 260.1 ET SEQ., 271.1 ET SEQ., AND 287.1 ET SEQ. THE CONTRACTOR SHALL NOT ILLEGALLY BURY, DUMP, OR DISCHARGE ANY BUILDING MATERIAL OR WASTES AT THE SITE.
- 14. STOCKPILE HEIGHTS MUST NOT EXCEED 35 FEET. STOCKPILE SLOPES MUST BE 2:1 OR FLATTER.
- 15. UPON COMPLETION OR TEMPORARY CESSATION OF THE EARTH DISTURBANCE ACTIVITY, OR ANY STAGE THEREOF, THE PROJECT SITE SHALL BE IMMEDIATELY STABILIZED WITH THE APPROPRIATE TEMPORARY OR PERMANENT STABILIZATION
- 16. AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM UNIFORM 70% PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED SURFACE EROSION AND SUBSURFACE CHARACTERISTICS SUFFICIENT TO RESIST SLIDING AND OTHER MOVEMENTS. IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITIES CEASE, THE OPERATOR SHALL STABILIZE ANY AREAS DISTURBED BY THE ACTIVITIES. DURING NON-GERMINATING PERIODS, MULCH MUST BE APPLIED AT THE SPECIFIED RATES. DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND

WHICH WILL BE REDISTURBED WITHIN 1 YEAR MUST BE STABILIZED IN ACCORDANCE WITH THE TEMPORARY VEGETATIVE STABILIZATION SPECIFICATIONS. DISTURBED AREAS WHICH ARE AT FINISHED GRADE OR WHICH WILL NOT BE REDISTURBED WITHIN 1 YEAR MUST BE STABILIZED IN ACCORDANCE WITH THE PERMANENT VEGETATIVE STABILIZATION SPECIFICATIONS. STOP-CALL BEFORE YOU DIG!

Pennsylvania One Call System, Inc. 1-800-242-1776



KPI Technology has notified the Pennsylvania One Call System, Inc DESIGN ONE CALL ONLY Date: 9/22/21

> USERS OF THIS PLAN ARE HEREBY CAUTIONED THAT THIS ONE CALL NOTICE IS FOR DESIGN PURPOSES ONLY AND THAT PRIOR TO ANY EXCAVATION OR EARTHMOVING ACTIVIES IT SHALL BE THE CONTRACTOR'S /DEVELOPER'S RESPONSIBILITY TO RECONTACT THE PENNA. ONE CALL SYSTEM FOR UNDERGROUND FACILITY LOCATION AND MARKING.

Serial # 20212651423





SEEDING SPECIFICATIONS

ANDROPOGON GERARDII

CHAMAECRISTA FASCICULATA

ASCLEPIAS SYRIACA

BAPTISIA AUSTRALIS

CAREX VULPINOIDEA

CORNUS AMOMUM

ELYMUS RIPARIUS

ELYMUS VIRGINICUS

JUNCUS EFFUSUS

MONARDA FISTULOSA

PENSTEMON DIGITALIS

SORGHASTRUM NUTANS

PANICUM VIRGATUM

RHUS TYPHINA

RUDBECKIA HIRTA

HELENIUM AUTUMNALE

EUPATORIUM FISTULOSUM

EUPATORIUM MACULATUM

FUTHAMIA GRAMINFOLIA

PANICUM CLANDESTINUM

SCHIZACHYRIUM SCOPARIUM

HELIOPSIS HELIANTHOIDES

EUPATORIUM PERFOLIATUM

A. SEEDING FOR RIPARIAN BUFFER AREAS

LATIN NAME

RIPARIAN BUFFER MIX (ERNMX-178)

% OF MIX

C. MULCH APPLICATION 1. HAY OR STRAW AT 3 TONS PER ACRE OR 140 LBS PER 1,000 SQ.FT.

D. AVAILABILITY 1. SEED MIXES ARE AVAILABLE FROM ERNST CONSERVATION SEEDS, 9006 MERCER PIKE, MEADVILLE, PA 16335, PHONE: (800) 873-3321.



COMPOST FILTER SOCK-

COMPOST

FILTER SOCK-

THE SLOPE OF ITS TRIBUTARY AREA.

AND THE MULCH SPREAD AS A SOIL SUPPLEMENT

NOTES:

INSPECTION.

RECOMMENDATIONS.

BLOWN/PLACED

FILTER MEDIA-

DISTURBED AREA











COMMON NAME

PARTRIDGE PEA

SILKY DOGWOOD

COMMON MILKWEED

BLUE FALSE INDIGO

COMMON SNEEZEWEED

SPOTTED JOE PYE WEED

GRASS LEAVED GOLDENROD

TALL WHITE BEARD TONGUE

RIVERBANK WILD RYE

OX EYE SUNFLOWER

TIOGA DEER TONGUE

STAGHORN SUMAC

LITTLE BLUESTEM

INDIAN GRASS

BLACK EYED SUSAN

VIRGINIA WILD RYE

JOE PYE WEED

SOFT RUSH

SWITCH GRASS

WILD BERGAMOT

BONESET

BIG BLUESTEM

FOX SEDGE



IN-STREAM STRUCTURES UNLESS OTHERWISE NOTED.

- 2. ROCK SHOULD BE HAND SELECTED BY CONTRACTOR.
- ROCK SHOULD BE AS BLOCKY AS POSSIBLE TO ALLOW FOR EASIER CONSTRUCTION OF IN-STREAM

STRUCTURES. DESIRABLE ROCK SIZES FOR

NOT TO SCALE

SECTION

)12 IN/

< MIN. 🤇

DISTURBED AREA

UNDISTURBED AREA

TRAFFIC SHALL NOT BE PERMITTED TO CROSS COMPOST FILTER SOCKS.

BARRIER AND DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.

<u>plan view</u>

SOCK FABRIC SHALL MEET STANDARDS OF TABLE 4.1 OF THE PA DEP EROSION CONTROL MANUAL.

