

Town of Vienna

Chesapeake Bay TMDL Action Plan

Prepared in compliance with General Permit No. VAR040066

PUBLIC REVIEW DRAFT

April 16, 2015

Department of Public Works
127 Center Street, South
Vienna, Virginia 22180

CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Name

Title

Date

Town of Vienna, Virginia

Chesapeake Bay TMDL Action Plan

April 16, 2015

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Town of Vienna, Virginia

Chesapeake Bay TMDL Action Plan

April 16, 2015

1. Introduction

1.1 Purpose

This Chesapeake Bay TMDL Action Plan documents how the Town of Vienna intends to meet the “Special Condition for the Chesapeake Bay TMDL” in Section I, Part C of the Town’s General Permit for Discharges from Small Municipal Separate Storm Sewer Systems (MS4s). The Town’s most recent permit (VAR040066) was issued by the Virginia Department of Environmental Quality (DEQ) effective July 1, 2013 and will expire June 30, 2018.

The Town’s MS4 permit requires the development and implementation of action plans for impaired streams where a Total Maximum Daily Load (TMDL) assigns a waste load allocation (WLA) to the Town that has been approved by the State Water Control Board. A TMDL establishes the maximum amount of a pollutant that can enter a water body without violating water quality standards.

A TMDL for the Chesapeake Bay was established by the U.S. Environmental Protection Agency in 2010. Pollutants of concern (POCs) identified for the Chesapeake Bay include total nitrogen (TN), total phosphorus (TP), and total suspended solids (TSS). Virginia subsequently developed and adopted a Watershed Implementation Plan (WIP) that establishes the framework for meeting the Chesapeake Bay TMDL. The Virginia WIP states that MS4 permit holders will implement a phased approach for meeting required reductions over three five-year permit cycles in accordance with the following: 5% of required reductions by the end of the first permit cycle (June 30, 2018); a total of 40% of required reductions by the end of the second permit cycle; and, 100% of required reductions by the end of the third permit cycle.

This Chesapeake Bay TMDL Action Plan establishes the 5% reduction target and the means and methods for achieving the reduction target in accordance with the MS4 permit and the Chesapeake Bay TMDL Special Condition Guidance developed by DEQ (Guidance Memo No 14-2012)¹.

1.2 Cooperative Approach to Implementation

As allowed by Section I.C.2.b(3) of the Town’s MS4 permit, the Town has entered into an agreement with Fairfax County to develop a Joint Chesapeake Bay TMDL Action Plan, which

¹ DEQ’s guidance was originally released August 18, 2014. Draft revisions were released on March 19, 2015. This plan relies on the March 19, 2015 version unless specifically noted. Final revisions are expected to be published by DEQ in late April 2015.

also includes the Town of Herndon. The agreement, included as Appendix A, was adopted by the Town of Vienna on October 28, 2013 and by Fairfax County on April 1, 2014.

Fairfax County's Phase I MS4 permit was re-issued and effective April 1, 2015. The County has 24 months from the effective date of the permit to develop a Chesapeake Bay TMDL Action Plan. As a result, the Town is submitting this stand-alone Chesapeake Bay TMDL Action Plan until such time that it is incorporated into the Joint Chesapeake Bay TMDL Action Plan. During the joint planning process, the Town will coordinate with the County to resolve timing and any other issues that may arise.

The agreement provides that cooperating localities will receive a credit for each stormwater management facility brought on-line beginning July 1, 2009, regardless of its location within the cooperating localities, that is in proportion to the percentage of the total load reductions that are established for each locality. Load reductions have been calculated for the Town of Vienna (see Section 4) and estimated for Fairfax County. The Town of Vienna's proportion of the load reduction was averaged among total nitrogen, total phosphorus, and total suspended sediment. As a result, the County and the Town have agreed that the Town will be credited 2.4% of the pollutant reduction for each eligible stormwater project or practice. Since Fairfax County is in the process of calculating reductions from projects based on DEQ's guidance, this plan presently accounts for only those projects implemented within the Town's jurisdictional boundaries. Additional shared stormwater projects and practices will be accounted for in subsequent plan updates or annual reports.

1.3 Summary of Required Reductions and Means and Methods to Achieve Required Reductions

In accordance with the MS4 permit, the Town must calculate reductions required from existing sources as of June 30, 2009 (Section 4) and then calculate offsets to account for increases in pollutant loads due to new sources initiating construction between July 1, 2009 and June 30, 2014 (Section 6) and grandfathered projects beginning construction after July 1, 2014 (Section 7). The Town must then identify the means and methods to achieve the required POC reductions accordingly.

The Town calculates that the following reductions must be achieved from existing sources as of June 30, 2009: 106.8 pounds for TN, 9.5 pounds for TP, and 10,522.1 pounds for TSS. The Town will achieve the reductions through a combination of means and methods as detailed in Section 5. Primary means and methods include:

- the Town's share of credit (2.4%) for implemented and planned stormwater management projects within its boundary; and,
- street sweeping.

These practices are anticipated to result in the following POC reductions: 120.31 pounds for TN, 53.96 pounds for TP, and 18,941.57 pounds for TSS. These practices exceed required reductions from existing sources.

The Town will also take credit for any redevelopment that results in POC reductions (Section 5.3), purchased off-site nutrient credits (Section 5.4), more stringent regulation of single family residential structures under one acre (Section 5.5), and additional means and methods that may be

implemented during the current permit cycle in accordance with DEQ’s Chesapeake Bay TMDL Special Conditions Guidance (Section 5.6). Any credits will be documented in the Town’s annual report to DEQ.

