MANHEIM BOROUGH CHESAPEAKE BAY POLLUTANT REDUCTION PLAN

PERMIT TERM (2018-2023)

Manheim Borough, Lancaster County

August 29, 2017

Revised: May 3, 2019

January 25, 2022

Lancaster Civil Engineer Company
P.O. Box 8792
Lancaster, PA 17601
bencraddock@lancastercivil.com
717-799-8599

In Collaboration with:

C.S. Davidson, Inc.
315 West James Street
Suite 102
Lancaster, PA 17603
717-481-2991

LandStudies, Inc.
315 North Street
Lititz, PA 17543
717-627-4440

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INTRODUCTION

INTRODUCTION

Manheim Borough consists of a 1.4 square mile area located approximately 8 miles north of Lancaster City in Lancaster County, PA. The population of the Borough was 4,858 at the 2010 census. The Borough was originally laid out in 1762 and incorporated in 1838. The Borough was established with a dense central business district, surrounded by residential development on all sides. The southern area of the Borough consists of commercial and industrial development.

All stormwater runoff from the Borough eventually reaches Chiques Creek. Some runoff reaches Chiques Creek through Rife Run, which flows around the western border of the Borough, while other areas are discharged directly to the creek. The flow from Chiques Creek drains to the Susquehanna River and ultimately the Chesapeake Bay.

To meet MS4 Permit Requirements, the Borough has elected to submit a Combined PRP to address local impaired waters (Permit Appendix E) and the Chesapeake Bay Watershed impairments (Permit Appendix D). The pollutant aggregation process has permitted us to combine all local watersheds into one large watershed encompassing the entire Borough. Through this process, the planning areas for the Appendix D and E pollution reduction plans are exactly the same.

This plan was prepared utilizing the guidelines outlined in the following Pennsylvania Department of Environmental Protection documents:

- 3800-PM-BCW0100k - National Pollutant Discharge Elimination Systems (NPDES) Stormwater Discharges from Small Municipal Separate Storm Sewer Systems Pollutant Reduction Plan (PRP) Instructions, last revised March 2017.

- 3800-PM-BCW0100m - National Pollutant Discharge Elimination Systems (NPDES) Stormwater Discharges from Small Municipal Separate Storm Sewer Systems BMP Effectiveness Values, last revised May 2016.

- Pollutant Aggregation Suggestions for MS4 Municipal Requirements Table, last revised May 9, 2017

- Pollution Reduction Plan: A Methodology

SECTION A
PUBLIC PARTICIPATION

SECTION A: PUBLIC PARTICIPATION

Manheim Borough provided a complete copy of this pollutant reduction plan for public review. A public notice describing the plan and inviting the public to review and issue written comments was published in the LNP, a daily newspaper in Lancaster County, on July 13, 2017. Additionally, a notice was posted on the Manhiem Borough website, http://manheimboro.org/, from July 14, 2017 to August 14, 2017. A copy of the proof on publication and a screen shot of the notice on the website are located in Appendix I and Appendix II, respectively.

Public comments were also solicited at regularly scheduled Borough Council meetings on July 25 and August 8, 2017 Borough Council Meeting.

Public comments were received for a period of 30 days from the date of the public notice. A summary of these written comments are attached to this document in Appendix III. Appendix III also contains the Borough's official response to these comments.

Since no public comments were received, the pollutant reduction plan was not revised.

SECTION B
MAPS

SECTION B: MAPS

Maps developed for the analysis required by this plan have been included in this section. The overall stormsheds map was utilized to designate the PRP planning area. Once the planning area was delineated, a land use map was developed for purposes of calculating the baseline pollution loading. This process will be covered in greater detail in Section D.

Mapping for all impaired watersheds have been included for reference even though the Borough will be aggregating these streams and utilizing the overall maps for pollutant reduction targets.

Summary of Maps Included:

- Manheim Borough Stormsheds (Overall)
- Manheim Borough Land Cover (Overall)
- Chiques Creek Stormsheds
- Chiques Creek Land Cover
- Rife Run Stormsheds
- Rife Run Land Cover
- UNT Chiques Creek Stormsheds
- UNT Chiques Creek Land Cover

MANHEIM BOROUGH
OVERALL STORMSHEDS

PENN TOWNSHIP

RAPHO TOWNSHIP

PENN TOWNSHIP

Rife Run

Chiques Creek

Manheim Veterans Memorial Park

Mumman Park

Logan Park

Baron Fields

Legend

- Stormwater Outfalls
- Stormwater Inlets
- Storm Manholes
- Observation Point
- Swale
- Stormwater Pipes
- Streams
- Manhiem Borough Stormsheds

