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City of Scranton

Lackawanna County, Pennsylvania

Chesapeake Bay Pollutant Reduction Plan

January 2020

HRG Project No. R004441.0434

HRG
Herbert, Rowland & Grubic, Inc.
Engineering & Related Services
AN EMPLOYEE-OWNED COMPANY

Chesapeake Bay Pollutant Reduction Plan

CITY OF SCRANTON
LACKAWANNA COUNTY, PENNSYLVANIA

TABLE OF CONTENTS

INTRODUCTION

The City of Scranton discharges stormwater to surface waters located within the Chesapeake Bay watershed and is therefore regulated by PAI-132203 Individual Permit, Appendix D (nutrients and sediment in stormwater discharges to waters in the Chesapeake Bay watershed). The City also has watershed impairments regulated by PAI-132203 Individual Permit, Appendix E (nutrients and/or sediment in stormwater discharges to impaired waterways). This Chesapeake Bay Pollutant Reduction Plan (CBPRP) was developed in accordance with both requirements and documents how the City intends to achieve the pollutant reduction requirements listed in the Pennsylvania Department of Environmental Protection (PADEP) Municipal MS4 Requirements Table[1].

This document was prepared following the guidance provided in the PADEP National Pollutant Discharge Elimination System (NPDES) Stormwater Discharges from Small Municipal Separate Storm Sewer Systems Pollutant Reduction Plan (PRP) Instructions[2].

General Information	
Permittee Name: City of Scranton	**NPDES Permit No.:** PAI132203
Mailing Address: 340 N. Washington Avenue	**Effective Date:** November 1, 2014
City, State Zip: Scranton, PA 18503	**Expiration Date:** October 31, 2019
MS4 Contact Person: Donald King, AICP, CFM	**Renewal Due Date:** May 2019
Title: MS4 Coordinator	**Municipality:** City of Scranton
Phone: 570-348-4193 x4280	**County:** Lackawanna
Email: dking@scrantonpa.gov	**Consultant Name:** Herbert, Rowland & Grubic, Inc.
Co-Permittees (if applicable): N/A	**Consultant Contact:** Mark Spatz, P.E. P.O. Box 504 Clark Summit, PA 18411 (570) 851-2804 mspatz@hrg-inc.com

The City of Scranton is an Individual Permit MS4 community that pending PADEP review, is anticipated to start its third permit term in 2020. The City has 11,650 acres of urbanized area (UA) according to the United States Census Bureau's 2010 census. The City is located within four HUC-12 watersheds. In particular, the majority of the City is located in the *City of Scranton-Lackawanna River* watershed and a small portion of the City is located in the Leggetts Creek watershed. Both watersheds have been classified as impaired for Sediment by PADEP, therefore the Pollution Reduction Plan (PRP) requirements for these impaired watersheds are included as part of this CBPRP.

The City does not have UA tributary to the Spring Brook watershed and the Roaring Brook watershed is impaired for metals and pathogens only. See Appendix VI for more details.

[1] PADEP, MS4 Requirements Table (Municipal) (rev. 9/20/2017)
[2] PADEP PRP Instructions; Document # 3800-PM-BCW0100k (rev. 3/2017)

SECTION A: PUBLIC PARTICIPATION

A complete copy of this CBPRP was made available for public to review at the City's municipal office from [start date] to [end date]. The availability of the document was publicized on the City's website for 30 days and published in *The Times-Tribune* on [publish date]. 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 published on the City website and in *The Times-Tribune* are included in Appendix II.

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

The information contained in this report was presented to the public during the regularly scheduled City Council meeting held on [council meeting date]. Comments and questions regarding the CBPRP were received during the public presentation. A copy of the meeting minutes for the meeting at which the CBPRP was presented as well as a copy of the presentation from this meeting are included in Appendix II.

SECTION B: MAPS

The City of Scranton Project Area map depict the City's regulated outfalls and its contributing Municipal Separate Storm Sewer System (MS4) area, as required under MCM #3, BMPs 2 and 3 of the MS4 permit. The City's BMP Map contains the land uses, impaired streams, and the watersheds (PRP planning areas) associated with each impaired stream located within the City boundary (see Appendix III).

The City's boundary includes a total urbanized area (UA) of 11,650 acres according to the 2010 U.S. Census. Areas that operate under their own MS4 permits, including County owned properties and PennDOT roadways, are parsed. Both entities should be addressing their MS4 permit requirements, so the City Planning Area excludes land/impervious area associated with these entities. Additionally, combined sewer areas and direct drainage areas to streams are parsed due to them not being part of a storm sewershed. Since some of the areas overlapped, an order of exclusion was applied to prevent double claiming of parsed areas. For example: where a PennDOT roadway falls within a combined sewer area, only the PennDOT roadway is mapped for parsing. The order of exclusion used for parsing of overlapping areas is as follows: County owned properties were parsed first, PennDOT roadways second, combined sewer areas third and, finally, direct drainage areas.

The locations of the proposed BMPs are shown on the BMP Map. The BMP Map exhibit identifies the precise location of each proposed BMP. Site and stream bank erosion photos are provided in Appendix VI to provide information on the existing conditions of each BMP and stream restoration project site.

SECTION C: POLLUTANTS OF CONCERN

The pollutants of concern for City of Scranton were determined by referencing the PADEP MS4 Municipal Requirements Table[3] (Table 1). The applicable section of this table is included for reference in Appendix IV.

Table 1. Pollutants of Concern

Impaired Downstream Water	Pollutants of Concern
Chesapeake Bay Nutrients/Sediment	Appendix D - Nutrients, Siltation (4a)
City of Scranton-Lackawanna River	*Appendix A - Metals, pH (4a),* *Appendix B - Pathogens (5),* ***Appendix E - Siltation (5)***
Unnamed Tributaries to Lackawanna River	*[none]*
Roaring Brook	*Appendix A - Metals (4a),* *Appendix B - Pathogens (5)*
Leggetts Creek	*Appendix B - Pathogens (5),* ***Appendix E - Siltation (5)***
Unnamed Tributaries to Stafford Meadow Brook	*Appendix B - Pathogens (5)*
Keyser Creek	*Appendix A - Metals, pH (4a)*

[3] PADEP, MS4 Requirements Table (Municipal) (rev. 9/20/2017)

SECTION D: DETERMINE EXISTING LOADING FOR POLLUTANTS OF CONCERN

D.1 Existing Pollutant Load Calculation

The existing loading in pounds per year for each pollutant of concern was determined for the entire City of Scranton service area (CBPRP planning area) as well as for each impaired water (PRP planning areas). Existing pollutant loads were calculated using the Simplified Method[4]. The urbanized area (UA) associated with each planning area was determined using GIS software and the following layers: municipal boundary (provided by Lackawanna County GIS); UA boundary (from the 2010 U.S. Census); and the HUC 12 watersheds (USGS National Hydrography data set).

Impervious cover was generated through utilizing the City's impervious data layer and impervious surfaces shown on aerial mapping. This more precise method, which more closely reflects the conditions on the ground, has been utilized to determine the pollutant loading provided by the Simplified Method. The impervious and pervious acreages were multiplied by the Developed Land Loading Rates for Lackawanna County[5] to determine the total existing pollutant loading for each planning area (Table 2). See Appendix III -- Impervious Area mapping for more details on the impervious area extents used for calculating the Existing Pollutant Loading.

As the PRP planning areas are contained within the overall CBPRP planning area, the existing pollutant load was calculated for each PRP planning area as well as the additional portion of the CBPRP planning area not included in a PRP planning area. Therefore, the pollutant load from each of PRP planning areas, plus the pollutant load from the CBPRP planning area not already included in a PRP planning area, is equal to the overall pollutant load for the entire regional planning area.

Table 2. Unparsed Pollutant Loading by Planning Area

Planning Area	UA (acres)	Existing Pollutant Load (lbs/yr)
		TSS
City of Scranton-Lackawanna River	7,904	4,265,956
Leggetts Creek	2,072	745,565
CBPRP Planning Area outside of PRP Planning Areas	1,673	865,948
Total CBPRP Planning Area	**11,650**	**5,877,469**

A full table of the pollutant loading associated with each planning area listed above is included in Appendix V -- Table A. Refer to Section B of this plan for the parsing philosophy used. The urbanized acreage for each planning area was reduced as a result of parsing (Table 3).

[4] PADEP - PRP Instructions Document # 3800-PM-BCW0100k, Attachment C "Chesapeake Bay PRP Example Using DEP Simplified Method" (3/2017)
[5] PADEP - PRP Instructions, Document # 3800-PM-BCW0100k Attachment B "Developed Land Loading Rates for PA Counties" (3/2017)

Table 3. Parsed Pollutant Loading by Planning Area

Planning Area	UA (acres)	Existing Pollutant Load (lbs/yr)
		TSS
City of Scranton-Lackawanna River	3,840	2,280,500
Leggetts Creek	340	166,665
CBPRP Planning Area outside of PRP Planning Areas	937	599,756
Total Regional CBPRP Planning Area	**5,116**	**3,046,921**

For a breakdown of the parsed area by watershed and feature type, see Appendix V -- Table B. The pollutant loading for each planning area was adjusted by subtracting the parsed loadings listed in Table 3, refer to Table 4 (see Appendix V -- Table C for details).

Table 4. Adjusted Existing Pollutant Loading by Planning Area

Planning Area	UA (acres)	Existing Pollutant Load (lbs/yr)
		TSS
City of Scranton-Lackawanna River	4,064	1,985,456
Leggetts Creek	1,733	578,899
CBPRP Planning Area outside of PRP Planning Areas	737	266,193
Total Regional CBPRP Planning Area	**6,534**	**2,830,548**

D.2 Existing Pollutant Loading Adjustment for Previously Implemented BMPs

The City contains several existing stormwater BMPs, however these BMPs were installed for stormwater volume control and documentation on the water quality benefit of these basins is not available. Therefore, none of the existing BMPs are being used to claim credit towards reducing the City's baseline pollutant load or pollutant load reduction requirements.

