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Herbert, Rowland & Grubic, Inc.
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WILLIAMSPORT AREA JOINT MS4s

JOINT CHESAPEAKE BAY POLLUTANT REDUCTION PLAN



"The Place to Live!"

LOYALSOCK TOWNSHIP



Submitted to:

LOYALSOCK TOWNSHIP
2501 East Third Street
Williamsport, PA 17701

CITY OF WILLIAMSPORT
245 West Fourth Street
Williamsport, PA 17701

WILLIAMSPORT SANITARY AUTHORITY
253 West Fourth Street
Williamsport, PA 17701

Submitted by:

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October 2018; Revised August 2020

Williamsport Area Joint MS4s
Joint Chesapeake Bay Pollutant Reduction Plan
CITY OF WILLIAMSPORT AND LOYALSOCK TOWNSHIP
LYCOMING COUNTY, PENNSYLVANIA

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INTRODUCTION

The City of Williamsport and Loyalsock Township (Applicants) discharge stormwater to surface waters located within the Chesapeake Bay Watershed and are therefore regulated by the National Pollutant Discharge Elimination System Individual Permit to Discharge Stormwater from Small Municipal Separate Sewer Systems. The Applicants submitted Municipal Separate Storm Sewer System (MS4) individual permit applications and a Joint Pollutant Reduction Plan (PRP) to the Pennsylvania Department of Environmental Protection (PADEP) on October 1, 2018, and the Applicants have determined that the PRP should be amended so that it is an implementable plan with confidence that the proposed best management practices (BMPs) meet PADEP’s credit eligibility guidelines. This Joint Chesapeake Bay Pollutant Reduction Plan (CBPRP) was developed in accordance with both individual permit requirements, and it documents how the Applicants intend to achieve the pollutant reduction requirements listed in the PADEP Municipal MS4 Requirements Table¹ and the NPDES Stormwater Discharges From Small Municipal Separate Storm Sewer Systems Pollutant Reduction Plan (PRP) Instructions².

General Information	
Permittee Name: Williamsport Area Joint MS4s	NPDES Permit No.: PAI134813
Mailing Address: 253 West Fourth Street	Effective Date: April 1, 2014
City, State, Zip: Williamsport, PA 17701	Expiration Date: March 31, 2019
MS4 Contact Person: Marcia LeBeau	Renewal Due Date: September 20, 2020
Title: Joint Permit Contact	Municipality: City of Williamsport & Loyalsock Township
Phone: 570-323-6140	County: Lycoming
Email: mlebeau@wmwa-wsa.org	
Client/Operator Name: City of Williamsport, Lycoming County	Client/Operator Name: Loyalsock Township, Lycoming County
Mailing Address: City Clerk Office Williamsport City Hall 245 West Fourth Street	Mailing Address: 2501 East Third Street
City, State, Zip: Williamsport, PA 17701	City, State, Zip: Williamsport, PA 17701
Contact Person: Jon Sander	Contact Person: Bill Burdett
Title: City Engineer	Title: Township Manager
Phone: 570-220-1872	Phone: 570-323-6151
Email: jsander@cityofwilliamsport.org	Email: bill@loyalsocktownship.org
Consultant Name: Herbert, Rowland & Grubic, Inc.	Consultant Contact: Matthew Vanaskie, P.E. 776 Bull Run Crossing, Suite 200 Lewisburg, PA 17837 (570) 524-6744 mvanaskie@hrg-inc.com

The City of Williamsport (City) and Loyalsock Township (Township) have approximately 9,792 acres of urbanized area within municipal boundaries and an additional 287 acres area that drains to

¹ PADEP, MS4 Requirements Table (Municipal) (rev. 11/18/2019)

² PADEP, PRP Instructions; Document #3800-PM-BCW0100k (rev. 3/2017)

stormwater systems within the City and Township's municipal boundaries. The total 10,079 acres of urbanized area and contributing storm sewershed area are considered to be the planning area for the Applicants' Joint PRP.

Loyalsock Township is in the Millers Run, Mill Creek-West Side of Loyalsock Creek, Little Bear Creek-Loyalsock Creek, and Lycoming Creek-West Branch of Susquehanna River HUC-12 watersheds. Williamsport City is in the Millers Run, Lycoming Creek, and Quenshukeny Creek HUC-12 watersheds.

SECTION A: PUBLIC PARTICIPATION

A.1 2018 Plan

A public notice was published in the Williamsport Sun-Gazette on July 2, 2018 and the Applicants had made a complete copy of the proposed PRP available for public review. Written comments were received for 30 days after the public notice was published. On July 19 and July 24, 2018, the Applicants presented their PRP at regularly scheduled meetings within the 30-day review period.

