APPENDIX A – MS4 Program Plan

Virginia Stormwater Management Program MS4 Program Plan
City of Falls Church, Virginia
July 1, 2013
Amended October 1, 2015

Introduction

On July 1, 2013, the City of Falls Church was granted coverage under Virginia's General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4s) through the acceptance of the City's Registration Statement and accompanying stormwater management plan by the Virginia Department of Environmental Quality. The City's current Program Plan was initially an extension of the July 2009 Program Plan but has been updated to meet the scheduled requirements in Table 1 of 9VAC25-890-40. The current General Permit is set to expire on June 30, 2018.

The General Permit requires the City to address six minimum control measures designed to ensure the elimination of stormwater pollution to the maximum extent practicable (MEP). The six minimum control measures include:

- Public Education and Outreach on Stormwater Impacts;
- Public Involvement/Participation;
- Illicit Discharge Detection and Elimination;
- Construction Site Stormwater Runoff Control;
- Post-Construction Stormwater Management in New Development and Redevelopment; and
- Pollution Prevention/Good Housekeeping for Municipal Operations.

The City's approved plan addresses the six minimum control measures, as required, with a series of best management practices (BMPs), along with implementation timelines, measurable goals, responsible entity(ies) for implementation, and reporting requirements. Over past permit years, the City has successfully implemented numerous BMPs as part of its ongoing stormwater management program, as documented in the annual reports submitted to the permitting authorities.

This document represents the City's plan to comply with existing requirements and the required updates listed in 9VAC25-890-40 and are being submitted with the City's Annual Report for continued coverage under the current General Permit.

For each minimum control measure, the City has identified a series of BMPs, including the necessary documents, responsible party(ies), the objective/expected results, measurable goals, schedules and timelines for implementation, and the method utilized to determine the BMP's effectiveness. This document is organized into seven sections corresponding to the requirements for submission. The first section details the administrative BMPs of reevaluating the program once the reissued General Permit becomes effective. The next six sections describe the BMP regimen for each of the six minimum control measures.

.

Program Administration

The City of Falls Church, Virginia (the City) will update and where necessary provide additional schedules to implement its MS4 Program and MS4 Program Plan including its best management practices (BMPs) and measurable goals in order to meet any new requirements included in the new General Permit for Discharges from Small Municipal Separate Storm Sewer Systems.

The City defines its MS4 Program Plan as its Registration Statement for Coverage under the General Permit for Discharges from Small Municipal Separate Storm Sewer Systems, approved by DEQ on July 1, 2013 and all documents, policies, procedures specified directly and those documents, policies, procedures necessary to implement all specified programs listed in the registration statement. The City realizes this is an ongoing process that must be evaluated and maintained throughout the permit cycle.

Necessary Documents: Updated Copy of this MS4 Program Plan, Annual Reports
Responsible Party: The City's MS4 Program is administered through the Department of Public Works. The Director is responsible for developing the updated MS4 Program Plan. The City Manager is responsible for providing the appropriate certification to any documents.
Objective/Expected Results: To maintain a consistent, compliant, and effective MS4 stormwater management program that considers the City's stormwater quality, level of service to City residents and businesses, and adheres to the City's environmental expectations.
Measurable Goals:

1. Annually review the MS4 Program Plan for program compliance and appropriateness of BMPs. Update as needed.
2. Submit an updated copy of this MS4 Program Plan to the Virginia Department of Environmental Quality in compliance with the schedule included in the General Permit.
3. Submit an annual report for the reporting period of July 1 through June 30 to DEQ by the following October 1. Each report shall include updates to the MS4 Program Plan completed during the reporting cycle.
4. Maintain records of documents pertaining to MS4 Program Plans for at least three years. Copies of such records will be made available to the public upon specific request. A copy of the most current MS4 Plan and supplemental annual reports will be posted on the City's website.

Schedule and Evaluation: Ongoing
Items Needed for the Annual Report:

1. Summary cover letter discussing current status of MS4 Program and, if needed, modifications to the MS4 Program Plan as required
2. Updated MS4 Program Plan, if needed

Method Utilized to Determine Effectiveness: Effectiveness will be determined by the outcomes of the assessment and the diagnosis of any gaps in the City's MS4 program as a result of annual self-evaluation. The City will also rely on Virginia DEQ review and approval of the MS4 Annual Report for feedback and confirmation of the City's intended actions in support of its MS4 Program Plan. In addition, the City will assess citizen feedback on its stormwater management program to determine whether the program is achieving what the City has proposed based on the BMP menu in the MS4 Program Plan.

MCM#1: Public Education and Outreach on Stormwater Impacts

BMP A. Draft and publish stormwater management/water quality-related articles in the Falls Church News-Press or locally distributed publication, with at least one article covering the hazards associated with illegal discharges, improper disposal of pet waste, and one article encouraging stormwater retrofits.
Necessary Documents: Articles for publication
Responsible Party: Department of Public Works
Objective/Expected Results: To inform the City's citizens and businesses on stormwater management/water quality issues and provide options demonstrating steps they can take to improve water quality in the City via print media.

Schedule and Evaluation: Beginning in PY1, the City of Falls Church will draft seasonal articles on water quality and/or stormwater management for publication in the Falls Church News-Press or locally distributed publication. The topics of these articles will track with the City's three high-priority water quality issue and may change as the City continues to evaluate topics and effectiveness.
Measurable Goals: In each permit year, the City will draft at least three articles for publication in the Falls Church News-Press or locally distributed publication.
Items to be reported in annual report: Title and subject of the articles published, including date of publication, the estimated number people reached, and an estimated percentage of the target audience reached to be included in an updated Education and Outreach Table.
Method Utilized to Determine Effectiveness: The City will track the distribution of the print media messages (i.e. document which articles ran in which publications and when) and document any noted changes recognizable inside the context of the MS4 program.

BMP B. Participate in the Northern Virginia Clean Water Partners (NVCWP) advertising campaign.
Necessary Documents: None.
Responsible Party: Department of Public Works
Objective/Expected Results: To inform the City's residents on stormwater management/water quality issues and provide options demonstrating steps they can take to improve water quality via cable television ads, promotional items, a website (onlyrain.org), print materials, and internet banner ads.
Schedule and Evaluation: Beginning in PY3, the City of Falls Church will participate in the campaign.
Measurable Goals: In each permit year, the City will provide funding for the ad campaign.
Items to be reported in annual report: Copy of the NVCWP Annual Report.
Method Utilized to Determine Effectiveness: The NVCWP performs an analysis on effectiveness of the campaign as part of the program.

BMP C. The City of Falls Church will post downloadable stormwater management and water quality information on the City's Internet web site (http://www.fallschurchva.gov). A priority will be given to the development and posting of materials with specifically targeted messages.
Necessary Documents: None.
Responsible Party: Department of Public Works, Engineering Division
Objective/Expected Results: To inform the City's constituents on stormwater management/water quality issues and provide options demonstrating steps they can take to improve water quality in the City via Internet media.
Schedule and Evaluation: Beginning PY1, ongoing through the permit period.
Measurable Goals: By the end of PY1, the City will have posted downloadable information on stormwater management and water quality on the City's Internet web site.
Items to be reported in annual report: Roster of materials posted, the number of website views, and an estimated percentage of the target audience reached to be included in an updated Education and Outreach Table.
Method Utilized to Determine Effectiveness: The City will develop targeted messages to address particular pollutants of concern or groups/industries whose activities/behavior may hinder surface water quality. The City will track the distribution of the messages (i.e. document web hits) and document any noted changes recognizable inside the context of the MS4 program.

BMP D. In conjunction with BMP C above, the City of Falls Church will include stormwater management and water quality information on the City's Internet web site (http://www.fallschurchva.gov) in a second language. A priority will be given to the development and posting of materials with specifically targeted messages.
Necessary Documents: None.
Responsible Party: Department of Public Works, Engineering Division
Objective/Expected Results: To inform the City's constituents on stormwater management/water quality issues and provide options demonstrating steps they can take to improve water quality in the City via Internet media.
Schedule and Evaluation: Beginning PY1, ongoing through the permit period.

Measurable Goals: By the end of PY1, the City will have developed and posted downloadable information on stormwater management and water quality on the City's Internet web site in a second language.
Items to be reported in annual report: Roster of materials posted, the number of website views, and an estimated percentage of the target audience reached to be included in an updated Education and Outreach Table.
Method Utilized to Determine Effectiveness: The City will develop targeted messages to address particular pollutants of concern or groups/industries whose activities/behavior may hinder surface water quality. The City will track the distribution of the messages (i.e. document web hits) and document any noted changes recognizable inside the context of the MS4 program.

BMP E. The City will develop targeted outreach material for pet owners on proper management of pet waste for the protection of water quality.
Necessary Documents: Document for publication
Responsible Party: Department of Public Works
Objective/Expected Results: To inform the City's pet owners on stormwater management/water quality issues and provide options demonstrating steps they can take to improve water quality in the City.
Schedule and Evaluation: Beginning in PY1, the City of Falls Church will develop one brochure for pet owners on proper management of pet waste for the protection of water quality and provide this material in both print and electronic format for posting to the City's Internet web site.
Measurable Goals: Develop and publish one brochure for pet owners on proper management of pet waste for the protection of water quality annually.
Items to be reported in annual report: Title of the brochure published, including date of publication, number of residents materials mailed to, and the percentage of the target audience reached to be included in an updated Education and Outreach Table.
Method Utilized to Determine Effectiveness: The City will track the distribution of the print publications (i.e. document the number of brochures distributed and where they were made available) and document any noted City policy or procedure changes recognizable inside the context of the MS4 program.

BMP F. Provide an opportunity for ongoing citizen input on stormwater management.
Necessary Documents: Report of water quality/stormwater management related inquiries via the City website.
Responsible Party: Department of Public Works, Office of Communications; City Manager's Office
Objective/Expected Results: Provide citizens access to the City of Falls Church Request Tracker (http://www.fallschurchva.gov/requesttracker.aspx) as an avenue to provide input on the City's MS4 Program.
Schedule and Evaluation: Ongoing
Measurable Goals: The City of Falls Church Request Tracker provides an opportunity for citizens to provide comments and feedback on issues and/or concerns. The City will document the water quality/stormwater management related inquiries received and report each year's activity in the annual report.
Items to be reported in annual report: Updated table of relevant inquiries/comments on water quality/stormwater management related concerns.
Method Utilized to Determine Effectiveness: The City will track the receipt of any public comments and inputs on stormwater management via Request Tracker to determine the effectiveness of this outreach mechanism and others listed in the Program Plan.

MCM#2: Public Involvement/Participation

BMP A. Follow public notice requirements for the City Council's meeting(s) regarding the implementation of the City's Phase II General Permit.
Necessary Documents: Public Notice of upcoming meetings.
Responsible Party: Department of Public Works, City Clerk's Office

Objective/Expected Results: To inform the City's citizens and businesses of the City's MS4 program and the components crafted in the program plan and to provide an opportunity for public input on the MS4 Program Plan.
Schedule and Evaluation: Ongoing
Measurable Goals: Provide public notice as required by the City Code.
Items to be reported in annual report: A table of City Council meetings held including the topic(s) of discussion.
Method Utilized to Determine Effectiveness: The City will track the receipt of any public comments, inputs and suggestions provided on the MS4 Program Plan via public hearings to determine the effectiveness of this outreach mechanism.

BMP B. Provide an opportunity for ongoing citizen input on stormwater management.
Necessary Documents: Report of water quality/stormwater management related inquiries via the City website.
Responsible Party: Department of Public Works, Office of Communications; City Manager's Office
Objective/Expected Results: Provide citizens access to the City of Falls Church Request Tracker (http://www.fallschurchva.gov/requesttracker.aspx) as an avenue to provide input on the City's MS4 Program.
Schedule and Evaluation: Ongoing
Measurable Goals: The City of Falls Church Request Tracker provides an opportunity for citizens to provide comments and feedback on issues and/or concerns. The City will document the water quality/stormwater management related inquiries received and report each year's activity in the annual report.
Items to be reported in annual report: Updated table of relevant inquiries/comments on water quality/stormwater management related concerns.
Method Utilized to Determine Effectiveness: The City will track the receipt of any public comments and inputs on stormwater management via Request Tracker to determine the effectiveness of this outreach mechanism and others listed in the Program Plan.

BMP C. Provide stormwater management/water quality informational updates to the citizen-based Environmental Services Council (ESC) and solicit input on the MS4 Program Plan and the Annual Reports from the ESC.
Necessary Documents: Report of water quality/stormwater management related topics addressed with the ESC.
Responsible Party: Department of Public Works
Objective/Expected Results: Provide MS4 Program Plan and Annual Report information to a citizen-based advisory council and solicit input on the Program Plan from the same council on a regular basis to ensure citizen input into the program.
Schedule and Evaluation: Ongoing, provide at least one briefing annually.
Measurable Goals: The City of Falls Church Environmental Services Council is a standing commission comprised of nine (9) citizens, who meet monthly to provide policy input to the City Council on Environmental issues, including stormwater. The City will document the water quality/stormwater management related briefings that staff provide to the ESC.
Items to be reported in annual report: List of water quality/stormwater management topics discussed with the ESC.
Method Utilized to Determine Effectiveness: The City will track the receipt of any comments, inputs and suggestions provided on the MS4 Program Plan and/or Annual Reports via the ESC to determine the effectiveness of this outreach mechanism.

BMP D. Schedule and hold Habitat Restoration Events in City parks and public right-of-ways in or near stream corridors and flood plains to remove harmful invasive species and replant with native species for the purpose of stormwater control, erosion control and habitat restoration.
Necessary Documents: Public notices for Events
Responsible Party: Department of Public Works

Objective/Expected Results: Provide a hands-on public involvement experience for the citizens of the City that allows for an educational opportunity for participants in the areas of environmental stewardship, with an emphasis on stormwater control, erosion control, and habitat restoration.
Schedule and Evaluation: Beginning in PY1, the City of Falls Church will hold at least two Habitat Restoration Events to include public participants.
Measurable Goals: The City will hold at least two Habitat Restoration Events annually.
Items to be reported in annual report: In each permit year, for each of the two events, the City will report the area of invasive plant removal and the number of participants.
Method Utilized to Determine Effectiveness: Effectiveness of this BMP will be measured by how many citizens, civic groups, etc. participate in the event.

BMP E. Promote Village Preservation and Improvement Society (VPIS) Neighborhood Tree Program planting events
Necessary Documents: Public notices for Events
Responsible Party: Department of Public Works
Objective/Expected Results: Promote a hands-on public involvement experience for the citizens of the City that allows for an educational opportunity for participants in the areas of environmental stewardship, with an emphasis on revegetation of the urban canopy and habitat restoration. City staff will attend to discuss the importance of trees to stormwater with public participants.
Schedule and Evaluation: Beginning in PY1, the City of Falls Church will promote at least one Neighborhood Tree Program planting event.
Measurable Goals: In each permit year the City will promote and attend planting events.
Items to be reported in annual report: Notification of the event, the number of trees planted, and the number of participants.
Method Utilized to Determine Effectiveness: Effectiveness of this BMP will be measured by how many citizens, civic groups, etc. participate in the event.

BMP F. Promote City-Wide Cleanups
Necessary Documents: Public notices for Events, tracking number of volunteers, and amount of debris collected
Responsible Party: Department of Public Works
Objective/Expected Results: Encourage and promote adopt a spot groups and citizens of the City to participate in the Fall and Spring City-Wide Cleanup. Cleanups remove litter from roadways, streambeds, and parks throughout the City as well as unwanted invasive species in a number of our City Parks. City staff attends and discusses the importance of properly disposing of refuse and recycling.
Schedule and Evaluation: Beginning in PY1, the City of Falls Church will promote two City-wide cleanups annually.
Measurable Goals: In each permit year the City will promote and attend cleanup events.
Items to be reported in annual report: Notification of the event, the amount of debris removed from the watershed, and the number of participants.
Method Utilized to Determine Effectiveness: Effectiveness of this BMP will be measured by how many citizens, civic groups, etc. participate in the event and the amount of debris removed.

BMP G. Provide the City's MS4 Program Plan on the City's Internet web site and provide hard copies of the MS4 Program Plan in select public buildings.
Necessary Documents: City of Falls Church MS4 Program Plan
Responsible Party: Department of Public Works
Objective/Expected Results: Provide citizens and City constituents with the opportunity to become more familiar with the City's MS4 Program Plan and increase awareness of the City's efforts to improve water quality.
Schedule and Evaluation: Ongoing, the City of Falls Church will post the MS4 Program Plan on its Internet web site (http://www.fallschurchva.gov) and will provide hard copies of the plan for viewing at the City Hall building.
Measurable Goals: Provide the MS4 Program Plan as indicated.

Items to be reported in annual report: Roster of materials posted to be included in an updated Education and Outreach Table.
Method Utilized to Determine Effectiveness: The City will track the distribution of the MS4 Program Plan via the Internet (i.e. document web hits) and document any comments and/or suggestions generated by publication of the document received via written or electronic communications.

BMP H. Develop and maintain a Public Education and Outreach Plan
Necessary Documents: Public Education and Outreach Plan
Responsible Party: Department of Public Works
Objective/Expected Results: Beginning in PY2, maintain a plan that focuses on the City's three high-priority water quality issues and works to reach at least 20% of the target audience with relevant messages and materials
Schedule and Evaluation: Ongoing, the City will evaluate and update the plan annually to meet its objective
Measurable Goals: The City will annually present outreach on the three high-priority water quality issues
Items to be reported in annual report: Table of outreach materials utilized and methods by which they were distributed
Method Utilized to Determine Effectiveness: The City will evaluate and determine if 20% of the target audience is being reached

MCM#3: Illicit Discharge Detection and Elimination

BMP A. Promote, publicize, and facilitate public reporting of illicit discharges.
Necessary Documents: Outreach materials for the City's website.
Responsible Party: Department of Public Works, Office of Communications
Objective/Expected Results: Promote the City's Request Tracker system in the community so residents can easily report illicit discharges.
Schedule and Evaluation: Ongoing
Measurable Goals: The City of Falls Church Request Tracker provides an opportunity for citizens to provide comments and feedback on issues and/or concerns via the website. The City will promote the service via the website and social media and then document the water quality/stormwater management related inquiries received and report each year's activity in the annual report.
Items to be reported in annual report: Updated table of relevant inquiries/comments on water quality/stormwater management related concerns.
Method Utilized to Determine Effectiveness: The City will track the receipt of any public comments and inputs on stormwater management via Request Tracker to determine the effectiveness of this outreach mechanism and others listed in the Program Plan.

BMP B. Complete an updated City storm drain map showing the City's storm water outfalls and State waters with HUCs and impairments to which those storm water outfalls discharge. Maintain the acreage and land use of watersheds for each outfall.
Necessary Documents: Updated maps.
Responsible Party: Department of Public Works, Engineering Division
Objective/Expected Results: Document the City's MS4 outfalls and locate them geographically.
Schedule and Evaluation: Annually, update storm drain maps to reflect new construction, modifications and field observations.
Measurable Goals: Completed mapping by the end of PY2. Afterwards update annually.
Items to be reported in annual report: Updates completed with new map and table.
Method Utilized to Determine Effectiveness: The City will rely on Virginia DEQ review of the MS4 outfall map and associated statistics gathered for feedback and confirmation of this component's compliance with the General Permit.

BMP C. Notify in writing the downstream MS4 of any known physical interconnection

Necessary Documents: Updated stormwater mapping
Responsible Party: Department of Public Works
Objective/Expected Results: Sharing of information between local MS4s for potential collaborative efforts.
Schedule and Evaluation: Ongoing
Measurable Goals: By the end of PY2, send written notification of known physical interconnections. Afterward, send written notification immediately after an update to stormwater mapping that contains a newly found interconnection.
Items to be reported in annual report: A copy of the letter to interconnected MS4s when applicable.
Method Utilized to Determine Effectiveness: The City will rely on Virginia DEQ review of the MS4 outfall map and associated statistics gathered for feedback and confirmation of this component's compliance with the General Permit

BMP D. Develop and implement a program for illicit discharge detection that includes written procedures to detect, identify, and address unauthorized nonstormwater discharges.
Necessary Documents: IDDE Manual and SOP; Table of observed outfalls in City streams, updated once per year.
Responsible Party: Department of Public Works, Engineering Division
Objective/Expected Results: Develop and implement a new program to identify potential illicit discharges into the City's MS4.
Schedule and Evaluation: By end of PY2, revise/update the existing IDDE Manual to comply with the new MS4 Permit requirements. Continue ongoing outfall inspections of the City's open channel stream reaches to examine the outfalls discharging directly to the stream
Measurable Goals: By the end of PY2 complete revisions to IDDE Manual and SOP. Annually conduct a stream walk of open channel streams to examine outfalls discharging directly to those streams.
Items to be reported in annual report: Updated Manual and SOP. Updated table of observed outfalls in City streams and a summary of the outcomes of any suspected illicit discharge investigations.
Method Utilized to Determine Effectiveness: The City will evaluate the number of potential illicit discharges identified each year and review how each was addressed.

BMP E. Develop targeted outreach materials for industries located in the City of Falls Church that are particularly susceptible to illicit discharges to the storm sewer system.
Necessary Documents: City IDDE evaluation noting industries of concern for illicit discharges. Printed outreach materials.
Responsible Party: Department of Public Works, Engineering Division
Objective/Expected Results: To inform the City's industries on the legal and environmental issues surrounding illicit discharges into the City's MS4 and to provide options demonstrating steps they can take to avoid illicit discharges in the City via print media.
Schedule and Evaluation: Develop a new printed outreach tool in PY2 for the automotive industry. Work with the Office of the Commissioner of Revenue to develop a good address list for the chosen industry.
Measurable Goals: By the end of PY2, develop, print, and disburse printed outreach materials to automotive industries located in the City of Falls Church.
Items to be reported in annual report: Copy of disbursement list for outreach materials.
Method Utilized to Determine Effectiveness: The City will evaluate the list of recipients of the targeted illicit discharge materials against those potential illicit discharges identified in BMP D. Where necessary, the City may then further refine the illicit discharge message's targeting.

BMP F. Adopt and evaluate City Code that clearly prohibits illicit discharges to the City's storm sewer system.
Necessary Documents: City Code
Responsible Party: Department of Public Works
Objective/Expected Results: To establish specific language in the City Code that prohibits illicit discharges to the City's storm sewer system and provides for civil and/or criminal remedies and enforcement of same.
Schedule and Evaluation: Complete Code amendment process by the conclusion of PY1.

Measurable Goals: By the end of PY1, the City will amend the City Code to clearly prohibit illicit discharges to the City's storm sewer system and provide for civil and/or criminal penalties and City enforcement capabilities for violation of the Code section.
Items to be reported in annual report: Copy of the amended Code section.
Method Utilized to Determine Effectiveness: The City will evaluate the number of potential illicit discharges identified each year and report on how each was addressed as required in the General Permit.

MCM#4: Construction Site Stormwater Runoff Control

BMP A. Maintain a consistently rated Erosion and Sediment (E&S) Control Program.
Necessary Documents: City Code; Notice of consistency from the Virginia Department of Environmental Quality.
Responsible Party: Department of Public Works, Engineering Division
Objective/Expected Results: To effectively manage erosion and sediment control on new and re-development projects disturbing 2,500 square feet or more of land or any land disturbance in the Resource Protection Area in order to protect the City's surface water quality.
Schedule and Evaluation: Beginning in PY1 and continuing throughout the permit cycle
Measurable Goals: The City will enforce Chapter 35 of the City Code with respect to E&S and maintain a consistently-rated Erosion and Sediment Control program. Track land disturbance, subsequent inspections, and enforcement actions.
Items to be reported in annual report: Consistency status with documentation will be noted in each annual report. Land disturbance reports, acres disturbed, number of inspections, and a summary of enforcement actions.
Method Utilized to Determine Effectiveness: Documentation received from DEQ through the agency's periodic review of the City's E&S program.

BMP B. Develop written policies and procedures for construction site stormwater runoff control
Necessary Documents: Falls Church Stormwater Management Handbook
Responsible Party: Department of Public Works, Engineering Division
Objective/Expected Results: To review existing City policies and procedures and then consolidate into a single document.
Schedule and Evaluation: Complete by the end of PY2.
Measurable Goals: The City will revise existing documents and combine into the Falls Church Stormwater Management Handbook by the end of PY2.
Items to be reported in annual report: A copy of the Falls Church Stormwater Management Handbook
Method Utilized to Determine Effectiveness: The City will rely on Virginia DEQ review of the handbook for feedback and confirmation of this component's compliance with the General Permit

BMP C. Promote, publicize, and facilitate public reporting of erosion and sediment concerns.
Necessary Documents: Outreach materials for the City's website.
Responsible Party: Department of Public Works, Office of Communications
Objective/Expected Results: Promote the City's Request Tracker system in the community so residents can easily report concerns regarding potential water quality and compliance issues.
Schedule and Evaluation: Ongoing
Measurable Goals: The City of Falls Church Request Tracker provides an opportunity for citizens to provide comments and feedback on issues and/or concerns via the website. The City will promote the service via the website and social media and then document the water quality/stormwater management related inquiries received and report each year's activity in the annual report.
Items to be reported in annual report: Updated table of relevant inquiries/comments on water quality/stormwater management related concerns.

Method Utilized to Determine Effectiveness: The City will track the receipt of any public comments and inputs on stormwater management via Request Tracker to determine the effectiveness of this outreach mechanism and others listed in the Program Plan.

MCM#5: Post-Construction Stormwater Management in New Development and Redevelopment

BMP A. Maintain a consistent rated Chesapeake Bay Preservation Program.
Necessary Documents: City Code; Notice of consistency from the Virginia Department of Environmental Quality.
Responsible Party: Department of Public Works
Objective/Expected Results: To effectively manage Chesapeake Bay Preservation regulations on new and re-development projects disturbing 2,500 square feet or more of land or any land disturbance in the Resource Protection Area in order to protect the City's surface water quality.
Schedule and Evaluation: Beginning in PY1 and continuing throughout the permit cycle
Measurable Goals: The City will enforce Chapter 35 of the City Code with respect to the Chesapeake Bay Preservation Program.
Items to be reported in annual report: Consistency status with documentation will be noted in each annual report.
Method Utilized to Determine Effectiveness: Documentation received from DEQ through the agency's periodic review of the City's Chesapeake Bay Preservation Area program.

BMP B. Maintain an inventory of all known stormwater management facilities
Necessary Documents: Spreadsheet with inventory of stormwater management facilities located in the City of Falls Church.
Responsible Party: Department of Public Works
Objective/Expected Results: Identify, geographically locate, and track all known stormwater management facilities and stormwater BMPs in the City so as to administer the requirements that ensure their proper operation and maintenance.
Schedule and Evaluation: Ongoing
Measurable Goals: The City will document the number of stormwater quality BMPs located in the City of Falls Church
Items to be reported in annual report: Updated list of current BMPs in the City.
Method Utilized to Determine Effectiveness: Implementation of the City's facility assessment program will determine BMP effectiveness.

BMP C. Require Stormwater BMP agreements are entered into and executed prior to issuing building permits where BMPs are required to meet the Chesapeake Bay Act requirements.
Necessary Documents: Spreadsheet with inventory of stormwater quality BMPs located in the City of Falls Church.
Responsible Party: Department of Public Works
Objective/Expected Results: Implementation will ensure that stormwater BMP owners are conducting appropriate maintenance on their facilities to ensure provision of stormwater quality treatment for all land disturbing projects greater than 2,500 square feet.
Schedule and Evaluation: Ongoing
Measurable Goals: The City will require 100% of new stormwater quality BMPs located in the City of Falls Church to have maintenance agreements.
Items to be reported in annual report: Updated list of current BMPs in the City.
Method Utilized to Determine Effectiveness: Documentation of BMPs implemented on each developed or re-developed parcel.

BMP D. Require adequate long-term operation and maintenance by the owner of stormwater management facilities

Necessary Documents: Spreadsheet with inventory of stormwater quality BMPs located in the City of Falls Church.
Responsible Party: Department of Public Works, Engineering Division.
Objective/Expected Results: Implementation will ensure that stormwater BMP owners are conducting appropriate maintenance on their facilities. The City will review existing City BMP inspection policies and procedures and then consolidate into a single document.
Schedule and Evaluation: Complete by the end of PY2
Measurable Goals: The City will revise existing documents and combine into the Falls Church Stormwater Management Handbook by the end of PY2. The City will continue to inspect all facilities at least once per permit cycle.
Items to be reported in annual report: Summary of stormwater management facilities inspected and enforcement actions.
Method Utilized to Determine Effectiveness: Documentation of maintenance activities performed and/or enforcement actions initiated by the City on each managed facility.

BMP E. Require adequate long-term operation and maintenance by operator-owned stormwater management facilities
Necessary Documents: Spreadsheet with inventory of stormwater quality BMPs owned by the City of Falls Church.
Responsible Party: Department of Public Works, Engineering Division.
Objective/Expected Results: Implementation will ensure that the City is conducting appropriate maintenance on their facilities annually. The City will review existing City BMP inspection policies and procedures and then consolidate into a single document.
Schedule and Evaluation: Complete by the end of PY2
Measurable Goals: The City will revise existing documents and combine into the Falls Church Stormwater Management Handbook by the end of PY2. The City will continue to inspect their facilities annually.
Items to be reported in annual report: Summary of stormwater management facilities inspected and enforcement actions.
Method Utilized to Determine Effectiveness: Documentation of maintenance activities performed and/or enforcement actions initiated by the City on each managed facility.

BMP F. Develop written policies and procedures for construction site stormwater runoff control
Necessary Documents: Falls Church Stormwater Management Handbook
Responsible Party: Department of Public Works, Engineering Division
Objective/Expected Results: To review existing City policies and procedures and then consolidate into a single document.
Schedule and Evaluation: Complete by the end of PY2.
Measurable Goals: The City will revise existing documents and combine into the Falls Church Stormwater Management Handbook by the end of PY2.
Items to be reported in annual report: A copy of the Falls Church Stormwater Management Handbook
Method Utilized to Determine Effectiveness: The City will rely on Virginia DEQ review of the handbook for feedback and confirmation of this component's compliance with the General Permit

MCM#6: Pollution Prevention/Good Housekeeping for Municipal Operations

BMP A. Conduct street sweeping for City streets to remove potential pollutants.
Necessary Documents: Municipal Pollution Prevention Activities Table
Responsible Party: Department of Public Works
Objective/Expected Results: To remove pollutants from roadways and parking areas that may otherwise be introduced into the City's MS4 during rainfall events.
Schedule and Evaluation: Beginning in PY1, the City of Falls Church will sweep City streets up to twice per year.

Measurable Goals: By the end of PY1, initiate biannual street sweeping for City streets.
Items to be reported in annual report: Documentation of street sweeping material removed each year will be reported in a Municipal Pollution Prevention Activities Table.
Method Utilized to Determine Effectiveness: Documentation of street sweeping materials removed each year. The quantity of materials removed will be calculated by multiplying the number of loads times the weight of the first load.

BMP B. Incorporate stormwater quality management information into ongoing employee training/safety programs. Document all water quality training activities.
Necessary Documents: Training Schedule and Program; Municipal Pollution Prevention Activities Table
Responsible Party: Department of Public Works
Objective/Expected Results: Ensure that City employees are trained on best practices in their operational areas of responsibility to reduce or eliminate stormwater pollution or other potential water quality impairments through the execution of their tasks and duties.
Schedule and Evaluation: Beginning in PY1, the City of Falls Church will provide water quality protection/pollution prevention training for all City operations employees whose job assignments have the potential to impact stormwater.
Measurable Goals: By the end of PY1, develop a Training Schedule and Program.
Items to be reported in annual report: Summary of training provided, including roster of training attendees.
Method Utilized to Determine Effectiveness: Documentation of training provided for City employees and tracking of any water quality compromising events caused by City staff will inform effectiveness and guide future training.

BMP C. Identify high-priority, City-owned and operated facilities with a specific emphasis on illicit discharges.
Necessary Documents: Facilities Assessment study
Responsible Party: Department of Public Works
Objective/Expected Results: Evaluate stormwater pollution potential posed by City-owned and operated facilities with respect to the new General Permit requirements
Schedule and Evaluation: Beginning in PY1, the City of Falls Church will conduct a City-owned and operated facilities assessment to document current practices, procedures, and program elements for stormwater pollution prevention in order to determine if the facility is a high-priority.
Measurable Goals: Identify high-priority City-owned and operated facilities by the end of PY1.
Items to be reported in annual report: Overview of findings from the Facilities Assessment study.
Method Utilized to Determine Effectiveness: Noted results of the City's investigation and eventual implementation of next steps.

BMP D. Develop and implement a Stormwater Pollution Prevention Plan (SWPPP) for high-priority, City-owned and operated facilities
Necessary Documents: Facilities Assessment study
Responsible Party: Department of Public Works
Objective/Expected Results: Evaluate stormwater pollution potential posed by City-owned and operated facilities with a specific emphasis on illicit discharges.
Schedule and Evaluation: Beginning in PY3, the City of Falls Church will conduct a high-priority, City-owned and operated facilities assessment to document current practices, procedures, and program elements for stormwater pollution prevention.
Measurable Goals: Complete and implement the SWPPP by the end of PY4.
Items to be reported in annual report: Final SWPPP report.
Method Utilized to Determine Effectiveness: Noted results of the City's assessment and eventual implementation of any necessary, remedial actions.

BMP E. Identify City-owned and operated facilities requiring nutrient management plans.
Necessary Documents: Nutrient Management Plan Study
Responsible Party: Department of Public Works

Objective/Expected Results: Identify City-owned and operated facilities with respect to the new General Permit requirements concerning nutrient management.
Schedule and Evaluation: Beginning in PY1, the City of Falls Church will conduct a City-owned and operated facilities study for nutrient management.
Measurable Goals: Identify high-priority City-owned and operated facilities by the end of PY1.
Items to be reported in annual report: Summary of findings from the study, including location and total acreage requiring a nutrient management plan.
Method Utilized to Determine Effectiveness: Noted results of the City's investigation and eventual implementation of next steps.

BMP F. Develop and implement a Nutrient Management Plan (NMP) for sites identified in BMP E directly above.
Necessary Documents: Nutrient Management Plan
Responsible Party: Department of Public Works
Objective/Expected Results: Evaluate stormwater pollution potential posed by City-owned and operated facilities with a specific emphasis on nutrient management.
Schedule and Evaluation: Beginning in PY4, the City of Falls Church will conduct a City-owned and operated facilities study for nutrient management.
Measurable Goals: Complete and implement the NMP by the end of PY5.
Items to be reported in annual report: Final NMP report.
Method Utilized to Determine Effectiveness: Noted results of the City's assessment and eventual implementation of any necessary, remedial actions.

BMP G. Maintain City Standard Operating Procedures (SOP) for the reduction of potential stormwater pollution and proper removal of waste materials.
Necessary Documents: Falls Church SOPs for Good Housekeeping
Responsible Party: Department of Public Works
Objective/Expected Results: Ensure that City SOPs are consistent with the need to reduce stormwater pollution potential and properly remove waste materials to the maximum extent practicable and that City employees are trained in the proper execution of these SOP.
Schedule and Evaluation: Ongoing. SOPs will be updated or added based on the final recommendations from the City's SWPPP to ensure proper procedures are in place.
Measurable Goals: By the end of PY4, evaluate and revise City SOPs upon completion of the SWPPP.
Items to be reported in annual report: Table outlining any SOP adjustments noted to City operations policies as noted during the review.
Method Utilized to Determine Effectiveness: Review of, and implementation of, City SOPs that ensure stormwater pollution potential reduction and proper waste disposal to the maximum extent practicable and that City employees are trained on the proper implementation of the SOPs outlined above.

APPENDIX B – Chesapeake Bay TMDL Action Plan

CITY OF FALLS CHURCH, VIRGINIA

Chesapeake Bay TMDL Action Plan

In compliance with General Permit for Discharges of Stormwater from Small Municipal Storm Sewer Systems VAR040065

DEQ Submittal – September 29, 2015

City of Falls Church
Department of Public Works
300 Park Avenue | Falls Church, Virginia 22046
www.fallschurchva.gov

Prepared with assistance from
Amec Foster Wheeler
14424 Albemarle Point Place | Chantilly, Virginia 20151
www.amecfw.com
(703) 488-3700

CERTIFICATION

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

Name	Title	Date

City of Falls Church, Virginia
Chesapeake Bay TMDL Action Plan

September 29, 2015

Table of Contents

1. Introduction 1
- 1.1 Purpose 1
- 1.2 Summary of Required Reductions and Means and Methods to Achieve Required Reductions 1
- 1.3 Permit Compliance Crosswalk 3

2. Current Program and Legal Authority 5
- 2.1 MS4 Program Description and Existing Legal Authority 5
- 2.2 New or Modified Legal Authority 6

3. Means and Methods to Address Discharges from New Sources 7

4. Estimated Existing Source Loads and Calculated Total Pollutant of Concern (POC) Required Reductions 7
- 4.1 MS4 Service Area Delineation Methodology 7
- 4.2 Pervious and Impervious Surface Calculation Methodology 8
- 4.3 Estimated Existing Source Loads 10
- 4.4 Required Reductions from Existing Source Loads 11
- 4.5 Anticipated Future Reductions 11

5. Means and Methods to Meet Required Reductions and Schedule 12
- 5.1 Redevelopment 12
- 5.2 City-Initiated Projects 13
- 5.3 Street Sweeping 13
- 5.4 More Stringent Single Family Residential Development 14
- 5.5 Nutrient Credit Trading 14
- 5.6 Additional Means and Methods 14
- 5.7 Compliance Demonstration 14

6. Means and Methods to Offset Increased Loads from New Sources Initiating Construction Between July 1, 2009 and June 30, 2014 15

7. Means and Methods to Offset Increased Loads from Grandfathered Projects Beginning Construction After July 1, 2014 16

8. List of Future Projects Qualifying as Grandfathered 16

9. Estimated Cost of Compliance 16

10. Public Comment Plan 16

Tables

1A Summary of Required Reductions and Means and Methods to Achieve Required Reductions 2
1B Action Plan and Permit Compliance Crosswalk 3

2A MS4 Program Plan Components Related to Meeting the Chesapeake Bay TMDL 5

4A Estimated Existing Source Loads 10
4B Required Reductions from Estimated Existing Source Loads 11
4C Estimated Total Reductions by Permit Cycle 12

5A Summary of Reductions from Redevelopment 13
5B Summary of Reductions from City-Initiated Projects 13
5C Compliance Demonstration for Total Nitrogen 15
5D Compliance Demonstration for Total Phosphorus 15
5E Compliance Demonstration for Total Suspended Sediment 15

9A Estimated Cost of Compliance 16

Maps

4A City of Falls Church MS4 Service Area Delineation 9

Appendices

Appendix A Redevelopment Projects

Appendix B City-Initiated Projects

City of Falls Church, Virginia
Chesapeake Bay TMDL Action Plan

September 29, 2015

1. Introduction

1.1 Purpose

This Chesapeake Bay TMDL Action Plan documents how the City of Falls Church intends to meet the "Special Condition for the Chesapeake Bay TMDL" in Section I, Part C of the City's General Permit for Discharges from Small Municipal Separate Storm Sewer Systems (MS4s). The City's most recent permit (VAR040065) was issued by the Virginia Department of Environmental Quality (DEQ) effective July 1, 2013 and will expire June 30, 2018.

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

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

This Chesapeake Bay TMDL Action Plan calculates the 5% reduction target and establishes the means and methods for achieving the reduction target in accordance with the MS4 permit and the final Chesapeake Bay TMDL Special Condition Guidance developed by DEQ (Guidance Memo No 15-2005) dated May 18, 2015. Reductions in excess of 5% will be applied to the second permit cycle requirements.

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

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

The City calculates that the following reductions must be achieved from existing sources as of June 30, 2009: 66.1 pounds for TN; 8.7 pounds for TP; and, 7,466.1 pounds for TSS. The City will achieve the reductions through the means and methods detailed in Section 5. Means and methods include redevelopment that resulted in a decrease in pollutant loads (Section 5.1) and City-initiated stormwater management and stream restoration projects (Section 5.2). These practices are anticipated to result in the following POC reductions: 304.80 pounds for TN; 137.58 pounds for TP; and, 84,118.35 pounds for TSS. These practices exceed required reductions from existing sources.

The City may also take credit for additional reductions, which will be documented in the City's annual reports to DEQ. These include additional redevelopment and City-initiated projects, credit for street sweeping operations (Section 5.3), more stringent regulation of single family residential structures under one acre (Section 5.4), nutrient credit trading (Section 5.5), and additional means and methods that may be implemented in accordance with DEQ's Chesapeake Bay TMDL Special Conditions Guidance (Section 5.6).

During the period of July 1, 2009 through June 30, 2014, 13 development projects resulted in a land disturbance of one acre or greater. However, all of these projects were redevelopment projects and resulted in a reduction in POC loads. In addition, the City has no grandfathered projects initiating construction after July 1, 2014. As a result, no offsets for new or grandfathered sources are required for this permit cycle.