During the period of July 1, 2009 through June 30, 2014, one new project resulted in a land disturbance of one acre or greater. The Town must offset 5% of the increase in POC loads from this project. The required offset is 1.27 pound for TN, 0.18 pound for TP, and 86.36 pounds for TSS. The Town will apply excess credit from reductions required for existing sources to offset required reductions from new sources. No grandfathered projects requiring offsets have been identified by the Town. As demonstrated in Table 1A, total existing and planned credits exceed total reduction requirements.

Table 1A– Summary of Required Reductions and Means and Methods to Achieve Required Reductions

| | Total Nitrogen (lbs) | Total Phosphorus (lbs) | Total Suspended Solids (lbs) |
|---|---------------------------------|-----------------------------------|---|
| Required Reductions from Existing Sources | 106.80 | 9.50 | 10,522.10 |
| Means and Methods from Section 5 | 120.31 | 53.96 | 18,941.57 |
| Excess Credit from Existing Sources | 13.51 | 44.46 | 8,419.47 |
| Required New Source Offsets | 1.27 | 0.18 | 86.36 |
| Remaining Excess Credit After Accounting for New Source Offsets | 12.24 | 44.28 | 8,333.11 |
| Required Grandfathered Offsets | 0 | 0 | 0 |
| Remaining Excess Credit After Accounting for Grandfathered Source Offsets | 12.24 | 44.28 | 8,333.11 |

1.4 Permit Compliance Crosswalk

Table 1B provides each of the requirements of the Town’s MS4 permit and the specific section where the requirement is addressed in this Chesapeake Bay TMDL Action Plan.

Table 1B – Action Plan and Permit Compliance Crosswalk

| Action Plan | Action Plan Element | MS4 Permit | MS4 Permit Requirement |
|--------------------|--|--------------------|--|
| Section 2.1 | Current Program and Existing Legal Authority | Section I.C.2.a(1) | A review of the current MS4 program implemented as a requirement of this state permit including a review of the existing legal authorities and the |

| Action Plan | Action Plan Element | MS4 Permit | MS4 Permit Requirement |
|-------------|--|---|--|
| | | | operator's ability to ensure compliance with this special condition. |
| Section 2.2 | New or Modified Legal Authority | Section I.C.2.a(2) | The identification of any new or modified legal authorities such as ordinances, state and other permits, orders, specific contract language, and inter-jurisdictional agreements implemented or needing to be implemented to meet the requirements of this special condition. |
| Section 3 | Means and Methods to Address Discharges from New Sources | Section I.C.2.a(3) | The means and methods that will be utilized to address discharges into the MS4 from new sources. |
| Section 4 | Estimated Existing Source Loads and Calculated Total Pollutants of Concern (POC) Required Reductions | Section I.C.2.a(4) and Section I.C.2.a(5) | <p>An estimate of the annual POC loads discharged from the existing sources as of June 30, 2009, based on the 2009 progress run. The operator shall utilize the applicable versions of Tables 2 a-d in this section based on the river basin to which the MS4 discharges by multiplying the total existing acres served by the MS4 on June 30, 2009 and the 2009 Edge of Stream (EOS) loading rate.</p> <p>A determination of the total pollutant load reductions necessary to reduce the annual POC loads from existing sources utilizing the applicable versions of Tables 3 a-d in this section based on the river basin to which the MS4 discharges. This shall be calculated by multiplying the total existing acres served by the MS4 by the first permit cycle required reduction in loading rate. For the purpose of this determination, the operator shall utilize those existing acres identified by the 2000 U.S. Census Bureau urbanized area and served by the MS4.</p> |
| Section 5 | Means and Methods to Meet the Required Reductions and Schedule | Section I.C.2.a(6) | The means and methods, such as best management practices and retrofit programs that will be utilized to meet the required reductions included in subdivision 2.a(5) of this subsection, and a schedule to achieve those reductions. The schedule should include annual benchmarks to demonstrate the ongoing progress in meeting those reductions. |

| Action Plan | Action Plan Element | MS4 Permit | MS4 Permit Requirement |
|-------------|---|---------------------|--|
| Section 6 | Means and Methods to Offset Increased Loads from New Sources Initiating Construction between July 1, 2009 and June 30, 2014 | Section I.C.2.a(7) | The means and methods to offset the increased loads from new sources initiating construction between July 1, 2009 and June 30, 2014 that disturb one acre or greater as a result of the utilization of an average land cover condition greater than 16% impervious cover for the design of post-development stormwater management facilities. The operator shall utilize Table 4 in this section to develop the equivalent pollutant load for nitrogen and total suspended solids. The operator shall offset 5.0% of the calculated increased load from these new sources during the permit cycle. |
| Section 7 | Means and Methods to Offset Increased Loads from Grandfathered Projects that Begin Construction after July 1, 2014 | Section I.C.2.a(8) | The means and methods to offset the increased loads from projects as grandfathered in accordance with 4VAC50-60-48 that disturb one acre or greater that begin construction after July 1, 2014, where the project utilizes an average land cover condition greater than 16% impervious cover in the design of post-development stormwater management facilities. The operator shall utilize Table 4 in this section to develop the equivalent pollutant load for nitrogen and total suspended solids. |
| Section 8 | List of Future Projects, and Associated Acreage that Qualify as Grandfathered | Section I.C.2.a(10) | A list of future projects and associated acreage that qualify as grandfathered in accordance with 4VAC50-60-48. |
| Section 9 | Estimated Expected Cost to Implement Necessary Reductions | Section I.C.2.a(11) | An estimate of the expected costs to implement the requirements of this special condition during the state permit cycle. |
| Section 10 | Public Comments on Draft Action Plan | Section I.C.2.a(12) | An opportunity for receipt and consideration of public comment regarding the draft Chesapeake Bay TMDL Action Plan. A list of all comments received as a result of public comment and any modifications made to the draft Chesapeake Bay TMDL Action Plan as a result of the public comments. |

2. Current Program and Legal Authority

2.1 Current Program and Existing Legal Authority

The Town has adopted an MS4 Program Plan that documents implementation of all MS4 permit requirements, including the programmatic and legal authorities required to meet the “Special Condition for the Chesapeake Bay TMDL.” The full MS4 Program Plan can be found at <http://www.viennava.gov/DocumentCenter/Home/View/870>. Table 2A provides a summary of elements of the six minimum control measures (MCMs) implemented by the Town under the MS4 permit that relate to controlling total nitrogen, total phosphorus, and total suspended solids.