A.2 2020 Plan Revision

A revised copy of this CBPRP was made available for the public to review at the City of Williamsport and Loyalsock Township municipal websites from August 3, 2020 to September 2, 2020. The availability of the document was publicized on the municipal websites for at least 30 days and published in a legal advertisement in the Williamsport Sun-Gazette on July 29, 2020. The published public notice contained a brief description of the plan, the dates and locations at which the plan was available for review by the public, and the length of time provided for the receipt of comments. Copies of the public notice as posted on the municipal websites and published in the Williamsport Sun-Gazette are included in Appendix A.

The information contained in this report revision was presented to the public during the regularly scheduled Loyalsock Township Board of Supervisor's meeting held on August 25, 2020.

Written comments were accepted for 30 days following the publication date of the public notice.

SECTION B: MAPPING

The PRP planning area map is provided in Appendix B. The figure illustrates the planning area with municipal boundaries, urbanized area, and water course features. Additional elements included are parsed areas, impaired stream reaches, storm sewershed additions to the planning area, and the locations of existing and proposed BMPs. A description of the parsed areas is provided in Section D. A description of primary and secondary BMPs selected to address pollution reduction requirements is provided in Section E and Appendices E and F.

SECTION C: POLLUTANTS OF CONCERN

The pollutants of concern for the City and Township were determined by referencing the PADEP MS4 Municipal Requirements Table³ (Table 1). The applicable section of this table is included for reference in Appendix C.

TABLE 1. POLLUTANTS OF CONCERN

Planning Area (Watershed)	Impaired Downstream Water	Pollutants of Concern	City of Williamsport	Loyalsock Township
CBPRP	Chesapeake Bay Nutrients/ Sediment	Appendix D - Nutrients, Siltation (4a)	X	X
Lycoming Creek-West Branch Susquehanna River	Unnamed Tributaries to Lycoming Creek	Appendix E-Organic Enrichment/Low D.O. (5)	X	X
Mill Creek-West Side of Loyalsock Creek	West Branch Susquehanna River	Appendix C-PCB (5)		X
Little Bear Creek-Loyalsock Creek	West Branch Susquehanna River	Appendix C-PCB (5)		X
Millers Run	West Branch Susquehanna River	Appendix C-PCB (5)	X	X
Lycoming Creek-West Branch Susquehanna River	West Branch Susquehanna River	Appendix C-PCB (5)	X	X
Quenshukeny Run	West Branch Susquehanna River	Appendix C-PCB (5)	X	

Likely sources of these pollutants include:

- Siltation – (Sediment, Total Suspended Solids)
 - Streambank erosion
 - Construction/earth moving activities
 - Agricultural activities
 - Urban runoff
- Nutrients – (Total Nitrogen, Total Phosphorus)
 - Lack of adequate stream buffer
 - Heavy use of lawn fertilizers
 - Agricultural activities
 - Urban runoff / discharges from septic tanks
- Organic Enrichment / Low Dissolved Oxygen
 - Eutrophication from high nutrients (see nutrients above)
- PCB / Priority Organics
 - Sources where PCBs were used prior to the 1979 ban (manufacturing, electrical transformers, capacitors, etc.)
 - Priority Organics (pesticides, volatile organic compounds, synthetic organic compounds, etc.)

³ PADEP, MS4 Requirements Table (Municipal) (rev. 3/5/2018)

SECTION D: DETERMINE EXISTING LOADING FOR POLLUTANTS OF CONCERN

D.1 Planning Area

The spatial extents of the 2018 Joint PRP planning area was utilized and pollutant loads were modeled utilizing Model My Watershed. Model My Watershed is the present day iteration of the Mapshed and GWLF-E watershed modeling tools. These tools have been developed to support total maximum daily load (TMDL) and MS4-related watershed analyses and have been identified by PADEP guidance for developing PRPs as an acceptable approach for calculating baseline loads and load reductions.

Consideration was given to areas outside of the urbanized area when delineating the planning area. Namely, storm sewersheds contributing to the impaired streams were reviewed for pollutant reduction BMP opportunities. Consequently, the extents of the planning area were adjusted as necessary to include areas draining to potentially beneficial BMP locations and the baseline pollutant loading was increased to accommodate for the additional planning area.

D.2 Parsed Area Calculation

In order to calculate the actual pollutant loads applicable to the City's and Township's MS4s, the PRP instructions allow areas that do not drain to the MS4 and areas that are already covered by their own MS4 or other NPDES permit to be removed from the planning area through the parsing process⁴.

