



CITY OF POQUOSON, VIRGINIA

CHESAPEAKE BAY TMDL ACTION PLAN

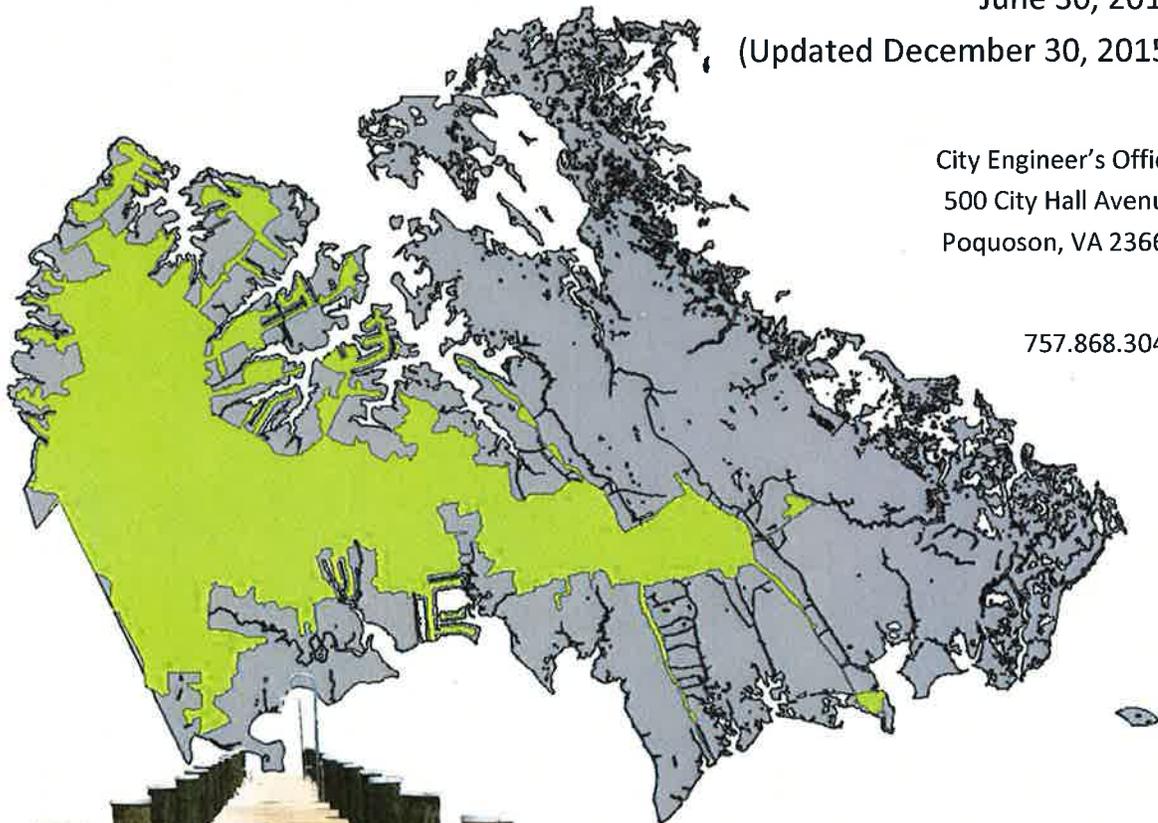
VPDES PERMIT NO. VAR040024

June 30, 2015

(Updated December 30, 2015)

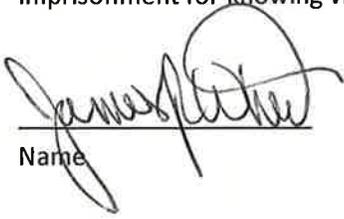
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CERTIFICATION

"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

City Manager
Title

1/8/2016
Date



CHESAPEAKE BAY TMDL ACTION PLAN (5 PERCENT COMPLIANCE)

VPDES PERMIT NUMBER VAR040024

June 30, 2015
(Updated December 30, 2015)

Prepared by City staff and

AECOM

AECOM No. 60393499

City Engineer's Office
500 City Hall Avenue, Poquoson, VA 22662
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UPDATE HISTORY

June 30, 2015 — Original Document.

December 30, 2015 — First revision. Addressed review comments provided by DEQ in a Kelsey Brooks email to Ellen Roberts dated December 9, 2015. Modified this Action Plan to account for BMPs, installed between January 1, 2006 and July 1, 2009 that can be credited towards pollutant load reductions required by the Chesapeake Bay TMDL and the City's MS4 Permit. Adjusted land cover to include 11.3 acres of forested land that was excluded (due to small acreage) in DEQ's March 19, 2015 guidance document, then allowed in DEQ guidance issued May 18, 2015. Recomputed pollutant removals using DEQ's corrected loading rate for Total Suspended Solids. Revised the text to address clarifications requested by DEQ.

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DEFINITIONS & ACRONYMS

The following definitions and acronyms are used in this Chesapeake Bay TMDL Action Plan:

- Action Plan** – unless specifically stated otherwise, the Chesapeake Bay TMDL Action Plan
- City** – unless specifically stated otherwise, the City of Poquoson
- DEQ** – Virginia Department of Environmental Quality
- EOS** – Edge of Stream
- EPA** – The U.S. Environmental Protection Agency
- L2** – Level 2 (scoping run of Chesapeake Bay Watershed Model)
- MS4** – Municipal Separate Storm Sewer System
- MTD** – Manufactured Treatment Devices
- NASA** – National Aeronautics and Space Administration
- NAVD88** – North American Vertical Datum of 1988
- Permit** – unless specifically stated otherwise, the City’s current MS4 permit valid from 2013 to 2018
- POCs** – Pollutants of Concern (Specifically Nitrogen, Phosphorus, and Total Suspended Solids)
- RMA** – Resource Management Area
- SLAF** – Stormwater Local Assistance Fund (administered by DEQ)
- TMDL** – Total Maximum Daily Load
- TN** – Total Nitrogen
- TP** – Total Phosphorous
- TSS** – Total Suspended Solids
- RPA** – Resource Protection Area
- VAMSA** – Virginia Municipal Stormwater Association
- VSMP** – Virginia Stormwater Management Program
- WIP** – Watershed Implementation Plan

CHESAPEAKE BAY TMDL ACTION PLAN (5 PERCENT COMPLIANCE)

VPDES PERMIT NUMBER VAR040024

JUNE 30, 2015

(UPDATED DECEMBER 30, 2015)

A. EXECUTIVE SUMMARY

Virginia localities, such as the City of Poquoson, are required to comply with the terms of the Chesapeake Bay TMDL regulations as set forth in their MS4 permits. These permits require each regulated locality to prepare and implement an Action Plan to reduce pollutants in stormwater discharges.

Poquoson prepared an Action Plan (dated June 30, 2015) and submitted it to DEQ for review. The original plan identified seven specific projects, one of which was already completed, two of which were under design and had been funded through a SLAF grant, and four additional projects that were to be completed by June 30, 2018. The total cost of the four unfunded projects was estimated to be \$238,831.