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

	Total Nitrogen (lbs)	**Total Phosphorus (lbs)**	**Total Suspended Solids (lbs)**
Required Reductions from Existing Sources	66.1	8.7	7,466.1
- Means and Methods from Section 5	304.8	137.58	84,118.35
= Excess Credit from Existing Sources	238.7	128.88	76,652.25
Required New Source Offsets	0	0	0
- Excess Credit from Existing Sources	238.7	128.88	76,652.25
Remaining Excess Credit After Accounting for New Source Offsets	238.7	128.88	76,652.25
Required Grandfathered Offsets	0	0	0
Remaining Excess Credit Carried Over to Next Permit Cycle	238.7	128.88	76,652.25

1.3 Permit Compliance Crosswalk

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

Table 1B – Action Plan and Permit Compliance Crosswalk

Falls Church Action Plan Section	Element from DEQ TMDL Special Condition Guidance	MS4 Permit	MS4 Permit Requirement
Section 2.1	Part VI.1 – Current Program and Existing Legal Authority	Section I.C.2.a(1)	A review of the current MS4 program implemented as a requirement of this state permit including a review of the existing legal authorities and the operator's ability to ensure compliance with this special condition.
Section 2.2	Part VI.2 – New or Modified Legal Authority	Section I.C.2.a(2)	The identification of any new or modified legal authorities such as ordinances, state and other permits, orders, specific contract language, and inter-jurisdictional agreements implemented or needing to be implemented to meet the requirements of this special condition.
Section 3	Part VI.3 – Means and Methods to Address Discharges from New Sources	Section I.C.2.a(3)	The means and methods that will be utilized to address discharges into the MS4 from new sources.
Section 4	Part VI.4 – Estimated Existing Source Loads and Calculated Total Pollutants of Concern (POC) Required Reductions	Section I.C.2.a(4) and Section I.C.2.a(5)	An estimate of the annual POC loads discharged from the existing sources as of June 30, 2009, based on the 2009 progress run. The operator shall utilize the applicable versions of Tables 2 a-d in this section based on the river basin to which the MS4 discharges by multiplying the total existing acres served by the MS4 on June 30, 2009 and the 2009 Edge of Stream (EOS) loading rate. A determination of the total pollutant load reductions necessary to reduce the annual POC loads from existing sources utilizing the applicable versions of Tables 3 a-d in this section based on the river basin to which the MS4 discharges. This shall be calculated by multiplying the total existing acres served by the MS4 by the first permit cycle required reduction in loading rate. For the purpose of this determination, the operator shall utilize those existing acres identified by the 2000

Falls Church Action Plan Section	Element from DEQ TMDL Special Condition Guidance	MS4 Permit	MS4 Permit Requirement
			U.S. Census Bureau urbanized area and served by the MS4.
Section 5	Part VI.5 – Means and Methods to Meet the Required Reductions and Schedule	Section I.C.2.a(6)	The means and methods, such as best management practices and retrofit programs that will be utilized to meet the required reductions included in subdivision 2.a(5) of this subsection, and a schedule to achieve those reductions. The schedule should include annual benchmarks to demonstrate the ongoing progress in meeting those reductions.
Section 6	Part VI.6 – Means and Methods to Offset Increased Loads from New Sources Initiating Construction between July 1, 2009 and June 30, 2014	Section I.C.2.a(7)	The means and methods to offset the increased loads from new sources initiating construction between July 1, 2009 and June 30, 2014 that disturb one acre or greater as a result of the utilization of an average land cover condition greater than 16% impervious cover for the design of post-development stormwater management facilities. The operator shall utilize Table 4 in this section to develop the equivalent pollutant load for nitrogen and total suspended solids. The operator shall offset 5.0% of the calculated increased load from these new sources during the permit cycle.
Section 7	Part VI.7 – Means and Methods to Offset Increased Loads from Grandfathered Projects that Begin Construction after July 1, 2014	Section I.C.2.a(8)	The means and methods to offset the increased loads from projects as grandfathered in accordance with 4VAC50-60-48 that disturb one acre or greater that begin construction after July 1, 2014, where the project utilizes an average land cover condition greater than 16% impervious cover in the design of post-development stormwater management facilities. The operator shall utilize Table 4 in this section to develop the equivalent pollutant load for nitrogen and total suspended solids.
Section 8	Part VI.8 – List of Future Projects, and Associated Acreage that Qualify as Grandfathered	Section I.C.2.a(10)	A list of future projects and associated acreage that qualify as grandfathered in accordance with 4VAC50-60-48.
Section 9	Part VI.9 – Estimated Expected Cost to	Section I.C.2.a(11)	An estimate of the expected costs to implement the requirements of this

Falls Church Action Plan Section	Element from DEQ TMDL Special Condition Guidance	MS4 Permit	MS4 Permit Requirement
	Implement Necessary Reductions		special condition during the state permit cycle.
Section 10	Part VI.10a&b – Public Comments on Draft Action Plan	Section I.C.2.a(12)	An opportunity for receipt and consideration of public comment regarding the draft Chesapeake Bay TMDL Action Plan. A list of all comments received as a result of public comment and any modifications made to the draft Chesapeake Bay TMDL Action Plan as a result of the public comments.

2. Current Program and Legal Authority

2.1 MS4 Program Description and Existing Legal Authority

The City has adopted an MS4 Program Plan that documents implementation of all MS4 permit requirements, including the programmatic and legal authorities required to meet the "Special Condition for the Chesapeake Bay TMDL." The full MS4 Program Plan can be found at http://www.fallschurchva.gov/261/Municipal-Separate-Storm-Sewer-System-MS. Table 2A provides a summary of the six minimum control measures (MCMs) implemented by the City under the MS4 permit and how they relate to controlling total nitrogen, total phosphorus, and total suspended solids.

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

Minimum Control Measure	MS4 Program Plan Elements Related to Controlling Total Nitrogen, Total Phosphorus, and Total Suspended Solids
Public Education and Outreach on Stormwater Impacts	The City's public education and outreach program includes several actions designed to reduce sediment and nutrients. These include: • BMP 1A. Each year, draft and publish at least three stormwater management articles in the Falls Church News-Press with at least one article encouraging stormwater retrofits. • BMP 1B. Each year, draft and publish stormwater management articles in the Watershed News section of Department of Public Works online newsletter with a focus on demonstrating how residents can take steps to improve water quality at home.
Public Involvement and Participation	The City has designed a program to involve the public in the decision-making process. In particular, BMP 2E promotes the Village Preservation and Improvement Society Neighborhood Tree Program planting events. Tree planting has the potential to reduce sediment and nutrients.
Illicit Discharge Detection and Elimination	The City has designed a program to identify and eliminate illicit discharges. Actions that specifically address sediment and nutrients include the following:

Minimum Control Measure	MS4 Program Plan Elements Related to Controlling Total Nitrogen, Total Phosphorus, and Total Suspended Solids
	• BMP 3A. Promote, publicize, and facilitate public reporting of illicit discharges. Illicit discharges may include sediment from construction activities or nutrients from landscaping and other activities. • BMP 3E. Develop targeted outreach materials for industries located in the City of Falls Church that are particularly susceptible to illicit discharges to the storm sewer system.
Construction Site Stormwater Runoff Control	The City's construction site stormwater runoff control program is designed to be fully consistent with the water quality control requirements of the Virginia Erosion and Sediment Control Act and the Virginia Stormwater Management Act, and their attendant regulations.
Post-Construction Stormwater Management	The City's construction site stormwater runoff control program is designed to be fully consistent with the water quality control requirements of the Virginia Stormwater Management Act and its attendant regulations.
Pollution Prevention and Good Housekeeping for Municipal Operations	The City has included in its MS4 Program Plan actions to meet the pollution prevention and good housekeeping requirements for municipal operations. Actions that specifically address sediment and nutrients include the following: • BMP 6A: Conduct street sweeping for City streets to remove potential pollutants. These pollutants include sediment and nutrients. • BMP 6B: Incorporate stormwater quality management information into ongoing employee training/safety programs. This information will include how to prevent sediment and nutrient pollution. • BMP 6C and BMP 6D: Identify high-priority, City-owned and operated facilities with a specific emphasis on illicit discharges. Develop and implement a stormwater pollution prevention plan (SWPPP) for high-priority, City-owned and operated facilities. Both of these actions will evaluate whether City operations are a source of sediment and nutrients and result in plans to control these pollutants. • BMP 6E and BMP 6F: Identify City-owned and operated facilities requiring nutrient management plans. Develop and implement a nutrient management plan for sites identified in BMP 6E.

2.2 New or Modified Legal Authority

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

3. Means and Methods to Address Discharges from New Sources

The City must identify and implement the means and methods necessary to address discharges into the MS4 from new sources. Any new source that disturbs one acre or greater and utilizes an average land cover condition greater than 16% impervious cover for the design of post-development stormwater management facilities must be offset in accordance with Section I.C.2.a(3) of the permit. Between July 1, 2009 and June 30, 2014, the City utilized a 35% cap on impervious cover for single family home new development and redevelopment (approximately 1.5 pounds of phosphorus per acre per year). For all other development, if the impervious coverage was 50% or less, then the development had to meet the existing pollutant load. For development over 50% impervious cover, the existing pollutant load had to be reduced by 10%. Section 6 addresses the issue of offsets to address discharges from new sources.

On March 24, 2014, the City Council adopted stringent new stormwater quality requirements (Chapter 35, Article I "Stormwater Management" City of Falls Church Code) that meet or exceed the state's minimum requirements for discharges from new sources. These changes became effective July 1, 2014 and meet the requirements of the Virginia Stormwater Management Act (§62.1-44.15:24 et seq, Code of Virginia), the Erosion and Sediment Control Act (§62.1-44.15:51 et seq, Code of Virginia), the Chesapeake Bay Preservation Act (§62.1-44.15:67 et seq, Code of Virginia), and their attendant regulations.

The City's ordinance applies to any land-disturbing activity 2,500 square feet and greater, which is the threshold required under the Virginia Stormwater Management Regulations (9VAC25-870) for localities subject to the Chesapeake Bay Preservation Act. However, the City's requirements are more stringent than the minimum standards since it could have exempted single family residential development not part of a common plan of development under one acre. All new development, and all new development and redevelopment that is zoned as low and medium residential, must meet a standard of 0.41 pounds of phosphorus per acre per year. All redevelopment, except parcels zoned or classified as low and medium residential, must reduce the phosphorus load by 20% if the land disturbance is one acre or greater or by 10% if the land disturbance is less than one acre (not to exceed the 0.41 standard for new development). The standard of 0.41 pounds of phosphorus per acre per year is mandated by the Virginia Stormwater Management Regulations, and according to DEQ, meets the requirement for no-net-increase from new sources.

A full copy of the City's stormwater management ordinance can be found at the following website: http://www.fallschurchva.gov/173/Stormwater.

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

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

4.1 MS4 Service Area Delineation Methodology

Storm sewer system GIS data (including MS4 outfalls) were used in conjunction with hydrologic features, local topographic data, and high-resolution aerial photos taken in March 2009 to delineate the City's MS4 boundary and create an MS4 boundary polygon layer. Drainage features were thoroughly reviewed by engineers and planners using a GIS environment to

accurately account for storm sewer drainage areas and determine break points between the manmade and natural hydrologic systems.

Sheet flow crossing the City boundary was also considered and analyzed. Sheet flow between MS4s is accounted for in accordance with Appendix IV of DEQ's Chesapeake Bay TMDL Special Condition Guidance. With the exception of small areas adjacent to two natural stream valleys (Four Mile Run and Tripps Run) and areas sheet flowing to adjoining localities, the vast majority of the City's total land area consists of regulated impervious and pervious cover.

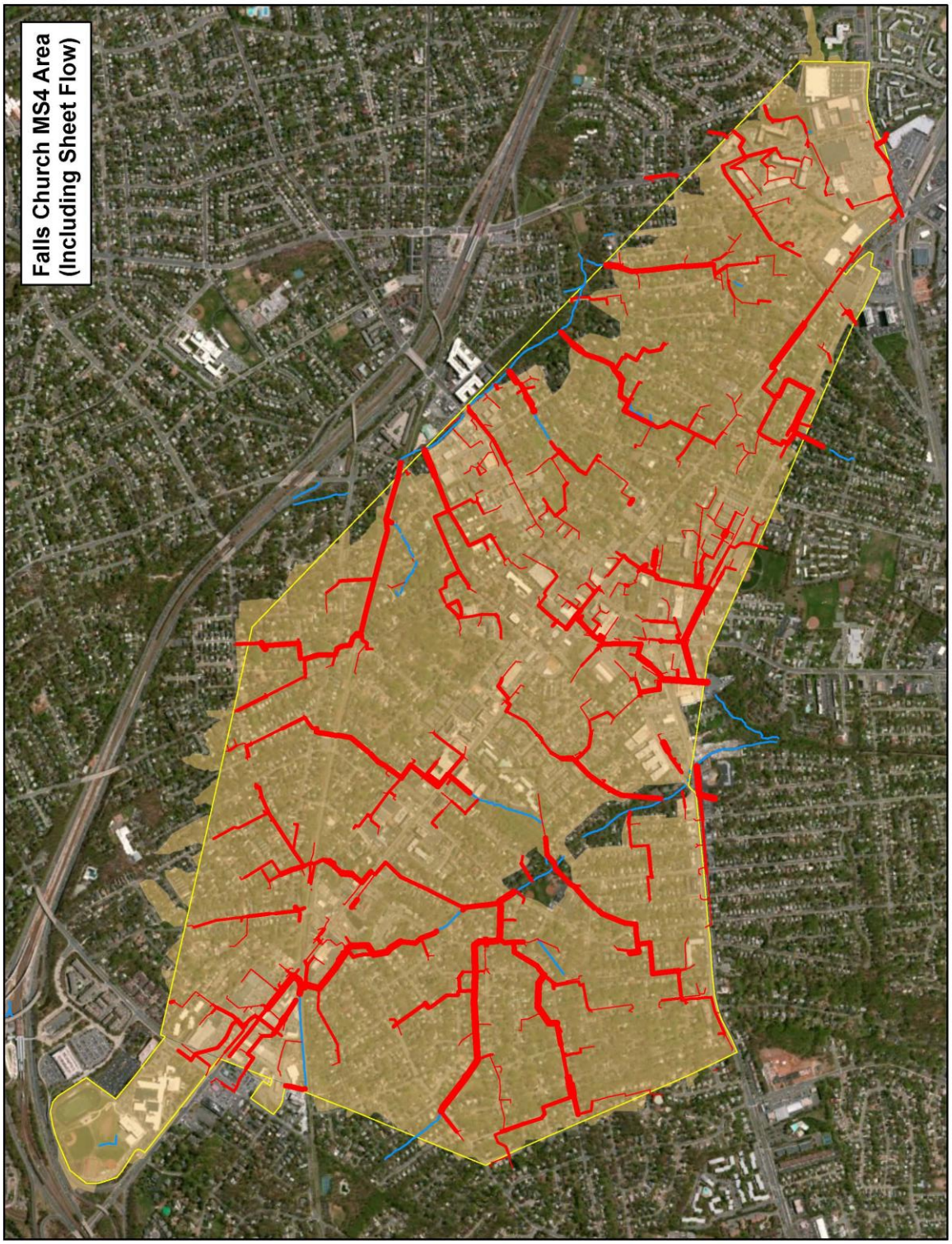
In accordance with DEQ's Chesapeake Bay TMDL Special Guidance, the City may exclude from its MS4 service area land regulated under any general VPDES permit that addresses industrial stormwater and forested land one half contiguous acre or more that meets specific criteria. The City has not identified within its boundary any property with a VPDES industrial stormwater permit. The City conducted a preliminary analysis of potential forested area within the MS4 and determined that the amount is *de minimus*. As a result, the City has opted not to exclude these areas for this plan, but may choose to conduct the additional analysis at a later date.

4.2 Pervious and Impervious Surface Delineation Methodology

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

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

Map 4A – City of Falls Church MS4 Service Area Delineation



4.3 Estimated Existing Source Loads

The City must estimate the total existing source loads for total nitrogen, total phosphorus, and total suspended solids as of June 30, 2009 based on the 2009 Chesapeake Bay Model progress run and using 2009 Edge of Stream (EOS) loading rates.[1] The City has a total of 1,296.4 acres served by the MS4. It is noted that a boundary adjustment was approved between the City and Fairfax County in 2014. The adjustment resulted in an expansion of the City's regulated MS4 area, including parcels containing George Mason High School and Mary Ellen Henderson Middle School. Since these parcels have long been within Fairfax County's MS4 service area, they are now included in the City's existing source load.

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

Table 4A – Estimated Existing Source Loads

Source	**Pollutant**	**Total Existing Acres Served by MS4 (6/30/09)**	**2009 EOS Loading Rate (lbs/acre)**	**Estimated Total POC Load Based on 2009 Progress Run**	
Regulated Urban Impervious	Nitrogen	591.1	16.86	9,966	17,068
Regulated Urban Pervious		705.3	10.07	7,102	
Regulated Urban Impervious	Phosphorus	591.1	1.62	958	1,247
Regulated Urban Pervious		705.3	0.41	289	
Regulated Urban Impervious	Total Suspended Solids	591.1	1,171.32	692,372	816,357
Regulated Urban Pervious		705.3	175.8	123,985	

[1] Since the City is within the Potomac River watershed, the 2009 EOS loading rates from Table 2b of the permit must be utilized.

4.4 Required Reductions from Existing Source Loads

Table 4B shows the required reductions that must be achieved from the existing source loads calculated in Table 4A.[2]

Table 4B – Required Reductions from Estimated Existing Source Loads

Source	Pollutant	Total Existing Acres Served by MS4 (6/30/09)	First Permit Cycle required Reduction in Loading Rate (lbs/acre)	Total Reduction Required First Permit Cycle (lbs)	
Regulated Urban Impervious	Nitrogen	591.1	0.07587	44.8	66.1
Regulated Urban Pervious		705.3	0.03021	21.3	
Regulated Urban Impervious	Phosphorus	591.1	0.01296	7.7	8.7
Regulated Urban Pervious		705.3	0.00148625	1.0	
Regulated Urban Impervious	Total Suspended Solids	591.1	11.7132	6,923.7	7,466.1
Regulated Urban Pervious		705.3	0.769125	542.4	

4.5 Anticipated Future Reductions

The City is only required to achieve reductions identified in the current permit. However, it is anticipated that additional reductions will be required in accordance with the Virginia WIP. While these targets may change based on revisions to the Chesapeake Bay model and the WIP, the current targets are summarized in Table 4C for planning purposes.

[2] Reductions from estimated existing source loads are calculated using Table 3b of the permit.

Table 4C – Estimated Total Reductions by Permit Cycle

Pollutant	First Permit Cycle (lbs)	Second Permit Cycle (lbs)	Third Permit Cycle (lbs)	Total Estimated Reductions (lbs)
Nitrogen	66.1	463	793.9	1,323
Phosphorus	8.7	60.9	104.5	174.2
Total Suspended Solids	7,466.1	52,263	89,593.8	149,323

5. Means and Methods to Meet Required Reductions and Schedule

This section describes the means and methods by which the City will achieve the reduction required for source loads in existence as of June 30, 2009 as calculated in Section 4. The City has documented and will take credit for existing and planned reductions from redevelopment (Section 5.1) and City-initiated projects (Section 5.2). These reductions exceed the 5% required under the permit. In addition, the City reserves the right to take credit for additional reductions, which will be documented in the City's annual reports to DEQ. These include additional redevelopment and City-initiated projects, credit for street sweeping operations (Section 5.3), more stringent regulation of single family residential structures under one acre (Section 5.4), nutrient credit trading (Section 5.5), and additional means and methods that may be implemented in accordance with DEQ's Chesapeake Bay TMDL Special Conditions Guidance (Section 5.6).

5.1 Redevelopment

In accordance with the Chesapeake Bay TMDL Special Condition Guidance (Part III.3.1) the City has documented credit for pollutant reductions from redevelopment regardless of the initial land cover condition of the site. This applies to any redevelopment project initiated on or after July 1, 2009. Thirteen qualifying projects have been identified by the City, which are included in Appendix A.

For projects approved prior to July 1, 2014 (which includes all of the 13 projects), the City used the simple method to determine the amount of TP credit.[3] For any portion of redevelopment that resulted in a direct impervious surface reduction, conversion factors from the MS4 permit[4] were used to determine the equivalent credit for TN and TSS associated with the TP reduction. For the portion of redevelopment that resulted in a reduction due to a stormwater management facility, the methodology described in Appendix V.E of the DEQ guidance was utilized. Based on the DEQ guidance, the City calculated the proportion of the implemented facility's total reduction that is available for credit toward the TMDL for TP. The City then determined the TN and TSS

[3] DEQ's guidance requires that the simple method be used to calculate offsets required for new sources between July 1, 2009 and June 30, 2014. The guidance is silent on the methodology to use for redevelopment. Kelsey Brooks, DEQ, confirmed in a phone conversation on April 23, 2015 that the simple method could be used for redevelopment project prior to July 1, 2014 to maintain consistency with the method used at the time of redevelopment.
[4] Table 4 of the City's MS4 permit.

efficiency for the specific facility and took credit for the same proportion of the facility's total reductions for TN and TSS.

Table 5A – Summary of Reductions from Redevelopment

	Total Nitrogen Reduction (lbs)	**Total Phosphorus Reduction (lbs)**	**Total Suspended Solids Reduction (lbs)**
Total	153.22	33.89	17,157.29

5.2 City-Initiated Projects

The City has documented and will take credit for voluntary City-initiated stormwater management projects that have been completed or are under construction and will be completed prior to the end of the current permit cycle. This includes the City Hall Campus retrofit with a StormFilter (completed in 2014) and the Coe Branch and Pearson Branch stream restoration projects (expected to be completed no later than 2016). Information on these projects is included in Appendix B in a format consistent with the Chesapeake Bay TMDL Special Conditions Guidance.

Table 5B – Summary of Reductions from City-Initiated Projects

	Total Nitrogen Reduction (lbs)	**Total Phosphorus Reduction (lbs)**	**Total Suspended Solids Reduction (lbs)**
Implemented Reductions	51.38	12.84	7,001.38
Under Construction	100.2	90.85	59,959.68
Total Reductions	151.58	103.69	66,961.06

5.3 Street Sweeping

The City may take credit for its street sweeping program. Any credit taken will be documented in the City's annual reports to DEQ. In its MS4 Fiscal Year 2014 Annual Report, the City reported that it swept 201.4 tons of debris. The City anticipates maintaining this level of effort in the future. DEQ's Chesapeake Bay TMDL Special Conditions Guidance (Appendix V.G) provides the specific steps required for determining credit for street sweeping programs as well as efficiencies for reducing TN, TP, and TSS.

5.4 More Stringent Single Family Residential Development

The City has adopted stormwater quality requirements for single family residential development under one acre that are more stringent than the minimum VSMP requirements. While the Virginia Stormwater Management Regulations and the Chesapeake Bay Preservation Act regulate land disturbing activities 2,500 square feet and greater, localities may exempt single family residential development under one acre that are not part of a common plan of development. Chapter 35, Article I "Stormwater Management" City of Falls Church Code applies the 0.41 pounds of phosphorus per acre per year standard to single family residential development and redevelopment 2,500 square feet and greater. Based on correspondence with DEQ, the City will take credit for the difference between the pollutant load that could have been allowed for single family residential property under the state's minimum water quality criteria and the pollutant load that was actually allowed for the property under the City's more stringent requirements. Reductions achieved will be documented to DEQ in the City's annual reports.

5.5 Nutrient Credit Trading

The City may take credit under nutrient credit trading programs authorized by the Code of Virginia. The City owns 2% of the efficiency of the Arlington Wastewater Treatment Plant. Likewise, the City has the option of purchasing off-site nutrient credits under the provisions of §62.1-44.15:35 of the Code of Virginia or taking credit for any off-site nutrient credit purchased by a private developer that exceeds the requirements of Chapter 35, Article I "Stormwater Management" City of Falls Church Code.

Any credits achieved through nutrient credit trading or through the use of off-site nutrient credits will be documented to DEQ in the City's annual reports.

5.6 Additional Means and Methods

The City reserves the right to implement and take credit for additional creditable facilities or practices as provided for in the Chesapeake Bay TMDL Special Condition Guidance. The guidance document specifically references the work of the Chesapeake Bay Urban Stormwater Workgroup, which includes credits for urban nutrient management and homeowner best management practices such as rainwater harvesting, downspout disconnection, permeable hard-scapes, tree planting, and impervious cover removal. Many of these practices are provided a credit under the City's stormwater utility fee (see Section 9). Reductions achieved will be documented to DEQ in the City's annual reports.

5.7 Compliance Demonstration

Tables 5C through 5E demonstrate how the City will meet the required reductions from Section 4 for each POC with the means and methods described in Sections 5.1 through 5.7.

Table 5C – Compliance Demonstration for Total Nitrogen

Total Required Reductions (Table 4B)	Total Reductions Achieved (Table 5A, Table 5B, and Table 5C)	Total Reductions Remaining (lbs)	Percentage Target Achieved
66.1	304.8	-238.7	461%

Table 5D – Compliance Demonstration for Total Phosphorus

Total Required Reductions (Table 4B)	Total Reductions Achieved (Table 5A, Table 5B, and Table 5C)	Total Reductions Remaining (lbs)	Percentage Target Achieved
8.7	137.58	-128.88	1,581%

Table 5E – Compliance Demonstration for Total Suspended Solids

Total Required Reductions (Table 4B)	Total Reductions Achieved (Table 5A, Table 5B, and Table 5C)	Total Reductions Remaining (lbs)	Percentage Target Achieved
7,466.1	84,118.35	-76,652.25	1,127%

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

The City must calculate any new POC loads between July 1, 2009 and June 30, 2014 that were due to water quality requirements less stringent than 16% impervious cover. The City must then achieve a 5% reduction in the new loads during this permit cycle.

Prior to July 1, 2014, development in low and medium residential zoning districts (R1A and R1B respectively, and for single family homes only) were capped at 35% impervious cover and were not required to implement water quality techniques provided that impervious cover was under the 35% threshold. For all other development, if the pre-development impervious cover was less than or equal to 50%, the post development load could be no greater than the pre-development load. If the pre-development impervious cover was greater than 50%, the post-development pollutant load must have been reduced by 10% from the pre-development pollutant load.

During the period of July 1, 2009 and June 30, 2014, 13 projects resulted in a land disturbance of one acre or greater. However, all projects resulted in a decrease in pollutant loads from pre-development conditions and are taken credit for in Section 5.1 (see projects listed in Appendix A). As a result, no offset is required.

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

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

8. List of Future Projects Qualifying as Grandfathered

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

9. Estimated Cost of Compliance

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

Table 9A – Estimated Cost of Compliance

Strategy	Cost Explanation	Estimated Cost
Redevelopment	Private expense. No cost to the City.	$0
City-Initiated Projects	City Hall retrofit project and Coe Branch and Pearson Branch stream restoration projects.	~$3 million

The City Council has recognized the need for a stable source of revenue to meet long-term pollutant reduction targets and infrastructure maintenance obligations. As a result, the City adopted a Stormwater Utility Fee on April 22, 2013 in accordance with § 15.2-2114 of the Code of Virginia. The Stormwater Utility Fee is currently set at $18 per 200 square feet of impervious cover. This rate will be continuously assessed by the City Council to ensure that it is adequate to meet the City's needs.

10. Public Comment Plan

The public comment process for the City of Falls Church Chesapeake Bay TMDL Action Plan included a work session of the City Council on July 27, 2015. The work session was followed by a public comment period. The draft plan was also posted on the Town's web site at www.fallschurchva.gov/298/Watershed-Planning. No public comments were received on the plan.

Appendix A

Redevelopment Projects

All calculations for pre-July 1, 2014 redevelopment are based on the simple method ("Chesapeake Bay Method") contained in Chapter 4, Section III.b of the Northern Virginia BMP Handbook.

For any portion of a redevelopment project that resulted in a direct impervious surface reduction, Table 4 from the permit was used to determine the equivalent credit for TN and TSS associated with the TP reduction. For the portion of a redevelopment project that resulted in a reduction as a result of a stormwater management facility, the methodology described in Appendix V.E of the DEQ guidance was utilized.

Redevelopment Projects	TN Credit	TP Crediдt	TSS Credit
Taco Bell - 935 West Broad Street	(2.86)	(0.33)	(374.47)
Falls Plaza - 1200 West Broad Street	(3.29)	(0.72)	(375.45)
Dominion Jewelers - 917 West Broad Street	(3.97)	(0.91)	(374.80)
Good Fortune at Eden Center - 6751 Wilson Blvd	(19.75)	(5.48)	(2,689.11)
Hilton - 706 West Broad Street	(3.63)	(1.01)	(494.85)
Northgate - 450 N. Washington Street	(16.12)	(2.76)	(1,687.75)
301 West Broad Street	(0.72)	(0.20)	(97.48)
BJ's Wholesale Club - 6607 Wilson Blvd	(47.38)	(10.75)	(4,987.88)
Easter Seals - 300 Hunton Avenue	(8.34)	(1.18)	(711.41)
The Reserve at Tinner Hill - 540-580 S. Washington Street	(8.73)	(2.42)	(1,189.40)
Thomas Jefferson Elementary - 601 South Oak Street	(14.10)	(2.05)	(1,202.99)
Cherry Street Child Development Center - 201 North Cherry Street	(14.60)	(3.53)	(1,718.51)
24 Hour Fitness Center - 1000 E. Broad Street	(9.73)	(2.56)	(1,253.19)
Total	**(153.22)**	**(33.89)**	**(17,157.29)**

Taco Bell - 935 West Broad Street		
Information	**Input**	**As Developed**
Date	Jul-14	
Rainfall	40	
Site Area (SF)	35615	
Site Area (AC)		0.82
Watershed I %	50	
Pre-I Area (SF)	23168	
Pre-I Area (AC)		0.53
Pre-I Area (%)		65.05
Pre C Value		1.08
Pre-TP Load		**4.58**
Post-I Area (SF)	22991	
Post-I Area (AC)		0.53
Post-I Area (%)		64.55
Post C Value		1.08
Post-TP Load		**4.55**
Increase/Decrease		**(0.03)**
BMP 1	Contech CDS	
Efficiency	0.2	
I Area (AC)	0.17	
TP Removed		0.29
BMP 2	-	
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
BMP 3	-	
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
Total BMP TP Removed		**0.29**
Total TP Decrease		**(0.33)**

Creditable Reductions for TN and TSS Per Guidance Appendix V.E			
TP Decrease for Impervious Reduction			(0.03)
TP Decrease for BMPs (Proportion of BMP Applied to TMDL Reduction)			
	1.00		(0.29)
Total Creditable TP Decrease			**(0.33)**
Total Associated TN Load	6.9		31.37
TN Decrease from Impervious Reduction			(0.22)
TN Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.261	0.322091253	(2.64)
BMP 2		0	-
BMP 3		0	-
TN Decrease for BMPs (Decrease * Prop. Applied to TMDL			(2.64)
Total Creditable TN Decrease (Imp. Reduction + BMPs)			**(2.86)**
Total Associated TSS Loa	469.2		2,133.23
TSS Decrease from Impervious Reduction			(15.12)
TSS Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.523	0.322091253	(359.35)
BMP 2		0	-
BMP 3		0	-
TSS Decrease for BMPs (Decrease * Prop. Applied to TMDI			(359.35)
Total Creditable TSS Decrease (Imp. Reduction + BMPs)			**(374.47)**

BMP Efficiency Methodology Description:

TP efficiency from original development plan. TN and TSS calculated using Chesapeake Bay Program Retrofit Equations. Runoff Depth Treated for Manufactured Treatment Devices is 0.5 inch based on an email from Kelsey Brooks at DEQ received 8/7/2015.

Falls Plaza - 1200 West Broad Street		
Information	**Input**	**As Developed**
Date	Sep-12	
Rainfall	40	
Site Area (SF)	28192	
Site Area (AC)		0.65
Watershed I %	50	
Pre-I Area (SF)	24829.2	
Pre-I Area (AC)		0.57
Pre-I Area (%)		88.07
Pre C Value		1.08
Pre-TP Load		**4.81**
Post-I Area (SF)	24393.6	
Post-I Area (AC)		0.56
Post-I Area (%)		86.53
Post C Value		1.08
Post-TP Load		**4.73**
Increase/Decrease		**(0.08)**
BMP 1	Permeable Pavers	
Efficiency	0.4	
I Area (AC)	0.02	
TP Removed		0.07
BMP 2	Filterra (4x6)	
Efficiency	0.5	
I Area (AC)	0.135	
TP Removed		0.57
BMP 3	-	
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
Total BMP TP Removed		**0.64**
Total TP Decrease		**(0.72)**

Creditable Reductions for TN and TSS Per Guidance Appendix V.E			
TP Decrease for Impervious Reduction			(0.08)
TP Decrease for BMPs (Proportion of BMP Applied to TMDL Reduction)			
	1.00		(0.64)
Total Creditable TP Decrease			**(0.72)**
Total Associated TN Load	6.9		32.62
TN Decrease from Impervious Reduction			(0.55)
TN Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.591	0.035714286	(0.69)
BMP 2	0.261	0.241071429	(2.05)
BMP 3		0	-
TN Decrease for BMPs (Decrease * Prop. Applied to TMDL			(2.74)
Total Creditable TN Decrease (Imp. Reduction + BMPs)			**(3.29)**
Total Associated TSS Loa	469.2		2,217.83
TSS Decrease from Impervious Reduction			(37.21)
TSS Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.74	0.035714286	(58.61)
BMP 2	0.523	0.241071429	(279.62)
BMP 3		0	-
TSS Decrease for BMPs (Decrease * Prop. Applied to TMDI			(338.24)
Total Creditable TSS Decrease (Imp. Reduction + BMPs)			**(375.45)**

BMP Efficiency Methodology Description:

TP efficiency from original development plan. TN and TSS calculated using Chesapeake Bay Program Retrofit Equations. Runoff Depth Treated for Manufactured Treatment Devices is 0.5 inch based on an email from Kelsey Brooks at DEQ received 8/7/2015. Permeable pavers (RR), 0.0016 AF Runoff Storage, 0.02 Acre Impervious Area, 0.96 Inch Runoff Treatment Depth.

Dominion Jewelers - 917 West Broad Street		
Information	**Input**	**As Developed**
Date	Jun-13	
Rainfall	40	
Site Area (SF)	24520	
Site Area (AC)		0.56
Watershed I %	50	
Pre-I Area (SF)	20102	
Pre-I Area (AC)		0.46
Pre-I Area (%)		81.98
Pre C Value		1.08
Pre-TP Load		**3.91**
Post-I Area (SF)	18164	
Post-I Area (AC)		0.42
Post-I Area (%)		74.08
Post C Value		1.08
Post-TP Load		**3.56**
Increase/Decrease		**(0.35)**
BMP 1	Filterra (4x6)	
Efficiency	0.65	
I Area (AC)	0.1	
TP Removed		0.55
BMP 2		
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
BMP 3	-	
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
Total BMP TP Removed		**0.55**
Total TP Decrease		**(0.91)**

Creditable Reductions for TN and TSS Per Guidance Appendix V.E			
TP Decrease for Impervious Reduction			(0.35)
TP Decrease for BMPs (Proportion of BMP Applied to TMDL Reduction)			
	1.00		(0.55)
Total Creditable TP Decrease			**(0.91)**
Total Associated TN Load	6.9		24.53
TN Decrease from Impervious Reduction			(2.43)
TN Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.261	0.239815019	(1.54)
BMP 2		0	-
BMP 3		0	-
TN Decrease for BMPs (Decrease * Prop. Applied to TMDL			(1.54)
Total Creditable TN Decrease (Imp. Reduction + BMPs)			**(3.97)**
Total Associated TSS Loa	469.2		1,668.19
TSS Decrease from Impervious Reduction			(165.57)
TSS Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.523	0.239815019	(209.23)
BMP 2		0	-
BMP 3		0	-
TSS Decrease for BMPs (Decrease * Prop. Applied to TMDI			(209.23)
Total Creditable TSS Decrease (Imp. Reduction + BMPs)			**(374.80)**

BMP Efficiency Methodology Description:

TP efficiency from original development plan. TN and TSS calculated using Chesapeake Bay Program Retrofit Equations. Runoff Depth Treated for Manufactured Treatment Devices is 0.5 inch based on an email from Kelsey Brooks at DEQ received 8/7/2015.

Good Fortune at Eden Center - 6751 Wilson Blvd		
Information	**Input**	**As Developed**
Date	Dec-14	
Rainfall	40	
Site Area (SF)	195295	
Site Area (AC)		4.48
Watershed I %	50	
Pre-I Area (SF)	175162	
Pre-I Area (AC)		4.02
Pre-I Area (%)		89.69
Pre C Value		1.08
Pre-TP Load		33.87
Post-I Area (SF)	175137	
Post-I Area (AC)		4.02
Post-I Area (%)		89.68
Post C Value		1.08
Post-TP Load		**33.86**
Increase/Decrease		**(0.00)**
BMP 1	StormFilter (6x8 w/ 6 27" Cartridges)	
Efficiency	0.5	
I Area (AC)	0.93	
TP Removed		3.92
BMP 2	Filterra (3 4x6)	
Efficiency	0.5	
I Area (AC)	0.37	
TP Removed		1.56
BMP 3	-	
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
Total BMP TP Removed		**5.47**
Total TP Decrease		**(5.48)**

Creditable Reductions for TN and TSS Per Guidance Appendix V.E			
TP Decrease for Impervious Reduction			(0.00)
TP Decrease for BMPs (Proportion of BMP Applied to TMDL Reduction)			
	1.00		(5.47)
Total Creditable TP Decrease			**(5.48)**
Total Associated TN Load	6.9		233.67
TN Decrease from Impervious Reduction			(0.03)
TN Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.261	0.231309204	(14.11)
BMP 2	0.261	0.092026242	(5.61)
BMP 3		0	-
TN Decrease for BMPs (Decrease * Prop. Applied to TMDL			(19.72)
Total Creditable TN Decrease (Imp. Reduction + BMPs)			**(19.75)**
Total Associated TSS Loa	469.2		15,889.44
TSS Decrease from Impervious Reduction			(2.14)
TSS Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.523	0.231309204	(1,922.22)
BMP 2	0.523	0.092026242	(764.75)
BMP 3		0	-
TSS Decrease for BMPs (Decrease * Prop. Applied to TMDI			(2,686.97)
Total Creditable TSS Decrease (Imp. Reduction + BMPs)			**(2,689.11)**

BMP Efficiency Methodology Description:

TP efficiency from original development plan. TN and TSS calculated using Chesapeake Bay Program Retrofit Equations. Runoff Depth Treated for Manufactured Treatment Devices is 0.5 inch based on an email from Kelsey Brooks at DEQ received 8/7/2015.

Hilton - 706 West Broad Street		
Information	**Input**	**As Developed**
Date	Jul-14	
Rainfall	40	
Site Area (SF)	48739	
Site Area (AC)		1.12
Watershed I %	50	57.20
Pre-I Area (SF)	27878.4	
Pre-I Area (AC)		0.64
Pre-I Area (%)		57.20
Pre C Value		1.08
Pre-TP Load		**5.57**
Post-I Area (SF)	40466	
Post-I Area (AC)		0.93
Post-I Area (%)		83.03
Post C Value		1.08
Post-TP Load		**7.86**
Increase/Decrease		**2.29**
BMP 1	StormFilter (8x6 w/ 8 18" Cartridges)	
Efficiency	0.5	
I Area (AC)	0.78	
TP Removed		3.30
BMP 2		
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
BMP 3	-	
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
Total BMP TP Removed		**3.30**
Total TP Decrease		**(1.01)**

Creditable Reductions for TN and TSS Per Guidance Appendix V.E			
TP Decrease for Impervious Reduction			-
TP Decrease for BMPs (Proportion of BMP Applied to TMDL Reduction)			
	0.31		(1.01)
Total Creditable TP Decrease			**(1.01)**
Total Associated TN Load	6.9		54.24
TN Decrease from Impervious Reduction			-
TN Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.261	0.839638215	(11.89)
BMP 2		0	-
BMP 3		0	-
TN Decrease for BMPs (Decrease * Prop. Applied to TMDL			(3.63)
Total Creditable TN Decrease (Imp. Reduction + BMPs)			**(3.63)**
Total Associated TSS Loa	469.2		3,688.47
TSS Decrease from Impervious Reduction			-
TSS Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.523	0.839638215	(1,619.72)
BMP 2		0	-
BMP 3		0	-
TSS Decrease for BMPs (Decrease * Prop. Applied to TMDI			(494.85)
Total Creditable TSS Decrease (Imp. Reduction + BMPs)			**(494.85)**

BMP Efficiency Methodology Description:

TP efficiency from original development plan. TN and TSS calculated using Chesapeake Bay Program Retrofit Equations. Runoff Depth Treated for Manufactured Treatment Devices is 0.5 inch based on an email from Kelsey Brooks at DEQ received 8/7/2015.

Northgate - 450 N. Washington Street		
Information	**Input**	**As Developed**
Date	Dec-14	
Rainfall	40	
Site Area (SF)	66671	
Site Area (AC)		1.53
Watershed I %	50	
Pre-I Area (SF)	40536	
Pre-I Area (AC)		0.93
Pre-I Area (%)		60.80
Pre C Value		1.08
Pre-TP Load		8.06
Post-I Area (SF)	57279	
Post-I Area (AC)		1.31
Post-I Area (%)		85.91
Post C Value		1.08
Post-TP Load		**11.10**
Increase/Decrease		**3.05**
BMP 1	Green Roof	
Efficiency	0.4	
I Area (AC)	0.46	
TP Removed		1.55
BMP 2	StormFilter (8x4)	
Efficiency	0.5	
I Area (AC)	0.85	
TP Removed		3.59
BMP 3	Bioretention #1	
Efficiency	0.65	
I Area (AC)	0.06	
TP Removed		0.33
BMP 4	Bioretention #2	
Efficiency	0.5	
I Area (AC)	0.08	
TP Removed		0.34
Total BMP TP Removed		**5.81**
Total TP Decrease		**(2.76)**

Creditable Reductions for TN and TSS Per Guidance Appendix V.E			
TP Decrease for Impervious Reduction			-
TP Decrease for BMPs (Proportion of BMP Applied to TMDL Reduction)			
	0.48		(2.76)
Total Creditable TP Decrease			**(2.76)**
Total Associated TN Load	6.9		76.62
TN Decrease from Impervious Reduction			-
TN Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.628	0.349824543	(16.83)
BMP 2	0.261	0.646414916	(12.93)
BMP 3	0.598	0.045629288	(2.09)
BMP 4	0.444	0.060839051	(2.07)
TN Decrease for BMPs (Decrease * Prop. Applied to TMDL			(16.12)
Total Creditable TN Decrease (Imp. Reduction + BMPs)			**(16.12)**
Total Associated TSS Loa	469.2		5,209.97
TSS Decrease from Impervious Reduction			-
TSS Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.788	0.349824543	(1,436.19)
BMP 2	0.523	0.646414916	(1,761.36)
BMP 3	0.749	0.045629288	(178.06)
BMP 4	0.554	0.060839051	(175.60)
TSS Decrease for BMPs (Decrease * Prop. Applied to TMDL			(1,687.75)
Total Creditable TSS Decrease (Imp. Reduction + BMPs)			**(1,687.75)**

BMP Efficiency Methodology Description:

TP efficiency from original development plan. TN and TSS calculated using Chesapeake Bay Program Retrofit Equations. Green Roof (RR) 0.36 AF Runoff Storage, 0.35 Acre Impervious Area, 1.23 Inch Runoff Treatment Depth. Runoff Depth Treated for Manufactured Treatment Devices is 0.5 inch based on an email from Kelsey Brooks at DEQ received 8/7/2015. Bioretention #1 Runoff Reduction Facility, 0.005 AF Runoff Storage, 0.06 Acre Impervious Area, 1.0 Inch Runoff Treatment Depth. Bioretention #2 Runoff Reduction Facility, 0.0045 AF Runoff Storage, 0.11 Acre Impervious Area, 0.49 Inch Runoff Treatment Depth.

