

CHESTER HEIGHTS BOROUGH

MS4

POLLUTANT REDUCTION PLAN

August 1, 2017

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Borough Engineer

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BACKGROUND

The stormwater requirements of the Federal Clean Water Act are administered under the Pennsylvania Department of Environmental Protection's Municipal Separate Storm Sewer (MS4) Program. Polluted storm water run-off is often transported to municipal separate storm sewer systems (MS-4's) and ultimately discharged into local rivers and streams without treatment. In 1990, the Environmental Protection Agency (EPA) promulgated rules establishing Phase I of the National Pollutant Discharge Elimination System (NPDES) stormwater program. The Phase I program for MS4's requires operators of "medium" and "large" MS4s (those MS4s that generally serve populations of 100,000 or greater), to implement a stormwater management program as a means to control polluted discharges from these MS4s. The Stormwater Phase II Rule extends coverage of the NPDES stormwater program to certain "small" MS4s but takes a slightly different approach to how the stormwater management program is developed and implemented.

The EPA's Stormwater Phase II Rule establishes an MS4 stormwater management program that is intended to improve the Nation's waterways by reducing the quantity of pollutants that stormwater picks up and carries into storm sewers during storm events. Common pollutants include oil and grease from roadways, pesticides from lawns, sediment from construction sites, carelessly discarded trash, and other illicit discharges. When deposited into nearby waterways through MS4 discharges, these pollutants can impair waterways, thereby discouraging recreational use of the resource, contaminating drinking water supplies, and interfering with the habitat for fish, other aquatic organisms, and wildlife.

In December 2002, DEP issued a General Permit for use by MS4s that fall under the National Pollutant Discharge Elimination System (NPDES) Phase II program, requiring the implementation of a stormwater management program for minimizing the impacts from runoff. Under the MS4 Program, permittees (including Chester Heights Borough), are required to incorporate the following six elements (known as minimum control measures, or MCMs) into their stormwater management programs:

- Public education and outreach
 - Develop, implement and maintain a written Public Education and Outreach Program
 - Develop and maintain lists of target audience groups
 - Annually publish at least one educational item on the SWM Program
 - Distribute Stormwater Educational Materials to the Target Audiences
- Public involvement and participation

- Develop, Implement and maintain a Written Public Involvement and Participation Plan (PIPP)
- Public comment on any ordinance changes
- Regularly solicit public involvement and participation from the Target audience groups
- Illicit discharge detection and elimination
 - Develop and maintain a written program for the detection, elimination, and prevention of illicit discharges
 - Develop and maintain a map of the regulated MS4 area.
 - Up-date map to show roads, inlets, storm sewers, basins, etc
 - Outfall Screening
 - Enact SWM Ordinance
 - Provide Educational Outreach to Public Employees, Business Owners and Employees, Property Owners, the general public, and elected officials about the program to detect and eliminate illicit discharges
- Construction site runoff control
 - Develop program for construction storm water permitting, construction inspections, and enforcement of installation and maintenance of the necessary E/S controls
 - Enact, implement, and enforce an Ordinance for E/S implementation.
 - Implement requirements to control waste at construction sites
 - Implement Procedures for receipt and consideration of public inquiries and concerns.
- Post-construction stormwater management in new development and redevelopment
 - Develop written procedures for storm water BMP's
 - Select BMP's that minimize water quality impacts
 - Insure BMP installation
 - Post-Construction SWM requirements
 - Low Impact Design
 - Operation and Maintenance issues
- Pollution prevention and good housekeeping for municipal operations and maintenance

- Inventory facilities and activities
- Develop, implement, and maintain O&M program for Municipal Operations and Facilities
- Employee Training Program

Each MCM has a series of suggested best management practices (BMPs) associated with it to guide permit holders in program development, tracking, and reporting. Pennsylvania has close to 1,000 jurisdictions that are considered small municipal separate stormwater systems (MS4s).