Table 2A – MS4 Program Plan Components Related to Meeting the Chesapeake Bay TMDL

| Minimum Control Measure | MS4 Program Plan Elements Related to Controlling Total Nitrogen, Total Phosphorus, and Total Suspended Solids |
|--|--|
| Public Education and Outreach on Stormwater Impacts. | <p>The Town’s MS4 Public Education and Outreach Plan identifies Chesapeake Bay nutrients and sediment and other illicit discharges as two of its three high-priority pollutants for the focus of the Town’s public education program during the permit cycle.</p> <p>Actions specific to nutrients and sediment and their impact on the Chesapeake Bay include:</p> <ul style="list-style-type: none"> • At least one of the stormwater quality related articles to be included annually in the Town’s monthly newsletter will focus on the proper use and application of fertilizer. • At least one of the stormwater quality related message in the Town of Vienna calendar will focus on the proper use and application of fertilizer. • Each year beginning in FY15, include a message about the proper use and application of fertilizer in at least one of the Town’s social media platforms. • In FY15, include a message in one of the Town’s quarterly residential water bills about the proper use and application of fertilizer. • Each year beginning FY15, mail information to 25% of HOA and condominium contacts about proper use and application of fertilizer and how to ensure contractors are using water quality friendly practices. • Participate in the NVRC Clean Water Partners program effort to reduce water quality impacts from nutrients in fertilizers. <p>Actions specific to sediment include:</p> <ul style="list-style-type: none"> • Maintain the “Report a Concern” function on the Town’s web site with a specific option for reporting an illicit discharge to the storm sewer system. • At least one of the stormwater quality related articles to be included annually in the Town’s monthly newsletter will focus on how to identify and report an illicit discharge, including erosion and sediment control issues. • In FY16, include a message in one of the Town’s quarterly residential water bills about how to identify and report an illicit discharge, including erosion and sediment control issues. |

| Minimum Control Measure | MS4 Program Plan Elements Related to Controlling Total Nitrogen, Total Phosphorus, and Total Suspended Solids |
|---|--|
| Public Involvement and Participation | The Town has designed a program to involve the public in the decision-making process by meeting all public notice requirements and sponsoring at least four watershed management activities annually. |
| Illicit Discharge Detection and Elimination | The Town has integrated into its MS4 Program Plan an Illicit Discharge Detection and Elimination Program. This program includes preventing, identifying, and eliminating sources of pollutants, including total nitrogen and total phosphorus as well as total suspended solids. |
| Construction Site Stormwater Runoff Control | The Town's construction site stormwater runoff control program is designed to be fully consistent with the water quality control requirements of the Virginia Erosion and Sediment Control Act and the Virginia Stormwater Management Act, and their attendant regulations. |
| Post-Construction Stormwater Management | The Town's construction site stormwater runoff control program is designed to be fully consistent with the water quality control requirements of the Virginia Stormwater Management Act and its attendant regulations. |
| Pollution Prevention and Good Housekeeping for Municipal Operations | The Town has included in its MS4 Program Plan actions to meet the pollution prevention and good housekeeping requirements for municipal operations. This includes developing a SWPPP for the Northside Property Yard, employee training, and ensuring proper staff and contractor certifications for erosion and sediment control. |

2.2 New or Modified Legal Authority

After review of the Town's existing MS4 Program Plan and legal authorities, the Town finds that no additional legal authorities are required for compliance with the "Special Condition for the Chesapeake Bay TMDL."

As described in Section 1.2, the Town has entered into a cooperative agreement with Fairfax County that establishes a credit-sharing process for projects implemented by Fairfax County and/or the Town. This agreement will achieve efficiencies by allowing the Town and the County to implement projects where they will achieve maximum benefit regardless of their physical location.

3. **Means and Methods to Address Discharges from New Sources**

The Town must identify and implement the means and methods necessary to address discharges into the MS4 from new sources. Any new source that disturbs one acre or greater and utilizes an average land cover condition greater than 16% impervious cover for the design of post-development stormwater management facilities must be offset in accordance with Section I.C.2.a(3) of the permit. Between July 1, 2009 and June 30, 2014, the Town utilized an average land cover condition greater than 16% (39% for Wolftrap Creek, 40% for Bear Branch, and 40% for Piney Branch). The total offsets required to be addressed by this plan are established in Section 6.

The Town Council has adopted stringent new stormwater quality requirements (Town Code Chapter 23, Article 3 “Stormwater Management”) that meet or exceed the state’s minimum requirements for discharges from new sources. The Town has been approved as a Virginia Stormwater Management Program (VSMP) by DEQ. The new requirements, which became effective July 1, 2014, meet the requirements of the Virginia Stormwater Management Act (§62.1-44.15:24 et seq, Code of Virginia), the Erosion and Sediment Control Act (§62.1-44.15:51 et seq, Code of Virginia), the Chesapeake Bay Preservation Act (§62.1-44.15:67 et seq, Code of Virginia), and their attendant regulations.

The Town’s ordinance applies to any land-disturbing activity 2,500 square feet and greater, regardless of land use type, which is more stringent than the one acre threshold required in the permit and the Virginia Stormwater Management Regulations (9VAC25-870). All new development must meet a standard of 0.41 pounds of phosphorus per acre per year. All redevelopment must reduce the phosphorus load by 20% if the land disturbance is one acre or greater or by 10% if the land disturbance is less than one acre (not to exceed the 0.41 standard for new development). The standard of 0.41 pounds of phosphorus per acre per year is mandated by the Virginia Stormwater Management Regulations, and according to DEQ’s guidance, meets the requirement for no-net-increase from new sources.