301 West Broad Street		
Information	**Input**	**As Developed**
Date	Under Construction	
Rainfall	40	
Site Area (SF)	108028.8	
Site Area (AC)		2.48
Watershed I %	50	
Pre-I Area (SF)	89298	
Pre-I Area (AC)		2.05
Pre-I Area (%)		82.66
Pre C Value		1.08
Pre-TP Load		**17.35**
Post-I Area (SF)	99752.4	
Post-I Area (AC)		2.29
Post-I Area (%)		92.34
Post C Value		1.08
Post-TP Load		**19.26**
Increase/Decrease		**1.90**
BMP 1	StormFilter (8x6 w/ 8 27" Cartridges)	
Efficiency	0.5	
I Area (AC)	0.5	
TP Removed		2.10
BMP 2		
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
BMP 3	-	
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
Total BMP TP Removed		**2.10**
Total TP Decrease		**(0.20)**

Creditable Reductions for TN and TSS Per Guidance Appendix V.E			
TP Decrease for Impervious Reduction			-
TP Decrease for BMPs (Proportion of BMP Applied to TMDL Reduction)			
	0.09		(0.20)
Total Creditable TP Decrease			**(0.20)**
Total Associated TN Load	6.9		132.87
TN Decrease from Impervious Reduction			-
TN Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.261	0.218340611	(7.57)
BMP 2		0	-
BMP 3		0	-
TN Decrease for BMPs (Decrease * Prop. Applied to TMDL			(0.72)
Total Creditable TN Decrease (Imp. Reduction + BMPs)			**(0.72)**
Total Associated TSS Loa	469.2		9,034.90
TSS Decrease from Impervious Reduction			-
TSS Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.523	0.218340611	(1,031.71)
BMP 2		0	-
BMP 3		0	-
TSS Decrease for BMPs (Decrease * Prop. Applied to TMDI			(97.48)
Total Creditable TSS Decrease (Imp. Reduction + BMPs)			**(97.48)**

BMP Efficiency Methodology Description:

TP efficiency from original development plan. TN and TSS calculated using Chesapeake Bay Program Retrofit Equations. Runoff Depth Treated for Manufactured Treatment Devices is 0.5 inch based on an email from Kelsey Brooks at DEQ received 8/7/2015.

BJ's Wholesale Club - 6607 Wilson Blvd		
Information	**Input**	**As Developed**
Date	Oct-10	
Rainfall	40	
Site Area (SF)	374616	
Site Area (AC)		8.60
Watershed I %	50	
Pre-I Area (SF)	318859.2	
Pre-I Area (AC)		7.32
Pre-I Area (%)		85.12
Pre C Value		1.08
Pre-TP Load		**61.85**
Post-I Area (SF)	304484.4	
Post-I Area (AC)		6.99
Post-I Area (%)		81.28
Post C Value		1.08
Post-TP Load		**59.23**
Increase/Decrease		**(2.62)**
BMP 1	Filterras (5 4x6, 1 6x10, 1 4x8, 1 6x8)	
Efficiency	0.5	
I Area (AC)	1.62	
TP Removed		6.86
BMP 2	Bioswale	
Efficiency	0.5	
I Area (AC)	0.3	
TP Removed		1.27
BMP 3	-	
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
Total BMP TP Removed		**8.13**
Total TP Decrease		**(10.75)**

Creditable Reductions for TN and TSS Per Guidance Appendix V.E			
TP Decrease for Impervious Reduction			(2.62)
TP Decrease for BMPs (Proportion of BMP Applied to TMDL Reduction)			
	1.00		(8.13)
Total Creditable TP Decrease			**(10.75)**
Total Associated TN Load	6.9		408.69
TN Decrease from Impervious Reduction			(18.06)
TN Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.261	0.231759657	(24.72)
BMP 2	0.262	0.042918455	(4.60)
BMP 3		0	-
TN Decrease for BMPs (Decrease * Prop. Applied to TMDL			(29.32)
Total Creditable TN Decrease (Imp. Reduction + BMPs)			**(47.38)**
Total Associated TSS Loa	469.2		27,791.10
TSS Decrease from Impervious Reduction			(1,228.08)
TSS Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.523	0.231759657	(3,368.57)
BMP 2	0.328	0.042918455	(391.22)
BMP 3		0	-
TSS Decrease for BMPs (Decrease * Prop. Applied to TMDI			(3,759.79)
Total Creditable TSS Decrease (Imp. Reduction + BMPs)			**(4,987.88)**

BMP Efficiency Methodology Description:

TP efficiency from original development plan. TN and TSS calculated using Chesapeake Bay Program Retrofit Equations. Runoff Depth Treated for Manufactured Treatment Devices is 0.5 inch based on an email from Kelsey Brooks at DEQ received 8/7/2015. Bioswale (RR), 0.0058 AF Runoff Storage, 0.3 Acre Impervious Area, 0.23 Inch Runoff Treatment Depth.

Easter Seals - 300 Hunton Avenue		
Information	**Input**	**As Developed**
Date	Nov-13	
Rainfall	40	
Site Area (SF)	24679	
Site Area (AC)		0.57
Watershed I %	50	
Pre-I Area (SF)	15422	
Pre-I Area (AC)		0.35
Pre-I Area (%)		62.49
Pre C Value		1.08
Pre-TP Load		**3.06**
Post-I Area (SF)	16324	
Post-I Area (AC)		0.37
Post-I Area (%)		66.15
Post C Value		1.08
Post-TP Load		**3.22**
Increase/Decrease		**0.16**
BMP 1	Infiltration Trench A	
Efficiency	0.65	
I Area (AC)	0.1	
TP Removed		0.56
BMP 2	Infiltration Trench B	
Efficiency	0.5	
I Area (AC)	0.04	
TP Removed		0.17
BMP 3	Porous Concrete	
Efficiency	0.65	
I Area (AC)	0.11	
TP Removed		0.61
Total BMP TP Removed		**1.35**
Total TP Decrease		**(1.18)**

Creditable Reductions for TN and TSS Per Guidance Appendix V.E			
TP Decrease for Impervious Reduction			-
TP Decrease for BMPs (Proportion of BMP Applied to TMDL Reduction)			
	0.88		(1.18)
Total Creditable TP Decrease			**(1.18)**
Total Associated TN Load	6.9		22.23
TN Decrease from Impervious Reduction			-
TN Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.628	0.266846361	(3.73)
BMP 2	0.66	0.106738544	(1.57)
BMP 3	0.645	0.293530997	(4.21)
TN Decrease for BMPs (Decrease * Prop. Applied to TMDL			(8.34)
Total Creditable TN Decrease (Imp. Reduction + BMPs)			**(8.34)**
Total Associated TSS Loa	469.2		1,511.74
TSS Decrease from Impervious Reduction			-
TSS Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.788	0.266846361	(317.88)
BMP 2	0.827	0.106738544	(133.45)
BMP 3	0.809	0.293530997	(358.99)
TSS Decrease for BMPs (Decrease * Prop. Applied to TMDI			(711.41)
Total Creditable TSS Decrease (Imp. Reduction + BMPs)			**(711.41)**

BMP Efficiency Methodology Description:

TP efficiency from original development plan. TN and TSS calculated using Chesapeake Bay Program Retrofit Equations. Infiltration Trench A (RR), 0.0103 AF Runoff Storage, 0.1 Acre Impervious Area, 1.23 Inch Runoff Treatment Depth. Infiltration Trench B (RR), 0.0056 AF Runoff Storage, 0.04 Acre Impervious Area, 1.68 Inch Runoff Treatment Depth. Porous Concrete (RR), 0.0131 AF Runoff Storage, 0.11 Acre Impervious Area, 1.43 Inch Runoff Treatment Depth.

The Reserve at Tinner Hill - 540-580 S. Washington Street		
Information	**Input**	**As Developed**
Date	Under Construction	
Rainfall	40	
Site Area (SF)	97182	
Site Area (AC)		2.23
Watershed I %	50	
Pre-I Area (SF)	81892.8	
Pre-I Area (AC)		1.88
Pre-I Area (%)		84.27
Pre C Value		1.08
Pre-TP Load		**15.89**
Post-I Area (SF)	92782.8	
Post-I Area (AC)		2.13
Post-I Area (%)		95.47
Post C Value		1.08
Post-TP Load		**17.88**
Increase/Decrease		**1.98**
BMP 1	StormFilter (12x6)	
Efficiency	0.5	
I Area (AC)	1.05	
TP Removed		4.41
BMP 2		
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
BMP 3		
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
Total BMP TP Removed		**4.41**
Total TP Decrease		**(2.42)**

Creditable Reductions for TN and TSS Per Guidance Appendix V.E			
TP Decrease for Impervious Reduction			-
TP Decrease for BMPs (Proportion of BMP Applied to TMDL Reduction)			
	0.55		(2.42)
Total Creditable TP Decrease			**(2.42)**
Total Associated TN Load	6.9		123.35
TN Decrease from Impervious Reduction			-
TN Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.261	0.492957746	(15.87)
BMP 2		0	-
BMP 3		0	-
TN Decrease for BMPs (Decrease * Prop. Applied to TMDL			(8.73)
Total Creditable TN Decrease (Imp. Reduction + BMPs)			**(8.73)**
Total Associated TSS Loa	469.2		8,387.98
TSS Decrease from Impervious Reduction			-
TSS Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.523	0.492957746	(2,162.56)
BMP 2		0	-
BMP 3		0	-
TSS Decrease for BMPs (Decrease * Prop. Applied to TMDI			(1,189.40)
Total Creditable TSS Decrease (Imp. Reduction + BMPs)			**(1,189.40)**

BMP Efficiency Methodology Description:

TP efficiency from original development plan. TN and TSS calculated using Chesapeake Bay Program Retrofit Equations. Runoff Depth Treated for Manufactured Treatment Devices is 0.5 inch based on an email from Kelsey Brooks at DEQ received 8/7/2015.

Thomas Jefferson Elementary - 601 South Oak Street		
Information	**Input**	**As Developed**
Date	Sep-13	
Rainfall	40	
Site Area (SF)	287932	
Site Area (AC)		6.61
Watershed I %	50	
Pre-I Area (SF)	89410	
Pre-I Area (AC)		2.05
Pre-I Area (%)		31.05
Pre C Value		1.08
Pre-TP Load		19.19
Post-I Area (SF)	98993	
Post-I Area (AC)		2.27
Post-I Area (%)		34.38
Post C Value		1.08
Post-TP Load		**20.94**
Increase/Decrease		**1.74**
BMP 1	Open Joint Block Pavement	
Efficiency	0.4	
I Area (AC)	0.138406795	
TP Removed		0.51
BMP 2	Bioretention #1	
Efficiency	0.65	
I Area (AC)	0.480004591	
TP Removed		2.87
BMP 3	Bioretention #2	
Efficiency	0.65	
I Area (AC)	0.068870523	
TP Removed		0.41
Total BMP TP Removed		**3.80**
Total TP Decrease		**(2.05)**

Creditable Reductions for TN and TSS Per Guidance Appendix V.E			
TP Decrease for Impervious Reduction			-
TP Decrease for BMPs (Proportion of BMP Applied to TMDL Reduction)			
	0.54		(2.05)
Total Creditable TP Decrease			**(2.05)**
Total Associated TN Load	6.9		144.47
TN Decrease from Impervious Reduction			-
TN Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.598	0.060903296	(5.26)
BMP 2	0.597	0.211216955	(18.22)
BMP 3	0.598	0.030305173	(2.62)
TN Decrease for BMPs (Decrease * Prop. Applied to TMDL			(14.10)
Total Creditable TN Decrease (Imp. Reduction + BMPs)			**(14.10)**
Total Associated TSS Loa	469.2		9,823.89
TSS Decrease from Impervious Reduction			-
TSS Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.75	0.060903296	(448.73)
BMP 2	0.749	0.211216955	(1,554.15)
BMP 3	0.749	0.030305173	(222.99)
TSS Decrease for BMPs (Decrease * Prop. Applied to TMDI			(1,202.99)
Total Creditable TSS Decrease (Imp. Reduction + BMPs)			**(1,202.99)**

BMP Efficiency Methodology Description:

TP efficiency from original development plan. TN and TSS calculated using Chesapeake Bay Program Retrofit Equations. Block Pavement (RR), 0.012 AF Runoff Storage, 0.138 Acre Impervious Area, 1.01 Inch Runoff Treatment Depth. Bioretention #1 (RR), 0.040 AF Runoff Storage, 0.48 Acre Impervious Area, 1.0 Inch Runoff Treatment Depth. Bioretention #2 (RR), 0.006 AF Runoff Storage, 0.069 Acre Impervious Area, 1.0 Inch Runoff Treatment Depth.

Cherry Street Child Development Center - 201 North Cherry Street		
Information	**Input**	**As Developed**
Date	Under Construction	
Rainfall	40	
Site Area (SF)	62680	
Site Area (AC)		1.44
Watershed I %	50	
Pre-I Area (SF)	40071	
Pre-I Area (AC)		0.92
Pre-I Area (%)		63.93
Pre C Value		1.08
Pre-TP Load		7.93
Post-I Area (SF)	36909	
Post-I Area (AC)		0.85
Post-I Area (%)		58.88
Post C Value		1.08
Post-TP Load		**7.35**
Increase/Decrease		**(0.58)**
BMP 1	StormFilter (6x8 w/ 8 18" Cartridges)	
Efficiency	0.5	
I Area (AC)	0.68	
TP Removed		2.95
BMP 2		
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
BMP 3		
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
Total BMP TP Removed		**2.95**
Total TP Decrease		**(3.53)**

Creditable Reductions for TN and TSS Per Guidance Appendix V.E			
TP Decrease for Impervious Reduction			(0.58)
TP Decrease for BMPs (Proportion of BMP Applied to TMDL Reduction)			
	1.00		(2.95)
Total Creditable TP Decrease			**(3.53)**
Total Associated TN Load	6.9		50.75
TN Decrease from Impervious Reduction			(3.97)
TN Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.261	0.802535967	(10.63)
BMP 2		0	-
BMP 3		0	-
TN Decrease for BMPs (Decrease * Prop. Applied to TMDL			(10.63)
Total Creditable TN Decrease (Imp. Reduction + BMPs)			**(14.60)**
Total Associated TSS Loa	469.2		3,450.75
TSS Decrease from Impervious Reduction			(270.14)
TSS Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.523	0.802535967	(1,448.37)
BMP 2		0	-
BMP 3		0	-
TSS Decrease for BMPs (Decrease * Prop. Applied to TMDI			(1,448.37)
Total Creditable TSS Decrease (Imp. Reduction + BMPs)			**(1,718.51)**

BMP Efficiency Methodology Description:

TP efficiency from original development plan. TN and TSS calculated using Chesapeake Bay Program Retrofit Equations. Runoff Depth Treated for Manufactured Treatment Devices is 0.5 inch based on an email from Kelsey Brooks at DEQ received 8/7/2015.

24 Hour Fitness Center - 1000 E. Broad Street		
Information	**Input**	**As Developed**
Date	Sep-12	
Rainfall	40	
Site Area (SF)	134487	
Site Area (AC)		3.09
Watershed I %	50	
Pre-I Area (SF)	117602	
Pre-I Area (AC)		2.70
Pre-I Area (%)		87.44
Pre C Value		1.08
Pre-TP Load		22.77
Post-I Area (SF)	116750	
Post-I Area (AC)		2.68
Post-I Area (%)		86.81
Post C Value		1.08
Post-TP Load		**22.62**
Increase/Decrease		**(0.16)**
BMP 1	Filterra 6x12	
Efficiency	0.5	
I Area (AC)	0.57	
TP Removed		2.41
BMP 2		
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
BMP 3		
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
Total BMP TP Removed		**2.41**
Total TP Decrease		**(2.56)**

Creditable Reductions for TN and TSS Per Guidance Appendix V.E			
TP Decrease for Impervious Reduction			(0.16)
TP Decrease for BMPs (Proportion of BMP Applied to TMDL Reduction)			
	1.00		(2.41)
Total Creditable TP Decrease			**(2.56)**
Total Associated TN Load	6.9		156.07
TN Decrease from Impervious Reduction			(1.07)
TN Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.261	0.212669807	(8.66)
BMP 2		0	-
BMP 3		0	-
TN Decrease for BMPs (Decrease * Prop. Applied to TMDL			(8.66)
Total Creditable TN Decrease (Imp. Reduction + BMPs)			**(9.73)**
Total Associated TSS Loa	469.2		10,612.64
TSS Decrease from Impervious Reduction			(72.79)
TSS Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.523	0.212669807	(1,180.40)
BMP 2		0	-
BMP 3		0	-
TSS Decrease for BMPs (Decrease * Prop. Applied to TMDI			(1,180.40)
Total Creditable TSS Decrease (Imp. Reduction + BMPs)			**(1,253.19)**

BMP Efficiency Methodology Description:

TP efficiency from original development plan. TN and TSS calculated using Chesapeake Bay Program Retrofit Equations. Runoff Depth Treated for Manufactured Treatment Devices is 0.5 inch based on an email from Kelsey Brooks at DEQ received 8/7/2015.

Appendix B

City-Initiated Projects

Coe Branch Stream Restoration					
Anticipated Date Installed: 2016					
Latitude: 38.885071	HUC: PL26				
Longitude: -77.180056	Calculation Method: Interim/Default Rate				
Restoration Length (ft)	**952.00**				
STEP 1	**TN**	**TP**	**TSS**		
Impervious 5% Rate Reduction (lbs/ac/yr)	0.07587	0.01296	11.7132		
Pervious 5% Rate Reduction (lbs/ac/yr)	0.03021	0.00148625	0.769125		
Stream Restoration Interim Rates (lbs/ft)	0.075	0.068	44.88		
Total Reduction Based on Interim Rates (lbs)	71.40	64.74	42,725.76		
STEP 2	**Total**	**Impervious**	**Forested**	**Pervious**	**Total Urban**
Regulated Acres	130.35	68.60	-	61.75	130.35
Unregulated Acres	-	-	-	-	-
	130.35	68.60	-	61.75	130.35
STEP 3		**Portion of Reductions (lbs/yr)**			
	Land Ratio	**TN**	**TP**	**TSS**	
Regulated Urban	1.00	71.40	64.74	42,725.76	
Unregulated Urban	0.00	-	-	-	
Unregulated Forested	0.00	-	-	-	
STEP 4	**TN**	**TP**	**TSS**		
Required Baseline Reduction on Unregulated Impervious (lbs/yr)	-	-	-		
Required Baseline Reduction on Unregulated Pervious (lbs/yr)	-	-	-		
Total Required Baseline Reduction on Unregulated (lbs/yr)	-	-	-		
MS4 Credits	71.40	64.74	42,725.76		
Unregulated Urban Credits	-	-	-		
Unregulated Forested Credits	-	-	-		
Total Credits	**71.40**	**64.74**	**42,725.76**		

Coe Branch Degraded Stream Condition Documentation

Stantech, Pearson Branch and Coe Branch Stream Restoration Nutrient Reductions and Crediting, April 16, 2016

Pearson Branch Stream Restoration					
Anticipated Installation Date: 2016					
Latitude: 38.887188		HUC: PL26			
Longitude: -77.184427		Calculation Method: Interim/Default Rate			
Restoration Length (ft)	**384.00**				
STEP 1	**TN**	**TP**	**TSS**		
Impervious 5% Rate Reduction (lbs/ac/yr)	0.07587	0.01296	11.7132		
Pervious 5% Rate Reduction (lbs/ac/yr)	0.03021	0.00148625	0.769125		
Stream Restoration Interim Rates (lbs/ft)	0.075	0.068	44.88		
Total Reduction Based on Interim Rates (lbs)	28.80	26.11	17,233.92		
STEP 2	**Total**	**Impervious**	**Forested**	**Pervious**	**Total Urban**
Regulated Acres	157.04	118.99	-	38.05	157.04
Unregulated Acres	-	-	-	-	-
	157.04	118.99	-	38.05	157.04
STEP 3		**Portion of Reductions (lbs/yr)**			
	Land Ratio	**TN**	**TP**	**TSS**	
Regulated Urban	1.00	28.80	26.11	17,233.92	
Unregulated Urban	0.00	-	-	-	
Unregulated Forested	0.00	-	-	-	
STEP 4	**TN**	**TP**	**TSS**		
Required Baseline Reduction on Unregulated Impervious (lbs/yr)	-	-	-		
Required Baseline Reduction on Unregulated Pervious (lbs/yr)	-	-	-		
Total Required Baseline Reduction on Unregulated (lbs/yr)	-	-	-		
MS4 Credits	28.80	26.11	17,233.92		
Unregulated Urban Credits	-	-	-		
Unregulated Forested Credits	-	-	-		
Total Credits	**28.80**	**26.11**	**17,233.92**		

Pearson Branch Degraded Stream Condition Documentation

Stantech, Pearson Branch and Coe Branch Stream Restoration Nutrient Reductions and Crediting, April 16, 2016

City Hall Storm Filter Retrofit - 300 Park Avenue		
Information	**Input**	**As Developed**
Date	Jun-14	
Rainfall	40	
Site Area (SF)	327135.6	
Site Area (AC)		7.51
Watershed I %	50	
Pre-I Area (SF)	138520.8	
Pre-I Area (AC)		3.18
Pre-I Area (%)		42.34
Pre C Value		1.08
Pre-TP Load		**28.53**
Post-I Area (SF)	138520.8	
Post-I Area (AC)		3.18
Post-I Area (%)		42.34
Post C Value		1.08
Post-TP Load		**28.53**
Increase/Decrease		**-**
BMP 1	Contech	
Efficiency	0.45	
I Area (AC)	3.18	
TP Removed		12.84
BMP 2	-	
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
BMP 3	-	
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
Total BMP TP Removed		**12.84**
Total TP Decrease		**(12.84)**

Creditable Reductions for TN and TSS Per Guidance Appendix V.E			
TP Decrease for Impervious Reduction			-
TP Decrease for BMPs (Proportion of BMP Applied to TMDL Reduction)			
	1.00		(12.84)
Total Creditable TP Decrease			**(12.84)**
Total Associated TN Load	6.9		196.87
TN Decrease from Impervious Reduction			-
TN Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.261	1	(51.38)
BMP 2		0	-
BMP 3		0	-
TN Decrease for BMPs (Decrease * Prop. Applied to TMDL			(51.38)
Total Creditable TN Decrease (Imp. Reduction + BMPs)			**(51.38)**
Total Associated TSS Loa	469.2		13,386.95
TSS Decrease from Impervious Reduction			-
TSS Decrease for BMPs	Efficiency	Proportion IA Treated by BMP	
BMP 1	0.523	1	(7,001.38)
BMP 2		0	-
BMP 3		0	-
TSS Decrease for BMPs (Decrease * Prop. Applied to TMDI			(7,001.38)
Total Creditable TSS Decrease (Imp. Reduction + BMPs)			**(7,001.38)**

BMP Efficiency Methodology Description:

TP efficiency = 45% based on Virginia Stormwater BMP Clearinghouse for Contech StormFilter with ZPG media. TN and TSS calculated using Chesapeake Bay Program Retrofit Equations. Runoff Depth Treated for Manufactured Treatment Devices is 0.5 inch based on an email from Kelsey Brooks at DEQ received 8/7/2015.

APPENDIX C – Outreach Materials

- Education and Outreach Plan
- Mayor's Proclamation
- Falls Church News-Press – May 14, 2015
- Falls Church News-Press – June 4, 2015
- Falls Church News-Press – June 25, 2015
- The Environment – Fall 2014
- Pet Waste Postcard
- Clean Water Partners Annual Report 2015
- Automotive Mailer

MS4 Permit Year 2 Education and Outreach Program Metrics (Compiled October 1, 2015)

Frequency	Audience	Priority Issue(s)	Activity	Documents	Impressions	Total impact in PY2	Comments
Annual	Residents	Bacteria Illicit Discharge Household waste	Falls Church News Press	3 articles	10,000 per paper	30,000 impressions/ or 3,000 in city	Impact area exceeds City limits (assume 10%) Received 5 calls about the articles
Ending PY2	Residents	Illicit Discharge	The Environment	1 article	135 per article	135 impressions	No word from residents
Ongoing	Residents	Bacteria Illicit Discharge Household waste	Website materials	website handouts	varies	854 views	
Ongoing	Residents	Illicit Discharge	Website in Spanish	website material		unknown at this time	Will track in PY3
Annual	Dog owners	Bacteria	Scoop the poop outreach	Postcard	varies	686 owners	Sent to every licensed dog owner in the City
Annual	Businesses	Illicit Discharge	Automotive IDDE	letter and handout		22 businesses	Sent to every automotive business in the City
As-needed	Businesses	Illicit Discharge	Food waste disposal	letter and handout		unknown at this time	To begin in PY3 to address a growing concern about solid waste management
As-needed	Residents	Illicit Discharge	Pool outreach	letter and handout		unknown at this time	To begin in PY3 to address a growing concern about closing pools at the end of summer
Annual	Residents	Bacteria Illicit Discharge Household waste	Clean Waters Partners	Radio and TV ads	varies	4,808,970 impressions/ or 48,000 in city	Impact area exceeds City limits (assume 1%)

Total	**52,675 impressions**
Falls Church Population	14,000 residents
20% outreach goal	2,800 impressions

PROCLAMATION

WHEREAS, the streams and tributaries that flow both above and below the ground through the City of Falls Church are part of an interconnected watershed system that carries water from our rooftops, yards, streets, and parking lots into the Potomac River and the Chesapeake Bay; and

WHEREAS, the City of Falls Church is committed to improving and protecting these precious waters as habitat for plant and animal life, as a recreational resource, and as drinking water for our citizens, both now and in the future; and

WHEREAS, there are currently 213 commercial and residential properties in the Falls Church City portion of the Tripps Run and Four Mile Run floodplains; and

WHEREAS, the City is participating in the National Flood Insurance Program's Community Rating System, which recognizes and encourages community floodplain management and through which flood insurance rates may be reduced to reflect the reduced flood risk resulting from community activities that meet targeted goals; and

WHEREAS, the City provides opportunities to residents, businesses, schools, churches, and organizations to participate in watershed and floodplain education efforts; and

WHEREAS, many citizens in our community have responded by participating in programs that serve to raise awareness about what individuals can do on their properties, in their homes, and through their transportation choices to improve water quality and minimize their impact on the floodplain; and

WHEREAS, the City has undertaken a city-wide comprehensive effort to examine our watershed and to develop a plan for improving the watershed over the next ten years; and

WHEREAS, the City of Falls Church recognizes the importance of increasing public awareness of watershed and floodplain protection,

NOW, THEREFORE, I, P. DAVID TARTER, Mayor of the City of Falls Church, Virginia, do hereby proclaim May 2015 as

WATERSHED AND FLOODPLAIN AWARENESS MONTH

in the City of Falls Church and urge all citizens to recognize the importance of this observance and to participate in watershed and floodplain protection activities in our community.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the Seal of the City of Falls Church, Virginia, to be affixed this 11th day of May, 2015.

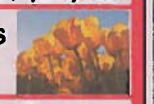
P. David Tarter, Mayor

front porch, wood wrapped doorways, 9' ceilings and hardwood floors. Expanded Kitchen plus a HUGE step down Great Room with soaring ceilings & breakfast nook addition. Great patio & in ground pool plus a huge yard. Unfinished basement for storage. 2 car garage, shed. Zoned R-3 but CANNOT be subdivided. Dir: From Leesburg Pike, West on Shreve Rd, right on Virginia Lane. Just past Fallsmere Ct, turn left at my sign post into the driveway. **7631 Virginia Lane, Falls Church Offered at $825,000**

Brand New Craftsman in Fall Church City!!!

NEW 5 BR, 4.5 BA, 4,664 sf custom home! Dream kitchen w/walk-in pantry, Jenn-Air SS appl, center isl/bkfst bar, bkfst nook, FR w/gas fplc & den. Formal DR + library. Upstairs is a spacious Master suite w/lux BA, plus 3 add'l BRs, 2 full BAs & laundry room. LL walk up rec room w/5th BR & full BA. Front porch. 2 car attached garage. Walk to TJ Elementary & heart of FCC. **103 W Marshall St, Falls Church City Offered at $1,299,999.**

Thinking about selling later this year? Call me to take complimentary photos of your home in the full colors of spring bloom to use in the brochure!



I am so confident that you will love working with me that I offer a

'Love Your Realtor® Promise'

You can cancel your listing or buying agreement at any time! I guarantee that you will love your new home or I will sell it for free. Call for details.

Leslie Hutchison

Realtor®, GRI, SRES, ABR

703-861-8119 *Direct*

kw KELLERWILLIAMS.

See Photos and 3D Virtual Tours at www.VirginiaHomeTeam.com

Wash Your Car the Right Way

Outdoor car washing is a common household task that results in high loads of nutrients, metals, and hydrocarbons as detergent rich water flows down the street, into the storm drain, and directly to our local watersheds and streams. Perhaps the biggest limitation to proper residential car washing is the lack of knowledge regarding impacts of polluted runoff. Many people do not associate vehicle washing with local water quality and may be unaware that the discharges that enter storm drains are not treated at wastewater plants before being discharged into local waters and other bodies of water.

What can City of Falls Church residents do to help?

- Wash your vehicle where the runoff waste water can be soaked in grass or landscaping. If you choose to wash your vehicle on grass, you may choose to drive your vehicle onto a piece of plywood or onto wood strips to minimize the impact to your lawn.
- Use only soaps labeled nontoxic, Phosphate-free, or biodegradable.
- The safest soaps for the environment are vegetable-based or citrus-based.
- Do not use acid-based engine degreasers or wheel cleaners.
- Remove all debris and trash before washing the vehicle, including car mats.
- If you select a washing site that will drain into the storm drain, you can block off the storm drain entrance with sandbags or divert the wash water to an area that will evaporate throughout the day.

The City's Department of Public Works is dedicated to keeping pollutants from entering the City's stormwater system. Water pollution prevention saves resources, time, and money by acting on the root cause of a problem. These actions help protect our local water bodies, Potomac River, the Chesapeake Bay, and the health of all living things that come in contact with these waters. For further information concerning stormwater runoff and pollutants, please contact Jason Widstrom, P.E., Civil Engineer with the Department of Public Works at 703-248-5350 (TTY 711) or jwidstrom@fallschurchva.gov.

The City of Falls Church is committed to the letter and spirit of the Americans with Disability Act. To request a reasonable accommodation for any type of disability, call 703-248-5350 (TTY 711).

NEWS BRIEFS

U.S. News Report Ranks GMHS 5th in State

The *U.S. News and World Report* has ranked Falls Church's George Mason High School the fifth best in Virginia in its school rankings edition. Mason is also ranked by the magazine 140th out of 29,070 high schools nationally. Rankings of other area schools in Virginia include the magnet Thomas Jefferson School for Science and Technology, ranked first in the state and third in the nation, Langley High School ranked second in the state, W. T. Woodson ranked third and McLean High School fourth, Oakton high schools sixth, James Madison High School seventh, Yorktown High School 12th, and George Marshall High School 16th.

No One Home in Knollwood Ave. House Blaze

No one of the Oliver family of four was home early this morning at 613 Knollwood Ave. in Falls Church when a fire broke out that gutted half of their house. That's because the house was undergoing a major renovation that was about 10 days away from completion, according to its owners. The fire broke out sometime before 5 a.m. and was noticed by a neighbor who emerged from her home at 5 a.m., having gone into labor, to head to the hospital. She called the fire department. According to the City, there were no injuries to occupants or first responders. Damage was estimated at $500,000 and the City Fire Marshall Tom Polera ruled the fire as "undetermined."

After the fire on Knollwood Ave. (Photo: City of F.C.)

Homeless Man Found Dead in Falls Church

A 66-year-old homeless man was found dead in a wooded area near South Street and Holmes Run Road Sunday at around 10:30 a.m., according to the Fairfax County Police Department. The police department said in an announcement today that two Fairfax County residents discovered the body of Robert S. Johnson lying in the wooded area and reported the discovery to the police. Police, fire and rescue units arrived a short time later and confirmed the death. Police say Johnson had recently been discharged from a local hospital, where he had been treated for an undisclosed medical issue. There were no signs of suspicious activity at the scene and the death appears to be from natural causes, police said.

F.C. Recycling Rate Up from 63 to 66 Percent

Falls Church City Manager Wyatt Shields announced at Monday's City Council meeting that the recycling rate in the City has grown in the last year from 63 to 66 percent as percentages of total solid waste. Shields told the *News-Press* that the statistics are generated by the City in conjunction with Fairfax County and are subsequently reported to the Virginia Department of Environmental Quality.

I-66 Lane Closures Tonight, Tomorrow Night

Drivers can expect multiple lane closures along westbound I-66 from Lee Highway (East Falls Church) to the Dulles Airport Access Road ramp between 10 p.m. Thursday, May 14 and 5 a.m. Friday, May 15. According to the Virginia Department of Transportation, two lanes of traffic will be maintained while the traffic is shifted to the newly built left lanes from Great Falls Street to the Dulles Airport Access Road. The partial traffic switch is part of a $33 million project to improve westbound I-66 inside the Beltway by connecting the Washington Boulevard on-ramp to the off-ramp at the Dulles Airport Access Road, creating a new one-mile stretch of auxiliary lane. A new 12-foot shoulder will have full-strength pavement capable of carrying traffic during emergencies. The project is expected to be complete in August.

Correction: *Lasso* Byline Omitted

The George Mason High School *Lasso* student newspaper story, "Pitfalls of Falling Ceilings," that was reprinted in the May 7-13 edition of the *News-Press* was jointly authored by George Mason High School students Isabelle Feldmayer and Eva Ellis. Ellis' byline was inadvertently omitted from the story.

#22), 73 in Amenities
Demographics (#57)
structure (#15).
to a synopsis on the
web site, "Living
rch comes with a
residents here are
ll-maintained parks,
ools and top health
as one of the rich-
the country, with a
l household income
5,000, Falls Church
ely low poverty level.
ud schools in Falls

---

m so excited that she
school board race to
the schools and our
any of you are just as
e City's development
nd the schools as we
imply don't have the
, work, family needs,
Erin and I will be able
u well."
, according to *News-*
, three other school
s are circulating peti-
ough none have sub-
he Registrar of Voters
public statements.
de Allison Kutchma,
and Bill Royce.

Church, especially those within the Falls Church City Public Schools, the city's largest employer."

The top ranked town on Livability's list is Lebanon, New Hampshire with a population of 13,367, $52,231 median household income and $235,400 median home price. Williamsburg was the only other Virginia town to make the list, ranking #38, while Takoma Park (#32), Bel Air (#42) and Easton (#77) were included from Maryland.

Everly Community Funeral Care

Funerals and Cremations

Serving all of Fairfax County and the surrounding areas.

(*Hablamos Español*)

We honor all pre-arrangements from any funeral home.

6161 Leesburg Pike, Falls Church, VA 22044
703.532.5161 (tel)
703.532.0860 (fax)
www.everlycommunityfuneralcare.com

The Hazards of Pesticides

The summer months are among us, meaning beach trips, fireworks for the fourth of July, and the sizzling sounds of burgers on the grill. Unfortunately, summer also means mosquitos, ants and other pesky bugs! Instead of spraying around your house with hazardous chemicals, which can end up in our local streams and eventually to the Chesapeake Bay, try some of these helpful tips.

Use Pesticides Wisely: Choose natural organic pesticides, use sparingly and most importantly avoid using before expected rain fall. Two to five applications a season should be sufficient. Avoid pesticides that contain DEET (N, N-diethyl-meta-toluamide) and DDT (di-chlorodiphenyltrichloroethane).

Pesticides drift: Chemicals used not only enter the groundwater, streams and rivers, the particles attach to dust and soil, which not only is harmful to the environment, but the dust and soil get tracked inside of our homes from our shoes. Remember to take your shoes off.

Mosquitos Love Water: Water deeply (saturate the soil). Watering your lawn/garden deeply and between the hours of midnight to 8am every third day will help. Have a pond? No problem, stock your pond with mosquito fish that eat the larva, or treat them with larvicide mosquito rings. Also, any standing water, for example, bird baths, make sure to change the water every other day. Mosquitos don't need much water to lay larva.

Please don't forget to recycle your empty pesticide/bug spray bottles! Residents can drop off hazardous materials at the City's Property Yard during Household Hazardous Waste collection on August 23, from 9am-1pm. Residents can also bring materials to the I-66 Transfer Station, 4618 West Ox Road, Fairfax, VA 22030, Thursday thru Sunday throughout the year.

For further information concerning stormwater runoff and pollutants, please contact Jason Widstrom, P.E., Civil Engineer with the Department of Public Works at 703-248-5026 or via email at jwidstrom@fallschurchva.gov.

The City of Falls Church is committed to the letter and spirit of the Americans with Disability Act. To request a reasonable accommodation for any type of disability call 703-248-5350 (TTY 711).

trail. Top floor unit has 12 ft. ceilings and great space! Priced at $407,500

1BR condo with 1 garage + 1 storage space. Ideal location .5 miles to EFC Metro and next to W&OD trail. Top floor unit has 12 ft. ceilings and great space! $379,000

covered Parking and storage space. Lots of light and great floor plan! Priced at $209,000.

6907 Willow St.
Falls Church, VA 22046
Stunning 3 level 4BR/4.5BA house w 2 car garage. Super close to shops, restaurants, WFC Metro & W&OD trail! Haycock, Longfellow and McLean schools. Sold Price $985,000

2200 Westmoreland St. N. #332
Arlington, VA 22213
2BR+den/2BA unit with 1 parking space+ 1 storage space. Excellent location and great size.
Sold Price $525,000

3134 Ellenwood Dr.
Fairfax VA 22031
3BR/2.5BA townhouse close to Nutley Metro and Mosiac district. Fresh paint and carpet and updated floors. Sold Price $388,000

CALL OR EMAIL BETHANY FOR ALL YOUR
FALLS CHURCH (& NORTHERN VA) REAL ESTATE QUESTIONS AND ANSWERS.
TOP SALES AGENT + LISTING AGENT • 2011-2014 FALLS CHURCH OFFICE

www.buyandsellwithbethany.com

PROUDLY PRESENTED BY:
Bethany Ellis
Realtor ®, e-Pro, SRES
Long and Foster Real Estate
#1 Agent in Sales in Falls Church Office
preferred (703) 307-7003
bethany.ellis@longandfoster.com
www.buyandsellwithbethany.com

Falls Church Office
6299 Leesburg Pike
Falls Church, VA 22044
(703) 534-9660

The Benefits of Conservation Landscaping & Rain Barrels

Conservation Landscaping and Rain Barrels are not only good for the environment, but you could potentially earn a 10 percent discount on your Stormwater Utility Fee.

Conservation Landscaping is able to reduce the negative impacts of stormwater runoff on the environment by using carefully planned plantings of native plants. Many native plant species are deeply rooted, resistant to insects, and drought. They are perfect for our climate and create new natural homes and food for local wildlife. By replacing grass with native plants, you can reduce use of pesticides, fertilizers and water, which in turn will save you time and money. It is also aesthetically pleasing for you and your neighbors.

Conservation Landscaping can be designed to receive the stormwater runoff from roofs, sidewalks, driveways and patios, which allows the water to soak into the ground naturally and thus reducing stormwater runoff. This is a great way to help protect our local streams and the Chesapeake Bay.

Rain Barrels are designed to catch stormwater runoff from the roofs for reuse. Rain water is better for plants and soils because rainwater is highly oxygenated, free from salts, inorganic ions and fluoride versus tap water. Rain barrels can also help keep moisture away from your homes foundation. Collecting water in the rain barrel will also help eliminate the amount of pollutants from entering the stormwater drain, and helps keep the pollutants out of our local streams and the Chesapeake Bay.

Remember, only rain down the storm drain! Please help us keep our local streams and the Chesapeake Bay clean. Every little bit counts.

For further information concerning stormwater runoff and pollutants, please contact Jason Widstrom, P.E., Civil Engineer with the Department of Public Works at 703-248-5026 (TTY 711) or via email at jwidstrom@fallschurchva.gov.

The City of Falls Church is committed to the letter and spirit of the Americans with Disability Act. To request a reasonable accommodation for any type of disability call 703-248-5350 (TTY 711).

Hours
Mon-Thurs: 11 am-10 pm
Fri-Sat: 11 am - 11 pm
Sun: Noon - 10 pm

Follo

twitter.com/fcnp

Make a differen
during the Diener
Do
- Falls Church
- Diener & A
- Point of Vi
- Art and Frame
- Falls Church
Collection will run f
All donations
125 Rowell

The Environment Newsletter Fall 2014 Edition

Stories in this edition.

•Stormwater Credit Highlight: Conservation Landscaping

•Participating the Fall Cleanup

•Coe Branch Update

•Seasonal Vacuum Leaf Collection

•Volunteers Needed to "Adopt-a-Spot"

• Brush and Yard Waste Reminder

Stormwater Credit Highlight: Conservation Landscaping

The City is into its first year of the stormwater utility fee and credits program. The credit program, created by the task force and approved by City Council, has a few options for reducing your fee. One of them is the Stormwater Pollution Prevention Plan (SWPPP). It works like a toolbox where you pick from a variety of stormwater mitigation options and once you reach 10 points you are eligible to receive 10 percent off your total fee. There are eight options in the toolbox and one of the most overlooked is conservation landscaping.

The points for conservation are fairly simply to calculate. Each 100 square feet of conservation landscaping equals three (3) points towards the ten (10) points needed to obtain a discount. If your property has 400 square feet of more, then 10 points has already been reached.

Conservation landscaping is any landscaped area on the property that is not turf grass. Mulched areas, gardens, flower beds, etc., that contain native plants can be considered conservation landscaping. These landscaped areas filter and retain water better than turf grass and thereby help improve the quality of the runoff before it reaches the City's streams and stormwater system.

In order to apply for this credit, a SWPPP application must be submitted with photos of the landscaped areas. Applications can be picked up at the City Hall in the Department of Public Works, Suite 100W, or downloaded from the City's website. More information about conservation landscaping can also be found on the City's website under "Helpful Documents." "How to Have a Bay-Friendly Yard" has a section on conservation landscaping which begins on page 45. Any other questions can be directed to stormwater@fallschurchva.gov.

Participating in the Fall Cleanup

Think about all of the litter you have seen today; along roadways, in parks, at your child's daycare? Will that litter be there tomorrow? Or will the wind carry the litter into the Potomac River, the source of drinking water for residents in Falls Church. Unfortunately, some of the litter will never make it to the proper waste receptacle.

Saturday, October 18 is the next opportunity to help clean up the City. Volunteers will collect and tally the trash throughout our community and dispose of it properly before the trash impacts our waterways. Volunteers collect over 300 bags of trash and recycling throughout the year found on our streets and in our parks. The cleanup will take place from 10:00 am to 12:00 pm starting at the Falls Church Community Center, 223 Little Falls Street, Falls Church. For more information visit www.fallschurchva.gov/solidwaste. To register for the cleanup, call 703-248-5456 or email recycling2@fallschurchva.gov.

Coe Branch Update

The Coe Branch stream restoration project is underway! The southern end of the site has been cleared and excavation for the new stream has begun. In order to limit land disturbance the contractor will only construct one stream control structure at a time and then stabilize the soil before installing the next. Those watching the project from the path at the rear of Thomas Jefferson Elementary School will see the contractor placing large boulders for the structures. The structures, such as cross vanes and constructed riffles, are what will help the stream control large storms and return to a more natural condition. To learn more about the project please visit www.fallschurchva.gov/Streamrestoration.