SECTION E: BMPS TO ACHIEVE THE REQUIRED POLLUTANT LOAD REDUCTIONS

E.1 Required Pollutant Load Reduction Calculations

The City discharges stormwater to surface waters located within the Chesapeake Bay watershed and is, therefore, regulated by their Individual Permit, Appendix D (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 stated previously, 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 achieved[6]. Therefore, only the required 10-percent TSS reduction is calculated herein as a requirement for planning area load reductions (Table 4).

Table 5: Required Pollutant Load Reduction – CBPRP Planning Area

Planning Area	UA (acres)	Required Load Reduction TSS (lbs/yr)
CBPRP	**6,534**	**283,055**

In addition to meeting the Individual Permit Appendix D requirements listed in Table 4, two watersheds within the City, City of Scranton-Lackawanna River and Leggetts Creek, have impairments regulated by Individual Permit, Appendix E (nutrients and/or sediment in stormwater discharges to impaired waterways). Appendix E siltation impairments require a minimum 10-percent reduction in sediment load and Appendix E organic enrichment/low D.O impairments require a minimum 5-percent reduction in TP load. Similar to the presumptive approach discussed previously, it can be assumed that a 10-percent sediment load reduction will also accomplish a 5-percent TP reduction.

The pollutant load reduction requirements in pounds per year for Appendix E watersheds are shown in Table 6. The planning areas associated with each of these impaired watersheds are shown on the Project Area map (Appendix III).

Table 6: Required Pollutant Load Reduction – PRP Planning Areas

Planning Area	UA (acres)	Required Load Reduction TSS (lbs/yr)
City of Scranton-Lackawanna River	**4,064**	**198,546**
Leggetts Creek PRP	**1,733**	**57,890**

As stated previously, the load reduction requirements for each impaired watershed planning areas are included as a portion of, and not in addition to, the CBPRP pollutant load reduction.

[6] PADEP - PRP Instructions, Document #3800-PM-BCW0100k (rev. 3/2017)

E.2 Proposed BMP Load Reduction Calculations

The following 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 and in-field site assessments.

Proposed projects have been evaluated in terms of preliminary feasibility and anticipated pollutant load reductions in order to meet the goals of this plan. During plan implementation, the proposed BMPs will be designed in accordance with the Pennsylvania BMP Manual design guidance and all local ordinances. Additionally, all proposed stream restoration projects will be designed in accordance with the requirements listed in DEP's stream restoration guidance[7]. Details and calculations for each proposed project developed during the design and implementation project phases will be documented in the Annual MS4 Status Reports.

Stream restoration projects are designed to stabilize channels within their present environmental context, accomplishing the goal of reducing channel bed and bank erosion, reducing downstream sedimentation from in-stream erosion, managing invasive plant species encountered, and providing enhancements to wildlife habitat. TSS reduction calculations, site photos, and project locations for these proposed stream restoration segments can be found in Appendix VI.

A summary of the type and scale of BMP projects included in the City's strategy is listed in Table 7. The pollutant loading reductions for each proposed BMP were calculated in terms of pounds per year using PADEP's standard BMP Effectiveness Values and the Chesapeake Bay Program Expert Panel Report[8].

Table 7: Proposed BMP Strategy Summary

BMP Type	Planning Area **	Stream	Watershed	# of Projects	Pollutant Load Reduction TSS (lbs/yr)
Stream Restoration	City of Scranton – Lackawanna River	Keyser Creek	Keyser Creek	5	285,000
Street Sweeping \ Catchbasin Cleaning	City of Scranton – Lackawanna River	Varies *	City of Scranton – Lackawanna River	n/a	19,688
Street Sweeping \ Catchbasin Cleaning	Leggetts Creek	Leggetts Creek	Leggetts Creek	n/a	3,008
Street Sweeping \ Catchbasin Cleaning	CBPRP Planning Area outside of PRP Planning Areas	Various *	Various *	n/a	4,369
Total					**312,065**

*See BMP Maps

** All Planning Areas are included in the CBPRP planning area as outlined in Section E.1.

The BMP strategy outlined in Table 7 represents the most cost-effective approach to meeting the required pollutant reductions while also improving the quality of local impaired waterways. The pollutant load

[7] PADEP, "Consideration of Stream Restoration Projects in Pennsylvania for Eligibility as an MS4 Best Management Practice" (June 22, 2017)

[8] PADEP Document 3899-PM-BCW0100M, NPDES Stormwater Discharges from Small MS4s, BMP Effectiveness Values (5/2016) Chesapeake Bay Program Expert Panel, Recommendation of the Expert Panel to Define Removal Rates for Street and Storm Drain Cleaning Practices (5/26/2016)

reductions achieved by the proposed BMPs listed above exceed the pollutant load reduction requirement by 29,011 lbs/TSS/yr. The City will report progress made on implementing the plan on an annual basis and will implement the amount of BMPs needed to meet the 5-year sediment reduction goal. The pollutant load reductions achieved within each PRP Planning Area are shown in Table 8. As allowed during the five-year permit term, this plan may be revised on an annual basis based upon actual progress made and new project opportunities.

Table 8: Pollutant Load Reductions Achieved by Planning Area

Planning Area	Adjusted Base Load (lbs/yr)		Reduction from Proposed BMPs (lbs/yr)		% of Reduction Goal Achieved
	TSS	TP	TSS	TP	
CBPRP	2,830,548	- -	312,065	- -	11.0%
City of Scranton – Lackawanna River	1,985,456	- -	304,688	- -	15.3%
Leggetts Creek	578,899	- -	3,008	- -	0.5%

E.3 Proposed BMP Descriptions

E.3.1 Stream Restoration Projects

In order to address local impaired waters, site visits were conducted throughout the PRP Planning Areas to determine sites for potential restoration projects. The areas proposed for stream restoration projects include sections of Keyser Creek streambanks observed as having severe and active erosion. Depending on the severity of the erosion and stream flow at the particular site, stream restoration may include channel re-grading to reconnect floodplain areas and absorb water energy and/or the installation of in-stream structures to redirect flow toward the center of the stream channel. Only in necessary conditions will limited structural stabilization be utilized to repair eroded banks and prevent future erosion. It is understood that structural armoring will not count toward stream restoration crediting.

Photographs of the existing accelerated stream bank erosion to be restored through these projects and calculations for the anticipated pollutant load reductions associated with these BMPs are included in Appendix VI.

E.3.2 Stormwater Catch Basin Cleaning

The City is including catch basin cleaning in the strategy to meet its pollutant reduction goals. This data will be tracked for inclusion in the Annual MS4 Status Reports and as credit toward the goal starting at the end of the upcoming permit term. The protocol to be utilized for catch basin cleaning sediment load reduction has been included in Appendix VI.

E.3.3 Street Sweeping

The City will include street sweeping in the strategy to meet its pollutant reduction goals. This data will be tracked for inclusion in the Annual MS4 Status Reports and as credit toward the goal starting at the end of the upcoming permit term. The protocol to be utilized for street sweeping sediment load reduction has been included in Appendix VI.

E.3.4 BMPs to Be Installed By-Others

The City's design strategy may potentially include a project to be completed by another entity. If a project by-others is implemented during the permit term, the pollutant load reductions for the project will be credited towards the City's pollutant load reduction goal, following review and approval for credit by the PADEP.

Additionally, the City may enact a fee and crediting program to promote land owners to install BMPs on their property(ies). If this occurs, and as credit application projects are implemented by private property owners during the permit term, the pollutant load reductions of the new BMPs will be credited towards the City's pollutant load reduction goal upon PADEP review and approval.

E.3.5 Alternate Potential BMP Projects

Several additional potential BMP sites were preliminarily evaluated during the development of this CBPRP, however these potential projects were deemed to be a lower priority than the BMPs included in the plan and therefore were not included within this plan. Should unforeseen circumstances arise which prevents a proposed project from being implemented, it is anticipated that one of the backup projects will be used to replace the eliminated project. If this occurs, the newly proposed project will be fully documented in a revision to the CBPRP which will be publically advertised and submitted to the PA DEP for review and approval prior to project implementation.

E.4 Proposed BMP Implementation Schedule

Stream Restoration – During Permit Years 1 through 3, property owners along the restoration project sites will be approached about access and construction easements. At the same time a comprehensive design of the sites will be completed. This will include site surveys, preliminary layouts, and analysis of the existing site soils and vegetation. Upon acquisition of easements and acceptance of the preliminary design by stake-holders, the hydraulic calculations will be performed to complete the final design and submit the plans and specifications to the PA DEP for acquisition of the necessary Chapter 105 and 404 permits from the PA DEP and U.S. Army Corp. of Engineers. During Permit Years 4 and 5, construction will be completed. Should restoration waivers be allowable, that permitting route will be perused. Progress of the BMPs activities will be documented in the Annual Status Report.

Street Sweeping \ Catchbasin Cleaning – The City currently engages in street sweeping and inlet cleaning. During Permit years 4 and 5, a reporting program will be setup to track solids captured and removed from the streets and separate storm sewer systems. Permit Year 5 will be the first year for reporting of debris removed in the Annual Status Report.

Table 8. BMP Implementation Schedule

Project Type	Permitting & Engineering Design (Permit Year)	Construction / Reporting (Permit Year)
Stream Restoration	1 - 3	4 - 5
Street Sweeping \ Catchbasin Cleaning	n/a	4 - 5

SECTION F: FUNDING MECHANISMS

The design and construction of the BMPs proposed herein will be funded through a variety of sources including the City's General Fund, available grants, and public donation of materials and manpower. The City plans on setting up a separate dedicated funding stream for the on-going costs associated with the operations and maintenance of the sewer system and implementation of the BMPs proposed in this CBPRP.