After the June 30, 2015 Action Plan was submitted, City staff continued working on a separate grant that Poquoson had received from DEQ to compile an accurate, up-to-date inventory of the City's BMPs. This work led to the discovery of four BMPs—implemented between January 1, 2006 and June 30, 2009—that can qualify for pollutant reduction credits under the Chesapeake Bay TMDL regulations.

DEQ reviewed both the Action Plan and BMP Inventory submittals, and commented in a December 9, 2015 email from Kelsey Brooks to City Engineer Ellen Roberts that qualifying BMPs could be incorporated into the Action Plan and credited towards the City's pollutant reduction goals.

The City asked AECOM to revise this Action Plan and incorporate the qualifying BMPs. When these BMPs are added to the five-percent compliance plan and combined with the two projects funded

by DEQ SLAF grants (a created wetland and a wet pond in Oxford Run), no additional projects are required to satisfy the five-percent pollutant reduction goal for the current permit cycle.

This Action Plan details the City's estimation of its existing source loads of POCs as of June 30, 2009 based on the Chesapeake Bay Program's Phase 5.3.2 watershed model and the required reductions in POCs by the end of this permit cycle using Table 3d in the permit. The means and methods by which the required reductions are met have also been addressed.

To determine the POC loads from existing sources, the City delineated Poquoson's MS4 boundary carefully using guidance from the Virginia Municipal Stormwater Association and definitions from DEQ. The City's GIS data and aerial imagery from 2009 were used to delineate the MS4 area. Contour information, storm system pipe and structure data, as well as infrared LiDAR data obtained from NASA, were used to determine drainage patterns during the delineation process. The City's MS4 service area is shown in Figure 1.

Land cover within the MS4 as of June 30, 2009 was also determined using the City's aerial imagery and parcel development data. The types of land cover identified within the City's MS4 area were regulated urban pervious, regulated urban impervious and forested land. Forested land was only included if it was a contiguous area over 30 meters square. Tidal marsh areas within the MS4 were included as forested land. Table 1 lists the land cover within the City's MS4, as indicated in Figure 2. Table 2 lists the annual pollutant loads generated by existing sources as of June 30, 2009.

Based on a total of 636.28 acres of regulated urban impervious land, and 1,631.04 acres of regulated pervious land within the City's MS4 service area, the estimated annual pollutant loads from existing sources are 17,128.66 pounds of nitrogen, 1,792.61 pounds of phosphorus, and 409,283.44 pounds of total suspended solids.

The five-percent required nutrient reduction for the first permit cycle, was calculated based on the land cover acreage within the MS4 and the required reduction in loading rates from Table 3d in the City's MS4 permit. Table 3 lists the total reductions required for the first permit cycle. The City's MS4 area in this Action Plan includes the City's 2010 Census urbanized area, and that land is included in the calculations of the reduction requirements for the first permit cycle. The total annual reductions required during the first permit cycle are 58.36 pounds of nitrogen, 10.70 pounds of phosphorus and 3,425.11 pounds of suspended solids.

To satisfy the first permit cycle requirements, Poquoson has eight BMPs, six of which are already completed, and two of which have been designed and will be awarded for construction in 2016. These two projects have been funded through a SLAF grant. The project locations are shown in Figure 3. Table 4 documents the pollutant reductions for these projects, as summarized in Table 5. Table 6 presents the implementation schedule.

The two SLAF grant projects are a proposed wet pond and created wetland. Land use conversion for the property at 127 Ridge Road has been completed (see Figure 4). The remaining projects that qualify for pollutant removal credit include three wet ponds and an infiltration basin. The City is

also taking credit for an annual reduction of nitrogen of approximately 66.02 lbs/yr for taking seven septic tanks offline and connecting those parcels to the City's sanitary sewer system.

The total annual reductions of POCs, through the implementation of this Action Plan, are approximately 162.76 pounds of nitrogen, 18.57 pounds of phosphorus, and 5,597.70 pounds of total suspended solids. Because all of these projects have been implemented or have already been funded, the implementation cost will be zero additional dollars. The City recognizes that meeting the next phase of the Chesapeake Bay TMDL requirements—developing and implementing a 35-percent Action Plan—will require significant additional planning and funding, and is already working to monitor developments and changes in the regulations with that plan in mind.

DEQ provisionally approved Poquoson's June 30, 2015 Action Plan on December 22, 2015—incorporating additional information provided by Poquoson that addressed DEQ comments and stated the City's intent to take credit for qualifying historical BMPs. This Action Plan is considered an enforceable part of the MS4 Program Plan. DEQ requested that Poquoson submit its updated Action Plan by January 11, 2016. This December 30, 2015 update addresses all outstanding issues listed in DEQ's email from Kelsey Brooks to City Engineer Ellen Roberts dated December 9, 2015.

The City reserves the right to make adjustments to this plan, and to substitute any projects that can achieve the required pollutant reductions, for economic or other reasons. If DEQ approves more cost-effective BMP types for credit under the Chesapeake Bay TMDL, the City will modify its Action Plan to meet the nutrient reduction requirements during this permit cycle as well as future permit cycles.

B. BACKGROUND INFORMATION

The City of Poquoson encompasses an area of less than 16 square miles, near the mouth of the Chesapeake Bay. The City drains to three water bodies: the Poquoson River, Back River, and the Chesapeake Bay itself, but is considered to be part of the York River watershed in the current Bay model, and for purposes of developing this Action Plan to comply with the Chesapeake Bay TMDL requirements in its permit. The City has noted on many occasions that it does not drain to the York River, and feels that its POC reduction requirements are unrealistically high to make up for contributions of POCs by entities far upstream in the York River watershed.

With a 2010 population of approximately 12,500 residents, Poquoson is one of the smallest regulated MS4s in the state of Virginia. However, the City strives to protect the Chesapeake Bay through its local program, which it continues to update since the implementation of its 1999 comprehensive Chesapeake Bay Preservation Ordinance. The City of Poquoson's history is directly linked to the Chesapeake Bay. Historically, Poquoson was a fishing village, with generations of families making their living fishing in the Bay and many of Poquoson's residents still depend on the waters around Poquoson for their livelihood.

The land cover in the current Phase 5.3 Chesapeake Bay Watershed Model is highly inaccurate and in Poquoson's case is a poor representation of the actual land cover in the City's MS4 service area. The City has approximately 5,089 acres of tidal wetlands within its boundary, which are not regulated under the City's permit. The majority of those tidal wetlands are contained within the 3,276-acre Plum Tree Island National Wildlife Refuge. The remaining 1,800 acres of tidal wetlands surround the shoreline of the City's tidal creeks. In addition, there are approximately 1,575 acres of land that are not part of the MS4 service area because stormwater runs off directly to tidal waters, or stormwater is conveyed from City owned ditches or pipes through private property which is not maintained by the City. During the development of this Action Plan, the City spent considerable time and effort to delineate its MS4 service area and determine the total acres of regulated urban pervious and urban impervious land within that service area.