Vacuum Leaf Collection

Every fall, the City of Falls Church offers vacuum leaf mulch collection to current solid waste customers, free of charge. Use the following guidelines to prepare leaves for collection. To find out when the vacuum leaf truck will be on your street, visit http://www.fallschurchva.gov/397/2014-Schedule at the end of September. Collection usually begins in late October but is subject to weather conditions.

After leaf mulch is collected, is composted and shredded. Following the composting process, leaf mulch is available for pickup in the early spring. Those interested may stop by the Recycling Center between 7 a.m. and dusk, seven days a week with their own containers, shovels or pitchforks to haul away the mulch. Residents are also able to compost leaves on their own property.

Leaves are one of the best things to add to your compost bin or pile. They contain many nutrients gathered from a tree's root system and surrounding soil. As they compost, the nutrients spread throughout the pile. Just about any type of leaf will work. There are two things to remember to do to make sure your leaves compost correctly: always shred the leaves before you compost them, and turn the pile once a week to make sure the pile receives air and stays fairly damp.

Other organic materials are also suitable for composting in your yard. On September 14, starting at 3:30 PM. the City of Falls Church in collaboration with Master Gardener Sandy

Tarpinian, will host a Yard Waste Composting Class in which participants will receive a free compost bin. At the class, participants will learn how to add in grass clippings, straw, and non-woody plant trimmings to your yard waste compost pile.

If you are not ready to begin yard waste composting at home, the Falls Church yard waste program runs year round. Reminders on how to properly prepare yard waste and brush can be found at http://www.fallschurchva.gov/425/Yard. Click on "Brown Bags Collection" and "Brush Collection" on the right.

Volunteers Needed to "Adopt-a-Spot"

For the past thirteen years, citizen volunteers have assisted the City in preventing and controlling litter in our streams, along our streets and in our parks through the "Adopt-a-Spot" program.

This special program enables organizations, families, and individuals to "adopt" a street or other public area for a two-year period and to participate in at least four litter pickups annually in their adopted areas. In return, they are provided with litter bags and safety vests and are recognized through the posting of a sign with their name on it, identifying them as the adopting group or individual.

There are currently 30 groups and individuals serving our community through the "Adopt-a-Spot" program. The City of Falls Church appreciates your dedication and participation! Areas still in need of adoption include:

- Broadmont Neighborhood
- Downtown Falls Church
- Little Falls
- Cherry Hill Park.

If you or your group would like to adopt one of these areas, please call 703-248-5456.

Brush and Yard Waste Reminder

The Department of Public Works staff spends a great deal of time and taxpayer money to keep our storm drains clear and free of debris. In you clean up your yard on the weekend, keep brush bundles and yard waste bags on your property until Tuesday evening after 5 p.m. or Wednesday morning prior to 7 a.m.. Avoid putting brush on sidewalks or near storm drain openings. Why? During rainstorms brush left out on the street is washed into the closest storm drain creating blockages that may result in flooding. Brush and yard waste bags in the street also poise safety hazards to car and bike traffic.

Events:
Recycling Extravaganza: September 6, 9am-2pm. Recycle computers, clothes and more. 703-248-5456
Habitat Restoration Events: September 20, October 25, November 22. For details call: 703-248-5456
Fall Cleanup: October 18. 10am-noon. 223 Little Falls. Call 703-248-5456 to reserve your spot.
Neighborhood Tree Program Events: October 18, November 1, November 15. For details call: 703-248-5183
Yard Waste Composting: September 14, 3:30 pm -5:30 pm

KNOW WHAT'S YUCKIER THAN PICKING UP DOG POOP?

PLEASE PICK UP MY POOP.

Stepping in it.

Know what's even more disgusting than that? Swimming in, fishing from or treating our drinking water from sources that have dog poop in them!

Please pick up after your pooch.

Cleaning up pet waste is good for your health and the environment! Seriously. Pet waste left on the ground, especially near streets and sidewalks, gets washed into storm drains and drainage ditches which flow to your local waterway…without being treated! Bacteria, parasites, and viruses found in pet waste can be harmful to water quality and human health. Not only is picking up after your pooch the neighborly thing to do, it's the healthy thing to do…for you and the environment!

Visit the Northern Virginia Clean Water Partners web site at www.onlyrain.org

CITY OF FALLS CHURCH

Department of Public Works
300 Park Avenue
Suite 100W
Falls Church, VA 22046

The City of Falls Church is committed to the letter and spirit of the Americans with Disability Act. To request a reasonable accommodation for any type of disability call 703-248-5030. (TTY 771)

Northern Virginia Clean Water Partners 2015 Annual Report

Only Rain Down the Drain

Craig Miller

[Click this to add]

[Type the date of this document here. This date is to be typed by a short cut to the date of the document. Type the date of this document here. This date is to be typed by a short cut to the date of the document.]

2015 Northern Virginia Clean Water Partners

Fairfax County | Arlington County | Loudoun County | Stafford County | Fairfax Water |City of Alexandria | Loudoun Water | City of Fairfax |Town of Herndon | City of Falls Church | Town of Leesburg | Town of Vienna | Town of Dumfries | Doody Calls | Northern Virginia Regional Commission | Virginia Coastal Zone Management Program | George Mason University | Fairfax County Public Schools | Arlington County Public Schools | Northern Virginia Community College | Prince William County Public Schools

Contents

1.0 Regional Stormwater Education Campaign 2
2.0 Public Education Advertisements 2
3.0 High-priority water quality issues and the target audience 3
3.1 Bacteria 3
3.2 Nutrients 3
3.3 Motor Oil/Chemical Contaminants 3
4.0 Summary of FY2015 Advertising 3
5.0 Reaching the Target Audience 8
5.1 Priority Issue: Bacteria 9
5.2 Priority Issue: Nutrients 11
5.1 Priority Issue: Chemical Contaminants 13
6.0 Annual Survey 15

Report prepared by the Northern Virginia Regional Commission on behalf of the Partners

For more information contact:
Corey Miles
Senior Environmental Planner
703-642-4625
cmiles@novaregion.org

Northern Virginia Regional Commission

Virginia Coastal Zone MANAGEMENT PROGRAM

1.0 Regional Stormwater Education Campaign

In 2015, the Northern Virginia Regional Commission continued to support the Northern Virginia Clean Water Partners and their regional stormwater education effort called "Only Rain Down the Drain Campaign". The campaign was initiated in 2003 to enable Northern Virginia jurisdictions to pool outreach funds to achieve common goals regarding stormwater education and outreach and promote consistent messages about stormwater pollution across the Northern Virginia region. The campaign uses the storm drain marker symbol, the blue and green shad, as its logo (Figure 1).

Figure 1. Northern Virginia Clean Water Partners logo symbol

MS4 permittees may fulfill all or part of their public education and outreach and documenting changes in behavior requirements through regional outreach programs involving two or more MS4 localities. The activities conducted as part of this regional campaign satisfies part of the member jurisdiction's Municipal Separate Storm Sewer System (MS4) Phase I and Phase II permit requirements for Minimum Control Measures 1 and 2.

The Clean Water Partners received financial and in-kind contributions from 15 partners in 2015, for a total budget of $134,000. The Partners met two times and had one conference call between January and September 2015 to plan, implement and review campaign activities with Virginia DEQ. Meeting summaries and presentations are provided as Appendix A.

2.0 Public Education Advertisements

The campaign uses a multi-media approach to educate the public on stormwater pollution. Cable television ads, promotional items, a website (onlyrain.org), print materials, and internet banner ads were used to reach a large audience across the region. On behalf of the partners, NVRC secured the services of Comcast Spotlight to air ads on cable television. Four, 30-second long ad's that feature rubber duckies were selected to illustrate the importance of picking up pet waste, reducing fertilizer application and implementing other general household stormwater pollution reduction measures. The rubber ducky was chosen as a theme for the ads because it has been a long-time symbol of non-point source pollution. One ad was translated into Spanish. In addition to the television ads, campaign banner ads appeared on the Infinity.com and Cox.com websites. For the first time this year, in-stream videos were also aired.

3.0 High-priority water quality issues and the target audience

Phase II MS4 permit holders are required to conduct outreach and education activities that reach at least 20% of each high priority issue target audience[1]. NVRC held several meetings with the Partners to discuss and determine the high priority water quality issues for the region. Regional water quality impairments were the primary criteria used to determine the issues. The three high priority water quality issues identified by the Partners are bacteria, nutrients, and motor oil/chemical contaminants. These issues became the focus of the education and outreach campaign for 2015.

3.1 Bacteria

Bacteria pollution in stormwater runoff can come from leaking sanitary sewer pipes, livestock agriculture, wildlife (i.e. Canada geese), improper disposal of pet waste, and failed septic systems. Since most of the region is connected to a municipal sanitary sewer, septic systems are not widely used. The region is primarily urban and suburban residential and agriculture is not a major land use. Most sanitary sewer lines undergo regular leak detection and do not contribute a significant load of bacteria to area streams. Due to the large number of pet owners in the region, the Partners chose pet owners as the target audience and the education and outreach messages focused on proper disposal of pet waste.

3.2 Nutrients

Nutrient impairment from stormwater runoff is usually attributed to agriculture or residential fertilizer. MS4 permit holders are required by the Chesapeake Bay TMDL to reduce the nitrogen and phosphorous load contributed to the Bay through stormwater. As the major land use in the region is urban or suburban residential, the Partners chose to target homeowners with education and outreach messages focused on proper lawn care and disposal of yard waste.

3.3 Motor Oil/Chemical Contaminants

Illicit Discharge or illegal dumping of motor oil, anti-freeze and other chemical contaminants into the stormwater sewer system is also a cause of water impairment in the region. The Partners chose to target home mechanics and contractors with educational messages focused on proper handling of motor oils and hazardous waste.

4.0 Summary of FY2015 Advertising

From July 2014 through June 2015, advertisements featuring messages on the importance of picking up pet waste and general household stormwater pollution reduction measures aired on nineteen cable TV networks, including three Spanish speaking channels a total of 6,818 times. The networks were selected based upon characteristics of the target audience. Table 1 shows the networks where “Only Rain Down the Drain” advertisements were aired. These networks were selected based upon research that shows they have the highest ‘reach’ to the target audiences. The complete report from Comcast Spotlight is attached as Appendix B.

[1] It shall not be considered noncompliance for failure to reach 20% of the target audience. However, it shall be a compliance issue if insufficient effort is made to annually reach a minimum of 20% of the target audience.

Table 1. English language cable networks by broadcast zone that aired Only Rain Down the Drain ads in FY2015

Alexandria (Comcast)	Fairfax County (Cox & Comcast Cable)	Fairfax Zone (Verizon FiOS)	Potomac Superzone (Verizon FiOS)
A&E	ANIMAL PLANET	A&E	AMC
AMC	A&E	ESPN	ANIMAL PLANET
ANIMAL PLANET	AMC	ABC FAMILY	COMCAST SPORTSNET
E!	CNN	FX	CARTOON NETWORK
ESPN	E!	USA	E!
FX	ESPN		HEADLINE NEWS
HGTV	ABC FAMILY		OXYGEN
OWN	FX		OWN
SPIKE	HISTORY		SPIKE
USA	NATIONAL GEOGRAPHIC		MASN
	OWN		
	SPIKE		
	USA		

In addition to the above English language networks, the Spanish language networks of Galavision, CNN en Español, and ESPN Deportes were utilized to target the Hispanic audiences in the target localities. This data was not tracked and could not be included in the analysis.

In addition to cable network advertising, digital banner ads were displayed on Xfinity.com and Cox.com resulted in 773,000 person impressions (Tables 2 and 3). A new advertising strategy this year was the in-stream video ads. Approximately 122,000 in-stream video impressions were made however; the demographics of this audience could not be collected.

Table 2. Impressions from banner ads from 7/1/2014-12/31/2014

Xfinity.com			
300 x 250 In-Banner Video	+/-	300 x 250 In-Banner Video	+/-
321,146	21,146	191,332	11,332

Table 3. Impressions from banner ads and in-stream video ads from 1/1/2015-6/30/2015

Xfinity.com		Cox.com		CSV+	
300 x 250 In-Banner Video	+/-	300 x 250 In-Banner Video	+/-	Instream Video	+/-
132,661	12,661	128,112	8,112	122,646	2,646

Since Comcast tracks the number of impressions by broadcast zone not jurisdiction, the target audience reached for each jurisdiction can be derived for the zipcodes in each broadcast zone (Tables4, 5, and 6).

Table 4. Zipcodes of the Potomac Superzone

ZIP	ZIP	ZIP	ZIP	ZIP	ZIP
20001	20166	20720	20851	22026	22202
20002	20169	20721	20852	22027	22203
20003	20170	20722	20853	22030	22204
20005	20171	20735	20854	22031	22205
20007	20175	20737	20855	22032	22206
20008	20176	20740	20860	22033	22207
20009	20181	20743	20861	22039	22209
20010	20190	20744	20862	22041	22213
20011	20191	20745	20866	22042	22302
20012	20194	20746	20868	22043	22303
20015	20601	20747	20871	22044	22306
20016	20602	20748	20872	22046	22307
20018	20603	20762	20874	22060	22308
20019	20607	20769	20876	22066	22309
20020	20611	20770	20877	22079	22310
20032	20613	20772	20878	22101	22311
20105	20622	20774	20879	22102	22312
20109	20623	20781	20882	22124	22315
20110	20632	20782	20886	22125	22401
20111	20646	20783	20889	22134	22405
20112	20664	20784	20895	22150	22406
20120	20675	20785	20896	22151	22407
20121	20677	20812	20901	22152	22408
20124	20693	20814	20902	22153	22508
20129	20695	20815	20903	22172	22551

20136	20705	20816	20904	22180	22553
20147	20706	20817	20905	22181	22554
20148	20707	20818	20906	22182	22556
20151	20708	20832	20910	22191	22580
20152	20710	20833	20912	22192	22701
20155	20712	20837	22003	22193	
20164	20715	20841	22015	22199	
20165	20716	20850	22025	22201	

Table 5. Zip codes of the Alexandria Broadcast Zone

ZIP	TOWN
22301	Alexandria
22302	Alexandria
22304	Alexandria
22305	Alexandria
22311	Alexandria
22312	Alexandria
22314	Alexandria

Table 6. Zip codes of the Fairfax Broadcast Zone

ZIP	TOWN	ZIP	TOWN
20120	Centreville	22102	Tyson's
20121	Centreville	22124	Oakton
20124	Clifton	22150	Springfield
20151	Chantilly	22151	Springfield
20170	Herndon	22152	Springfield
20171	Herndon	22153	Springfield
20192	Herndon	22180	Vienna
22003	Annandale	22181	Vienna
22015	Burke	22182	Vienna
22027	Dunn Loring	22306	Alexandria
22030	Fairfax	22307	Alexandria

22031	Fairfax	22308	Alexandria
22032	Fairfax	22309	Alexandria
22033	Fairfax	22310	Alexandria
22039	Fairfax Station	22312	Alexandria
22041	Bailey's Cross	22315	Alexandria
22042	Falls Church		
22043	Falls Church		
22044	Seven Corners		
22046	Falls Church		
22079	Lorton		
22101	McLean		

The TV ads resulted in approximately 4,808,970 household impressions in Northern Virginia. The number of impressions by network in each broadcast zone is given in Table 7.

Table 7. Number of impressions by network in each broadcast zone from 7/1/2014-6/30/2015

Total Household Impressions	**4,808,970**
Potomac Superzone (Verizon FiOS)	**3,831,722**
AMC	152,431
ANIMAL PLANET	487,506
COMCAST SPORTSNET	4,962
CARTOON NETWORK	1,124,677
E!	635,727
HEADLINE NEWS	297,974
OXYGEN	131,574
OWN	388,877
SPIKE	84,140
MASN	55,666
Rotational	468,188
Potomac Superzone	
Fairfax Zone (Verizon FiOS)	**271,022**
A&E	34,485
ESPN	29,445
ABC FAMILY	40,687

FX	63,943
USA	84,559
Rotational	17,903
Fairfax County (Cox and Comcast)Total	**602,155**
ANIMAL PLANET	78,486
A&E	16,086
AMC	23,461
CNN	91,146
E!	12,825
ESPN	116,179
ABC FAMILY	21,557
FX	24,501
HISTORY	67,635
NATIONAL GEOGRAPHIC	42,839
OWN	19,848
SPIKE	19,665
USA	47,300
Rotational	20,627
Alexandria, VA Total	**104,071**
A&E	7853
AMC	10,394
ANIMAL PLANET	8,847
E!	9,518
ESPN	8,759
FX	10,449
HGTV	10,218
OWN	7,651
SPIKE	5,801
USA	19,096
Rotational	5,485
Total Household Impressions All Zones	**3,193,924**

Reference: Raj Bhansali-Comcast Spotlight.Documentation of reaching desired targets for "Only Rain" Campaign. Advertising during period of July 1, 2014 through June 30, 2015.

5.0 Reaching the Target Audience

The Clean Water Partners conducts an annual survey to determine the target audience for each high priority issue, determine the effectiveness of the ads, reveal any changes in behavior, and aid in directing the future efforts of the campaign. The 2014 survey report prepared by Amplitude Research is included as Appendix C.

5.1 Priority Issue: Bacteria

Target Audience: Dog owners

To reduce bacteria pollution in streams caused by pet waste that is left on the ground, the campaign determined that dog owners are the target audience. The educational message was that "Pet waste left on the ground washes into stormdrains and streams every time it rains. This runoff carries bacteria and other organisms from your pet's waste into local streams. Dispose of your pet's waste properly by bagging it and throwing it away." The take home message in the advertisement was simple and reinforcing; "Scoop it, bag it, trash it" (Figure 2).

Figure 2. Messaging to dog owners regarding proper disposal of pet waste

Comcast derived the population of the target audience in the Northern Virginia region using the Scarborough Research syndicated data set for the Washington DC DMA (March 2014-February 2015 survey period). The target audience is respondents who have lifestyle characteristics that include owning a dog. The Scarborough Research data set indicated that the adult population of the target audience across the region is 434,602 individuals. Phase II MS4 permit holders are required to reach at least 20 percent of the target audience in their jurisdiction with education and outreach. In order to reach the 20 percent of the target audience for the entire region, it was necessary to reach at least 86,920 individuals throughout the region with education and outreach.

To determine how many of the total impressions reached the target audience (pet owners) in individual broadcast zones, the percentage of network viewers in each broadcast zone that have lifestyle characteristics that include owning a dog was tabulated (Table 8).

It is important to note that not all networks aired ads in all of the broadcast zones and the Potomac Zone includes zip codes that are not part of the Clean Water Partners geography. Therefore the impression data is slightly different for each zone. Table 8 shows the number of impressions by broadcast zone. The goal of reaching 20 percent of the target audience was exceeded across the region as a whole as well as in individual broadcast zones.

Table 8. Pet owners reached in each broadcast zone

	Lifestyle Characteristics: Own a Dog			
	Television Impressions in each Broadcast Zone			
Cable Network	Potomac	Alexandria	Fairfax County (Cox & Comcast Cable)	Fairfax Zone (Verizon FiOS)
A&E	N.A.	1696	3,475	7,449
ABC FAMILY	N.A.	N.A.	2,953	5,574
AMC	24,389	1663	3,754	N.A.
ANIMAL PLANET	57,038	1035	9,183	N.A.
CARTOON NETWORK	39,364	N.A.	N.A.	N.A.
CNN	N.A.	N.A.	25,703	N.A.
COMCAST SPORTSNET	N.A.	N.A.	N.A.	N.A.
E!	69,930	1047	1,411	N.A.
ESPN	N.A.	2435	32,298	8,186
FX	N.A.	2038	4,778	12,469
HEADLINE NEWS	19,666	N.A.	N.A.	N.A.
HGTV	N.A.	2524	N.A.	N.A.
HISTORY	N.A.	N.A.	16,841	N.A.
MASN	3,730	N.A.	N.A.	N.A.
NATIONAL	N.A.	N.A.	7,154	N.A.

GEOGRAPHIC				
OWN	25,666	505	1,310	N.A.
OXYGEN	4,342	N.A.	N.A.	N.A.
SPIKE	7,741	534	1,809	N.A.
USA	N.A.	4468	11,068	19,787
Total	**251,866**	**17,945**	**121,737**	**53,465**

5.2 Priority Issue: Nutrients

Target Audience: Homeowners Who Apply Fertilizer

According to the data from our 2014 annual survey, more than a third of lawn and garden owners fertilize their lawns two or more times per year. The recommended application for most types of lawns in Northern Virginia is once per year in late summer or fall depending upon the results of a soil test. The educational messages were "Fertilize in the Fall if at all", "Mulch clippings for a healthy lawn and community", and "Sweep all clippings and fertilizer off of the pavement". The television and internet ads featured the well-known national symbol of non-point source pollution; the rubber ducky (Figures 4 and 5).

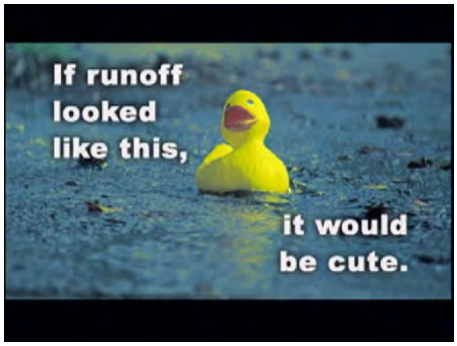


Figure 4. Screenshot of television ad

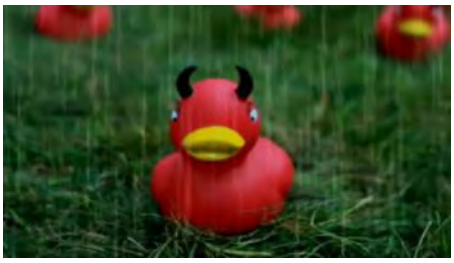


Figure 5. Screenshot of television ad

The survey results suggest that the highest percentages of homeowners who apply fertilizers to their lawn or garden more than the recommended rate are males and females between the ages of 35 and 65.

Comcast derived the population of the target audience in the Northern Virginia region using the Scarborough Research syndicated data set for the Washington DC DMA (March 2014-February 2015 survey period). The target audience is respondents who have lifestyle characteristics that include performing their own lawn care. The Scarborough Research data set indicated that the adult population of the target audience across the region is 714,109 individuals. In order to reach the 20 percent of the target audience for the entire region, it was necessary to reach at least 142,281 individuals throughout the region with education and outreach.

To determine how many of the total impressions reached the target audience in individual broadcast zones, the percentage of network viewers in each broadcast zone that have lifestyle characteristics that include performing their own lawn care was tabulated (Table 9).

Table 9. Television impressions of people that perform lawncare at their home

	Lifestyle Characteristics: Perform Lawn Care			
	Television Impressions in each Broadcast Zone			
Cable Network	Potomac	Alexandria	Fairfax County (Cox & Comcast Cable)	Fairfax Zone (Verizon FiOS)
A&E	N.A.	1414	2,895	6,207
ABC FAMILY	N.A.	N.A.	1,789	3,377
AMC	20,121	1601	3,613	N.A.
ANIMAL PLANET	53,626	973	8,633	N.A.
CARTOON NETWORK	33,740	N.A.	N.A.	N.A.
CNN	N.A.	N.A.	24,701	N.A.
COMCAST SPORTSNET	427	N.A.	N.A.	N.A.
E!	27,972	419	564	N.A.
ESPN	N.A.	2566	34,040	8,627

FX	N.A.	1327	3,112	8,121
HEADLINE NEWS	13,707	N.A.	N.A.	N.A.
HGTV	N.A.	2381	N.A.	N.A.
HISTORY	N.A.	N.A.	18,870	N.A.
MASN	6,680	N.A.	N.A.	N.A.
NATIONAL GEOGRAPHIC	N.A.	N.A.	7,711	N.A.
OWN	18,277	360	933	N.A.
OXYGEN	2,237	N.A.	N.A.	N.A.
SPIKE	6,479	447	1,514	N.A.
USA	N.A.	3934	9,744	17,419
Total	**183,265**	**15,420**	**118,120**	**43,752**

The cable television impressions totaled 360,557 and the goal of reaching 20 percent of the target audience was exceeded across the region as well as in individual broadcast zones.

5.1 Priority Issue: Chemical Contaminants

Target Audience: Contractors and Home Mechanics

Comcast derived a target audience using the Scarborough Research syndicated data set for the Washington DC DMA (March 2014-February 2015 survey period). The target audience is respondents who reported performing their own auto repairs such as oil filter/oil change or coolant/anti-freeze change in the past 12 months. The Scarborough Research data set indicated that the total population of the target audience across the region is 189,232 individuals.

According to Comcast data, the viewers of the networks listed in Table 10 have lifestyle characteristics that include performing their own auto repair. In order to reach 20% of the target audience, it was necessary to reach 37,846 individuals throughout the region with education and outreach. The cable television impressions totaled 422,022 and the goal of reaching 20 percent of the target audience was exceeded with the television ads.

Table 10. Networks with viewers that are more likely to perform their own auto repair

	Lifestyle Characteristics: Auto Repair Anti-Freeze/Coolant Or Oil Filter/Oil Change			
	Television Impressions in each Broadcast Zone			
Cable Network	Potomac	Alexandria	Fairfax County (Cox & Comcast Cable)	Fairfax Zone (Verizon FiOS)
A&E	N.A.	1,500	3,072	6,587
ABC FAMILY	N.A.	N.A.	2,695	5,086
AMC	20,121	1601	3,097	N.A.
ANIMAL PLANET	53,626	973	8,633	N.A.
CARTOON NETWORK	71,979	N.A.	N.A.	N.A.
CNN	N.A.	N.A.	24,701	N.A.
COMCAST SPORTSNET	362	N.A.	N.A.	N.A.
E!	46,408	695	936	N.A.
ESPN	N.A.	2,654	35,202	8,834
FX	N.A.	1,432	3,357	8,760
HEADLINE NEWS	11,919	N.A.	N.A.	N.A.
HGTV	N.A.	2,166	N.A.	N.A.
HISTORY	N.A.	N.A.	16,773	N.A.
MASN	5,344	N.A.	N.A.	N.A.
NATIONAL GEOGRAPHIC	N.A.	N.A.	6,512	N.A.
OWN	18,277	360	933	N.A.
OXYGEN	4,737	N.A.	N.A.	N.A.

SPIKE	6,815	470	1,593	N.A.
USA	N.A.	4,278	10,595	18,941
Total	**239,588**	**16,127**	**118,099**	**48,207**

6.0 Annual Survey

To assist in determining the effectiveness of the campaign at increasing awareness and changing behaviors, after each campaign year, the Partners conduct an online annual survey of 500 Northern Virginia residents. The annual surveys are used to understand current behaviors of Northern Virginia residents as they relate to pet waste management, lawn care, and motor oil disposal. The surveys also determining the effectiveness of the campaign at increasing awareness and changing behaviors related to stormwater pollution from year to year.

The 2015 survey of 500 Northern Virginia residents was conducted online by Amplitude Research. The results are attached as Appendix C. This year, 8 percent of the respondents were Spanish speakers. Results from 2015 indicated that 9 percent of the respondents recalled hearing or seeing advertisements that featured rubber duckies on the internet or on TV about reducing water pollution. Of those who recalled the ads, three percent state they now pick up their pet waste more often, four percent state that they are more careful with motor oil, and 13 percent state they fertilize fewer times per year.

Other findings from the 2015 survey include:

- 15 percent of the respondents recalled hearing or seeing advertisements on the internet or on TV about reducing water pollution.
- Of those who recalled the ads, seven percent state they now pick up their pet waste more often, seven percent state that they are more careful with motor oil, and 18 percent state they fertilize fewer times per year.
- The number of respondents choosing runoff from streets and parking lots as the number one source of pollution has remained steady over the past four years.
- 42 percent of respondents knew they lived in the Potomac River watershed, up from 38 percent in 2011.
- Interestingly, 81 percent of people surveyed reported that they always pick up after their pet, as compared with 30 percent in previous surveys.
- When shown the Only Rain Down the Storm Drain logo, over half of the respondents recognized the logo.
- 86 percent of respondents were familiar with rain barrels, and 66 percent stated they already have a rain barrel or are interested in getting one
- 36 percent of respondents were familiar with rain gardens, with 62 percent already having a rain garden or interested in installing one.

- More than half of the respondents (54%) prefer to receive information from online sources. Newspaper (19%) and television (17%) were the next two preferred information sources.

In addition to capturing responses to questions regarding the effectiveness of the campaign, this year's survey honed in on the current behaviors of Northern Virginia residents as they relate to pet waste management, lawn care, and motor oil disposal. Responses to these questions support the development of future messages and targeted promotion.

The most important reason dog owners are motivated to pick up their pet's waste is because "It's what good neighbors do". The number of respondents choosing "It causes water pollution" as the most important reason to pick up has risen from 13 percent in 2011 to 20 percent in 2014. A third of the lawn and garden owners fertilize their lawns two or more times per year; an equal number never fertilize their lawns. Among those who fertilize once a year, 13 percent fertilize in the spring and only eight percent fertilize in the fall. This suggests that there is room to educate more residents of Northern Virginia that fertilizing in the fall is better for local waterways than fertilizing in the spring.

About half of the respondents reported using an herbicide to treat weeds in their lawn or garden. To better understand behavior related to the application of fertilizer, three new questions about fertilizer were added to the 2013 survey. Among those who fertilize their lawn, 71 percent have never had or were not sure if their soil had been tested for fertility or pH and four-in-ten reported using a slow release N fertilizer. When asked where they get information to decide when and how much fertilizer to apply the top three most commonly selected responses were "Follow directions on the bag" (52%), followed by "Lawn service conducts the applications" (31%), and then "Eyeball it based on size of lawn" (7%).

The majority of respondents take their vehicle to a service station to change their oil (85%) or take used oil to a gas station or hazmat facility for recycling (10%). Only two percent of Northern Virginians reported storing used motor oil in their garage, placing it in the trash or dumping it down the storm drain.

Responses to the survey suggest that public support remains strong for local government programs that improve the quality of water in local and regional streams and rivers and the Chesapeake Bay.

Appendix A
Meeting Summaries and Presentations

Northern Virginia Clean Water Partners

SPRING 2015 CAMPAIGN PLANNING MEETING
March 2, 2015
11:00 – 1:00
Main Conference Room
Northern Virginia Regional Commission
3040 Williams Drive – Suite 200
Fairfax, VA 22031

The purpose of this meeting is to plan 2015 advertising efforts

SUMMARY

In Attendance:

Jennifer McDonnell	Arlington County	jmcdonnell@arlingtonva.us
Paul Santay	Stafford County	psantay@co.stafford.va.us
David Jensen	Doody Calls	djensen@doodycalls.com
Aileen Winquist	Arlington County	awinquist@arlingtonva.us
Corey Miles	NVRC	cmiles@novaregion.org
Cathy Lin	Arlington County Public Schools	cathy.lin@apsva.us
Jesse Maines	City of Alexandria	jesse.maines@alexandriava.gov
Melanie Mason	City of Alexandria	Melanie.mason@alexandriava.gov
Sara Degroot	City of Alexandria	sara.degroot@alexandriava.gov
Jason Widstrom	City of Falls Church	jwidstrom@fallschurchva.gov
Lonni Marquetti	City of Falls Church	lmarquetti@fallschurchva.gov
Zhongyan Zu	George Mason University	zxu8@gmu.edu
Susan Miller	Fairfax Water	smiller@fairfaxwater.org
Chris Mueller	Town of Dumfries	chris@bgllc.net
Susan Mackert	VA DEQ	Susan.Mackert@deq.virginia.gov
Bryant Thomas	VA DEQ	Bryant.Thomas@deq.virginia.gov
Jeff Selegnut	VA DEQ	Jeffrey.Selegnut@deq.virginia.gov
Raj Bhansali	Comcast Spotlight	Raj_Bhansali@cable.comcast.com
Kim O'Brien	Comcast Spotlight	Kim_Obrien@cable.comcast.com
Amy Wood	Comcast Spotlight	Amy_Wood@cable.comcast.com
Heather DeForge	Comcast Spotlight	Heather_DeForge@cable.comcast.com

AGENDA

1. **Welcome and Overview of Clean Water Partners Program for DEQ**
   11:00-11:10 Corey Miles, Northern Virginia Regional Commission
   For the benefit of the guests from Virginia Department of Environmental Quality and Comcast Spotlight, Corey provided a brief overview of the Clean Water Partners Program and the goals and activities of the 'Only Rain Down the Drain' campaign. Corey explained that DEQ was invited to attend this meeting because many of the partners rely on this program at varying

degrees to fulfill the outreach and education requirements specified in their MS4 permit. It is important to open up a dialogue with DEQ to familiarize them with the Clean Water Partners Program and ensure the Program's activities are in line with DEQ's expectations.

2. Education and Outreach Presentation by DEQ followed by discussion

11:10-11:45 Jeff Selengut, VA Dept. of Environmental Quality

Susan Mackert, Bryant Thomas, and Jeffrey Selengut were present at the meeting to represent DEQ.

Jeffrey Selengut, MS4 Permit Writer from DEQ gave a presentation titled 'Requirements and Expectations for the Public Education, Outreach and Involvement Minimum Control Measures (MCM1 and MCM2)'. The presentation is attached as Appendix A. Discussion occurred during and following the presentation, particularly regarding the requirement to reach 20% of each high priority issue target audience. Corey requested clarification that since this is a regional program, could the partners report that the advertisements reached 20% of the target audience for each high priority issue for the entire Northern Virginia region. Jeff replied that even though DEQ encourages regional collaboration among operators, the way the permit is written requires each individual operator to report that they reached 20% of the target audience in their jurisdiction. Jeff also suggested that future updates to the rule may reflect special conditions for regional approaches since that is what DEQ encourages.

3. 2014 Comcast Recap

11:45 – 12:00 Heather DeForge, Local Sales Manager, Comcast Spotlight DC

Raj Bhansali, Director of Research for Comcast Spotlight gave a brief recap of the performance of the 2014 campaign and included the delivery of impressions for the television ads and the internet banner ads. Raj's presentation is included as Appendix B.

4. 2015 Comcast Proposal

12:00-12:30 Heather DeForge, Local Sales Manager, Comcast Spotlight DC

Heather DeForge and Kim O'Brien presented their recommendations on how the branding of the campaign might be improved. Comcast Spotlight's Production and Marketing team reviewed our 'Creative' (the rubber ducky commercials). They made the suggestion to remove the slide at the end with all of the logos on it and replace it with a simpler image or message such as 'Brought to you by the Northern Virginia Clean Water Partners' and show the storm drain marker and website. The cluster of logos is very busy and does not convey a simple or memorable message. The Comcast team then proposed the 2015 strategy. Their strategy involves using television ads on targeted networks, internet banner ads, The Weather Channel Crawl, and CSV+ to deliver an estimated 5,088,785 impressions. The total cost to the Clean Water Partners will be $89,712. The details of their proposal is attached as Appendix B.

Short Break
12:30-12:35 –

DEQ and Comcast Teams departed the meeting at this time.

5. Partners Discussion 12:35-1:00

a. News and announcements

Corey announced that the Clean Water Partners were invited to set up a table at the DEA Earth Day Festival at their Headquarters in Arlington. Aileen and Corey will set up a table and get a CWP tabletop exhibit made.

b. Wrap up

The Partners agreed to move forward with the Comcast proposal. Corey will ask Comcast to provide a midyear report in June in time for the FY reporting period. Paul suggested everyone communicate as to how to report the numbers of people reached to DEQ so that DEQ receives consistent reports. There was an e-mail follow-up discussion on this subject .

c. Schedule next meeting for Summer 2015

The next meeting will be scheduled to coincide with the midyear reporting period in June 2015.

Appendix A
Presentation from DEQ

Requirements and Expectations for the Public Education, Outreach and Involvement Minimum Control Measures (MCM1 and MCM2)

Jeff Selengut

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

Permit Requirements for MCM1 and MCM2

MCM1 – Public Education and Outreach on Stormwater Impacts

- The operator shall continue to implement the public education and outreach program as included in the registration statement until the program is updated to meet the conditions of this state permit. Operators who have not previously held MS4 permit coverage shall implement this program in accordance with the schedule provided with the completed registration statement.

MCM1 – Public Education and Outreach on Stormwater Impacts

- The public education and outreach program goals:
- Increasing target audience knowledge about the steps that can be taken to reduce stormwater pollution
  - Reducing impacts to impaired waters and other local water pollution concerns
- Increasing target audience knowledge of hazards associated with illegal discharges and improper disposal of waste

MCM1 – Public Education and Outreach on Stormwater Impacts

- Implementing a program targeted towards audiences most likely to have significant stormwater impacts
- The updated program shall be designed to:
  - Identify, at a minimum, three high-priority water quality issues
  - Identify and estimate the population size of the target audience or audiences who is most likely to have significant impacts for each high-priority water quality issue

MCM1 – Public Education and Outreach on Stormwater Impacts

- Develop relevant message or messages and associated educational and outreach materials for message distribution to the selected target audiences

- Provide for public participation during public education and outreach program development

MCM1 – Public Education and Outreach on Stormwater Impacts

- Annually conduct sufficient education and outreach activities designed to reach an equivalent 20% of each high-priority issue target audience

- Provide for the adjustment of target audiences and messages in order to address any observed weaknesses or shortcomings

MCM1 – Public Education and Outreach on Stormwater Impacts

- The operator may coordinate their public education and outreach efforts with other MS4 operators; however, each operator shall be individually responsible for meeting all of its state permit requirements.
- Prior to re-application the operator shall evaluate the education and outreach program for:
  - Appropriateness of the high-priority stormwater issues
  - Appropriateness of the selected target audiences for each high-priority stormwater issue
  - Effectiveness of the message or messages being delivered
  - Effectiveness of the delivery mechanism

MCM1 – Public Education and Outreach on Stormwater Impacts

- The MS4 Program Plan shall describe how the conditions of this permit shall be updated in accordance with Table 1.

Specific Annual Reporting Requirements/Minimum Control Measure (MCM) #1

- A list of the education and outreach activities conducted during the reporting period for each high-priority water quality issue, the estimated number of people reached, and an estimated percentage of the target audience or audiences that will be reached

- A list of the education and outreach activities that will be conducted during the next reporting period for each high-priority water quality issue, the estimated number of people that will be reached, and an estimated percentage of the target audience or audiences that will be reached

MCM2 – Public Involvement and Participation

- Public involvement
- The operator shall comply with any applicable federal, state, and local public notice requirements.
- Maintain an updated MS4 Program Plan.
  - updates to the MS4 Program Plan shall be completed at a minimum of once a year and shall be updated in conjunction with the annual report.
  - The operator shall post copies of each MS4 program plan on its webpage at a minimum of once a year and within 30 days of submittal of the annual report to the department.

MCM2 – Public Involvement and Participation

- Post copies of each annual report on the operator's web page within 30 days of submittal to the department
- Prior to re- applying for coverage, public notice the proposed MS4 Program Plan that will be submitted with the registration statement

MCM2 – Public Involvement and Participation

- Public participation.
- The operator shall participate, through promotion, sponsorship, or other involvement, in a minimum of four local activities annually. The activities shall be aimed at increasing public participation to reduce stormwater pollutant loads; improve water quality; and support local restoration and clean-up projects, programs, groups, meetings, or other opportunities for public involvement.

- The MS4 Program Plan shall include written procedures for implementing this program.

Specific Annual Reporting Requirements/Minimum Control Measure (MCM) #2

- A web link to the MS4 Program Plan and annual report
- Documentation of compliance with the public participation requirements of this section

Annual Reporting Requirements for MCM 1 and MCM2

- Simplified compared to last permit cycles reporting requirements.
- Less ambiguous than last permit cycles reporting requirements
- Because the reporting requirements were simplified, does not mean that the education, outreach and participation elements of the MS4 Program plan have become less important or complex.

Programmatic Expectations for MCM 1 and MCM2

- At a minimum, the public education and outreach program as well as the public involvement and participation program need to meet the conditions established by the permit.
- The permit language is meant to provide the flexibility necessary for each MS4 program to develop these programs in such a way as best suits their needs.
- Communicating with other MS4 programs is encouraged.

Programmatic Expectations for MCM1 and MCM2

- Where it makes sense to do so, pooling resources is encouraged.
  - Presents a unified stormwater message for a region
  - Addresses stormwater issues common to MS4 programs
  - Potential cost savings
- While MS4 programs may have some of the same stormwater issues in common, there probably will be some issues that are unique to each program.
  - The educational program should account for both the shared stormwater issues, as well as the unique issues.

Questions ?