Additionally, the City is currently actively participating in the investigation of a regional approach to stormwater management in Lackawanna County. The investigation is underway at this time, with the results anticipated to be released in 2020.

SECTION G: BMP OPERATIONS AND MAINTENANCE (O&M)

Once implemented, the BMPs outlined in this plan will be operated and maintained by the City to ensure that they continue to produce the expected pollutant reductions. The O&M activities will be reported in the Annual MS4 Status Reports submitted in accordance with the Individual Permit. The general list of the activities involved with O&M for each BMP and the frequency at which O&M activities will occur are as follows:

Table 9: O&M Activities by BMP Type

BMP	Responsible Party	O&M Activities	Frequency
Stream Restoration	City Staff	Inspection	Twice per year and as needed after major storm events
		Revegetation (replanting, replacement of dead, or struggling vegetation)	As needed
		Repairs to streambank armoring structures	As needed
		Removal of nuisance/invasive vegetation and woody debris	As needed

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APPENDIX I

PERMITTEE INFORMATION

3800-PM-BCW0200b 1/2017
Permit Application

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF CLEAN WATER

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) INDIVIDUAL PERMIT TO DISCHARGE STORMWATER FROM SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS (MS4s) APPLICATION

Before completing this form, read the step-by-step instructions provided in this application package.

Related ID#s (If Known)				DEP USE ONLY
Client ID#	62556	**APS ID#**		Date Received
Site ID#	619170	**Auth ID#**		
Facility ID#				PA_____ PDG?

GENERAL INFORMATION

Type of Permit: ☐ New Permit ☒ Renewal of Permit Permit No.: PAI132203

Is a waiver of coverage being requested and is a waiver application attached to this application? ☐ Yes ☒ No

Is individual permit coverage requested for more than one MS4 applicant? ☐ Yes ☒ No

If Yes, submit this application for each co-applicant and complete the information below (see instructions):

Joint Client Name: _____ Joint Client Phone: _____

Joint Client Address: _____ Joint Client Contact: _____

Joint Client City, State, Zip: _____

MS4 CLIENT/OPERATOR INFORMATION

DEP Client ID#	Client Type/Code		
	MUNI		
Organization Name or Registered Fictitious Name		Employer ID# (EIN)	Dun & Bradstreet ID#
City of Scranton			
Mailing Address Line 1	Mailing Address Line 2		
340 N Washington Ave			
Address Last Line – City	State	ZIP+4	Country
Scranton	**PA**	**18503**	**USA**
Client Contact Last Name	First Name	MI	Suffix
King	**Donald**	**J**	
Client Contact Title	Phone	Ext	
City Planner	**570-348-4280**		
Email Address	FAX		
dking@scrantonpa.gov	**570-348-4171**		

MS4 SITE INFORMATION

DEP Site ID#	Site Name				
	City of Scranton MS4				
Urbanized Area (UA) Name(s)		UA Area (specify acres or mi^2)			
Scranton		**21.77 mi**			
County Name	Municipality Name	City	Boro	Twp	State
Lackawanna	**City of Scranton**	☒	☐	☐	
County Name	Municipality Name	City	Boro	Twp	State
		☐	☐	☐	
Site Location Address Line 1	Site Location Address Line 2				

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Site Location City	State	ZIP+4
City of Scranton	**PA**	

Detailed Written Directions to Site

Site Contact Last Name	First Name	MI	Suffix
King	**Donald**		

Site Contact Title	Site Contact Firm
City Planner	

Mailing Address Line 1	Mailing Address Line 2

Address Last Line – City	State	ZIP+4

Phone	Ext	FAX	Email Address
570-348-4280			**dking@scrantonpa.gov**

SIC Code(s) (List All That Apply)	NAICS Code(s)

Site-to-Client Relationship
MS4 Coordinator

STORMWATER DISCHARGE INFORMATION

Map(s). Attach a map(s) to the application that identifies all stormwater discharge points (outfalls) from the MS4 to surface waters. For MS4s with existing permit coverage (that did not receive a waiver from DEP during the latest permit term), the map must include all elements required by MCM #3 in the NPDES permit. See instructions.

Surface Water Information. For each surface water body that receives stormwater discharges from the MS4, list the surface water, the furthest downstream outfall ID number, and the surface water's existing use, impairment and TMDL/WLA information in the table below. See instructions. **NOTE** – If the MS4 discharges to any surface water whose existing use is HQ or EV, the MS4 must apply for an individual permit.

Surface Water Name	Outfall No.	Ch. 93 Existing Use	Impaired?	Approved TMDL?	WLA?
Lackawanna River	017	CWF	Yes	Yes	No
Roaring Brook	044	CWF	Yes	No	No
Leggetts Creek	046	TSF	Yes	No	No
Meadow Brook	unknown	CWF	No	No	No
Leach Creek	049	TSF	No	No	No
Lucky Run	unknown	CWF	No	No	No
Keyser Creek	050	CWF	Yes	No	No
Lindy Creek	unknown	CWF	No	No	No
UNT to Stafford Meadow Brook	027	WWF	Yes	No	No

Outfall Locations. For each outfall identified in the table above, list the latitude and longitude coordinates. Identify the Horizontal Reference Datum used to determine the coordinates.

Outfall No.	Latitude			Longitude		
	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
SEE						
ATTACHED						

Horizontal Reference Datum: ☐ NAD of 1927 ☒ NAD of 1983 ☐ WGS of 1984 ☐ Unknown

TMDL Details. For any surface water with an approved TMDL in which a WLA is applicable to the MS4, provide the WLAs below.

Surface Water Name	TMDL Name	Pollutant Name	TMDL WLA (lbs/yr)	Specific or General
Lackawanna River	Lackawanna River Watershed	AMD	N/A	N/A

MS4 Requirements. Are requirement(s) specified in DEP's MS4 Requirements Table for the MS4? ☒ Yes ☐ No

If Yes, summarize the requirements below by checking all boxes that apply:

☒ Appendix A (AMD Metals and pH)

☒ Appendix B (Pathogens)

☐ Appendix C (Priority Organic Compounds)

☒ Appendix D (Chesapeake Bay Nutrients/Sediment) ☐ Pollutant Reduction Plan attached to application

☒ Appendix E (Impaired Waters Nutrients/Sediment) ☐ Pollutant Reduction Plan attached to application

☐ TMDL Plan ☐ TMDL Plan attached to application

NOTE – Appendices D and E and the TMDL Plan require the applicant to submit documentation of a public involvement and participation process.

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APPENDIX II

PUBLIC PARTICIPATION DOCUMENTATION

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APPENDIX III

MAPS

Project Area
City of Scranton
Lackawanna County, Pennsylvania

Leggetts Creek Watershed
South Branch Leach Creek
Leach Creek
Keyser Creek
Lindy Creek
Lucky Run
Saint Johns Creek
City of Scranton-Lackawanna River Watershed
Lackawanna River
Roaring Brook Watershed
Roaring Brook
Meadow Brook
Little Roaring Brook
Stafford Meadow Brook
Spring Brook Watershed
Spring Brook
Covey Swamp Creek
Green Run
Clover Hill Creek
Pancoast Creek
Price Creek
Eddy Creek

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

1,500 0 1,500 Feet

Mapping derived from data provided by Scranton Sewer Authority (2017), PASDA, and ESRI

12/17/2019	PM: MS	GIS: MSM	QA:	R04441.0434

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An Employee-Owned Company

- Municipal Boundary
- State Road
- Non-Sediment Impaired Stream
- Sediment Impaired Stream
- Unimpaired Stream
- County Owned (130 ac.)
- PennDOT Owned (1,024 ac.)
- Combined (3,819 ac.)
- Direct Drainage (227 ac.)
- Non-Urban Area
- MS4 Outfall
- MS4 Stucture
- Stormline
- HUC 12 Watershed Boundary

Red label *indicates watershed impaired for sediment*

P:\04440\04441_0434\GIS\Projects\Parsed_Area_24x36.mxd

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1,500 0 1,500 Feet

Mapping derived from data provided by Scranton Sewer Authority (2017), PASDA, and ESRI

12/16/2019	PM: MS	GIS: MSM	QA: XXX	R04441.0434

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Engineering & Related Services
An Employee-Owned Company

Impervious Area
Non-Urban Area
Municipal Boundary

County Owned (130 ac.)
PennDOT Owned (1,024 ac.)
Combined (3,819 ac.)
Direct Drainage (227 ac.)