Poquoson, like other Hampton Roads localities, has flat, low-lying topography, high water tables, and soils that are not conducive to infiltration. As of spring 2015, there are not many Clearinghouse-approved BMPs that can be used in a cost-effective manner in the City. Many low impact development (LID) practices such as rooftop disconnection and vegetated roofs are acceptable as BMPs for individual parcel development but are not practical as retrofits for localities to implement on a large scale. The flat topography and high water tables in Poquoson preclude many of the BMPs with the highest nutrient removal efficiencies. Infiltration basins make ideal BMPs to treat impervious areas such as parking lots, but cannot be used in areas with high water tables. The primary BMPs considered by the City for the Action Plan were wet ponds, created wetlands, wet swales, vegetated filter strips, permeable asphalt, manufactured treatment devices and land conversions.

During the preparation of this Action Plan, DEQ made two revisions to its draft guidance memorandum (No. 14-2012) issued on August 18, 2014. The first revision was issued for public comment on March 19, 2015. The final guidance memorandum (No. 15-2005) was issued on May 18th, 2015—less than six weeks before this Action Plan was due to be implemented. Two revisions made in the final guidance memo impact the City's Action Plan. The first revision—reverting back to the Chesapeake Bay Program's size requirement for forested lands of 30 meters by 30 meters—reversed a change in the March 19th guidance memo, stating that forested lands must be at least one-half acre in size. While this change resulted in a very slight decrease in the City's pollutant load, it did not affect the City's Action Plan. The second revision, which corrected an issue with rounding the required reduction in loading rates, found in Table 3d of the permit, does affect the City's POC reduction requirements, which are increased for nitrogen and phosphorus. Due to the delay in issuing the final guidance document, the City was not able to update the land cover and the means and methods to achieve the first permit cycle reductions to account for the forested land that had been excluded by the March 19th revision of the guidance document, as well as the additional nutrient reductions required due to the corrected reductions in loading rates listed in the final guidance memo. However, this updated Action Plan has revised the land cover in Table 1 to include approximately 11.31 acres of forested land that had been excluded and counted as regulated pervious land due to changes in the March 19th guidance memorandum. In addition, the loading rates in Table 2 have been updated to reflect the change in acreage of forested and regulated

pervious land. The corrected loading rates from the May 18, 2015 guidance memorandum were also used to update Table 3, which presents the revised reductions required during the first permit cycle.

During the development of its Action Plan, the City identified BMPs to help it meet the required POC reductions for both the first and second permit cycles. Originally the City identified four projects—three vegetated filter strips and a wet swale—that when combined with two BMPs that were already in the design phase, seven lots connected to sanitary sewer, and a City-owned residential parcel converted to grass, met the required five-percent reductions for the first permit cycle. The four BMPs eligible for POC credit that were identified as a result of the City’s 2015 Historical Data Cleanup help the City achieve the required five-percent reductions for the first permit cycle without the need for the three proposed vegetated filter strips and the wet swale. However, the City recognizes that meeting its required second permit cycle reductions will be difficult, and may use those projects to help achieve its 35-percent POC reductions during the second permit cycle.

C. REQUIRED COMPONENTS OF THE CHESAPEAKE BAY TMDL ACTION PLAN

The following sections of the Action Plan are required components, described in Section I.C.2.a of the City’s MS4 Permit. The “Permit Requirements” described below are taken verbatim from Section I.C.2.a of the City’s MS4 Permit.

1. REVIEW OF CURRENT MS4 PROGRAM

Permit Requirement: 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 operator's ability to ensure compliance with this special condition.

The City of Poquoson has obtained coverage under 9VAC25-890-40, the General VPDES Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4’s), with authorization to discharge under the Virginia Stormwater Management Program and the Virginia Stormwater Management Act. This state permit authorizes operators of small municipal separate storm sewer systems to discharge to surface waters within the boundaries of the Commonwealth of Virginia, except those waters specifically named in State Water Control Board regulations, which prohibit such discharges. This permit is consistent with the Chesapeake Bay TMDL and the Virginia Phase I and II WIPs to meet the Level 2 (L2) scoping run for existing developed lands as it represents an implementation of five percent of L2 as specified in the 2010 Phase I WIP.

The City maintains an MS4 program plan, which was updated according to the schedule found in Table 1 of the permit, and submitted to DEQ on September 30, 2014 along with its Permit Year 1 Annual Report. In accordance with the permit requirements, Poquoson developed and submitted

to DEQ, for its review and acceptance, an approvable Chesapeake Bay TMDL Action Plan dated June 30, 2015. DEQ provisionally approved Poquoson's June 30, 2015 Action Plan on December 22, 2015—incorporating additional information provided by Poquoson that addressed DEQ comments and stated the City's intent to take credit for qualifying historical BMPs. This Action Plan is considered an enforceable part of the MS4 Program Plan. DEQ requested that Poquoson submit its updated Action Plan by January 11, 2016. This December 30, 2015 update addresses all outstanding issues listed in DEQ's email from Kelsey Brooks to City Engineer Ellen Roberts dated December 9, 2015.

The City implements its MS4 program through legal authorities found in Section 34 of the City Code. The City's Erosion and Sediment Control, Wetlands, and Stormwater Management Ordinances; Articles III, IV, and V of Chapter 34 respectively, are the primary legal authorities governing land development, water quality, and environmental protection. In addition to its environmental ordinances, the City has taken other steps to preserve the environment and protect water quality. In 1991, areas equal to approximately 16% of the City of the City's total land mass were designated as RPAs. All upland areas outside the RPAs were designated as RMAs. As a result, every construction project within the City is reviewed for compliance with the Chesapeake Bay Act.

Actions undertaken to implement the Chesapeake Bay TMDL Special Condition shall be undertaken on City-owned lands, using General Funds, in accordance with all applicable state laws and regulations.

2. IDENTIFICATION OF NEW OR MODIFIED LEGAL AUTHORITIES

Permit Requirement: The identification of any new or modified legal authorities such as ordinances, state and other permits, orders, specific contract language, and interjurisdictional agreements implemented or needing to be implemented to meet the requirements of this special condition.

The only new legal authorities required for plan implementation will be site-specific permits related to construction activity. These include coverage under the General VPDES Permit for Discharges of Stormwater from Construction Activities; Poquoson Land Disturbance Permits; Poquoson Right-of-Way Permits; and Wetlands permits obtained on an as-needed basis. All other local and state construction and procurement laws are sufficient to implement the plan.

3. MEANS AND METHODS TO ADDRESS DISCHARGES INTO THE MS4 FROM NEW SOURCES

Permit Requirement: The means and methods that will be utilized to address discharges into the MS4 from new sources.