0 500 1,000 2,000
Feet

C.S.Davidson, Inc.
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MANHEIM BOROUGH
OVERALL LAND COVER

PENN TOWNSHIP

RAPHO TOWNSHIP

PENN TOWNSHIP

Rife Run

Chiques Creek

Legend

- Stormwater Outfalls
- Stormwater Inlets
- Storm Manholes
- Observation Point
- Swale
- Stormwater Pipes
- Streams
- Manhiem Borough Stormsheds

Land Cover

- Barren
- Low Vegetation
- Other Impervious Surfaces
- Roads
- Structures
- Tree Canopy
- Water

0 500 1,000 2,000
Feet

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MANHEIM BOROUGH
CHIQUES CREEK STORMSHEDS

PENN TOWNSHIP

RAPHO TOWNSHIP

PENN TOWNSHIP

Legend

- Stormwater Outfalls
- Stormwater Inlets
- Storm Manholes
- Headwall/Endwall
- Swale
- Stormwater Pipes
- Streams
- Chiques Creek Stormsheds
- Basin

0 750 1,500 3,000
Feet

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MANHEIM BOROUGH
CHIQUES CREEK
LAND COVER

PENN TOWNSHIP

RAPHO TOWNSHIP

PENN TOWNSHIP

N

Legend

- Stormwater Outfalls
- Stormwater Inlets
- Storm Manholes
- Headwall/Endwall
- Swale
- Stormwater Pipes
- Streams
- Basin
- Chiques Creek Stormsheds

Land Cover

- Barren
- Low Vegetation
- Other Impervious Surfaces
- Roads
- Structures
- Tree Canopy
- Water

0 500 1,000 2,000 3,000

Feet

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MANHEIM BOROUGH
RIFE RUN STORMSHEDS

RAPHO TOWNSHIP

PENN TOWNSHIP

PENN TOWNSHIP

Legend

- Stormwater Outfalls
- Stormwater Inlets
- Storm Manholes
- Headwall/Endwall
- Observation Point
- Swale
- Stormwater Pipes
- Streams
- Rife Run Stormsheds
- Basin

0 625 1,250 2,500
Feet

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MANHEIM BOROUGH
RIFE RUN LAND COVER

RAPHO TOWNSHIP

PENN TOWNSHIP

PENN TOWNSHIP

Manheim Veterans Memorial Park

Logan Park

Rife Run

Chickies Creek

1-1
1-2
1-3
2-1
3-1
3-2
3-3
3-4
3-5
3-6
3-7
3-8
3-9
3-10
3-11
4-1
4-2
4-3
4-4
4-5
4-6
4-7
4-8
4-9
4-10

Legend

- Stormwater Outfalls
- Stormwater Inlets
- Storm Manholes
- Headwall/Endwall
- Observation Point
- Swale
- Stormwater Pipes
- Streams
- Basin
- Rife Run Stormsheds

Land Cover

- Barren
- Low Vegetation
- Other Impervious Surfaces
- Roads
- Structures
- Tree Canopy
- Water

0 300 600 1,200 1,800 2,400 Feet

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MANHEIM BOROUGH
UNT TO CHIQUES CREEK
STORMSHEDS

PENN TOWNSHIP

PENN TOWNSHIP

UNT to Chiques Creek

3-1
3-2
3-3
3-4
3-5
3-6
3-7
3-9
3-10
3-11
4-10

Legend

- Stormwater Outfalls
- Stormwater Inlets
- Storm Manholes
- Headwall/Endwall
- Swale
- Stormwater Pipes
- Streams
- UNT to Chiques Creek Stormsheds
- Basin

0 300 600 1,200
Feet

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MANHEIM BOROUGH
UNT TO CHIQUES CREEK
LAND COVER

PENN TOWNSHIP

PENN TOWNSHIP

UNT to Chiques Creek

3-1
3-2
3-3
3-4
3-5
3-6
3-7
3-9
3-10
3-11
4-10

N

Legend

- Stormwater Outfalls
- Stormwater Inlets
- Storm Manholes
- Headwall/Endwall
- Swale
- Stormwater Pipes
- Streams
- Basin
- UNT to Chiques Creek Stormsheds

Land Cover

- Barren
- Low Vegetation
- Other Impervious Surfaces
- Roads
- Structures
- Tree Canopy

0 300 600 1,200
Feet

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SECTION C
POLLUTANTS OF CONCERN

SECTION C: POLLUTANTS OF CONCERN

The pollutants of concern were determined by referencing both the Municipal MS4 Requirements Table and the Pollution Aggregation Table. Because there are three impaired streams within the planning area, that converge within the boundaries of the Borough, the Borough has elected to address the pollutants of concern for the overall PRP Planning Area instead of individually.