During next five-year permitting period starting in March 2018, if there are impaired streams in a Municipality, the Municipality must reduce sediment pollution loads by 10% over a five year period. In order to achieve this goal the Municipality must develop a Pollutant Reduction Program (PRP). The PRP Program is to be developed by the Municipality and approved by PaDEP. The PRP must include the following information:

- Accurate Map of the municipality's Storm Sewer Shed
- Determine the area and land use types in the Storm Sewer Shed
- Determine the sediment loading in the Storm Sewer Shed
- Establish the 10% reduction value of the sediment loading
- Develop and fund a program to meet the 10% reduction
- Physical work will need to be accomplished – stream bank stabilization, retro-fit SWM Basins, installation of the SWM Facilities, Tree planting, etc.

More specifically, the PRP shall contain the following:

A. Public Participation

1. The PRP shall be made available for public review.
2. A Public Notice shall be published in a newspaper of general circulation concerning the PRP – where it can be viewed, comment period, etc.
3. Public comments concerning the PRP shall be received by the municipality

B. Map

1. A Map that identifies land uses and/or impervious/pervious surfaces and the storm sewer shed boundary associated with each MS4 that discharges to an impaired waterway.

C. Pollutants of Concern

1. The pollutants of concern for each storm sewershed or the overall PRP Planning Area shall be identified.

D. Determine Existing Loading for Pollutants of Concern

1. Calculations are to be provided to determine the existing loading, in lbs per year, for the pollutant(s) of concern in the PRP Planning Area.

E. BMPs to Achieve the Minimum Required Reductions in Pollutant Loading

1. The municipality must propose the implementation of BMP(s) or land use changes within the PRP Planning Area that will result in meeting the minimum required reductions in pollutant loading within the planning area.

F. Identify the Funding Mechanism

G. Identify Responsible Parties for the Operation and Maintenance (O&M) of the BMPs

The requirements of the MS4 program including the Pollution Reduction program is an unfunded mandate meaning the municipality must fund the expenses related to the MS4 program

A. PUBLIC PARTICIPATION

Copies of the Chester Heights Borough Pollution Reduction Plan (PRP) are available at the Chester Heights Municipal Office located at 222 Llewelyn Road, Chester Heights, PA. A public notice containing a statement describing the PRP was published in the Delaware County Times on 11 August, 2017. A copy of the proof of publication is attached in Appendix 'A'. Comments concerning the PRP were accepted for a period of 30 days from the date of the public notice. Copies of written comments are included in Appendix 'B' of this report. Chester Heights Borough record of consideration is included in Appendix 'C' of this report.

B. PRP MAP

A Storm Sewershed map for Chester Heights Borough is included in Appendix 'H' of this report. The Storm Sewershed Map illustrates the existing road system within the Borough and also the

residential and commercial developments within the Borough. The storm sewer shed drainage areas to all Borough Roads and Drainage Facilities have been delineated on the Storm Sewershed Map.

The northerly 2/3 of Chester Heights Borough is located in the Chester Creek Watershed, and the southerly third is located in the West Branch Chester Creek Watershed. Chester Heights Borough is primarily a residential community with commercial areas located along Baltimore Pike and Smithbridge Road. The typical residential lot size in the Borough is one acre.

There are several private large residential communities located within the Borough:

- Valleybrook Townhomes
- Darlington Woods PRD
- Madison at Glen Mills Apartments
- Hamanasset
- Brookefield Townhouses (under construction)

These private communities own and maintain their streets and are therefore not part of the MS4 program.

The State Highways located within the Borough include:

- Baltimore Pike
- Valleybrook Road
- Wawa Road
- Smithbridge Road
- Ivy Mill Road
- Stoney Bank Road (municipal border with Concord Township)
- Bodley Road (municipal border with Aston Township)
- Lenni Road (municipal border with Aston Township)
- Darlington Road

The above State Highways are not part of the Borough MS4.