Therefore, the following areas were removed from the CBPRP and PRP planning areas:

- PennDOT roadway and land area – The estimated pollutant load from stormwater runoff generated by PennDOT roadways located within the Planning Area was parsed from the existing pollutant base load, as PennDOT maintains their own MS4 permit to account for stormwater runoff generated from their facilities.
- Non-municipal stormwater NPDES permit area – land area associated with non-municipal stormwater NPDES permit coverage that exists within the urbanized area of a municipality.
- Land area that does not enter the MS4 – as defined by PADEP, if an accurate storm sewershed map is developed, these lands may be parsed or excluded as part of that process. Potential examples include homeowner's associations and schools which do not contain municipal roads or their municipal infrastructures. Also, areas that directly discharge to surface water without entering the MS4 may be parsed.
- Combined sewer system area – it has also been determined during preliminary discussions between the City of Williamsport, Loyalsock Township, and PADEP, along with the MS4 FAQ, that all stormwater draining to Combined Sewer Outfalls (CSOs) can be parsed from the planning area because it is regulated under a different NPDES program.

⁴ PADEP - PRP Instructions, Attachment A: Parsing Guidelines for MS4s in Pollutant Reduction Plans (rev. 3/2017)

A summary of parsed area removed from the Applicant’s planning area is shown in Table 2. Parsed areas are shown on the CBPRP Planning Area Map (Appendix B). Supporting calculations for the pollutant loads associated with each parsed area are included in Appendix D.

TABLE 2. PARSED AREA SUMMARY

Planning Area Categories	Planning Area (acres)
Total Planning Area	10,079
Parsed Areas - PennDOT Roadway Area	-520
Parsed Areas – NPDES Permit Holders	-127
Parsed Areas – Combined Sewer System Area	-3,681
Parsed Areas – Non-MS4 Direct Drainage	-1,270
Adjusted Planning Area	4,560

D.3 Existing Pollutant Load Calculation

The existing pollutant loadings were calculated using the Model My Watershed online tool and BMP Spreadsheet. In accordance with this method, 2011 National Land Cover Database is the default land use file used by Model My Watershed. The existing pollutant loading was determined for the Planning Area as well as for each watersheds’ PRP planning areas, as this is the native output from Model My Watershed.

The pollutants of concern identified in Section C are total suspended solids (TSS), total nitrogen (TN), and total phosphorus (TP); however, it is presumed that within the overall Bay watershed, the TP and TN goals will be achieved when the permit-required sediment reduction is achieved. Therefore, only the TSS pollutant loading was calculated in Table 3. Detailed pollutant load calculations are provided in Appendix D.

TABLE 3. EXISTING POLLUTANT LOADING FOR THE PLANNING AREA

HUC-12 Planning Area	Planning Area (acres)	Regulated Pollutant Load TSS (lbs/yr)
Mill Creek-West Side of Loyalsock Creek	150	54,610
Little Bear Creek-Loyalsock Creek	482	237,992
Millers Run	5,916	3,855,895
Lycoming Creek-West Branch Susquehanna River	1,575	906,064
Quenshukeny Run	1,956	1,407,385
Parsed Area	- 5,519	- 4,040,257
CBPRP Total	4,560	2,421,689

D.4 Existing Pollutant Loading Adjustment for Previously Implemented BMPs

Loyalsock Township and the City of Williamsport adjusted Planning Area contains various previously installed BMPs, which continue to function as designed. The municipally-owned BMPs are maintained by public works staff, and are inspected regularly. Privately owned BMPs located

within the Planning Area are to be maintained in accordance with Operation and Maintenance agreements recorded with the land development plan or local municipal Stormwater Permit.

Land use data from aerial flight data and PADEP’s standard BMP Effectiveness Values⁸ were used to estimate the pollutant load reduction associated with BMPs. Additional information on existing BMPs is provided in Appendix E of this document. The locations of existing BMPs are shown on the CBPRP Planning Area Map (Appendix B).

Since the 2018 CBPRP was finalized, an inventory of additional stormwater BMPs installed since 2003 was completed. The inventory was cross referenced with available BMP characteristics to determine the TSS removal efficiencies for existing BMPs and baseload reductions were calculated for the additional BMPs.

