

## City of Alexandria 2008-2013 Phase II MS4 General Permit Summary of Permit Year 5 Program Evaluation

June 6, 2013

The City of Alexandria operates its stormwater program per the requirements of 4VAC50-60 "General Virginia Stormwater Management Program (VSMP) Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems." The City was originally issued a permit on July 8, 2003 (Permit No. VAR040057) and successfully met the requirements over the initial five year permit period. The City continues to meet the requirements of the permit that was re-issued on July 9, 2008 and will expire on July 8, 2013.

Under the existing permit and related MS4 program plan, an evaluation of the City's stormwater management program must be performed during Permit Year 5 (PY5). With the assistance of AMEC, the City conducted a comprehensive evaluation of the entire program using the U.S. EPA's "Municipal Stormwater Program Evaluation Guidance." This included completing Appendix B "Program Evaluation Worksheets," which contains information about the City's program and a review of specific stormwater management records. The worksheets are on file with the City and available for review. The overall process culminated with a meeting on May 21, 2013 to discuss the worksheets and findings.

The purpose of EPA's guidance is to assist in assessing Phase I and Phase II MS4 programs and developing effective stormwater management programs in general. As a result, the guidance encompasses a broad range of recommendations that are not specifically tailored to Virginia's Phase II MS4 General Permit. The guidance serves as a "primary reference" and sets a universal high bar for which programs should strive. However, it also recognizes that an "MS4 program evaluation is ultimately based on the requirements in the MS4 permit and commitments made in the stormwater management program" and that the guidance is not an enforcement document. The information generated by this exercise does not signify noncompliance with the City's program plan or permit. Rather it is a way of providing a means of self reflection in preparation for new permit requirements that will be effective July 1, 2013.

The current MS4 permit requires the City to use EPA's guidance to evaluate the current program and utilize the information in permit reapplication. Since reapplication for the next permit has already occurred, the City will use the findings of the evaluation to strengthen the program in PY1. In addition, the evaluation generated useful information upon which to base program plan updates for the new MS4 General Permit. The worksheet components address the overall management of the program and closely follow the structure of the permit's six Minimum Control Measures (MCMs). A discussion of the stormwater program and a summary of the findings based on the evaluation are provided below.

Program evaluation components include the following:

- Program Management
- Public Education / Involvement
- Illicit Discharge (Detection and Elimination)
- Construction (Site Stormwater Runoff Control)
- Post-Construction (Stormwater Management in New Development and Development on Prior Developed Lands)
- MS4 Maintenance (Pollution Prevention and Good Housekeeping)

- Industrial/Commercial (Not a General Permit MCM)

### **Program Management**

The focus of this component is on comprehensive planning, internal and interagency coordination, organizational structure, creating measureable goals, benchmarking and gathering feedback, providing clear roles and responsibilities, and making adjustments to the program and resource allocations as needed. The City engaged in an extensive review and assessment of stormwater management operations, ordinances, protocols, and programming against the VSMP permit compliance requirements in creating two cycles of successful MS4 program plans. Based on that review and assessment, the City has developed appropriate and cost effective best management practices (BMPs) to control pollution to the maximum extent practicable.

Overall, the stormwater program is managed efficiently and effectively, and has maintained permit compliance since the inception of Virginia's Phase II permit program in 2003. While stormwater activities and functions are divided among several different departments and divisions, the Department of Transportation & Environmental Services (T&ES), Office of Environmental Quality (OEQ) has primary responsibility of managing the MS4 program and ensuring that multiple BMPs are implemented to meet each of the MCMs as well as permit Special Conditions. Each BMP in the program plan includes:

- Policies, ordinances and other necessary documents
- Objectives and expected results in meeting the measureable goals
- Roles and responsible parties
- Schedule
- Measure of effectiveness

