

**MARYLAND DEPARTMENT OF THE ENVIRONMENT  
WATER MANAGEMENT ADMINISTRATION**

**NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM  
MUNICIPAL SEPARATE STORM SEWER SYSTEM DISCHARGE PERMIT  
MD0068349**

**REVIEW OF MONTGOMERY COUNTY'S 2005 ANNUAL REPORT**

Montgomery County was reissued a National Pollutant Discharge Elimination System (NPDES) municipal separate storm sewer system discharge permit (MD0068349) on July 5, 2001. The permit was subsequently modified on January 26, 2004 to include the Towns of Chevy Chase, Chevy Chase Village, Kensington, Somerset, and Poolesville, and the Village of Friendship Heights as co-permittees. NPDES regulations require permit conditions that effectively prohibit non-stormwater discharges and reduce the discharge of pollutants to the "maximum extent practicable." For each year of the County's permit, an annual report is required to help assess the County's stormwater program. The following is a review of Montgomery County's fifth annual report that was submitted to the Maryland Department of the Environment (MDE) on September 1, 2006

**Permit Administration:**

Montgomery County is required to identify key administrative and technical personnel responsible for permit compliance. An updated contact list was submitted with the annual report. Changes were noted due to the retirement of two key members of the County's Department of Environmental Protection (DEP) staff. Recently, the DEP Director position was vacated and temporarily filled by senior staff from the County Executive's office in an "acting" capacity. Any future organizational changes that affect the County's stormwater program should be reported promptly to MDE.

**Legal Authority:**

Montgomery County was required to provide MDE with certification from the County Attorney that it possesses the authority to perform the activities described in 40 Code of Federal Regulations (CFR) 122.26(d)(2)(i) and permit MD0068349. The County Attorney submitted the required certification on January 7, 2002. This satisfied the County's permit condition regarding legal authority. Additionally, in May 2006, the County established the Clean Water Task Force (CWTF) to evaluate existing interagency coordination for stormwater management and water resources protection. At its first meeting on September 15, 2006, the CWTF agreed to develop recommendations by Spring 2007 for both short-term actions and long-term priorities for enhanced stormwater management and water resources protection in the County.

**Source Identification:**

Montgomery County is required to identify sources of pollutants in stormwater runoff and link these sources to specific water quality impacts on a watershed-by-watershed basis. To demonstrate this ability, the County was required to submit an example of its geographic information system (GIS) capabilities for a watershed of its choice. In its 1998 annual report, the County submitted a GIS example that included resource attributes within the Cabin John Creek watershed. MDE considers this information to be complete and the County should currently have the ability to conduct basic analyses for effective watershed planning.

The County was required to submit data regarding major outfalls, inlets, appurtenant conveyances, and associated drainage areas for its system by July 2003. Storm drain system mapping has been completed, however, there have been problems with the drainage area delineations. This work continues and a table was submitted to show progress for the reporting period. However, it is unclear from the table how close the task is to being complete.

The County is also required to continually update and summarize new information and submit stormwater management facility construction completion data for MDE's Urban Best Management Practices (BMP) Database. Data provided include information for 3,488 structures and the County reported that this effort is approximately 70% complete. The County has routinely updated NPDES industrial and stormwater discharger information. However, this information was not submitted for the current reporting period. The County needs to report the status of its drainage area delineation efforts and update significant discharger and infrastructure information annually.

### **Discharge Characterization:**

Montgomery County is required to conduct chemical monitoring at a residential outfall and an associated in-stream station. Monitoring occurs at the Stewart-April Lane outfall and in the Paint Branch mainstem. Impervious cover within the watershed accounts for approximately 39% and 13% of the contributing drainage to the outfall and in-stream station, respectively. The County has contracted Versar, Inc. to conduct field data collection and the Washington Suburban Sanitary Commission (WSSC) performs laboratory analyses.