The residential subdivisions with Borough owned and maintained streets include the following:

1. Rochford Estates
 - a. Willits Way
2. Scots Knoll
 - a. Heather Lane
3. Old Ivy
 - a. Ivy Lane
 - b. Mildred Lane

4. Summit Lane
5. Logtown
 - a. Logtown Drive
6. Highlands
 - a. Highland Drive
 - b. Thistle Lane
 - c. Bonnie Lane
7. Rolling Heights Estates
 - a. Rolling Heights Lane
 - b. Wilson Circle

C. POLLUTANTS OF CONCERN

The identified pollutants of concern for both the Chester Creek and the West Branch of the Chester Creek are 1) Urban Run-off, and 2) Siltation.

D. EXISTING LOADING OF POLLUTANTS OF CONCERN

A table for the determination of the Sediment Loading (lbs/yr) has been included in Appendix 'D'. The Sediment Loading was determined by the following method:

1. Determine the storm sewershed for each Borough Road and Borough Drainage Facility.
2. The Drainage Area is shown on the Borough Storm Sewershed Map that contains LIDAR Topographic Information.
3. The Area of each storm sewershed is calculated and included on the CHB PRP Sediment Loading Table.
4. The impervious cover in each storm sewershed is established by determining the 1) length and width of road surfaces in the storm sewershed; 2) the number of buildings and approximate building footprint in the storm sewershed; 3) measuring the length of driveways or private lanes in the storm sewershed; and 4) providing an allowance for miscellaneous impervious surface.
5. The sediment loading values for Delaware County provided by PaDEP were used – 1,839 lbs/acre/year for impervious surfaces and 265 lbs/acre/year for pervious surfaces.
6. The loading for the storm sewersheds for each development/borough road was determined by taking the drainage area and then multiplying by the percent impervious cover x 1839 lbs/year/ac and also the percent pervious cover x 265 lbs/year/acre. The loading for the individual development/road storm sewersheds were then summed to

provide the sediment loading for the Chester Creek Watershed and the West Branch Chester Creek Watershed.

7. The sediment loading is included on the Chester Heights Borough PRP Work Sheet included in Appendix 'D'

E. BMPs for REQUIRED REDUCTIONS IN POLLUTANT LOADING

West Branch Chester Creek

In the West Branch Chester Creek Storm Shed within Chester Heights Borough, there are three Developments served by Borough Roads; namely, Rochford Estates, Scots Knoll, and Old Ivy.

The Rochford Estates Development was constructed in the late 1990's. A Storm Water Management Basin was provided in the Development for storm water rate control. The basin is available for retro-fit from a dry detention basin to a dry extended basin for a net BMP Effectiveness ratio benefit of 50%. Portions of the storm water management basin are located on individual lots. The Borough would be required to seek permission from the Development HOA and the individual property owners where the basin is located in order to retro-fit the existing SWM basin. The retrofit would meet the 10% reduction requirement for the entire West Branch Chester Creek Storm Sewershed.

If permission is not readily obtainable to gain access for the retrofit of the SWM Basin in the Rochford Estates Development, then the second alternative is to stabilize the outfall of storm sewers in the Scots Knoll Development (Heather Lane). The Scots Knoll Development was constructed in the late 1970s. The Development contains no Storm Water Management Basins. Storm Sewers are limited to the low points of the Road. There are two storm sewer outfalls for the development. Excessive soil erosion is evident at each outfall. Appendix 'E' contains photographs of eroded channels that were created by the discharge of the storm sewer system in the development. By calculating the soil loss based on eroded channel geometry and dividing by the age of the development, and average sediment loading can be calculated. The stabilization of these eroded channels can easily meet the 10% reduction requirements in the West Branch Chester Creek Storm Sewershed.

The remaining development in the West Branch Storm Sewershed is the 'Old Ivy' Development that was constructed in the 1950s – 1960s. This Development has no SWM Basins, the amount of storm sewer was limited to low points of the roads, and there is no nearby municipal owned land. There is little or no opportunity for the installation of BMPs without significant burden being placed on existing landowners.

