MS4 POLLUTION REDUCTION PLAN (PRP)

FOR

BOROUGH OF DUNMORE

LACKAWANNA COUNTY

PENNSYLVANIA

Submitted to:

PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

April 22, 2025

Prepared by:

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Engineering, Design, Construction Services

326 Ward Street
Dunmore, PA 18512
(570) 496-7020

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Appendices

A. Public Participation

The PRP plan will be available for public review starting on March 10, 205, on the Borough website, and a hardcopy will be available for review during normal business hours at the Dunmore Borough Building.

Notice of the public comment period and public meeting will be published in the Scranton Times in accordance with the permit requirements. This notice is included in Appendix A of this plan.

A copy of the timely comments received, and documentation of comments received during the Borough Council meeting (March 25, 2025) will be included as Appendix B of the PRP plan. The PRP will be revised as necessary to consider public comment. The Borough's record of consideration of comments will be included in the submission of the PRP as Appendix C of the PRP.

B. PRP Map

A Pollution Reduction Plan (PRP) map for the Borough of Dunmore has been prepared by analyzing the known Outfall locations along the Meadow Brook and Roaring Brook. The map enclosed was prepared by Reuther+Bowen based on GIS mapping information from the Lackawanna County GIS department and the assistance of Dunmore Borough Public Works Department to determine the existing nine (9) listed outfalls. The map can be found in Appendix D of this report. The aerial base map was utilized to delineate the sewershed areas within the Borough and to determine pervious and impervious landuse surfaces. The areas outside the nine (9) delineated sewersheds either discharge directly to the creek, to a combined sewer system or are the responsibility of the Department of Transportation (PennDOT) or a private entity. As displayed in the map, entire Borough is located within the Lackawanna River Watershed with sewershed areas mapped to verify direct discharge within the Borough planning area in support of the sediment loading calculations.

The locations of potential sediment reduction best management practices (BMPs) are shown on the map. See the enclosed sewershed map.

C. Pollutants of Concern

The following streams are within or along the Borough boundary and are affected in the PRP designated area, they are as follows: Meadow Brook, and Roaring Brook.

Table 1. Impairments within The Borough of Dunmore Urbanized Area.

Municipality	NPDES Permit	Individual Permit?	Waters	Impairment(s)	Other Cause(s) of Impairments	TMDL Priority
Dunmore Borough	PAG132244	No	Meadow Brook	N/A	N/A	N/A
			Roaring Brook	Appendix A-Metals, (4a); Appendix B-Channelization (4c))	Abandon Mine Drainage (4a), Other Habitat Alterations (4c)	N/A

D. Existing Loading for Pollutants of Concern

The Borough of Dunmore consists of approximate 8.9 square miles or roughly 5,670 acres, where the entire Borough is within the Lackawanna River Watershed and 4351 acres or 6.8 square miles is Urbanized Area. The nine (9) known outfalls were surveyed within the Borough and approximately 264 acres drain to these outfalls making up the Borough study area. The remaining areas within the borough either drain directly to streams, are collected within combined sewer systems, drain to private stormwater collection systems and are collected within PennDOT storm collection systems.

To determine the total yearly sediment load within the borough, the sediment loading (TSS) values of 1305.05 lb/acre/year for the impervious land cover and 132.98 lb./acre/year for pervious land cover were utilized. These values were taken from Attachment B of the PRP Instructions and are to be used with the DEP Simplified Method as the loading rates for MS4s within the Chesapeake Bay watershed. The landuse was delineated in AutoCAD Civil 3D while using available lidar contour from the Pennsylvania Department of Conservation and Natural Resources and multiple sources of aerial imagery. For the residential developments, the tracts were typically ¼ acre lots. To determine the pervious and impervious area the SCS curve number reference was utilized which states the ¼ acre residential lot is thirty-eight (38) percent impervious and sixty-two (62) percent pervious. A breakdown of the outfalls along with the areas can be found in the appendix of this report.

As noted in the Pollutant Aggregation Suggestions for MS4 Requirements Table Instructions and the Pollutant Aggregation Suggestions for MS4 Requirements Table (Municipal), Dunmore Borough may achieve the ten (10) percent sediment pollutant reduction across the entire Planning Area, as opposed to a 10 percent reduction in the Planning Areas for each receiving impaired surface water. This is due to Meadow Brook and Roaring Brook sharing a common issue (sediment to surface waters in the Chesapeake Bay).