A full copy of the Town’s stormwater management ordinance can be found at the following website: www.municode.com/library/va/vienna/codes/code_of_ordinances?nodeId=PTIICOOR_CH23ENCO.

4. Estimated Existing Source Loads and Calculated Total Pollutant of Concern (POC) Required Reductions

The following sections describe the methodology used by the Town to estimate existing POC source loads. In accordance with the MS4 permit, the Town must estimate the annual POC loads discharged from existing sources as of June 30, 2009, based on the 2009 progress run. Completed calculation tables from the permit are included in Table 4A.

4.1 MS4 Service Area Delineation Methodology

Storm sewer system maps were used in conjunction with hydrologic features, local topographic data, and high-resolution aerial photos to delineate the Town’s MS4 boundary and create an MS4 boundary polygon layer. Drainage features were thoroughly reviewed by engineers and planners using a GIS environment in order to accurately account for storm sewer drainage areas and determine break points between the manmade and natural hydrologic systems. Sheet flow crossing the Town boundary was also considered and analyzed. It was determined that, with the exception of two natural stream valleys, the vast majority of Vienna’s total land area consists of regulated impervious and pervious cover.

In accordance with Part II.2 of the Chesapeake Bay TMDL Special Conditions Guidance, the Town of Vienna and Fairfax County have cooperatively agreed to utilize the following methodology for allocating pollutant loadings where drainage flows across jurisdictional boundaries:

- Any pollutant loading from an area of the Town that drains through a pipe or other conveyance to the County’s regulated system remains the responsibility of the Town up-flow of the interconnection.

- Any pollutant loading from an area of Fairfax County that drains through a pipe or other conveyance to the Town's regulated system is not the responsibility of the Town.
- By agreement between the County and the Town, any pollutant loading from an area of the Town that sheet flows across jurisdictional boundaries to the County's regulated system remains the responsibility of the Town within the Town's boundary.
- By agreement between the County and the Town, any pollutant loading from an area of the County that sheet flows across jurisdictional boundaries to the Town's regulated system is not the responsibility of the Town.
- By agreement between the County and the Town, any pollutant loading from property owned by Fairfax County Public Schools within the Town is not the responsibility of the Town. The County has a separate memorandum of understanding with Fairfax County Public Schools addressing Chesapeake Bay TMDL requirements.

There are no identified interconnections with the Virginia Department of Transportation MS4, nor does sheetflow from or to the VDOT system affect the Town.

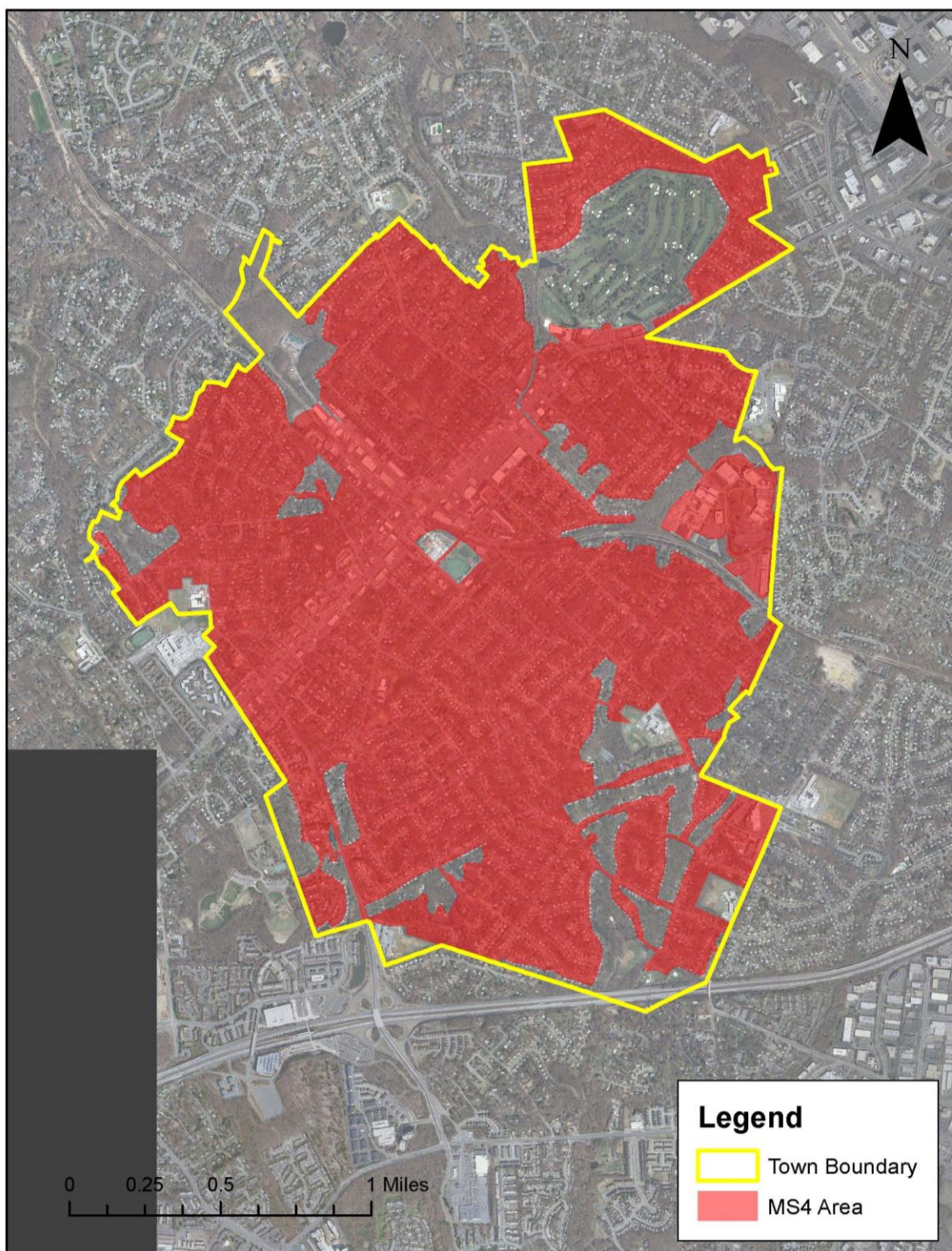
In accordance with DEQ's Chesapeake Bay TMDL Special Guidance, the Town may exclude from its MS4 service area land regulated under any general VPDES permit that addresses industrial stormwater and forested land one half contiguous acre or more that meets specific criteria. The Town does not have within its boundary any property with a VPDES industrial stormwater permit or property that meets the definition of forested land.

