2005 VPDES Permit Annual Report

Fairfax County, Virginia

VPDES Permit No. 0088587

March 9, 2006

As required in Fairfax County's Virginia Pollutant Discharge Elimination System (VPDES) permit issued January 24, 2002 for five years, the following annual report is submitted to the Department of Conservation and Recreation (DCR). This report covers the previous calendar year from January 1, 2005 to December 31, 2005 and includes all the material required in the county's permit.

Annual Report requirements as specified in Part I section C.4 of the permit are bold and underlined below and *the stormwater program requirements as specified in the permit, Part I sections B.1, C.1, C.2 and C.3 of the permit are in italics* under the applicable annual report section. The approximations of annual expenditures for the reporting period, with a breakdown for the major elements of the Storm Water Management Program, and the budget for the following year is in sub-section d) of this report.

Attached is the 2005 Fairfax County Status Report on the Municipal Separate Storm Sewer System (MS4) with appendices, which discusses stormwater management and how the county's program protects public safety; preserves property values; ensures environmental sustainability; and supports environmental mandates such as those aimed at protecting the Chesapeake Bay and the water quality of other local waterways. Combined, these two reports along with the 13 appendices provide DCR and other interested professionals and citizens with the complete story of stormwater management in Fairfax County.

NOTE: Fairfax County's response to the annual report and permit requirements are indented.

a) Provide the status of the components of the Watershed Management Program to include a summary of the implementation of each component and an evaluation of the effectiveness of each component.

The Municipal Separate Storm Sewer System and any storm water structural controls shall be operated in a manner that reduces the discharge of pollutants to the maximum extent practicable, B.1.a).

Watershed management plans are one component of the Virginia Pollutant Discharge Elimination System Permit requirements and the Fairfax County Board of Supervisors' Environmental Agenda Elements *(see Appendix B of attached report)* program of maintaining safe and caring communities, protecting the environment, and promoting environmental stewardship. Two watershed management plans have been completed and are being implemented. Four additional plans are being drafted with anticipated completion in 2006. Combined these six plans will cover 55 percent of the land area in the county. Within the next few years watershed management plans will be completed for the entire county. The watershed plans provide an assessment of stormwater conditions, encourage public involvement, and prioritize recommendations for implementation within each watershed.

The goals of the plans include protecting and meeting state and federal water quality standards by identifying strategies to prevent and remove pollution, to support Virginia's commitment under the Chesapeake Bay 2000 Agreement to clean up and restore the bay, to replace the current 1970s-era watershed management plans, and to restore and protect the county's streams and

enhance property values. Additionally, these plans will provide a consistent basis for the evaluation and implementation of solutions for protecting and restoring the health of receiving water, the ecological systems, and other natural resources of the county.

The development of comprehensive watershed management plans commenced in 2003 with the Little Hunting Creek Watershed. The plans include the following tasks: 1) review and synthesis of previous studies and data compilation; 2) evaluation of current conditions and a projection of ultimate development conditions; 3) development of non-structural and structural watershed management alternatives; 4) capital project implementation options including preliminary cost estimates, cost/benefit analysis, and prioritization; 5) Public involvement; and 6) documentation of the watershed management plan.

a.1) Structural and Source Controls

a.1 (a) Report all inspections performed on SWM facilities and BMP Ponds.

Last year Fairfax County inspected all 1,178 county maintained Stormwater Management (SWM) and Best Management Practice (BMP) facilities at least once and also inspected 457 (20%) of the 2251 privately maintained facilities. All facilities are routinely scheduled for inspection by the county with the goal of performing a thorough inspection of each facility at least once every 5 years within the permit period. In addition, 215 miles of county-maintained storm sewers were inspected for deficiencies and 261 work orders were written to correct the deficiencies and all deficiencies were corrected.

a.1 (b) Report all maintenance performed on SWM facilities and BMP Ponds.

During 2005, the county mowed 584 dam embankments, and performed 206 maintenance work orders to correct deficiencies in county maintained SWM/BMP facilities. In addition, detailed inspection reports with photographs and Geographic Information Systems (GIS) maps were provided to the owners of 457 privately maintained facilities upon completion of the inspection. The county is continuing to ramp up its efforts to ensure privately maintained facilities are maintained and operated consistent with industry standards. Education of owners/operators of stormwater management facilities continues to be effective in achieving the desired level of service for these facilities.

The county maintained dams are inspected every year by Fairfax County Department of Public Works and Environmental Services (DPWES) staff and representatives from the Natural Resources Conservation Services (NRCS) and the Northern Virginia Soil and Water Conservation District (NVSWCD). In addition, a biennial inspection is conducted by an engineering firm under contract with the county or by in-house professional engineering staff with expertise in dam design and construction. Additional facilities are being studied to determine what, if any, remedial measures need to be taken to ensure that they meet the state's criteria for dam safety. The purpose of this formal inspection is to identify any safety or operational items in need of corrective action. These inspections satisfy state requirements for dam safety. State issued operating permits are valid for six years and must be reissued at the end of each permitting period. Permit reissuing is tied to the most recent biennial inspection and its attached operation and maintenance plan. Based on these formal inspections, as well as other less

formal inspections, a work program to correct deficiencies and address maintenance items is established and implemented. Critical items such as the stability of the dam embankment and the functioning of the water control structures are addressed on a priority basis. Routine items such as mowing are accomplished on a scheduled basis, currently five times per year.

a.2) Areas of New Development and Significant Redevelopment

The permittee shall comply with and enforce all components of the County's Comprehensive Land Use Plan that are relevant to storm water discharges. The goals of such controls shall be to limit increases in the discharge of pollutants from storm water as a result of development and significant re-development.