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Impervious Area
City of Scranton
Lackawanna County, Pennsylvania

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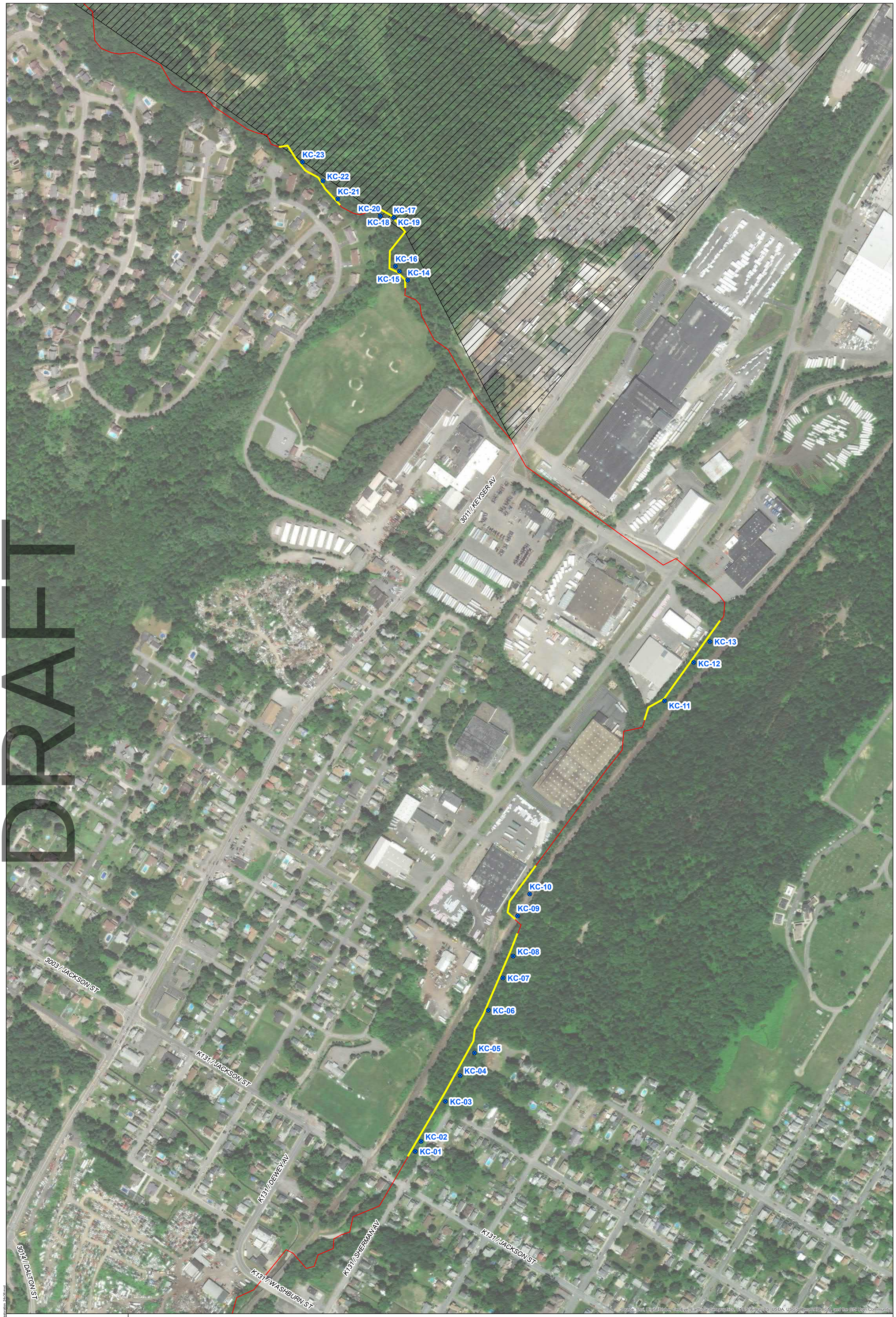

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200 0 200 Feet

Mapping derived from data provided by Scranton Sewer Authority (2017), PASDA, and ESRI

12/16/2019	PM: MS	GIS: MSM	QA: XXX	R04441.0434

HRG
Herbert Rowland & Grubic Inc
Engineering & Related Services
An Employee-Owned Company

Stream_Restoration_Points
Impaired Stream
Non-Urban Area

BMP Map

City of Scranton
Lackawanna County, Pennsylvania

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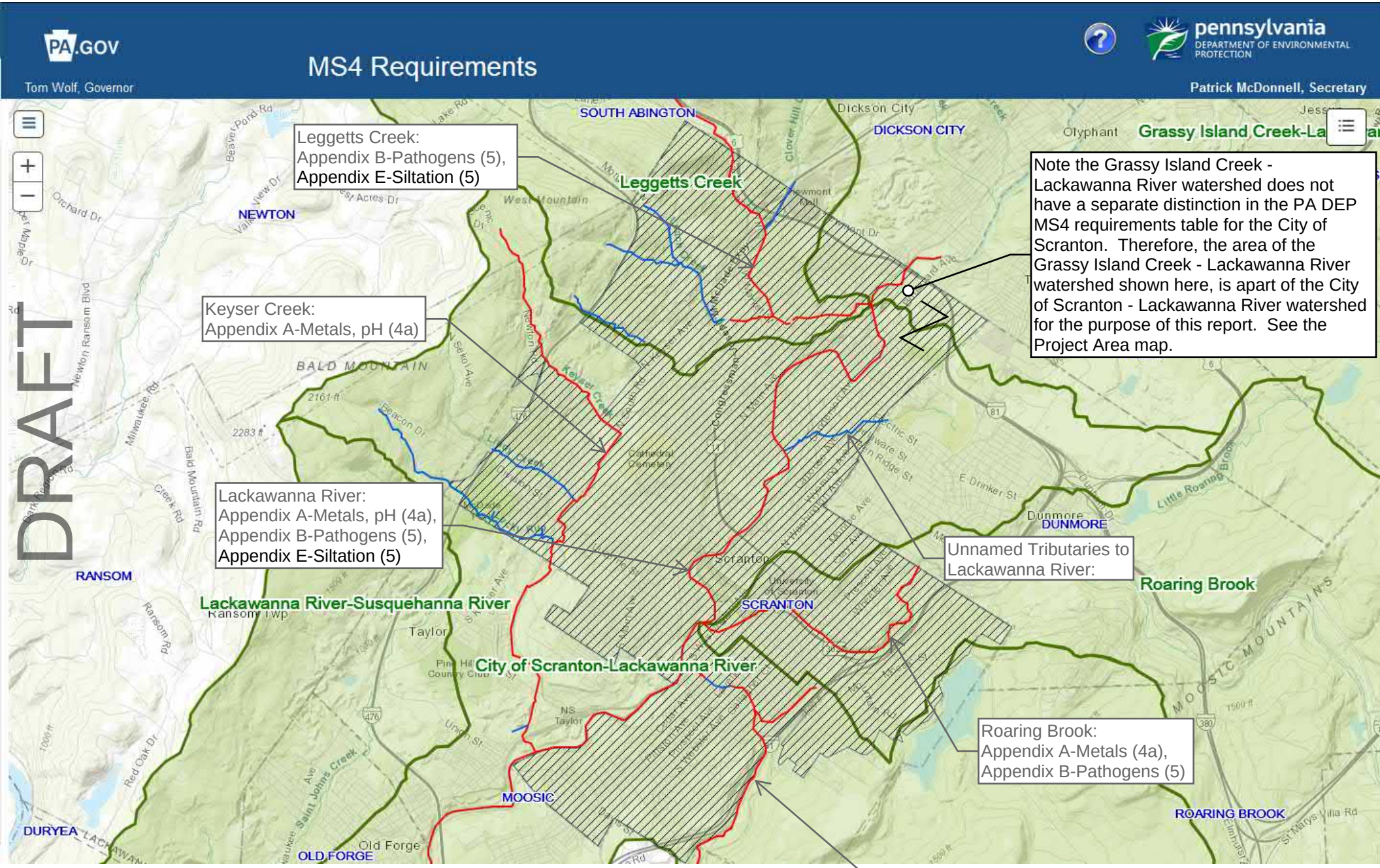
APPENDIX IV

MUNICIPAL MS4 REQUIREMENTS


PA.GOV
Tom Wolf, Governor
MS4 Requirements
pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Patrick McDonnell, Secretary
DRAFT
Leggetts Creek:
Appendix B-Pathogens (5),
Appendix E-Siltation (5)
Keyser Creek:
Appendix A-Metals, pH (4a)
Lackawanna River:
Appendix A-Metals, pH (4a),
Appendix B-Pathogens (5),
Appendix E-Siltation (5)
Note the Grassy Island Creek - Lackawanna River watershed does not have a separate distinction in the PA DEP MS4 requirements table for the City of Scranton. Therefore, the area of the Grassy Island Creek - Lackawanna River watershed shown here, is apart of the City of Scranton - Lackawanna River watershed for the purpose of this report. See the Project Area map.
Unnamed Tributaries to Lackawanna River:
Roaring Brook:
Appendix A-Metals (4a),
Appendix B-Pathogens (5)
Unnamed Tributaries to Stafford Meadow Brook:
Appendix B-Pathogens (5)
SOUTH ABINGTON
DICKSON CITY
Leggetts Creek
NEWTON
BALD MOUNTAIN
Keyser Creek
Lackawanna River-Susquehanna River
City of Scranton-Lackawanna River
Grassy Island Creek-La
Roaring Brook
RANSOM
SCRANTON
DUNMORE
MOOSIC
ROARING BROOK
DURYEA
OLD FORGE