Monitoring at these sites was to be used to characterize runoff from high-density residential land use and to gauge the effectiveness of a proposed stormwater retrofit project. It was determined that the retrofit was not cost-effective and would result in adverse impacts to the riparian buffer. The County changed its approach to focus more on source control and pollution prevention in the watershed. This will include installing storm drain inlet inserts, routine street sweeping, storm drain inlet cleaning, low impact design retrofits on private property, and public outreach. Justification for this change was submitted and appears to be warranted. Monitoring will continue in order to document water quality improvements that result from structural and operational control implementation. The results should allow the County to estimate the amount of material that can be prevented from entering the storm drain system and being washed downstream.

Continuous flow monitoring occurs at both locations. For chemical monitoring, at least three samples determined to be representative of each storm event are to be collected and analyzed for

12 specified parameters. Temperature and pH are also to be recorded. Twelve storm events are to be sampled each year, three during each quarter with quarters based upon calendar year. For periods of extended dry weather, baseflow samples are to be taken once per month. Sampling commenced in May 2002.

During 2005, eleven baseflow and eight storm event samples were obtained. The storm event sampling is fairly well represented for the reporting period. Flow-weighted composite samples were collected at the rising, peak, and falling limb of each storm's hydrograph. Results were submitted for each event. Rainfall was reported to be generally below normal except for October 2005.

Sampling results indicate elevated levels of total phosphorous, total copper, and fecal coliform at both the in-stream and outfall stations during storm flow. High fecal coliform and copper levels were also evident for baseflow samples. The County should pay particular attention to how its proposed source reduction strategy affects these pollutants.

In addition to chemical monitoring, the County is required to conduct biological and physical assessments in the stream segment between the outfall and in-stream station. Results for the Stewart-April Lane tributary showed "poor" benthic macroinvertebrate and fish resource conditions while habitat conditions were rated as "good/fair." Additionally, a longitudinal profile and cross-section survey is to be conducted annually and comparative results represented graphically. The information submitted appears to be the same as the previous reporting period and no comparative analyses were submitted. Similarly, information regarding hydrologic modeling remains absent.

As discussed above, the County has changed its water quality improvement approach within the watershed to focus more on source control and pollution prevention instead of structural control. As a result, little, if any, hydro modification is likely to occur. Therefore, the physical stream assessment work may be of limited value. MDE believes that the physical stream assessment work that the County is conducting in the Clarksburg area, described below, should be adequate to gauge the effectiveness of water quality improvements that result from structural and operational control implementation.

Montgomery County is also required to monitor the effectiveness of a stormwater management system implemented to provide stream channel protection. The County identified a 294-acre drainage area of the proposed Clarksburg Town Center for monitoring. This watershed was approved by MDE in March 2002. Existing land use is predominantly cropland with forested buffers of varying widths. The County reported that rapid development and land cover changes commenced in 2002. Development will result eventually in approximately 30% imperviousness within this watershed. Additionally, the County is monitoring Sopers Branch as a "paired" watershed. Sopers Branch will remain static with stable land cover and be used as a control for analyses.

During the reporting period, the County completed a comparison survey of established cross-sections and stream profiles in both watersheds. The results were submitted in tabular and graphic formats. Additional geomorphic features (e.g., sinuosity, bank full elevation, bedload

characteristics, etc.) were also examined. To better understand and assess impacts resulting from land use changes, the County is also monitoring biological conditions (e.g., benthic macroinvertebrates and fish), temperature, rainfall, and stream flow. Preliminary conclusions from existing data analyses indicate that both streams are exhibiting geomorphologic changes (e.g., cross-section, median particle size, etc.). In the previous reporting period, the benthic macroinvertebrate community conditions changed from “good” to “fair” in the developing watershed. The decline in biological conditions was believed to be the result of sediment impacts from construction activities. During 2005, the benthic macroinvertebrate community changed back to a “good” condition. Additionally, preliminary hydrologic/hydraulic modeling (TR-20, Project Formulation Hydrology) was completed in June 2005 and compared existing and proposed conditions with and without stormwater controls to determine discharge rates for the 1-year to the 100-year storm event frequencies. Build-out conditions with stormwater management showed a significant decrease in discharge compared to existing conditions for all but the 100-year frequency storm.