Municipal MS4 Requirements Table:

MANHEIM BORO	PAG133640	No		Chesapeake Bay Nutrients/Sediment	Appendix D-Nutrients, Siltation (4a)	
				Chiques Creek	Appendix E-Siltation (4a)	
				Rife Run	Appendix E-Siltation (4a)	
				Unnamed Tributaries to Chiques Creek	Appendix E-Nutrients (4a)	Cause Unknown (5)

Pollution Aggregation Table:

MANHEIM BORO	PAG133640	Lower Chickies Creek, Upper Chickies Creek	Chesapeake Bay Nutrients\Sediment, Chiques Creek, Rife Run, Unnamed Tributaries to Chiques Creek	Appendix D-Siltation/Nutrients, Appendix E-Nutrients, Siltation

Consistent with the guidance provided in the DEP pollutant reduction plans instruction document, an assumption can be made that meeting the sediment reduction goal for a given watershed will also result in achieving the nutrient reduction goal. As such, this PRP will focus on sediment as the main pollutant of concern.

SECTION D

EXISTING LOADING FOR POLLUTANTS OF CONCERN

SECTION D: EXISTING LOADING FOR POLLUTANTS OF CONCERN

The Borough elected to utilize the DEP Simplified Method for calculating the baseline pollution load applicable for this PRP. The land cover map for the overall planning area included in Section B provides the basis for the values in the below table. The Borough did utilize parsing to refine these values. All parks owned by the Borough were parsed into the planning area as these locations proved to provide the most opportunity for pollution reduction project. Conversely, all PennDOT state roads and sites with their own NPDES Permits were parsed out of the planning area. Properties belonging to Fenner Drives and FL Smith were the two sites that were parsed out as a result of having their own NPDES Permits. A copy of their permit information from DEP eFacts has been included in Appendix IV.

In addition to the baseline adjustments above, the Borough also took a baseline reduction credit for a floodplain restoration project that was completed in 2015 in Logan Park along Rife Run. Below is a summary of this project:

Description: The Rife Run restoration project at Logan Park include the restoration of 1,042lf of degraded and unstable stream and the associated floodplain between West High Street and the confluence with the Chiques Creek in the Borough of Manheim. The purpose of this project was to remove the legacy sediment and restore the floodplain to conditions that resemble as close of an approximation to pre-settlement conditions as reasonably possible. Benefits of the project included reduced sediment and nutrient loads to the Chiques Creek, restoration of aquatic and wetland habitat and native vegetation community, reduced flooding frequency on adjacent soccer fields, and educational and recreational opportunities for the community. A load reduction summary is included within Appendix IV.

Latitude/Longitude: 40° 9’25.1”, -76° 24’ 16.2”

Permit #: Waiver (DEP ref. EA36-031)

Date Installed: June- Sept. 2015

O&M: Annual Monitoring Reports are submitted to DEP and ACOE for a five year monitoring period, per the permit conditions; Manheim Borough has contracted LSI to conduct regular maintenance as needed to control invasive species.

Baseline Loading Calculation:

Land Cover	Area (ac)	TN lbs/yr	TP lbs/yr	TSS lbs/yr
Impervious Area	322.92	12,441.96	500.52	478,054.83
Non Impervious Area	308.33	6,857.16	116.25	58,868.57
Total	631.24	19,299.12	616.77	536,923.40
Reductions for Logan Park Project		-1,504.74	-292.99	-42,794.00
Adjusted Total		17,794.38	323.78	494,129.4

Required Reductions

TN lbs (3%)	TP lbs (5%)	TSS lbs (10%)
533.83	16.19	49,412.94

As stated previously in Sections B and C, the Borough will be focusing on the sediment loading of the entire planning area as its pollutant of concern and to meet both Appendix D and E permit requirements. As such, projects equating to the reduction of 49,412.94 pounds of sediment per year will demonstrate that the goals of this plan have been met.

Manheim Borough
Overall Watershed

Land Cover	Area (ac)	TN lbs/yr	TP lbs/yr	TSS lbs/yr
Impervious Area	444.19	17,114.64	688.49	657,592.20
Non Impervious Area	397.97	8,850.85	143.27	75,984.41
Total	842.16	25,965.49	831.76	733,576.61

Manheim Borough
Stormshed Watersheds and Parks

Land Cover	Area (ac)	TN lbs/yr	TP lbs/yr	TSS lbs/yr
Impervious Area	322.92	12,441.96	500.52	478,054.83
Non Impervious Area	308.33	6,857.16	116.25	58,868.57
Total	631.24	19,299.12	616.77	536,923.40