### *Organizational Structure*

The organizational structure meets program requirements and provides for timely reporting of data. An organizational chart is included in the program plan and each successive annual report, and has proven effective. Based on the evaluation and increased requirements of the upcoming permit, the City may consider formalizing "stormwater points of contact" for specific facilities or along divisions/departments based on reporting of data. Informal points of contact already exist and have met the requirements of the permit. Formalizing the designees would further ensure that expectations are known and met during the permit cycle. The formal designee would also serve as the point of contact for data reporting purposes. Memorializing reporting procedures and deadlines may also prove useful. Taking the step to memorialize appointed designees and procedures in an official document would work to standardize the process and ensure continuity in the case of employee succession.

### *Stakeholder Involvement*

The City Manager has established two internal stakeholder groups to address the Virginia Stormwater Management Regulations, the new MS4 permit, and the Chesapeake Bay TMDL. The Stormwater Work Group is comprised of members at the division chief and deputy director levels to develop strategies and alternatives leading to short, medium, and long-term stormwater policies, programs and capital investment plans. The Stormwater Steering Committee is comprised of department directors and deputy city managers to oversee and guide the Stormwater Work Group. The Steering Committee is charged with ensuring cost-

effective regulatory compliance through the allocation of adequate resources. The creation of these two groups has already begun to strengthen communications both horizontally across agencies and vertically from line personnel to the executive level. Water quality issues are also a subject discussed by the citizen-led Environmental Policy Commission, which is kept apprised of stormwater program issues through annual updates provided by OEQ.

### *Holistic Approach*

The City takes a holistic approach to stormwater management and water quality. The City's Comprehensive Plan, the Water Quality Supplement to the City's Mater Plan (2001) and the Eco-City Action Plan 2030 (2008), all contain elements related to stormwater quality, tree protection and canopy coverage, smart growth, preservation of open space, flood protection and Chesapeake Bay protection areas.

## **Public Education/Involvement**

### *Materials, Target Audience, and Events*

The City's education and outreach program seeks to distribute general public education materials to a diverse audience and to take advantage of regional outreach efforts to increase individual and household knowledge about steps they can take to reduce stormwater pollution. This includes staff presentations to school, civic, and community organizations, participation in regional outreach campaigns such as the Earth Force Youth Summit and World Water Monitoring Day, and annual Earth Day celebrations. The City utilizes brochures, online outreach, direct mailings, newsletters, community television PSAs, a storm drain marking program, stream cleanups, standard project plan conditions, special use permit (SUP) language, and give-aways in the program. The City also participates in the Northern Virginia Clean Water Partners which has utilized cable and radio PSAs, the [www.onlyrain.org](http://www.onlyrain.org) website, the Metro DC Lawn and Garden Blog, and online ads via Google, YouTube, and Facebook. The water quality messages focus on proper disposal of pet waste, alternatives to dumping wastes, lawn care practices, home auto care and disposal or recycling of fluids, proper litter disposal, and PCBs. The City has targeted businesses and stakeholder groups based on type of practice and likelihood of impact on water quality.

### *Message and Approach*

Eco-City Alexandria embodies a comprehensive environmental initiative that reaches across departments and divisions, as well as into the public. This effort involves a holistic environmental vision passed by Council (Eco-City Charter) and an action plan also passed by Council (Eco-City Action Plan 2030) which contains a Water Principle as one of the guiding principles. Numerous actions are associated with the Water Principle, which is focused on education/outreach, preservation, mitigating impacts, and conservation of water resources.

An overall message of water quality is provided by the program, with special focus on pollutants of concern for impaired waters on the 303(d) list and those with TMDLs. The City will be refining the current approach and adjusting it to meet new permit requirements, and will memorialize this refinement in the new program plan update that is due by June 30, 2014 and must be submitted with the PY1 annual report on October 1, 2014.