Appendix B
Presentation from Comcast Spotlight

Reaching Northern VA Residents effectively and efficiently…

Presented to:
Northern VA Clean Water Partners
March 2, 2015

COMCAST SPOTLIGHT

Objective of the “Only Rain Campaign”

- Northern Virginia Clean Water partners in support of the Only Rain Campaign wants to increase awareness in Northern Virginia
- Reach Hispanic residents in Northern Virginia (i.e. Fairfax County, Alexandria, Arlington and Loudoun)
- Target residents with a focus on
  - Lawn Care (Fertilizers)
  - Auto Care (oils and lubricants)
  - Pet Waste

We listened…

Agenda

I. 2014 Campaign recap

II. Branding Discussion

III. Recommended Campaign for 2015

2014 Campaign in Review

2014 Campaign using Comcast Spotlight

- Used targeted networks to reach each of the three target groups in Northern Virginia:
  - Utilizing geographic trade zones to reach NVRC footprint
  - This included HGTV, ESPN, CNN among other networks
  - Spanish Language Networks including ESPN Deportes, CNN Espanol and Galavision
  - Xfinity.com to capture online consumers

2014 Original Television Campaign

DELIVERY PERFORMANCE: +1,836,516 HH +44.3%

		Scheduled	Actual Delivery
		Entire Flight 2/24/14-12/19/14	Entire Flight 2/24/14-12/19/14
Total Household Impressions		4,148,947	5,985,463
9555, POTOMAC		3,455,346	5,364,623
	HLN -TV	248,593	441,674
	OXYG-TV	336,036	654,634
	TOON-TV	1,775,205	1,897,056
	ENT -TV	597,849	847,189
	APL -TV	497,663	638,113
	Rotational spots (5 Nets)	NA	885,957
0356, Fairfax County		655,178	569,273
	APL -TV	107,157	96,212
	ESPN-TV	185,687	140,537
	CNN -TV	218,562	137,282
	HIST-TV	110,459	105,467
	NGC -TV	33,313	66,102
	Rotational spots (5 Nets)	NA	23,673
0340, Alexandria, VA		38,424	51,567
	APL -TV	13,176	15,756
	ESPN-TV	14,083	11,357
	HGTV-TV	11,164	19,356
	Rotational spots (3 Nets)	NA	5,098

2014 Add-on Television Campaign

DELIVERY PERFORMANCE: +37,109 HH +11.7%

		Scheduled	Actual Delivery
		4Q Add on 11/24/14-12/28/14	4Q Add on 11/24/14-12/28/14
Total Household Impressions		317,823	354,932
9555, POTOMAC		81,120	223,781
	APL -TV	81,120	95956
	Rotational spots (5 Nets)	NA	127825
0356, Fairfax County		60,577	49,411
	APL -TV	14,652	12853
	ESPN-TV	33,269	13520
	FAM -TV	12,656	21765
	Rotational spots (3 Nets)	NA	1273
9794, Fairfax Zone		166,996	78,996
	ESPN-TV	117,741	29445
	FAM -TV	49,255	49255
	Rotational spots (2 Nets)	NA	296
0340, Alexandria, VA		9,130	2,744
	ESPN-TV	9,130	2553
	Rotational spots (2 Nets)	NA	191

TOTAL DELIVERY : +1,873,625 HH +41.9%

In-Banner Video Campaign Recap

Client Name: Northern Virginia Regional Commission 300x250
Start Date: Jan 2014
End Date: Dec 2014

- Delivered **650,249 banner impressions**
- People **chose** to watch your video **8,217 times**
- Users were **40X more likely** to watch this campaign than "click" on a typical banner ad *
- A total of over **1,321 minutes** of video consumption… over **22 HOURS** of BRAND EXPOSURE!
- On average, **24%** of the video length was viewed
- **1,207** viewers completed watching the video
- The **added value** beyond banner impressions:
  - **191** Click-thrus to your website
  - **312** Interactions with your commercial
- **1.34% TOTAL ENGAGEMENT RATE**

xfinity®

*** Based on national click-thru average of .03% (IAB)**

In-Banner Video Campaign Recap

Client Name: Northern Virginia Regional Commission 160x600
Start Date: Jan 2014
End Date: Dec 2014

- Delivered **379,088 banner impressions**
- People **chose** to watch your video **3,165 times**
- Users were **28X more likely** to watch this campaign than "click" on a typical banner ad *
- A total of over **292 minutes** of video consumption… over **4.8 HOURS** of BRAND EXPOSURE!
- On average, **20%** of the video length was viewed
- **372** viewers completed watching the video
- The **added value** beyond banner impressions:
  - **265** Click-thrus to your website
  - **68** Interactions with your commercial
- **0.92% TOTAL ENGAGEMENT RATE**

xfinity

* Based on national click-thru average of .03% (IAB)

Evaluating ways to Improve messaging

- Reviewed Creative with our Production and Marketing teams.
- Reviewed Amplitude Study and the performance of the networks in 2014 campaign based on how it was being evaluated.

Our 2015 strategy to help achieve your goals…

- Utilize networks in Northern VA to increase overall branding awareness with a focus on homeowners, pet owners and those who perform personal auto care.

- Utilize Spanish Language Networks to continue to reach this growing population

- Show an effective "Video Everywhere" campaign with television and online video *(A total of 5,088,785 impressions)*

- *Strategize about what your commercial messaging will look like to emotionally connect with all target audiences effectively*

We strategized...

2015 Recommended Advertising Schedule

Flight Dates
03/9/2015 – 12/27/2015

Targeted Networks & Websites

AMC, USA network, OWN Oprah Winfrey Network, A&E, E!, Spike Get More Action, FX

ESPN Deportes, Galavisión, CNN En Español

mash Nationals Campaign

4,188,785 Total Newtork Impressions

CSV+ Comcast Spotlight Video

30,000 Video Plays monthly targeting Home owners OR Pet owners

xfinity, cox

300x250 In-Banner Video, 60,000 imp/month

Total Impressions
est. 5,088,785

Peak Months
March – May, Sept- Nov

Base Months
June – Aug., Dec

Total Value
$101,880

Total Investment
$89,712 (12% discount)

Appendix

Research

Coverage Maps

TWC Crawl

Video Pre Roll and Mid Roll

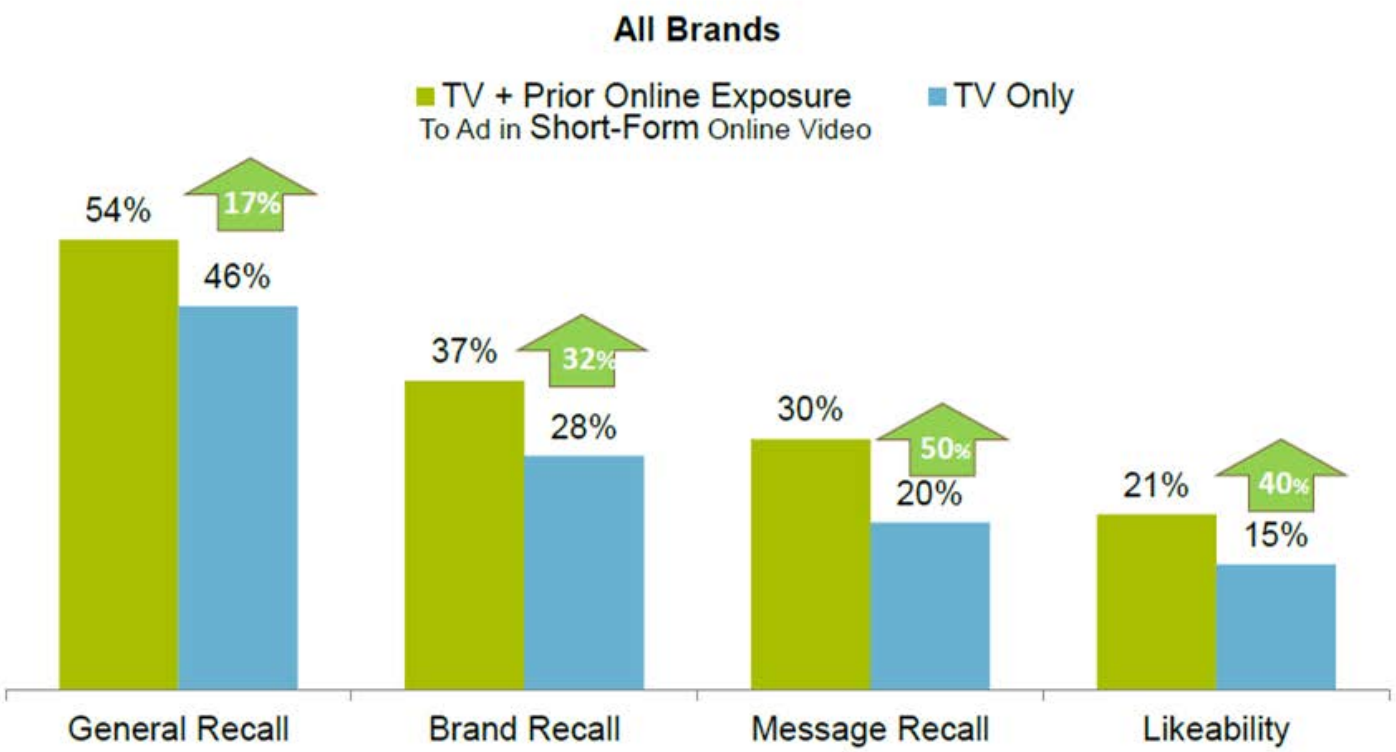
2014 Xfinity.com In-Banner Video Campaign

DELIVERY PERFORMANCE: 59,472 29,127 +10.1%

Month 2014	Xfinity.com	
	300 x250 ad size (50,0000 impressions/ month)	160x 600 ad size (30,000 impressions/ month)
February	56,111	31,754
March	55,975	31,600
April	55,137	33,089
May	55,799	31,854
June	55,573	32,710
July	55,179	33,082
August	55,117	33,080
September	55,148	32,734
October	55,159	33,085
November	55,124	33,063
December	55,150	33,076

Why we care about Duplicated Reach

Digital Multiplier Effect: Previous Ad Exposure in Short Form Online Video Improves Effectiveness of TV Ads



Standard TV includes TV ads on both cable and broadcast networks.
Nielsen Video Brand Effect (IAG), 01.01.11 - 03.31.12, A18+
Green arrows indicate a positive difference at >90% confidence
TV data based on responses up to 1 day post-ad stream; Based on exposures to Video Ads in FEPs in the previous 7 days.
Based on Video Ad exposure before TV ad exposure.
Limited to the same brands that streamed online and aired on TV during the same period; specific creative executions may vary.
700 Brands were included in FEP v TV data, and 15 brands for SF vs. TV data.

nielsen
IAB Online Video Study
Copyright 2012 The Nielsen Company. Confidential and proprietary.
COMCAST SPOTLIGHT

The Weather Channel Crawl

The Weather Channel℠
weather.com

The more powerful **connection.**

Only Rain Down the Storm Drain……

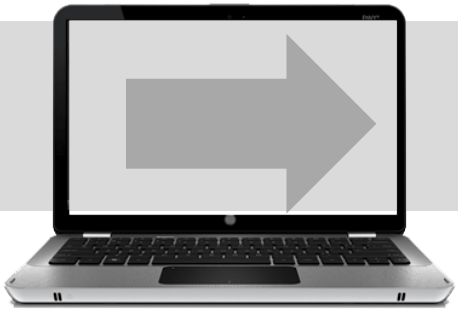
- Runs “on the 8's” during Local Forecast
- Highly-Versatile
- High-Impact
- High-Frequency
- 280 Characters

The Weather Channel℠

Target Northern VA Residents with Online Video

Target Audience

In Fairfax & Alexandria



30+ Data providers

High Quality Websites

Your Video

Note: The websites shown here are a sample of the hundreds of sites available. No specific site is guaranteed and impressions are subject to availability.

What is CSV+?

CSV+ is an actively managed video ad network that integrates your brand in the consumer world of *video everywhere*. Our list of websites is continually optimized for maximum return on your investment.

98.2%

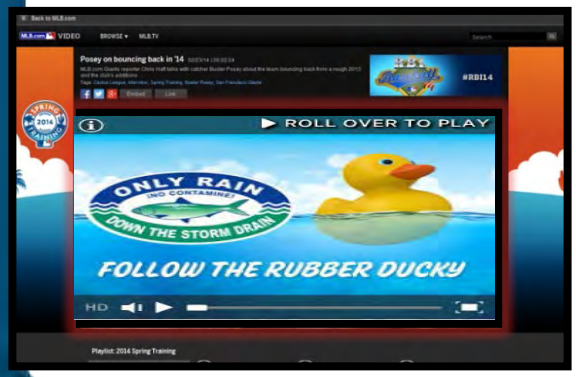
Potential Reach of Online Users in the Washington, D.C. DMA

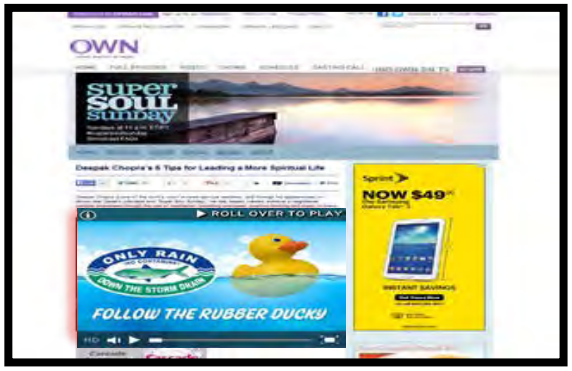
Surround and engage customers with your message by integrating CSV+ as another network to your campaign.

Source: comScore Media Metrix, Washington, DC March 2014 (3 month average); [NE] Videology and Washington, DC DMA.

CSV+
COMCAST SPOTLIGHT VIDEO

Sample Placements





**Also includes Car & Driver, Wired, Disney Family, Politico, Last.fm, NBCU Sports, CNET and other premium video destinations!

COMCAST SPOTLIGHT

Potomac Superzone

(VZWA, 9555) Washington, DC DMA

Alexandria Zone

(ALEX, 0340) Washington, DC DMA

ZIP	TOWN
22301	Alexandria
22302	Alexandria
22304	Alexandria
22305	Alexandria
22311	Alexandria
22312	Alexandria
22314	Alexandria

All homes within listed zip codes may not be served through this zone.

COMCAST SPOTLIGHT

Fairfax County

All homes within listed zip codes may not be served through this zone.

ZIP	TOWN	ZIP	TOWN
20120	Centreville	22060	Fort Belvoir
20121	Centreville	22066	Great Falls
20124	Clifton	22079	Lorton
20151	Chantilly	22101	McLean
20170	Herndon	22102	Tysons Corner
20171	Herndon	22124	Oakton
20190	Reston	22150	Springfield
20191	Reston	22151	Springfield
20194	Reston	22152	Springfield
22003	Annandale	22153	Springfield
22015	Burke	22180	Vienna
22027	Dunn Loring	22181	Vienna
22030	Fairfax	22182	Wolf Trap
22031	Fairfax	22199	Lorton
22032	Fairfax	22303	Huntington
22033	Fairfax	22306	Groveton
22039	Fairfax Station	22307	Alexandria
22041	Bailey's Cross	22308	Alexandria
22042	Jefferson	22309	Alexandria
22043	Pimmit Hills	22310	Alexandria
22044	Lake Barcroft	22312	Lincolnia
22046	Falls Church	22315	Franconia

COMCAST SPOTLIGHT

Thank You!

Raj Bhansali, Director of Research

Heather DeForge, Local Sales Manager

Amy Wood, Local Sales Manager

Kim O'Brien, Account Executive

Northern Virginia Clean Water Partners

FALL 2015 CAMPAIGN PLANNING MEETING
Wednesday August 26, 2015
10:00 – 11:30
Main Conference Room A
Northern Virginia Regional Commission
3040 Williams Drive – Suite 200
Fairfax, VA 22031

The purpose of this meeting is to review 2015 annual report

Attendees

Name	Organization	Email Address
Brian Rahal	Alexandria -TES	Brian.rahal@alexandriava.gov
Sara DeGroot	Alexandria -TES	Sara.degroot@alexandriava.gov
Tony Hayes	Loudoun County	Tony.hayes@loudoun.gov
Chris Stone	Loudoun County	Chris.stone@loudoun.gov
Irene Haske	Fairfax County	Irene.haske@fairfaxcounty.gov
Aileen Winquist	Arlington County	awinquist@arlingtonva.us
Jason Widstrom	Falls Church	jwidstrom@fallschurchva.gov
Andew Uglow	Prince William County Schools	uglowaf@pwcs.edu
Amy Wood	Comcast Spotlight	Amy_wood@cable.comcast.com
Raj Bhansali	Comcast Spotlight	Raj_bhansali@cable.comcast.com
Richard West	Town of Dumfries	rwest@dumfriesva.gov
Jennifer McDonnell	Arlington County	jmcdonnel@arlingtonva.us
Corey Miles	Northern Va Regional Commission	cmiles@novaregion.org
David Jensen	Doody Calls	Djensen@DoodyCalls.com
Bryant Thomas	VA DEQ - NRO	Bryant.thomas@deq.virginia.gov
Jeff Selengut	VA DEQ - CO	Jeffrey.selengut@deq.virginia.gov
Holly Moran	FCPS	Hmmoran@fcps.edu
Jane (Xhongyan) Zu	GMU	Zxu8.gmu.edu

AGENDA

1. Comcast Data Presentation by Raj Bhansali, Director of Research

Raj Bhansali, Director of Research at Comcast Spotlight and Amy Wood, Local Sales Manager for Comcast Spotlight presented an analysis of the data from the FY15 advertising campaign (Appendix A). The analysis utilized samples from several datasets to determine the overall campaign delivery and the campaign performance.

The main highlights of the presentation were:

- A nationwide survey conducted by Ad-ology that asked consumers where they have seen ads in the last 12 months led them to take action; television (over-the-air, online, tablet, mobile) ranked number 1 for dog owners and auto care enthusiasts and number 2 for personal yard care/landscaping enthusiasts.
- Internet banner ads ranked 9 or 10 (out of 10)
- Another syndicated dataset (Scarborough research) was used to select the networks that would most likely reach the target audiences within the Northern VA region.
- Nineteen English language networks and 2 digital properties were selected to reach the targeted groups
- Three Spanish language networks were also used however results from this advertising cannot be isolated and are not included in the analysis
- Additionally, CSV+ was utilized in conjunction with Xfinity.com and Cox.com to reach the target audiences. CSV+, a video ad network, provides another opportunity to reach all audiences regardless of Internet Service Provider. Both Spanish language networks and CSV+ were excluded from this analysis.

Overall Campaign Delivery

- In order to understand performance, the overall number of television homes that viewed a commercial (household impressions) and the number of persons who were exposed to the digital display (person impressions) was analyzed for the period of July 1, 2014 to June 30, 2015.
- The advertisements aired 5,134 times on English language networks and 1,684 times on Spanish language networks for a total of 6,818 commercial units.
- That resulted in over 4.8 million television household impressions delivered during this campaign (the period of July 1, 2014 through June 30, 2015). (Please note that the 3.8 million impressions delivered by the Potomac super zone include areas outside of the target localities. This includes homes in the District of Columbia, parts of Maryland, and the Virginia areas of Spotsylvania, Culpeper and Fredericksburg City.
- The digital products (banner ads and instream video) yielded 895,897 person impressions

Campaign Performance

- Overall, more than 20% of the population that comprises each of the three attribute groups was reached at least one time through the utilization of the television networks selected.
- When combined with the digital products of Xfinity.com and Cox.com - the respective home pages of each Internet Service Provider - the overall reach increases to over 40% of each targeted attribute groups.
- Results provided by Comcast Spotlight were derived from samples and therefore have variance associated.

2. Q and A with VA DEQ on satisfying reporting requirements

Bryant Thomas from Northern Virginia Regional Office and Jeff Selengut from Central Office were present to represent Virginia Dept. of Environmental Quality.

Corey Miles asked if this effort was satisfying the permit requirement from DEQ's perspective. Jeff replied that the method is reasonable and is satisfying the intent of the requirement. Bryant elaborated further and responded that DEQ is satisfied with the results and the regional aggregated numbers can be used in the annual report. However, any further breakdown of the results of the campaign by jurisdiction is encouraged. The rationale for selecting the high priority issues is an important component of the annual report.
Corey responded that the results are by broadcast zone but there are zip codes associated with each broadcast zone. Results could possibly be broken down by zip code to isolate a particular geography.
Most representatives that were present at the meeting indicated that they conduct additional activities to connect with target audiences such as hand out information about picking up pet waste at dog parks and pet festivals and volunteer stream monitoring and this is also presented in their annual report.
Dave Jensen offered to help publish articles about the campaign in the Community Association Institute newsletter. Aileen Winquist said that Arlington County had developed a number of articles for their stormwater program that could be adapted and used for this purpose.

3. Discussion of 2015 Annual Reports and Survey

a. Survey included 8% Spanish speakers
b. How are we reaching 20% of each high priority issue target audience
   - Comcast Spotlight can ensure we reach the target audiences in the target geographies but they cannot ensure the resonance
   - When evaluating audience recall, both un-aided and aided awareness questions should be used
   - This ensures that the intent of the message was not misunderstood
   - Also, make sure that the recall elements happen during the course of the campaign rather than towards the end or during a window
   - Raj can be of assistance when we do next year's survey to make sure our questions align with the ad campaign

4. 2016 Campaign Plan

a. Select the high priority issues and the target audiences

There was a brief discussion of the high priority issues and target audiences for next year's public education campaign. The 2016 high priority issues and target audiences will be selected at the next meeting in November/December 2015.

b. New videos?

The potential of selecting new ads will be discussed at the next meeting.

5. Wrap-up

The next meeting will be scheduled for November or December 2015.

Presented to

Northern Virginia Clean Water Partners

8.26.15

COMCAST SPOTLIGHT®

Agenda

- We will review how we the campaign achieved a reach of 20% in each of the three target groups in Northern Virginia:
  - For Dog Waste
  - For Lawn Care
  - For Auto Care

1. Advertising response for each target groups (National scope)
2. Selection of advertising properties
3. Overall Campaign Delivery
4. Overall Campaign Performance – 20% reach of target group

Definition of Geography

COMCAST SPOTLIGHT

- In targeting Northern Virginia, we looked to cover the entire localities of Clean Water Partners:
  - Alexandria
  - Arlington
  - Fairfax County
  - Fairfax City
  - Falls Church
  - Loudoun County
  - Stafford County
  - Dumfries

  - The Fairfax County Zone : represents Cox and Comcast homes in Fairfax County & and independent cities of Fairfax and Falls Church

  - The Fairfax Zone : represents Verizon FiOS homes in Fairfax County & the independent cities of Fairfax and Falls Church

  - The Potomac Super Zone (FiOS): counties/ independent cities of Arlington, Fairfax County, Fairfax City, Falls Church, Loudoun and Stafford (Dumfries).

  - The Alexandria Zone (Comcast): independent city of Alexandria

1. Advertising Motivations

The survey questions are from *Ad-ology* (a nationwide syndicated data service) and are phrased:

“Where have you seen/heard an ad in the past 12 months that led you to take action?”

Attribute used:

- For Dog Waste: “Dog Owners” was used
- For Lawn Care: “Personal Yard Care/ Landscaping Enthusiast” was used
- For Auto Care: “Personal Car Maintenance/Restoration” was used

1. Advertising Motivations

COMCAST SPOTLIGHT

	Dog Owners		Personal Yard Care/ Landscaping Enthusiasts		Personal Car Maintenance/ Restoration	
Media	Audience %	Rank	Audience %	Rank	Audience %	Rank
Television (over-the-air, online, mobile or tablet)	63.80%	1	61.20%	2	68.00%	1
Ads/Coupons in your mailbox	63.60%	2	66.60%	1	67.00%	2
Emailed ad or newsletter	54.10%	3	54.80%	3	60.80%	3
Sponsored search result (like on Google, Yahoo or Bing)	53.00%	4	49.90%	5	59.30%	4
Daily Deals (like Groupon or LivingSocial)	50.50%	5	46.00%	7	53.80%	5
Newspaper (print, online, mobile or tablet)	50.30%	6	53.70%	4	53.70%	6
Magazine (print, online, mobile or on tablet)	47.40%	7	46.20%	6	52.40%	8
Radio (over-the-air, online, mobile or tablet)	46.50%	8	42.40%	8	53.40%	7
Ad on a social network	46.40%	9	NA	NA	47.80%	10
Internet banner ad	45.40%	10	41.10%	9	51.80%	9

Internet banner was ranked #4th in 2014. The question changed in 2015.

2. Selection of advertising properties

COMCAST SPOTLIGHT

1. Limited our scope to :

"County Of Residence: Alexandria City, VA OR Arlington, VA OR Fairfax City, VA OR Fairfax, VA OR Falls Church City, VA OR Loudoun, VA OR Stafford, VA"

2. Created target groups to select networks that either provided strong reach or high value based on index.

TARGET	A18+ Intab
Lifestyle Characteristics: Own a Dog	547
Household Activities: Lawn Care	943
Unpaid/ Personal Labor: Anti-Freeze/Coolant OR Oil Filter/Oil Change	1,386

All information for Network selection is from Scarborough Research

Scarborough Research- Washington DC DMA (Base adults 18+), March 2014-February 2015 survey period

2. Selection of advertising properties

COMCAST SPOTLIGHT

	Lifestyle Characteristics			Leisure Activities Past 12 Months			Auto Repairs Pst.Yr:Unpd.Labor-HH		
	Own A Dog			Lawn Care			Anti-Freeze/Coolant OR Oil Filter/Oil Change		
Cable Network:	Adults 18+ Reach	Reach %	Index	Adults 18+ Reach	Reach %	Index	Adults 18+ Reach	Reach %	Index
AEN -TV	94,032	21.6%	116	128,441	18.0%	97	216,119	19.1%	102
AMC -TV	69,343	16.0%	111	110,053	15.4%	107	149,588	13.2%	92
APL -TV	50,651	11.7%	102	78,170	11.0%	96	124,220	11.0%	96
CNN -TV	122,688	28.2%	113	192,800	27.1%	108	304,503	26.9%	107
CSNM-TV	18,870	4.3%	67	61,425	8.6%	133	82,936	7.3%	113
ENT -TV	47,767	11.0%	146	31,218	4.4%	58	82,336	7.3%	97
ESPN-TV	120,902	27.8%	101	208,777	29.3%	106	342,872	30.3%	110
FAM -TV	59,369	13.7%	106	59,428	8.3%	65	141,248	12.5%	96
FX -TV	84,762	19.5%	136	90,357	12.7%	88	155,558	13.7%	96
HGTV-TV	107,405	24.7%	122	166,255	23.3%	115	240,307	21.2%	105
HIST-TV	108,096	24.9%	103	198,724	27.9%	116	280,361	24.8%	103
HLN -TV	28,556	6.6%	160	32,739	4.6%	112	45,017	4.0%	97
MASN-TV	29,043	6.7%	82	85,132	12.0%	146	109,193	9.6%	118
NGC -TV	72,698	16.7%	109	127,958	18.0%	117	171,987	15.2%	99
OWN -TV	28,687	6.6%	133	33,162	4.7%	94	52,732	4.7%	94
OXYG-TV	14,464	3.3%	91	12,384	1.7%	47	40,262	3.6%	97
SPK -TV	40,008	9.2%	125	54,865	7.7%	105	91,696	8.1%	110
TOON-TV	15,060	3.5%	57	21,161	3.0%	48	72,211	6.4%	104
USA -TV	101,816	23.4%	109	147,028	20.6%	96	253,955	22.4%	105
XFINITY.COM	77,402	17.8%	107	96,225	13.5%	81	192,606	17.0%	102
COX.COM	26,118	6.0%	78	66,701	9.4%	122	84,193	7.4%	97

Please note that different trade zones use different networks.

Scarborough Research- Washington DC DMA (Base adults 18+), March 2014-February 2015 survey period

3. Campaign Delivery

COMCAST SPOTLIGHT

Over 4.8 Million HH Impressions were delivered.
with over 6,800 commercial units airing

	30 second units	Delivered Impressions 7/1/2014-6/30/2015
Total Household Impressions	6818	4,808,970
9794 Fairfax Zone	275	271,022
AEN	77	34,485
ESPN	19	29,445
FAM	17	40,687
FX	79	63,943
USA	55	84,559
Rotational spots	28	17,903
1581 Fairfax County	2297	602,155
APL	298	78,486
CNN	190	91,146
ESPN	152	116,179
FAM	18	21,557
HIST	188	67,635
AEN	154	16,086
AMC	154	23,461
ENT	154	12,825
FX	154	24,501
NGC	180	42,839
OWN	154	19,848
SPK	154	19,665
USA	108	47,300
Rotational spots	239	20,627

Different networks were used in each zone, and those network were not consistent during each month

	30 second units	Delivered Impressions 7/1/2014-6/30/2015
Total Household Impressions	6818	4,808,970
9555 POTOMAC	2568	3,831,722
AMC	77	152,431
APL	267	487,506
CSNM	11	4,962
ENT	303	635,727
HLN	231	297,974
MASN	87	55,666
OWN	77	131,574
OXYG	243	388,877
SPK	77	84,140
TOON	230	1,124,677
ESPND	363	NA
GALA	357	NA
Rotational spots	245	468,188
0340 Alexandria, VA	714	104,071
AEN	77	7,853
AMC	77	10,394
APL	90	8,847
ENT	77	9,518
ESPN	31	8,759
FX	77	10,449
HGTV	22	10,218
OWN	77	7,651
SPK	77	5,801
USA	55	19,096
Rotational spots	54	5,485
6030, INTERCONNECT	964	-
CNNE	442	NA
ESPND	445	NA
GALA	77	NA

Nielsen Company- Washington DC DMA derived via CablePost

3. Campaign Delivery

COMCAST SPOTLIGHT

Digital Campaign

2014	Xfinity.com			
	300 x 250 In-Banner Video		160 x 600 In-Banner Video	
	(50,000 Impressions/Month)	+/-	(30,000 Impressions/Month)	+/-
July	55,179	5,179	33,082	3,082
August	54,567	4,567	31,974	1,974
September	54,252	4,252	31,161	1,161
October	52,662	2,662	31,699	1,699
November	52,188	2,188	31,523	1,523
December	52,298	2,298	31,893	1,893
	321,146	**21,146**	**191,332**	**11,332**

2015	Xfinity.com		Cox.com		CSV +	
	300 x 250 In-Banner Video		300 x 250 In-Banner Video		In-Stream Video	
	(30,000 Impressions/Month)	+/-	(30,000 Impressions/Month)	+/-	(30,000 Impressions/Month)	+/-
March	33,374	3,374	33,098	3,098	31,212	1,212
April	33,119	3,119	31,699	1,699	30,622	622
May	33,069	3,069	30,252	252	30,360	360
June	33,099	3,099	33,063	3,063	30,452	452
	132,661	**12,661**	**128,112**	**8,112**	**122,646**	**2,646**

Expected Delivery: 840,000 impressions
Actual Delivery: 895,897 impressions

4. 20% of Target Reached

Since Not all networks and properties were used in this, we need to isolate networks by provider, by municipality to understand performance

Alexandria (Comcast)	Fairfax County (Cox Cable)
ANIMAL PLANET	ANIMAL PLANET
ESPN	CNN
HGTV	ESPN
	HISTORY CHANNEL
	NATIONAL GEOGRAPHIC CHANNEL

Therefore Combining Logic of :

((Alexandria Ind City) and (Cable Comcast) and (APL or ESPN or HGTV))
OR
(Fairfax County and Falls Church and Fairfax City) and (Cable Cox) and (APL or CNN or ESPN or HIST or NAT GEO) ....

…And so forth is used for each target attribute

4. 20% of Target Reached

COMCAST SPOTLIGHT

County Of Residence: Alexandria City, VA OR Arlington, VA OR Fairfax City, VA OR Fairfax, VA OR Falls Church City, VA OR Loudoun, VA OR Stafford, VA

Scarborough Research- Washington DC DMA (Base adults 18+), March 2014-February 2015 survey period

	Lifestyle Characteristics		Leisure Activities Past 12 Months		Auto Repairs Pst.Yr: Unpd.Labor-HH	
	Own A Dog		Lawn Care		Anti-Freeze/Coolant OR Oil Filter/Oil Change	
	Reach	Reach %	Reach	Reach %	Reach	Reach %
Population of Target Area	*434,602*	*100.0%*	*712,358*	*100.0%*	*171,596*	*100.0%*
NVRC Campaign (Television only)	172,253	**39.6%**	251,713	**35.3%**	50,953	**29.7%**
NVRC Campaign (TV &Cox.com/Xfinity)	233,192	**53.4%**	344,117	**48.3%**	77,714	**45.3%**

Considerations

- We can help reach audiences in Northern VA, but we cannot ensure the message will resonate with audiences.

- When evaluating audience recall, both un-aided and aided awareness should be utilized. This ensures that if the intent of the message was not understood, that at least the deliver of message can be evaluated.

- Also, ensure that the recall elements happen during the course of the campaign, rather than towards the end ,or during a window of time.

Questions?

Thank You!

Raj Bhansali
Director of Research
Comcast Spotlight, Washington DC
O: 240-482-2525
E: Raj_bhansali@cable.comcast.com

Appendix B
Comcast Spotlight Report

Northern Virginia Regional Commission

Documentation of reaching desired targets for "Only Rain" Campaign.

Advertising during period of July 1, 2014 through June 30, 2015

August 3, 2015

COMCAST SPOTLIGHT

Prepared by Raj Bhansali
Director of Research, Comcast Spotlight -Washington DC

Northern Virginia Regional Commission

This document provides support that 20% of each target audience has been reached by the advertising campaign enacted by the Northern Virginia Regional Commission.

This is the second year that the Northern Virginia Regional Commission "Clean Water Partners" have partnered with Comcast Spotlight to target localities in Virginia. In support of the "Only Rain" campaign, we have targeted localities in the following counties:

- Alexandria
- Arlington
- Fairfax County
- Fairfax City
- Falls Church
- Loudoun County
- Stafford County

In targeting these areas, the Potomac geographic super zone, Alexandria trade zone, Fairfax Zone trade zone and Fairfax County trade zone were used to reach target customers for three segments of residential customers.

- Lawn Care (fertilizers)
- Personal Auto Care (oils and lubricants)
- Pet Waste (dog waste)

In this campaign, English Language Networks, Spanish Language Networks and the digital platforms "Xfinity.com", "Cox.com" and "CSV+" were used to further reach customers within these segments across each locality. However, due to limitations of data, only the English Language Networks and Xfinity.com are included for analysis.

Please note that Dumfries receives coverage from the Potomac super zone, but is not included in the analysis due to a limitation of data.

We will be reference the 2014 analysis provided to the Northern Virginia Regional Commission as "the 2014 study." Additionally, the 2014 points of analysis have been included in the appendix.

Trade Zone Definitions:

The Fairfax County trade zone represents Cox Cable households in the county of Fairfax and independent cities of Fairfax City and Falls Church. This trade zone additional represents Comcast households in the city of Reston. In 2014, this only served the Cox households in this territory.

The Fairfax Zone trade zone represents Verizon FiOS households in the county of Fairfax and independent cities of Fairfax City and Falls Church

The Potomac super zone represents all Verizon FiOS households across the Greater Washington DC Region. This differs from the Fairfax trade zone in that the networks covered are different. For this analysis, we are limiting our scope of data to the counties/ independent cities of Arlington, Fairfax County, Fairfax City, Falls Church, Loudoun and Stafford

The Alexandria trade zone represents Comcast households in the independent city of Alexandria.

Northern Virginia Regional Commission

Table of Contents:

1. Advertising Response for Target Groups

2. Selection of Advertising Properties

3. Overall Campaign Delivery

4. Overall Campaign Performance – 20% reach of target group

5. Summary

Northern Virginia Regional Commission

Advertising Response for Target Groups

Similar to the analysis provided in September 2014, an evaluation advertising response was provided for each of the three targeted attribute groups in support of the "Only Rain" campaign. While not specific to waste disposal, these attribute groups should represent overall behavior by advertising medium.

The survey questions are from Ad-ology (a nationwide syndicated data service) and are phrased: "Where have you seen/heard an ad in the past 12 months that led you to take action? In 2014, Ad-ology's question requested response in the "past 30 days." For the 2015 study, the question is "past year 12 months."

"Take action" is defined as: clicking on a banner ad, doing an Internet search, going to the advertiser's website, buying the product advertised, or calling/visiting the advertiser.

As the exact target attribute is not available, the most similar attribute was used.

For Dog Waste: "Dog Owners" was used
For Lawn Care: "Personal Yard Care/ Landscaping Enthusiast" was used
For Auto Care: "Personal Car Maintenance/Restoration" was used

	Dog Owners		Personal Yard Care/ Landscaping Enthusiasts		Personal Car Maintenance/ Restoration	
Media	Audience %	Rank	Audience %	Rank	Audience %	Rank
Television (over-the-air, online, mobile or tablet)	63.80%	1	61.20%	2	68.00%	1
Ads/Coupons in your mailbox	63.60%	2	66.60%	1	67.00%	2
Emailed ad or newsletter	54.10%	3	54.80%	3	60.80%	3
Sponsored search result (like on Google, Yahoo or Bing)	53.00%	4	49.90%	5	59.30%	4
Daily Deals (like Groupon or LivingSocial)	50.50%	5	46.00%	7	53.80%	5
Newspaper (print, online, mobile or tablet)	50.30%	6	53.70%	4	53.70%	6
Magazine (print, online, mobile or on tablet)	47.40%	7	46.20%	6	52.40%	8
Radio (over-the-air, online, mobile or tablet)	46.50%	8	42.40%	8	53.40%	7
Ad on a social network	46.40%	9	NA	NA	47.80%	10
Internet banner ad	45.40%	10	41.10%	9	51.80%	9

Northern Virginia Regional Commission

In 2015, television advertising ranked either #1 or #2 and internet banner advertising #9 or #10 among each of the three attribute groups. In the 2014 study, television ranked #1 and internet banner advertising ranked #4 for each of the three attributes. Differences in the advertising response year over year may have been influenced on how the question is asked.

Selection of advertising properties (networks/platforms)

With television media and internet display advertising being among the advertising solutions that Comcast Spotlight offers our clients, we analyzed the three target attributes using the Scarborough Research syndicated data set for the Washington DC DMA (March 2014-February 2015 survey period). In conjunction to pricing this provides guidance on the networks to use. For Dog Waste, we used the attribute of "Own a Dog." We limited the analysis to the geographic scope identified by Clean Water Partners. This analysis is to show the selected properties helped achieve the target goal of 20% by attribute.

County Of Residence: Alexandria City, VA OR Arlington, VA OR Fairfax City, VA OR Fairfax, VA OR Falls Church City, VA OR Loudoun, VA OR Stafford, VA

TARGET	A18+ Intab
Lifestyle Characteristics: Own a Dog	547
Household Activities: Lawn Care	943
Unpaid/ Personal Labor: Anti-Freeze/Coolant OR Oil Filter/Oil Change	1,386

Scarborough Research- Washington DC DMA (Base adults 18+), March 2014-February 2015 survey period

The above survey respondents in tabulation ("in tab") are considered significant and therefore can be used for analysis.

	Lifestyle Characteristics			Leisure Activities Past 12 Months			Auto Repairs Pst.Yr:Unpd.Labor-HH		
	Own A Dog			Lawn Care			Anti-Freeze/Coolant OR Oil Filter/Oil Change		
Cable Network:	Adults 18+ Reach	Reach %	Index	Adults 18+ Reach	Reach %	Index	Adults 18+ Reach	Reach %	Index
AEN -TV	94,032	21.6%	116	128,441	18.0%	97	216,119	19.1%	102
AMC -TV	69,343	16.0%	111	110,053	15.4%	107	149,588	13.2%	92
APL -TV	50,651	11.7%	102	78,170	11.0%	96	124,220	11.0%	96
CNN -TV	122,688	28.2%	113	192,800	27.1%	108	304,503	26.9%	107
CSNM-TV	18,870	4.3%	67	61,425	8.6%	133	82,936	7.3%	113
ENT -TV	47,767	11.0%	146	31,218	4.4%	58	82,336	7.3%	97
ESPN-TV	120,902	27.8%	101	208,777	29.3%	106	342,872	30.3%	110

Northern Virginia Regional Commission

	Lifestyle Characteristics			Leisure Activities Past 12 Months			Auto Repairs Pst.Yr:Unpd.Labor-HH		
	Own A Dog			Lawn Care			Anti-Freeze/Coolant OR Oil Filter/Oil Change		
Cable Network:	Adults 18+ Reach	Reach %	Index	Adults 18+ Reach	Reach %	Index	Adults 18+ Reach	Reach %	Index
FAM -TV	59,369	13.7%	106	59,428	8.3%	65	141,248	12.5%	96
FX -TV	84,762	19.5%	136	90,357	12.7%	88	155,558	13.7%	96
HGTV-TV	107,405	24.7%	122	166,255	23.3%	115	240,307	21.2%	105
HIST-TV	108,096	24.9%	103	198,724	27.9%	116	280,361	24.8%	103
HLN -TV	28,556	6.6%	160	32,739	4.6%	112	45,017	4.0%	97
MASN-TV	29,043	6.7%	82	85,132	12.0%	146	109,193	9.6%	118
NGC -TV	72,698	16.7%	109	127,958	18.0%	117	171,987	15.2%	99
OWN -TV	28,687	6.6%	133	33,162	4.7%	94	52,732	4.7%	94
OXYG-TV	14,464	3.3%	91	12,384	1.7%	47	40,262	3.6%	97
SPK -TV	40,008	9.2%	125	54,865	7.7%	105	91,696	8.1%	110
TOON-TV	15,060	3.5%	57	21,161	3.0%	48	72,211	6.4%	104
USA -TV	101,816	23.4%	109	147,028	20.6%	96	253,955	22.4%	105
XFINITY.COM	77,402	17.8%	107	96,225	13.5%	81	192,606	17.0%	102
COX.COM	26,118	6.0%	78	66,701	9.4%	122	84,193	7.4%	97

These 19 networks and 2 digital properties were used to reach the targeted groups. It is important while 19 English language networks were utilized since July 1, 2014; only 9 were utilized in at the time of the 2014 study. These commercials did not air on 19 networks simultaneously, and differed by trade zone and by month.

The Spanish language networks of Galavision, CNN en Español, and ESPN Deportes were utilized to target the Hispanic audiences in the target localities.

Additionally, CSV+ was utilized in conjunction with Xfinity.com and Cox.com to reach the target audiences. CSV+, a video ad network, provides another opportunity to reach all audiences regardless of Internet Service Provider. Both Spanish language networks and CSV+ were excluded from this analysis.

The networks selected for the campaign over-index or provide a large number of targeted viewers, who were reached at least one time. If a network indexes over 100 for an attribute, it suggests that the network is more likely to deliver that attribute compared to the general population. It is treated as an indicator of value and helps ensure that the campaign will deliver its goal the message to a more qualified audience.

For television networks, the question is positioned as "viewed network past 7 days." For Xfinity.com and Cox.com the question is positioned as" visited site past 30 days." The data is collected via self-reporting by respondents and is therefore treated as suggestive.

Overall Campaign Delivery

In order to understand performance, the overall number of television homes that viewed a commercial (household impressions) and the number of persons who were exposed to the digital display (person impressions) was analyzed for the period of July 1, 2014 to June 30, 2015.

The television household impressions are taken from Nielsen's sample estimates for the Washington DC DMA or television marketplace. Since the estimates are derived from a sample, Spanish language networks did not have enough coverage area to provide audience estimates from. Therefore this analysis is limited to the English language networks for each zone as well as for internet banner advertisements.

	30 second units	Delivered Impressions 7/1/2014-6/30/2015
Total Household Impressions	6818	4,808,970
9794 Fairfax Zone	275	271,022
AEN	77	34,485
ESPN	19	29,445
FAM	17	40,687
FX	79	63,943
USA	55	84,559
Rotational spots	28	17,903
1581 Fairfax County	2297	602,155
APL	298	78,486
CNN	190	91,146
ESPN	152	116,179
FAM	18	21,557
HIST	188	67,635
AEN	154	16,086
AMC	154	23,461
ENT	154	12,825
FX	154	24,501
NGC	180	42,839
OWN	154	19,848
SPK	154	19,665
USA	108	47,300
Rotational spots	239	20,627
9555 POTOMAC	2568	3,831,722
AMC	77	152,431
APL	267	487,506
CSNM	11	4,962
ENT	303	635,727
HLN	231	297,974
MASN	87	55,666
OWN	77	131,574
OXYG	243	388,877
SPK	77	84,140
TOON	230	1,124,677
ESPN D	363	NA
GALA	357	NA
Rotational spots	245	468,188
0340 Alexandria, VA	714	104,071
AEN	77	7,853
AMC	77	10,394
APL	90	8,847
ENT	77	9,518
ESPN	31	8,759
FX	77	10,449
HGTV	22	10,218
OWN	77	7,651
SPK	77	5,801
USA	55	19,096
Rotational spots	54	5,485
6030, INTERCONNECT	964	-
CNN E	442	NA
ESPN D	445	NA
GALA	77	NA

Nielsen Company –Washington DC Live+SD data extrapolated through Strata CablePost. Strata uses its NuMath methodology to derive zone based estimates

Northern Virginia Regional Commission

For the English language networks, 5,134 ":30" second commercials (or combined ":15" second commercials) aired. That resulted in over 4.8 million television household impressions delivered during this campaign. These figures should also be treated as suggestive as they are derived from the Nielsen television sample for the entire Washington DC TV market for the period of July 1, 2014 through June 30, 2015. Additionally, 1,684 ":30" second commercials on Spanish language networks for a total of 6,818 commercial units.