The City of Poquoson requires that stormwater discharges from any new development adhere to the criteria outlined in the VSMP regulations for both water quality and quantity. Post-

development stormwater management facilities and structures must meet the design standards and specifications of the Virginia Stormwater BMP Clearinghouse, and plans for proposed post-development stormwater management facilities must be reviewed and approved by the City. In addition, all construction activities must follow the minimum standards and requirements outlined in Virginia's Erosion and Sediment Control Law as well as the City's Erosion and Sediment Control ordinance, to prevent sediment-laden stormwater from being discharged into receiving waters.

Also, the City restricts all development in its RPAs in accordance with the Chesapeake Bay Preservation Act. In an effort to protect water quality, all City upland areas outside the RPAs were designated as RMAs in 1991. This designation exceeds the Chesapeake Bay Act's minimum technical requirements for RMA designation. The City's Environmental Management Area Overlay District ordinance allows the City to request that a Water Quality Impact Assessment be performed for any proposed land disturbance, development, or redevelopment activity within an RMA, when the City deems it necessary due to unique site conditions, or the intensity of the proposed use, development or redevelopment.

4. ESTIMATE OF ANNUAL POC LOADS DISCHARGED FROM EXISTING SOURCES AS OF JUNE 30, 2009

Permit Requirement: 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.

To determine the POC loads from existing sources, the City delineated Poquoson's MS4 boundary carefully using guidance from VAMSA and definitions from DEQ. The City's GIS data and aerial imagery from 2009 were used to delineate the MS4 area. Contour information, storm system pipe and structure data, as well as infrared LiDAR data obtained from NASA, were used to determine drainage patterns during the delineation process. Drainage ditches through private property were not included as part of the City's MS4 area, except for those ditches that the City identified as being maintained by City personnel. The majority of the City's outfall ditches are tidal at some point, and interstate waters and wetlands are outside of the City's MS4 jurisdiction. The MS4 area was terminated where outfall ditches reached "vegetated wetlands." Virginia's definition of vegetated wetlands is those lands between mean low water and an elevation above mean low water equal to 1.5 times the mean tide range. Using the Sewell's Point tidal recording station, this elevation is approximately equal to 2.16 feet on the NAVD88 datum. Figure 1 maps the resulting MS4 service area.

Land cover within the MS4 as of June 30, 2009 was also determined using the City's aerial imagery and parcel development data. The types of land cover identified within the City's MS4 area were regulated urban pervious, regulated urban impervious, and forested land. Forested land was only included if it met the Bay Program size requirement of a contiguous area at least 30 meters by 30

meters. Forested areas on the edge of the MS4 boundary were included if they were less than 30 meters square, but were part of a contiguous area greater than 30 meters by 30 meters. Tidal marsh areas within the MS4 are included as forested land. Land cover within the City's MS4 is listed in Table 1 and shown in Figure 2. Table 2 lists the annual pollutant loads generated by existing sources as of June 30, 2009.

The land cover found in Table 1 was revised for this December 30, 2015 Action Plan update to account for approximately 11.3 acres of forested land that had been excluded by DEQ's March 19th guidance memorandum, and was counted as regulated urban pervious land in the June 30, 2015 Action Plan. The net result is a very small decrease in required pollutant reductions for the first two permit cycles. For the first permit cycle, the required nutrient reductions are reduced by 0.26 pounds of nitrogen, 0.02 pounds of phosphorus, and 3.60 pounds of suspended solids. The second permit cycle reductions are reduced by 1.82, 0.14, and 25.19 pounds of nitrogen, phosphorus and suspended solids respectively. These reductions do not have any impact on the means and methods for meeting the nutrient reduction requirements for the first two permit cycles.

5. DETERMINATION OF TOTAL POLLUTANT LOAD REDUCTIONS

Permit Requirement: 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 purposes 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.

The five-percent required nutrient reductions for the first permit cycle are based on the land cover acreages within the MS4 and the required reduction in loading rates from Table 3d in the City's MS4 permit. As previously mentioned, DEQ's May 18, 2015 final guidance memo recognized that the required reductions in loading rates found in Table 3d of the City's MS4 permit contain problematic rounding of significant digits. This updated Action Plan uses the corrected load reductions from the May 18, 2015 guidance memorandum.

Table 3 lists the total reductions required for the first permit cycle. It should be noted that the City's MS4 area in this Action Plan includes the City's 2010 Census urbanized area, and that land was included in the calculations of the reduction requirements for the first permit cycle.

6. MEANS AND METHODS TO MEET THE REQUIRED REDUCTIONS WITH SCHEDULE

Permit Requirement: The means and methods, such as 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.

To satisfy the first permit cycle requirements, Poquoson has identified three specific projects, one of which is already complete, two of which are under design and are funded through a SLAF grant, and four additional qualifying BMPs that all together meet the City's required reductions. The project and BMP locations are shown in Figure 3. Table 4 documents the pollutant reductions for these projects and BMPs.

Pollutant removals for the proposed wet pond and created wetland currently under design were calculated along with the land use conversion for the property at 127 Ridge Road to determine the remainder of the first permit cycle reductions. Because the created wetland does not meet the water quality volume under the Virginia BMP Clearinghouse specifications for a level 1 design, the Bay Program retrofit curves were used to determine the pollutant removal efficiencies. With a treatment depth of only 0.23 inches over the impervious area treated, the removal rates are approximately half of those for a level 1 design. The land use conversion at 127 Ridge Road involved the conversion of 0.08 acres of impervious land and 0.21 acres of managed turf to grass. The grass on this parcel will be unmanaged. Figure 4 shows photos of the converted property taken on December 10, 2015.

During its 2015 Historical Data Cleanup, the City identified four BMPs within its MS4 service area that were implemented between January 1, 2006 and June 30, 2009, and thus are eligible for credit towards the City's required five-percent POC reductions during the first permit cycle. Three of the BMPs are wet ponds (Hunts Neck Estates, Island Cove, and River's Edge) and one is an infiltration basin (Villas Phase 2) that was verified during the Historic Data Cleanup to be in good order and functioning as designed. The calculated reductions for these BMPs are included in Table 4.

It should be noted that the service areas and impervious acres served that were reported for the Hunts Neck Estates wet pond, and the Villas Phase 2 infiltration basin were taken from engineering calculations submitted to the City for the BMPs prior to construction. When calculating the reduction loads for those BMPs, GIS data was checked to confirm the land cover in the service areas. Discrepancies were found in the impervious areas served for both BMPs, and the total service area for the Villas Phase 2 infiltration basin. The Hunts Neck Estates wet pond has a service area of 16.46 acres. Impervious acres served were reported as 6.13 acres, but GIS data and aerial photos show that area to be approximately 2.51 acres. Similarly, The Villas Phase 2 infiltration basin has a service area of 3.59 acres—not the 4.13 acres as initially reported—with an impervious area served of 0.99 acres, not 2.2 acres. In both cases the changes are conservative, resulting in less impervious acres served, and a slight reduction in phosphorus removal.