In summary for the West Branch Chester Creek Storm Sewershed, the alternatives for obtaining the 10% reduction in sediment loading is either retro-fitting the SWB at the Rochford Estates Development, or stabilizing eroded channels in the Scots Knoll Development. The Pollutant Reduction Calculations are included in Appendix 'F' of this report. The decision on which method to proceed will be made during the first year of the five year permitting period with plans, specifications and installation to follow in subsequent years.

Chester Creek Storm Sewershed

In the Chester Creek Storm Sewershed, there are located six Developments served by Municipal Roads; namely, Rolling Heights Estates, Summit Lane, Logtown, The Highlands, and Walnut Hill Boulevard.

The Rolling Heights Development was constructed in the late 1980's. Storm Water Management Basins were provided in the Development for storm water rate control. The basin is available for retro-fit from a dry detention basin to a dry extended basin for a net BMP Effectiveness ratio benefit of 50%. The SWM Basin is located in the community open space which may allow for an easy process to obtain access rights to retro-fit the basin. The retrofit would meet the 10% reduction requirement for the entire Chester Creek Storm Sewershed.

The Summit Lane Development was constructed in the 1970s. This Development has no SWM Basin, there are no storm sewers, and there is no nearby municipal owned land. There is little or no opportunity for the installation of BMPs without significant burden being placed on existing landowners.

The Logtown Development was constructed in the late 1970s. There are no SWM basins in the Development, nor is there any common open space. There are two storm sewer outfalls in the development that have created eroded channels. The stabilization of the eroded channels would be a significant step in achieving the 10% sediment reduction for the Chester Creek Storm Sewershed. Access to the eroded channels may be a problem that the Borough would need to acquire access rights.

The Highlands Development was constructed in the late 1980's. Storm Water Management Basins were provided in the Development for storm water rate control. Three SWM basins are located within the development. Basins # 1 and #3 are partially located on individual lots. Basin #2 is located within community open space. The basins are available for retro-fit from a dry detention basin to a dry extended basin for a net BMP Effectiveness ratio benefit of 50%. The Borough would be required to seek permission from the Development HOA and the individual property owners where the basin is located in order to retro-fit the existing SWM basin. The

retrofit of all three basins would meet the 10% reduction requirement for the entire West Branch Chester Creek Storm Sewershed.

Walnut Hill Boulevard

The individual storm sewer shed for the Walnut Hill Boulevard is primarily from the commercial properties located on the south side of the Road. The Borough has historically experienced problems with sediment and debris on Walnut Hill Boulevard. Maintenance has been limited to cleaning out the grate and inlet when there has been visible signs of obstruction – usually 3-4 times a year. Street Sweeping Walnut Hill Boulevard on a regular basis would serve a dual purpose for meeting a portion of the 10% sediment reduction as well as keeping the road more serviceable condition.

In summary for the West Branch Chester Creek Storm Sewershed, the alternatives for obtaining the 10% reduction in sediment loading is either retro-fitting the SWM Basin(s) in either the Rolling Heights Estate Development or The Highlands Development and Street sweeping Walnut Hill Boulevard. There is a possibility of stabilizing eroded channels in the Logtown Development. The Pollutant Reduction Calculations are included in Appendix 'F' of this report. The decision on which method to proceed will be made during the first year of the five year permitting period with plans, specifications and installation to follow in subsequent years.

F. FUNDING MECHANISM

The efforts to achieve the 10% reduction in sediment loading will be funded by the General Funds of Chester Heights Borough. A Preliminary Cost Estimate for the proposed BMPs is included in Appendix 'G' of this report.