Please note that the 3.8 million impressions delivered by the Potomac super zone include areas outside of the target localities. This includes homes in the District of Columbia, parts of Maryland, and the Virginia areas of Spotsylvania, Culpeper and Fredericksburg City.

In 2015, the digital products of Cox.com and CSV+ were added to Xfinity.com. Conversely, the 160x 600 Banner that part of the 2014 campaign was not included in 2015. Unlike television, digital impressions have return path data and therefore we can guarantee those impressions during the month.

2014	Xfinity.com			
	300 x 250 In-Banner Video		160 x 600 In-Banner Video	
	(50,000 Impressions/Month)	+/-	(30,000 Impressions/Month)	+/-
July	55,179	5,179	33,082	3,082
August	54,567	4,567	31,974	1,974
September	54,252	4,252	31,161	1,161
October	52,662	2,662	31,699	1,699
November	52,188	2,188	31,523	1,523
December	52,298	2,298	31,893	1,893
	321,146	**21,146**	**191,332**	**11,332**

2015	Xfinity.com		Cox.com		CSV +	
	300 x 250 In-Banner Video		300 x 250 In-Banner Video		In-Stream Video	
	(30,000 Impressions/Month)	+/-	(30,000 Impressions/Month)	+/-	(30,000 Impressions/Month)	+/-
March	33,374	3,374	33,098	3,098	31,212	1,212
April	33,119	3,119	31,699	1,699	30,622	622
May	33,069	3,069	30,252	252	30,360	360
June	33,099	3,099	33,063	3,063	30,452	452
	132,661	**12,661**	**128,112**	**8,112**	**122,646**	**2,646**

For each product and banner type, the digital platforms outperformed what was the guaranteed number of impressions by month. Overall, 840,000 impressions were expected to be delivered. The campaign exceeded what was forecasted by 55,897 impressions, or roughly 6.7%.

Northern Virginia Regional Commission

Campaign Performance –20% reach of target group

To understand the delivery of the overall campaign we created target logic to properly identify the audience we reach, using the below zone definitions and networks within. For the campaign delivery, the base for the calculation of reach is the adult population for the combined geographies in Northern Virginia. This was based on the actual delivery of the networks in each zone. For reporting purposes, we provided this as one estimate.

Alexandria (Comcast)	Fairfax County (Cox & Comcast Cable)	Fairfax Zone (Verizon FiOS)	Potomac Superzone (Verizon FiOS)
A&E	ANIMAL PLANET	A&E	AMC
AMC	A&E	ESPN	ANIMAL PLANET
ANIMAL PLANET	AMC	ABC FAMILY	COMCAST SPORTSNET
E!	CNN	FX	CARTOON NETWORK
ESPN	E!	USA	E!
FX	ESPN		HEADLINE NEWS
HGTV	ABC FAMILY		OXYGEN
OWN	FX		OWN
SPIKE	HISTORY		SPIKE
USA	NATIONAL GEOGRAPHIC		MASN
	OWN		
	SPIKE		
	USA		

Overall, more than 20% of each of the three attribute groups was reached at least one time through the utilization of the networks selected. When we add in the digital products of Xfinity.com and Cox.com - the respective home pages of each Internet Service Provider - the overall reach increases to over 40% of each targeted attribute groups.

County Of Residence: Alexandria City, VA OR Arlington, VA OR Fairfax City, VA OR Fairfax, VA OR Falls Church City, VA OR Loudoun, VA OR Stafford, VA

	Lifestyle Characteristics		Leisure Activities Past 12 Months		Auto Repairs Pst.Yr: Unpd.Labor-HH	
	Own A Dog		Lawn Care		Anti-Freeze/Coolant OR Oil Filter/Oil Change	
	Reach	Reach %	Reach	Reach %	Reach	Reach %
Population of Target Area	*434,602*	*100.0%*	*712,358*	*100.0%*	*171,596*	*100.0%*
NVRC Campaign (Television only)	172,253	**39.6%**	251,713	**35.3%**	50,953	**29.7%**
NVRC Campaign (TV &Cox.com/Xfinity)	233,192	**53.4%**	344,117	**48.3%**	77,714	**45.3%**

Scarborough Research- Washington DC DMA (Base adults 18+), March 2014-February 2015 survey period

Northern Virginia Regional Commission

Summary

Through use Comcast Spotlight's targeted media offerings; the data strongly supports the Clean Water Partners goal of reaching at least 20% of each target attribute among the defined geographies in Northern Virginia. The reach increases over 40% when Xfinity.com and Cox.com are included for each attribute. This period evaluation greatly surpassed that of the 2014 study.

Attribute	2014 Study (Previous)	2015 Study (Current)
Pet Waste (dog waste)	32.8%	53.4%
Lawn Care (fertilizers)	31.9%	48.3%
Personal Auto Care (oils and lubricants)	35.9%	45.3%

Much of this growth is due to the overall number of networks used during the July 1, 2014 through June 30, 2015 period. However the amount of numbers being used at any given time was roughly the same. When the Spanish language networks and CSV+ Video Ad network are added, this will further grow. However, that impact cannot be quantified.

While these results appear favorable for the attainment of goals, these are derived from samples and therefore have variance associated with it.

Northern Virginia Regional Commission

Appendix

1. 2014 Advertising Response

	Dog Owners		Personal Yard Care/ Landscaping Enthusiasts		Personal Car Maintenance/ Restoration	
Media	Responded Last 30 Days	Rank	Responded Last 30 Days	Rank	Responded Last 30 Days	Rank
Television	47.9%	1	43.9%	1	50.7%	1
Sponsored search result (like on Google, Yahoo or Bing)	39.1%	2	36.3%	2	42.8%	2
Radio	26.8%	9	23.8%	8	31.5%	6
Newspaper (print, online, mobile or tablet)	34.4%	3	34.0%	3	37.6%	3
Mobile smartphone app or text message	23.9%	10	18.5%	10	30.1%	9
Magazine (print, online, mobile or on tablet)	29.2%	5	25.9%	7	31.2%	7
Internet banner ad	34.1%	4	27.7%	4	36.7%	4
Ads mailed to you	27.7%	7	26.8%	5	31.5%	5
Ad or newsletter emailed to you	27.5%	8	26.5%	6	30.4%	8
Ad on a social network	28.0%	6	20.5%	9	29.4%	10

[Source: 2014 Ad-ology® AudienceSCAN study.Methodology]

2. Selection of Advertising Properties

TARGET	A18+ Intab
Lifestyle Characteristics: Own a Dog	486
Household Activities: Lawn Care	928
Unpaid/ Personal Labor: Anti-Freeze/Coolant OR Oil Filter/Oil Change-	210

	Lifestyle Characteristics			Leisure Activities Past 12 Months			Auto Repairs Pst.Yr:Unpd.Labor-HH		
	Own A Dog			Lawn Care			Anti-Freeze/Coolant OR Oil Filter/Oil Change		
Cable Network:	Adults 18+ Reach	Reach %	Index	Adults 18+ Reach	Reach %	Index	Adults 18+ Reach	Reach %	Index
APL -TV	76,018	18.8%	131	92,040	12.9%	90	31,386	16.6%	115
CNN -TV	116,459	28.7%	95	234,296	32.8%	109	61,549	32.5%	108
ENT -TV	42,130	10.4%	128	53,483	7.5%	93	13,530	7.1%	88
ESPN-TV	118,414	29.2%	91	256,549	35.9%	112	48,350	25.6%	80
HGTV-TV	104,778	25.8%	124	175,105	24.5%	118	39,541	20.9%	100
HIST-TV	125,117	30.9%	118	218,108	30.5%	117	51,017	27.0%	103
HLN -TV	18,415	4.5%	141	32,211	4.5%	140	5,876	3.1%	96
NGC -TV	51,036	12.6%	82	124,630	17.5%	114	40,636	21.5%	140
TOON-TV	27,907	6.9%	154	24,775	3.5%	78	3,413	1.8%	40
XFINITY.COM	33,782	8.3%	90	64,402	9.0%	98	26,179	13.8%	150

Scarborough Research- Washington DC DMA (Base adults 18+), March 2013-February 2014 survey period

Northern Virginia Regional Commission

3. Overall Advertising Delivery

Television

		Results Flight to date 2/24/14- 8/17/14
Total Household Impressions		3,193,924
9555, POTOMAC		2,871,055
	HLN -TV	173,544
	OXYG-TV	310,261
	TOON-TV	1,061,087
	ENT -TV	479,889
	APL -TV	340,469
	Rotational spots (5 Nets)	505,805
0356, Fairfax County		292,881
	APL -TV	47,143
	ESPN-TV	56,371
	CNN -TV	77,371
	HIST-TV	64,132
	NGC -TV	31,764
	Rotational spots (5 Nets)	16,100
0340, Alexandria, VA		29,988
	APL -TV	10,786
	ESPN-TV	6,705
	HGTV-TV	12,497

Digital

Month 2014	Xfinity.com	
	300 x250 ad size (50,0000 impressions/ month)	160x 600 ad size (30,000 impressions/month)
February	56,111	31,754
March	55,975	31,600
April	55,137	33,089
May	55,799	31,854
June	55,573	32,710
July	55,179	33,082

Northern Virginia Regional Commission

4. Campaign Performance

County Of Residence: Alexandria City, VA OR Arlington, VA OR Fairfax City, VA OR Fairfax, VA OR Falls Church City, VA OR Loudoun, VA OR Stafford, VA

	Lifestyle Characteristics		Leisure Activities Past 12 Months		Auto Repairs Pst.Yr: Unpd.Labor-HH	
	Own A Dog		Lawn Care		Anti-Freeze/Coolant OR Oil Filter/Oil Change	
	Reach	Reach %	Reach	Reach %	Reach	Reach %
Population of Target Area	*405,333*	*100.0%*	*714,109*	*100.0%*	*189,232*	*100.0%*
NVRC Campaign (Television only)	102,673	**25.3%**	168,084	**23.5%**	46,679	**24.7%**
NVRC Campaign (TV and Xfinity.com)	132,924	**32.8%**	228,091	**31.9%**	67,938	**35.9%**

Scarborough Research- Washington DC DMA (Base adults 18+), March 2013-February 2014 survey period

Appendix C
Amplitude Research Report

Northern Virginia Regional Commission

2015 Only Rain NVRC Survey

Summary Report of Findings

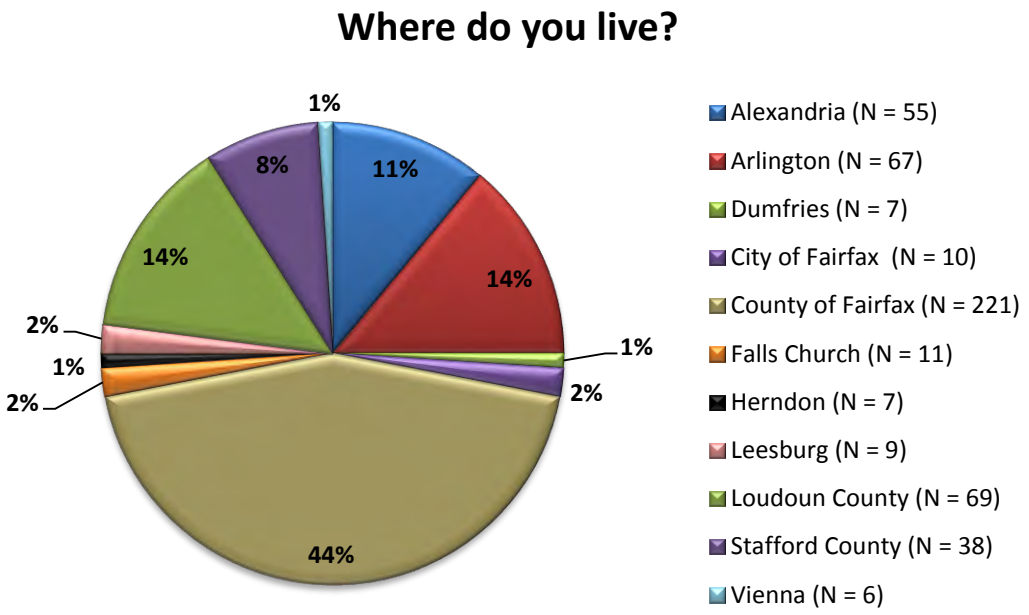
7/28/2015

Amplitude Research, Inc.

Study Methodology & Respondent Characteristics

The Northern Virginia Regional Commission (NVRC) hired Amplitude Research, Inc. to conduct a survey of residents of northern Virginia to measure beliefs and attitudes related to pollution of the Potomac River and Chesapeake Bay.

Amplitude Research administered the study online between July 8 and 17, 2015. In the end, 500 surveys were completed by web panelists who live in one of the areas of Virginia shown in the chart below. (In the legend, "N =" indicates the number of respondents in each city, county, or town.)

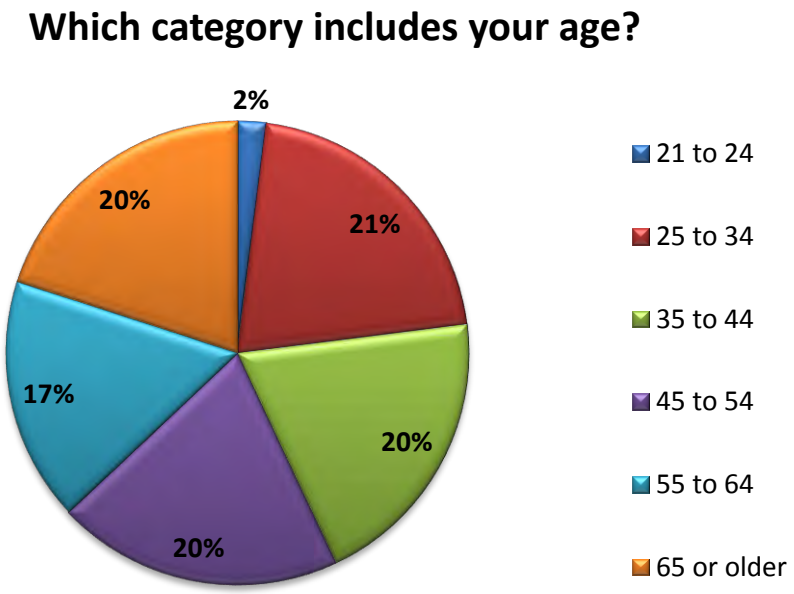


Later in this report, the results for some of the questions are "broken out" by area, in addition to presenting the results for the total sample. However, the specific areas listed above were grouped together into larger areas so that each larger area used for analysis had a reasonable number of respondents.

Residents from Leesburg and Loudoun County were combined into a single category labeled "**Leesburg / Loudoun**," since the town of Leesburg lies within Loudoun County. Another category used for analysis was "**Dumfries / Stafford**," since Dumfries lies just north of Stafford County. Although Dumfries is not located within Stafford County, it is closer to Stafford than to the other counties covered in the survey. (There were too few survey respondents living in Dumfries to examine the results for Dumfries separately.) The City of Fairfax, Falls Church, Herndon, and Vienna were combined with Fairfax County to create the category "**Fairfax Inclusive**," since these cities and towns lie within the Fairfax County area. Although the City of Fairfax and City of Falls Church are distinct areas, their location falls within the larger area circumscribed by Fairfax County.

Alexandria and Arlington each had more than 50 respondents and therefore each of these areas can be examined separately.

The minimum age to participate in the survey was 21. As shown in the chart below, each age group was well represented in the survey. Although a small proportion were age 21 to 24, this category has fewer years than the other categories shown. For analysis purposes later in this report, the categories "21 to 24" and "25 to 34" were combined into the broader category of "21 to 34."



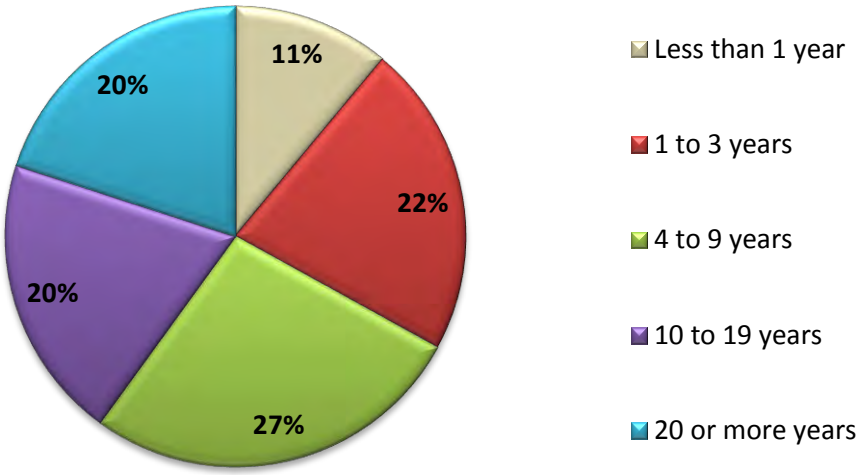
The survey respondents were split between males (48%) and females (52%), while approximately three-fourths (76%) indicated that they own their residence, and 24% reported renting.

The chart on the next page shows how long respondents have lived in their current residence. Some had been living in their current homes for a fairly short period of time (e.g., less than one year – 11%, one to three years – 22%).

A survey was conducted in 2014, 2013, 2012, and 2011 that included many of the same questions, targeted the same geographic area, and had a similar demographic mix as in this 2015 study. Later in this report, comparisons between years are shown where appropriate. Initially, the title used for the study was "NVRC Resident Survey." Starting in 2013, the study title was changed to "Only Rain NVRC Survey," since a new question was added about awareness of the "Only Rain" logo.

In 2015, a minimum quota of 8% of the total sample was set for those who are of Hispanic heritage to ensure sufficient representation and to allow analysis of results specifically among Hispanic respondents.

For how many years have you lived in your current residence?



Sampling Variability

While examining the survey findings, it is helpful to keep in mind that the results are based on a sample and are therefore subject to sampling variability, often referred to as "sampling error." The degree of uncertainty for an estimate (e.g., a particular percentage from the survey) arising from sampling variability is represented through the use of a margin of error. A sampling margin of error at the "95% confidence level" can be interpreted as providing a 95% probability that the interval created by the estimate plus and minus the margin of error contains the true value. (The "true" value would be known only if everyone in the target market was surveyed rather than just a sample.) In addition to sampling variability, results may be subject to various sources of non-sampling error (e.g., non-response bias, respondent misinterpretation of question wording, etc.). The degree of non-sampling error is not represented by the sampling margin of error and is usually unknown.

For a "sample size" of 500 survey respondents, the "maximum" margin of sampling error for percentages from the survey is +/- 4.4 percentage points at the 95% confidence level. Here, "maximum" refers to the margin of error being highest for proportions from the survey near 50%, while the margin of error declines as percentages get further from 50%. For example, given the same sample size of 500 respondents, a result from the survey near 10% or 90% would have a margin of sampling error of +/- 2.6 percentage points.

The margin of sampling error increases as the sample size decreases. Thus, when a question is asked of only a subset of the total sample, the associated margin of sampling error is larger than that quoted above. Also, even if a question is asked of all respondents, when examining results for a particular subgroup, the margin of sampling error depends on the number of respondents in that subgroup. For example, the "maximum" margin of sampling error would be +/- 9.8 percentage points at the "95% confidence level" when based on a subgroup of 100 survey respondents. In some parts of this report, results are shown for subgroups that include a fairly small number of respondents, and caution is recommended when thinking about these findings.

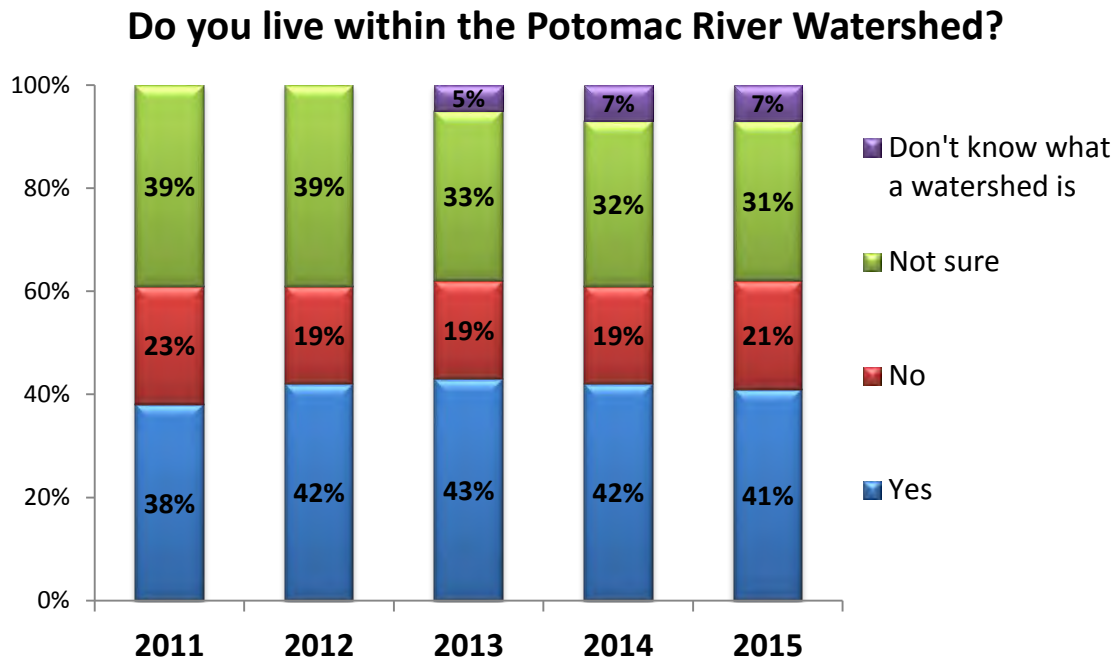
This suggests that results for different subgroups can be considered "similar" when the differences are small (i.e., small enough to be within the range of sampling error).

Results from different years can be considered similar when differences between the years are small. If the difference between two years is referred to as "statistically significant," this essentially means that the difference in the survey results is large enough to be highly confident (i.e., at the "95% confidence level") that there has been a real change. That is, a "statistically significant" difference in the survey results from one year to the next is larger than what would usually be expected from sampling error alone.

In this report, when a result from 2015 is described as "significantly" higher (or lower) than the result from a previous year, this means that the difference between these years is "statistically significant." Also, when one subgroup is described as "more likely" (or "less likely") than another subgroup to answer in a particular way, this is based on a statistically significant difference.

Potomac River Watershed

- Early in the survey, respondents were asked if they lived within the "Potomac River Watershed." As shown in the chart below, slightly more than four-in-ten in 2015 (41%) believed that they did in fact live within the Potomac River Watershed. Similar proportions held this belief in previous years.



- Nearly four-in-ten each year were not sure if they lived within the Potomac River Watershed or did not know what a watershed is. (The response option "I do not know what a watershed is" was first added in the 2013 survey.)

- When breaking the results out by area, as shown in the table below, the proportion believing that they live in the Potomac River Watershed did not differ significantly by area.

Live Within Potomac River Watershed	**Alexandria**	**Arlington**	**Fairfax Inclusive**	**Leesburg / Loudoun**	**Dumfries / Stafford**
Yes	40%	48%	41%	41%	36%
No	11%	15%	22%	27%	29%
Not sure	35%	25%	34%	22%	31%
Don't know what a watershed is	14%	12%	3%	10%	4%
N = number of respondents	*55*	*67*	*255*	*78*	*45*

- As shown in the next table, those who have lived in their residence for 20 or more years were more likely than those in their residence less than 10 years to say they live within the Potomac River Watershed.

Live Within Potomac River Watershed	**Have Lived in Current Residence < 1 Year**	**1 to 3 Years**	**4 to 9 Years**	**10 to 19 Years**	**20 or More Years**
Yes	40%	33%	33%	46%	57%
No	23%	26%	22%	23%	12%
Not sure	28%	31%	38%	27%	26%
Don't know what a watershed is	9%	10%	7%	4%	5%
N = number of respondents	*53*	*111*	*136*	*101*	*99*

- Those age 65 or older were more likely than others to believe that they live in the Potomac River Watershed.

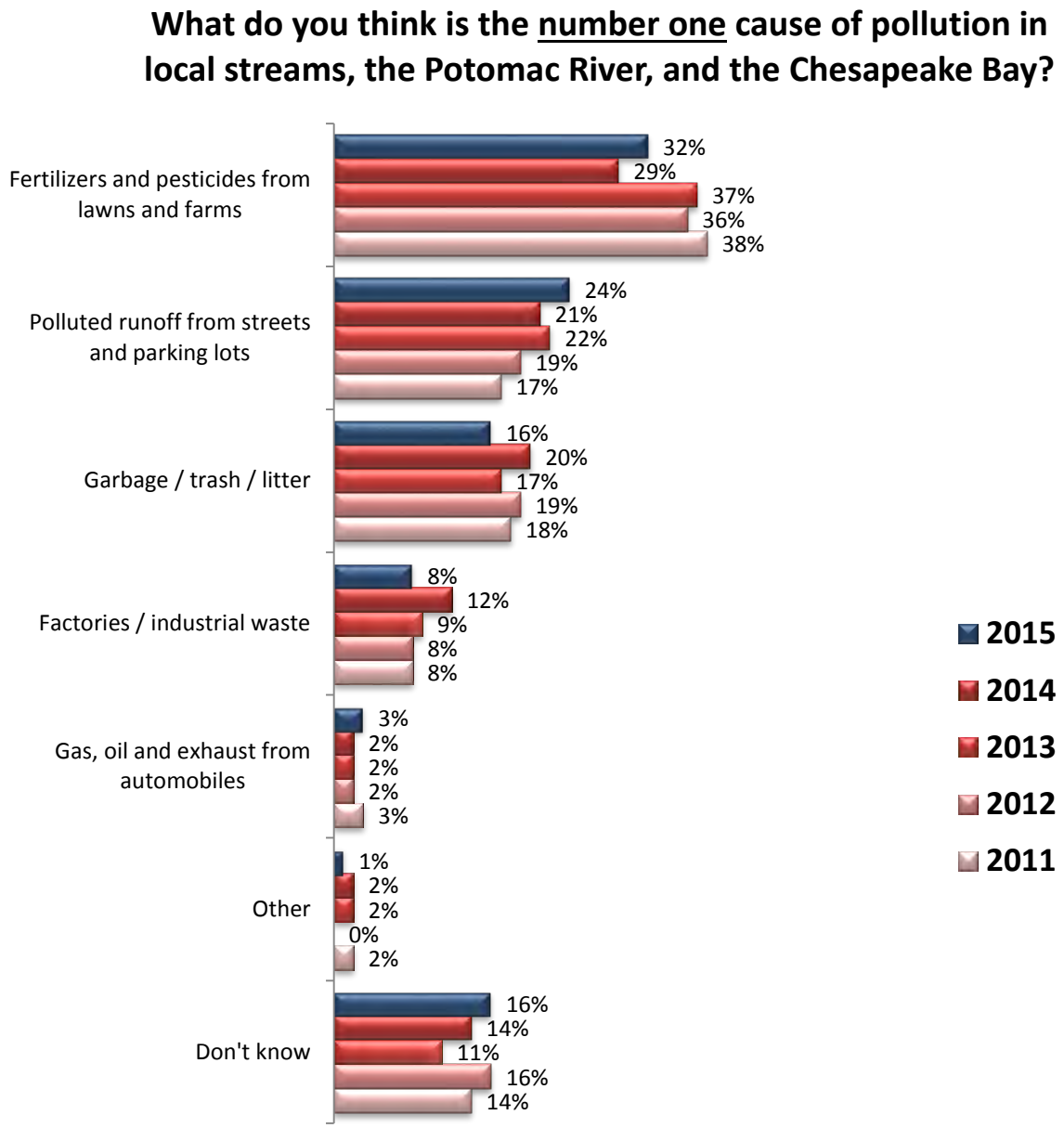
Live Within Potomac River Watershed	**Age 21 to 34**	**35 to 44**	**45 to 54**	**55 to 64**	**65 +**
Yes	33%	30%	39%	44%	61%
No	20%	31%	20%	22%	14%
Not sure	35%	30%	36%	29%	22%
Don't know what a watershed is	12%	9%	5%	5%	3%
N = number of respondents	*114*	*100*	*101*	*83*	*102*

- When examining the results by other subgroups, males were more likely than females to believe that they live within the Potomac River Watershed. Slightly more than one-third (36%) of Hispanic respondents held this belief, but this was not significantly different from others.

Live Within Potomac River Watershed	**Male**	**Female**	**Homeowners**	**Renters**	**Hispanic Respondents**
Yes	54%	29%	42%	38%	36%
No	18%	24%	22%	18%	23%
Not sure	23%	38%	31%	31%	27%
Don't know what a watershed is	5%	9%	5%	13%	14%
N = number of respondents	*240*	*260*	*380*	*120*	*44*

Beliefs About Local Water Pollution

- When asked what they thought was the "Number one" cause of pollution in local streams, the Potomac River, and the Chesapeake Bay, the most frequently selected response option was "Fertilizers and pesticides from lawns and farms." However, this result in 2015 (32%) was significantly lower than the result in 2011 (38%).



- The second most often selected cause in 2015 was "Polluted runoff from streets and parking lots." This result in 2015 (24%) was significantly higher than the result in 2011 (17%).

- Tables below show the 2015 results broken out by various subgroups of the total sample for the question covered on the previous page. For example, those who have lived in their homes for 10 or more years, those age 45 or older, and homeowners were more likely than others to select fertilizers and pesticides from lawns and farms.

Believed #1 Cause of Local Water Pollution	**Alexandria**	**Arlington**	**Fairfax Inclusive**	**Leesburg / Loudoun**	**Dumfries / Stafford**
Fertilizers and pesticides from lawns and farms	22%	43%	33%	34%	20%
Polluted runoff from streets and parking lots	29%	15%	26%	24%	20%
Garbage / trash / litter	14%	19%	15%	13%	22%
Factories / Industrial waste	11%	3%	7%	9%	16%
Gas, oil and exhaust from automobiles	2%	5%	2%	4%	4%
Other	0%	0%	2%	3%	2%
Don't know / not sure	22%	15%	15%	13%	16%
N = number of respondents	*55*	*67*	*255*	*78*	*45*

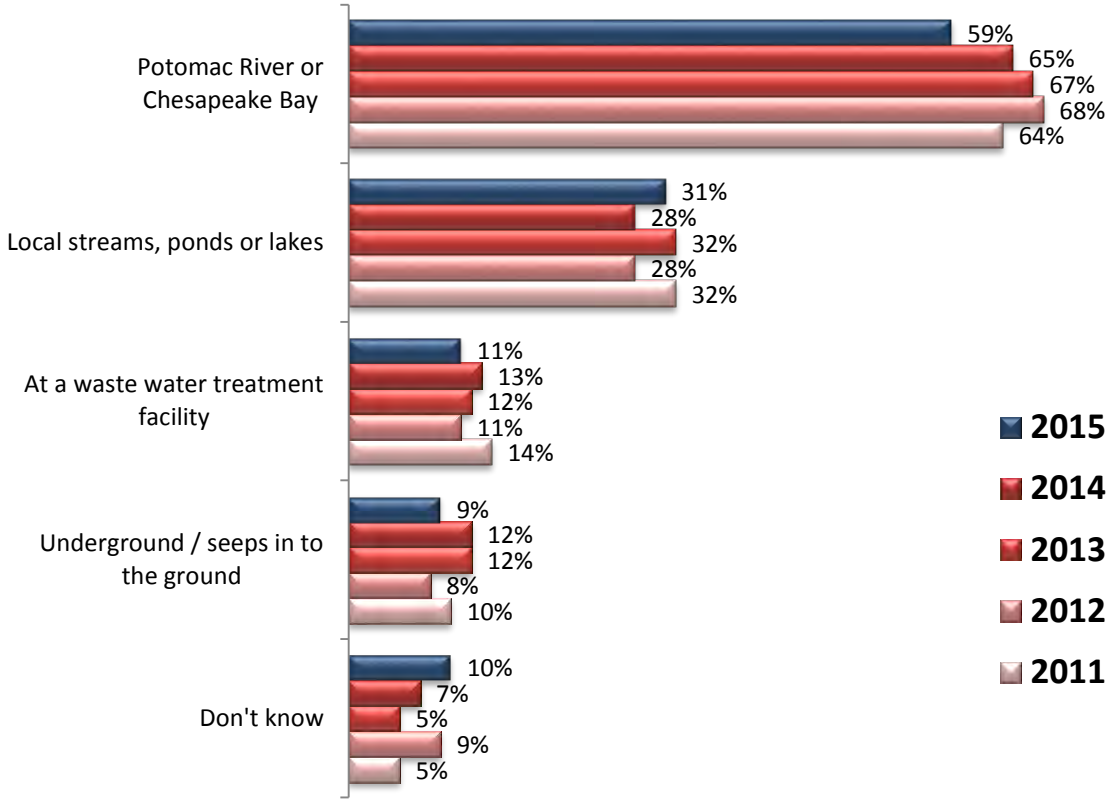
Believed #1 Cause of Local Water Pollution	**Have Lived in Current Residence < 1 Year**	**1 to 3 Years**	**4 to 9 Years**	**10 to 19 Years**	**20 or More Years**
Fertilizers and pesticides from lawns and farms	17%	26%	23%	44%	49%
Polluted runoff from streets and parking lots	30%	18%	31%	21%	22%
Garbage / trash / litter	19%	21%	14%	14%	11%
Factories / Industrial waste	13%	9%	8%	7%	4%
Gas, oil and exhaust from automobiles	10%	3%	4%	0%	1%
Other	0%	2%	2%	2%	0%
Don’t know / not sure	11%	21%	18%	12%	13%
N = number of respondents	*53*	*111*	*136*	*101*	*99*

Believed #1 Cause of Local Water Pollution	Age 21 to 34	35 to 44	45 to 54	55 to 64	65 +
Fertilizers and pesticides from lawns and farms	20%	22%	36%	41%	45%
Polluted runoff from streets and parking lots	25%	28%	23%	17%	27%
Garbage / trash / litter	19%	16%	18%	16%	9%
Factories / Industrial waste	12%	11%	6%	7%	2%
Gas, oil and exhaust from automobiles	7%	4%	1%	1%	1%
Other	0%	2%	2%	1%	2%
Don't know / not sure	17%	17%	14%	17%	14%
N = number of respondents	*114*	*100*	*101*	*83*	*102*

Believed #1 Cause of Local Water Pollution	Male	Female	Homeowners	Renters	Hispanic Respondents
Fertilizers and pesticides from lawns and farms	35%	30%	35%	25%	18%
Polluted runoff from streets and parking lots	28%	21%	25%	22%	32%
Garbage / trash / litter	12%	19%	15%	17%	11%
Factories / Industrial waste	8%	8%	8%	8%	14%
Gas, oil and exhaust from automobiles	3%	3%	2%	6%	2%
Other	2%	0%	1%	1%	5%
Don't know / not sure	12%	19%	14%	21%	18%
N = number of respondents	*240*	*260*	*380*	*120*	*44*

- Hispanic residents were less likely than others to select fertilizers and pesticides from lawns and farms.

To the best of your knowledge, where do you believe stormwater eventually ends up?



- The Potomac River or Chesapeake Bay was selected most often as where stormwater is believed to end up. The proportion selecting this response was highest in Leesburg / Loudoun. However, while the result for Leesburg / Loudoun (69%) was significantly higher than for Alexandria and Arlington, it was not significantly higher compared to other areas.

Believed Destination of Stormwater	**Alexandria**	**Arlington**	**Fairfax Inclusive**	**Leesburg / Loudoun**	**Dumfries / Stafford**
Potomac River or Chesapeake Bay	51%	52%	59%	69%	62%
Local streams, ponds or lakes	29%	36%	31%	29%	29%
At a waste water treatment facility	15%	12%	13%	6%	2%
Underground / seeps in to the ground	7%	13%	7%	5%	20%
Don't know	15%	10%	11%	6%	2%
N = number of respondents	*55*	*67*	*255*	*78*	*45*

Believed Destination of Stormwater	**Have Lived in Current Residence < 1 Year**	**1 to 3 Years**	**4 to 9 Years**	**10 to 19 Years**	**20 or More Years**
Potomac River or Chesapeake Bay	51%	53%	60%	62%	66%
Local streams, ponds or lakes	40%	40%	30%	29%	20%
At a waste water treatment facility	25%	19%	7%	8%	4%
Underground / seeps in to the ground	15%	15%	9%	4%	3%
Don't know	8%	9%	11%	8%	11%
N = number of respondents	*53*	*111*	*136*	*101*	*99*

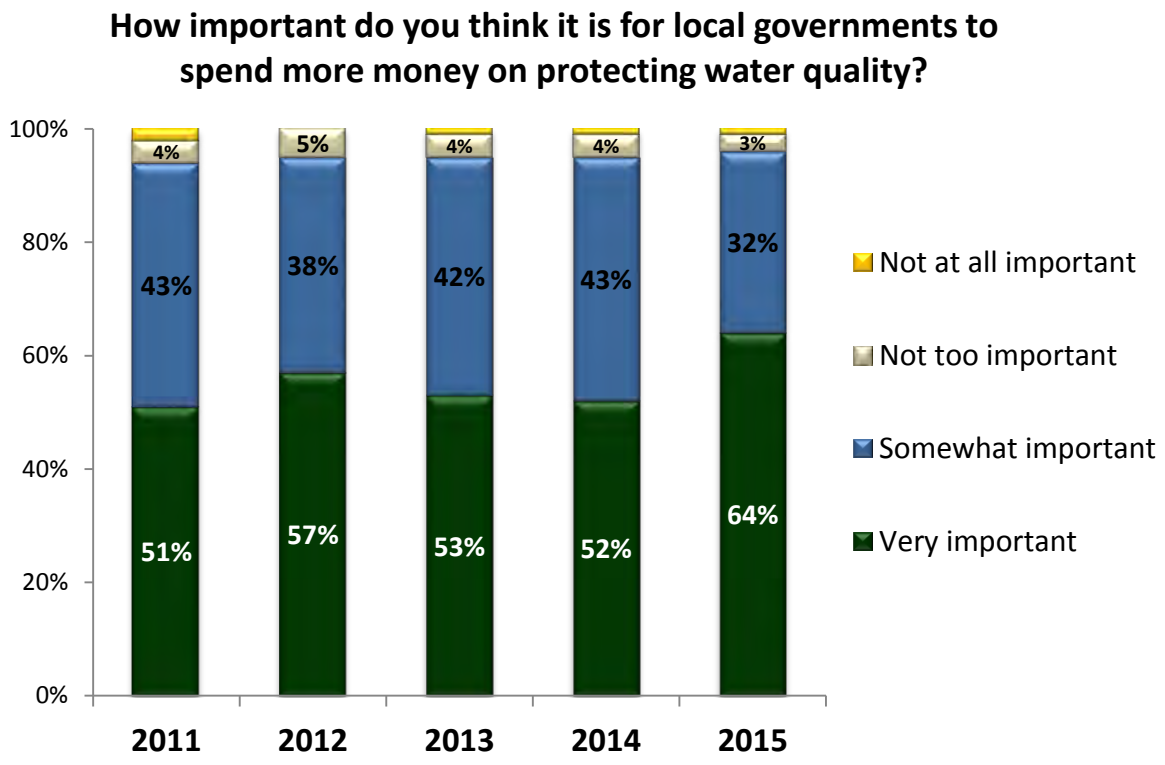
Believed Destination of Stormwater	**Age 21 to 34**	**35 to 44**	**45 to 54**	**55 to 64**	**65 +**
Potomac River or Chesapeake Bay	51%	50%	57%	73%	68%
Local streams, ponds or lakes	43%	33%	31%	25%	21%
At a waste water treatment facility	24%	10%	9%	6%	4%
Underground / seeps in to the ground	19%	10%	4%	6%	3%
Don't know	11%	14%	10%	4%	9%
N = number of respondents	*114*	*100*	*101*	*83*	*102*

- Those age 55 and older were more likely than those younger to believe that stormwater ends up in the Potomac River or Chesapeake Bay.

- As shown on the next page, females and renters were less likely than others to select "Potomac River or Chesapeake Bay."

Believed Destination of Stormwater	**Male**	**Female**	**Homeowners**	**Renters**	**Hispanic Respondents**
Potomac River or Chesapeake Bay	70%	49%	62%	51%	50%
Local streams, ponds or lakes	28%	34%	29%	38%	41%
At a waste water treatment facility	10%	12%	8%	19%	20%
Underground / seeps in to the ground	6%	11%	7%	15%	11%
Don't know	5%	14%	9%	13%	11%
N = number of respondents	*240*	*260*	*380*	*120*	*44*

- When asked the question below, a significantly higher proportion in 2015, compared to each previous year, gave a rating of "Very important" for local governments to spend more money on protecting water quality.



- The majority from each area felt it was "Very important" for local governments to spend more money on protecting water quality.

Importance of Local Water Quality Spending	**Alexandria**	**Arlington**	**Fairfax Inclusive**	**Leesburg / Loudoun**	**Dumfries / Stafford**
Not at all important	0%	0%	1%	2%	2%
Not too important	0%	6%	4%	3%	0%
Somewhat important	35%	18%	31%	40%	40%
Very important	65%	76%	64%	55%	58%
N = number of respondents	*55*	*67*	*255*	*78*	*45*

- In each of the subgroups covered in the tables below, a majority gave a rating of "Very important."