In addition to the BMP construction projects listed above, the City will take nitrogen reduction credit for recent disconnections of household septic tanks and the conversions of the lots to sanitary sewer hookups. During the mid-2000s, the City spent millions of dollars to install new sanitary sewer lines and make pump station upgrades. Currently, it is estimated that more than 95% of the City's parcels are connected to the sanitary sewer system. With less than thirty parcels remaining with septic tanks, the City is working towards a 100% connection rate to its sanitary sewer system.

In a June 17, 2015 conference call with the Hampton Roads Regional Stormwater Work Group, DEQ decided that localities could take nitrogen reduction credits for sanitary sewer connections equal to 3.6 pounds of TN per person per year. In a June 29, 2015 email to the City, DEQ stated that when determining the number of individuals in a household for calculating sewer connection credits, the average number of people per household based on the latest Census data for that locality should be used. For Poquoson that number is 2.62 people per household.

Since July 1, 2009, the City has disconnected seven septic tanks and connected those parcels to the sanitary sewer system. Using 2.62 people per household, and nitrogen reductions of 3.6 lbs TN/person/year results in a reduction of 9.43 lbs TN/year for each household disconnected. With seven household disconnects, the total nitrogen reduction is 66.02 lbs/yr.

The City will reserve the right to make adjustments to this plan, and to substitute any projects that can achieve the required pollutant reductions at less total cost. Alternative BMPs and nutrient credit trading opportunities that are not available in 2015 could become available in time to be implemented by June 30, 2018.

7. MEANS AND METHODS TO OFFSET INCREASED LOADS FROM CONSTRUCTION BETWEEN JULY 1, 2009 AND JUNE 30, 2014

Permit Requirement: 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.

Poquoson has consistently used an average land cover condition of 16% impervious cover for the design of post-development stormwater management facilities. The City therefore does not have to identify any means and methods to offset increased loads from new sources initiating construction between July 1, 2009 and June 30, 2014—as addressed in Phase II General Permit Section I.C.2.a.(7).

8. MEANS AND METHODS TO OFFSET INCREASED LOADS FROM GRANDFATHERED PROJECTS

Permit Requirement: 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.

Poquoson does not have any grandfathered projects that began construction after July 1, 2014—as addressed in Phase II General Permit Section I.C.2.a.(8). Therefore, there are no required means and methods to offset increased loads from grandfathered projects.

9. ANY MODIFICATION TO THE TMDL OR WATERSHED IMPLEMENTATION PLAN

Permit Requirement: The operator shall address any modification to the TMDL or watershed implementation plan that occurs during the term of this state permit as part of its permit reapplication and not during the term of this state permit.

The City of Poquoson reserves the right to substitute locations, sizes and types of treatment practices if more cost effective measures are approved by the Bay Program or if site conditions warrant. Modifications to the TMDL plan shall be addressed during the permit reapplication.

10. FUTURE PROJECTS AND ASSOCIATED ACREAGE THAT QUALIFY AS GRANDFATHERED

Permit Requirement: A list of future projects and associated acreage that qualify as grandfathered in accordance with 4VAC50-60-48.

There are no future projects and associated acreage within the City that qualify as grandfathered in accordance with 4VAC50-60-48.

11. ESTIMATE OF EXPECTED COSTS

Permit Requirement: An estimate of the expected costs to implement the requirements of this special condition during the state permit cycle.

The total implementation cost of four proposed projects identified in the June 30, 2015 version of this Action Plan was estimated to be \$238,831. As described elsewhere in this December 30, 2015 update, Poquoson will meet its requirements for the first permit term and exceed the five-percent compliance level documented in Table 3 without constructing additional projects. The projects that meet the five-percent goal are documented in Tables 4 through 6.

12. PUBLIC COMMENT

Permit Requirement: An opportunity for receipt and consideration of public comment regarding the draft Chesapeake Bay TMDL Action Plan.

The City of Poquoson Chesapeake Bay TMDL Action Plan was discussed at a televised City Council Work Session on June 22, 2015, and made available on line on the City website, and at City Hall on Friday, June 26, 2015. Public Comments were received from June 26, 2015 to July 27, 2015.

Table 1. City of Poquoson Regulated MS4 Area

MS4 Land Use	Area (ac)
Regulated Impervious	636.28
Regulated Pervious	1,631.04
Forest*	828.33
Open Water*	15.94
Total Area	3,111.59

* Excluded land

Table 2. Existing Pollutant Loads (As of June 30, 2009)

Pollutant	Subsource	2009 EOS Loading Rate for the York River Basin (lbs/ac) ¹	Total Existing Acres Served by MS4 (6/30/09)	Estimated Load (lbs)	Estimated Total POC Load Based on 2009 Progress Run (lbs)
Nitrogen	Regulated Impervious	7.31	636.28	4,651.21	17,128.66
	Regulated Pervious	7.65	1,631.04	12,477.46	
Phosphorus	Regulated Impervious	1.51	636.28	960.78	1,792.61
	Regulated Pervious	0.51	1,631.04	831.83	
TSS	Regulated Impervious	456.68	636.28	290,576.35	409,283.44
	Regulated Pervious	72.78	1,631.04	118,707.09	

1. Existing Source Loads for the York River Basin taken from Table 2d of the City's MS4 General Permit.

Table 3. Reductions Required During First Permit Cycle (5% of the Level 2 Scoping Run)

No offsets are required for "New Sources" as of 06/30/2009. An average land cover of 16% imperviousness was used by the City for the design of post-development stormwater management facilities for development that occurred between June 30, 2009 and June 30, 2014.

Pollutant	Subsource	First Permit Cycle Required Reduction in Loading Rate (lbs/ac)	Total Existing Acres Served by MS4 (6/30/09)	Reduction Required (lbs)	Total Reduction Required During First Permit Cycle (lbs)
Nitrogen	Regulated Impervious	0.032895	636.28	20.93	58.36
	Regulated Pervious	0.02295	1,631.04	37.43	
Phosphorus	Regulated Impervious	0.01208	636.28	7.69	10.70
	Regulated Pervious	0.00184875	1,631.04	3.02	
TSS	Regulated Impervious	4.56680	636.28	2,905.76	3,425.11
	Regulated Pervious	0.3184125	1,631.04	519.34	

Table 4. Computation of Proposed Credits for First Permit Cycle (5% of the Level 2 Scoping Run)

SUMMARY — Reductions Required for First Permit Cycle, 5% of the Level 2 Scoping Run			
	TN	TP	TSS
5% Required Annual Reductions - (1st Permit Cycle)	58.36	10.70	3,425.11
Total Annual Reductions (lbs/yr) from BMPs	162.76	18.57	5,597.70
Pounds in Excess of Requirements: (carried forward to 2nd permit cycle)	✓ 104.40	✓ 7.87	✓ 2,172.59

1-1. Proposed Created Wetland (In Progress)

Land Use	Acres	Loading Rates (lbs/ac/yr)			Pollutant Loads (lbs/yr)		
		TN	TP	TSS	TN	TP	TSS
Forest	7.42	2.13	0.07	27.61	15.80	0.52	204.87
Reg. Pervious	4.14	7.65	0.51	72.78	31.67	2.11	301.31
Reg. Impervious	8.88	7.31	1.51	456.68	64.91	13.41	4,055.32
Total (lbs/yr)					112.39	16.04	4,561.49
Removal Efficiency*					15%	24%	30%
Annual Reduction (lbs/yr)					16.86	3.85	1,368.45

*Efficiencies taken from the Bay Program Retrofit Curves for a treatment depth of 0.23 inches.