The total sediment load of the Borough Planning Area is calculated to be 17,241 lb. /year.

E. BMP's to Achieve Required Reduction in Pollutant Loading

The BMP's with potential to provide the required ten (10) percent reduction in sediment pollution in the next five (5) years are identified below. A detailed analysis of each BMP's effectiveness, cost and if site acquisition is required prior to implementation. The calculations prepared to support the selection of BMPs are included in Appendix F.

Street Sweeping (done by Borough but not included in the sediment reduction calculation)

The Borough currently maintains streets and drainage facilities throughout the Municipality. The Borough performs street sweeping regularly throughout the Municipality when weather allows. The removal of debris and sediment from the roadway will reduce the amount of sediment discharged to the from Borough facilities. The Borough will increase the amount of street sweeping within the identified areas to meet the requirements for the MS4. The following sediment removal was calculated within the sewersheds delineated.

Bio-Retention Basin (BMP 1)

The Borough is proposing to retrofit an existing detention basin into a Bio-Retention Basin (BMP-01) downstream of an existing commercial development in sewershed DA-06. The noted sewershed has sufficient drainage area (approximately 26 acres) to accommodate the sediment reduction requirement. We are planning on excavating an additional 2 feet in the bottom of the basins. This area provides approximately 10,500 c.f. of sediment storage area. The existing outlet structure will remain unchanged. **(SEE APPENDIX F – BMP CALCULATIONS)**

Bio-Retention Basin (BMP 2)

The Borough is proposing to retrofit an existing detention basin to an bio-retention basin (BMP-02) downstream of an existing residential development in sewershed DA-07. The noted sewershed has sufficient drainage area (approximately 65 acres) to accommodate the sediment reduction requirement. The proposed location of the BMP will be on a Borough owned lot and will not require an easement/land acquisition. The basin will be dugout and lowered by 2' with the existing outlet structure remaining unchanged. The storage volume provided for sediment storage will be approximately 9,583 c.f. **(SEE APPENDIX F – BMP CALCULATIONS)**

Bio-Retention Basin (BMP 3)

BMP 3 is a proposed bio-retention basin that will be located at the downstream end of sewershed DA-8 which collects stormwater flows from an existing residential development. The Borough recently upgraded the existing stormwater pipe from W. Swinick Drive to OF-08. The pipe that was replaced had collapsed, limiting the outflow and flooding the area adjacent to three homes on the west side of W. Swinick drive. The proposed basin will be approximately 7 feet deep with the bottom two feet providing sediment storage. The storage volume provided for

sediment storage will be approximately 12,833 c.f. **(SEE APPENDIX F – BMP CALCULATIONS)**

F. Funding

Unless funding changes are provided at the State and Federal levels, the funding of design and installation of BMP's required by the State and Federal MS4 program will be the responsibility of the Borough. The Borough will seek grants from any available sources including Federal, State and private sources.

G. Operation and Maintenance (O&M) of BMP's

A written O & M program will be developed specifically with the detailed design of each BMP. Dunmore Borough will be the responsible party to maintain all BMP's. General O & M measures as described below:

Street Sweeping – Street sweeping will continue using a vacuum truck on Borough streets. Areas with separate storm systems having outfalls directly to either the Roaring Brook or Meadow Brook Creek watersheds, street sweeping will occur a minimum of 25 times per year.

Infiltration Basins – Routine and non-routine maintenance is required to keep infiltration basins operating effectively. Basins should be inspected following major rainfall events, particularly in the first few months after construction. Water entering the basins should infiltrate with 72 hours. Any base spots in the basin should immediately be replanted to establish overall coverage. Basins should be mowed once the vegetation exceeds 12 inches in height. Grass clippings should be removed to prevent clogging of the surface.

Rain Garden/Bioretention – Maintenance activities focus largely on maintaining infiltration capacity and the health of the vegetation. Upon installation of the vegetation it should be water for a minimum of a two week period to help establish the vegetation. Biweekly for the first year the vegetation should be inspected for signs of disease or distress. Once vegetation is established and on a monthly schedule inspect inlet controls and outlet structures for trash and sediment accumulation and remove in an approved manner. Maintain records of all inspections and repairs.