Importance of Local Water Quality Spending	**Have Lived in Current Residence < 1 Year**	**1 to 3 Years**	**4 to 9 Years**	**10 to 19 Years**	**20 or More Years**
Not at all important	0%	1%	3%	0%	0%
Not too important	4%	4%	3%	2%	3%
Somewhat important	32%	29%	34%	34%	31%
Very important	64%	66%	60%	64%	66%
N = number of respondents	*53*	*111*	*136*	*101*	*99*

Importance of Local Water Quality Spending	**Age 21 to 34**	**35 to 44**	**45 to 54**	**55 to 64**	**65 +**
Not at all important	3%	0%	1%	1%	0%
Not too important	5%	3%	1%	0%	6%
Somewhat important	27%	40%	35%	28%	30%
Very important	65%	57%	63%	71%	64%
N = number of respondents	*114*	*100*	*101*	*83*	*102*

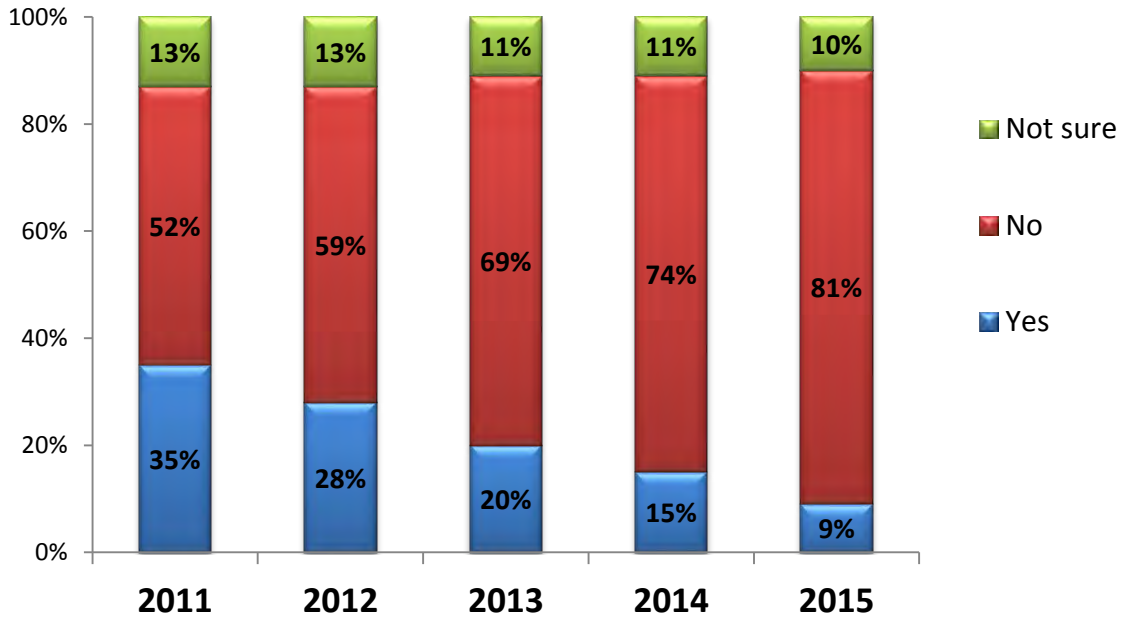
Importance of Local Water Quality Spending	**Male**	**Female**	**Homeowners**	**Renters**	**Hispanic Respondents**
Not at all important	0%	1%	1%	1%	5%
Not too important	4%	3%	3%	4%	0%
Somewhat important	35%	30%	34%	24%	27%
Very important	61%	66%	62%	71%	68%
N = number of respondents	*240*	*260*	*380*	*120*	*44*

Advertising

- In 2015, 9% indicated that they have seen ads on TV or the Internet about reducing water pollution and featuring "rubber duckies." This was lower than in previous years, but the question wording has varied slightly from year to year. For example, the reference to "rubber duckies" was unique in 2015. This level of specificity in the 2015 wording might have reduced the proportion saying they recall the advertising.

ADVERTISING AWARENESS

(2015 Question Wording: **Have you seen any ads on TV or the Internet featuring rubber duckies that talk about reducing water pollution?**)



- Leesburg / Loudoun had the highest proportion aware (14%), while Arlington (4%) had the lowest proportion aware of the advertising. The difference between these two proportions was statistically significant, but the differences between other areas were not.

Saw TV / Internet Ads on Reducing Water Pollution	**Alexandria**	**Arlington**	**Fairfax Inclusive**	**Leesburg / Loudoun**	**Dumfries / Stafford**
Yes	13%	4%	8%	14%	9%
No	80%	84%	81%	78%	80%
Not sure	7%	12%	11%	8%	11%
N = number of respondents	*55*	*67*	*255*	*78*	*45*

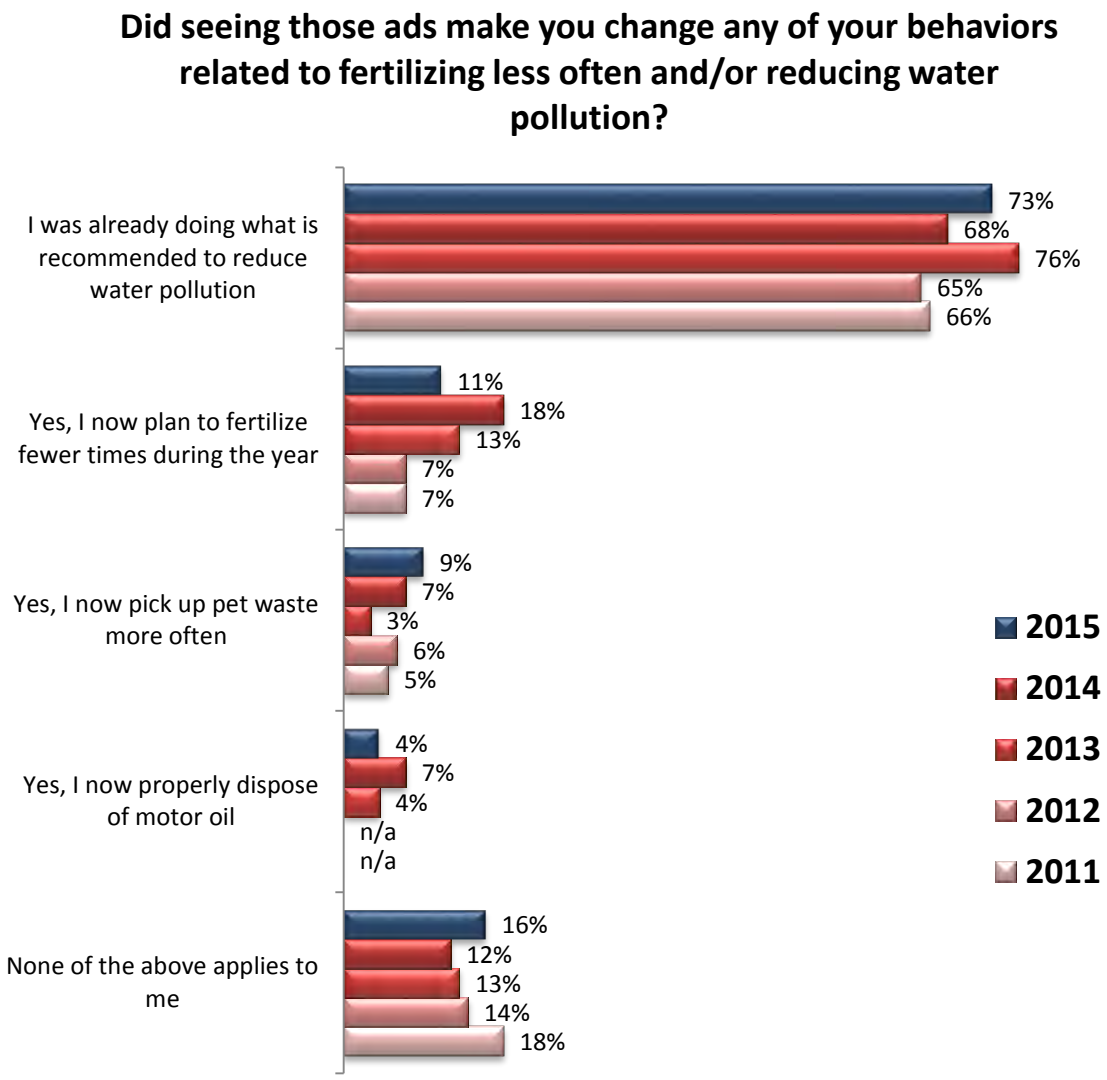
Saw TV / Internet Ads on Reducing Water Pollution	Have Lived in Current Residence < 1 Year	1 to 3 Years	4 to 9 Years	10 to 19 Years	20 or More Years
Yes	11%	12%	10%	7%	6%
No	83%	78%	83%	83%	78%
Not sure	6%	10%	7%	10%	16%
N = number of respondents	*53*	*111*	*136*	*101*	*99*

Saw TV / Internet Ads on Reducing Water Pollution	Age 21 to 34	35 to 44	45 to 54	55 to 64	65 +
Yes	11%	7%	10%	8%	8%
No	82%	85%	74%	83%	81%
Not sure	7%	8%	16%	9%	11%
N = number of respondents	*114*	*100*	*101*	*83*	*102*

- Men were more likely than women to report recalling the advertising. A relatively high proportion of Hispanic respondents reported awareness, but the difference between Hispanic respondents and others was not statistically significant.

Saw TV / Internet Ads on Reducing Water Pollution	Male	Female	Homeowners	Renters	Hispanic Respondents
Yes	14%	5%	9%	10%	16%
No	79%	83%	80%	82%	75%
Not sure	7%	12%	11%	8%	9%
N = number of respondents	*240*	*260*	*380*	*120*	*44*

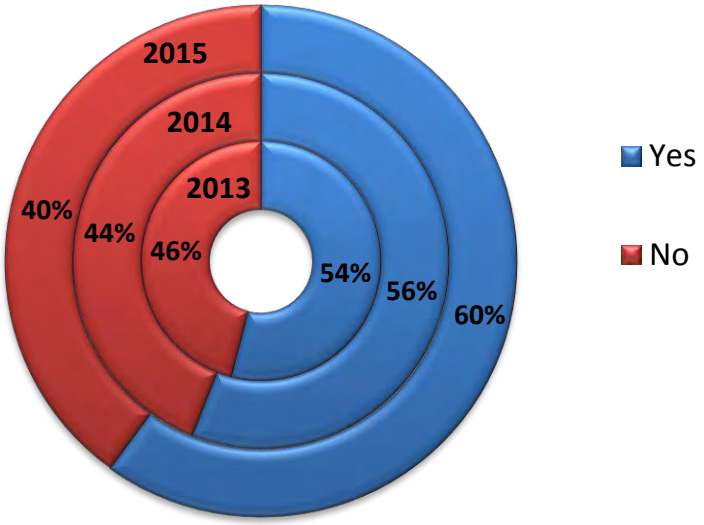
- The question covered in the chart on the next page was asked only of those who reported awareness of the ads.



- Nearly three-fourths (73%) in 2015 felt that they were already doing what they were supposed to be doing, but some reported changing behavior, such as fertilizing less often, picking up pet waste more often, and/or properly disposing of motor oil.

- The logo below was shown to all respondents in 2013, 2014, and 2015, regardless of whether they had seen advertising or not, and more than half of the total sample recognized the logo. The difference between 60% in 2015 and 54% in 2013 was statistically significant, suggesting that awareness of the logo has increased over time.

Have you ever seen the logo above anywhere?



- Results for the question above in 2015 by subgroup are shown on the next page.

- Awareness of the logo was highest in Arlington and lowest in Dumfries / Stafford. The differences between Arlington and other areas, except Alexandria, were statistically significant. At the same time, the differences between Dumfries / Stafford and each other area were statistically significant.

Have Seen Logo	**Alexandria**	**Arlington**	**Fairfax Inclusive**	**Leesburg / Loudoun**	**Dumfries / Stafford**
Yes	67%	78%	59%	59%	38%
No	33%	22%	41%	41%	62%
N = number of respondents	*55*	*67*	*255*	*78*	*45*

Have Seen Logo	**Have Lived in Current Residence < 1 Year**	**1 to 3 Years**	**4 to 9 Years**	**10 to 19 Years**	**20 or More Years**
Yes	64%	59%	60%	56%	66%
No	36%	41%	40%	44%	34%
N = number of respondents	*53*	*111*	*136*	*101*	*99*

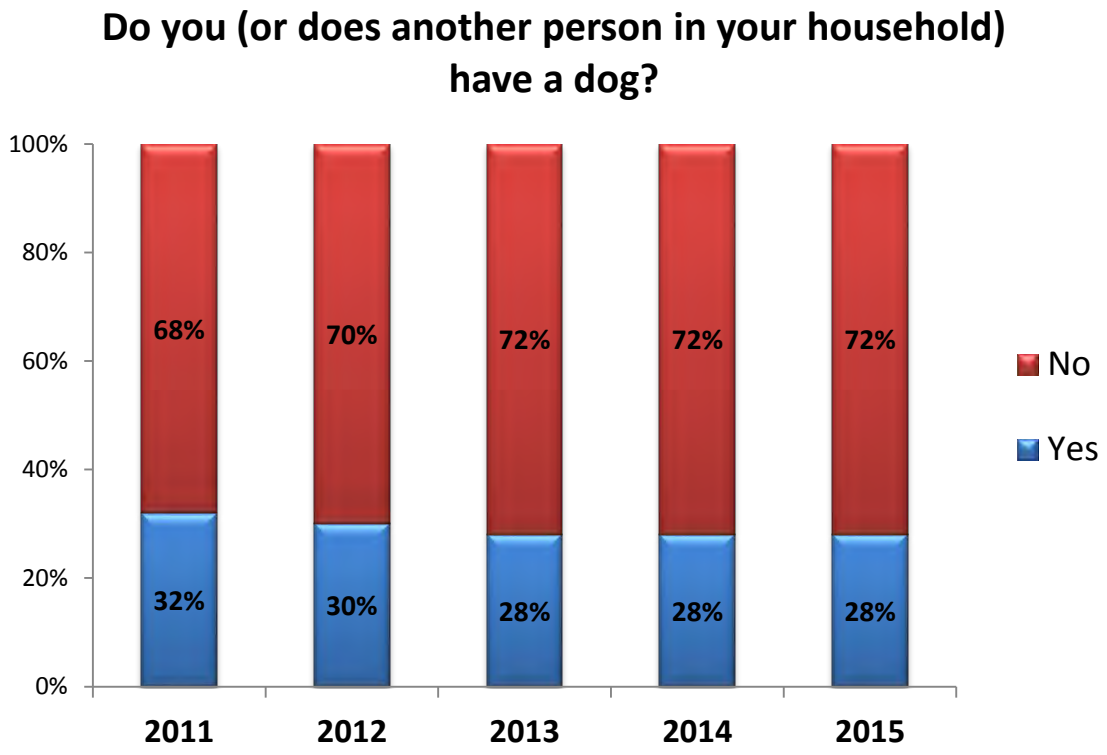
Have Seen Logo	**Age 21 to 34**	**35 to 44**	**45 to 54**	**55 to 64**	**65 +**
Yes	63%	60%	63%	55%	59%
No	37%	40%	37%	45%	41%
N = number of respondents	*114*	*100*	*101*	*83*	*102*

Have Seen Logo	**Male**	**Female**	**Homeowners**	**Renters**	**Hispanic Respondents**
Yes	65%	56%	61%	58%	55%
No	35%	44%	39%	42%	45%
N = number of respondents	*240*	*260*	*380*	*120*	*44*

- Males were more likely than females to report having seen the logo.

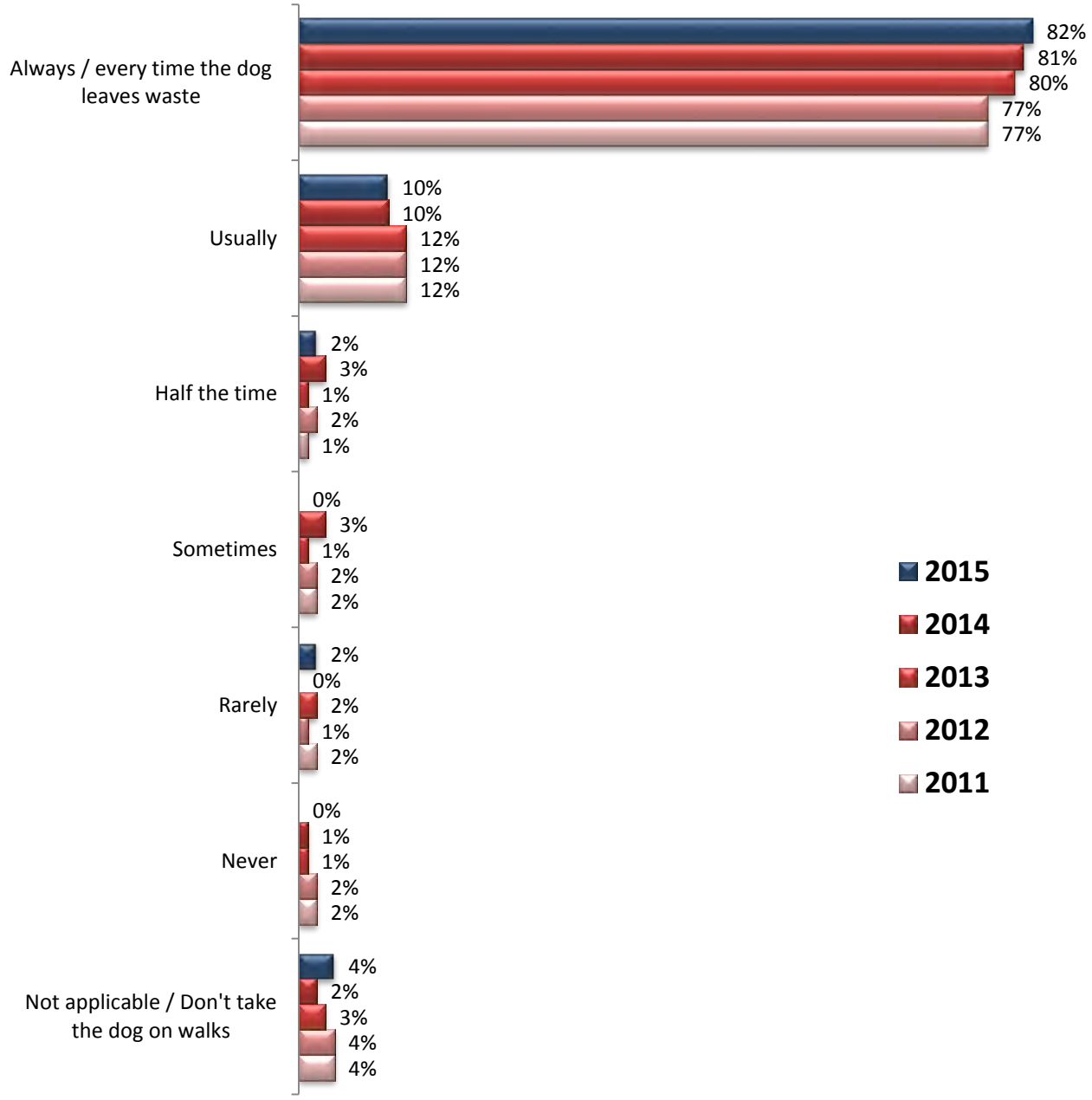
Behavior Among Dog Owners

- More than one-fourth in each year indicated that they have a dog (or someone else in their household has a dog). Several questions were asked of these dog owners. (However, since a subset of the total sample reported having a dog, the results for the questions applicable only to dog owners are not broken out by area or demographic subgroups.)

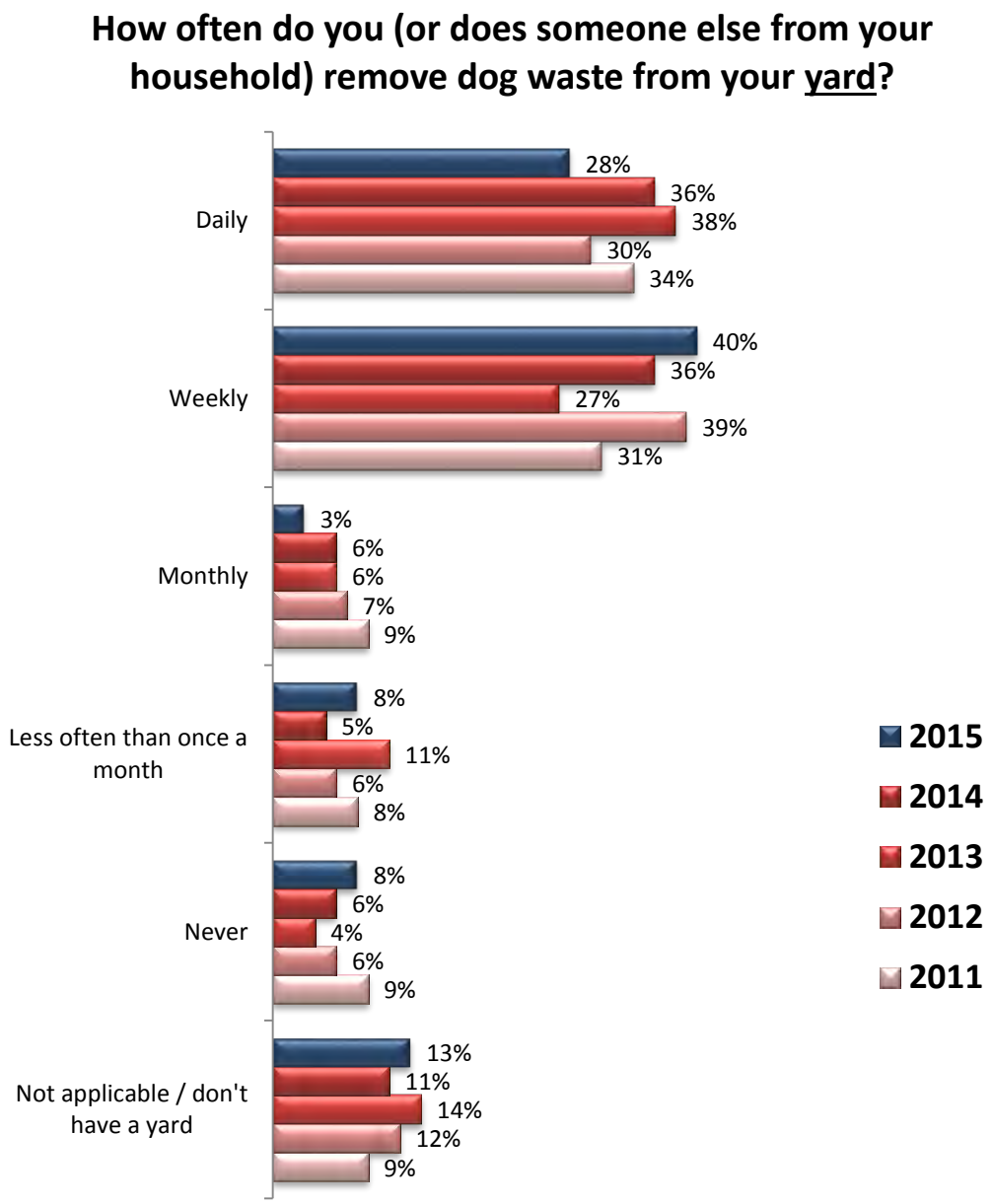


- On the following pages, results are shown for questions about how often dog owners pick up after their dogs and what motivates them to do so.

When taking your dog(s) for a walk, how often do you pick up after your dog(s)?

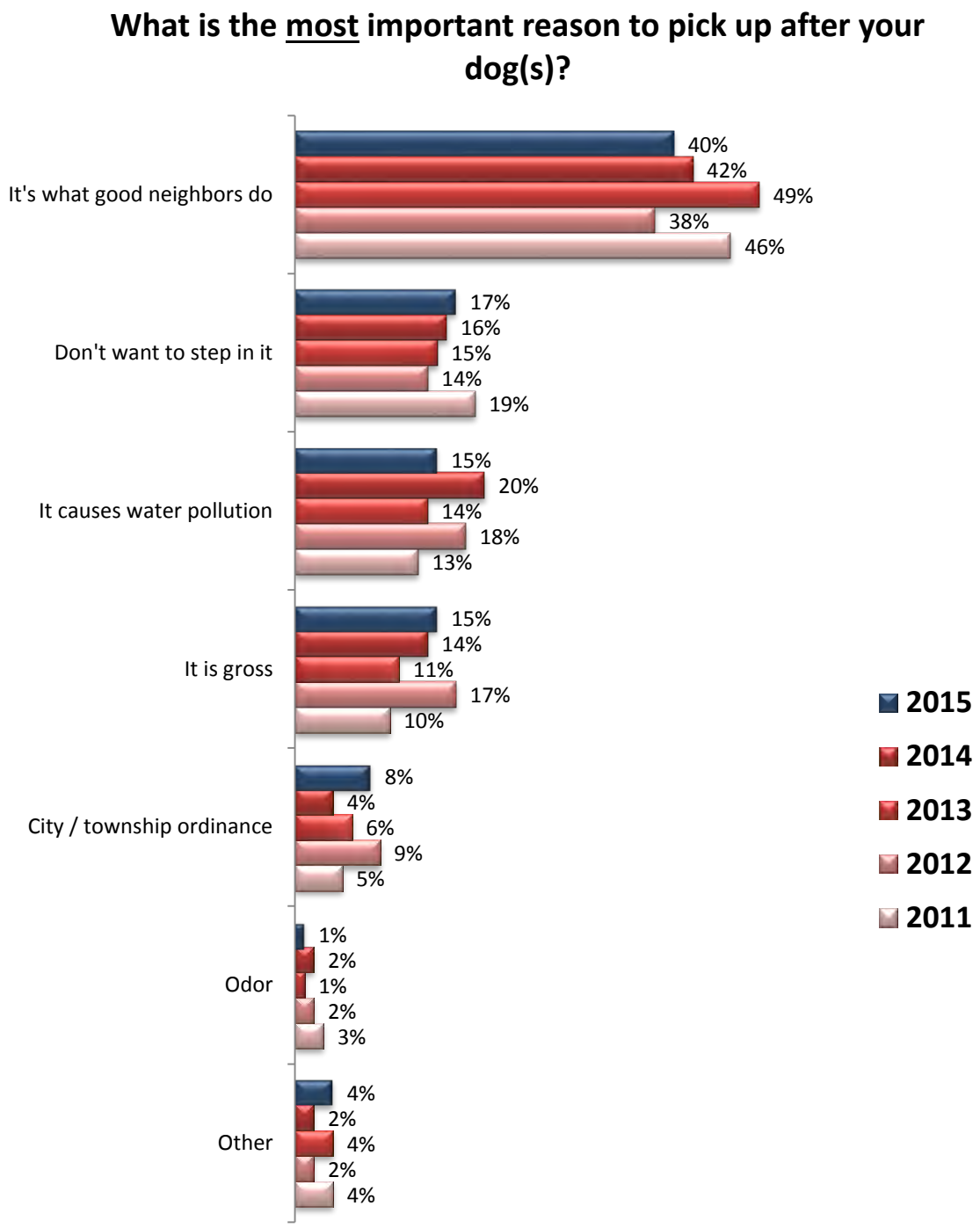


- More than eight-in-ten (82%) in 2015 indicated that they *always* pick up after their dog(s) when taking the dog(s) for a walk. This is up five percentage points from 2012, but the difference was not quite large enough to be statistically significant.



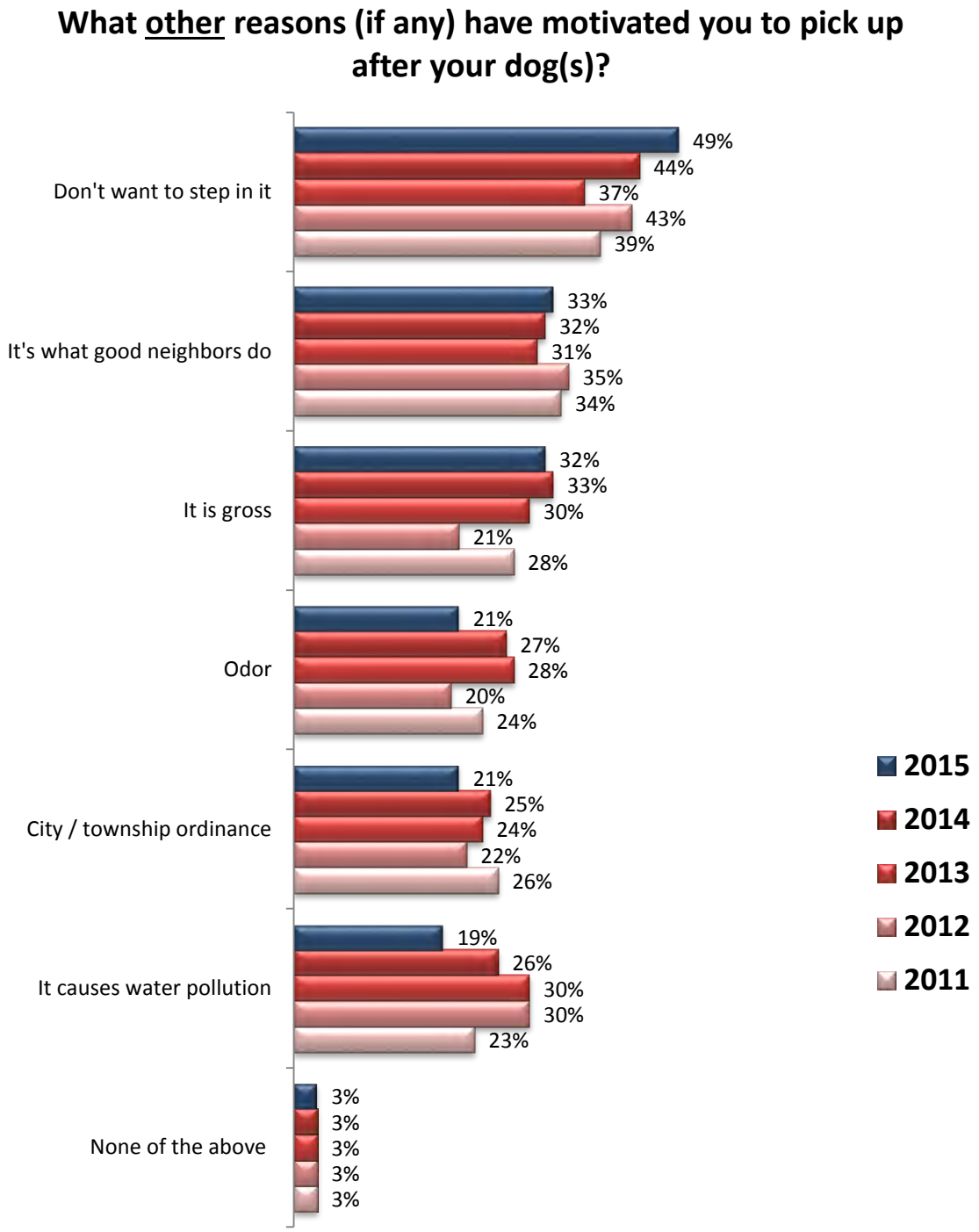
- In their own yard, respondents in 2015 were more likely to remove pet waste weekly than daily.

- There was some fluctuation from year to year in the proportions reporting daily and weekly removal of dog waste from their yard, but recall that this question was asked only of dog owners, and the sample size of dog owners is lower than the total sample size, while the margin of error is higher for a lower sample size.

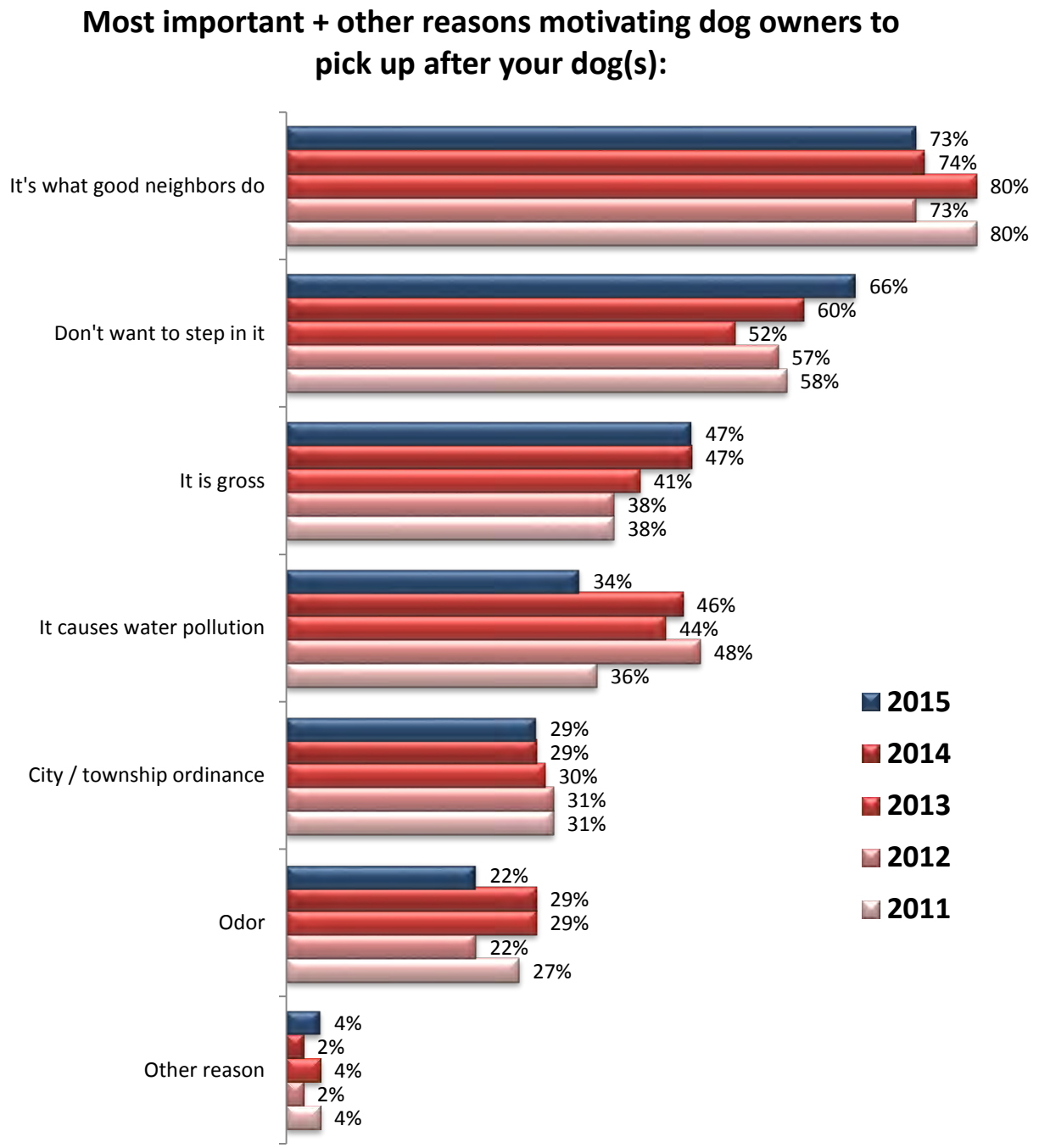


- When asked about the "Most important reason" for picking up after their dog(s), four-in-ten (40%) in 2015 selected "It's what good neighbors do."

- Less than one-in-five (15%) in 2015 selected "It causes water pollution" as the most important reason to pick up after their dog.



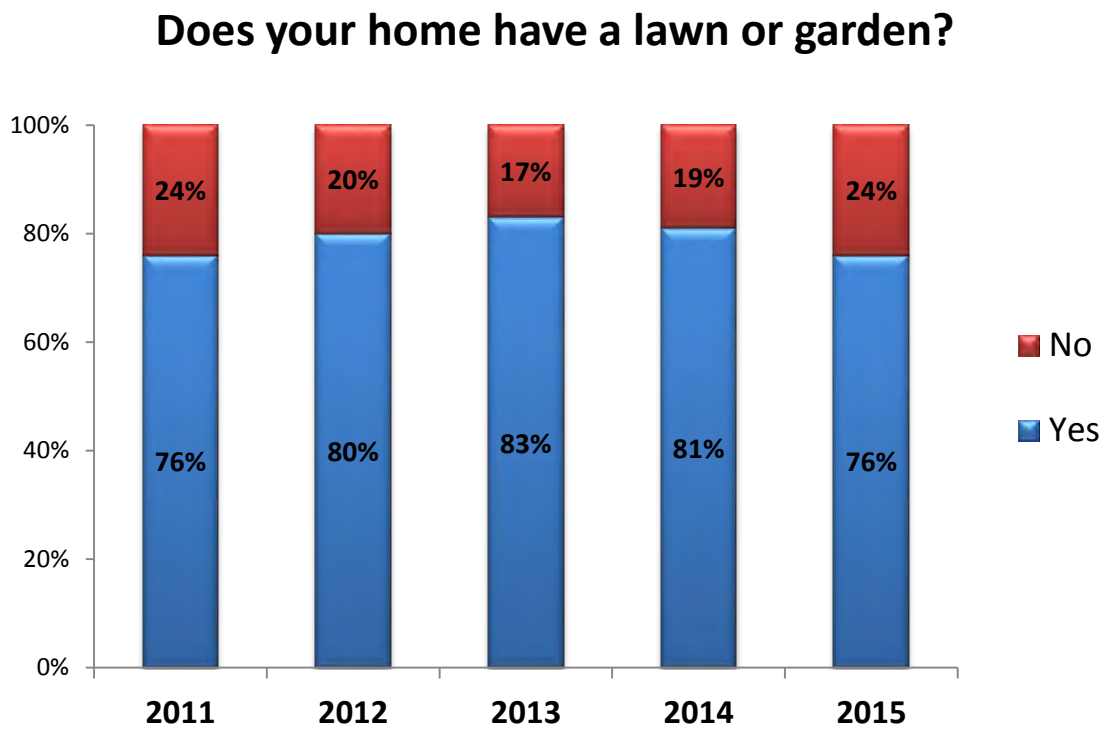
- In addition to the *most* important reason for picking up after their dog(s) as shown on the previous page, respondents were also asked to select any other reasons that motivate them. As shown in the chart above, an additional 19% in 2015 selected "It causes water pollution" as a motivation. When combining results in the chart above with the chart on the previous page, a total of 34% in 2015 were motivated to pick up after their dog(s) because "It causes water pollution," as shown on the next page.



- While it is encouraging to see that one-third in 2015 were motivated to pick up after their dog by wanting to reduce water pollution, this also means that two-thirds were not thinking about water pollution in this context. Also, the proportion selecting this reason declined significantly between 2014 and 2015. This implies that there is room to "educate" more northern Virginia residents about how dog waste is an important cause of water pollution, and "picking up after your dog" is an important action that helps reduce water pollution.

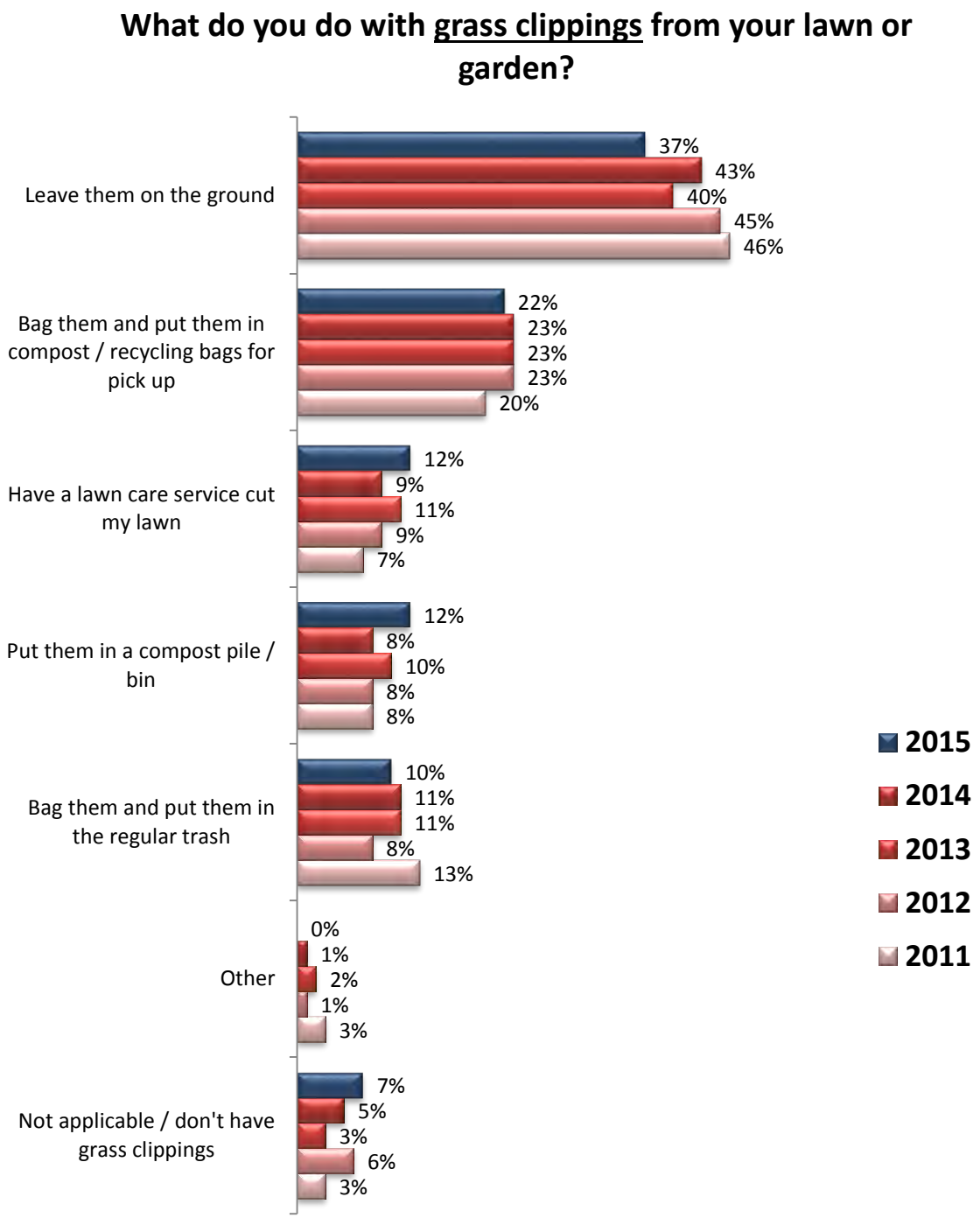
Behavior Related to Lawns & Gardens

- More than three-fourths of the survey respondents each year indicated that their current home has a lawn or garden.