## **Illicit Discharge (Detection and Elimination)**

### *Ordinance and Enforcement*

City code prohibits the discharge of “wastes” to the storm sewer system. Special Use Permit (SUP) language provides for the prohibition of outdoor cleaning of restaurant equipment through the SUP process, and is enforced by Code Enforcement. For all illicit discharges other than those associated with SUPs, the Fire Department’s Environmental Industrial Unit (EIU) works in coordination with OEQ to determine the source, find the responsible party, and eliminate the source. The EIU may use Notice of Violations (NOVs), Stop Work Orders (SWOs), or civil penalties; however, criminal charges are often sought and applied. Escalation procedures are available in the code. The City may want to consider extending the use of NOVs, SWOs, and civil penalties to OEQ, as well as formalizing the process. Written procedures congruent with the detailed requirements and schedule in the new permit will be refined/created as part of the PY1 program plan update.

### *Mapping and Complaint Investigation*

An up-to-date storm sewer map is maintained that may be accessed in GIS format by staff at specific work stations, in an interactive GIS-based format on the public-facing webpage, or in a hardcopy format for field personnel. All of these formats are also available for field personnel investigating possible illicit discharges reported through the City’s 24-hour “Call, Click, Connect” web-based reporting, Contact Center (703-746-HELP), nuisance abatement hotline, or regular email that is often received from residents. All of these outfall map formats may also be used by staff performing routine outfall screening per the permit. The EIU works in concert with environmental and maintenance staff to eliminate discharges when they are detected through proactive investigations or received by citizen complaints through various reporting mechanisms.

The City will need to review the storm sewer system map and associated outfall information table to ensure that the required data is captured per the new permit. This updated information is due for completion within 48 months of the permit’s effective date.

### *Outfall Screening and Database*

The City continues the outfall screening effort consistent with the MS4 program plan. Based on an analysis of applicable TMDLs and since the requirement began mid-permit cycle, the City is completing the reconnaissance on a total of 275 outfalls. Applicable TMDLs include bacteria for non-tidal Four Mile Run and PCBs for tidal Potomac tributaries. This represents a total of 92 outfalls for Four Mile Run, eight outfalls for direct Potomac, and 175 for Cameron Run, or approximately 26, two, and 50 during PY5, respectively.

### *Complaint Reporting and Tracking*

Outfall inspections and follow up activities are currently tracked in a Microsoft Access database. Work is underway to move this into a proprietary asset management database (Cityworks™) that works on a GIS-based platform and is being utilized by maintenance staff and by environmental staff for complaint tracking. Centralizing this information into one database will

reduce redundant data management steps, reduce duplicative reporting, and allow for the gathering of more robust operational data. Illicit investigations conducted by OEQ staff are currently tracked in Cityworks, while EIU and Code Enforcement staff use Permit Plan for permitting, tracking and reporting purposes. The Code and Fire departments are currently shopping around for new database management software to replace Permit Plan, and are considering the use of Cityworks.

### *High-Risk Assessment*

The City conducted an assessment of potential “high risk” facilities for the discharge of bacteria in the non-tidal Four Mile Run watershed and PCBs for the entire City, based on industries identified by Virginia DEQ as potential sources. No facilities were identified at that time, and as a result, no site characterizations or implementation schedules were required.

### *Written Procedures*

Current outfall screening and illicit discharge investigation procedures are based on Center for Watershed Protection guidance documents and manuals. The City follows the EPA-endorsed, Center for Watershed Protection manual entitled “Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments.” The City will evaluate its current procedures and revise as needed to ensure compliance with the specific schedule and requirements listed in the new permit. These written procedures will be memorialized in an IDDE screening manual and work plan.

## **Construction (Site Stormwater Runoff Control)**

### *Program and Legal Authority*

The City’s Erosion and Sediment Control Ordinance is consistent with state regulations per review by the Department of Conservation and Recreation. Erosion and sediment control plans are required to be included for projects that disturb greater than 2,500 square feet since the City is a Chesapeake Bay Act jurisdiction. The City’s ordinance provides authority for inspections, maintenance, and penalties if warranted. The City ordinance is currently being revised to be consistent with the Virginia Stormwater Management Regulations.