Appendix A

Public Notice

NOTICE OF PUBLIC COMMENT PERIOD FOR NPDES STORMWATER DISCHARGE POLLUTANT REDUCTION PLAN

Dunmore Borough is preparing an application for a National Pollution Discharge Elimination System (NPDES) Individual Stormwater Permit for Stormwater Discharges from Small Municipal Separate Sewer Systems (MS4s) to be submitted on June 1, 2025, to the Pennsylvania Department of Environmental Protection (PADEP). The Borough is required to submit a Pollution Reduction Plan (PRP) to the PADEP as part of the MS4 application. The plan describes potential sediment reduction measures in the Roaring Brook and Meadow Brook Creek watersheds.

The Borough is hereby giving notice of the public comment period on the PRP, which is a requirement of the Individual MS4 permit. The Borough shall accept comments from April 25, 2025, through May 27, 2025. A copy of the plan will be available on April 25, 2025, on the Borough website, at www.dunmorepa.gov. A hardcopy can be reviewed in person during normal business hours at the Dunmore Borough Building located at 400 South Blakley Street, Dunmore, PA 18512. Written comments may be submitted to the Borough Manager at this address during the comment period. The plan will be discussed, and the public will have the opportunity to comment at the May 9, 2025, Borough Council meeting.

The Borough Council meeting will be held at the Dunmore Community Center on May 9, 2025 at 7 p.m.

Appendix B

Public Comments

(TO BE INCLUDED AT THE END
OF PUBLIC REVIEW PERIOD)