G. BMP OPERATION and MAINTENANCE RESPONSIBILITIES

The operation and maintenance responsibilities of the proposed BMP's will be established as follows:

1. Retro-fit SWM Basins

The day-day maintenance of the SWM Basins will continue to that of the owner of the Basin – whether a Homeowners Association or an individual Lot owner. The Borough will maintain any facility that is to be newly installed to achieve the extended duration feature of the basin. Retro-fitted SWM basins will be inspected at least once a year by an authorized agent of the Borough (typically the Borough Engineer).

2. Stabilization of Eroded Channels at Storm Sewer Outfalls

The day-day maintenance of stabilized channels will be the entity that owns the land on which the eroded channel is located. The Borough will be responsible for any significant re-construction/installation of the stabilization measures. Stabilized conveyance channels will be inspected at least once a year by an authorized agent of the Borough (typically the Borough Engineer).

3. Street Sweeping

It will be the Borough's responsibility to ensure that street sweeping is performed on a regular basis at least 25 times a year.

APPENDIX 'A'
PROOF OF PUBLICATION

PUBLIC NOTICE

The Pollutant Reduction Plan (PRP) associated with the NPDES Stormwater Discharges for small Municipal Separate Storm Sewer Systems (MS4) Program for Chester Heights Borough is available for public review at the Borough Municipal Office located at 222 Llewellyn Road. The PRP describes measures to be taken to reduce the sedimentation pollution of the streams within Chester Heights Borough. Written comments from the public will be accepted for a period of 30 days from the date of this notice. Public comment will also be received at the regularly scheduled Borough Council Work Session meeting on August 28, 2017 at 7:00 PM at the Borough Office.

LEGAL NOTICES

PUBLIC NOTICE

The Pollutant Reduction Plan (PRP) associated with the NPDES Stormwater Discharges for small Municipal Separate Storm Sewer Systems (MS4) Program for Bethel Township is available for public review at the Bethel Township Building located at 1092 Bethel Road. The PRP describes measures to be taken to reduce the sedimentation pollution of the streams within Bethel Township. Written comments from the public will be accepted for a period of 30 days from the date of this notice. Public comment will also be received at the regularly scheduled Board of Supervisors Meeting on September 12, 2017 at 7:30 PM at the Township Building. DCT-Aug 11-1a

PUBLIC NOTICE

The Pollutant Reduction Plan (PRP) associated with the NPDES Stormwater Discharges for small Municipal Separate Storm Sewer Systems (MS4) Program for Rose Valley Borough is available for public review at the Borough Municipal Office located at Old Mill Lane. The PRP describes measures to be taken to reduce the sedimentation pollution of the streams within Rose Valley Borough. Written comments from the public will be accepted for a period of 30 days from the date of this notice. Public comment will also be received at the regularly scheduled Borough Council Public Meeting on September 13, 2017 at 8:00 PM at the Borough Office. DCT-Aug 11-1a

PUBLIC NOTICE

The Pollutant Reduction Plan (PRP) associated with the NPDES Stormwater Discharges for small Municipal Separate Storm Sewer Systems (MS4) Program for Chester Heights Borough is available for public review at the Borough Municipal Office located at 222 Llewellyn Road. The PRP describes measures to be taken to reduce the sedimentation pollution of the streams within Chester Heights Borough. Written comments from the public will be accepted for a period of 30 days from the date of this notice. Public comment will also be received at the regularly scheduled Borough Council Work Session meeting on August 28, 2017 at 7:00 PM at the Borough Office.