TABLE 4: ADJUSTED BASELINE LOAD SUMMARY

HUC-12 Planning Area	Pollutant Load TSS (lbs/yr)	Installed BMP Reduction TSS (lbs/yr)	Adjusted Pollutant Load TSS (lbs/yr)
Mill Creek-West Side of Loyalsock Creek	54,610	11,339	43,271
Little Bear Creek-Loyalsock Creek	237,992	18,547	219,445
Millers Run	3,855,895	62,965	3,792,930
Lycoming Creek-West Branch Susquehanna River	906,064	27,816	878,248
Quenshukeny Run	1,407,385	34,290	1,373,095
Parsed Area	- 4,040,257	0	- 4,036,474
CBPRP Total	2,421,689	154,957	2,266,733

SECTION E: BMPS TO ACHIEVE THE REQUIRED POLLUTANT LOADING REDUCTIONS

E.1 Required Pollutant Reduction Calculation

The Applicants discharge stormwater to surface waters located within the Chesapeake Bay Watershed and must address Appendix D requirements (nutrients and sediment in stormwater discharges to waters in the Chesapeake Bay watershed). The pollutants of concern for Appendix D are TSS, TP, and TN, with required loading reductions of 10-percent, 5-percent, and 3-percent, respectively. However, as previously described, it is presumed that within the overall Bay watershed, the TP and TN goals will be achieved when a 10-percent reduction in sediment is achieved⁵. Therefore, only the required 10-percent TSS reduction is calculated herein as a requirement for planning area load reductions (Table 5). The pollutant load reduction

⁸ PADEP Document 3899-PM-BCW0100M, NPDES Stormwater Discharges from Small MS4s, BMP Effectiveness Values (5/2015)

⁵ PADEP – PRP Instruction, Document #3800-PM-BCW0100k (rev. 3/2017)

requirements listed below consider adjustments to baseline loading from the parsed areas and existing BMPs discussed in Section D.

The total CBPRP Planning area required sediment load reduction is 226,673 lbs/yr. The municipalities have agreed to share responsibility for reducing the sediment loading as follows: The City of Williamsport will have a reduction requirement of 79,336 lbs/yr or 35% of the total required loading and the remaining 147,338 lbs/yr or 65% of the required reduction will be the responsibility of Loyalsock Township. The memorandum of understanding documenting the agreement and roles and responsibilities of the municipalities is included in Appendix G.

TABLE 5: REQUIRED POLLUTANT LOAD REDUCTION GOAL

Planning Area	Non-Parsed Planning Area Baseline Pollutant Load TSS (lbs/yr)	Parsed Area Pollutant Load TSS (lbs/yr)	Existing BMP Load Reduction TSS (lbs/yr)	Adjusted Baseline TSS (lbs/yr)	Required 10% Load Reduction TSS (lbs/yr)
CBPRP Total	6,461,947	-4,040,257	-154,957	2,266,733	226,673

E.2 Proposed BMPs

This section outlines the BMP implementation strategy developed to achieve the required pollutant load reduction goals stated in Section E.1. The proposed BMPs were determined through discussions with municipal staff, in-field site assessments, and public outreach meetings.

A summary of the type and scale of BMP projects included in the pollutant reduction strategy is listed in Table 6. The pollutant loading reductions for each proposed BMP were calculated in terms of pounds per year using a combination of the Expert Panel Report⁶ and PADEP's standard BMP Effectiveness Values⁷. Calculations for the anticipated pollutant load reductions for each BMP in Table 6 is provided in Appendix F.

TABLE 6: CITY OF WILLIAMSPORT AND LOYALSOCK TOWNSHIP JOINT PRP PROPOSED BMP SUMMARY – PRIMARY LOCATIONS

Project Site	BMP ID	BMP Type	Drainage Area (acres) or Length as noted	Load Reduction TSS (lbs/yr)
Robbins Road	BMP-204	Infiltration Basin	3.63	4,821
Sand Hill Road	BMP-205	Infiltration Berm	29.31	12,203
Mountain Crescent	BMP-246	Subsurface Infiltration	2.00	5,088
Becht School Redevelopment	BMP-201	Subsurface Infiltration Basin	2.56	3,234
Front of Ruby Tuesday's/Harley Davidson	BMPs-214, 215	Basin Retrofit	2.98	2,756

⁶ Chesapeake Stormwater Network Recommendations of the Expert Panel to Define Removal Rates for Urban Stormwater Retrofit Projects (10/9/2012)

⁷ PADEP Document 38-99-PM-BCW0100M, NPDES Stormwater Discharges from Small MS4s, BMP Effectiveness Values (5/2015)