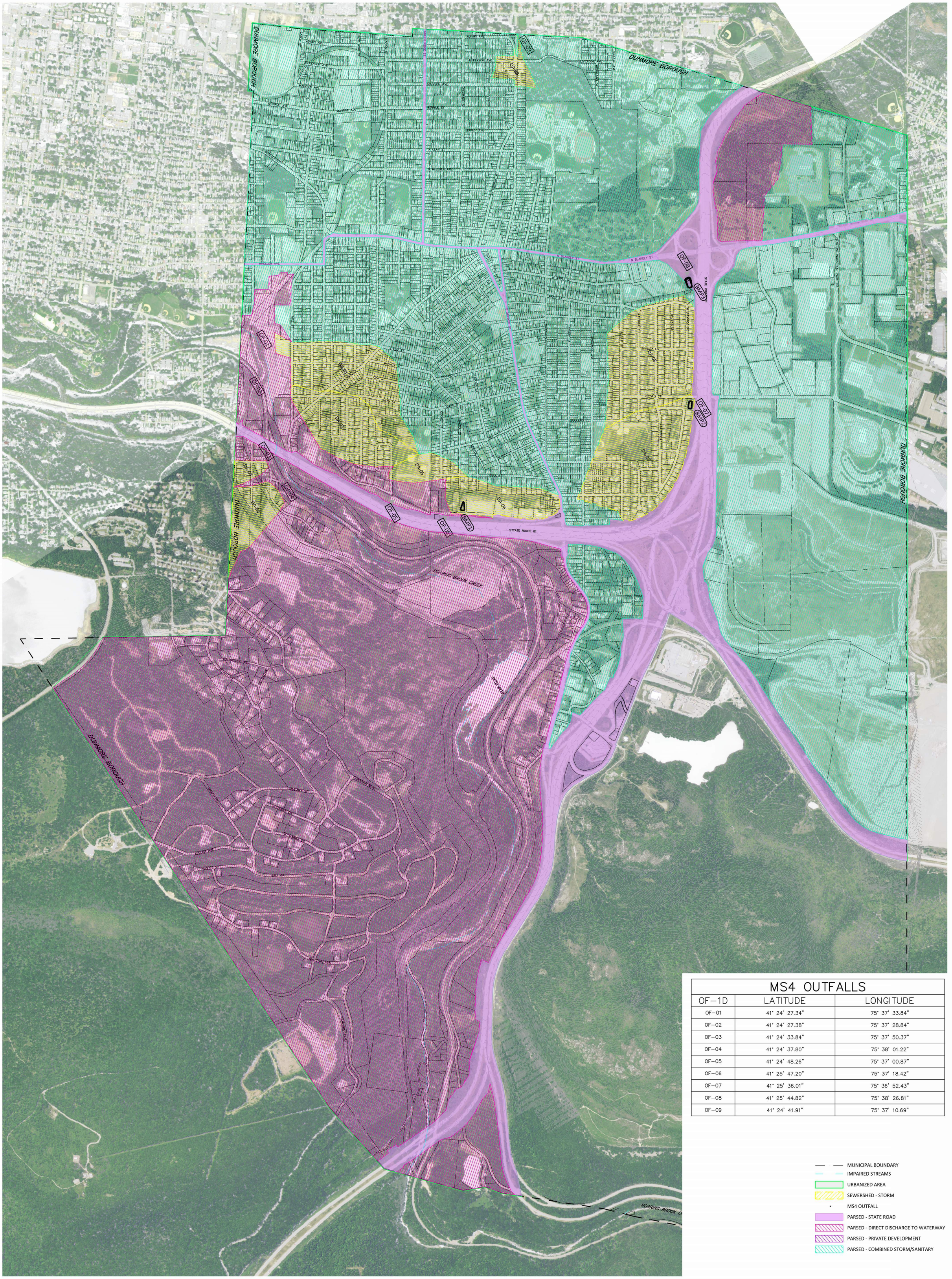
Appendix C

Record of Consideration of Comments

(TO BE INCLUDED AT THE END
OF PUBLIC REVIEW PERIOD)

Appendix D

Maps



MS4 OUTFALLS		
OF-1D	LATITUDE	LONGITUDE
OF-01	41° 24' 27.34"	75° 37' 33.84"
OF-02	41° 24' 27.38"	75° 37' 28.84"
OF-03	41° 24' 33.84"	75° 37' 50.37"
OF-04	41° 24' 37.80"	75° 38' 01.22"
OF-05	41° 24' 48.26"	75° 37' 00.87"
OF-06	41° 25' 47.20"	75° 37' 18.42"
OF-07	41° 25' 36.01"	75° 36' 52.43"
OF-08	41° 25' 44.82"	75° 38' 26.81"
OF-09	41° 24' 41.91"	75° 37' 10.69"

- MUNICIPAL BOUNDARY
- IMPAIRED STREAMS
- URBANIZED AREA
- SEWERSHED - STORM
- MS4 OUTFALL
- PARSED - STATE ROAD
- PARSED - DIRECT DISCHARGE TO WATERWAY
- PARSED - PRIVATE DEVELOPMENT
- PARSED - COMBINED STORM/SANITARY

GRAPHIC SCALE
1 IN = 600 FT
0' 600' 1200' 1800'

OWNER:
DUNMORE BOROUGH
400 S BLAKELY STREET
DUNMORE, PA 18512

PROJECT TITLE:
DUNMORE BOROUGH
MS-4
DUNMORE PENNSYLVANIA

PREPARED BY:
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Engineering, Design, Construction Services
326 WARD ST. SCRANTON, PA 18512-2424
PHONE (570)496-7020 FAX (570)496-7021

SEAL:

TITLE:
MS-4 MAP

DATE ISSUED:	DRAWN BY:	DWG. NO.
1/12/2025	MB	MS-4.1
SCALE: AS SHOWN	REVIEWED BY: DL	
PROJECT NO: 5189.19	CHECKED BY: TV	

Appendix E

Loading Calculations

Project Title: Dunmore Borough MS4
Job Number: 5189.19
Date: 3/3/2025

reuther+bowen
Engineering, Design, Construction Services

Stream	ID	Landuse	Area (Acres)	Total Sediment (TSS) (lbs/yr)	Total Drainage Area (Acres)
Roaring Brook	DA-01	1/4 Residential (Impervious)	1.49	1,944.08	
	DA-01	1/4 Residential (Pervious)	2.43	323.21	
	DA-01	Impervious	1.28	1,675.93	
	DA-01	Pervious	3.01	400.18	8.21
Roaring Brook	DA-02	1/4 Residential (Impervious)	0.80	1,046.34	
	DA-02	1/4 Residential (Pervious)	1.31	173.96	
	DA-02	Impervious	14.63	19,086.54	
	DA-02	Pervious	17.89	2,378.70	34.62
Roaring Brook	DA-03	1/4 Residential (Impervious)	11.14	14,538.88	
	DA-03	1/4 Residential (Pervious)	18.18	2,417.12	
	DA-03	Impervious	6.39	8,341.88	
	DA-03	Pervious	6.34	842.75	42.05
Roaring Brook	DA-04	1/4 Residential (Impervious)	3.81	4,974.55	
	DA-04	1/4 Residential (Pervious)	6.22	827.03	
	DA-04	Pervious	2.52	334.81	12.55
Roaring Brook	DA-05	1/4 Residential (Impervious)	1.51	1,971.84	
	DA-05	1/4 Residential (Pervious)	2.47	327.82	
	DA-05	Impervious	11.16	14,570.62	
	DA-05	Pervious	10.08	1,340.34	25.22
Meadow Brook	DA-06	1/4 Residential (Impervious)	11.67	15,231.88	
	DA-06	1/4 Residential (Pervious)	19.04	2,532.33	
	DA-06	Impervious	26.28	34,290.46	
	DA-06	Pervious	4.33	576.19	61.32
Meadow Brook	DA-07	1/4 Residential (Impervious)	14.82	19,347.23	
	DA-07	1/4 Residential (Pervious)	24.19	3,216.52	
	DA-07	Impervious	6.78	8,853.92	
	DA-07	Pervious	18.60	2,473.31	64.40
Meadow Brook	DA-08	1/4 Residential (Impervious)	2.57	3,354.42	
	DA-08	1/4 Residential (Pervious)	4.19	557.68	
	DA-08	Impervious	1.47	1,912.81	
	DA-08	Pervious	1.83	242.69	10.05
Roaring Brook	DA-09	Impervious	1.29	1,683.17	
	DA-09	Pervious	4.67	621.07	5.96

Load Rates:	Impervious	1,305.05	lbs/acre/yr
	Pervious	132.98	lbs/acre/yr
Overall:	Impervious	152,824.55	lbs/yr
	Pervious	19,585.69	lbs/yr
Ex. Sediment Load:		172,410.23	
Required Reduction:		***17,241.02***	

Appendix F

BMP Calculations

BMP-1 Bio-Retention Basin

Table 1 Background

BMP Type	Latitude	Longitude
Bio-Retention Basin	41.414377	-75.616927

Table 2. Sediment Load to the BMP

	Drainage Area (Ac)	Land Use Loading Rate (lb/acre/yr)	Sediment Loading To BMP (lb/yr)
Impervious	10.51	1305.05	13,716
Pervious	15.76	132.98	2,095
Total	26.27		15,811

Table 3. Existing Condition Calculations

Volume Treated (ac-ft)	Inches per Impervious Acre	Percent Reduction	Sediment Load Reduction by BMP (lb/yr)

Table 4. Proposed Condition Calculations

Volume Treated (Ac-Ft)	Inches per Impervious Cover	Percent Reduction	Sediment Load Reduced by BMP (lb/yr)	Retrofit Final Sediment Load Reduced [Proposed Load – Existing Load Reduced (lb/yr) (Retrofits Only
0.22	0.25	33	5,217	