COMPOST SHALL MEET THE STANDARDS OF TABLE 4.2 OF THE PA DEP EROSION CONTROL MANUAL

COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE BARRIER SHALL

BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN BARRIER ALIGNMENT. MAXIMUM

ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/2 THE ABOVE GROUND HEIGHT OF THE

COMPOST FILTER SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS

SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF

BIODEGRADABLE COMPOST FILTER SOCKS SHALL BE REPLACED AFTER 6 MONTHS: PHOTODEGRADABLE

SOCKS AFTER 1 YEAR. POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MANUFACTURER'S

UPON STABILIZATION OF THE AREA TRIBUTARY TO THE SOCK, STAKES SHALL BE REMOVED. THE SOCK MAY

BE LEFT IN PLACE AND VEGETATED OR REMOVED. IN THE LATTER CASE, THE MESH SHALL BE CUT OPEN

STANDARD CONSTRUCTION DETAIL #4-1

COMPOST FILTER SOCK

NOT TO SCALE

SLOPE LENGTH ABOVE ANY BARRIER SHALL NOT EXCEED THAT SPECIFIED FOR THE SIZE OF THE SOCK AND



IN-STREAM STRUCTURES





-2 IN. x 2 IN. WOODEN STAKES

EXISTING

2 IN. x 2 IN.

CENTER

WOODEN STAKES

PLACED 10 FT ON

CONTOURS

PLACED 10 FT ON CENTER

UNDISTURBED AREA



USED ON UPSLOPE FACE IN HQ AND EV WATERSHEDS SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH 1/3 THE HEIGHT OF THE OUTLET.

LEAKS.

A ROCK FILTER OUTLET SHALL BE INSTALLED WHERE FAILURE OF A SILT FENCE OR STRAW BALE BARRIER HAS OCCURRED DUE TO CONCENTRATED FLOW. ANCHORED COMPOST LAYER SHALL BE

OPTIONAL 6 IN. COMPOST LAYER

-OPTIONAL 6 IN. SUMP

STRAW BALES-

FIRMLY ANCHORED

-AASHTO NO

6 IN. MIN

-MOUNTABLE BERM (6 IN. MIN.)*

-FARTH FILL

∽PIPE AS NECESSARY

GEOTEXTILE-

MIN 8" AASHTO #1

PROFILE

<u>Plan view</u>

* MOUNTABLE BERM USED TO PROVIDE PROPER COVER FOR PIPE

REMOVE TOPSOIL PRIOR TO INSTALLATION OF ROCK CONSTRUCTION ENTRANCE.

MOUNTABLE BERM SHALL BE INSTALLED WHEREVER OPTIONAL CULVERT PIPE IS

RUNOFF SHALL BE DIVERTED FROM ROADWAY TO A SUITABLE SEDIMENT

USED AND PROPER PIPE COVER AS SPECIFIED BY MANUFACTURER IS NOT

OTHERWISE PROVIDED. PIPE SHALL BE SIZED APPROPRIATELY FOR SIZE OF

CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS BY ADDING ROCK. A

STOCKPILE SHALL BE MAINTAINED ON SITE FOR THIS PURPOSE. ALL SEDIMENT

CONSTRUCTION SITE IMMEDIATELY. IF EXCESSIVE AMOUNTS OF SEDIMENT ARE

BEING DEPOSITED ON ROADWAY, EXTEND LENGTH OF ROCK CONSTRUCTION

ENTRANCE BY 50 FOOT INCREMENTS UNTIL CONDITION IS ALLEVIATED OR

INSTALL WASH RACK. WASHING THE ROADWAY OR SWEEPING THE DEPOSITS

DEPOSITED ON PAVED ROADWAYS SHALL BE REMOVED AND RETURNED TO THE

INTO ROADWAY DITCHES, SEWERS, CULVERTS, OR OTHER DRAINAGE COURSES IS

STANDARD CONSTRUCTION DETAIL #3-1

ROCK CONSTRUCTION ENTRANCE

NOT TO SCALE

└─R-3 ROCK

OUTLET CROSS-SECTION

REMOVAL BMP PRIOR TO ENTERING ROCK CONSTRUCTION ENTRANCE.

MAINTENANCE: ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE

EXTEND ROCK OVER FULL WIDTH OF ENTRANCE.

GROUND

NOTES:

DITCH BEING CROSSED.

NOT ACCEPTABLE.

EXISTING ROADWAY

STAKE



SPILL PREVENTION AND RESPONSE: 1. ALL EQUIPMENT SHALL BE INSPECTED AT THE START AND END OF THE WORK DAY AND MONITORED DURING USE FOR

2. ALL REFUELING OF EQUIPMENT SHALL BE COMPLETED AT LEAST 50 FEET FROM THE EDGE OF STREAM CHANNELS. 3. A SPILL CLEANUP KIT SHALL BE PRESENT ON THE SITE IN THE AREA USED FOR REFUELING.

4. IN THE EVENT OF A LEAK OR SPILL, THE CONTRACTOR SHALL TAKE IMMEDIATE ACTION TO STOP THE DISCHARGE OF POLLUTANTS, CLEAN UP THE SPILL USING THE SPILL KIT OR APPROVED METHODS, AND NOTIFY THE CONSTRUCTION

OVERSIGHT REPRESENTATIVE. 5. FOR SPILLS WHERE DISCHARGES TO SURFACE OR GROUND WATER OCCUR OR INCLUDE HAZARDOUS MATERIALS ABOVE FIVE GALLONS, TAKE ACTION TO STOP THE DISCHARGE OF POLLUTANTS IF POSSIBLE AND

IMMEDIATELY NOTIFY DEP AT 1-800-541-2050.



SUPPORT STAKE

UNDISTURBED

18 II

-FABRIC FENCE

COMPACTED

BACKFILL

LOW VOLUME FILTER BAGS SHALL BE MADE FROM NON-WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH STRENGTH, DOUBLE STITCHED "J" TYPE SEAMS. THEY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS. HIGH VOLUME FILTER BAGS SHALL BE MADE FROM WOVEN GEOTEXTILES THAT MEET THE FOLLOWING STANDARDS:

PROPERTY	TEST METHOD	MINIMUM STANDARD
AVG. WIDE WIDTH STRENGTH	ASTM D-4884	60 LB/IN
GRAB TENSILE	ASTM D-4632	205 LB
PUNCTURE	ASTM D-4833	110 LB
MULLEN BURST	ASTM D-3786	350 PSI
UV RESISTANCE	ASTM D-4355	70%
AOS % RETAINED	ASTM D-4751	80 SIEVE

A SUITABLE MEANS OF ACCESSING THE BAG WITH MACHINERY REQUIRED FOR DISPOSAL PURPOSES SHALL BE PROVIDED. FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME 1/2 FULL OF SEDIMENT SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED. BAGS SHALL BE PLACED ON STRAPS TO FACILITATE REMOVAL UNLESS BAGS COME WITH LIFTING STRAPS ALREADY ATTACHED.