On November 15, 2004, the Board of Supervisors adopted an amendment to the Comprehensive Plan pursuant to the comprehensive planning requirements of Virginia's Chesapeake Bay Preservation Act and Chesapeake Bay Preservation Area Designation and Management Regulations. Included in the amendment were revisions and additions to Comprehensive Plan text and policies as well as the incorporation into the plan of a "Chesapeake Bay Supplement." The amendment satisfied the specific requirements identified by the state while more comprehensively addressing water resource conditions, issues, policies, regulations, and initiatives in support of the county's commitment to the regional Chesapeake Bay Program, in furtherance of the county Board of Supervisors' "Environmental Excellence 20-year Vision Plan," and in support of other environmental and open space goals. The supplement presents information regarding water quality factors, water pollution sources, water quality conditions, and shoreline conditions in the county within the context of the county's land use and its water quality policies, regulations, and initiatives. The supplement culminates in an analysis and series of recommendations addressing water pollution sources, infill development, redevelopment, shoreline erosion control, and shoreline access.

The Environmental Quality Corridor (EQC) policy, as found in the Environment section of the Policy Plan volume of the county's Comprehensive Plan, does not directly address stormwater discharges; however, it is particularly relevant to the county's overall water quality management program as it serves to identify, protect, and, in some cases, restore environmentally-sensitive resources. Specifically, the EQC policy recommends the preservation and restoration of areas including floodplains, steep slopes (slope gradients of 15% or greater) adjacent to streams or floodplains, wetlands connected to stream valleys, minimum stream buffers (variable in width depending on topography), and sensitive habitat areas. While there is no county regulation requiring EQC protection (Resource Protection Areas (RPA) and floodplain provisions in the County Code protect many, but not all, EQC areas), the application of the EQC policy during the zoning process has been effective in protecting, and in some cases restoring, environmentally-sensitive areas.

Another area of interest with respect to the Comprehensive Plan is an objective addressing water quality and stream protection; there are a series of policy statements in the plan that are related to this objective. This section of the plan was amended in the year 2000 to provide explicit support for better site design and low impact design (LID) measures, and opportunities to implement such measures are explored during the zoning process. In a number of cases, staff has negotiated successfully for measures such as reductions in proposed impervious cover and the provision of biofiltration facilities (rain gardens) to provide water quality control through infiltration.

The Environment and Development Review Branch of the Department of Planning and Zoning (DPZ), in coordination with other DPZ staff and staff from other county agencies, reviewed 147 rezonings and related applications (e.g., amendments), 72 special exceptions and amendments, and 78 special permits in 2005 for environmental considerations.

Stormwater management and drainage issues continue to be evaluated throughout the development review process, and the county continues to seek improvements in how these issues are addressed during this process. On March 29, 2004, the Board of Supervisors adopted an amendment to the Zoning Ordinance that substantially expanded the submission requirements for all special permit, special exception, rezoning, and development plan applications as they relate to stormwater management and drainage issues. The amendment also significantly restricted the extent to which the limits of clearing and grading for stormwater management facilities can be expanded (such expansions are not permissible where they will result in a reduction of non-stormwater management open space, tree save, and/or landscaping area on the property in question). Details are provided in a letter to industry that was sent to all Architects, Builders, Developers, Engineers, and Surveyors practicing in Fairfax County. The letter can be found at the following Web address:

http://www.fairfaxcounty.gov/dpwes/publications/lti/04-06.htm

In conjunction with the adoption of this amendment, the technical review of stormwater management and drainage issues during the development review process was strengthened.

In September, 2002, the Board of Supervisors adopted a plan amendment to revise the criteria used to evaluate residential development proposals. This amendment included a heightened emphasis on environmental protection, including stormwater management. The following text was added to address water quality and drainage issues; this text is applied during the review of all residential rezoning requests:

> **Water Quality**: **Developments should minimize off-site impacts on water quality by commitments to state-of-the-art best management practices for stormwater management and low-impact site design techniques.**
>
> **Drainage**: **The volume and velocity of stormwater runoff from new development should be managed in order to avoid impacts on downstream properties. Where drainage is a particular concern, the applicant should demonstrate that off-site drainage impacts will be mitigated and that stormwater management facilities are designed and sized appropriately. Adequate drainage outfall should be verified, and the location of drainage outfall (onsite or offsite) should be shown on development plans.**

DPZ staff is implementing this Comprehensive Plan guidance during the rezoning process for proposed residential projects.

a.3) Roadways

Public streets, roads, and highways maintained by the permittee shall be operated and maintained in a manner to minimize discharge of pollutants, including those pollutants related to deicing or sanding activities.