BMP-1

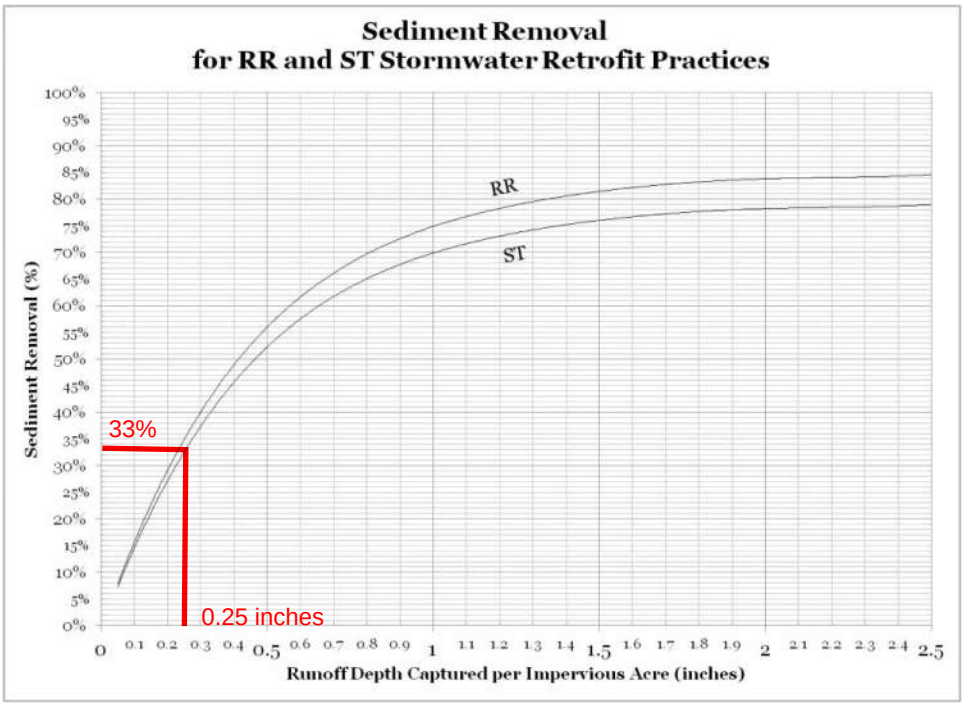

Figure 5. Retrofit Removal Adjustor Curve for Sediment

Runoff reduction is defined as the total post development runoff volume that is reduced through canopy interception, soil amendments, evaporation, rainfall harvesting, engineered infiltration, extended filtration or evapo-transpiration. Retrofit projects that achieve at least a 25% reduction of the annual runoff volume are classified as providing Runoff Reduction (RR), and therefore earn a higher net removal rate. Retrofit projects that employ a permanent pool, constructed wetlands or sand filters have less runoff reduction capability, and their removal rate is determined using the Stormwater Treatment (ST) curve.

Table 2 assigns all of the stormwater practices referenced in Bay State stormwater manuals into either the ST or RR category, so that designers can quickly determine which curve they should use based on the primary treatment practice employed by the retrofit. In situations where a mix of ST and RR practices are used within the same retrofit project, the designer should use the curve based on either the largest single practice used in the project or the ones that provide the majority of the retrofit treatment volume.

The removal rates determined from the retrofit removal rate adjustor curves are applied to the entire drainage area to the retrofit, and not just its impervious acres. Also, the retrofit reporting unit is the entire treated area, regardless of whether it is pervious or impervious.

BMP -2 Bio-Retention Basin

Table 1 Background

BMP Type	Latitude	Longitude
Bio-Retention Basin	41.426439	-75.61454

Table 2. Sediment Load to the BMP

	Drainage Area (Ac)	Land Use Loading Rate (lb/acre/yr)	Sediment Loading To BMP (lb/yr)
Impervious	26.05	1305.05	33,996
Pervious	39.07	132.98	5,195
Total	65.12		39,191

Table 3. Existing Condition Calculations

Volume Treated (ac-ft)	Inches per Impervious Acre	Percent Reduction	Sediment Load Reduction by BMP (lb/yr)

Table 4. Proposed Condition Calculations

Volume Treated (Ac-Ft)	Inches per Impervious Cover	Percent Reduction	Sediment Load Reduced by BMP (lb/yr)	Retrofit Final Sediment Load Reduced [Proposed Load – Existing Load Reduced (lb/yr) (Retrofits Only
0.22	0.11	17	6,662	6,662