Required Reductions

TN lbs (3%)	TP lbs (5%)	TSS lbs (10%)
579	31	53,692

Rife Run
Overall Watershed

Land Cover	Area (ac)	TSS lbs/yr
Impervious Area	171.22	253,479.22
Non Impervious Area	113.58	21,685.83
Total	284.8	275,165.05

Rife Run
Sewershed & Parks Drainage

Land Cover	Area (ac)	TSS lbs/yr
Impervious Area	122.09	180753.03
Non Impervious Area	94.63	18067.26
Total	216.72	198,820.29

Required Reductions

TSS lbs (10%)
19,882.0

Chiques Creek
Overall Watershed

Land Cover	Area (ac)	TSS lbs/yr
Impervious Area	248.53	367,931.27
Non Impervious Area	252.18	48,148.73
Total	500.71	416,080.00

Chiques Creek
Sewershed & Parks Drainage Areas

Land Cover	Area (ac)	TSS lbs/yr
Impervious Area	177.96	263461.05
Non Impervious Area	185.40	35397.71
Total	363.36	298,858.75

Required Reductions

TSS lbs (10%)
29,885.9

Unnamed Tributary to Chiques Creek
Overall Watershed

Land Cover	Area (ac)	TSS lbs/yr
Impervious Area	24.44	36,181.71
Non Impervious Area	32.21	6,149.86
Total	56.65	42,331.56

Unnamed Tributary to Chiques Creek
Sewershed Drainage Areas

Land Cover	Area (ac)	TSS lbs/yr
Impervious Area	23.31	34,508.82
Non Impervious Area	27.85	5,317.40
Total	51.16	39,826.22

Required Reductions

TSS lbs (10%)
3,982.6

SECTION E

BMPS TO ACHIEVE THE MINIMUM REQUIRED REDUCTIONS

SECTION E: BMPS TO ACHIEVE THE MINIMUM REQUIRED REDUCTIONS

The Borough has chosen to pursue one large project to meet the 49,412.94 pounds of sediment per year required reduction. The section of Chiques Creek that runs through the Borough's Memorial Park presents an excellent opportunity for a floodplain restoration project. The entire proposed project would extend for approximately 2,880 linear feet.

For pollutant reduction calculations, the DEP Simplified Method was utilized to remain consistent with how the baseline loading was determined. Values for Stream Restoration were utilized for calculating the pollutant removal efficiency.

BMP Effectiveness Values Table:

BMP Name	BMP Effectiveness Values			BMP Description
	TN	TP	Sediment	
Stream Restoration	0.075 lbs/ft/yr	0.068 lbs/ft/yr	44.88 lbs/ft/yr	An annual mass nutrient and sediment reduction credit for qualifying stream restoration practices that prevent channel or bank erosion that otherwise would be delivered downstream from an actively enlarging or incising urban stream. Applies to 0 to 3rd order streams that are not tidally influenced. If one of the protocols is cited and pounds are reported, then the mass reduction is received for the protocol.

2,880 linear feet X 44.88 pounds/foot/year = 129,254.44 pounds/foot/year

129,254.44 pounds/foot/year reduction > 49,412.94 pounds/foot/year required reduction

The above calculation demonstrates that completing the Memorial Park stream restoration will be adequate to meet and exceed pollution reduction requirements. The Borough intends to utilize any reductions completed over and above these permit requirements to meet reduction requirements of future permits.

Additionally, the stream restoration included nine (9) acres of riparian buffer which added another annual sediment reduction of 1,921 pounds of sediment for a total sediment reduction of 130,973 pounds of sediment per year. This project, will in fact, achieve up to 265% of the Borough's required reduction.

Please see Appendix IV for the sediment reduction calculations.

MANHEIM BOROUGH
PROJECT LOCATIONS

Memorial Park
(Proposed Project)

PENN TOWNSHIP

RAPHO TOWNSHIP

PENN TOWNSHIP

Logan Park
(Baseline Reduction)

Legend

- Stream Restoration Areas
- Streams
- Non Planning Areas
- Manheim Borough

0 500 1,000 2,000
Feet

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Chiques Creek Floodplain Restoration
At Memorial Park
Manheim Borough PRP
June 2, 2017