1-2. Proposed Wet Pond (In Progress)

Land Use	Acres	Loading Rates (lbs/ac/yr)			Pollutant Loads (lbs/yr)		
		TN	TP	TSS	TN	TP	TSS
Forest	1.86	2.13	0.07	27.61	3.96	0.13	51.35
Reg. Pervious	1.84	7.65	0.51	72.78	14.08	0.94	133.92
Reg. Impervious	3.41	7.31	1.51	456.68	24.93	5.15	1,557.28
Total (lbs/yr)					42.96	6.22	1742.55
Removal Efficiency*					20%	45%	60%
Annual Reduction (lbs/yr)					8.59	2.80	1045.53

*Chesapeake Bay Program established efficiencies for wet ponds.

1-3. Land Use Change - 127 Ridge Rd. (Completed)

Area Converted	Acres	Load Reductions (lbs/ac/yr)			Total Reductions (lbs/yr)		
		TN	TP	TSS	TN	TP	TSS
Impervious to Grass	0.08	6.06	1.17	430.00	0.48	0.09	34.40
Pervious to Grass*	0.21	4.41	0.08	-	0.93	0.02	-
Total Reduction for Land Conversion (lbs/yr)					1.41	0.11	34.40

*Pervious land converted was managed turf. See Figure 4 for photos.

Table 4. Computation of Proposed Credits for First Permit Cycle (5% of the Level 2 Scoping Run)

1-4. Hunts Neck Estates Wet Pond (Online 2/2/2006)

Land Use	Acres	Loading Rates (lbs/ac/yr)			Pollutant Loads (lbs/yr)		
		TN	TP	TSS	TN	TP	TSS
Forest	1.09	2.13	0.07	27.61	2.32	0.08	30.09
Reg. Pervious	12.86	7.65	0.51	72.78	98.38	6.56	935.95
Reg. Impervious	2.51	7.31	1.51	456.68	18.35	3.79	1,146.27
Total (lbs/yr)					119.05	10.43	2,112.31
Removal Efficiency*					20%	45%	60%
Annual Reduction (lbs/yr)					23.81	4.69	1,267.39

*Chesapeake Bay Program established efficiencies for wet ponds.

1-5. Island Cove Wet Pond (Online 6/21/2007)

Land Use	Acres	Loading Rates (lbs/ac/yr)			Pollutant Loads (lbs/yr)		
		TN	TP	TSS	TN	TP	TSS
Forest	0.14	2.13	0.07	27.61	0.30	0.01	3.87
Reg. Pervious	4.28	7.65	0.51	72.78	32.74	2.18	311.50
Reg. Impervious	1.28	7.31	1.51	456.68	9.36	1.93	584.55
Total (lbs/yr)					42.40	4.13	899.91
Removal Efficiency*					20%	45%	60%
Annual Reduction (lbs/yr)					8.48	1.86	539.95

*Chesapeake Bay Program established efficiencies for wet ponds.

1-6. River's Edge Wet Pond (Online 12/3/2007)

Land Use	Acres	Loading Rates (lbs/ac/yr)			Pollutant Loads (lbs/yr)		
		TN	TP	TSS	TN	TP	TSS
Forest	1.76	2.13	0.07	27.61	3.75	0.12	48.59
Reg. Pervious	8.77	7.65	0.51	72.78	67.09	4.47	638.28
Reg. Impervious	1.17	7.31	1.51	456.68	8.55	1.77	534.32
Total (lbs/yr)					79.39	6.36	1,221.19
Removal Efficiency*					20%	45%	60%
Annual Reduction (lbs/yr)					15.88	2.86	732.71

*Chesapeake Bay Program established efficiencies for wet ponds.

Table 4. Computation of Proposed Credits for First Permit Cycle (5% of the Level 2 Scoping Run)

1-7. Villas Phase 2 Infiltration Basin (Online 7/1/2008)

Land Use	Acres	Loading Rates (lbs/ac/yr)			Pollutant Loads (lbs/yr)		
		TN	TP	TSS	TN	TP	TSS
Forest	-	2.13	0.07	27.61	-	-	-
Reg. Pervious	2.60	7.65	0.51	72.78	19.89	1.33	189.23
Reg. Impervious	0.99	7.31	1.51	456.68	7.24	1.49	452.11
Total (lbs/yr)					27.13	2.82	641.34
Removal Efficiency*					80%	85%	95%
Annual Reduction (lbs/yr)					21.70	2.40	609.27

*Chesapeake Bay Program established efficiencies for infiltration practices w/o sand, veg.

1-8. Septic Tank Disconnects/Connections to Sanitary Sewer

Conversion	Number of Households Connected to Sewer	Load Reductions (lbs/Household/yr)*			Total Reductions (lbs/yr)		
		TN	TP	TSS	TN	TP	TSS
Septic to Sanitary Sewer	7.0	9.432	-	-	66.02	-	-
Total Reduction for Land Conversion (lbs/yr)					66.02	-	-

*Per email from DEQ to City on June 29, 2015 based on a stream loading value of 3.6 lb TN/year/person and an average number of people per household of 2.62 based on Poquoson's 2009-2013 Census data.

See the summary at the beginning of this table for cumulative totals.

Table 5. Projects for First Permit Cycle (5% of the Level 2 Scoping Run)

Project	Location(s)	2015 Estimated Cost ¹	Notes
1-1. Proposed Created Wetland (In Progress)	Adjacent to Oxford Run Ditch just south of Victory Boulevard	-	Project funded previously (SLAF grant)
1-2. Proposed Wet Pond (In Progress)	Adjacent to Oxford Run Ditch, west of the City Hall parking lot	-	Project funded previously (SLAF grant)
1-3. Land Use Change - 127 Ridge Road (Completed)	127 Ridge Road	-	Project completed previously
1-4. Hunts Neck Estates Wet Pond	South of Volunteer Trail, in the Hunts Neck Estates Subdivision	-	Pond online 2/2/2006
1-5. Island Cove Wet Pond	North of Elm Street in the Island Cove subdivision	-	Pond online 6/21/2007
1-6. Rivers Edge Wet Pond	Adjacent to Hollingsworth Way	-	Pond online 12/3/2007
1-7. Villas Phase 2 Infiltration Basin	Between Ambrosia Place and Government Ditch	-	Basin online 7/1/2008
1-8. Septic Tank Disconnects/Connections to Sanitary Sewer	(See notes)	\$ -	Completed after July 1, 2009
Total Cost:		\$ -	

Notes:

1. These projects have been fully funded or completed prior to December 30, 2015. There will be no additional cost to construct them.
2. See Figure 3 for specified locations.
3. See Table 4 for computation and tabulation of Chesapeake Bay TMDL pollutant removal credits.
4. The following parcels were connected to sanitary sewer: 220 Browns Neck Rd., 2 Lyons Creek Dr., 3 Lyons Creek Dr., 4 Lyons Creek Dr., 5 Lyons Creek Dr., 6 Lyons Creek Dr., 201-A Odd Rd. Nitrogen reductions were based on a stream loading value of 3.6 lb TN/year/person, and an average of 2.62 people per household in Poquoson according to the City's 2009-2013 Census data. The stream loading value of 3.6 lb TN/year/person and Poquoson's average number of people per household of 2.62 were confirmed in a DEQ email to the City dated June 29, 2015.