ESTATE NOTICES

ESTATE NOTICE

ESTATE OF BERTIE L. RITCHIE, DECEASED.
Late of the Borough of Folcroft, Delaware County, PA LETTERS TESTAMENTARY on the above Estate have been granted to the undersigned, who request all persons having claims or demands against the estate of the decedent to make known the same and all persons indebted to the decedent to make payment without delay to DAVID T. PATRICK, EXECUTOR, 15806 Burlingame Rd., Huntersville, NC 28078. DCT, August 11, 18, 25 a-1

ESTATE NOTICE

ESTATE OF ELAYNE FISHER HIGHTOWER, DECEASED.
Late of the City of Chester, Delaware County, PA LETTERS TESTAMENTARY on the above Estate have been granted to the undersigned, who request all persons having claims or demands against the estate of the decedent to make known the same and all persons indebted to the decedent

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ESTATE NOTICES

to make payment without delay to TANYA LAWSON, EXECUTRIX, c/o Jeff L. Lewin, Esq., 25 W. Second St., Media, PA 19063, Or to her Attorney:
JEFF L. LEWIN
25 W. Second St.
Media, PA 19063
DCT, August 4, 11, 18, a-1

ESTATE NOTICE

ESTATE OF ELEANOR B. HARKINS, DECEASED.
Late of the Borough of Brookhaven, Delaware County, PA LETTERS TESTAMENTARY on the above Estate have been granted to the undersigned, who request all persons having claims or demands against the estate of the decedent to make known the same and all persons indebted to the decedent to make payment without delay to CAROL J. HERSHEY (Named in Will as CAROL HERSHEY), EXECUTRIX, c/o James A. Gillin, Esq., 2 Old State Rd., Media, PA 19063, Or to her Attorney:
JAMES A. GILLIN
JAMES A. GILLIN, P.C.
2 Old State Rd.
Media, PA 19063
DCT, August 4, 11, 18, a-1

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ESTATE NOTICES

ESTATE NOTICE

ESTATE OF ELIZABETH A. SEMERARO, DECEASED.
Late of the Township of Nether Providence, Delaware County, PA LETTERS TESTAMENTARY on the above Estate have been granted to the undersigned, who request all persons having claims or demands against the estate of the decedent to make known the same and all persons

IN THE COURT OF COMMON PLEAS

IN RE: CONDEMNATION BY THE COMMONWEALTH OF PENNSYLVANIA, DEPARTMENT OF TRANSPORTATION, OF THE RIGHT-OF-WAY FOR STATE ROUTE 0322, SECTION 102 IN THE TOWNSHIP OF UPPER CHICHE

NOTICE OF CONDEMNATION AND DE

Notice is hereby given that the Co Transportation, whose address is t Transportation, Office of Chief Coun Building, Harrisburg, Pennsylvania 1 of the Administrative Code of 1929, 25, 2017 a Declaration of Taking to th shown on the plans of the parcels th have been recorded in the Recorder on the said schedule. The name(s) of is (are) also shown on the aforesaid of himself/herself and the Governor January 13, 2017 a plan entitled Office of the aforesaid county on Janu

The purpose of the condemnation is t

Plans showing the property condem Condemned have been recorded in th on the Schedule, where they are av condemned is designated on the Deck of Pennsylvania is not required to pos Because the identify or the whereabo or for other reasons he (they) can accordance with Section 305(b) of the

Claim No. 2300874000 Parcel No. 393

The power or right of the Secretary of to appropriate the property conden Transportation or the Declaration of objections within thirty (30) days of th

FURTHERMORE, NOTICE IS GIVEN TH of Transportation, pursuant to Section will, at the end of the above-referen preliminary objections to the Declar Common Pleas of the above county to by the Commonwealth to be due all p of the condemnation of the property R

The petition to deposit estimated just the owner(s) of the property herein in of the District noted below of their ext the noted period. After estimated just monies may be withdrawn by the per If no petition is presented within a p the court shall order the fund or any without escheat.

NOTICE TO BIDDERS UPLAND BOROUGH

Sealed proposals for Upland Avenue Park will be received by the Council of Upland Borough until 10:00 AM (local time) on August 21, 2017 at the Upland Borough Office, 224 Castle Avenue, Upland, PA 19015 at which time and place all bids received will be publicly open and read aloud.