MS4 Name	NPDES ID	Individual Permit Required?	Reason	Impaired Downstream Waters or Applicable TMDL Name	Requirement(s)	Other Cause(s) of Impairment
Lackawanna County						
SCOTT TWP	PAI132242	Yes	IP	Hull Creek		Other Habitat Alterations (4c)
				Chesapeake Bay Nutrients/Sediment	Appendix D-Nutrients, Siltation (4a)	
				Leggetts Creek	Appendix B-Pathogens (5), Appendix E-Siltation (5)	
				South Branch Tunkhannock Creek	Appendix B-Pathogens (5)	
				Kennedy Creek	Appendix B-Pathogens (5)	
				Lackawanna Lake	Appendix E-Organic Enrichment/Low D.O. (5)	Mercury (Lakes) (5)
				Lackawanna River	Appendix A-Metals, pH (4a), Appendix B-Pathogens (5)	
SCRANTON CITY	PAI132203	Yes	IP	Keyser Creek	Appendix A-Metals, pH (4a)	Cause Unknown (5)
				Unnamed Tributaries to Stafford Meadow Brook	Appendix B-Pathogens (5)	Other Habitat Alterations (4c)
				Lackawanna River	Appendix A-Metals, pH (4a), Appendix B-Pathogens (5), Appendix E-Siltation (5)	Flow Alterations (4c)
				Chesapeake Bay Nutrients/Sediment	Appendix D-Nutrients, Siltation (4a)	
				Leggetts Creek	Appendix B-Pathogens (5), Appendix E-Siltation (5)	
				Unnamed Tributaries to Lackawanna River		Other Habitat Alterations (4c)
				Roaring Brook	Appendix A-Metals (4a), Appendix B-Pathogens (5)	Other Habitat Alterations (4c)
SOUTH ABINGTON TWP	PAG132208	No		Ackerly Creek	Appendix B-Pathogens (5), Appendix E-Siltation (5)	
				Chesapeake Bay Nutrients/Sediment	Appendix D-Nutrients, Siltation (4a)	
				Lackawanna River	Appendix A-Metals, pH (4a), Appendix B-Pathogens (5)	
				Leggetts Creek	Appendix B-Pathogens (5), Appendix E-Siltation (5)	
				Unnamed Tributaries to Summit Lake Creek		Cause Unknown (5), Flow Alterations, Water/Flow Variability (4c)
				Summit Lake Creek	Appendix E-Siltation (5)	Thermal Modifications (5)
				South Branch Tunkhannock Creek	Appendix B-Pathogens (5)	
TAYLOR BORO	PAG132205	No		Unnamed Tributaries to Saint Johns Creek		Cause Unknown (5)
				Chesapeake Bay Nutrients/Sediment	Appendix D-Nutrients, Siltation (4a)	
				Susquehanna River	Appendix A-Metals (4a), Appendix C-PCB (4a), Appendix A-pH (5), Appendix E-Siltation (5)	Flow Alterations (4c), Mercury (5)
				Saint Johns Creek	Appendix E-Siltation (5)	Flow Alterations (4c)
				Lackawanna River	Appendix A-Metals, pH (4a), Appendix B-Pathogens (5), Appendix E-Siltation (5)	Flow Alterations (4c)
				Keyser Creek	Appendix A-Metals, pH (4a)	Cause Unknown (5)
THROOP BORO	PAG132253	No		Eddy Creek		Flow Alterations (4c)
				Lackawanna River	Appendix A-Metals, pH (4a), Appendix B-Pathogens (5)	
				Unnamed Tributaries to Lackawanna River		Flow Alterations (4c)
				Chesapeake Bay Nutrients/Sediment	Appendix D-Nutrients, Siltation (4a)	

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APPENDIX V

EXISTING POLLUTANT LOADING CALCULATIONS

Appendix V -- Table A: Un-Parsed Pollutant Loading by Planning Area

Watershed	UA Impervious (Acres)	UA Pervious (Acres)	Total UA (Acres)	Land Use Impervious	Land Use Pervious	Loading Rates - TSS Impervious (lbs/yr)	Loading Rates - TSS Pervious (lbs/yr)	Loading Rates - TP Impervious (lbs/yr)	Loading Rates - Tp Pervious (lbs/yr)	Baseline Pollutant Load TSS (lbs/yr)	Baseline Pollutant Load TP (lbs/yr)
City of Scranton-Lackawanna River	2,742.90	5,161.23	7,904.1	34.70%	65.30%	1305.05	132.98	2.84	0.76	4,265,956	11,712
County Owned Properties	13.16	85.57	98.7	13.33%	86.67%	1305.05	132.98	2.84	0.76	28,549	102
PennDOT Owned	224.10	329.41	553.5	40.49%	59.51%	1305.05	132.98	2.84	0.76	336,267	887
Combined Sewer Area	1,266.78	1,767.80	3,034.6	41.74%	58.26%	1305.05	132.98	2.84	0.76	1,888,290	4,941
Direct Drainage Area	6.02	146.97	153.0	3.93%	96.07%	1305.05	132.98	2.84	0.76	27,394	129
Un-parsed Area	1,232.85	2,831.48	4,064.3	30.33%	69.67%	1305.05	132.98	2.84	0.76	1,985,456	5,653
Leggetts Creek	400.97	1,671.52	2,072.5	19.35%	80.65%	1305.05	132.98	2.84	0.76	745,565	2,409
PennDOT Owned	58.29	148.58	206.9	28.18%	71.82%	1305.05	132.98	2.84	0.76	95,830	278
Combined Sewer Area	45.39	87.03	132.4	34.28%	65.72%	1305.05	132.98	2.84	0.76	70,804	195
Direct Drainage Area	0.00	0.23	0.2	0.00%	100.00%	1305.05	132.98	2.84	0.76	31	0
Un-parsed Area	297.29	1,435.67	1,733.0	17.16%	82.84%	1305.05	132.98	2.84	0.76	578,899	1,935
CBPRP Planning Area outside of PRP Planning Areas	548.98	1,124.27	1,673.24	32.81%	67.19%	1305.05	132.98	2.84	0.76	865,948	2,414
County Owned Properties	3.05	2.69	5.7	53.18%	46.82%	1305.05	132.98	2.84	0.76	4,343	11
PennDOT Owned	74.68	132.22	206.9	36.10%	63.90%	1305.05	132.98	2.84	0.76	115,049	313
Combined Sewer Area	326.51	323.94	650.4	50.20%	49.80%	1305.05	132.98	2.84	0.76	469,188	1,173
Direct Drainage Area	1.21	72.20	73.4	1.64%	98.36%	1305.05	132.98	2.84	0.76	11,176	58
Un-parsed Area	143.52	593.22	736.7	19.48%	80.52%	1305.05	132.98	2.84	0.76	266,193	858
	3,693	7,957	11,650	31.70%	68.30%					5,877,469	16,535

Appendix V -- Table B1: Parsed Pollutant Loading by Planning Area

Watershed	UA Impervious (Acres)	UA Pervious (Acres)	Total UA (Acres)	Land Use Impervious	Land Use Pervious	Loading Rates - TSS Impervious (lbs/yr)	Loading Rates - TSS Pervious (lbs/yr)	Loading Rates - TP Impervious (lbs/yr)	Loading Rates - Tp Pervious (lbs/yr)	Baseline Pollutant Load TSS (lbs/yr)	Baseline Pollutant Load TP (lbs/yr)
City of Scranton-Lackawanna River	1,510.05	2,329.75	3,839.8	39.33%	60.67%	1305.05	132.98	2.84	0.76	2,280,500	6,059
County Owned Properties	13.16	85.57	98.7	13.33%	86.67%	1305.05	132.98	2.84	0.76	28,549	102
PennDOT Owned	224.10	329.41	553.5	40.49%	59.51%	1305.05	132.98	2.84	0.76	336,267	887
Combined Sewer Area	1,266.78	1,767.80	3,034.6	41.74%	58.26%	1305.05	132.98	2.84	0.76	1,888,290	4,941
Direct Drainage Area	6.02	146.97	153.0	3.93%	96.07%	1305.05	132.98	2.84	0.76	27,394	129
Leggetts Creek	103.68	235.84	339.5	30.54%	69.46%	1305.05	132.98	2.84	0.76	166,665	474
PennDOT Owned	58.29	148.58	206.9	28.18%	71.82%	1305.05	132.98	2.84	0.76	95,830	278
Combined Sewer Area	45.39	87.03	132.4	34.28%	65.72%	1305.05	132.98	2.84	0.76	70,804	195
Direct Drainage Area	0.00	0.23	0.2	0.00%	100.00%	1305.05	132.98	2.84	0.76	31	0
CBPRP Planning Area outside of PRP Planning Areas	405.45	531.05	936.50	43.29%	56.71%	1305.05	132.98	2.84	0.76	599,756	1,555
County Owned Properties	3.05	2.69	5.7	53.18%	46.82%	1305.05	132.98	2.84	0.76	4,343	11
PennDOT Owned	74.68	132.22	206.9	36.10%	63.90%	1305.05	132.98	2.84	0.76	115,049	313
Combined Sewer Area	326.51	323.94	650.4	50.20%	49.80%	1305.05	132.98	2.84	0.76	469,188	1,173
Direct Drainage Area	1.21	72.20	73.4	1.64%	98.36%	1305.05	132.98	2.84	0.76	11,176	58
	2,019	3,097	5,116	39.47%	60.53%					3,046,921	8,652

Appendix V -- Table B2: Parsed County Owned Properties

ID	Description	Latitude	Longitude	Total Area (Acres)	Impervious Area (Acres)	Pervious Area (Acres)	TSS Loading Rate - Imp Area (Lbs/year)	TSS Loading Rate - Per Area (Lbs/year)	Sediment Load (Lbs)
1	LACKAWANNA COUNTY	41.38863	-75.66521	0.69	0.00	0.69	1305.05	132.98	92
2	LACKAWANNA COUNTY	41.38757	-75.66995	0.15	0.04	0.10	1305.05	132.98	70
3	LACKAWANNA COUNTY	41.38784	-75.66613	0.28	0.02	0.26	1305.05	132.98	58
4	LACKAWANNA COUNTY	41.40494	-75.66900	0.33	0.00	0.33	1305.05	132.98	44
5	LACKAWANNA COUNTY PRISON	41.42273	-75.64817	2.48	2.22	0.26	1305.05	132.98	2,931
6	LACKAWANNA COUNTY	41.41838	-75.71147	93.11	9.48	83.63	1305.05	132.98	23,490
7	LACKAWANNA COUNTY PRISON	41.42199	-75.64867	1.14	1.02	0.12	1305.05	132.98	1,349
8	LACKAWANNA COUNTY	41.42155	-75.64898	0.11	0.09	0.02	1305.05	132.98	122
9	LACKAWANNA COUNTY	41.42154	-75.64919	0.19	0.19	0.00	1305.05	132.98	251
10	LACKAWANNA COUNTY	41.42250	-75.64909	0.25	0.09	0.16	1305.05	132.98	142
11	LACKAWANNA COUNTY COURT HOUSE	41.40811	-75.66235	4.85	2.24	2.61	1305.05	132.98	3,273
12	LACKAWANNA COUNTY	41.40706	-75.66185	0.33	0.31	0.02	1305.05	132.98	413
13	LACKAWANNA COUNTY	41.40669	-75.66200	0.06	0.05	0.00	1305.05	132.98	70
14*	LACKAWANNA COUNTY	41.36008	-75.66902	24.30	0.03	24.27	-	-	-
15	LACKAWANNA COUNTY	41.40628	-75.66189	0.51	0.44	0.06	1305.05	132.98	587
				128.77	16.24	112.54			32,892