Table 6. Schedule for First Permit Cycle (5% of the Level 2 Scoping Run)

Project	DATES ²			Notes
	BMP Initiated ¹	BMP Construction to Begin	BMP Installation Completed	
1-1. Proposed Created Wetland (In Progress)	n/a	1/22/2016	6/20/2016	SLAF grant. Design completed in 2015.
1-2. Proposed Wet Pond (In Progress)	n/a	1/22/2016	6/20/2016	SLAF grant. Design completed in 2015.
1-3. Land Use Change - 127 Ridge Rd. (Completed)	n/a	-	Before 6/30/2014	Completed.
1-4. Hunts Neck Estates Wet Pond	n/a	-	2/2/2006	Completed.
1-5. Island Cove Wet Pond	n/a	-	6/21/2007	Completed.
1-6. Rivers Edge Wet Pond	n/a	-	12/3/2007	Completed.
1-7. Villas Phase 2 Infiltration Basin	n/a	-	7/1/2008	Completed.
1-8. Septic Tank Disconnects/Connections to Sanitary Sewer	After 6/30/2009	-	-	Completed.

Notes:

1. This column is for non-structural BMPs.
2. This information is formatted as requested in DEQ Guidance Memo No. 15-2005 (Finalized 5/18/2015).
3. This schedule can be used as the annual benchmarks required by the Phase II General Permit.