The county maintains the roadways and parking lots of public facilities such as government centers, libraries, fire stations, police stations, health centers, bus transit facilities, park and ride

lots, commuter rail stations, and approximately 5 miles of road segments. In an effort to limit the discharge of sand and deicing materials into the county's streams, sand and chemical treatment are provided when dictated by safety. Magnesium chloride is used on sidewalk applications as necessary, as it is more environmentally acceptable than sodium chloride. In an effort to reduce the discharge of these materials into the county's streams, the County performed sweeping operations at a total of 64 sites.

a.4) Retrofit

Receiving water quality impacts shall be assessed for all storm water management facilities. When the permittee determines water quality impact, they shall continue to evaluate and implement retrofitting existing storm water management facilities and areas without stormwater controls.

In 2005, seven stormwater management ponds, serving a drainage area greater than 80 acres, were rehabilitated and/or retrofitted. Rehabilitations consisted of repair, replacement, or modification of the facility to meet or exceed safety and functional requirements and to extend the service life of each facility. Retrofits employed the use of shallow wetland marshes to enhance nutrient uptake and provide an increase in water absorption and transpiration. A secondary effect of wetland marshes and naturally vegetated pond floors is the creation of habitat for wildlife.

In addition, two regional stormwater management facilities were completed during 2005 providing BMP for 60 acres and controlling stormwater runoff from 192 acres of land. There were an additional twelve regional facilities in the design plan stage in 2005.

a.5) Pesticides, Herbicide, and Fertilizer Application

The permittee will implement controls to reduce the discharge of pollutants related to the storage and application of pesticides, herbicides, and fertilizers applied to public right of ways, parks, and other municipal property. The permittee shall develop and implement a program within one year of the effective date of the permit to achieve the above goal.

A Pesticides, Herbicide, and Fertilizer (PHF) application program was submitted on January 24, 2003 in accordance with the above permit requirement. A survey was conducted in 2003 and 2004 and an application rate reduction report was generated recommending the county develop a Nutrient Management Plan (NMP) and an Integrated Pest Management (IPM). The development of a NMP and an IPM is an effort to control excessive use of pesticides, herbicides and fertilizers in the county. Currently the county's 2003/2004 application rate reduction report is being reviewed as well as DCR, EPA, NVSWCD and the Environmental Horticulture Division of Virginia publications on proper use of PHF. An updated survey is being conducted to see what changes may have taken place since 2003. Initially, only county agencies responsible for county public right of ways, parks and other municipal property will be the ones surveyed as they are part of the county's MS4 permit. Other agencies and private organization such as the county's Public schools, private golf courses, Federal Government owned land in the county, Virginia Department of Transportation and others will be asked to participate on a voluntary basis. Personal interviews may also be conducted to further define the current usage of PHF.

In addition, the NMP and IPM of other counties will be reviewed and compared to the data collected in Fairfax County, with the ultimate goal being the development of a NMP and IPM for the county.

a.6) Illicit Discharges and Improper Disposal

a.6 (a) Report all identified illicit dischargers. This shall include site inspections and a description of any follow-up activities associated with illicit dischargers (see No. 12 below for dry weather screening);

Non-storm water discharges to the Municipal Separate Storm Sewer System will be effectively prohibited.

The Fire and Rescue Department's (FRD) Hazardous Materials Investigative Service (HMIS) aggressively enforces County Code Chapters 105 and 106 in conjunction with DWPES and DPZ and has issued criminal citations during the investigations of Hazardous Materials Incidents, and Illicit Discharges and Improper Disposal. Chapters 105 & 106 contain the provisions that address illicit discharges to state waters and the county's storm drainage system. Procedural Memorandum No. 71-01, Illegal Dump Site Investigation, Response, and Cleanup, ***(see Appendix H of attached report)*** outlines the process of follow-up action for non-emergency incidents of illegal dumping; establishes action under County Code Chapter 46, Health or Safety Menaces; and provides referrals for action on complaints that are not public health hazards nor regulated. The Hazardous Materials Technical Support Branch currently monitors 68 active sites undergoing remediation activities.

The Sanitary Sewer Infiltration Abatement Program conducts wastewater flow measurements and analysis to identify areas of the wastewater collection system with excessive inflow/infiltration problems and uses closed circuit television (CCTV) to inspect trunk sewer mains in an effort to specifically identify the defective sewer lines for repair and rehabilitation. In 2005, 229 miles of old sewer lines and 30 miles of new sewer lines were inspected resulting in the repair and rehabilitation of sanitary sewer lines and manholes. In 2005, approximately 115,557 feet of sanitary sewer lines were rehabilitated and over the past eight years this totals 1,155,257 feet (219 miles).

a.7) Spill Prevention and Response

A program to prevent, contain, and respond to spills that may discharge into the Municipal Separate Storm Sewer System shall be implemented. The spill response program may include a combination of spill response actions by the permittee (and/or another public or private entity), and legal requirements for private entities within the permittees' jurisdiction.