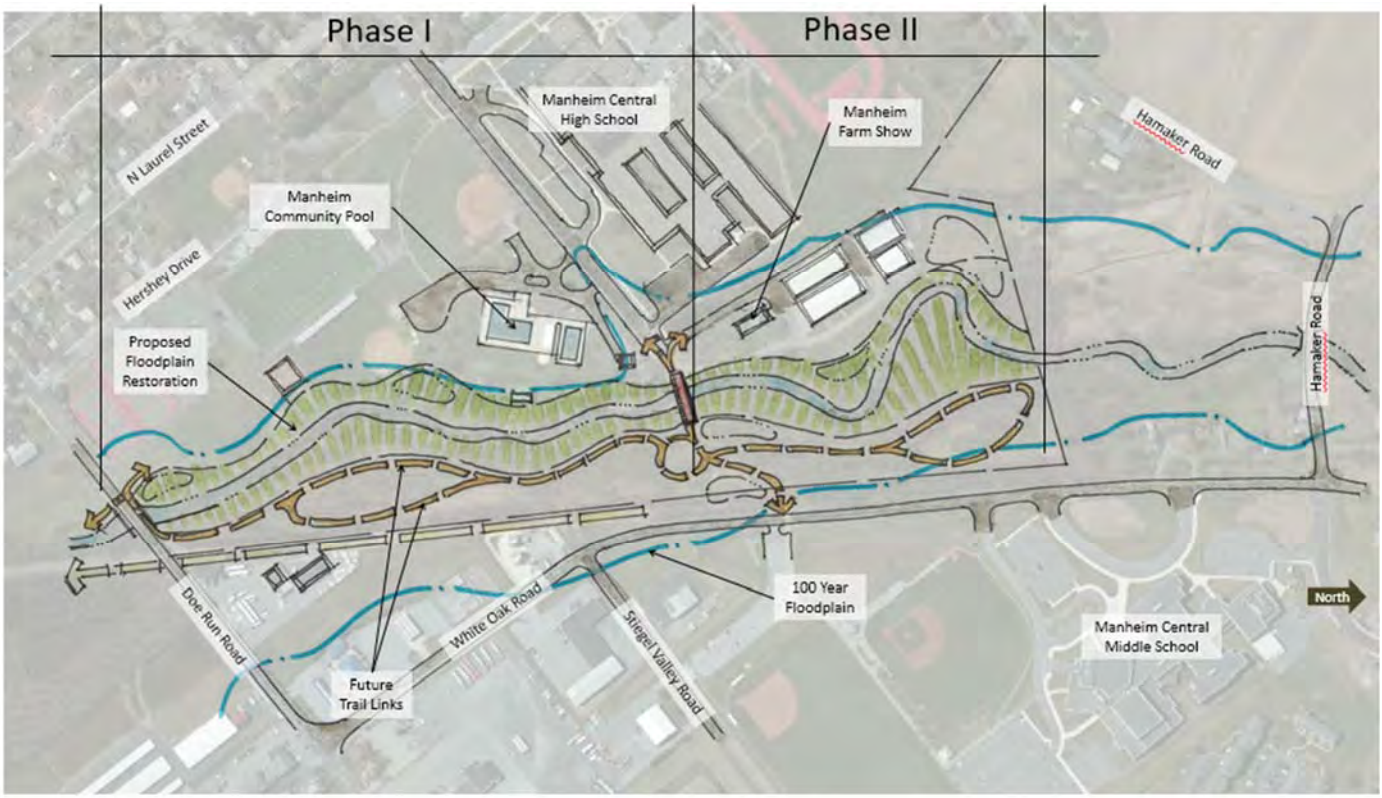
Project Description

The proposed Chiques Creek Floodplain Restoration at Memorial Park would extend approximately 3040 feet from High Street upstream to the Borough line. Average restoration width would be 125 to 175 feet. The existing covered bridge would remain and the remnant dam at the downstream end would be removed. In addition to eliminating the current bank erosion as s source of sediment to the Chiques Creek, the restored floodplain would filter runoff from the school and farm show campuses as well as treating runoff from upstream in the watershed. In addition, a marginal amount of additional flood storage would be created, and recreational and educational opportunities would be created. Additional water quality BMPs shown on the concept plan below can be added at a later time for additional water quality benefits. The project could be completed in two phases, as shown on the plan, below.

Project Data

Length: 3,040 feet
Sediment Reduction: 136,435 lb/yr
Fraction of PRP Load reduction target: =287%
Estimated Cost: $1,520,000 **
Estimated Annual Maintenance Cost: $18,240***

*Load reduction based on Protocol 1 of the Recommendation of the Expert Panel to Define removal Rates for Urban Stream Restoration Projects. Schueler and Stack, 2014. Additional reductions from Protocol 3 are anticipated based on the final design.
**Design, Permitting, and Construction Cost Based on Average Unit Cost of $500/ lf)
***Annual maintenance cost based on $6.00/ lf; Maintenance costs are typically higher for the first 3-5 years following construction and significantly lower for subsequent years



SECTION F
FUNDING MECHANISMS

SECTION F: FUNDING MECHANISMS

The cost estimate to complete the entire Memorial Park project is $1,520,000 which includes engineering, design, and permitting. The cost to accomplish a 10% sediment reduction during the 2018-2023 permit cycle is estimated to be approximately $530,500 for 1,102 linear feet. During the design and permitting of this BMP, the Borough may elect to extend the scope of Phase 1 to provide reductions over and above the 10% requirement for the 2018-2023 permit cycle. This is provided that these reductions are fully credited toward future permit(s) as described in Section E. The cost to only complete the minimum reduction breaks down to approximately $106,000 per year over the five year permit.