BAGS SHALL BE LOCATED IN WELL-VEGETATED (GRASSY) AREA, AND DISCHARGE ONTO STABLE, EROSION RESISTANT AREAS. WHERE THIS IS NOT POSSIBLE, A GEOTEXTILE UNDERLAYMENT AND FLOW PATH SHALL BE PROVIDED. BAGS MAY BE PLACED ON FILTER STONE TO INCREASE DISCHARGE CAPACITY. BAGS SHALL NOT BE PLACED ON SLOPES GREATER THAN 5%. FOR SLOPES EXCEEDING 5%, CLEAN ROCK OR OTHER NON-ERODIBLE AND NON-POLLUTING MATERIAL MAY BE PLACED UNDER THE BAG TO REDUCE SLOPE STEEPNESS.

NO DOWNSLOPE SEDIMENT BARRIER IS REQUIRED FOR MOST INSTALLATIONS. COMPOST BERM OR COMPOST FILTER SOCK SHALL BE INSTALLED BELOW BAGS LOCATED IN HQ OR EV WATERSHEDS, WITHIN 50 FEET OF ANY RECEIVING SURFACE WATER OR WHERE GRASSY AREA IS NOT AVAILABLE.

THE PUMP DISCHARGE HOSE SHALL BE INSERTED INTO THE BAGS IN THE MANNER SPECIFIED BY THE MANUFACTURER AND SECURELY CLAMPED. A PIECE OF PVC PIPE IS RECOMMENDED FOR THIS PURPOSE.

THE PUMPING RATE SHALL BE NO GREATER THAN 750 GPM OR 1/2 THE MAXIMUM SPECIFIED BY THE MANUFACTURER, WHICHEVER IS LESS. PUMP INTAKES SHALL BE FLOATING AND SCREENED. FILTER BAGS SHALL BE INSPECTED DAILY. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED.

STANDARD CONSTRUCTION DETAIL #3-16 PUMPED WATER FILTER BAG

NOT TO SCALE WILLOUGHBY RUN SITE REVISIONS 7/14/22 EROSION AND SEDIMENTATON 7/29/22 CONTROL DETAILS CLAUSER CLAUSER ENVIRONMENTAL, LLC 1915 LEIBY LANE, KUTZTOWN, PA 19530 CAPE MAY COURT HOUSE, NJ - SCHUYLKILL HAVEN, PA (570) 294–0669 www.clauserenvironmental.com DRAWN CHECK (C) 2022 CLAUSER ENVIRONMENTAL, LLC SHEET7 OF 8 4/25/22 4/25/22





ATTACHMENT C – STREAM RESTORATION



MS4 STREAM RESTORATION ELIGIBILITY CHECKLIST

Permittee Name: **Cumberland Township**

Stream Restoration @ Adams Project Name .: County Human Resources

١.	ELIGIBILITY EVALUATION		
Α.	Siting Criteria (DEP Stream Restoration Eligibility Guidance)	Yes	No
1.	Did the permittee provide documentation that demonstrates existing channel or streambank erosion and an actively enlarging or incising urban stream condition prior to restoration?		
2.	. Is the project location on a 1st - 3rd order stream?		
3.	Does the project address at least 100 linear feet of stream channel?		
4.	Did the permittee provide documentation that the impervious area upstream of the project is sufficiently treated to address peak flows that may exceed engineering design threshold or compromise channel form and function?		
5.	Does the project address both sides of the channel on sites where a need to do so is evident?	$\mathbf{\nabla}$	
В.	Restoration Techniques (DEP Stream Restoration Eligibility Guidance)	Yes	No
6.	Does the restoration design apply a comprehensive approach (i.e., a mix of techniques appropriate to the site) that will create long-term stability of the streambed, streambanks, and floodplain?	R	
7.	Does the restoration design avoid the use of hard armoring (i.e., armoring that involves the placement of hard structures along the stream channel for the express purpose of limiting the movement of a stream along its horizontal and/or vertical dimensions?	R	
8.	Does the restoration design maximize floodplain reconnection, with a minimal channel invert election increase required to achieve this objective? Is the restoration bank height ratio 1.0 or less?		
9.	Does the restoration design include a 35-foot (average width) minimum riparian buffer?	$\mathbf{\nabla}$	
10.	Does the restoration design include an operations and maintenance (O&M) plan that identifies O&M activities, frequencies, and responsible parties?		

Note: Stream restoration projects that satisfy all the siting and techniques criteria listed above may be credited as an MS4 BMP. If a restoration project does not satisfy all the eligibility criteria, DEP may still approve credit for a project if it can be demonstrated that the project will have long-term stability and improve water quality.

Comments:

2. UNT to Rock Creek is a 2nd order stream

9. Native Riparian Buffer Mix was incorporated in the design to supplement the existing natural buffer areas along the stream.

Clauser Environmental assisted in the selection and design of the stream bank projects. This firm has a wide range of experience with these types of projects.

Recommendation:

	Eligible
_	

Insufficient information provided by permittee

Reviewer Name:

Date:

Stream Restoration at Adams County Human Resources

Maintenance Frequency	intenance Frequency Maintenance Activity	
As Needed/Annually	Vegetation along the streambanks and within the floodplain	
	should be maintained at 60 – 85 % cover; replant as needed	
As Needed (Appually	Maintain any meadow pretreatment areas to a height of six to	
As Needed/Annually	12 inches	
As Needed/Annually	Revegetate and establish any eroded areas along the	
	streambanks	
As Needed/Annually	Remove weeds and invasive plants	
	Replace diseased or dead plants; if specific species mortality is	
As Needed/Annually	reoccurring, access cause and replace with an appropriate	
	alternative species.	
As Needed/Annually	Remove litter, trash, and debris	
Annually/After Every Rainfall	Monitor and observe for continued functionality of the	
Event Totaling One Inch or	restoration; contact KPI Technology if any failures are	
More in a 24-hour Period	identified	

Operations and Maintenance Plan

Operations and Maintenance of the UNT to Rock Creek Stream Restoration is the responsibility of the County of Adams

Adams County Human Resources 525 Boyds School Road Gettysburg, PA 17325 Phone - 717-337-9822



Data Sources: Clauser Environmental, LLC www.pasda.psu.edu UNT to Rock Creek Photo Location Map Cumberland Township Adams County, PA



UNT to Rock Creek Stream Restoration Site Photos



Photo 1: Facing southeast from Sample Point #1. Viewing typical site uplands and Stream 1.



Photo 2: Facing northwest from the eastern site boundary. Viewing Stream 1



Photo 3: Facing west from the stream crossing located in the eastern portion of the site. Viewing Stream 1 and typical site uplands.



Photo 4: Facing south in the center of the site. Viewing Stream 1.



Photo 5: Facing west in the southwestern portion of the site. Viewing Stream 2.



Photo 6: Facing southeast in the southwestern portion of the site. Viewing Stream 2 and typical site uplands.