Project Site	BMP ID	BMP Type	Drainage Area (acres) or Length as noted	Load Reduction TSS (lbs/yr)
Reed Street	BMP-241	Stormwater Treatment Wetland	72.00	20,126
Pennvale-Randall Circle	BMP-240	Permeable Pavement	3.00	1,501
Pennvale-Randall Circle	BMP-240	Infiltration System (Surface or Sub-Surface)	34.50	13,499
Loyalsock Community Center Parking	BMP-224	Infiltration Basin	3.89	3,036
Loyalsock Community Center Greenway Trail	BMP-224	Infiltration Basin	3.89	3,036
Millers Run at Short Park	BMP-237	Stream Restoration	300 feet	34,500
Valley Heights - Loyalsock Community Center	BMP-224	Regenerative Stormwater Conveyance	23.00	6,320
Cameo - Short Park	BMPs-250, 251	Subsurface Infiltration	15.87	8,590
Saint Ann's	BMP-209	Infiltration Basin	2.64	2,227
Hidden Valley	BMP-239	Basin Retrofit	66.70	25,856
Cameo Estates to Northway	BMP-238	Regenerative Stormwater Conveyance	95.00	14,350
Faxon Bowling Lanes	BMP-223	Subsurface Infiltration	1.81	1,522
Windfield Drive Roadside	BMPs-202, 203, 220, 221	Subsurface Infiltration (4)	44.53	19,852
Cemetery Road	BMP-200	Detention Basins (2)	14.75	6,576
Northwood Drive Roadside	BMPs-216, 219, 230	Infiltration Berms (3)	23.14	10,286
Ravine Road	BMP-234	Infiltration Berms/Swales	40.00	15,735
Reach Road	BMP-232	Infiltration Berms/Swales	3.00	4,720
Loyalsock Township Street Sweeping	BMP-L1	Street Sweeping	153.00	27,000
Loyalsock Township Inlet/Pipe Cleanng	BMP-L2	Inlet/Pipe Cleaning	10.00	1,000
Williamsport Street Sweeping	BMP-W1	Street Sweeping	50.00	4,500
			Total	252,334

E.3 Secondary Projects and Meeting the MS4 Goal

The inherent complexity of implementing numerous, large-scale projects in a five-year timeframe with limited annual cash flow and limited land control, necessitates a significant number of alternate projects be identified and included in this plan in order to provide flexibility during implementation. As projects are completed and reported on in MS4 Annual Reports, plan implementation progress will be quantified. The plan goal will be accomplished once the implemented projects meet the joint planning area load reduction goal. For those planned

projects that are not completed during the individual permit term because the goal has been met, the MS4s reserve the possibility of implementing the projects in the future should there be a new regulatory water quality improvement goal.

Should any projects proposed be deemed to be unachievable during the five-year plan implementation, additional projects have been identified as secondary sites. The Applicants recognize their ability to review and revise the sediment reduction strategy put forth in this Joint Plan and may elect to do so in at some point in the future in accordance with PADEP regulations. Projects on the primary BMP project lists may shift to the secondary project list (identified in Tables 7 and 8) based upon actual feasibility upon initiation of the project and, conversely, alternate projects may shift to the primary project list. Calculations for the anticipated pollutant load reductions for each BMP in Table 7 is provided is provided in Appendix F.

TABLE 7: CITY OF WILLIAMSPORT AND LOYALSOCK TOWNSHIP JOINT PRP PROPOSED BMP SUMMARY – SECONDARY LOCATIONS

Project Site	BMP ID	BMP Type	Drainage Area (acres) or Length as noted	Load Reduction TSS (lbs/yr)
Warrensville Road Wetland	BMP-244	Wetland / Riparian Buffer	9.37	7,503
Mill Creek Bend	BMP-245	Regenerative Stormwater Conveyance	3.43	2,938
Sycamore Road / Haas Lane	BMP-243	Stream Restoration or Regenerative Stormwater Conveyance	5.70	2,622
South of Loyal Plaza	BMPs-206, 213	Basin Retrofit	12.65	14,193
Hoss's Parking Lot	BMP-207	Subsurface Infiltration	2.00	1,687
Giant Parking Lot	BMP-208	Subsurface Infiltration	8.44	7,142
Bull Run - Reed to Edercrest	BMP-241	Stream Restoration	400 feet	46,000
Country Club at Lincoln Drive	BMP-242	Wetland, Pond, or Regenerative Stormwater Conveyance	11.00	2,589
Wilmont Drive	BMP-211	Basin Retrofit	2.98	2,718
Faxon Circle	BMP-228	Subsurface Infiltration	3.54	2,533
Divine Providence Campus	BMP-222	Subsurface Infiltration	2.29	2,296
Grafius Run	BMPs-235, 236	Infiltration/Detention Basins	40.00	17,833
Lycoming Valley Middle School	BMP-231	Infiltration Basin / Regenerative Stormwater Conveyance	10.00	3,320
Fox Hollow Run	BMP-233	Regenerative Stormwater Conveyance	84.00	16,559
Downspout Disconnection Enforcement in Loyalsock	BMP-L3	Disconnection	100.00	39,000
Downspout Disconnection Enforcement in Williamsport	BMP-W3	Disconnection	25.00	9,750
			Total	178,682

SECTION F: FUNDING MECHANISMS

Funding for the design and construction of the BMPs proposed herein will be funded through a variety of sources including the Township's and City's General Funds, available grants, and public donation of materials and manpower.