Proposal forms and specifications are on file and may be obtained at the office of the Borough Engineer, Catania Engineering Associates, Inc., 520 W. MacDade Blvd., Millmont Park, PA 19033 between the hours of 8:00 A.M. and 5:00 P.M., Monday through Friday, upon receipt of a \$40.00 non-refundable fee.

Bids must be enclosed in a sealed envelope, plainly endorsed on the outside "UPLAND AVENUE PARK" and be accompanied by a certified check or bid bond in the amount of ten percent (10%) of the bid, made payable to Upland Borough and addressed to the Borough at the above address.

Contractor's attention is called to all of the requirements contained in this bid package, particularly to PA Prevailing Wage Rates, various insurance requirements, various equal opportunity provisions, and the requirements for a payment bond and performance bond for 100% of the contract price and a one year maintenance bond for 10% of the contract price.

Council reserves the right to reject any or all bids, or parts thereof, in the best interest of the Borough.

BY ORDER OF THE COUNCIL OF UPLAND BOROUGH

APPENDIX 'B'
PUBLIC COMMENTS

CHESTER HEIGHTS BOROUGH POLLUTANT REDUCTION PLAN (PRP)

PUBLIC COMMENTS

There was no written comments received by Chester Heights Borough concerning the Chester Heights Borough Pollutant Reduction Plan.

Also, comments were welcomed at the September 11, 2017 Chester Heights Borough Council Public Meeting; but no comments were received.

APPENDIX 'C'
BOROUGH CONSIDERATION
OF
PUBLIC COMMENTS

CHESTER HEIGHTS BOROUGH
POLLUTANT REDUCTION PLAN (PRP)

BOROUGH CONSIDERATION
OF
PUBLIC COMMENTS

There was no Public Comments received by Chester Heights Borough.

APPENDIX 'D'
SEDIMENT LOADING TABLE

CHESTER HEIGHTS BOROUGH

PRP WORK SHEET

July 30, 2017

OUTFALL #	DEVELOPMENT	ROAD	STORM SEWER SHED AREA (acres)	IMPERVIOUS COVER (%)	SEDIMENT LOADING (lbs)	10% of Sed Loading
WEST BRANCH CHESTER CREEK						
001	Willits Way	Willits Way	0.2	5	69	7
002	Willits Way	Willits Way	3.7	20	2145	215
003	Scots Knol	Heather Lane	2.1	22	1284	128
004	Scots Knol	Heather Lane	2.4	22	1467	147
005	Old Ivy	Ivy Lane	10.8	10	4562	456
006	Old Ivy	Mildred Lane	2.1	20	1218	122
	Sub-Total		21.3		10744	1074
CHESTER CREEK (MAIN BRANCH)						
001	Rolling Heights Estates	Rolling Heights Lane	0.2	5	69	7
002	Rolling Heights Estates	SWM Basin	20.8	17	11078	1108
003	Summit Lane	Summit Lane	1.8	37	1525	153
004	Logtown	Logtown Drive	0.8	29	577	58
005	Logtown	Logtown Drive	1.1	29	794	79
006	Highlands	SWM Basin #2 - Highland Drive	3.2	25	2107	211
007	Hammanasett	Heather Hill Lane - Basin 'B'	1.4	20	812	81
008	Hammanasett	Indian Springs Drive - Basin 'A'	4.8	20	2783	278
009	Hammanasett	Indian Springs Outfall	2.7	20	1565	157
010	Highlands	Bonnie Lane Basin #3	5	19	2820	282
011	Highlands	Bonnie Lane Outfall	2.9	19	1636	164
012	Highlands	SWM Basin #1 - Highland Drive	5.6	20	3247	325
013	Highlands	Thistle lane	4	12	1816	182
014	Commercial Strip	Walnut Hill Boulevard	12.1	75	17491	1749
	Sub-Total		66.4		48319	4832
	Grand Total		87.7		59063	5906