Stream Restoration at Adams County Human Resources <u>Post-Construction Photos March 29, 2023</u>





1.
















11.



















CROSS SECTION #1



CROSS SECTION #2



0+50

PROPOSED TOE ROCK GED-TEXTILE FABRIC

	SCALE $1'' = 5'$					
	5 0 5 10 15					
	CROSS SECTIONS					
	FOR					
L	INT TO ROCK CREEK SITE					
	Situate In: Cumberland Township Adams County, Pennsylvania					
REVISIONS 6/28/22	© 2022 CLAUSER ENVIRONMENTAL, LLC					
7/8/22	7/8/22 CLAUSER environmental llc					
CLAUSER ENVIRONMENTAL, LLC						
1915 LEIBY LANE, KUTZTOWN, PA 19530 CAPE MAY COURT HOUSE, NJ (570) 294-0669 www.clauserenvironmental.com						
	4/25/22 4/25/22 SHEET6 OF 8 ASC KSC					

CONSTRUCTION SEQUENCE NOTES

THE OPERATOR SHALL ASSURE THAT THE APPROVED EROSION AND SEDIMENT CONTROL PLAN IS PROPERLY AND COMPLETELY IMPLEMENTED.

THE OPERATOR SHALL ASSURE THAT AN EROSION AND SEDIMENT CONTROL PLAN HAS BEEN PREPARED BY THE APPLICANT, SUBMITTED TO AND APPROVED BY THE ADAMS COUNTY CONSERVATION DISTRICT, AND IS BEING IMPLEMENTED AND MAINTAINED FOR ALL SOIL AND/OR ROCK SPOIL AND BORROW AREAS, REGARDLESS OF THEIR LOCATIONS.

BEFORE INITIATING ANY REVISIONS TO THE APPROVED EROSION AND SEDIMENT CONTROL PLAN OR REVISIONS TO OTHER PLANS WHICH MAY AFFECT THE EFFECTIVENESS OF THE APPROVED E&S CONTROL PLAN. THE OPERATOR MUST RECEIVE APPROVAL OF THE REVISIONS FROM THE ADAMS COUNTY CONSERVATION DISTRICT. ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE FOLLOWING SEQUENCE.

EACH STAGE SHALL BE COMPLETED BEFORE ANY FOLLOWING STAGE IS INITIATED. CLEARING AND GRUBBING SHALL BE LIMITED ONLY TO THOSE AREAS DESCRIBED IN EACH STAGE.

EROSION AND SEDIMENT BMPS MUST BE CONSTRUCTED. STABILIZED, AND FUNCTIONAL BEFORE SITE DISTURBANCE BEGINS WITHIN THE TRIBUTARY AREAS OF THOSE BMPS.

AT LEAST 7 DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES, THE OPERATOR SHALL INVITE ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES, THE LANDOWNER, ALL APPROPRIATE MUNICIPAL OFFICIALS, THE EROSION AND SEDIMENT CONTROL PLAN PREPARER, AND THE ADAMS COUNTY CONSERVATION DISTRICT TO AN ON-SITE MEETING. ALSO, AT LEAST 3 DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES, ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES SHALL NOTIFY THE PENNSYLVANIA ONE CALL SYSTEM INCORPORATED AT 1-800-242-1776 FOR BURIED UTILITIES LOCATIONS.

CONSTRUCTION SEQUENCE

1. STAKE/FLAG ALL LIMIT OF DISTURBANCE (LOD) LINES, UTILITIES, AND PIPES (INCLUDING THE 4" AND 6" CPP) FOR THE PROJECT. 2. INSTALL ROCK CONSTRUCTION ENTRANCE AND COMPOST FILTER SOCK AT ALL LOCATIONS PROPOSED ON THE SITE.

- 3. INSTALL THE TEMPORARY FORD CROSSING AS SHOWN ON THE PROJECT PLANS. 4. WHEN WORKING WITHIN THE STREAM TO INSTALL IN-STREAM STRUCTURES, WORK IN THE DEWATERED STREAMBED THROUGH THE USE OF TEMPORARY COFFERDAMS (OR EQUIVALENT) AND PUMP BYPASS AND IN ACCORDANCE WITH THE SEQUENCE FOR WORKING WITHIN THE STREAM CHANNEL. LOCATIONS OF TEMPORARY COFFERDAMS AND PUMP BY-PASS SETUPS CAN BE DETERMINED 3. BACKFILLED EXCAVATIONS SHALL BE RESTORED TO ORIGINAL TYPE OF COVER AND
- BY THE CONTRACTOR IN THE FIELD. USE SEDIMENT FILTER BAGS AS NEEDED TO MINIMIZE SEDIMENTATION FROM THE DEWATERED ZONE. 5. PRE-POSITION MATERIALS ON-SITE FOR EACH WORKZONE SO THAT STABILIZATION MAY OCCUR IMMEDIATELY FOLLOWING GRADING OF EACH WORKZONE. GRADING OF STREAM BANKS SHOULD OCCUR ONE WORKZONE AT A TIME.
- IT IS ANTICIPATED THAT GRADING AND STABILIZATION WILL BE COMPLETED FROM UPSTREAM TO DOWNSTREAM, BUT CONSTRUCTION CONDITIONS SHOULD BE TAKEN INTO ACCOUNT TO PROVIDE THE LEAST IMPACT TO THE SITE.
- 6. WHEN THE TEMPORARY COFFERDAMS AND PUMP BYPASS ARES REMOVED, INSPECT ALL IN-STREAM STRUCTURES FOR FUNCTION. REPAIR ANY DEFICIENCIES
- 7. AS WORK PROCEEDS, PROGRESSIVELY SEED AND MULCH FRESHLY GRADED AREAS AND REMOVE ANY CONSTRUCTION DEBRIS. ALL STREAMBANKS SHOULD BE COMPACTED SO THAT THE SOIL IS NOT LOOSE BEFORE MATTING. REFER TO THE ATTACHED PLANTING PLAN FOR THE PROPOSED RIPARIAN BUFFER PLANTING AREAS AND THE SEEDING SPECIFICATIONS NOTE ON THIS PAGE. EROSION CONTROL MATTING SHOULD BE INSTALLED IMMEDIATELY FOLLOWING GRADING OF EACH SECTION. THE EROSION CONTROL MATTING SHOULD BE INSTALLED SO THAT THE DOWNSLOPE EDGE IS JUST ABOVE THE NORMAL FLOW LEVEL OF THE STREAM. 8. REMOVE THE ROCK CONSTRUCTION ENTRANCE.
- 9. STABILIZE ALL DISTURBED AREAS WITH SEED, FERTILIZE , LIME, AND MULCH AS REQUIRED. 10. WHEN VEGETATION REACHES AT LEAST 70% UNIFORM, PERENNIAL COVER, REMOVE THE COMPOST FILTER SOCK. STABILIZE ANY AREAS DISTURBED DURING REMOVAL OF THE TEMPORARY BMPS.