The FRD responds to all reported incidents of hazardous material releases, spills, and discharges. Staff are trained and equipped to initiate spill control measures to reduce the possibility of hazardous materials reaching the MS4 drainage system. Resources available to FRD personnel include personal protective equipment, technical tools and equipment for control, and absorbent products such as pads and booms for containment. The FRD also maintains a contract with a major commercial hazardous materials response company to provide additional containment and clean-up support for large-scale incidents.

In 2005, the FRD's HMIS section responded to 584 calls involving hazardous material, including 525 reported spills, leaks or releases of hazardous materials. There were 146 hydraulic oil spills/releases (mostly from trash trucks), 88 fuel oil or home heating oil releases, 51 gasoline releases and 36 diesel fuel releases. There were 66 responses to incidences which had the potential to discharge, or did discharge, hazardous materials into storm drains or surface water.

HMIS staff, through vigorous enforcement of appropriate codes and ordinances, ensures that the responsible party takes appropriate spill control and cleanup action. In both emergency and non-emergency spills that reach the municipal storm sewer system, HMIS staff utilizes appropriate enforcement actions to ensure that proper cleanup activities are undertaken to protect and restore the environment as well as recover costs incurred by the county for initial emergency response to the incident.

The HMIS monitors, on a long-term basis, contaminated sites that have a potential for the contaminant coming in contact with surface structures including stormwater management facilities. As a part of the Oversight Program, HMIS, as an agent of the Director of DPWES, accepts, reviews, and processes requests to discharge treated groundwater from remedial activities at those sites into county sewers. HMIS then monitors the discharge for the duration of the agreement. DPWES staff members receive regular training in pollution prevention measures and in proper response procedures for incidences where pollutants or spills are found that are exposed to stormwater. Select groups are also trained in the proper handling of hazardous wastes and operate the Household Hazardous Waste collection program.

a.8) Industrial & High Risk Runoff

a.8 (a) Report on all inspections of any new or previously unidentified facilities.

a.8 (b) Report an updated list of all industrial storm water sources and VPDES permitted facilities that discharge into the MS4.

A program to identify and control pollutants in storm water discharges to the Municipal Separate Storm Sewer System (municipal landfills; other treatment, storage, or disposal facilities for municipal waste; hazardous waste treatment, storage, disposal and recovery facilities; facilities that are subject to EPCRA Title III, Section 313) and any other industrial or commercial discharge the permittee determine are contributing a substantial pollutant loading to the Municipal Separate Storm Sewer System shall be implemented under this program:

Fairfax County's efforts on the permit requirement for Industrial and High Risk Runoff is in sections a.12.b (and c) of this report, which contains a discussion of the county's Wet Weather and Industrial and High Risk Runoff Monitoring Program.

In addition, Fairfax County's Division of Solid Waste Disposal and Resource Recovery, DPWES, is responsible for the operation of the I-95 Landfill located at 9850 Furnace Road, Lorton, Virginia 22079, and the I-66 Transfer Station/Closed Landfill, located at 4618 West Ox Road, Fairfax, Virginia 22030. Both facilities are located on county property. Both facilities are covered under the VPDES General Permit. The I-95 Landfill is registered under the permit as VAR051076, and the I-66 Transfer Station/Closed Landfill is registered under the VPDES permit asVAR051074. The permit expires on June 30, 2009.

The I-95 Closure Project was designed to complete the capping of approximately 130 acres of the Municipal Solid Waste section of the landfill, as approved by the Virginia Department of Environmental Quality (VDEQ). The closure project is divided into four phases, with each phase consisting of approximately 40 acres. Phase III and Phase IV of the closure project are currently being implemented in the central area of the landfill. The final cover system consists of 18 inches of low-permeability soil and a 15-inch protective cover/vegetative support layer. As a result of this work, stormwater is managed more efficiently and infiltration is reduced significantly, in turn providing for less generation of leachate. The final cover system also minimizes the need for post-closure maintenance. In addition, a new stormwater detention pond is currently under construction north of the ash cell in Area Three Lined Landfill, Phase IIB.

The Area Three Lined Landfill, Phase IIB project is part of the I-95 Area Three Lined Landfill Project (ATLL). The Phase IIB project has a disposal capacity of 375,000 tons, and will accept ash from the Energy/Resource Recovery Facility (E/RRF) located at the I-95 Complex and a similar facility in Alexandria. This phase has a service life of four years. The 7.5-acre cell consists of a bottom lining system that includes two feet of low-permeability soil, a double synthetic liner (60 mil HDPE) system, and a leachate collection and detection system.