The Borough does plan to explore grant opportunities to help defray this cost. In the event grant funding is not available, the Borough plans to use money from a combination of its General Fund Balance and its Capital Reserve Account to fund the project.

SECTION G

BMP OPERATION AND MAINTENANCE (O&M)

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

The long term operation and maintenance of the proposed Memorial Park floodplain restoration project will be the responsibility of the Borough. The Borough will perform biannual inspections for the first three years and annual inspections for subsequent years. Additional inspections should occur following large storm events.

The project will experience a five year initial monitoring period to ensure proper vegetation and stability in addition to ensuring invasive species are not established. Following the initial five year monitoring period, a regular maintenance plan will be followed. The following normal Operations and Maintenance of the project will be required to allow the system to develop into and maintain its full ecological potential:

- Avoid encroachment into the proposed floodplain area. Encroachments will detract from the functions and services of the wetlands and stream system.

- Manage any invasive species that may try to out-compete the proposed native riparian planting community until viable successional processes can naturally be sustained. Invasive species control should be implemented at a minimum one time per year using the appropriate methods described below based on site conditions.

- Visually inspect the floodplain and channel. Appropriate corrective measures shall be identified by a qualified professional to address any noted instabilities. The Owner shall be responsible for any necessary corrective measures.

SECTION H

PRP AMENDMENTS

SECTION H: AMENDMENTS

From time to time amendments will need to be made to the Borough's Pollutant Reduction Plan. Amendments to the plan will be identified below:

- May, 2019
  The PRP was amended to reflect comments from DEP's review.

- January, 2022
  The PRP was amended to reflect completion of the entire Memorial Park stream restoration at a total of 2,880 linear feet, 9-acres of riparian buffer, and 130,973 lbs. of sediment removal per year.

  The initial PRP detailed the stream restoration project being completed in phases with the first phase equaling 1,102 linear feet and a sediment reduction of 49,412.94 pounds. Additional funding had been secured allowing completion of the entire project. Please see the revised calculations in the Appendix IV

APPENDIX I

PROOF OF PUBLICATION

Invoice No. 3801034

PROOF OF PUBLICATION NOTICE IN

State of Pennsylvania}
} ss:
County of Lancaster}

An Affiant of the County and State aforesaid, being duly sworn, deposes and says that the LNP, a daily newspaper of general circulation published at Lancaster, County and State aforesaid, was established 1794-1877 since which date said daily newspaper has been regularly issued in said county, and that a copy of the printed notice or publication is attached hereto exactly the same as was printed and published in the regular editions and issues of said daily newspaper on the following dates:

13TH DAY OF JULY 2017

Affiant further deposes that he/she is the Clerk duly authorized by the LNP Media Group, Inc., a corporation, publisher of said LNP, a newspaper of general circulation, to verify the foregoing statement under oath, and also declares that affiant is not interested in the subject matter of the aforesaid notice or advertisement and that all allegations in the foregoing statement as to time, place and character of publication are true.

PUBLIC NOTICE
Manheim Borough has created a Pollutant Reduction Plan (PRP) to meet the requirements of its Municipal Separate Storm Sewer (MS4) permit with the Department of Environmental Protection (DEP). The PRP includes estimates of the existing pollutants that are discharged to Borough streams and the reductions that are required by DEP. The plan also identifies proposed stormwater improvements needed to meet these pollutant reduction requirements. Possible funding sources and ongoing operation and maintenance responsibilities for the proposed stormwater improvements are included in the PRP. A draft of the PRP will be available for public inspection at the Borough office located at 15 E. High Street, Manheim, Mondays through Thursdays between the hours of 8 am and 5 pm and Fridays between the hours of 8 am and 1:30 pm. A copy is also available at manheimboro.org. The public review period will begin on July 14, 2017, and will continue for 30 days until August 14, 2017. During this period, comments must be submitted in writing to the Borough office or via email to JimFisher@ManheimBoro.org. Comments can also be made during the public comment period at the July 25, 2017, and August 8, 2017, Borough Council meetings, at the Borough office at 7 pm. All comments will be considered by the Manheim Borough Council at a public meeting on August 20, 2017.