SOILS

Bo - BOWMANSVILLE SILT LOAM GqB - GLENELG SILT LOAM, 3 TO 8 PERCENT SLOPES

PcB - PENN SILT LOAM, 3 TO 8 PERCENT SLOPES ReA - READINGTON SILT LOAM, 0 TO 3 PERCENT SLOPES

SURVEY INFORMATION

- 1. TOPOGRAPHIC CONDITIONS SHOWN HEREON ARE BASED ON A FIELD SURVEY BY KPI TECHNOLOGY ON
- OCTOBER 14, 2021 2. UNDERGROUND UTILITIES ARE SHOWN BASED UPON SURFACE INDICATION, PRIOR PLANS PREPARED BY OTHERS, UTILITY COMPANY INFORMATION, AND RECORDED INFORMATION, AS SUCH. THESE LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY, AND MUST BE VERIFIED PRIOR TO ANY CONSTRUCTION ACTIVITY ON THIS SITE
- 3. VERTICAL DATUM SHOWN HEREON IS BASED ON NORTH AMERICAN VERTICAL DATUM (NAVD88). 4. THIS PLAN DOES NOT REPRESENT AN ACTUAL BOUNDARY SURVEY

WETLANDS

A WETLAND DELINEATION WAS CONDUCTED BY CLAUSER ENVIRONMENTAL, LLC. WETLANDS WERE NOT IDENTIFIED WITHIN THE PROJECT BOUNDARY.

ENVIRONMENTAL DUE DILLIGENCE

ENVIRONMENTAL DUE DILLIGENCE: THE APPLICANT MUST PERFORM ENVIRONMENTAL DUE DILLEGENCE TO DETERMINE IF THE FIL MATERIALS ASSOCIATED WITH THE PROJECT QUALIFY AS CLEAN .. ENVIRONMENTAL DUE DILLEGENCE IS DEFINED AS: INVESTIGATIVE TECHNIQUES, INCLUDING, BUT NOT LIMITED TO VISUAL PROPERTY INSPECTIONS, ELECTRONIC DATA BASE SEARCHES, REVIEW OF PROPERTY OWNERSHIP. REVIEW OF PROPERTY USE HISTORY SANBORN MAPS, ENVIRONMENTAL QUESTIONNAIRES, TRANSACTION SCREENS, ANALYTICAL TESTING, ENVIRONMENTAL ASSESSMENTS OR AUDITS. ANALYTICAL TESTING IS NOT A REQUIRED PART OF DUE DILLIGENCE UNLESS VISUAL INSPECTION AND/OR REVIEW OF THE PAS LAND USE OF THE PROPERTY INDICATES THAT THE FILL MAY HAVE BEEN SUBJECTED TO A SPILL OR RELEASE OF REGULATED SUBSTANCE. IF THE FILL MAY HAVE BEEN AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE, IT MUST BE TESTED TO DETERMINE IF IT QUALIFIES AS CLEAN FILL. TESTING SHOULD BE PERFORMED IN ACCORDANCE WITH

APPENDIX A OF THE DEPARTMENT'S POLICY "MANAGEMENT OF FILL".

LIABILITY NOTE

FAILURE TO CORRECTLY INSTALL SEDIMENT CONTROL FACILITIES OR FAILURE TO PREVENT SEDIMENT LADEN RUNOFF FROM LEAVING THE CONSTRUCTION SITE OR FAILURE TO TAKE CORRECTIVE ACTIONS TO IMMEDIATELY RESOLVE FAILURES OF SEDIMENT CONTROL FACILITIES MAY RESULT IN ADMINISTRATIVE, CIVIL AND/OR CRIMINAL PENALTIES BEING INSTITUTED BY THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION AS DEFINED IN SECTION 602 OF THE CLEAN STREAMS LAW OF PENNSYLVANIA. THE CLEAN STREAMS LAW PROVIDES FOR UP TO \$10,000 PER DAY IN CIVIL PENALTIES, UP TO \$10,000 IN SUMMARY CRIMINAL PENALTIES, AND UP TO \$25,000 IN MISDEMEANOR CRIMINAL PENALTIES FOR EACH VIOLATION.

THIS PLAN IS NOT TO BE CONSTRUED AS AN ENVIRONMENTAL AUDIT/ASSESSMENT PLAN. THIS SURVEY MAKES NO WARRANTY OR GUARANTEE EITHER EXPRESSED OR IMPLIED AS TO THE ENVIRONMENTAL CONDITIONS OF THE PREMISES HEREON DESCRIBED I.E., THE DETECTION OF SUBSURFACE CONTAMINANTS AS DEFINED IN D.E.P. TITLE 25-PA CODES.

DEFINITION OF CLEAN FILL

SOLUBLE, NON-DECOMPOSABLE, INERT, SOLID MATERIAL. THE TERM INCLUDES SOIL, ROCK, STONE, DREDGED MATERIAL, USED ASPHALT, AND BRICK, BLOCK OR CONCRETE FROM CONSTRUCTION AND DEMOLITION ACTIVITIES THAT IS SEPARATE FROM OTHER WASTE AND IS RECOGNIZABLE AS SUCH. THE TERM DOES NOT INCLUDE MATERIALS PLACED IN OR ON THE WATERS OF THE COMMONWEALTH UNLESS OTHERWISE AUTHORIZED. (THE TERM 'USED ASPHALT" DOES NOT INCLUDE MILLED ASPHALT OR ASPHALT THAT HAS BEEN PROCESS FOR RE-USE).

CLEAN FILL IS DEFINED AS: UNCONTAMINATED, NON-WATER

CLEAN FILL AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE: FILL MATERIALS AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE STILL QUALIFIES AS CLEAN FILL PROVIDED THE TESTING REVEALS THAT THE FILL MATERIAL CONTAINS CONCENTRATIONS OF REGULATED SUBSTANCES THAT ARE BELOW THE RESIDENTIAL LIMITS IN TABLES FP-1A AND FP-1B FOUND IN THE DEPARTMENT'S POLICY "MANAGEMENT OF FILL"

ANY PERSON PLACING CLEAN FILL THAT HAS BEEN AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE MUST USE FORM FP-001 TO CERTIFY THE ORIGIN OF THE FILL MATERIAL AND THE RESULTS OF THE ANALYTICAL TESTING TO QUALIFY THE MATERIAL AS CLEAN FILL. FORM FP-001 MUST BE RETAINED BY THE OWNER OF THE PROPERTY RECEIVING THE FILL. A COPY OF FORM FP-001 CAN BE FOUND AT THE END OF THESE INSTRUCTIONS.