Division staff performs quarterly visual inspections of the stormwater outfalls located at the I-95 Landfill and the I-66 Transfer Station/Closed Landfill. The inspections are performed in each quarter of the calendar year (January through March, April through June etc.). Annual benchmark sampling is performed between July 1 and June 30 of the monitoring year. The cost for the required VPDES monitoring, testing, and other related activities are included as part of the operating budget for each facility and is not funded separately. This is done because most of the activities required by the VPDES permit are also required under the operating permits granted by VDEQ. Test results and inspection reports are maintained at the division's main office, and copies are on file at the facility's administration offices.

Training in pollution prevention for facility staff is provided and is a part of the I-95 Landfill and I-66 Transfer Station/closed landfill waste disposal permits. Pollution Prevention Plans are maintained at each facility and are updated when conditions change. Additionally, spill kits are readily available at each location. Water quality test results conducted to satisfy VPDES permit condition have been satisfactory.

a.9) Construction Site Runoff

a.9 (a) Report all Erosion and Sediment Control Plans the permittee has approved for sites disturbing greater than 1 acre of land for that year.

A program to reduce the discharge of pollutants from construction Permit No. VA0088587 Part I Page 5 of 12 sites (land disturbing activities equal to or greater than one acre) shall be implemented under this program:

Fairfax County's Erosion and Sediment (E&S) Control Plan for land disturbing activities resulted in inspections of over 3,100 projects per month. Notices of violation were given to the construction sites not conforming to the approved plans. The program is fully approved by DCR.

Classes and workshops were conducted in 2005 through the Engineers and Surveyors Institute (ESI) on the County's E&S requirements, constructability issues, quality control of plans and interjurisdictional E&S regulations. The class and workshop were attended by both the private and public sector employees.

Presentations were made to the Fairfax County Environment Quality Advisory Council (EQAC) pertaining to E&S controls and the protection of natural resources during the land development process. Other efforts included presentations to several citizen groups on the County's environmental protection requirements. In 2006 outreach is expanding to other groups that are interested to learn about the County's efforts to protect our resources during the land-development process.

During 2005 a total of 258 E&S plans were submitted and approved for projects that would disturb one acre or more of land. Monthly letters were written to DCR informing them of these individual sites, ***(see Appendix G of attached report)***.

A 24-hour hotline established by the Code Enforcement Division of DPWES continues to be an effective means for citizens to report complaints about erosion and sedimentation.

a.10) Storm Sewer Infrastructure Management

A program to maintain and update the accuracy and inventory of the storm sewer system shall be implemented. The permittee shall submit to the Department of Environmental Quality, Northern Virginia Office a plan and schedule by which the entire storm sewer Infrastructure will be mapped. The plans and schedule shall be submitted within 180 days of the effective date of this permit.

A Stormsewer Infrastructure Management Plan and Schedule (***see Appendix E of attached report)*** was submitted on July 24, 2002, in accordance with the permit and updated on January 13, 2006. During 2005, 217 tax maps were field verified and the final 140 were digitized.

The inventory of stormwater management and storm sewer facilities is documented and tracked through the use of the county's GIS system. The county's 400-square-mile jurisdiction is currently divided into 440 tax map grids; each grid encompasses a surface area of approximately one square mile. The documented inventory of storm drainage infrastructure has been digitized in GIS format for management and identification purposes.

In 2005, 215 miles of county-maintained storm sewers were field verified as to location and inspected for deficiencies. As a result of the information gathered 261 work orders were written to correct deficiencies.

a.11) Public Education

A public education program shall be implemented:

The public education and involvement program is an essential component to stormwater management. The county raises awareness about stormwater issues facing the county and educates residents about what they can do to positively impact Fairfax County's waterways. A summary of the outreach and education activities conducted by Fairfax County in 2005 to its more than one million residents follows:

Presentations were made to various groups throughout the county regarding stormwater management and watershed basics. The presentations include an overview of watersheds,

stormwater management, and actions that residents can take to protect the water quality of local streams, the Occoquan Reservoir, the Potomac River, and the Chesapeake Bay. They consisted of the following: 3 Fairfax County homeowners associations; 2 Environmental groups; 5 Schools; and 2 Youth Groups

Educational booths were hosted at 13 public events to raise awareness among residents about stormwater issues facing the county and to encourage behaviors that positively impact watersheds. The events included the following: Celebrate Fairfax; Centerville Days; Fall for Fairfax; Earth Force Youth Summit; Fairfax County Earth Day Exposition; Earth Day Celebration Tree Planting; GIS Week; Hidden Oaks Nature Center Kids Camp; Hidden Pond Nature Camp; McLean Day; Middle Ridge Community Night Out; Mount Vernon Town Hall Meeting; and Naturefest at Runnymeade Park.

Environmental issues and concerns are a part of many science courses. The Fairfax County Public Schools curriculum for its approximately 14,000 seventh grade students includes a course in "Investigations in Environmental Science." During this course, the students study basic ecology concepts and how to apply them to their local watershed and the Chesapeake Bay ecosystem. The curriculum for the approximately 10,000 ninth grade students includes "Biology 1," in which the students explore the interactions of populations in ecology. Another course is "Chemistry 1," which addresses chemistry in the community and water quality issues. In it, issues involving the use of resources as it relates to the conservation of matter are addressed. A course in "Geosystems" is also available and includes a section on the hydrologic cycle and a study of the effect of economic and public policy on our resources. The "Geosystems" course includes specific environmental projects tied to environmental science courses across the county. Herndon students in Advanced Placement Biology are doing stream monitoring following the Fairfax stream protection strategies. In addition to the courses offered, there are school-based projects that examine geomorphologic changes, nonpoint source pollution, and stream monitoring.