### **Management Programs:**

Montgomery County is required to conduct preventative maintenance inspections of all stormwater management facilities on at least a triennial basis. The County reported that maintenance inspections occurred at 1,145 facilities during 2005. Of the 1,145 facilities, 959 were privately owned and 186 were publicly owned. Forty-six percent (526) of the facilities inspected required some type of maintenance or repair. The County also reported that 22 facilities were accepted for transfer into the County’s Stormwater Facility Maintenance Program (SWFMP) during 2005. The County structurally maintains facilities accepted into the SWFMP while routine activities (e.g., mowing, trash and debris removal, etc.) remain the responsibility of the facility owner. The County efforts with respect to its preventative maintenance and facility improvement are considered to be exceptional.

Montgomery County was required to modify its stormwater ordinance, implement design policies, and identify and report problems associated with implementing the *2000 Maryland Stormwater Design Manual*. Modifications to Montgomery County’s stormwater management requirements that incorporated current State stormwater regulations and the *2000 Maryland Stormwater Design Manual* criteria became effective on June 20, 2002. No problems with implementation were reported.

Stormwater programmatic information was submitted on MDE’s spreadsheet for four major watersheds. The County reported that sediment control permits and the number of developed acres decreased during 2005 compared to the previous years. The County also questioned how nonstructural practices should be reported (e.g., total number for each site or identifying the sites using them). MDE understands that it is difficult to account for these practices over a long period of time considering that homeowners and businesses may modify or eliminate them. From a programmatic standpoint, each type of nonstructural practice should be reported only once for each project. However, from a practical standpoint, the County may desire to track

certain practices (e.g., raingardens, dry wells, etc.) individually in order to gauge the extent that they are implemented, their impact on water quality improvement, and to ensure that no additional restoration work is needed.

Montgomery County is required to field screen a total of 100 outfalls annually for its illicit connection detection and enforcement program. During 2005, 100 outfalls were screened with 37 having dry-weather flow. Twenty-eight of the 37 outfalls were identified as piped streams. Five of the remaining nine outfalls were found to have detergent above the detection limit while all other parameters (e.g., phenol, copper, chlorine) were below. The County reported that source tracking for these outfalls was unsuccessful and that it would target specific reaches for subsequent toxicity testing during both dry and wet weather flows. The outfall screening did, however, reveal an accumulation of used motor oil in one case. Source tracking for this incident was successful and was traced back to an overflowing used oil tank. The problem with the tank was corrected and approximately 50 gallons of used oil was removed and recovered from the stream by a spill contractor.

Montgomery County is required to identify all County-owned facilities that require NPDES discharge permit coverage, submit documentation that permits have been obtained, and report the status of pollution prevention plan implementation at each. During 2001, URS-Greiner, Inc. was contracted to update existing Stormwater Pollution Prevention Plans (SWP3) for nine County facilities covered under MDE's General Permit for Industrial Stormwater Discharges (MD-97SW). In March 2003, these facilities received continued coverage from MDE until November 2007.

The County reported that the pollution prevention plans for three of the facilities need to be updated and that continued progress was made regarding general housekeeping, site appearance, and material storage and handling activities. The County also reported that there remains a need for better routine inspections and record keeping, elimination of outdoor vehicle washing, and more widespread employee training to enhance pollution prevention awareness. Previously, the County indicated that the Town of Kensington was required to secure NPDES industrial stormwater permit coverage for its municipal operations. The County did not report the status in its 2005 annual report. This needs to be addressed.