Penny R Hoff
(Affiant's Signature)

COPY OF NOTICE OF PUBLICATION

Sworn and subscribed to before me this
13TH DAY OF JULY 2017

Jeffrey J. Hollinger
Notary Public

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
Jeffrey J. Hollinger, Notary Public
City of Lancaster, Lancaster County
My Commission Expires June 10, 2021
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

Welcome to Manheim Borough

Welcome

- Current Projects
- FAQs
- Employment
- Payments
- Community Links
- Manheim Central School District Construction Updates
- Election Info
- Manheim Community Pool
- Stormwater Management

Stormwater Management

Click Here

>> 2017-07-07 PRP Plan – DRAFT

(note, document is large and may take time to fully load)

>> Manheim PRP public notice

for Manheim Borough's Chesapeake Bay Pollutant Reduction Plan and Notice, as required by the Pennsylvania Department of Environmental Protection in order to meet the terms of the 2018-2023 MS4 Permit Cycle.

Storm Water Management

Public Information

Welcome to Stormwater Management Information page. This page is designed to provide Borough residents and property owners with quick access to information and resources to preserve and protect our water in the Borough and the Lancaster County regional community. Manheim Borough is actively involved in a variety of programs and initiatives to meet various Statewide and National goals for clean water.

As this communities knows, heavy rains can cause serious problems for this community. In 2011, Tropical Storm Lee caused widespread flooding in this community. Over the years, other smaller storms have caused property damage and flooding of our roads, bridges, parks, and homes.

We all have a role to play to protect this community from the impacts of the rain. Stormwater originates from rainfall and other precipitation that runs off of surfaces all over the Borough – rooftops, streets,

FOLLOW US ON twitter

Upcoming Events

September 5, 2017

Committee Meeting at 6:30 pm

September 11, 2017

Boro Planning Commission Mtg at 7:00 pm

Historic Commission at 7:00 pm

September 12, 2017

Committee Meeting at 5:30 pm

Borough Council Meeting at 7:00 pm

September 14, 2017

MAWSA at 7:00 pm

September 26, 2017

Committee Meeting at 5:30 pm

Borough Council Meeting at 7:00 pm

October 2, 2017

APPENDIX II

LOGAN PARK LOAD REDUCTION SUMMARY

Rife Run FPR at Logan Park
Load Reduction Summary

Load Reduction Method	Nitrogen (lb/yr)	Phosphorus (lb/yr)	Sediment (lb/yr)
Protocol 1	707.2	290.7	235,731
Protocol 2	748.2	N/A	N/A
Protocol 3	49.4	2.3	702.4
Total	1,504.74	292.99	236,433
Adjusted Load Reduction (SDR=0.181)			42,794 lb/ yr

Protocol #1 - Bank Erosion Prevention Nutrient and Sediment Load Reductions				
		N (lb/T) *	P (lb/T)*	Sediment (lb/yr/ft of reach)**
Existing Loading Rate	On-site	6.0	2.47	456.4
Restored Reach Length	On-site	1,033	lf	
Reduction for Site (Current Annual Yield, lb/yr)		N***	P***	Sediment****
	On-site	1414.4	581.5	471,461
	Total (lb/yr)	1414.4	581.5	471,461
	Load Credited †(lb/yr) =	707.2	290.7	235,731

* Nitrogen Concentrations determined from soil test results; Phosphorus concentrations based on data from CBP 2014

**Sediment Loading Rate determined from BANCS assessent

***N and P Yields = Nutrient Concentration x Total Sediment Yield

****Annual Sediment Yield = Sediment Loading Rate x Reach Length

† Load Credited based on 50% reduction factor, as prescribed in CBP 2014

Protocol #2 - Base Flow Reductions in Hyporheic Zone Nutrient Load Reductions		
Length of Stream Reconnected to Floodplain	1,033	ft
Estimated Channel Width	13	ft
Additional Width of Hyporheic Zone	65	ft
Assumed Depth of Hyporheic Zone	2	ft
Hyporheic Box Volume	161,148	cf
Bulk Density of Soil	96	lb/cf
Hyporheic Exchange Rate	2.65.E-04	lb/day/ton
TN Credit	**748.18**	**lb/yr**

Protocol #3 - Storm Flow Floodplain Reconnection Nutrient and Sediment Load Reductions				
TN				
Annual Loads	Impervious	Pervious	Total	
lb/ ac/yr*	27.5	21.6		
lb/ yr	4,360.58	86,707.45	91,068.02	
		Annual Reduction**=	1107.70	
		Adjusted Annual Reduction* **	**49.38**	lb

TP				
Annual Loads	Impervious	Pervious	Total	
lb/ ac/yr*	2.05	0.61		
lb/ yr	325.06	2,448.68	2,773.74	
		Annual Reduction**=	50.61	
		Adjusted Annual Reduction* **	**2.26**	lb