Fairfax County Stormwater is partnering with Fairfax County Public Schools (FCPS) to implement the Meaningful Watershed Experience Program. The program is aimed at training Life Science teachers in the county's water quality monitoring techniques and program; local, state, and federal policies surrounding watershed protection; and stewardship opportunities offered by the county for teachers and students.

Fairfax County Stormwater Management is partnering with the county's Wastewater Department to implement a sewer science program for high school students. This new program promotes an understanding of stormwater, its relationship with wastewater, how the water and the land are connected, and how each individual can make a difference in the health of our environment.

Fairfax County partnered with the Audubon Naturalist Society (ANS) and NVSWCD to host three watershed walks. These walks provide an opportunity for residents to learn more about the organisms living in Fairfax County's stream valleys, the pollution that threatens them, and how we can work together to improve the quality of our local waterways and those downstream.

Other educational outreach activities include: Watershed Cleanups; Regional Pollution Prevention Outreach Campaign; Involvement in the High School Science Program; patterning with Fairfax Watershed Network and Earth Force; assisting in Volunteer Stream Water Quality Monitoring

a.12) Monitoring Programs

a.12 (a) Report on the Dry Weather Screening Program; (1) Number of outfalls inspected and test results; (2) Follow-up activities to investigate problematic areas and illicit dischargers.

The permittee shall continue ongoing efforts to detect the presence of illicit connections and improper discharges to the Municipal Separate Storm Sewer System. Representative outfalls of the entire Municipal Separate Storm Sewer System must be screened at least once during the permit term. Screening methodology may Permit No. VA0088587 Part I Page 6 of 12 be modified based on experience gained during actual field screening activities and need not conform to the protocol at 40 CFR 122.26(d)(1)(iv)(D). Sample collection and analysis need not conform to the requirements of 40 CFR Part 136.

The 2005 Dry Weather Screening Program started with a review of the following: The United States Geological Survey's (USGS) Accotink Creek total maximum daily load (TMDL) study results (previous two years dry weather program); Data collected by staff as part of the Bacteria Monitoring Program; and the locations of the VPDES permitted sites in the county. 14 subwatersheds in the county were selected to be a part of the screening program based on previous water quality testing and accessibility. A GIS layer was created allowing the identification of the specific stormsewer outfalls to be monitored. 57 outfalls were identified and GIS maps created to assist the field teams in locating the outfalls. Field investigation resulted in 23 outfalls with water flowing. Water quality analysis for pH, copper, detergents, conductivity, chlorine and phenol were taken in the field, resulting in 6 positive tests for contaminants. Follow-up activities to investigate these potential problematic areas and potential illicit dischargers resulted in the following: The retests of 5 of the sites could no longer detect the pollutant(s); however at one site the pollutants remained (detergents and copper). As this was a DEQ Industrial Stormwater permitted site, DEQ as well as DCR was notified of the location of the site, the pollutants present and the site's permit number. As part of the 2006 program, all six of these sites will be screened again with particular attention placed on the one site that continued to have pollutants.

a.12 (b) Report on the Wet Weather Screening Program; (1) Number of outfalls inspected and test results; (2) Follow-up activities to investigate problematic areas and illicit dischargers.

The permittee shall investigate, and address known areas within their jurisdiction that are contributing excessive levels of pollutants to the Municipal Separate Storm Sewer System. The Permittee shall specify the sampling and nonsampling techniques to be used for initial screening and follow-up purposes. Sample collection and analysis need not conform to the requirements of 40 CFR Part 136.

During 2005, two of the nine sites identified in 2004 from the DEQ list of VPDES permitted stormwater industrial facilities were selected for wet weather screening and industrial and high risk monitoring. All nine sites were field investigated in 2005 to determine potential monitoring locations and to evaluate accessibility. One of the sites monitored was a used motor vehicle parts yard and the other a petroleum bulk station and terminal, both permitted by DEQ for industrial stormwater.

They were monitored twice during rain events and the water quality (WQ) samples were processed by the county's Noman Cole Wastewater Treatment Facility. A summary of the WQ analysis is in ***Appendix J of attached report)***. Both sites had levels of copper, lead, and zinc

which were above the Virginia WQ standards, dated August 10, 2005, for Aquatic Life - Fresh Water Chronic. Re-test of these two sites will be evaluated in the 2006 wet weather screening program.