### *Plan Checklist and VSMP Coverage*

City plan review staff that has obtained the appropriate state certification is responsible for reviewing E&SC plans as part of land-disturbing activities. A checklist is utilized during plan review, which includes language that all “required permits from Virginia Department of Environmental Quality, Environmental Protection Agency, Army Corps of Engineers, Virginia Marine Resources must be in place for all project construction and mitigation work prior to release of the final site plan. This includes the state requirement for a VSMP permit for land disturbing activities greater than 2500 SF.” The City’s E&SC preliminary and final checklists include a requirement to check for a VSMP permit during the preconstruction meeting and ensure that a Responsible Land Disturber is appointed. Finally, this requirement is included on the City’s website.

### *Site Inspection, Training, VSMP Coverage and Citizen Complaints*

Staff from T&ES, Construction Management & Inspection (CM&I) maintains the proper “Inspector” certification from the state and performs onsite construction inspections at a frequency consistent with the state’s new stormwater regulations. This includes a requirement to secure VSMP coverage through the preconstruction meeting checklist process, as well as a requirement that an individual be identified who has obtained certification through the state’s Responsible Land Disturber Certification of Competence program. Staff also responds to complaints related to construction sites. Regular and complaint-related inspection results and follow up activities are maintained in a dedicated database. CM&I staff can administer enforcement actions that include NOVs and SWOs. The City’s ordinance provides for enforcement escalation and procedures for the responsible onsite party to take appropriate corrective measures, to include action taken by the director and expenses being charged to the contractor. The ordinance allows for the levying of civil penalties and court proceedings.

Project information is tracked and maintained in a dedicated database. The database will be reviewed to ensure compliance with increased MS4 reporting requirements.

### *Written Procedures*

The program maintains state consistency and meets all current requirements. The City will assess inspection and enforcement procedures and revise these procedures as necessary to ensure standardization and consistency of the program, and compliance with the new stormwater regulations and new permit. Plan review procedures will also be reviewed and revised as necessary.

### **Post-Construction (Stormwater Management in New Development and Development on Prior Developed Lands)**

#### *Authority and Applicability*

The City’s requirement for post-construction stormwater management for water quality dates back to the early 1990s, while the detention (quantity) requirement dates back to the early 1970s. Article XIII of the Zoning Ordinance (the Environmental Management Ordinance) requires development and redevelopment to meet water quality and volume performance requirements for land-disturbing activities over 2,500 S.F, consistent with the Chesapeake Bay Act. During determination of resource protection areas and resource management areas with the onset of the Bay Act, the City took a more stringent approach than was afforded highly urbanized localities. Resource protection areas (RPAs) were set as 100’ buffers around perennial streams, regardless of the City’s highly urbanized nature. However, the City went even further in protecting intermittent streams with a 50’ buffer. Finally, post-development sites must meet the water quality volume in addition to the state-required water quality requirements. Failure to meet the water quality volume onsite can be offset by contributing to the locally-innovative water quality improvement fund. Plans are reviewed by OEQ and Engineering staff utilizing standard conditions and checklists, with a maintenance agreement required for structural stormwater management practices (BMPs). The City is currently updating its water quality and water quality requirements for consistency with the Virginia Stormwater Management Regulations

### *Technical BMP Guidance and Plan Review*

The City is viewed as an environmental leader and garnered this reputation through the creation of the Alexandria Supplement to the Northern Virginia BMP Handbook. During development plan approval, applicants must demonstrate compliance prior to site plan approval by using the appropriate state-approved calculations. For private facilities, the developer is required to enter into a Stormwater Management BMP Maintenance Agreement with the City prior to release of the final site plan. A schedule of maintenance must be included in the project plan sheets, along with various views and details. After adoption of amendments required to meet the Virginia Stormwater Management Regulations, the primary resource for BMP technical guidance will be the Virginia BMP Clearinghouse maintained by the Department of Conservation and Recreation.