BMP-2

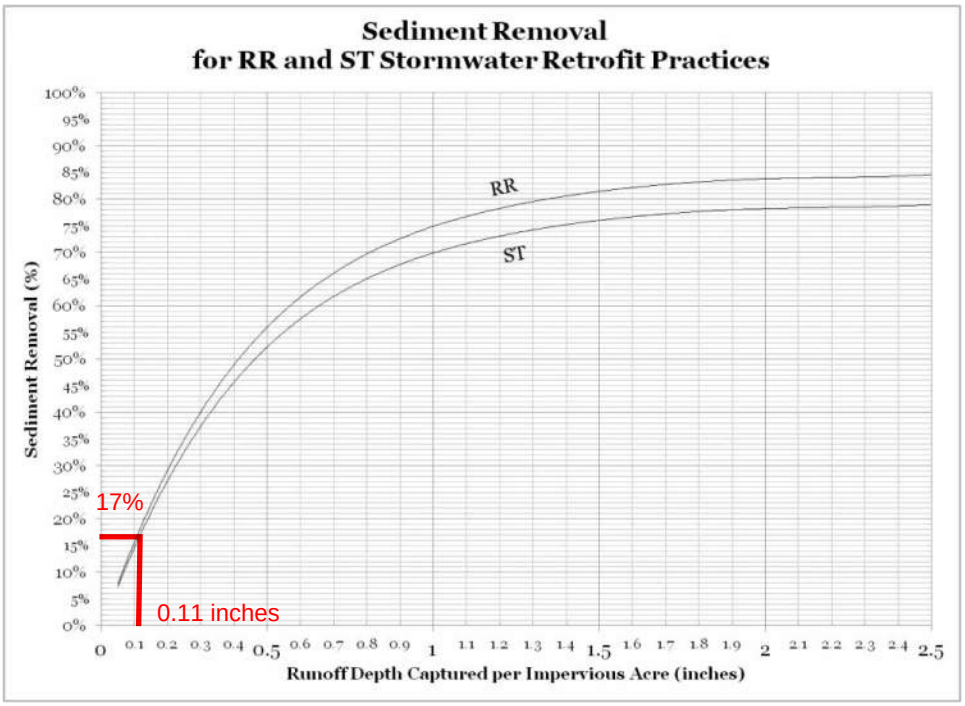

Figure 5. Retrofit Removal Adjustor Curve for Sediment

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The removal rates determined from the retrofit removal rate adjustor curves are applied to the entire drainage area to the retrofit, and not just its impervious acres. Also, the retrofit reporting unit is the entire treated area, regardless of whether it is pervious or impervious.

BMP - 3 Bio-Retention Basin

Table 1 Background

BMP Type	Latitude	Longitude
Bio-Retention Basin	41.429544	-75.621158

Table 2. Sediment Load to the BMP

	Drainage Area (Ac)	Land Use Loading Rate (lb/acre/yr)	Sediment Loading To BMP (lb/yr)
Impervious	25.46	1305.05	33226
Pervious	38.20	132.98	5079
Total	63.66		38305

Table 3. Existing Condition Calculations

Volume Treated (ac-ft)	Inches per Impervious Acre	Percent Reduction	Sediment Load Reduction by BMP (lb/yr)

Table 4. Proposed Condition Calculations

Volume Treated (Ac-Ft)	Inches per Impervious Cover	Percent Reduction	Sediment Load Reduced by BMP (lb/yr)	Retrofit Final Sediment Load Reduced [Proposed Load – Existing Load Reduced (lb/yr) (Retrofits Only
0.29	0.14	20	7661	7661

BMP-3

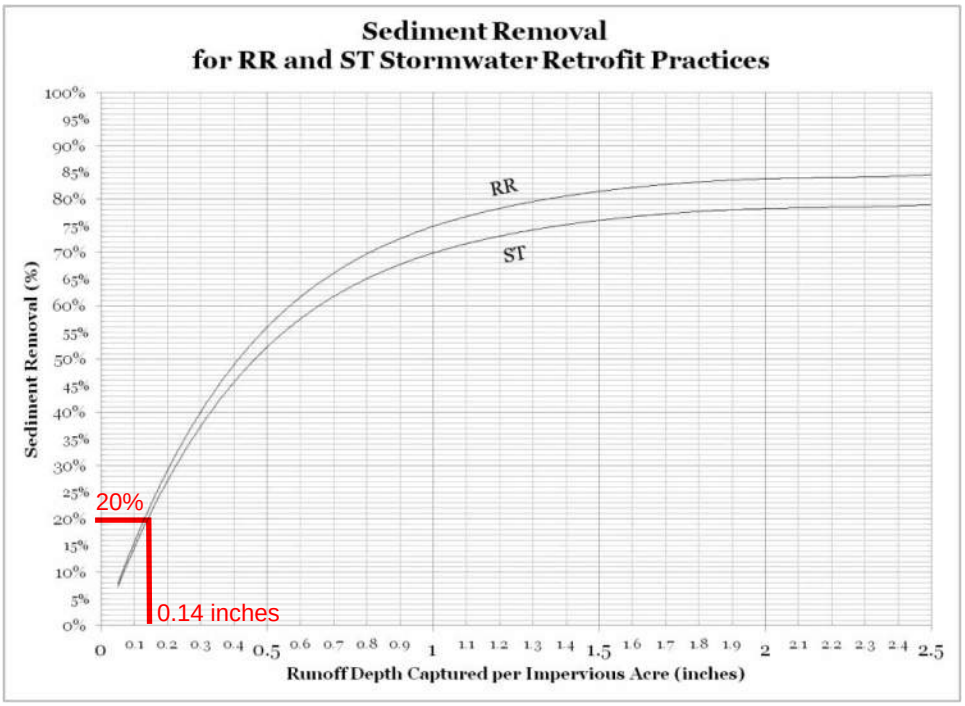

Figure 5. Retrofit Removal Adjustor Curve for Sediment

Runoff reduction is defined as the total post development runoff volume that is reduced through canopy interception, soil amendments, evaporation, rainfall harvesting, engineered infiltration, extended filtration or evapo-transpiration. Retrofit projects that achieve at least a 25% reduction of the annual runoff volume are classified as providing Runoff Reduction (RR), and therefore earn a higher net removal rate. Retrofit projects that employ a permanent pool, constructed wetlands or sand filters have less runoff reduction capability, and their removal rate is determined using the Stormwater Treatment (ST) curve.