The City of Williamsport has been in discussions to transfer the ownership and operation of all stormwater infrastructure to the Williamsport Sanitary Authority. Further, the Williamsport Sanitary Authority has investigated a stormwater utility fee to assist with funding the maintenance of the stormwater system infrastructure. At this time there is no further detail on this funding mechanism, but it is anticipated a stormwater utility fee may be a tool to assist with the funding of municipal stormwater infrastructure operations, maintenance, and capital program in the future.

SECTION G: BMP OPERATIONS AND MAINTENANCE

The Applicants are responsible for meeting their individual sediment reduction requirements as stated in the memorandum of understanding between the City and Township. Once implemented, the BMPs outlined in this plan will be operated and maintained by the City of Williamsport and Loyalsock Township staff and inspected regularly by the Applicants MS4 Program Coordinators to ensure that they continue to provide the expected pollutant reductions. Table 8 provides a summary of BMP type, priority, and responsible party for maintenance based on project location. The Operation and Maintenance (O&M) activities will be reported in the Annual MS4 Status Reports submitted in accordance with the Individual Permits. Projects located within private property will require an easement, if not already existing.

The O&M activities and schedule for each BMP will be developed during the design phase. A general summary of the O&M activities involved with each BMP type and the frequency at which O&M activities will occur are as follows:

Bioretention BMPs, Infiltration Basins, and Retrofits (Bioswales and Basin Retrofits)

Operation and maintenance requirements for the bioretention projects include:

- Ensure disturbed areas are kept free of foot and/or vehicular traffic until full stabilization has occurred. Properly designed and installed Bioretention areas require some regular maintenance.
- While vegetation is being established, pruning and weeding may be required.
- Detritus may also need to be removed every year. Perennial plantings may be cut down at the end of the growing season.
- Mulch should be re-spread when erosion is evident and be replenished as needed. Once every 2 to 3 years the entire area may require mulch replacement.
- Bioretention areas should be inspected at least two times per year for sediment buildup, erosion, vegetative conditions, etc.
- During periods of extended drought, Bioretention areas may require watering.
- Trees and shrubs should be inspected twice per year to evaluate health.

The contractor shall be responsible for the operation and maintenance of the bioretention basin until all features of the project have been successfully constructed to the specifications and design standards set forth by the Applicants' Engineer(s). The Contractor should provide a one-year 80% care and replacement warranty for all planting beginning after installation and inspection of all plants.

Once construction of the project(s) is complete, the Applicant(s) shall be responsible for long term implementation of all Operation and Maintenance procedures to ensure the basin remains operationally functional and physically consistent with the original design.

Stream Restoration BMP

Operation and maintenance requirements for the stream restoration project includes:

- Ensure disturbed areas are kept free of foot and/or vehicular traffic until full stabilization has occurred. Properly designed and installed stream features require some monitoring and regular maintenance.
- Stream Restoration areas should be inspected at least four times per year for sediment buildup, erosion, vegetative conditions, etc.
- Trees and shrubs should be inspected twice per year to evaluate health.

The contractor shall be responsible for the operation and maintenance of the stream restoration area until all features of the project have been successfully constructed to the specifications and design standards set forth by the Applicants' Engineer(s). The Contractor should provide a one-year 80% care and replacement warranty for all planting beginning after installation and inspection of all plants.

Once construction of the project(s) is complete, the Applicant(s) shall be responsible for long term implementation of all Operation and Maintenance procedures to ensure the stream channel remains operationally functional and physically consistent with the original design.

Riparian Buffer BMP

Operation and maintenance requirements for the riparian buffer project includes:

- Ensure disturbed areas are kept free of foot and/or vehicular traffic until full stabilization has occurred. Properly planted riparian areas require some monitoring and regular maintenance.
- Trees and shrubs should be inspected twice per year to evaluate health.

If applicable, the contractor shall be responsible for the operation and maintenance of the stream restoration area until all features of the project have been successfully constructed to the specifications and design standards set forth by the Applicants' Engineer. The Contractor should provide a one-year 80% care and replacement warranty for all planting beginning after installation and inspection of all plants.

Once construction of the project(s) is complete, the municipality shall be responsible for long term implementation of all Operation and Maintenance procedures to ensure the riparian buffer remains operationally functional and physically consistent with the original design.