PLAN NOTES

- A. GENERAL EROSION AND SEDIMENT CONTROL GUIDELINES:
- 1. SPOIL MATERIALS ARE NOT TO BE DISPOSED OF IN FLOODPLAINS, FLOODWAYS, OR REGULATED WATERS OF THE COMMONWEALTH AND UNITED STATES INCLUDING RIVERS, LAKES AND WETLANDS.
- 2. ALL DISTURBED SOILS SHOULD BE SEEDED AND/OR PLANTED WITH RIPARIAN VEGETATION IMMEDIATELY AFTER ACHIEVING FINAL GRADE.
- 3. UPON PROJECT COMMENCEMENT, ALL EARTHWORK ASSOCIATED WITH THIS PROJECT, WITH THE EXCEPTION OF ADDITIONAL TREE AND SHRUB PLANTING, SHOULD BE COMPLETED IMMEDIATELY.
- 4. A COPY OF THIS E&S CONTROL PLAN SHALL BE KEPT AVAILABLE FOR INSPECTION ON THE CONSTRUCTION SITE AT ALL TIMES THROUGH THE TERMS OF THE PROJECT.
- 5. THE INTENT OF THIS PLAN/NARRATIVE IS TO INDICATE GENERAL MEANS OF COMPLIANCE WITH THE REQUIREMENTS OF THE RULES AND REGULATIONS OF CHAPTER 102 OF THE PENNSYLVANIA CLEAN STREAMS LAW. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO IMPLEMENT THESE METHODS PLUS ADDITIONAL METHODS AS MAY BE NECESSARY BECAUSE OF THE CONDITIONS CREATED BY LOCALIZED SITE CONDITIONS, AND/OR CONSTRUCTION PROCEDURES IN ORDER TO ASSURE COMPLIANCE WITH APPLICABLE LAW. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN ALL SEDIMENT AND EROSION CONTROL FACILITIES SO THAT THEY PERFORM AS REQUIRED BY LAW.
- B. GENERAL EROSION AND SEDIMENT CONTROL METHODS/PROCEDURES IN ALL CASES, THE SMALLEST PRACTICAL AREA OF STABLE LAND SURFACE SHALL BE DISTURBED.
- 2. ALL RELATED SEDIMENT AND EROSION CONTROL FACILITIES SHALL BE IN PLACE AND CAPABLE OF FUNCTIONING AS INTENDED PRIOR TO EARTHMOVING ACTIVITY.
- GRADE AS PER SPECIFICATIONS. SEEDING SHALL BE DONE ACCORDING TO SCHEDULE FOR PERMANENT SEEDING. TEMPORARY STABILIZATION IS REQUIRED OF ANY AND ALL ERODIBLE/SOLUBLE AREAS AND MATERIALS IMMEDIATELY.
- 4. CONSTRUCTION ACCESS INTO UNPAVED AREAS FROM PAVED AREAS OR STREETS (PUBLIC OR PRIVATE) SHALL BE VIA A ROCK CONSTRUCTION ENTRANCE.
- SEDIMENT SPILLED, DROPPED OR TRACKED ONTO PAVED SURFACES SHALL BE REMOVED IMMEDIATELY.
- 6. ALL SLOPES 3:1 OR STEEPER WILL UTILIZE EROSION CONTROL MATTING.
- ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE CONSTRUCTION SEQUENCE. EACH STAGE SHALL BE COMPLETED BEFORE ANY FOLLOWING STAGE IS INITIATED. CLEARING AND GRUBBING SHALL BE LIMITED ONLY TO THOSE AREAS DESCRIBED IN EACH STAGE.
- 8. AT LEAST 7 DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES THE OPERATOR SHALL INVITE ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES INCLUDING BUT NOT LIMITED TO: THE LANDOWNER AND ALL APPROPRIATE MUNICIPAL OFFICIALS, A REPRESENTATIVE FROM THE COUNTY CONSERVATION DISTRICT FOR AN ON SITE PRE-CONSTRUCTION MEETING.
- 9. UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENTATION BMP'S MUST BE MAINTAINED PROPERLY. MAINTENANCE MUST INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENTATION BMP'S AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL SITE INSPECTIONS WILL BE DOCUMENTED IN AN INSPECTION LOG KEPT FOR THIS PURPOSE. THE COMPLIANCE ACTIONS AND THE DATE, TIME AND NAME OF THE PERSON CONDUCTING THE INSPECTION. THE INSPECTION LOG WILL BE KEPT ON SITE AT ALL TIMES AND MADE AVAILABLE TO THE DISTRICT UPON REQUEST.

ALL PREVENTIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGRADING, RESEEDING, REMULCHING AND REMATTING, MUST BE PREFORMED IMMEDIATELY. IF EROSION AND SEDIMENTATION BMPS FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMPS OR MODIFICATIONS OF THOSE INSTALLED WILL BE NEEDED.

WHERE BMPS ARE FOUND TO FAIL TO ALLEVIATE EROSION OR SEDIMENT POLLUTION THE PERMITTEE OR CO-PERMITTEE SHALL INCLUDE THE FOLLOWING INFORMATION:

- A. THE LOCATION AND SEVERITY OF THE BMPS FAILURE AND ANY POLLUTION EVENTS. B. ALL STEPS TAKEN TO, REDUCE, ELIMINATE AND PREVENT THE RECURRENCE
- OF THE NON-COMPLIANCE. C. THE TIME FRAME TO CORRECT THE NON-COMPLIANCE, INCLUDING THE EXACT DATES WHEN THE ACTIVITY WILL RETURN TO COMPLIANCE.

AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AN SEDIMENT BMPS MUST BE REMOVED. AREAS DISTURBED DURING REMOVAL OF THE BMPS MUST BE STABILIZED IMMEDIATELY.