The County is required to maintain its illegal dumping and spill response program. During 2005, the County responded to 196 water quality complaints and 55 hazardous material incidents. As a result, 22 Notices of Violation (NOV) and 3 Civil Citations were issued with fines totaling \$1,750. Typical violations include the improper handling or disposal of cooking grease, paint, and automotive fluids. Additionally, the County responded to 387 complaints received on its Illegal Dumping Hotline 240-777-3868 (DUMP). Most of these complaints involved bagged trash, vegetation (leaves and brush), or other unwanted materials being dumped on public and private property. A total of 18 Notices of Violation (NOV) and 9 Civil Citations were issued with fines totaling \$4,500. The County continues to do extremely well and is commended for its water quality enforcement efforts.

Montgomery County is required to maintain an acceptable erosion and sediment control program. MDE's review of the County's program in 2005 determined that the program was acceptable. Nine "Responsible Personnel" Certification classes for erosion and sediment control were conducted, which resulted in the training of 84 individuals during 2005. The required database for identifying responsible personnel was submitted as Attachment A. The

County is also required to submit information regarding earth disturbances exceeding one acre or more to MDE on a quarterly basis. The County routinely submitted this information to MDE during 2005. The County is commended for its erosion and sediment control efforts.

The County has implemented an extensive multimedia public outreach program that focuses on pollution prevention and citizen stewardship. Water quality, pollution prevention, and watershed management information can be found on the DEP's web site ([askdep.com](http://askdep.com)), in various print media, and on local cable television. Public outreach continues to be well integrated with many aspects of the County's stormwater program. Once again, the County is commended for its efforts in this regard.

The County's Department of Public Works and Transportation (DPWT), Division of Highway Services (DHS) is responsible for all routine road maintenance activities. Approximately 1,676 tons of material was collected as a result of the County's road sweeping efforts. The extent of sweeping (e.g., curb miles) was not reported. The amount collected is approximately 45% less than the previous year but represents approximately the same percentage (7%) of material (salt and sand) applied for deicing during each of the last two winters. The County also reported that it removed accumulated materials from 11,460 feet of storm drains. This represents 0.2 % of the total system. Present efforts are in response to complaints. As stated in the last two annual report reviews, the County should develop procedures for maintaining its storm drain system similar to those regarding stormwater management facilities.

The Village of Friendship Heights and the Towns of Kensington and Poolesville (co-permittees) own and maintain their own storm drain systems. In its previous annual report, the County reported that the Town of Kensington had completed electronic mapping of its system and is currently developing a maintenance program. Additionally, GIS storm drain files were submitted for Kensington and Poolesville. The status of mapping and maintenance in the Village of Friendship Heights was not reported.

Montgomery County is required to examine the use, control, and reduction of herbicide, pesticide, and fertilizer by all of its departments. There are 98 County-owned facilities with associated land area totaling 250 acres. The County continues to use the Integrated Pest Management (IPM) program started in 1990. The IPM program stresses sanitation, monitoring, and habitat modification to offset the use of pesticides. During 2005, no fertilizer was applied, herbicide use decreased, and pesticide use increased slightly.

Montgomery County has successfully implemented many of the stormwater management program elements required by its NPDES permit. The County's stormwater facility maintenance, illicit discharge detection and elimination, and public outreach efforts continue to be strong. Continued implementation and successful integration of all program components should result in effective water quality improvements. Improvement can be realized by better co-permittee compliance reporting and updating Pollution Prevention Plans for three County facilities. Lastly, the County needs to develop procedures for maintaining its storm drain system similar to those regarding stormwater management facilities. This issue was raised during previous annual reports and remains to be addressed.

### **Watershed Restoration:**

The County has completed watershed assessments and identified restoration opportunities for approximately 40% of its total land area. During 2005, restoration inventories continued for the Great Seneca Creek and Muddy Branch Watersheds. Additionally, screening continued throughout the County with biological and habitat monitoring occurring at 43 stations in five watersheds during 2005. One of the 43 stations showed impairment to benthic macroinvertebrate and fish communities. These impairments were not completely attributed to habitat impacts. In its previous annual report, the County reported that it would investigate potential sources of impairment found at four stations in 2004 through its illicit connection detection and enforcement program in 2005. It is unclear whether or not these investigations occurred.