APPENDIX 'E'
PHOTOGRAPHS



0102010



APPENDIX 'F'
PROPOSED BMP
ALTERNATIVES

**BMP SEDIMENT REDUCTIONS
FOR
CHESTER HEIGHTS BOROUGH PRP**

WEST BRANCH OF CHESTER CREEK

	Required Sediment Loading Reduction	1,074 lbs/year
Alt 1	Retro-Fit SWM Basin at Rochford Estates 2,145 lbs/yr x (60%-10%)	1,073 lbs/year
Alt 2	Eroded Channel Stabilization	
	Geometry of Channel - 5 ft x 3 ft x 200 ft	3,000 cf
	Soil Loss - 3,000 cf x 115 lbs/cf	345,000 lbs
	Erosion Time period - 30 years	
	Soil Loss Per year - 345,000/30	11,500 lbs/yr

CHESTER CREEK

	Required Sediment Loading Reduction	4,832lbs/year
Alt 1	Retro-Fit SWM Basin at Rolling Heights Estates 11,078 lbs/yr x (60%-10%)	5,539 lbs/year
Alt 1	Retro-Fit SWM Basins #1 & #2 at The Highlands 5,354 lbs/yr x (60%-10%)	2677 lbs/year
	Street Sweep Walnut Hill Boulevard 17,491 Lbs/yr x 0.09	1,574 lbs/year
	Misc	581 lbs/year
Alt 2	Eroded Channel Stabilization	
	Geometry of Channel - 4 ft x 2 ft x 300 ft	2,400 cf
	Soil Loss - 2,400 cf x 115 lbs/cf	276,000 lbs
	Erosion Time period - 35 years	
	Soil Loss Per year - 276,000/35	7,886 lbs/yr

APPENDIX 'G'
PRELIMINARY COST ESTIMATE

**ESTIMATED BMP COST
FOR
CHESTER HEIGHTS BOROUGH
POLLUTANT REDUCTION PLAN**

BASIN RETROFIT

1	Mobilization	1 EA	\$ 2,500.00	\$ 2,500.00
2	Track Hoe	5 Day	\$ 1,500.00	\$ 7,500.00
3	Dump Truck	3 Day	\$ 800.00	\$ 2,400.00
4	Foreman	5 Day	\$ 600.00	\$ 3,000.00
5	Laborers	10 Day	\$ 400.00	\$ 4,000.00
6	Stone	100 TN	\$ 20.00	\$ 2,000.00
7	Stabilization	1 LS	\$ 1,000.00	\$ 1,000.00
8	E/S Matting	550 YD	\$ 3.00	\$ 1,650.00
9	Riser Modification	1 EA	\$ 2,500.00	\$ 2,500.00
10	Underdrain Piping	75 FT	\$ 25.00	\$ 1,875.00
	Sub-Total			\$ 28,425.00
11	Engineering (10%)			\$ 2,842.50
	TOTAL			\$ 31,267.50

ERODED CHANNEL STABILIZATION

1	Mobilization	1 EA	\$ 2,500.00	\$ 2,500.00
2	Clearing	1 LS	\$ 2,000.00	\$ 2,000.00
2	Track Hoe	3 Day	\$ 1,500.00	\$ 4,500.00
3	Dump Truck	2 Day	\$ 800.00	\$ 1,600.00
4	Foreman	5 Day	\$ 600.00	\$ 3,000.00
5	Laborers	10 Day	\$ 400.00	\$ 4,000.00
6	Rip-Rap	60 TN	\$ 20.00	\$ 1,200.00
7	Stabilization	1 LS	\$ 3,000.00	\$ 3,000.00
8	E/S Matting	550 YD	\$ 3.00	\$ 1,650.00
	Sub-Total			\$ 23,450.00
11	Engineering (10%)			\$ 2,345.00
	TOTAL			\$ 25,795.00

STREET SWEEPING

1	Street Sweeper	25 hrs	\$ 80.00	\$ 2,000.00
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APPENDIX 'H'

BOROUGH STORM SEWERSHED MAP