Wet Pond

Operation and maintenance requirements for the wet pond project includes:

- Wet ponds should have a maintenance plan and privately-owned facilities should have an easement, deed restriction, or other legal measure to prevent neglect or removal.
- During the first growing season or until established, vegetation should be inspected every two to three weeks.
- Wet Ponds should be inspected at least four times per year and after major storms (greater than two inches in 24 hours) or rapid ice breakup. Inspections should access the vegetation, erosion, flow channelization, bank stability, inlet outlet conditions, embankment, and sediment/debris accumulation.
- The pond drain should also be inspected and tested four times per year. Problems should be corrected as soon as possible.
- Wet Pond and buffer vegetation may need support (watering, weeding, mulching, replanting, etc.) during the first three years.
- Undesirable species should be carefully removed and desirable replacements planted if necessary.
- Vegetation should be maintained at least an 85 percent cover of the emergent vegetation zone and buffer area.
- Annual harvesting of vegetation may increase the nutrient removal of Wet Ponds; if performed it should generally be done in the summer so that there is adequate regrowth before winter.
- Care should be taken to minimize disturbance, especially of bottom sediments, during harvesting. The potential disturbance from harvesting may outweigh its benefits unless the Wet Pond receives a particularly high nutrient load or discharges to a nutrient sensitive waterbody.
- Sediment should be removed from forebay before it occupies 50 percent of the forebay, typically every five to 10 years.

If applicable, the contractor shall be responsible for the operation and maintenance of the wet pond until all features of the project have been successfully constructed to the specifications and design standards set forth by the Applicants' Engineer. The Contractor should provide a one-year 80% care and replacement warranty for all planting beginning after installation and inspection of all plants.

Once construction of the project(s) is complete, the municipality shall be responsible for long term implementation of all Operation and Maintenance procedures to ensure the wet pond remains operationally functional and physically consistent with the original design.

Dry Extended Detention Basin

Operation and maintenance requirements for the dry extended detention basin project includes:

- All basin structures expected to receive and/or trap debris and sediment should be inspected for clogging excessive debris and sediment accumulation at least four times per year, as well as after every storm greater than 1 inch.
- Structures include basin bottoms, trash racks, outlets structures, riprap or gabion structures and inlets.
- Sediment removal should be conducted when the basin is completely dry. Sediment should be disposed of properly and once sediment is removed, disturbed areas need to be immediately stabilized and revegetated.
- Mowing and/or trimming of vegetation should be performed as necessary to sustain the system but all detritus should be removed from the basin.
- Vegetated areas should be inspected annually for erosion.
- Vegetated areas should be inspected annually for unwanted growth of exotic/invasive species.
- Vegetative cover should be maintained at a minimum of 95 percent. If vegetative cover has been reduced by 10 percent, vegetation should be reestablished.

If applicable, the contractor shall be responsible for the operation and maintenance of the dry extended retention basin until all features of the project have been successfully constructed to the specifications and design standards set forth by the Applicants' Engineer. The Contractor should provide a one-year 80% care and replacement warranty for all planting beginning after installation and inspection of all plants.

Once construction of the project(s) is complete, the municipality shall be responsible for long term implementation of all Operation and Maintenance procedures to ensure the wet pond remains operationally functional and physically consistent with the original design.

Roadside Infiltration Trenches/Berms

Operation and maintenance requirements for the roadside infiltration trench project includes:

- Catch Basins and Inlets should be inspected and cleaned at least two times per year.
- The vegetation along the surface of the infiltration trench should be maintained in good condition and any bare spots revegetated as soon as possible.
- Vehicles should not be parked or driven on a vegetated infiltration trench, and care should be taken to avoid excessive compaction by mowers.

If applicable, the contractor shall be responsible for the operation and maintenance of the roadside infiltration trench until all features of the project have been successfully constructed to the specifications and design standards set forth by the Applicants' Engineer. The Contractor should provide a one-year 80% care and replacement warranty for all planting beginning after installation and inspection of all plants.

Once construction of the project(s) is complete, the municipality shall be responsible for long term implementation of all Operation and Maintenance procedures to ensure the roadside infiltration trench remains operationally functional and physically consistent with the original design.

Subsurface Infiltration Basin

Operation and maintenance requirements for the subsurface infiltration basin project includes:

- Catch Basins and Inlets should be inspected and cleaned at least two times per year.
- The vegetation along the surface of the infiltration trench should be maintained in good condition and any bare spots revegetated as soon as possible.
- Vehicles should not be parked or driven on a vegetated Subsurface Infiltration Basin, and care should be taken to avoid excessive compaction by mowers. If access is needed, use of permeable, turf reinforcement should be considered.

If applicable, the contractor shall be responsible for the operation and maintenance of the subsurface infiltration basin until all features of the project have been successfully constructed to the specifications and design standards set forth by the Township Engineer. The Contractor should provide a one-year 80% care and replacement warranty for all planting beginning after installation and inspection of all plants.

Once construction of the project(s) is complete, the municipality shall be responsible for long term implementation of all Operation and Maintenance procedures to ensure the subsurface infiltration basin remains operationally functional and physically consistent with the original design.