4.2 Pervious and Impervious Surface Delineation Methodology

A GIS approach was used to determine the Town's regulated urban impervious and regulated urban pervious acres. Planimetric impervious cover GIS data was developed by Fairfax County from 2009 aerial imagery. This impervious cover dataset contains the entire Town as well as areas within the County. Impervious cover surfaces include buildings, roads, parking lots, sidewalks, recreational surfaces, and other similar features.

To calculate the 2009 impervious regulated area, the 2009 planimetric impervious cover features were clipped using the MS4 boundary polygon layer and the resulting acres were totaled. Regulated pervious acres were calculated by subtracting the regulated impervious acres from the total MS4 acres.

Map 4A – Town of Vienna MS4 Service Area Delineation



4.3 Estimated Existing Source Loads

The Town must estimate the total existing source loads for total nitrogen, total phosphorus, and total suspended solids as of June 30, 2009 based on the 2009 Chesapeake Bay Model progress run and using 2009 Edge of Stream (EOS) loading rates. Since the Town is within the Potomac River watershed, the 2009 EOS loading rates from Table 2b of the MS4 permit must be utilized. The Town has a total of 2,219.8 acres served by the regulated MS4.

Table 4A presents the estimated existing source loads in accordance with the MS4 permit and the Chesapeake Bay TMDL Special Conditions Guidance.

Table 4A – Estimated Existing Source Loads

| Source | Pollutant | Total Existing Acres Served by MS4 (6/30/09) | 2009 EOS Loading Rate (lbs/acre) | Estimated Total POC Load Based on 2009 Progress Run | |
|----------------------------|------------------------|--|----------------------------------|---|-----------|
| Regulated Urban Impervious | Nitrogen | 805.6 | 16.86 | 13,582 | 27,823 |
| Regulated Urban Pervious | | 1,414.2 | 10.07 | 14,241 | |
| Regulated Urban Impervious | Phosphorus | 805.6 | 1.62 | 1,305 | 1,885 |
| Regulated Urban Pervious | | 1,414.2 | 0.41 | 580 | |
| Regulated Urban Impervious | Total Suspended Solids | 805.6 | 1,171.32 | 943,567 | 1,192,187 |
| Regulated Urban Pervious | | 1,414.2 | 175.80 | 248,620 | |

4.4 Required Reductions from Existing Source Loads

The reductions from the estimated existing source loads (loads in existence as of June 30, 2009) in Table 4A must be calculated using Table 3b of the MS4 permit. Table 4B shows the completed calculations from Table 3b of the permit.

Table 4B – Required Reductions from Estimated Existing Source Loads

| Source | Pollutant | Total Existing Acres Served by MS4 (6/30/09) | First Permit Cycle required Reduction in Loading Rate (lbs/acre) | Total Reduction Required First Permit Cycle (lbs) | |
|----------------------------|------------------------|--|--|---|----------|
| Regulated Urban Impervious | Nitrogen | 805.6 | 0.08 | 64.4 | 106.8 |
| Regulated Urban Pervious | | 1,414.2 | 0.03 | 42.4 | |
| Regulated Urban Impervious | Phosphorus | 805.6 | 0.01 | 8.1 | 9.5 |
| Regulated Urban Pervious | | 1,414.2 | 0.001 | 1.4 | |
| Regulated Urban Impervious | Total Suspended Solids | 805.6 | 11.71 | 9,433.1 | 10,522.1 |
| Regulated Urban Pervious | | 1,414.2 | 0.77 | 1,089.0 | |

5. Means and Methods to Meet Required Reductions and Schedule

This section describes the means and methods by which the Town will achieve the 5% reduction required for source loads in existence as of June 30, 2009 as calculated in Section 4. The Town's reductions will be achieved through a combination of street sweeping (Section 5.1) and shared credit for projects based on the cooperative agreement with Fairfax County (Section 5.2). In addition, the Town will take credit for any future redevelopment that results in POC reductions (Section 5.3), any purchase of off-site nutrient credits (Section 5.4), and more stringent regulation of single family residential structures under one acre (Section 5.5). Finally, the Town reserves the right to take credit for additional means and methods that may be implemented during the current permit cycle in accordance with DEQ's Chesapeake Bay TMDL Special Conditions Guidance (Section 5.6).