* Is located outside the Urbanized Area

State Route Number	Length (Miles)	Total Area (Acres)	Impervious Area (Acres)	Pervious Area (Acres)	TSS Loading Rate - Imp Area (Lbs/year)	TSS Loading Rate - Per Area (Lbs/year)	Sediment Load (Lbs)
0011	13.08	197.98	56.78	141.20	1305.05	132.98	92,880
0081	13.64	305.35	56.88	248.47	1305.05	132.98	107,271
0307	3.77	48.48	16.57	31.91	1305.05	132.98	25,873
2105	0.01	0.19	0.09	0.11	1305.05	132.98	128
2111	0.01	On \ Off ramp					
3003	1.08	6.51	3.57	2.94	1305.05	132.98	5,047
3011	2.51	15.98	8.01	7.97	1305.05	132.98	11,510
3013	3.02	18.73	12.49	6.24	1305.05	132.98	17,136
3014	1.19	8.53	5.13	3.40	1305.05	132.98	7,153
3016	1.11	12.88	4.14	8.74	1305.05	132.98	6,569
3018	0.15	1.30	0.75	0.55	1305.05	132.98	1,055
3020	1.10	7.06	4.76	2.29	1305.05	132.98	6,520
3021	0.98	7.06	3.78	3.28	1305.05	132.98	5,371
3022	1.36	17.96	4.28	13.68	1305.05	132.98	7,400
3023	3.12	22.08	15.36	6.73	1305.05	132.98	20,937
3025	3.25	16.41	10.92	5.49	1305.05	132.98	14,979
3027	0.68	4.92	3.52	1.40	1305.05	132.98	4,784
3029	1.75	7.77	5.31	2.46	1305.05	132.98	7,252
3033	0.43	2.14	1.35	0.79	1305.05	132.98	1,869
3102	0.04	On \ Off ramps (area merged into larger adjoining routes)					
6006	0.97						
6011	4.21	22.65	14.47	8.18	1305.05	132.98	19,968
6307	0.66	6.53	3.11	3.42	1305.05	132.98	4,514
7476	2.73	51.46	18.42	33.04	1305.05	132.98	28,429
8003	0.07	On \ Off ramps (area merged into larger adjoining routes)					
8005	1.47						
8011	0.41	2.10	0.63	1.48	1305.05	132.98	1,016
8013	1.75	On-ramps and Off-ramp					
8025	1.18	13.89	3.51	10.38	1305.05	132.98	5,960
8027	0.88	On\ Off ramps (area merged into larger adjoining routes)					
8029	0.69						
8031	0.66						
8033	0.67						
8039	0.57						
K107	1.49	13.71	7.78	5.93	1305.05	132.98	10,943
K116	0.07	0.42	0.26	0.17	1305.05	132.98	358
K118	2.18	14.87	8.30	6.57	1305.05	132.98	11,705
K120	2.54	18.96	13.55	5.41	1305.05	132.98	18,405
K125	0.36	2.60	1.44	1.16	1305.05	132.98	2,029
K128	0.53	3.79	2.24	1.56	1305.05	132.98	3,127
K129	1.29	9.67	6.38	3.29	1305.05	132.98	8,766
K130	2.37	14.82	8.31	6.51	1305.05	132.98	11,708
K131	1.45	8.87	5.77	3.11	1305.05	132.98	7,940
K132	0.32	2.10	1.45	0.65	1305.05	132.98	1,979
K133	0.55	3.54	2.30	1.25	1305.05	132.98	3,161
K135	0.08	0.62	0.46	0.16	1305.05	132.98	619
K136	0.97	9.43	6.88	2.55	1305.05	132.98	9,321
K140	0.64	4.57	2.71	1.85	1305.05	132.98	3,787
K142	0.75	5.43	2.87	2.56	1305.05	132.98	4,088

Appendix V -- Table B3: Parsed PENNDOT Roads

State Route Number	Length (Miles)	Total Area (Acres)	Impervious Area (Acres)	Pervious Area (Acres)	TSS Loading Rate - Imp Area (Lbs/year)	TSS Loading Rate - Per Area (Lbs/year)	Sediment Load (Lbs)
K143	0.92	4.09	2.38	1.71	1305.05	132.98	3,337
K144	0.09	0.64	0.32	0.32	1305.05	132.98	463
K145	1.00	9.23	5.99	3.25	1305.05	132.98	8,244
K146	2.35	15.36	9.03	6.33	1305.05	132.98	12,630
K149	0.98	5.50	3.20	2.30	1305.05	132.98	4,479
K151	0.44	3.06	1.52	1.54	1305.05	132.98	2,189
K154	1.17	6.38	3.54	2.84	1305.05	132.98	4,996
K156	0.84	5.35	2.54	2.81	1305.05	132.98	3,692
K172	1.26	6.28	4.04	2.24	1305.05	132.98	5,572
		967.30	357.08	610.21			547,159

Appendix V -- Table C: Adjusted Pollutant Loading by Planning Area

Watershed	UA Impervious (Acres)	UA Pervious (Acres)	Total UA (Acres)	Land Use Impervious	Land Use Pervious	Loading Rates - TSS Impervious (lbs/yr)	Loading Rates - TSS Pervious (lbs/yr)	Loading Rates - TP Impervious (lbs/yr)	Loading Rates - Tp Pervious (lbs/yr)	Baseline Pollutant Load TSS (lbs/yr)	Baseline Pollutant Load TP (lbs/yr)
City of Scranton-Lackawanna River											
Un-parsed Area	1,232.85	2,831.48	4,064.3	30.33%	69.67%	1305.05	132.98	2.84	0.76	1,985,456	5,653
Leggetts Creek											
Un-parsed Area	297.29	1,435.67	1,733.0	17.16%	82.84%	1305.05	132.98	2.84	0.76	578,899	1,935
CBPRP Planning Area outside of PRP Planning Areas											
Un-parsed Area	143.52	593.22	736.7	19.48%	80.52%	1305.05	132.98	2.84	0.76	266,193	858
	1,674	4,860	6,534	25.61%	74.39%					2,830,548	8,447

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APPENDIX VI

PROPOSED BMP

POLLUTANT LOAD REDUCTION CALCULATIONS

Appendix VI -- Table A: Stream Restoration Projects

Photo #	Latitude	Longitude	Description	Start Point (downstream end)		End Point (upstream end)		Total Length of Restoration (ft)	Total Sediment Load Reduction (lbs/year)
Keyser Creek									
KC-01	41.419728	-75.69381	Major Erosion (Both Banks)	41.41964	-75.69389	41.42272	-75.69172	2562	114,983
KC-02	41.41986	-75.69370	Major Erosion (Both Banks)						
KC-03	41.42042	-75.69323	Major Erosion (Both Banks)						
KC-04	41.42077	-75.69294	Major Erosion (Both Banks)						
KC-05	41.42108	-75.69267	Major Erosion (Both Banks)						
KC-06	41.42168	-75.69239	Major Erosion (Both Banks)						
KC-07	41.42213	-75.69211	Major Erosion (Both Banks)						
KC-08	41.42243	-75.69191	Major Erosion (Both Banks)						
KC-09	41.42299	-75.69181	Major Erosion (Both Banks)	41.42292	-75.69186	41.42361	-75.69131	592	26,569
KC-10	41.42329	-75.69157	Major Erosion (Both Banks)						
KC-11	41.42595	-75.68898	Major Erosion (Both Banks)	41.42567	-75.68928	41.42703	-75.68783	1270	56,998
KC-12	41.42647	-75.68842	Major Erosion (Both Banks)						
KC-13	41.42676	-75.68811	Major Erosion (Both Banks)						
KC-14	41.43192	-75.69357	Major Erosion (Both Banks)	41.43183	-75.69347	41.43286	-75.69428	1096	49,188
KC-15	41.43204	-75.69372	Major Erosion (Both Banks)						
KC-16	41.43212	-75.69379	Major Erosion (Both Banks)						
KC-17	41.43280	-75.69380	Major Erosion (Both Banks)						
KC-18	41.43280	-75.69380	Major Erosion (Both Banks)						
KC-19	41.43280	-75.69380	Major Erosion (Both Banks)						
KC-20	41.43282	-75.69405	Major Erosion (Both Banks)						
KC-21	41.43307	-75.69483	Major Erosion (Both Banks)	41.43300	-75.69475	41.43375	-75.69586	836	37,520
KC-22	41.43333	-75.69510	Major Erosion (Both Banks)						
KC-23	41.43360	-75.69547	Major Erosion (Both Banks)						
							Total	6,356	285,257