TSS				
Annual Loads	Impervious	Pervious	Total	
lb/ ac/yr*	1816	251		
lb/ yr	287,956.58	1,007,572.63	1,295,529.22	
		Annual Reduction**=	15,758.14	
		Adjusted Annual Reduction* **	**702.41**	lb

* Annual loading from Edge of Stream Unit Loading Rates provided By CBWM v. 5.3.2

** Annual Reductions = Total Annual Load * % Removal

*** Adjusted annual reduction = Annual reduction * adjustment factor based on ratio of project size to watershed

APPENDIX III

NPDES PERMITS FOR INDUSTRIAL SITES PARSED OUT OF BASELINE

eFACTS on the Web
DEP Information
About DEP
Contact Us
DEP Home
Search eFACTS
Authorization Search
Client Search
Facility Search
Inspection Search
Mammography Search
Name Search
Pollution Prevention
Sites by County/Municipality
Site Search
Reports
Emission Summary
Facility Emissions
Other Sites
eMapPA
eNotice
EPA ECHO
EPA Envirofacts
Permits, Licensing, and Certification
The PA Code

Facility Search Details

Facility ID:	240968
Facility Name:	FL SMIDTH
Address:	236 SOUTH CHERRY ST MANHEIM, PA 17545 Manheim Borough, Lancaster County
Status:	Active
Program:	Clean Water

Facility Search Sub-Facility Details

Sub Facility Name	Type:	Other ID:	Status:	eMap PA Location:
COOL WATER DISCH-CHICKIES CR	Discharge Point	001	Active	View Map in eMapPa
COOLING WATER	Production Service Unit	00005824	Active	
STORMWATER	Discharge Point	002	Active	View Map in eMapPa

Facility Search Permit Details

Authorization	Status:	Permit Number:	Date Received:
NPDES Pmt Industrial Wastewater Discharge Minor (13508)	Issued	PA0010227	01/06/1998
NPDES Pmt Industrial Wastewater Discharge Minor (497968)	Issued	PA0010227	03/24/2003
NPDES Pmt Industrial Wastewater Discharge Minor (724565)	Issued	PA0010227	05/12/2008
Minor IW Facility with ELG (1021292)	Pending	PA0010227	04/07/2014

Facility Search Inspection Details

Inspection Type	Inspection Date	Result
Routine/Complete Inspection (9210)	01/20/1998	No Violations Noted
Routine/Complete Inspection (891238)	09/08/1999	No Violations Noted
Routine/Complete Inspection (999351)	01/29/2001	No Violations Noted
Routine/Complete Inspection (1079857)	11/27/2001	No Violations Noted
Routine/Complete Inspection (1176227)	10/08/2002	No Violations Noted
Routine/Partial Inspection (1265884)	08/26/2003	No Violations Noted
Routine/Complete Inspection (1306711)	02/10/2004	No Violations Noted
Follow-up Inspection (1344407)	06/15/2004	No Violations Noted
Administrative/File Review (1386499)	10/15/2004	Recurring Violations

<< < 1 of 2 Go > >> (18 records, 9 per page)

Facility Search Tank Remediation

No records matched the criteria.

Corrective Action/Tank Closure requirements remain outstanding for incidents in Inactive status.

Facility Search Land Recycling Information

No records matched the criteria.

Facility Search Air Emissions

No records matched the criteria.

APPENDIX IV

MEMORIAL PARK STREAM RESTORATION SEDIMENT REDUCTION CALCULATIONS

Manheim Borough
12/15/21

Chiques Creek Restoration- Pollutant Reduction Credits

Chiques Creek Stream Restoration - 2,880 LF

Pollutant	Distance (Feet)	BMP Effectiveness Values (lbs/ft/year)	Pollutant Reduction Credit (lbs/year)
Sediment	2,880	44.88	129,254
Phosphorus	2,880	0.068	196
Nitrogen	2,880	0.075	216

Chiques Creek Riparian Buffer - 9 acres

Pollutant	Buffer Area (Acres)	Loading Ratio (Expert Panel Recommendations)	Area Treated (Acres)	Pollutant Loading Rate- Pervious Developed (lbs/acre)	Existing Pollutant Load (lbs/year)	BMP Effectiveness Values	Pollutant Reduction Credit (lbs/year)
Sediment	9	2	18	190.93	3436.74	50%	1,718
Phosphorus	9	2	18	0.36	6.48	50%	3
Nitrogen	9	4	36	22.24	800.64	25%	200

Total Reduction Credits

Sediment	130,973	lbs/year
Phosphorus	199	lbs/year
Nitrogen	416	lbs/year