### *Inspection and Enforcement*

Owners of private structural BMPs must enter into a maintenance agreement with the City that is recorded with the deed and conveys with the land. Maintenance requirements for public BMPs are formalized in a Memorandum of Understanding. Inspections of private and public facilities are conducted at a frequency of at least once every five years, in compliance with permit and program plan requirements. Inspection/enforcement staffs' program objectives include proper functioning of the BMP facility, along with owner education. To that end, pre-inspection letters request the owner to be present during inspection, where they are provided documents (i.e., plan sheets, cut sheets, specs and checklists) related to the facility. A certified post-inspection letter is sent to the owner detailing the results. During the current permit cycle, the City focused on educating BMP owners on the need for maintenance to ensure that the facility provides the designed water quality function. Owners that were not part of the development process are usually not familiar with stormwater BMPs. These owners must first be made aware of the type of facility, its location, and the schedule of maintenance based facility design parameters and property use. This educational component is a crucial first step towards a strong program, but has not shown to be an effective means of widespread compliance. The City will need to transition from this purely educational mode to an enforcement stance that includes the use of legal authority and proceedings during the next permit cycle. The City may wish to consider the use of civil penalties available in ordinance as a tool to increase compliance.

### *Tracking Database*

An electronic database for tracking and reporting of BMP facility inspections is maintained. OEQ staff performs inspections of private and public facilities at least once during the 5-year permit. Information tracked includes: unique identifier, type of facility, location, owner contact information, inspection dates, reports, and follow up activities. The City is actively working to migrate data in Access and GIS format to proprietary asset management system software (Cityworks™) that runs on an ESRI GIS format, which will streamline data management and reporting. This proprietary software is the same database being used by the City Manager's Office for the City's "Call, Click, Connect" customer relations portal, by T&ES Maintenance for infrastructure operations and maintenance, and by OEQ staff for illicit discharge resident reporting and complaint tracking. Given the widespread use of this software and its increased capabilities beyond that of Access, successful completion of this migration will be very positive.

### *Written Procedures*

The BMP inspection and enforcement program will need to be assessed and revised as necessary to ensure standardization and consistency of the program with new permit requirements. The City will be required to create written policies and procedures related to post construction stormwater management. Written policies and procedures used during the plan review process must be memorialized to ensure that BMPs are designed and installed properly. Policies and procedures used for conducting onsite BMP inspection are required. The City must also develop written procedures for inspection, compliance and enforcement to ensure that proper maintenance of private facilities is conducted and guarantees effective long-term operation according to approved designs. Lastly, written inspection and maintenance procedures that provide for the adequate long-term operation and maintenance of public facilities must be developed.

### **MS4 Maintenance (Pollution Prevention and Good Housekeeping)**

#### *Operations*

Municipal operations strive to go a step beyond current permit requirements and to be acutely aware of the potential of water quality impacts that could occur from various types of activities. Applicable staff continues to receive pollution prevention and good housekeeping training, along with training detecting and reporting illicit discharges.

#### *Maintenance Activities and Tracking*

Proactive catch basin cleaning and street sweeping is practiced on a routine basis to reduce spot flooding and drainage problems, as well as to mitigate the impact of floatables, vegetative debris, and roadway debris on local water quality. T&ES staff utilizes a sophisticated asset management database that is built on a GIS-based backbone to perform activities. Assets have unique identifiers and a host of metrics can be input and retrieved in order to allocate the proper resources, track hotspots and problems, generate work orders, and create detailed reports to help in decision making. The linkage of this asset management system (Cityworks™) into a detailed GIS-based mapping product provides for highly organized tracking and systematic response for proactive as well as reactive measures. Further, this is the same system discussed previously that is used for resident complain reporting, is currently being used by OEQ for illicit discharge complaint investigations, will soon be used for outfall inspections and BMP inspections/enforcement, and is being considered by other departments for inspection, enforcement and permit tracking. Centralizing database operations would be highly advantageous.