Stream Restoration Project Photos

Keyser Creek

KC-01

KC-02

KC-03

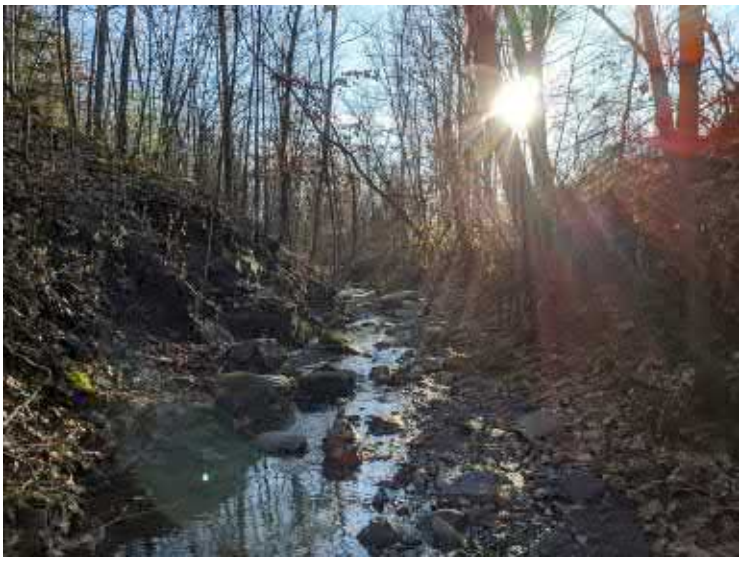
KC-04

KC-05

KC-06

KC-07

KC-08



KC-09

KC-10

KC-11

KC-12

KC-13

KC-14

KC-15

KC-16

KC-17

KC-18

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Appendix VI -- Table B: Street Sweeping Areas

Watershed	UA Impervious (Sq. Ft.)	UA Impervious (Acres)	Loading Rates - TSS Impervious (lbs/yr)	Baseline Pollutant Load TSS (lbs/yr)	*Total Sediment Load Reduction (lbs/year)
City of Scranton-Lackawanna River	7,301,779	167.63	1305.05	218,760	19,688
Leggetts Creek	1,115,533	25.61	1305.05	33,421	3,008
CBPRP Planning Area outside of PRP Planning Areas	1,620,388	37.20	1305.05	48,547	4,369
Total	10,037,700	230.43		300,728	27,065

* Assumes 9% Sediment BMP Effectiveness Value

MANAGEMENT PRACTICES

FOR

STREET SWEEPING & STORM WATER CATCH BASIN CLEANING

Street Sweeping and Catch Basin Cleanings Defined:

Street Sweepings are materials such as sand, salt, leaves, broken glass, small pieces of metal, and other litter and debris removed from streets, parking lots and sidewalks in order to prevent these materials from being washed into storm sewers and surface waters, and to improve the appearance and safety of public roadways. Street sweepings are not as clean as virgin earth materials and should be handled with a certain degree of care. Street sweepings usually contain low levels of chemical compounds associated with storm water runoff. Sodium and compounds associated with asphalt and motor oils can also be found. A vehicular accident or spill can result in high levels of these hazardous compounds.

Catch Basin Cleanings are the materials such as sand, silt, leaves and debris that accumulate in and are removed from catch basins. Materials that are removed from other drainage structures such as separators, detention and retention basins are often similar to catch basin cleanings and generally should be handled in a similar manner. The material removed from catch basins generally contains a higher percentage of fine-grained material such as silt and clay. They are usually wet and usually have higher organic content from decomposing wet leaves than do street sweepings. Catch basin cleanings generally have higher levels of pollutants than street sweepings. The finer grained sediments in catch basins and other drainage structures absorb more metals and other pollutants than the coarser sand typically found in street sweepings. Catch basins are also more likely to have been affected by spills and polluted runoff than street sweepings.

Street sweepings and catch basin cleanings that have been affected by spills of gasoline or hazardous waste **should not be handled in accordance with this guidance.** Materials from these sources, whether or not they are removed by a sweeping process, must be tested to determine if they are hazardous. If hazardous, they must be managed in accordance with hazardous waste disposal requirements. If such materials are not hazardous, they must be disposed of at a permitted waste disposal facility in accordance with an authorization issued by Pennsylvania Department of Environmental Protection Bureau of Waste Management, Division of Municipal and Residual Waste.

Planning Considerations for Street Sweepings and Catch Basin Cleanings:

1. Planning for when and how often street sweeping should be done and catch basins cleaned -
   There are a number of factors that should be taken into account when determining the timing and frequency of sweeping streets and cleaning catch basins. One factor is the evaluation of areas/structures to determine those that may require more frequent cleaning. Another factors to consider for evaluation may consist of categorizing roads for traffic volumes, number of accidents (which can contribute to spills), number of catch basins, proximity to watercourses and wetlands, litter frequency (which can lead to clogged catch basins) and overhead vegetation, e.g. tree canopies (which may contribute to clogged catch basins in the fall). Additional guidance on best management practices for the timing and frequency of sweeping streets and cleaning catch basins is in the Best Management Practices sections of this document.

2. Planning for the quality of street sweepings and catch basin cleanings – In general the quality of street sweepings and catch basin cleanings will determine the options the City has for reuse of the material.

Sweepings that are generated from the same road or type of road under much the same conditions are likely to have fairly consistent pollutant levels. Guidance on testing the quality of street sweepings and catch basin cleanings is provided in the Best Management Practices sections of this document in accordance with Appendix A of the Pennsylvania Department of Environmental Protection Management of Fill Policy (Document No. 258-2182-773). Guidance on limited reuse options for street sweepings without any chemical testing is also provided in that section. Because catch basin cleanings are generally more polluted than street sweepings, unless the City plans to dispose of the material at a waste disposal facility, catch basin cleanings should not be mixed with street sweepings. However, if testing data shows that the catch basin cleanings are similar to street sweepings, the City will consult with the Pennsylvania Department of Environmental Protection about mixing the materials.

3. Planning for appropriate storage areas – A critical aspect of management is the selection of the location of sites for storing and processing street sweepings and catch basin cleanings. Such locations should be sized to handle the expected volume of material to be collected and allow for any testing or processing necessary for reusing the material. The storage area should be designed in a manner that will not result in the erosion of storage piles, the generation of excessive dust and debris and that will properly control storm water runoff from the site.

BEST MANAGEMENT PRACTICES FOR STREET SWEEPINGS

When to sweep streets: The City will conduct street sweeping as soon as possible after snow melt. The longer the sand is on the road, the more the coarse sand particles are abraded, rounded and reduced in size. Since the finer particles are more likely to absorb pollutants, prompt sweeping reduces not only the amount of silt levels in catch basins and watercourses but also reduces the amount of pollutants entering surface water bodies. Prompt spring cleanup may also reduce the amount of incidental debris associated with the sand. Prompt pick up before the sand is rounded and abraded also increases the opportunity to reuse the material for road sanding the following winter by blending a portion of the sweepings, after processing, into new street sand.

How to sweep streets: Street sweeping is conducted on public streets and municipal parking lots within the City to reduce the amount of sediment, debris, and organic matter entering the catch basins, which in turn reduces the frequency with which they need to be cleaned.

- Street sweeping is conducted by The City.
- Street sweeping is conducted on all streets starting at the "top" of the topography (upstream end of the storm sewer system, farthest from the outfall) and progressing downward.
- The street sweeper shall be well maintained and operated according to the manufacturer's recommended procedures to get optimal debris removal. This includes adjusting sweeper speed, brush alignment, rotation rate and sweeping pattern.
- Debris is not allowed to accumulate – debris is disposed of on a regular basis.
- Non-vegetative debris (i.e. grit) from sweeper hoppers is collected and taken to a temporary storage area with containment at the City Property. If this material is determined to meet the clean fill standards, it is screened and reused on City properties.
- Street sweepings or empty sweeper hoppers are not stored, even temporarily, near storm drains or surface water bodies or where wind or rain could scatter debris.

Temporary storage site: Temporary storage (less than one year) of street sweepings prior to reuse or disposal should be located in an area where the sweepings will not wash into wetlands or watercourses. Good temporary storage sites include:

a) an empty salt storage shed if available;
b) a municipal site where sand and salt are normally handled; or
c) a paved area that is more than 100 feet from a wetland or watercourse.

The City covers storage piles with a pre-fabricated aluminum type building to minimize erosion, dust and runoff. The City limits the height of storage piles, to the extent space allows, to no higher than 10 to15 feet as stockpiles higher than that will be difficult to cover and manage for dust and erosion control.

Preparing Street Sweepings for Reuse: Prior to reuse, materials such as trash, leaves and debris should be removed from the street sweepings by screening or other appropriate method and such materials should either be disposed of at a permitted solid waste facility, recycled (e.g. aluminum cans) or taken to a composting facility (e.g. leaves). A 3/4-inch mesh will screen out much of the debris from collected street sweepings prior to mixing. If the City chooses to rinse the sweepings to remove the fine particles and debris so that the sand may be reused on roads during the following winter, the City will contact the Pennsylvania Department of Environmental Protection for additional guidance and discharge requirements.

Disposal / Reuse of Street Sweeping Debris and Antiskid: Street sweepings consist of antiskid (cinders, coal (bottom) ash, rock and sand), salt, leaves, plastic, broken glass, small pieces of metal, litter and debris. Sweepings are removed from streets, parking lots and sidewalks to improve the appearance and safety of public roadways and prevent pollution of local waterways.

The City is able to reuse antiskid provided that it is screened to separate all non-reusable debris, such as silt, trash, litter, leaves, etc., from the reusable antiskid material and visually checked for contaminants, staining

or odors persistent to the Pennsylvania Department of Environmental Protection Bureau of Waste Management Disposal/Reuse of Street Sweeping Debris and Antiskid. If the visual examination shows no staining, odors or other evidence of contaminants, the antiskid may be managed a clean fill and used in an unrestricted manner, including the following:

- Reused as an antiskid
- Remixed with new salt mixture for winter applications to roads
- As the sub grade beneath a paved municipal road or parking lot
- For filling potholes
- As shoulder repair material along roads within City or privately owned public right-of-way*
- Other fill

** The public right-of-way means the strip of land under a publicly owned paved road or highway and includes the publicly owned land adjacent to the road or highway. Screened street sweepings for which the concentration of chemical compounds has not been determined should not be used as fill on any land that is not owned by the City.*

If the visual inspection shows staining, odors or other evidence of contaminants, the antiskid material must be tested to determine if it qualifies as clean fill. Testing must be in accordance with Appendix A of the Pennsylvania Department of Environmental Protection Management of Fill Policy (Document No. 258-2182-773). If testing reveals that the antiskid material contains regulated substances at concentrations that exceed the limits in Table FP-1a and FP-1b, the material may be managed as regulated fill, providing the person proposing to use the material obtains authorization under Waste Management General Permit WMGR096. Otherwise, the material must be disposed of at a permitted landfill.