The 2006 wet weather screening and industrial and high risk monitoring program will evaluate potential retest of the 2005 sites and will update the program plan and the list of potential sites to be monitored. The 2004 list of potential sites will be expanded by coordination with the county's FRD's HMIS section and the County's Division of Solid Waste Disposal. In addition, a GIS-based screening procedure for identifying potential "hot-spots," based primarily on intensity of land-use (imperviousness and land-use type) is part of the long term goals and will be used to rank and prioritize potential sites for field screening. Possible areas include: landfills; other treatment, storage, or disposal facilities; hazardous waste treatment, storage, disposal, and recovery facilities; facilities subject to the Emergency Planning and Community Right-To-Know Act (EPCRA) Title III, Section 313. The goal of the county's program is to identify and possibly investigate and monitor industrial and other high-risk areas to determine if they are contributing substantial pollutant loading to the MS4.

a.12 (c) Report on the Industrial and High Risk Runoff Monitoring Program

The permittee may include monitoring for pollutants in storm water discharges to the Municipal Separate Storm Sewer System which include: municipal landfills; other treatment, storage, or disposal facilities for municipal waste; hazardous waste treatment, storage, disposal and recovery facilities; facilities that are subject to EPCRA Title III, Section 313. Monitoring may also be required on other industrial or commercial discharges the permittee determines are contributing a substantial pollutant loading to the Municipal Separate Storm Sewer System. Permittee may require the industrial facility to conduct self-monitoring to satisfy this requirement.

This part of the permit in 2005 is satisfied through the Wet Weather Screening Program in the preceding section, a.12 (b).

a.12 (d) Report on the Watershed Monitoring Program; (1) Monitoring plan; (2) Summarize the implementation including, Storm Event Data, Station test results, Seasonal Loadings and Yearly Loadings.

The permittee shall develop a long-term monitoring plan and trend analysis to verify the effectiveness and adequacy of control measures in the County's Storm Water Management Plan and to identify water quality improvement or degradation. The permittee shall submit an approvable monitoring program to the Department of Environmental Quality no later than one year from the effective date of this permit. The program shall be implemented within two years of the effective date of the permit. Monitoring shall be conducted on representative stations to characterize the quality of storm water in at least two watersheds during the term of this permit.

A long-term monitoring program was established at two in-stream stations. The first station in Vienna (VNA) drains a 152-acre medium/high density residential area in the Accotink Creek watershed, while the second station in Occoquan (OQN) drains a 415-acre low density residential area in the Sandy Run watershed. Station VNA has an estimated imperviousness of 25.1 percent while station OQN has an estimated imperviousness of 10.1 percent (Table 1 of ***Appendix K of attached report)***.

A total of five storms were monitored over this reporting period. Rainfall, flow, and water quality analysis data sheets from the monitored storms are provided in the appendix. The results of a statistical analysis to determine if there were significant differences between observed constituent concentrations at the two stations is shown in Table 2 in the appendix. Seasonal and annual unit-area constituent loadings from the monitored sites for 2005 were computed using the Simple Method, and are summarized in Table 3 in the appendix.

As can be seen from Table 2 in the appendix, a significant difference ($p < 0.1$) is indicated for NH_3-N and TKN concentrations from the two sites, with differences for other constituents not statistically significant. The NH_3-N and TKN concentrations are higher at the medium/high density residential site compared to the low density residential site. A point estimate for the difference in NH_3-N concentrations is 0.205 mg/l, while a point estimate for the difference in TKN concentrations is 0.770 mg/l. Monitoring will continue in 2006 and the full data set used to determine if the observed high variance in constituent concentrations from the medium/high density residential site can be reduced sufficiently to allow detection of statistically significant differences for other constituents. The data set will also support the development of continuous water quality models that provide more refined prediction of water quality loadings.

a.12 (e) Report on the Bioassessment Monitoring Program; (1) Monitoring plan; (2) Summarize test results.

The permitee can use and is encouraged to use a rapid bioassessment monitoring program to demonstrate the effectiveness of the stormwater management plan. The program will be implemented within one year of the effective date of the permit and an approvable program must be submitted within six months of the effective date of the permit.

A probabilistic-based site selection sampling methodology was used to identify randomly-selected stream bioassessment locations throughout Fairfax County. These sites were stratified and proportionally distributed throughout the county based on Stahler stream order. This methodology eliminates any site selection bias and is commonly used as a cost-effective way of obtaining statistically defensible determination of stream conditions at a countywide scale. A total of 43 sites were sampled in 2005, 30 sites randomly selected in Fairfax County as part of the monitoring program. Two coastal plain reference locations in Fairfax County were monitored and eleven piedmont reference location were monitored in Prince William National Forest Park. Results suggest that approximately 80 percent of the county's waterways are in "Fair" to "Very Poor" condition. This indicates significant impairments in the county's streams due to a notable decrease in biological diversity.

a.12. (f) Report on the Floatable Monitoring Program

The permittee shall conduct surveys of floatables. The intent of the survey is to document the effectiveness of the litter control programs for the Municipal Separate Storm Sewer System. Surveys shall be done in accordance with the following procedures: c) The above may be accomplished through the "Adopt a Stream" program (Part I.B.1.k.2.).