#### *Training*

Annual comprehensive pollution prevention and illicit discharge training is provided annually for T&ES Maintenance; Recreation, Parks, and Cultural Activities, and supervisory staff in General Services. Training materials focus on good housekeeping practices for municipal operation, and how to identify and report potential sources of pollution. To meet new permit requirements, a training schedule will be formalized to meet the frequency required in the permit for applicable employees. Training materials will be assessed to ensure that pollutants associated with applicable TMDLs are included.

### *Facility Inventory and Inspections*

A pollution prevention inspection checklist was created for municipal facilities during PY1. An inventory of facilities that have significant materials potentially exposed to stormwater runoff was performed as well. Facilities are quickly identified in GIS given the address. (For mapping of the storm sewer system, see the IDDE component above.) Pursuant to permit requirements, municipally owned or operated storage yards, maintenance shops, outdoor storage areas, and other facilities with the potential for significant materials exposure were inspected twice during the permit cycle in PY2 and PY4 using the checklist. Results were provided in those year's annual reports.

A stormwater pollution prevention plan (SWPPP) was created in the previous permit cycle for a number of facilities and related activities that predates the current permit program. This SWPPP will be revised and updated as needed to comply with the new permit requirements, and SWPPPs will be implemented for those facilities as required by the new permit. The new permit requires the identification of locations requiring SWPPPs. For those facilities identified as needing a SWPPP, the City will implement the SWPPPs in phases to meet the 48 month schedule and conduct associated inspections as those SWPPPs are implemented.

### *Pesticides, Herbicides, & Fertilizers*

Integrated Pest Management (IPM) techniques are used in the application of these materials on publicly-owned lands. Materials are properly stored and handled. Pesticides are applied by, or under the supervision of licensed applicators and manufacturers' recommendations are followed. The new permit requires the City to identify locations at the end of PY1 that will be required to have Nutrient Management Plans (NMPs) created. The City will assess current guidelines and develop NMPs, where applicable, based on the schedule in the new MS4 permit.

### *Written Procedures*

While some written standard operating procedures (SOPs) exist for daily municipal operations, those SOPs will be reviewed and revised as needed to be compliant with the new permit requirements. These written procedures must be designed to prevent illicit discharges, ensure the proper disposal of waste materials, prevent the discharge of vehicle wash water to the MS4, require the implementation of best management practices for dewatering from utility construction and maintenance activities, minimize pollutants associated with runoff from bulk storage, prevent discharges from leaking vehicles and equipment, and ensure that the application of materials is conducted in accordance with manufacturer's specifications. A written Training Schedule must be also be developed for the appropriate staff that will incorporate these written procedures into the curriculum.

### **Conclusion**

The City's stormwater management program takes a holistic approach to protecting local water quality resources and meeting permit requirements through the implementation of the MS4 program plan. The City has maintained program consistency and permit compliance since the inception of the state program through two permit cycles. Overall, the program currently meets the minimum standards established in the permit.

In general, the major area of improvement identified through the use of the EPA's evaluation guidance is the need to better memorialize standards and procedures. This will help to ensure continuity and consistency in their application. Most, if not all of these are reflected in the new MS4 permit requirements and will be part of the updated MS4 program plan to meet new permit requirements. In addition, an ongoing effort to centralize and better coordinate various databases through Cityworks has the potential to result in more effective tracking and management of large volumes of data. Finally, the City will investigate the effectiveness of how it is currently enforcing various aspects of its stormwater management program. This includes potentially expanding the enforcement tools being used for illicit discharges and other violations and transitioning from an education mode to an enforcement mode for those property owners that are not properly maintaining structural BMPs.