- 10. BEFORE INITIATING ANY REVISION TO THE APPROVED EROSION AND SEDIMENT CONTROL PLAN OR REVISIONS TO OTHER PLANS WHICH MAY AFFECT THE EFFECTIVENESS OF THE APPROVED E&S CONTROL PLAN, THE OPERATOR MUST RECEIVE APPROVAL OF THE REVISIONS FROM THE CHESTER COUNTY CONSERVATION DISTRICT. THE OPERATOR SHALL ASSURE THAT THE APPROVED EROSION AND SEDIMENT CONTROL PLAN IS PROPERLY AND COMPLETELY IMPLEMENTED. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO ELIMINATE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION.
- 11. ALL PUMPING OF SEDIMENT LADEN WATER OR POTENTIALLY SEDIMENT LADEN WATER SHALL BE THROUGH A SEDIMENT CONTROL BMP, SUCH AS A PUMPED WATER FILTER BAG DISCHARGING OVER NON-DISTURBED AREAS.
- 12. THE CONTRACTOR IS ADVISED TO BECOME THOROUGHLY FAMILIAR WITH THE PROVISIONS OF THE APPENDIX 64, EROSION CONTROL RULES AND REGULATIONS, TITLE 25. PART 1. DEPARTMENT OF ENVIRONMENTAL PROTECTION, SUBPART C. PROTECTION OF NATURAL RESOURCES, ARTICLE III, WATER RESOURCES, CHAPTER 102. EROSION CONTROL.
- 13. THE OPERATOR SHALL REMOVE FROM THE SITE, RECYCLE, OR DISPOSE OF ALL BUILDING MATERIALS AND WASTES IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS AT 25 PA. CODE 260.1 ET SEQ., 271.1 ET SEQ., AND 287.1 ET SEQ. THE CONTRACTOR SHALL NOT ILLEGALLY BURY, DUMP, OR DISCHARGE ANY BUILDING MATERIAL OR WASTES AT THE SITE.
- 14. STOCKPILE HEIGHTS MUST NOT EXCEED 35 FEET. STOCKPILE SLOPES MUST BE 2:1 OR FLATTER.
- 15. UPON COMPLETION OR TEMPORARY CESSATION OF THE EARTH DISTURBANCE ACTIVITY, OR ANY STAGE THEREOF, THE PROJECT SITE SHALL BE IMMEDIATELY STABILIZED WITH THE APPROPRIATE TEMPORARY OR PERMANENT STABILIZATION.
- 16. AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM UNIFORM 70% PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED SURFACE EROSION AND SUBSURFACE CHARACTERISTICS SUFFICIENT TO RESIST SLIDING AND OTHER MOVEMENTS. IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITIES CEASE, THE OPERATOR SHALL STABILIZE ANY AREAS DISTURBED BY THE ACTIVITIES. DURING NON-GERMINATING PERIODS, MULCH MUST BE APPLIED AT THE SPECIFIED RATES. DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND WHICH WILL BE REDISTURBED WITHIN 1 YEAR MUST BE STABILIZED IN ACCORDANCE WITH THE TEMPORARY VEGETATIVE STABILIZATION SPECIFICATIONS. DISTURBED AREAS WHICH ARE AT FINISHED GRADE OR WHICH WILL NOT BE REDISTURBED WITHIN 1 YEAR MUST BE STABILIZED IN ACCORDANCE WITH THE PERMANENT VEGETATIVE STABILIZATION SPECIFICATIONS.



SEEDING SPECIFICATIONS

HAY OR STRAW AT 3 TONS PER ACRE OR 140 LBS PER 1,000 SQ.FT.

B. LAWN AREA SEED BED PREPARATION: ENSURE THE LAWN AREA IS RETURNED TO EXISTING GRADES BY REMOVING ANY RUTS OR SPOIL MATERIALS, RAKE THE SOIL TO REMOVE GRAVEL SIZE AND LARGER STONES, CONDUCT A SOIL TEST THAT INCLUDES A COMPOSITE SAMPLE FROM MULTIPLE LOCATIONS ON THE SITE, PROVIDE LIME AND FERTILIZER AS INDICATED IN THE SOIL TEST, BROADCAST SEED AND APPLY HAY OR STRAW MULCH.

C. AVAILABILITY SEED MIXES ARE AVAILABLE FROM ERNST CONSERVATION SEEDS, 9006 MERCER PIKE, MEADVILLE, PA 16335, PHONE: (800) 873-3321.

Native Riparian Buffer Seed Mix

% PLS	Latin Name	Common Name	Indicator	Cultivar/
			Status	Ecotype
10	Carex vulpinoidea	fox sedge	OBL	PA
8	Panicum clandestinum	deertongue	FAC+	'Tioga'
8	Schizachyrium scoparium	little bluestem	FACU	PA
6	Chamaecrista fasciculata	partridge pea	FACU	PA
6	Elymus riparius	riverbank wild rye	FACW	PA
6	Elymus virginicus	Virginia wild rye	FACW-	PA
6	Verbena hastata	blue vervain	FACW+	PA
5	Andropogon gerardii	big bluestem	FAC-	'Niagara'
5	Heliopsis helianthoides	ox-eye sunflower	NI	PA
5	Viburnum dentatum	arrowwood viburnum	FAC	PA
4	Cornus amomum	silky dogwood	FACW	PA
4	Panicum virgatum	switchgrass	FAC	'Shelter'
4	Sorghastrum nutans	indiangrass	UPL	PA
2	Asclepias syriaca	common milkweed	FACU-	PA
2	Desmodium canadense	showy tick trefoil	FAC	PA
2	Eupatorium fistulosum	joe-pye-weed	FACW	PA
2	Eupatorium maculatum	spotted joe-pye-weed	FACW	PA
2	Eupatorium perfoliatum	boneset	FACW+	PA
2	Juncus effusus	soft rush	FACW+	PA
2	Monarda fistulosa	wild bergamot	UPL	PA
2	Penstemon digitalis	tall white beardtongue	FAC	PA
2	Rhus typhina	staghorn sumac	NI	PA
2	Rudbeckia hirta	black eyed susan	FACU-	Commercial
1	Baptisia australis	blue false indigo	NI	PA
1	Euthamia graminifolia	grass leaf goldenrod	FAC	PA
1	Vernonia gigantea	giant ironweed	FAC	PA
100	Total			
	Seed this	mix at 15 bulk lbs/acre.		
	Seed oats (Avena sativa) a	s a companion crop at 30 l	oulk lbs/acre	
Seed	this mix in the first 50' of upla	nds along all new stream c	hannels and	wetlands.

Establishes in 2-3 years and develops into a biodiverse cover.

	Proposed lawn areas							
	Available from: Ernst Conservation Seeds, Inc. (ERNMX-113)							
% PLS	Latin Name	Common Name	Indicato	Cultivar/				
25	Festuca rubra	creeping red fescue	FACU	'Pennlawn'				
25	Lolium multiflorum	annual ryegrass	UPL	Commercial				
25	Lolium perenne	perennial ryegrass	FACU	'Nobility'				
25	Lolium perenne	perennial ryegrass	FACU	'Amazing'				
100	Total							
	Seed this mix at 75-150 bulk lbs/acre.							