5.1 Street Sweeping

The Town will take credit for its street sweeping program to meet the required POC reductions. In its MS4 Fiscal Year 2014 Annual Report, the Town reported that it swept 95.1 cubic yards of

debris. DEQ’s Chesapeake Bay TMDL Special Conditions Guidance provides the specific steps required for determining credit for street sweeping programs as well as efficiencies for reducing TN, TP, and TSS.²

Since efficiencies are based on pounds collected, and there is no standard methodology for converting cubic yards to pounds, the Town will change its reporting methodology to pounds beginning in Fiscal Year 2016. For the purposes of this plan, the Town is using an estimated conversion factor of 0.34 ton per cubic yard based on an analysis of Arlington County’s street sweeping program. Arlington County measured street sweeping spoils in cubic yards from FY 2001 through FY 2009, and then switched to pounds. The 0.34 ton per cubic yard figure is derived by comparing the average cubic yards collected from FY 2001 through FY 2009 against the average tons collected from FY 2010 through FY 2014. Table 5A summarizes reductions achieved through the Town’s street sweeping program.

Table 5A – Summary of Reductions from Street Sweeping

| Pollutant | Cubic Yards Collected | Conversion to Pounds (CY * 0.34 *2,000) | Dry Weight Factor | Dry Pounds Collected | Removal Efficiency | Pollutant Reduction (lbs) |
|------------------------|------------------------------|--|--------------------------|-----------------------------|---------------------------|----------------------------------|
| Total Nitrogen | 95.1 | 64,668 | 0.7 | 45,267.6 | 0.0025 | 113.17 |
| Total Phosphorus | 95.1 | 64,668 | 0.7 | 45,267.6 | 0.001 | 45.27 |
| Total Suspended Solids | 95.1 | 64,668 | 0.7 | 45,267.6 | 0.3 | 13,580.28 |

5.2 Shared Credit Projects

The Town will take credit for projects implemented cooperatively between Fairfax County and the Town of Vienna after July 1, 2009 that are located within the Town’s jurisdictional boundary. The Town will also take credit for projects currently under construction and planned to be completed prior to the end of this permit cycle. Information on implemented and planned projects is included in Appendix B in accordance with the Chesapeake Bay TMDL Special Condition Guidance. The Town receives 2.4% credit for pollutant reductions achieved by each facility in accordance with the cooperative agreement.

In the future Joint Chesapeake Bay TMDL Action Plan that will be developed under the cooperative agreement with Fairfax County, the Town will take 2.4% credit for pollutant reductions achieved by all facilities covered by the cooperative agreement regardless of location within Fairfax County, the Town of Herndon, or the Town of Vienna.

² The March 19, 2015 proposed changes to the DEQ guidance places several programmatic restrictions on taking credit for street sweeping (for example, the program must sweep at least 26 times per year). Based on an email from DEQ on April 16, 2015, the Town has been authorized to take credit for street sweeping under the DEQ guidance without the programmatic restrictions.

Table 5B – Summary of Reductions from Shared Credit Projects

| | Nitrogen Reduction (lbs) | Phosphorus Reduction (lbs) | Total Suspended Solids Reduction (lbs) |
|---|-------------------------------------|---------------------------------------|---|
| Implemented Reductions | 142.05 | 156.68 | 93,587.20 |
| Planned Reductions | 155.30 | 205.69 | 129,799.95 |
| Total Implemented and Planned Reductions | 297.35 | 362.37 | 223,387.15 |
| Credit to Vienna (2.4%) | 7.14 | 8.70 | 5,361.29 |

5.3 Redevelopment

In accordance with the Chesapeake Bay TMDL Special Condition Guidance the Town may receive credit for pollutant reductions from redevelopment regardless of the initial land cover condition of the site. This applies to any redevelopment project initiated after July 1, 2009. To-date, no redevelopment projects in the Town have resulted in a POC reduction. Any future reductions achieved will be documented to DEQ in the Town’s annual report.

5.4 Purchased Off-Site Nutrient Credits

The Town has the option of purchasing off-site nutrient credits under the provisions of §62.1-44.15:35 of the Code of Virginia. Likewise, the Town may take credit for any off-site nutrient credit purchased by a private developer that exceeds the requirements of Town Code Chapter 23, Article 3 “Stormwater Management” provided that the Town and the land owner may not both take credit for the additional reductions. Any reductions achieved will be documented to DEQ in the Town’s annual report.

5.5 More Stringent Single Family Residential Development

The Town has adopted stormwater quality requirements for single family residential development under one acre that are more stringent than the minimum VSMP requirements. Specifically, Town Code Chapter 23, Article 3 “Stormwater Management” applies the 0.41 pounds of phosphorus per acre per year standard to single family residential development 2,500 square feet and greater even though the Town could have exempted all such development under one acre. In accordance with the Chesapeake Bay TMDL Special Condition Guidance the Town will take credit for the difference between the pollutant load that could have been allowed for single family residential property under the state’s minimum water quality criteria and the pollutant load that was actually allowed for the property under the Town’s more stringent requirements. Reductions achieved will be documented to DEQ in the Town’s annual report.

5.6 Additional Means and Methods

The Town reserves the right to implement and take credit for additional creditable facilities or practices as provided for in the Chesapeake Bay TMDL Special Condition Guidance. The guidance document specifically references the work of the Chesapeake Bay Urban Stormwater Workgroup, which includes credits for urban nutrient management and homeowner best management practices such as rainwater harvesting, downspout disconnection, permeable hard-scapes, tree planting, and impervious cover removal. Reductions achieved will be documented to DEQ in the Town's annual report.

5.7 Compliance Demonstration

Tables 5C through 5E demonstrate how the Town will meet the required reductions from Section 4 for each POC with the means and methods described in Sections 5.1 through 5.6.