The County is required to track the progress toward restoring 10% of its impervious area that has not been treated to the maximum extent practicable. The County reported that the total acres developed under its responsibility for stormwater management (81,603) is about 33.6% of the total county acres minus excluded areas. Excluded areas include forest and parks, rural zoned land, municipalities with their own stormwater programs (e.g., Rockville, Gaithersburg, Takoma Park), and State and federal properties. Approximately 52% (42,480 acres) of the developed acres have some sort of stormwater management. The County's previous restoration goal (1,700 acres) has been increased to 2,700 acres. This increase is reported to be a result of refinement in the County's accounting methods.

The County selected Turkey Branch as its watershed for restoration. The Turkey Branch subwatershed is about 2,434 acres, with 706 acres of impervious surfaces. Proposed restoration includes retrofitting an existing detention pond for quality control, constructing two new stormwater facilities, and implementing two stream restoration projects that will address the impacts to 1.7 linear miles of stream. The County reported that design and construction have been delayed for these projects and will likely not occur until 2006 or 2007. Due to the delay in construction, the County's treatment goal will not be met for this permit term by the proposed restoration in Turkey Branch. However, the County reported that the combination of acres in Turkey Branch (2,434) and uncontrolled acres that drain to completed restoration projects, as of January 2006, (2,872) exceeds the present treatment goal. Based upon present reporting efforts, the extent that restoration work has been completed and its relationship to impervious surface treatment is unclear. Montgomery County needs to document and verify its implementation efforts by submitting a list of projects that have been completed during this permit term. This information should be segregated by each County watershed and year of completion and include: project name, project type, location, completion date, associated drainage area, impervious area treated, cost, and pollutant removal effectiveness. Similar data should be provided to account for all projects under design or construction to satisfy the treatment goal. A proposed schedule of implementation is also needed.

The County also reported that its next restoration watershed would be Lower Paint Branch. Restoration projects will address water quality conditions for the Hollywood Branch, Snowdens Mill, and Stewart-April Lane tributaries. The County's long-term monitoring sites are located in the Stewart-April Lane tributary and the results will be used to gauge the effectiveness of its proposed source control and pollution prevention efforts in this watershed. The County's watershed assessment and restoration efforts remain strong. Watershed

assessment work, prioritizing watershed restoration efforts, and project implementation continue. These efforts should result in a significant reduction of source pollutants and improved water quality. As noted during the previous review, success needs to be better quantified through improved reporting of restoration work and its relationship to impervious surface treatment.

**Program Funding:**

Montgomery County submitted budget information for fiscal years 2003 through 2006. Expenditures were summarized and average \$13.4 million each year. The proposed budget for fiscal year 2007 is \$14.7 million. This is an increase of about \$1.8 million over the previous year. Most of the increase is directed toward watershed restoration project implementation. Approximately 41% of existing costs involve watershed assessment and capital improvement project construction and 20% is directed toward stormwater facility maintenance inspection and repair. The present level of funding appears to be adequate to support the existing level of activity for Montgomery County's stormwater program.

**Assessment of Controls:**

For each year of the County's permit, an assessment of controls is required for gauging the effectiveness of NPDES stormwater program implementation. The County reported that approximately 55% of the developed land under the County's jurisdiction is treated by stormwater management. Loads have been calculated based on assumed reductions as a result of existing BMP implementation. Estimates indicate that the BMPs have resulted in a 15.6% reduction of total nitrogen and 19.7% of total phosphorus.

**Summary:**

Overall, Montgomery County's efforts regarding NPDES stormwater program implementation are robust. Watershed assessment continues, restoration projects are prioritized, and implementation is ongoing. These efforts should result in a reduction or removal of source pollutants. However, success needs to be better quantified. This is especially true regarding the reporting of co-permittee compliance efforts and the reporting of restoration work and its relationship to impervious surface treatment.