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Appendix G

Attachment B – Developed Land Loading Rates for PA Counties

ATTACHMENT B
DEVELOPED LAND LOADING RATES FOR PA COUNTIES[1,2,3]

County	Category	Acres	TN lbs/acre/yr	TP lbs/acre/yr	TSS (Sediment) lbs/acre/yr
Adams	impervious developed	10,373.2	33.43	2.1	1,398.77
	pervious developed	44,028.6	22.99	0.8	207.67
Bedford	impervious developed	9,815.2	19.42	1.9	2,034.34
	pervious developed	19,425	17.97	0.68	301.22
Berks	impervious developed	1,292.4	36.81	2.26	1,925.79
	pervious developed	5,178.8	34.02	0.98	264.29
Blair	impervious developed	3,587.9	20.88	1.73	1,813.55
	pervious developed	9,177.5	18.9	0.62	267.34
Bradford	impervious developed	10,423	14.82	2.37	1,880.87
	pervious developed	23,709.7	13.05	0.85	272.25
Cambria	impervious developed	3,237.9	20.91	2.9	2,155.29
	pervious developed	8,455.4	19.86	1.12	325.3
Cameron	impervious developed	1,743.2	18.46	2.98	2,574.49
	pervious developed	1,334.5	19.41	1.21	379.36
Carbon	impervious developed	25.1	28.61	3.97	2,177.04
	pervious developed	54.2	30.37	2.04	323.36
Centre	impervious developed	7,828.2	19.21	2.32	1,771.63
	pervious developed	15,037.1	18.52	0.61	215.84
Chester	impervious developed	1,838.4	21.15	1.46	1,504.78
	pervious developed	10,439.8	14.09	0.36	185.12
Clearfield	impervious developed	9,638.5	17.54	2.78	1,902.9
	pervious developed	17,444.3	18.89	1.05	266.62
Clinton	impervious developed	7,238.5	18.02	2.80	1,856.91
	pervious developed	11,153.8	16.88	0.92	275.81
Columbia	impervious developed	7,343.1	21.21	3.08	1,929.18
	pervious developed	21,848.2	22.15	1.22	280.39
Cumberland	impervious developed	8,774.8	28.93	1.11	2,065.1
	pervious developed	26,908.6	23.29	0.34	306.95
Dauphin	impervious developed	3,482.4	28.59	1.07	1,999.14
	pervious developed	9,405.8	21.24	0.34	299.62
Elks	impervious developed	1,317.7	18.91	2.91	1,556.93
	pervious developed	1,250.1	19.32	1.19	239.85
Franklin	impervious developed	13,832.3	31.6	2.72	1,944.85
	pervious developed	49,908.6	24.37	0.76	308.31
Fulton	impervious developed	3,712.9	22.28	2.41	1,586.75
	pervious developed	4,462.3	18.75	0.91	236.54
Huntington	impervious developed	7,321.9	18.58	1.63	1,647.53
	pervious developed	11,375.4	17.8	0.61	260.15
Indiana	impervious developed	589	19.29	2.79	1,621.25
	pervious developed	972	20.1	1.16	220.68
Jefferson	impervious developed	21.4	18.07	2.76	1,369.63
	pervious developed	20.4	19.96	1.24	198.60
Juniata	impervious developed	3,770.2	22.58	1.69	1,903.96
	pervious developed	8,928.3	17.84	0.55	260.68
Lackawana	impervious developed	2,969.7	19.89	2.84	1,305.05
	pervious developed	7,783.9	17.51	0.76	132.98
Lancaster	impervious developed	4,918.7	38.53	1.55	1,480.43
	pervious developed	21,649.7	22.24	0.36	190.93
Lebanon	impervious developed	1,192.1	40.58	1.85	1,948.53
	pervious developed	5,150	27.11	0.4	269.81