Table 5C – Compliance Demonstration for Total Nitrogen

| Total Required Reductions (Table 4B) | Total Reductions Achieved (Tables 5A and 5B) | Total Reductions Remaining (lbs) | Percentage Target Achieved |
|---|---|---|-----------------------------------|
| 106.8 | $113.17 + 7.14 = 120.31$ | -13.51 | 112.65% |

Table 5D – Compliance Demonstration for Total Phosphorus

| Total Required Reductions (Table 4B) | Total Reductions Achieved (Tables 5A and 5B) | Total Reductions Remaining (lbs) | Percentage Target Achieved |
|---|---|---|-----------------------------------|
| 9.5 | $45.27 + 8.70 = 53.96$ | -44.46 | 568.05% |

Table 5E – Compliance Demonstration for Total Suspended Solids

| Total Required Reductions (Table 4B) | Total Reductions Achieved (Tables 5A and 5B) | Total Reductions Remaining (lbs) | Percentage Target Achieved |
|---|---|---|-----------------------------------|
| 10,522.1 | $13,580.28 + 5,361.29 = 18,941.57$ | -8,419.47 | 180.02% |

6. Means and Methods to Offset Increased Loads from New Sources Initiating Construction Between July 1, 2009 and June 30, 2014

The Town must calculate any new POC loads between July 1, 2009 and June 30, 2014 that were due to water quality requirement less stringent than 16% impervious cover. The Town must then achieve a 5% reduction in the new loads during this permit cycle. In accordance with the DEQ guidance, the Town used the simple method to determine the excess TP that needs to be offset. Table 4 from the MS4 permit was used to determine the equivalent reduction required for TN and TSS.

During the period of July 1, 2009 and June 30, 2014, one project with a land disturbance of one acre or greater resulted in increases in pollutant loadings. A summary of this project is provided in Table 6A. Detailed calculations are provided in Appendix C.

Table 6A – Required Reductions from New Sources

| Project ≥ 1 Acre | Site (acres) | Total Increase (lbs) | | Required 5% Reduction (lbs) | |
|------------------|--------------|----------------------|----------|-----------------------------|-------|
| Surrey Estates | 2.77 | N | 25.40 | | |
| | | P | 3.68 | | |
| | | S | 1,727.24 | | |
| Total | 2.77 | N | 25.40 | N | 1.27 |
| | | P | 3.68 | P | 0.18 |
| | | S | 1,727.24 | S | 86.36 |

The Town will achieve reductions using excess credit from projects implemented in Section 5 and summarized in Tables 5C through 5E.

Table 6B – Compliance Demonstration for Total Nitrogen

| Total Required Reductions (Table 6A) | Excess Credit from Table 5D | Total Reductions Remaining (lbs) | Percentage Target Achieved |
|--------------------------------------|-----------------------------|----------------------------------|----------------------------|
| 1.27 | 13.51 | -12.24 | 1,063.4% |

Table 6C – Compliance Demonstration for Total Phosphorus

| Total Required Reductions (Table 6A) | Excess Credit from Table 5E | Total Reductions Remaining (lbs) | Percentage Target Achieved |
|--------------------------------------|-----------------------------|----------------------------------|----------------------------|
| 0.18 | 44.46 | -44.28 | 24,157.22% |

Table 6D – Compliance Demonstration for Total Suspended Sediment

| Total Required Reductions (Table 6A) | Excess Credit from Table 5F | Total Reductions Remaining (lbs) | Percentage Target Achieved |
|---|--|---|---------------------------------------|
| 86.36 | 8,419.47 | -8,333.11 | 9,749.04% |

7. Means and Methods to Offset Increased Loads from Grandfathered Projects Beginning Construction After July 1, 2014

The Town must calculate new POC loads from grandfathered projects initiating construction after July 1, 2014 and disturbing one acre or greater. Unlike POCs from sources in Section 5 and Section 6, loads from grandfathered projects must be 100% offset prior to the completion of the project. The Town has not identified any existing projects that meet this criteria and therefore no offset is required.

8. List of Future Projects Qualifying as Grandfathered

The Town must list projects in addition to those listed in Section 7 that qualify as grandfathered in accordance with 9VAC25-870-48. No such projects have been identified for the Town.

9. Estimated Cost of Compliance

Table 9A provides a summary of the estimated cost to implement projects in Section 5. These projects exceed the POC reduction requirements of this permit cycle.

Table 9A – Estimated Cost of Compliance

| Strategy | Cost Explanation | Estimated Cost |
|------------------------|---|---|
| Street Sweeping | Annual cost of street sweeping estimated based on January 2014 through December 2014 figures. This includes approximately 275 hours of operation, 80 hours of machine maintenance, and dumping fees. | \$25,000 annually |
| Shared Credit Projects | <ul style="list-style-type: none"> Hunters Branch (Vienna) Stream Restoration Project: \$1,340,000 Wolftrap Creek Stream Restoration Phase 1: \$1,920,400 Wolftrap Creek Stream Restoration Phase 2: \$890,000 | \$4,150,400 total \$99,610 Town share (2.4%) |
| Total | | \$124,610 |

Ensuring an adequate funding source for meeting the Chesapeake Bay TMDL is a key component of the cooperative agreement with Fairfax County. The County adopted a Stormwater Service District tax in Fiscal Year 2010 in accordance with § 15.2-2400 of the Code of Virginia. The Stormwater Service District provides a dedicated revenue stream for stormwater management, including Chesapeake Bay TMDL compliance. The Stormwater Service District tax was increased to \$0.0225 per \$100 of assessed

real estate value in Fiscal Year 2015. This rate will be continuously assessed by the Board of Supervisors.

10. Public Comment Plan

The public comment process for the Town of Vienna Chesapeake Bay TMDL Action Plan includes a joint work session of the Town Council and Planning Commission on April 20, 2015 followed by an invitation for the public to provide comments on the plan by May 29, 2015. The draft plan was posted on the Town's website. An invitation for the public to comment on the plan was included in the May X, 2015 Vienna Happenings email newsletter.

Public comments are summarized in the table below and were taken into consideration in developing the final plan.