TABLE 8: CITY OF WILLIAMSPORT AND LOYALSOCK TOWNSHIP BMP RESPONSIBILITY

Project Site	BMP ID	BMP Type	Priority	Responsible Party
Robbins Road	BMP-204	Infiltration Basin	Primary	Loyalsock
Sand Hill Road	BMP-205	Infiltration Berm	Primary	Loyalsock
Mountain Crescent	BMP-246	Subsurface Infiltration	Primary	Loyalsock
Becht School Redevelopment	BMP-201	Subsurface Infiltration Basin	Primary	Loyalsock
Front of Ruby Tuesday's/Harley Davidson	BMPs-214, 215	Basin Retrofit	Primary	Loyalsock
Reed Street	BMP-241	Stormwater Treatment Wetland	Primary	Loyalsock
Pennvale-Randall Circle	BMP-240	Permeable Pavement	Primary	Loyalsock
Pennvale-Randall Circle	BMP-240	Infiltration System (Surface or Sub-Surface)	Primary	Loyalsock
Loyalsock Community Center Parking	BMP-224	Infiltration Basin	Primary	Loyalsock
Loyalsock Community Center Greenway Trail	BMP-224	Infiltration Basin	Primary	Loyalsock
Millers Run at Short Park	BMP-237	Stream Restoration	Primary	Loyalsock
Valley Heights - Loyalsock Community Center	BMP-224	Regenerative Stormwater Conveyance	Primary	Loyalsock
Cameo - Short Park	BMPs-250, 251	Subsurface Infiltration	Primary	Loyalsock

Project Site	BMP ID	BMP Type	Priority	Responsible Party
Saint Ann's	BMP-209	Infiltration Basin	Primary	Loyalsock
Hidden Valley	BMP-239	Basin Retrofit	Primary	Loyalsock
Cameo Estates to Northway	BMP-238	Regenerative Stormwater Conveyance	Primary	Loyalsock
Faxon Bowling Lanes	BMP-223	Subsurface Infiltration	Primary	Loyalsock
Windfield Drive Roadside	BMPs-202, 203, 220, 221	Subsurface Infiltration (4)	Primary	Loyalsock
Cemetery Road	BMP-200	Detention Basins (2)	Primary	Loyalsock
Northwood Drive Roadside	BMPs-216, 219, 230	Infiltration Berms (3)	Primary	Loyalsock
Ravine Road	BMP-234	Infiltration Berms/Swales	Primary	Williamsport
Reach Road	BMP-232	Infiltration Berms/Swales	Primary	Williamsport
Loyalsock Township Street Sweeping	BMP-L1	Street Sweeping	Primary	Loyalsock
Loyalsock Township Inlet/Pipe Cleanng	BMP-L2	Inlet/Pipe Cleaning	Primary	Loyalsock
Williamsport Street Sweeping	BMP-W1	Street Sweeping	Primary	Williamsport
Warrensville Road Wetland	BMP-244	Wetland / Riparian Buffer	Secondary	Loyalsock
Mill Creek Bend	BMP-245	Regenerative Stormwater Conveyance	Secondary	Loyalsock
Sycamore Road / Haas Lane	BMP-243	Stream Restoration or Regenerative Stormwater Conveyance	Secondary	Loyalsock
South of Loyal Plaza	BMPs-206, 213	Basin Retrofit	Secondary	Loyalsock
Hoss's Parking Lot	BMP-207	Subsurface Infiltration	Secondary	Loyalsock
Giant Parking Lot	BMP-208	Subsurface Infiltration	Secondary	Loyalsock
Bull Run - Reed to Edercrest	BMP-241	Stream Restoration	Secondary	Loyalsock
Country Club at Lincoln Drive	BMP-242	Wetland, Pond, or Regenerative Stormwater Conveyance	Secondary	Loyalsock
Wilmont Drive	BMP-211	Basin Retrofit	Secondary	Loyalsock
Faxon Circle	BMP-228	Subsurface Infiltration	Secondary	Loyalsock
Divine Providence Campus	BMP-222	Subsurface Infiltration	Secondary	Loyalsock
Grafius Run	BMPs-235, 236	Infiltration/Detention Basins	Primary	Williamsport
Lycoming Valley Middle School	BMP-231	Infiltration Basin / Regenerative Stormwater Conveyance	Secondary	Loyalsock
Fox Hollow Run	BMP-233	Regenerative Stormwater Conveyance	Secondary	Williamsport
Downspout Disconnection Enforcement in Loyalsock	BMP-L3	Disconnection	Secondary	Loyalsock
Downspout Disconnection Enforcement in Williamsport	BMP-W3	Disconnection	Secondary	Williamsport