All non-reusable debris that has been removed from the antiskid, as well as catch basin material, must be disposed of at a landfill.

Reuse Options for Screened Street Sweepings with Analytical Testing: In order to use street sweepings as fill in the following circumstances, the screened sweepings should be tested in accordance with Appendix A of the Pennsylvania Department of Environmental Protection Management of Fill Policy (Document No. 258-2182-773).
The analytical results should be compared to the direct exposure criteria established in Appendix A of the Pennsylvania Department of Environmental Protection Management of Fill Policy (Document No. 258-2182-773). If some samples exceed the applicable direct exposure criteria, the City should determine the average concentration at the 95% upper confidence limit, and compare the average to the appropriate criteria.

1. As Fill – Screened street sweepings may be used for fill material on an industrial or commercial property, provided the testing shows that concentrations or the average concentration is below the industrial/commercial direct exposure criteria established in Appendix A of the Management of Fill Policy (Document No. 258-2182-773) and provided the City obtains the permission of the owner of the property.
   Screened street sweeping will not be used as fill that could be easily exposed or is at the surface on residential property, public playgrounds, or recreational facilities, because broken glass of other sharp debris may be present. However, screened street sweepings may be used beneath a paved driveway or road and provided the City obtains the permission of the property owner

   Fill areas must be stabilized using appropriate erosion and sediment control techniques as described in the Pennsylvania Department of Environmental Protections Solid Waste Management Act.

The practice of using street sweepings as fill should also be coordinated with PA DEP, the town sanitarian, and other appropriate officials (local health department, water department or Water Company) to determine approximate locations of potable water supply wells and minimize risks to surface water resources. Fill should be placed only with the consent and permits required by the Pennsylvania Department of Environmental Protections applicable regulatory programs but in general, must be located as follows:

a) more than 100 feet from any wetland or watercourse;
b) more than 100 feet from any private potable water supply well;
c) more than 250 feet from any public potable water supply well; and
d) placed above the seasonal high ground water table.

2. For Spill Cleanups - Street sweepings that have been determined to be non-hazardous may be used as absorptive material to contain or to absorb hazardous materials in emergency situations. Following such use, the road cleanup material must be immediately handled in accordance with all requirements for hazardous materials. The road cleanup material cannot be permitted to wash into surface waters. If road cleanup materials are used in the form of embankments to contain larger spills, the road cleanup material must be stabilized to prevent surface water contamination, and be collected and managed appropriately as a contaminated material.

3. Disposal Options - Street sweepings that are contaminated will be disposed of at a permitted solid waste disposal facility. However, if the City finds that the analytical testing of screened street sweepings routinely averages only slightly more than the direct exposure criteria, the City should consult with the Pennsylvania Department of Environmental Protection about options for reducing the concentrations to acceptable levels.

Street Sweeping Sampling Procedures:

The City has implemented a street sweeping program to help reduce the amount of road debris entering the storm water basins that can lead to sediment and foreign debris entering our rivers and streams.

The following is the protocol that the City uses to sweep streets and record the pertinent information for street sweeping in order to report to the Department of Environmental Protection:

Street are swept 26-times a year in the MS4 Planning Areas. The operator records the mileage and street name of the streets swept on a Street Sweeping Tracking and Reporting Form.

Mileage is being recorded by entering the starting mileage of the sweeper and the ending mileage of the sweeper to give the most accurate total mileage that was swept on any given street.

The debris that is extracted from the streets is transported to the City's Public Works facility.

The debris is dumped on a covered concrete pad and the water is allowed to drain out of the debris upstream to a vegetated BMP.

The amount of debris is recorded by the operator using visual markers and logged onto his reporting form in cubic yards.

Street sweepings are reclaimed or disposed of at a permitted facility.

BEST MANAGEMENT PRACTICES FOR CATCH BASIN CLEANINGS

When to clean catch basins: The City developed and implemented a program to evaluate and, if necessary, clean catch basins and other storm water structures that accumulate sediment at least once a year, including a provision to identify and prioritize those structures that may require cleaning more than once a year. This task is a required condition of the "pollution prevention/good housekeeping for municipal operations" section in the development of a municipal storm water management plan as outlined in the MS4 Storm Water Permit. Late fall is an ideal routine time to clean basins - after the leaves have fallen and before the first snowfall. Then, another cleaning in the spring is helpful to remove the buildup of sand, leaves, and other debris that accumulated during the winter months. Areas which may contribute to higher pollutant loadings or which discharge to surface waters should be cleaned more frequently.

Catch Basin Evaluation: Before removing sediment and debris from a catch basin or other drainage structure, City staff should evaluate whether there is any contamination. The catch basin evaluation will aid in determining if waste should be handled as a hazardous waste.

If the City field personnel believe that a spill has occurred, it must be reported and cleaned up under procedures specified under MS4 MCM #6.

Management of catch basin cleanings:

The use of a Vactor truck is typical for cleaning catch basins. The contents of the truck can be divided into decant liquids and solids which require proper disposal.

Currently storm basin debris is decanted and disposed of at a local approved landfill

Catch Basin Sampling Procedures:

The City Storm Water Division has implemented a storm water catch basin cleaning program to help reduce the amount of debris entering the storm water basins that can lead to sediment and foreign debris entering our rivers and streams.

The following is the protocol that the City uses to clean storm water catch basins and record the pertinent information for basin cleaning in order to report to the Department of Environmental Protection on behalf of the municipalities we represent. (Attached)

Information including the latitude and longitude of each basins location, along with the size of the inlets entering and exiting each basin, and the pipe material providing the most accurate information that was compiled on any given basin.

Basins are cleaned on a monthly schedule. The operator records the pertinent information, including the actual amount of debris in pounds that is being removed from each basin, on a Storm Water Catch Basin and Inlet Inspection Form.

The debris that is extracted from the basins by any City owned Vactor Truck and is transported to the City's Public Work facility.

The debris is calculated by the operator and logged onto his reporting form in net pounds. The debris is calculated by draining all liquid in the debris tank onto a dump pad located on City property to be absorbed into a non-impervious area. The Vactor Truck will then be weighed on a scale. That weight will be recorded as the gross weight. The Vactor Truck will then be dumped on a covered concrete pad. The Vactor Truck will then be re-weighed and that weight will be recorded as the tare weight. Then the tare weight of the debris will be subtracted from the gross weight of the debris resulting in the net weight of the wet debris sample.

The debris is then collected in a one Liter plastic bottle. The bottle is then brought to the Public Works Building and weighed in pounds.

The wet weight of the sample is then recorded onto an excel spreadsheet along with the amount of debris in net pounds.

The sample is then put in a plastic pan and dried

The sample is then returned to the one Liter plastic bottle and reweighted the sample in pounds.

The dry weight is then entered on the excel spreadsheet as the dry weight along with the net pounds collected and recorded on the sheet using the same calculations as above.

A comparison is then observed and recorded as the variation in the two weights.

The dry weight is then divided by the wet weight giving the percentage of weight loss in that particular sample.

These sample weights are recorded on the aforementioned spreadsheet consisting of:

*Date

*Location

*Wet weight of the sample

*Dry weight of the sample

*Net weight of the wet debris (gross weight – tare weight)

*Weight of the accumulated debris in pounds (lbs.)

*Weight of the accumulated debris in tons

The credit for the catch basin Best Management Practice (BMP) will be based on a calculation which is comprised of the average wet weight for the reporting period multiplied by the average dry weight percentage from 30 samples to equal the dry weight pounds.

<u>For example:</u>

Total wet weight for the reporting period = 1000 lbs.

Average percentage of dry material (from 30 samples) = 0.77

1000 lbs. X 0.77 = 770 lbs.

This equals 770 pounds of credit for the Best Management Practice (BMP) on the City Pollutant Reduction Plan (PRP)

Contact Information

For questions concerning:

- Storage, Disposal and reuse of Street Sweeping and Catch Basin Cleanings: Pennsylvania Department of Environmental Protection
  Bureau of Waste Management
  Division of Municipal and Residual Waste
  717-787-7381
- Pollutant characteristics and testing:
  Kirby Memorial Health Center
  570-822-4278
- Spill Reporting and Cleanups (24 Hour Hotline):
  Pennsylvania Department of Environmental Protection
  Emergency Response Program
  1-800-541-2050

Street Sweeping and Catch Basin Crediting

Street sweeping calculation

- Impervious area of streets swept 26 times a year
230.43 acres

- Swept Street Area x Baseline Pollutant Load TSS (lbs/yr)
230.43 x 1305.05 = 300,728 lbs/yr

- Street Sweeping BMP effectiveness
9%

- Crediting calculation
300,728 lbs/yr x 0.09 = 27,065 lbs/yr

Catch basin calculation

- Estimated Dry Weight Collected per month in reporting period
= 500 lbs. per month collected

-Estimated reporting period dry weight
12 months of collections x 500 lbs. per month collected
= 6,000 lbs.

Total PRP Credit per Year

27,000 lbs. of credit for street sweeping + 6,000 lbs. credit for catch basin cleaning.

33,000 lbs.