Table 10A – Public Comments

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| |

Appendix A

Cooperative Agreement Between the Fairfax County Board of Supervisors and the Towns of Herndon and Vienna

Appendix B

Detailed Project List

Table Appendix B1 – Reductions from Projects Implemented On or After July 1, 2009


| Project Name: Wolftrap Creek Stream Restoration, Phase 1 | | | | | | |
|---|--------------------|--------------------|----------------------|------------------------|----------------|-----------------|
| Project Description: Restoration of a portion of Wolftrap Creek from Follin Lane to Wildwood Park | | | | | | |
|  | | | | | | |
| Date Installed | Type | Imp. Acres Treated | Total Acres Treated | Runoff Captured | Unit | Amount Applied |
| 10/19/2013 | Stream Restoration | 288 | 766 | NA | LF | 2,089 |
| Latitude | Longitude | HUC | TN Efficiency | TP Efficiency | TSS Efficiency | Efficiency Unit |
| 38.90239 | 77.25073 | PL22 | 0.075 | 0.068 | 44.88 | Lbs/LF |
| TN Removed | TP Removed | TSS Removed | Calculation Method | | | |
| 142.052 | 156.675 | 93,587.2 | Interim/Default Rate | | | |
| | | Total Nitrogen | Total Phosphorus | Total Suspended Solids | | |
| Subtotal POCs Removed | | 142.052 | 156.675 | 93,587.2 | | |

Table Appendix B2 – Reductions from Projects Planned to be Implemented During the Current Permit Cycle

| Project Name: Wolftrap Creek Stream Restoration, Phase 2 | | | | | | |
|---|--------------------|---------------------------|----------------------------|------------------------|-----------------------|------------------------|
| Project Description: | | | | | | |
| Date Anticipated | Type | Imp. Acres Treated | Total Acres Treated | Runoff Captured | Unit | Amount Applied |
| 2016 | Stream Restoration | | | NA | LF | 1,020 |
| Latitude | Longitude | HUC | TN Efficiency | TP Efficiency | TSS Efficiency | Efficiency Unit |
| | | PL22 | 0.075 | 0.068 | 44.88 | Lbs/LF |
| TN Removed | TP Removed | TSS Removed | Calculation Method | | | |
| 76.5 | 69.36 | 44,268 | Interim/Default Rate | | | |

| Project Name: Hunters Branch (Vienna) | | | | | | |
|--|--------------------|---------------------------|----------------------------|------------------------|-----------------------|------------------------|
| Project Description: | | | | | | |
| Date Anticipated | Type | Imp. Acres Treated | Total Acres Treated | Runoff Captured | Unit | Amount Applied |
| 2016 | Stream Restoration | | | NA | LF | 2067 |
| Latitude | Longitude | HUC | TN Efficiency | TP Efficiency | TSS Efficiency | Efficiency Unit |
| | | PL22 | 0.075 | 0.068 | 44.88 | Lbs/LF |
| TN Removed | TP Removed | TSS Removed | Calculation Method | | | |
| 78.8 | 136.33 | 85,531.95 | Interim/Default Rate | | | |

| | Total Nitrogen | Total Phosphorus | Total Suspended Solids |
|------------------------------|-----------------------|-------------------------|-------------------------------|
| Subtotal POCs Removed | 155.3 | 205.69 | 129,799.95 |

Table Appendix B3 – Total Reductions from Implemented and Planned Projects

| | Total Nitrogen | Total Phosphorus | Total Suspended Solids |
|---------------------------|-----------------------|-------------------------|-------------------------------|
| Total POCs Removed | 297.352 | 362.365 | 223,387.15 |

Appendix C

New Source Calculations

All calculations based on the simple method (“Chesapeake Bay Method”) contained in Chapter 4, Section III.b of the Northern Virginia BMP Handbook.

| Surrey Estates | | | |
|--|-----------|--------------|--|
| Information | Input | As Developed | Using Redevelopment VSMP Scenario 3 |
| Rainfall | 40 | | |
| Site Area (SF) | 120661.20 | | |
| Site Area (AC) | | 2.77 | 2.77 |
| Watershed I % | | | |
| Pre-I Area (SF) | 50677.70 | | |
| Pre-I Area (AC) | | 1.16 | 1.16 |
| Pre-I Area (%) | | 42.00 | 42.00 |
| Pre C Value | | 1.08 | 1.08 |
| Pre-TP Load | | 10.45 | 10.45 |
| Post-I Area (SF) | 65157.05 | | |
| Post-I Area (AC) | | 1.50 | 1.50 |
| Post-I Area (%) | | 54.00 | 54.00 |
| Post C Value | | 1.08 | 1.08 |
| Post-TP Load | | 13.08 | 13.08 |
| Increase/Decrease | | 2.64 | 2.64 |
| Stormwater Controls | | | |
| BMP 1 | | | |
| Efficiency | 0 | | |
| I Area (AC) | 0 | | |
| TP Removed | | 0.00 | 0.00 |
| | | | |
| BMP 2 | | | |
| Efficiency | 0 | | |
| I Area (AC) | 0 | | |
| TP Removed | | 0.00 | 0.00 |
| | | | |
| BMP 3 | - | | |
| Efficiency | 0 | | |
| I Area (AC) | 0 | | |
| TP Removed | | 0.00 | 0.00 |
| | | | |
| Final Load | | 13.08 | 13.08 |
| Total Increase/Decrease | | 2.64 | 2.64 |
| | | | |
| VSMP Situation 3: Land disturbing activities where the existing percent impervious cover (42%) is greater than the average land cover condition (16%). | | | |
| Requirement: The pollutant discharge after disturbance shall not exceed the pollutant discharge based on existing conditions less 10%. | | | |
| Initial Amount to be Made Up: Difference between post load and existing less 10%. | | | 3.681 |
| Amount to be Made Up After BMP: | | | 3.681 |
| Requirement Not Met. Offset includes increase net plus fact that 10% decrease from existing would have been required. | | | 3.681 |