The county is an active participant and supporter of several trash cleanup and education programs. Throughout calendar year 2005, an army of volunteers collected over 100 tons of trash from Fairfax County's land and waterways. The dominant types of trash that were collected

include plastic grocery bags, aluminum cans, glass bottles, Styrofoam pieces and cups, and athletic balls.

To better highlight cleanup efforts and identify trash hot spots, in calendar year 2006 the county will continue to work with and support the following organizations that coordinate large and small-scale volunteer cleanups: The Alice Ferguson Foundation; The Virginia Department of Conservation and Recreation; The International Coastal Cleanup; and The Friends of the Occoquan.

The county is currently developing a floatables monitoring plan to be used for the next few years in an effort to determine the amount of trash collected by all organizations in the county during their clean up days.

b) Proposed changes to the Storm Water Management Program including those changes that were implemented during the reporting year;

Storm Water Management Program Review and Update.

Fairfax County's DPWES is leading the effort to develop watershed management plans for the entire county. Two watershed management plans have been completed and are being implemented. Four additional plans are being drafted with completion slated for 2006. Combined, these six plans will cover more than 50 percent of the land area in the county. Within the next few years, watershed management plans will be completed for the entire county to provide an assessment of stormwater conditions, recommend protection strategies and improvement projects, and encourage public involvement.

The county is has completed field studies of all stream valleys, providing an assessment of management needs and a prioritization of solutions within each watershed. These are being used to help develop Watershed Management Plans. The county has also completed the field identification of all perennial streams, thus ensuring that these streams received designation as RPA under the Chesapeake Bay Preservation Ordinance. In addition, the county is conducting long-term biological monitoring and watershed water quality monitoring to establish trends, to verify the effectiveness and adequacy of stormwater management controls, and to identify areas of water quality improvement or degradation.

Review and modification of the county's Stormwater Management Program is anticipated to be completed in time for our reapplication package submittal in July 2006.

c) Revisions, if necessary, to the assessments of controls and the fiscal analysis of the effectiveness of new controls established by the Storm Water Management Program;

Results of the monitoring efforts and field screening activities indicate that the stormwater controls in Fairfax County generally maintain water quality and discharges in compliance with the MS4 permit requirements. As the county approaches build-out conditions, it has become increasingly challenging to mitigate the impacts of impervious area and nonpoint source pollution on streams. Several efforts through the existing stormwater management program are helping to reduce or minimize water quality impacts such as: the mandate of controls (BMPs) by the Chesapeake Bay Preservation Ordinance; development and implementation of Comprehensive Watershed Management Plans; development of an extensive retrofitting program for existing developed areas; and changes to current stormwater management codes, policies, ordinance and guidelines.

d) Annual expenditures for the reporting period, with a breakdown for the major elements of the Storm Water Management Program, and the budget for the year following each annual report;

Department of Public Works and Environmental Services

The total funding associated with stormwater management for calendar year 2005 was approximately $15,901,000. The Stormwater Planning Division and the Maintenance and Stormwater Management Division operating funding were $1,298,000 and $5,798,000 respectively. The capital stormwater funding for stormwater public works construction, storm drainage bond construction, storm drainage Pro Rata Share and stormwater program requirements was $8,805,000.

Other costs not directly associated with stormwater management but of importance to the stream environment are incurred by the Division of Solid Waste Disposal and Resource Recovery, DPWES. This division is responsible for the operation of the I-95 Landfill located at 9850 Furnace Road in Lorton, Virginia, and the I-66 Transfer Station Landfill (closed), located at 4618 West Ox Road in Fairfax, Virginia. Annual VPDES expenditures are estimated to be $150,000 for the I-95 facility and $30,000 for the I-66 facility (closed). In addition, this division operates the Household Hazardous Waste program, which costs approximately $500,000 annually.

In addition, Board of Supervisors in April authorized one penny of the real estate tax to be dedicated to the stormwater management program for FY 2006, totaling $17.9 million dollars. The one cent of the real estate tax is currently in the county executive's proposed budget for FY 2007. The anticipated continuation of the one cent of the real estate tax dedication will provide program stability, accommodate program growth, and provide continuity across fiscal years.

Department of Planning and Zoning

There are currently four full-time professional positions in the Environment and Development Review Branch, DPZ, devoted to environmental planning. Additional staff resources from other DPZ branches or divisions will occasionally address water quality issues. The environmental planning function in DPZ was funded at approximately $270,000 in FY 2005. A similar budget allocation was established for FY 2006.

e) Identification of water quality improvements or degradation.

Overall, the stormwater control program has been effective in achieving compliance with the permit to date. However, it is anticipated that the increased nutrient (phosphorus and nitrogen) and sediment reductions required as part of the State's Potomac River Basin Tributary Strategy have placed increased demands on the county's MS4 program to achieve the necessary allocations and pollutant levels in the effort to meet the goals to restore the Chesapeake Bay. The impacts of additional pollutant reduction requirements will continue to be the focus of future collaborative efforts with the state and an anticipated subject for negotiations with the state during the next permit renewal process.