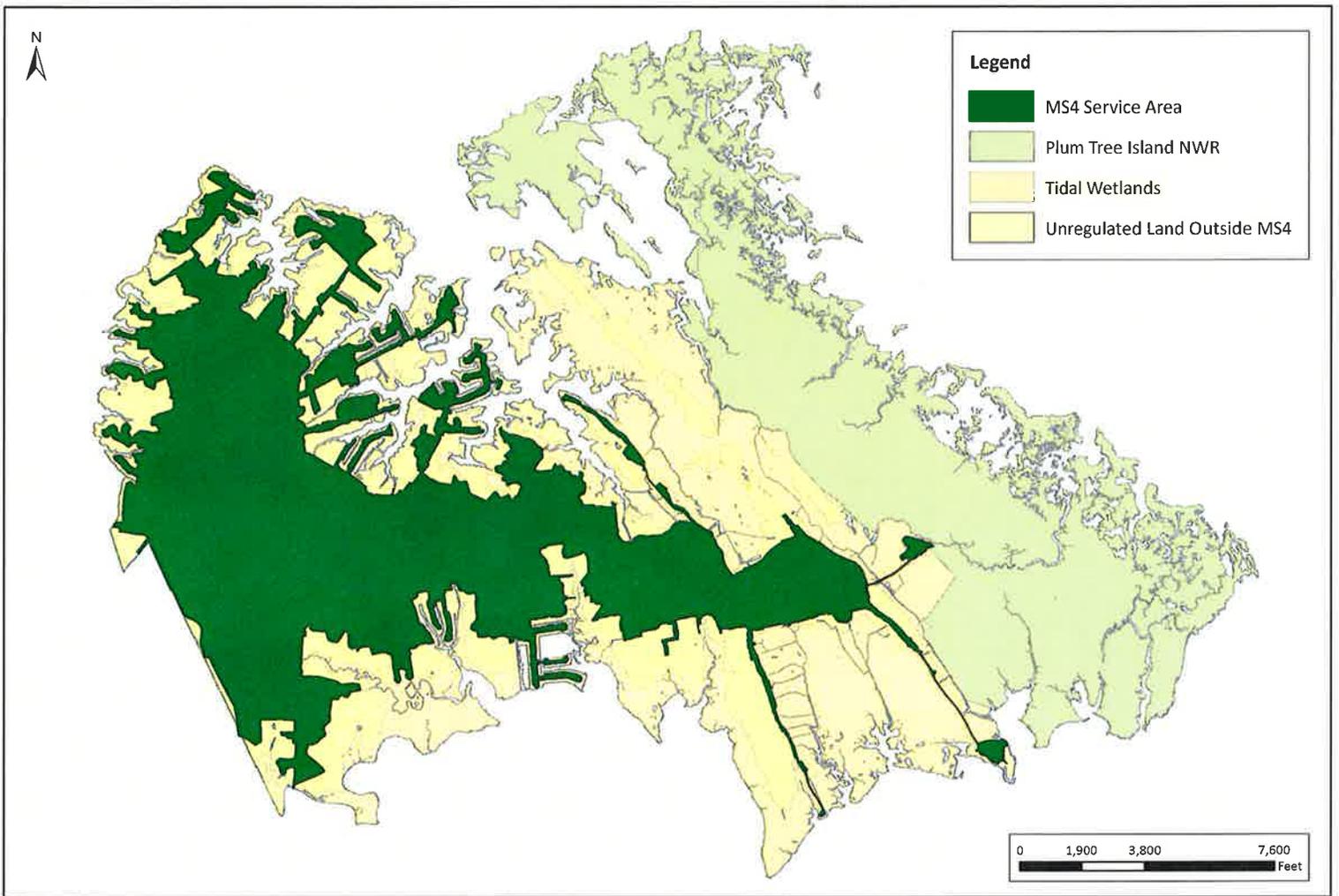


Figure 1. City of Poquoson's MS4 Service Area

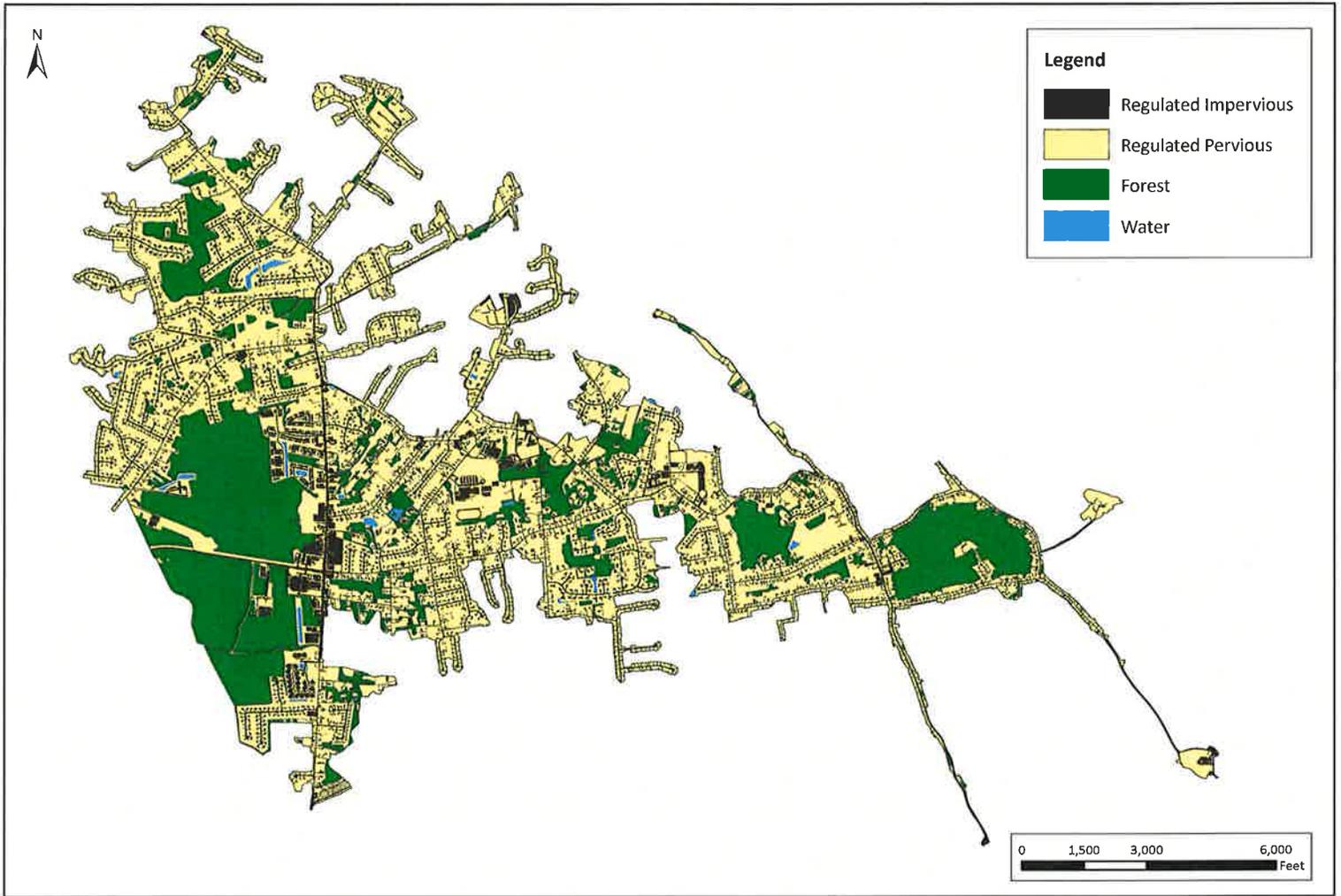


Figure 2. Land Use in the MS4 Service Area

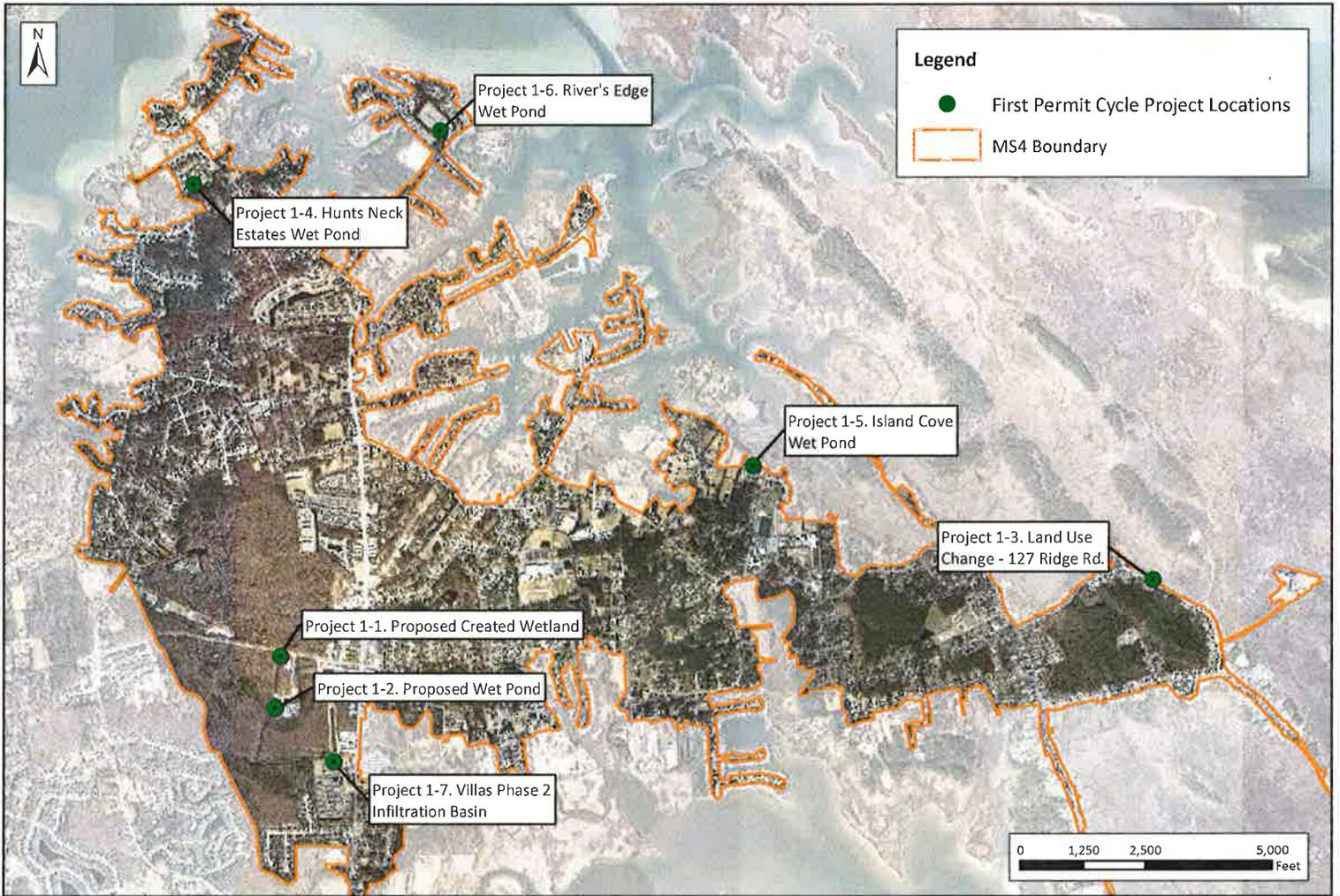


Figure 3. Project Locations for First Permit Cycle (5% of the Level 2 Scoping Run)



Figure 4. Photos of Land Conversion at 127 Ridge Road