Pennsylvania One Call System, Inc.



KPI Technology has notified the Pennsylvania One Call System, Inc DESIGN ONE CALL ONLY Date: September 22, 2021

> USERS OF THIS PLAN ARE HEREBY CAUTIONED THAT THIS ONE CALL NOTICE IS FOR DESIGN PURPOSES ONLY AND THAT







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FASCINE DETAIL NOT TO SCALE



Cross section

Protrudes 2 to 3 inches

Mulching betwee

above bundle

Not to scale

• Platanus occidentalis (American Sycamore) • Salix exigua ssp. interior (Sandbar Willow) • Salix lucida (Shining Willow) • Salix nigra (Black Willow) • Salix purpurea (Streamco Willow) • Salix sericea (Silky Willow)

- Salix discolor (Pussy Willow)
- Salix amygdaloides (Peachleaf Willow)
- Physocarpus opulifolius (Ninebark)
- Cornus amomum (Silky Dogwood)
- Cephalanthus occidentalis (Buttonbush)
- OBTAIN NATIVE ADVENTITIOUSLY ROOTABLE STOCK THAT IS

WORKING WITHIN THE STREAM CHANNEL WITH PUMP BYPASS TYPICAL DETAIL

APPROPRIATE STREAMBANK PROTECTION SHALL BE PROVIDED WITHIN THE CHANNEL.

ALL EXCESS EXCAVATED MATERIAL SHALL BE IMMEDIATELY REMOVED FROM THE STREAM CROSSING AREA. ALL DISTURBED AREAS WITHIN 50 FEET OF TOP-OF-BANK SHALL BE BLANKETED OR MATTED WITHIN 24 HOURS OF INITIAL DISTURBANCE FOR MINOR STREAMS OR 48 HOURS OF INITIAL DISTURBANCE FOR MAJOR STREAMS UNLESS OTHERWISE AUTHORIZED.

SEDIMENT TRAP PRIOR TO DISCHARGING INTO ANY SURFACE WATER. HAZARDOUS OR POLLUTANT MATERIAL STORAGE AREAS SHALL BE LOCATED AT LEAST 100 FEET BACK

BYPASS PUMP INTAKE SHALL BE MAINTAINED A SUFFICIENT DISTANCE FROM THE BOTTOM TO PREVENT PUMPING OF CHANNEL BOTTOM MATERIALS. WATER ACCUMULATING WITHIN THE WORK AREA SHALL BE PUMPED TO A PUMPED WATER FILTER BAG OR

PREVIOUSLY UNSTABLE).

6. ALL EXCAVATED CHANNEL MATERIALS SHALL BE PLACED OUTSIDE OF THE FLOODWAY/FLOODPLAIN OR ANY WETLAND AREAS AND IMMEDIATELY REMOVED TO A DISPOSAL SITE HAVING AN E&S PLAN. 7. AT THE END OF EACH WORKING DAY, THE CHANNEL, STREAMBANKS, AND SURROUNDING AREAS WILL BE STABILIZED AND THE PUMPS WILL BE TURNED OFF. ANY DEFICIENCIES OBSERVED IN THE FUNCTION OF THE INSTALLED STRUCTURES SHALL BE REMEDIED

MINIMIZE BACK FLOW INTO THE WORKZONE. 4. DEWATER THE WORKZONE AS NEEDED WITH A PUMPED WATER FILTER BAG PER DETAIL. 5. COMPLETE WORK FROM THE TOP OF BANK WHEREVER POSSIBLE WHERE IT IS NOT POSSIBLE TO WORK FROM THE TOP OF BANK, A TEMPORARY CROSSING OR CAUSEWAY MAY BE USED TO PROVIDE A

WORKZONE. 2. PUMP WATER AROUND THE PROPOSED WORKZONE. THE DISCHARGE SHALL BE LOCATED IN A STABLE AREA OF THE STREAMBED AND AN ENERGY DISSIPATER MUST BE INSTALLED. 3. INSTALL THE DOWNSTREAM SANDBAG DAM AS NEEDED TO

SEQUENCE FOR WORKING WITHIN THE STREAM CHANNEL: 1. INSTALL SANDBAG DAM AT THE UPSTREAM END OF THE

WORKING PAD FOR ANY EQUIPMENT IN THE STREAM CHANNEL.

8. UPON COMPLETION, ALL SANBAG DAMS, CROSSINGS, CAUSEWAYS, AND CHANNEL ENTRANCES SHALL BE REMOVED/RESTORED TO PRE-CONSTRUCTION CONDITIONS OR THE TYPICAL BANKFULL STREAM CHANNEL SIZING DETAIL (IF

GRUBBING SHALL NOT TAKE PLACE WITHIN 50 FEET OF TOP-OF-BANK UNTIL ALL MATERIALS REQUIRED TO COMPLETE WORK WITHIN THE STREAM CHANNEL ARE ON SITE AND READY FOR INSTALLATION.



<u>NOTES:</u>

SOCK FABRIC SHALL MEET STANDARDS OF TABLE 4.1 OF THE PA DEP EROSION CONTROL MANUAL. COMPOST SHALL MEET THE STANDARDS OF TABLE 4.2 OF THE PA DEP EROSION CONTROL MANUAL.

COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE BARRIER SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN BARRIER ALIGNMENT. MAXIMUM SLOPE LENGTH ABOVE ANY BARRIER SHALL NOT EXCEED THAT SPECIFIED FOR THE SIZE OF THE SOCK AND THE SLOPE OF ITS TRIBUTARY AREA.

TRAFFIC SHALL NOT BE PERMITTED TO CROSS COMPOST FILTER SOCKS.

ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/2 THE ABOVE GROUND HEIGHT OF THE BARRIER AND DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN. COMPOST FILTER SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.

BIODEGRADABLE COMPOST FILTER SOCKS SHALL BE REPLACED AFTER 6 MONTHS; PHOTODEGRADABLE SOCKS AFTER 1 YEAR. POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

UPON STABILIZATION OF THE AREA TRIBUTARY TO THE SOCK, STAKES SHALL BE REMOVED. THE SOCK MAY BE LEFT IN PLACE AND VEGETATED OR REMOVED. IN THE LATTER CASE, THE MESH SHALL BE CUT OPEN AND THE MULCH SPREAD AS A SOIL SUPPLEMENT.

STANDARD CONSTRUCTION DETAIL #4-1 COMPOST FILTER SOCK NOT TO SCALE