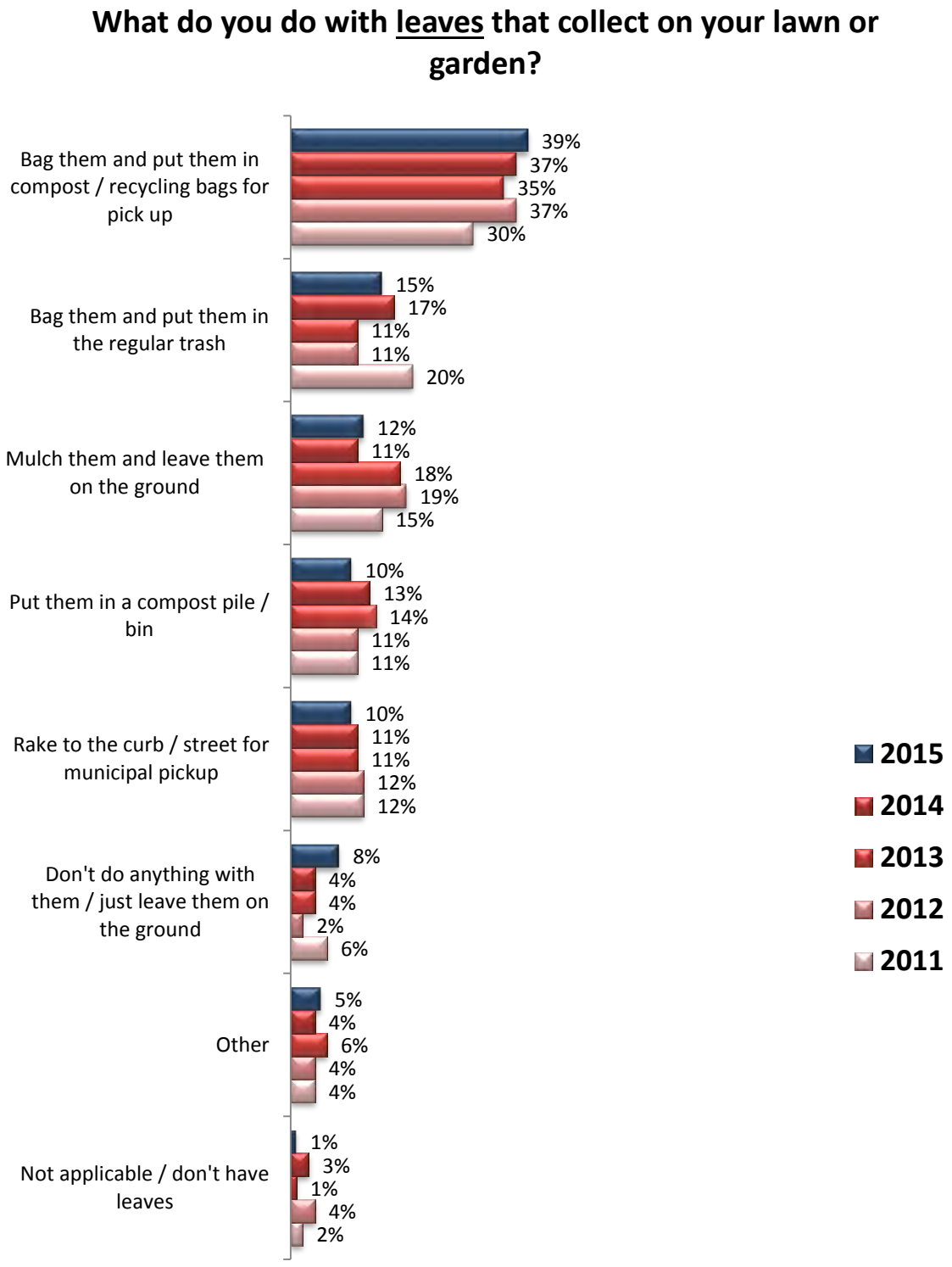


- In a separate question, of the respondents who have a lawn or garden, more than half (64% in 2015, 58% in 2014, 60% in 2013, 62% in 2012, and 67% in 2011) identified themselves as the primary person taking care of the lawn or garden. Several questions about lawns and gardens were then asked only of these respondents (i.e., primary person in the household who takes care of the lawn or garden).

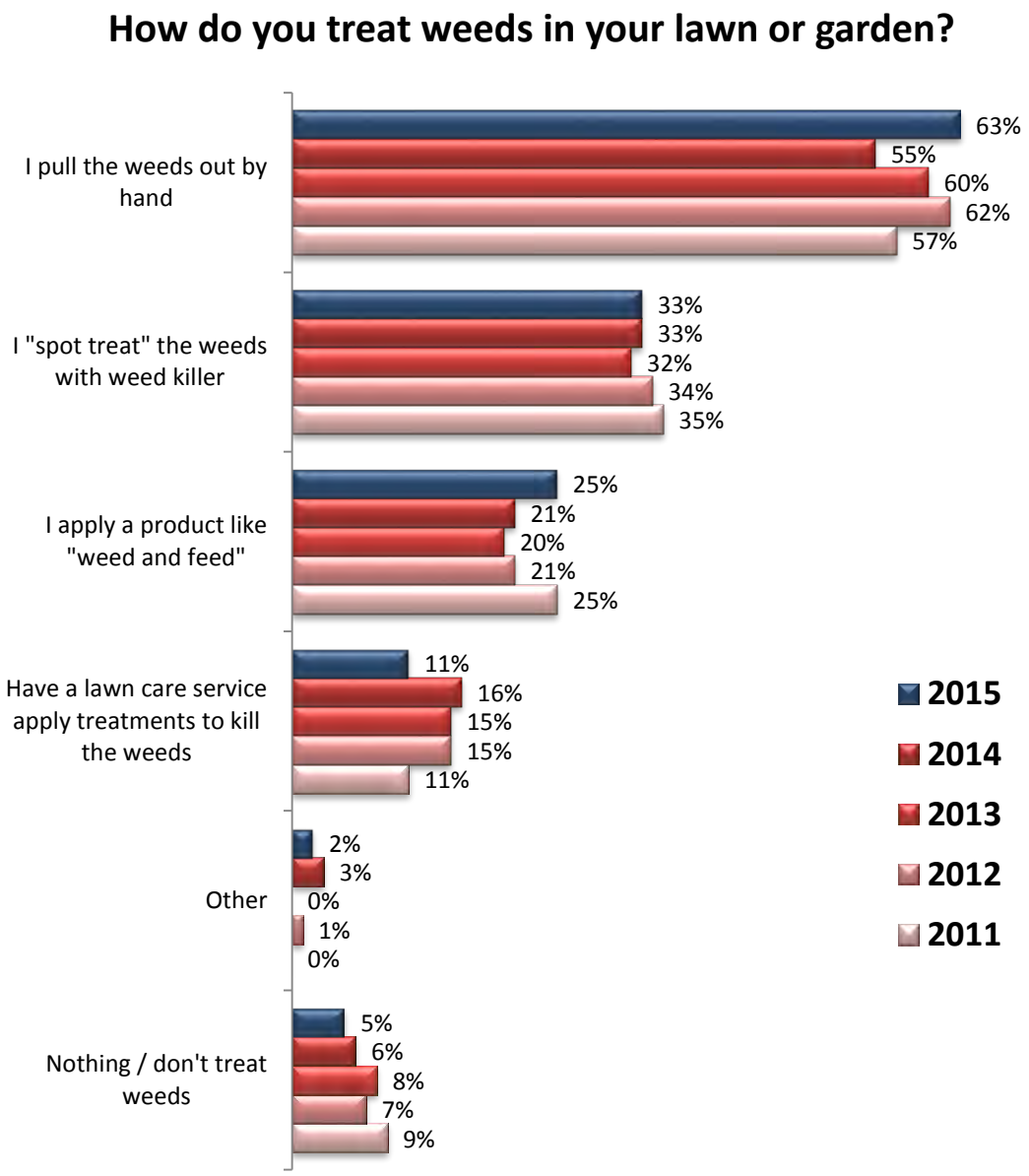
- The first question about lawns and gardens addressed actions related to grass clippings. As shown in the chart on the next page, slightly less than four-in-ten (37%) in 2015 reported that they leave grass clippings on the ground.



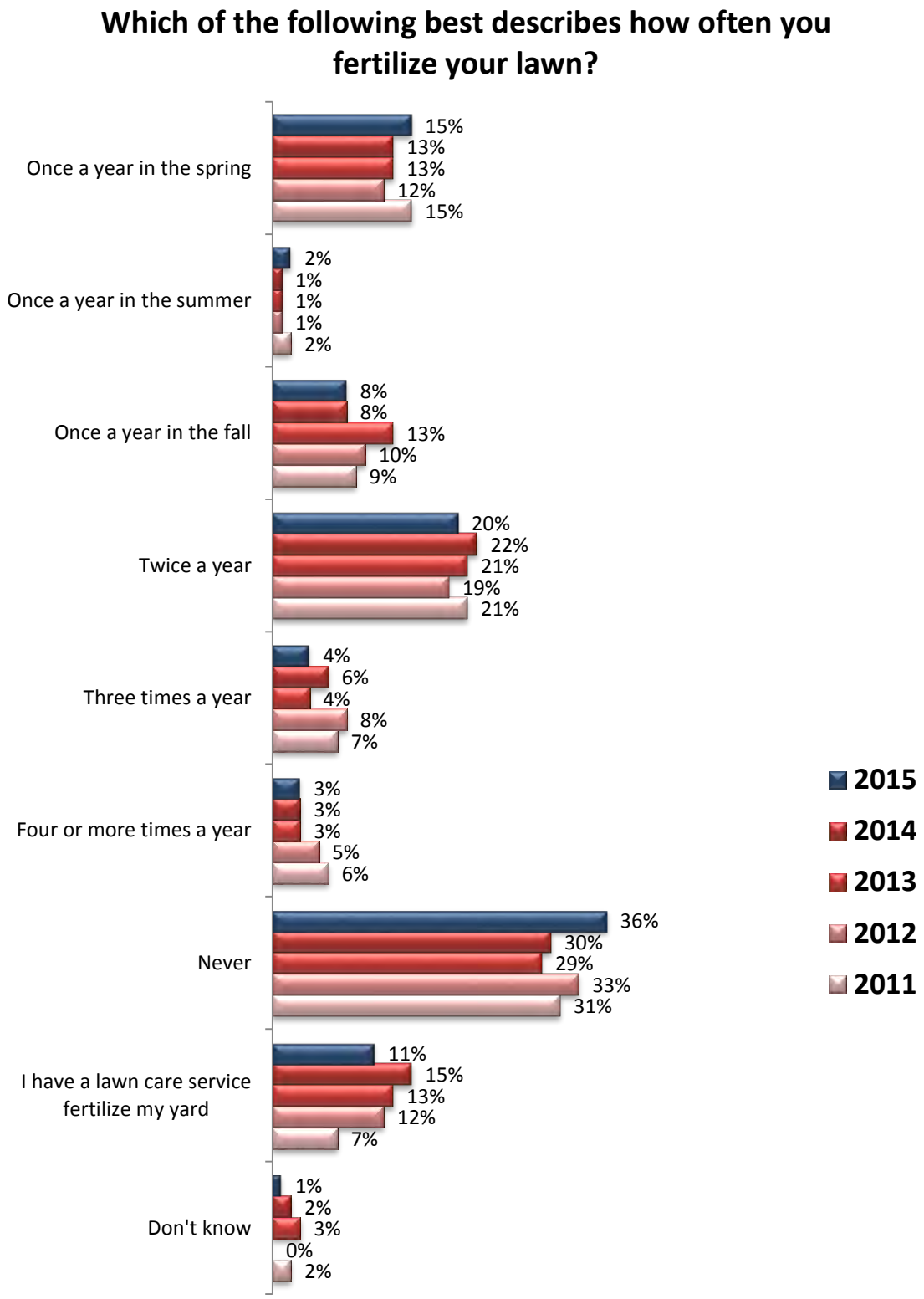
- The proportion leaving grass clippings on the ground in 2015 (37%) was significantly lower than in 2011 (46%) but not significantly different from other years.



- When it comes to leaves that collect on the lawn or garden, nearly four-in-ten (39%) in 2015 reported putting them in compost / recycling bags. This 2015 result was significantly higher than the result in 2011 (but it was not significantly different from other years).

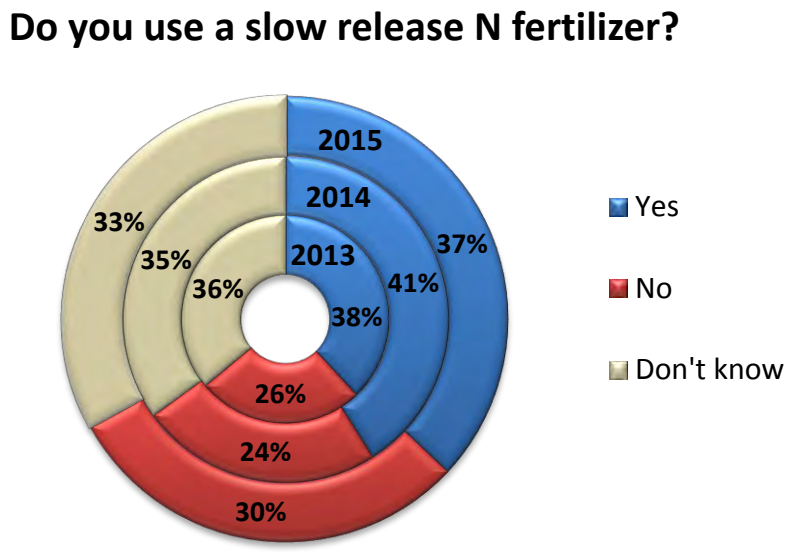


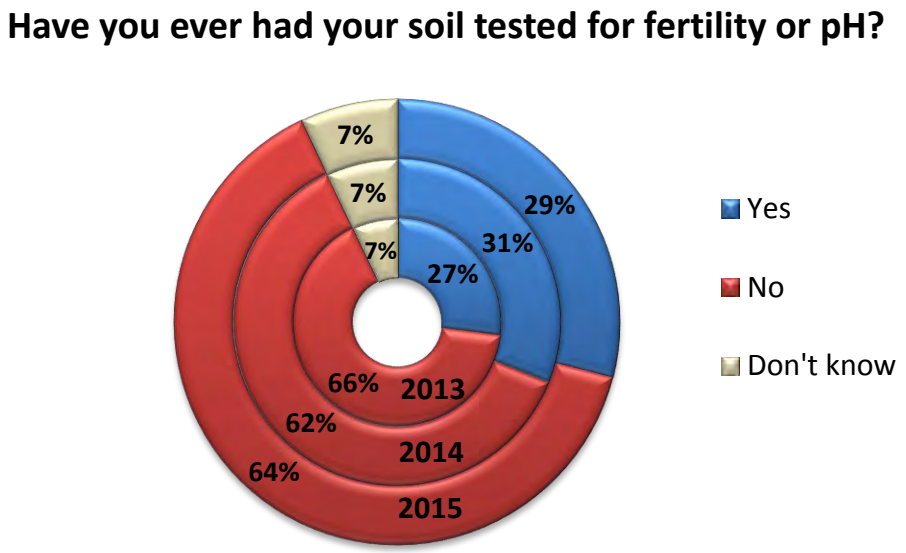
- When dealing with weeds, more than half reported pulling them out by hand.
- However, it was possible to report more than one way of dealing with weeds. One-third in 2015 reported using "spot treatments," and one-fourth reported that they apply "weed and feed." Also, some have a lawn service apply weed killer.



- More than one-third (36%) in 2015 reported that they *never* fertilize their lawn. Among those who do so, fertilizing behavior varied, as shown in the chart above.

- The next two questions were first asked in the 2013 survey. These results are based only on those who fertilize their lawn (or have a lawn service fertilize their lawn) at least once a year. First, nearly four-in-ten (37% in 2015) use a "slow release N fertilizer," although many didn't know. Second, more than one-fourth (29%) have had their soil tested for fertility or pH.

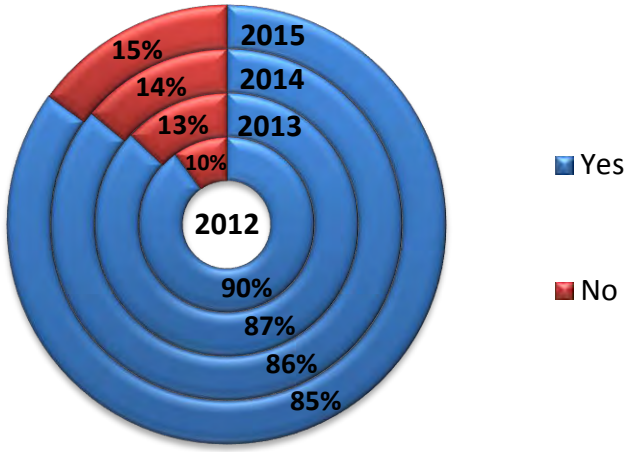




Rain Barrels & Rain Gardens

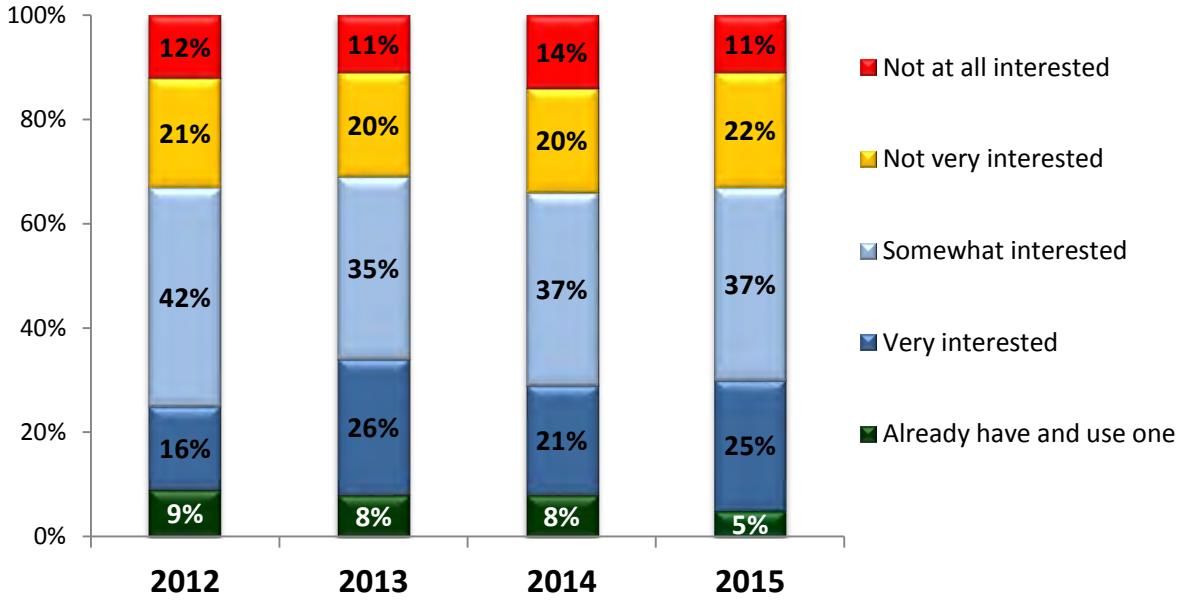
- Questions about "rain barrels" and "rain gardens" were first introduced in the 2012 survey and were asked of those who were the primary person in their household who takes care of their lawn or garden. In the first chart below, 85% in 2015 have heard of a "rain barrel."

Have you ever heard of a "rain barrel" (i.e., a barrel you put under your downspout to collect rain water that you can use around your yard)?



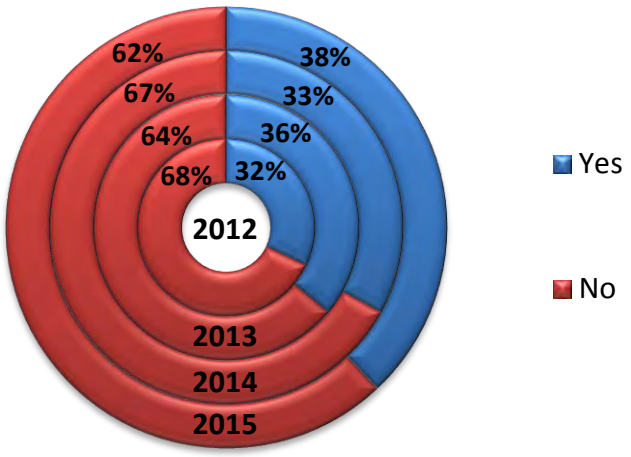
- The proportion "Very interested" in installing and using a rain barrel in 2015 (25%) was significantly higher than in 2012 but similar to 2013 and 2014.

How interested would you be in installing and using a "rain barrel" at your home within the next few years?



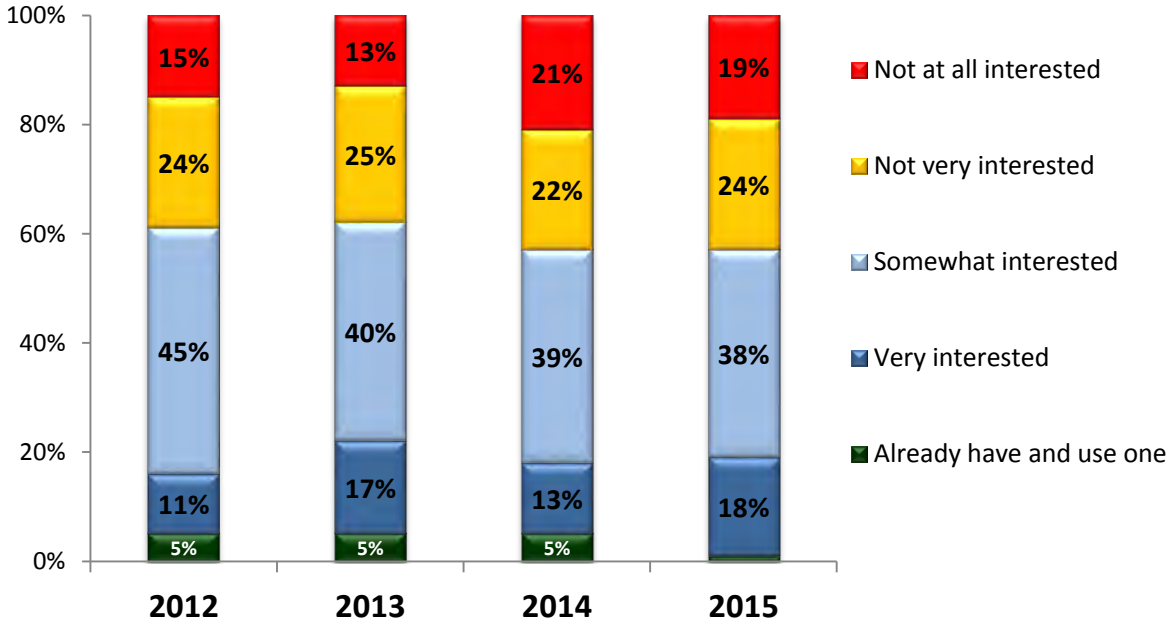
- Again among respondents who reported being the primary person in their household who takes care of their lawn or garden, more than one-third in 2015 have heard of a "rain garden."

Have ever you heard of a "rain garden" (i.e., a bowl shaped garden area where runoff can collect and soak into the ground)?



- The proportion "Very interested" in a "rain garden" in 2015 (18%) was significantly higher than in 2012 but not significantly different compared to 2013 and 2014.

How interested would you be in installing and using a "rain garden" at your home within the next few years?



Behavior Related to Changing Vehicle Oil

- When asked about changing the oil in their car or truck, more than eight-in-ten each year reported that they use an oil change service, while 11% in 2015 reported taking old motor oil to a gas station or hazmat facility for recycling. A few respondents selected other response options, including three respondents in 2015 who put old motor oil in the trash. Because the number selecting some response options was very small, the results are shown in the tables below, with the frequency (number of respondents selecting each response) and the percentage.

2015: When you need to change the oil in your car or truck, what do you do with the old motor oil?

	Frequency	*Percent*
I don't change the oil myself / I take it to a garage / oil change service	426	85.2%
Take the old motor oil to a gas station or hazmat facility for recycling	54	10.8%
Store it in my garage	4	0.8%
Put it in the trash	3	0.6%
Don't own a car or truck	13	2.6%
Total	500	100.0%

2014: When you need to change the oil in your car or truck, what do you do with the old motor oil?

	Frequency	*Percent*
I don't change the oil myself / I take it to a garage / oil change service	426	85.2%
Take the old motor oil to a gas station or hazmat facility for recycling	50	10.0%
Put it in the trash	5	1.0%
Store it in my garage	4	0.8%
Other	1	0.2%
Don't own a car or truck	14	2.8%
Total	500	100.0%

2013: When you need to change the oil in your car or truck, what do you do with the old motor oil?

	Frequency	*Percent*
I don't change the oil myself / I take it to a garage / oil change service	427	85.4%
Take the old motor oil to a gas station or hazmat facility for recycling	57	11.4%
Put it in the trash	3	0.6%
Dump it in the gutter or down the storm sewer	2	0.4%
Store it in my garage	1	0.2%
Don't own a car or truck	10	2.0%
Total	500	100.0%

2012: When you need to change the oil in your car or truck, what do you do with the old motor oil?

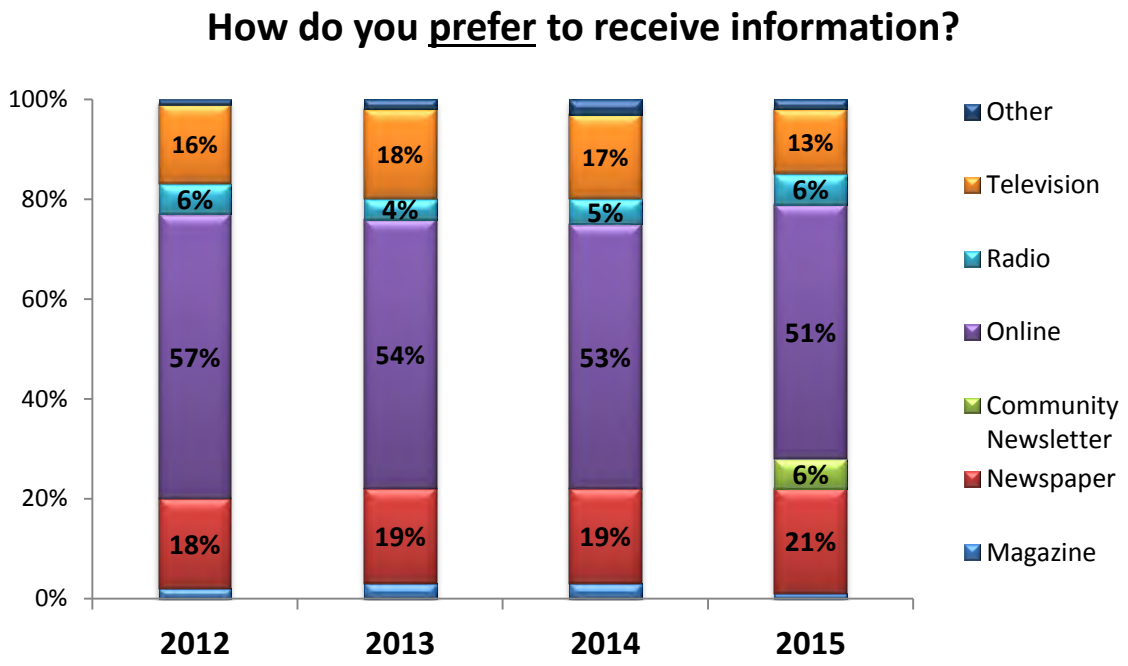
	Frequency	*Percent*
I don't change the oil myself / I take it to a garage / oil change service	426	85.2%
Take the old motor oil to a gas station or hazmat facility for recycling	49	9.8%
Store it in my garage	3	0.6%
Put it in the trash	2	0.4%
Other	2	0.4%
Don't own a car or truck	18	3.6%
Total	500	100.0%

2011: When you need to change the oil in your car or truck, what do you do with the old motor oil?

	Frequency	*Percent*
I don't change the oil myself / I take it to a garage / oil change service	413	82.6%
Take the old motor oil to a gas station or hazmat facility for recycling	60	12.0%
Put it in the trash	2	0.4%
Other	2	0.4%
Don't own a car or truck	23	4.6%
Total	500	100.0%

Preference for Receiving Information

- Based on a question that was first introduced in the 2012 survey, more than half prefer to receive information online (51% in 2015). However, the response option "Community Newsletter" was first added in the 2015 survey.



- In each of the areas included in the survey, more preferred to receive information online than preferred to receive information from other particular sources, as shown below.

Preference for Receiving Information	Alexandria	Arlington	Fairfax Inclusive	Leesburg / Loudoun	Dumfries / Stafford
Magazine	0%	1%	1%	1%	2%
Newspaper	18%	21%	21%	16%	27%
Community Newsletter	5%	3%	8%	5%	4%
Online	46%	51%	53%	51%	47%
Radio	5%	9%	5%	6%	4%
Television	22%	13%	10%	17%	16%
Other	4%	2%	2%	4%	0%
N = number of respondents	*55*	*67*	*255*	*78*	*45*

- As might be expected, younger respondents were more likely than older respondents to prefer receiving information online.

Preference for Receiving Information	Have Lived in Current Residence < 1 Year	1 to 3 Years	4 to 9 Years	10 to 19 Years	20 or More Years
Magazine	4%	0%	3%	0%	0%
Newspaper	9%	14%	13%	26%	37%
Community Newsletter	6%	6%	5%	6%	7%
Online	64%	57%	49%	51%	41%
Radio	6%	7%	7%	5%	3%
Television	9%	12%	20%	11%	11%
Other	2%	4%	3%	1%	1%
N = number of respondents	*53*	*111*	*136*	*101*	*99*

Preference for Receiving Information	Age 21 to 34	35 to 44	45 to 54	55 to 64	65 +
Magazine	3%	0%	1%	0%	2%
Newspaper	7%	9%	19%	31%	39%
Community Newsletter	5%	5%	5%	7%	8%
Online	67%	53%	55%	44%	34%
Radio	5%	8%	11%	1%	2%
Television	11%	20%	8%	13%	15%
Other	2%	5%	1%	4%	0%
N = number of respondents	*114*	*100*	*101*	*83*	*102*

Preference for Receiving Information	Male	Female	Homeowners	Renters	Hispanic Respondents
Magazine	1%	2%	1%	3%	2%
Newspaper	22%	19%	22%	13%	9%
Community Newsletter	5%	6%	6%	5%	2%
Online	54%	48%	49%	59%	59%
Radio	3%	8%	6%	5%	2%
Television	12%	15%	14%	12%	16%
Other	3%	2%	2%	3%	10%
N = number of respondents	*240*	*260*	*380*	*120*	*44*

Appendix: Questionnaire

2015 Only Rain NVRC Survey

INTRODUCTION:
Welcome, and thank you for participating in this important research survey.

S1. Are you:

- Male
- Female

S2. Which of the following categories includes your age?

- Under 18 **[END SURVEY]**
- 18 to 20 **[END SURVEY]**
- 21 to 24
- 25 to 34
- 35 to 44
- 45 to 54
- 55 to 64
- 65 to 74
- 75 or older

S3. Which of the following best describes your residence?

- I own my home
- I rent my home
- Neither **[END SURVEY]**

S4. Do you live in the state of Virginia?

- Yes
- No **[END SURVEY]**

S5. Which of the following best describes where you live (county or city or town)?

- Alexandria
- Arlington
- Dumfries
- Fairfax (city of)
- Fairfax (county of)
- Falls Church
- Herndon
- Leesburg
- Loudoun County
- Stafford County
- Vienna
- None of the above **[END SURVEY]**

S6. Which of the following describes your ethnicity? (Please select ALL that apply)

- ○ African American / Black
- ○ American Indian / Alaska Native
- ○ Asian
- ○ Hispanic / Latino
- ○ Native Hawaiian / Pacific Islander
- ○ White / Caucasian
- ○ Other

Q1. For how many years have you lived in your current residence?

- ○ Less than 1 year
- ○ 1 to 3 years
- ○ 4 to 9 years
- ○ 10 to 19 years
- ○ 20 or more years

Q2. Do you live within the Potomac River Watershed?

- ○ Yes
- ○ No
- ○ Not Sure
- ○ I do not know what a “watershed” is

Q3. What do you think is the number one cause of pollution in local streams, the Potomac River, and the Chesapeake Bay? (Please select only one)

- ○ Factories / Industrial waste
- ○ Fertilizers and pesticides from lawns and farms
- ○ Garbage / trash / litter
- ○ Gas, oil and exhaust from automobiles
- ○ Pet waste
- ○ Polluted runoff from streets and parking lots
- ○ Don’t know / not sure
- ○ Other: _____

Q4. "Stormwater" is rain or other water that flows into the street, along the gutter and into the storm drain. To the best of your knowledge, where do you believe storm water eventually ends up?

- □ At a waste water treatment facility
- □ Local streams, ponds or lakes
- □ Potomac River or Chesapeake Bay
- □ Underground / seeps in to the ground
- □ Don’t know
- □ Other:_____

---------- Page Break ----------

Q5. Do you (or does another person in your household) have a dog?

- ○ Yes **[CONTINUE WITH Q6]**
- ○ No **[SKIP TO Q9]**

Q6. When taking your dog(s) for a walk, how often do you pick up after your dog(s)?

- ○ Always / every time the dog leaves waste
- ○ Usually
- ○ Half the time
- ○ Sometimes
- ○ Rarely
- ○ Never
- ○ Not applicable / I don't take the dog(s) on walks

Q7. How often do you (or does someone else from your household) remove dog waste from your yard?

- ○ Daily
- ○ Weekly
- ○ Monthly
- ○ Less often than once a month
- ○ Never
- ○ Not applicable / don't have a yard

[SKIP OVER Q8a/b IF NEVER OR NOT APPLICABLE IN BOTH Q6 AND Q7]
Q8a. What is the <u>most</u> important reason to pick up after your dog(s)? (Please select only one)

- ○ City / township ordinance
- ○ Don't want to step in it
- ○ It causes water pollution
- ○ It is gross
- ○ It's what good neighbors do
- ○ Odor
- ○ Other reason
- ○ None / no reason to **[SKIP TO Q9]**

Q8b. What other reasons (if any) have motivated you to pick up after your dog(s)? [PROGRAMMING NOTE: DON'T SHOW WHAT WAS SELECTED IN Q10a]

- □ City / township ordinance
- □ Don't want to step in it
- □ It causes water pollution
- □ It is gross
- □ It's what good neighbors do
- □ Odor
- □ None of the above

Q9. Does your home have a lawn or garden?

- ○ Yes **[CONTINUE WITH Q10]**
- ○ No **[SKIP TO Q18]**

Q10. Are you the primary person who takes care of the lawn or garden?

- ○ Yes **[CONTINUE WITH Q11a]**
- ○ No **[SKIP TO Q18]**

Q11a. What do you do with grass clippings from your lawn or garden?

- ○ Bag them and put them in the regular trash
- ○ Bag them and put them in compost / recycling bags for pick up
- ○ Leave them on the ground
- ○ Put them in a compost pile / bin
- ○ Have a lawn care service cut my lawn
- ○ Other
- ○ Not applicable / don't have grass clippings

Q11b. What do you do with leaves that collect on your lawn or garden?

- ○ Bag them and put them in the regular trash
- ○ Bag them and put them in compost / recycling bags for pick up
- ○ Rake to the curb / street for municipal pickup
- ○ Mulch them and leave them on the ground
- ○ Put them in a compost pile / bin
- ○ Don't do anything with them / just leave them on the ground
- ○ Other
- ○ Not applicable / don't have leaves

Q12. How do you treat weeds in your lawn or garden? (Select all that apply)

- □ I apply a product like "weed and feed" that contains weed treatment and fertilizer
- □ I "spot treat" the weeds with weed killer
- □ I pull the weeds out by hand
- □ I have a lawn care service apply treatments to kill the weeds
- □ Other
- □ Nothing / I don't treat weeds / leave the weeds alone

Q13. Which of the following best describes how often you fertilize your lawn?

- ○ Once a year in the spring
- ○ Once a year in the summer
- ○ Once a year in the fall
- ○ Twice a year
- ○ Three times a year
- ○ Four or more times a year
- ○ Never **[SKIP TO Q15]**
- ○ I have a lawn care service fertilize my yard
- ○ Don't know

Q14. Do you use a slow release N fertilizer?

- ○ Yes
- ○ No
- ○ I don't know

Q15. Have you ever had your soil tested for fertility or pH?

- ○ Yes
- ○ No
- ○ I don't know

Q16a. Have you ever heard of a "rain barrel" (i.e., a barrel you put under your downspout to collect rain water that you can use around your yard)?

- ○ Yes
- ○ No

Q16b. How interested would you be in installing and using a "rain barrel" at your home within the next few years?

- ○ Not at all interested
- ○ Not very interested
- ○ Somewhat interested
- ○ Very interested
- ○ I already have and use a "rain barrel"

Q17a. Have you ever you heard of a "rain garden" (i.e., a bowl shaped garden area where runoff can collect and soak into the ground)?

- ○ Yes
- ○ No

Q17b. How interested would you be in installing and using a “rain garden” at your home within the next few years?

- ○ Not at all interested
- ○ Not very interested
- ○ Somewhat interested
- ○ Very interested
- ○ I already have a “rain garden” at my home

Q18. When you need to change the oil in your car or truck, what do you do with the old motor oil?

- ○ I don’t change the oil myself / I take it to a garage / oil change service
- ○ Take the old motor oil to a gas station or hazmat facility for recycling
- ○ Store it in my garage
- ○ Put it in the trash
- ○ Dump it in the gutter or down the storm sewer
- ○ Dump it down the sink
- ○ I don’t own a car or truck
- ○ Other

Q19. How important do you think it is for local governments to spend more money on protecting water quality?

- ○ Not at all important
- ○ Not too important
- ○ Somewhat important
- ○ Very important

---------- Page Break ----------

Q20. Have you seen any ads on TV or the Internet featuring rubber duckies that talk about reducing water pollution?

- ○ Yes **[CONTINUE WITH Q21]**
- ○ No **[SKIP TO Q22]**
- ○ Not sure **[SKIP TO Q22]**

Q21. Did seeing those ads make you change any of your behaviors related to fertilizing less often and/or reducing water pollution?
(Select all that apply)

- □ Yes, I now pick up pet waste more often
- □ Yes, I now plan to fertilize fewer times during the year
- □ Yes I now properly dispose of motor oil
- □ I was already doing what is recommend to reduce water pollution
- □ None of the above applies to me

---------- Page Break ----------

Q22. Have you seen the logo above anywhere? (Show Only Rain logo)

- Yes
- No

Q23. How do you prefer to receive information? (Please select only one)

- Magazine
- Newspaper
- Community newsletter
- Online
- Radio
- Television
- Other: _____

June 3, 2015

Subject: Automotive Industry Outreach Material

Dear Automotive Industry Facility Manager:

The City of Falls Church Department of Public Works is providing the following informational materials to establishments that are engaged in the automotive industry. This mailing is a small part of the City's effort to educate public and private businesses about the common types of illicit discharges that plague our environment. More specifically, the following materials cover general good housekeeping practices for automotive businesses and address items such are hazardous waste disposal, leaks and spills, material storage, dumpster management, and vehicle maintenance.

Please take a moment to read and share the provided information with your staff. If you have any questions about the City's stormwater program or require technical assistance on how you can improve your workplace to prevent illicit discharges please contact the City's Civil Engineer, Jason Widstrom, at 703-248-5026 or via email at jwidstrom@fallschurchva.gov.

Sincerely,

Jason Widstrom, P.E.
Civil Engineer

Enc.

Automotive Shop
Stormwater Pollution Prevention

Practice Good Shop Keeping

- Designate an area away from storm or sanitary sewer drains to change automotive fluids
- Use drip pans to capture leaks when pouring and draining fluids. Never allow pan to fill more than half full
- Post signs to prevent disposal of liquid wastes into sanitary drains
- Routinely sweep fuel dispensing areas for removal of litter and debris
- Inspect and clean facility stormdrain inlets and catch basins before the first rainfall event of the year
- Post signs at fuel dispensers warning against topping off vehicle fuel tanks
- Prohibit washing down the fueling pad off-site or to a stormdrain. Collect runoff water for proper disposal
- Do not hose down outside area, sweep or us a mop and bucket. Do not discharge mop water into the parking lot, street, gutter, or stormdrain.

Manage Spills

- Immediately clean up small spills using shop rags
- Utilize dry methods, including sweeping and absorbing cleaning agents, to clean work areas instead of hosing them down
- Prepare and use spill containment clean-up kits
- Follow your hazardous materials response plan in the event of a hazardous spill
- Train employees to be knowledgeable with hazardous spill response plans and emergency procedures

Properly Dispose of Waste

- Cover outdoor storage areas to prevent contaminated stormwater runoff
- Recycle motor oil, oil filters, antifreeze, batteries, solvents and tires
- Contact a state licensed waste hauler for proper disposal of hazardous wastes

For more information call:
City of Falls Church Department of Public Works, 703-248-5350 (TTY711)

The City of Falls Church is committed to the letter and spirit of the Americans with Disabilities Act. To request reasonable accommodation for any type of disability, call (703) 248-5350 (TTY 711).

Talleres automotores
Evite la contaminación del agua de lluvia

Implemente buenas prácticas de mantenimiento en el taller

- Para el cambio de fluidos automotores designe un área alejada de alcantarillas y drenajes pluviales (drenajes por los que se elimina el agua de lluvia).
- Al drenar y verter fluidos utilice bandejas recolectoras para recoger escurrimientos o derrames. Nunca permita que la bandeja se llene a más de la mitad de su capacidad.
- Coloque avisos para evitar la eliminación de desechos líquidos en alcantarillas/drenajes.
- Barra frecuentemente las áreas de abastecimiento de combustible para eliminar basura y residuos.
- Antes de las primeras lluvias de cada año, inspeccione y limpie las entradas/rejillas del drenaje pluvial y colector de lodo/fango del taller.
- Coloque avisos en las bombas abastecedoras de combustible desaconsejando llenar al tope el tanque de combustible de los vehículos.
- Prohíba el lavado del tapete de abastecimiento de combustible en otro lugar o en el drenaje pluvial. Recolecte el agua de escurrimientos para su eliminación adecuada.
- No limpie con manguera el área externa; barra o use cubeta y trapeador /mapo. No arroje el agua con la que limpió al estacionamiento, la calle, la alcantarilla o el drenaje pluvial.

Controle derrames

- Limpie inmediatamente cualquier derrame pequeño usando trapos o paños del taller.
- Para limpiar áreas de trabajo utilice métodos secos, como barrido y agentes de limpieza absorbentes, en lugar de limpiarlas con la manguera.
- Prepare y utilice kits de limpieza para contención de derrames.
- En caso de derrame de sustancias peligrosas, siga su plan de respuesta para este tipo de accidentes.
- Capacite a los empleados para que conozcan los procedimientos de emergencia y los planes de respuesta en caso de derrames de sustancias peligrosas.

Elimine desechos adecuadamente

- Cubra las áreas de almacenamiento externas para evitar el escurrimiento de aguas pluviales contaminadas.
- Recicle aceite de motor, filtros de aceite, anticongelante, baterías, solventes y llantas.
- Para eliminar desechos peligrosos adecuadamente comuníquese con un recolector de desechos con licencia estatal.

Para obtener más información llame al:
Departamento de Obras Públicas de la Ciudad de Falls Church, 703-248-5350 (TTY711)

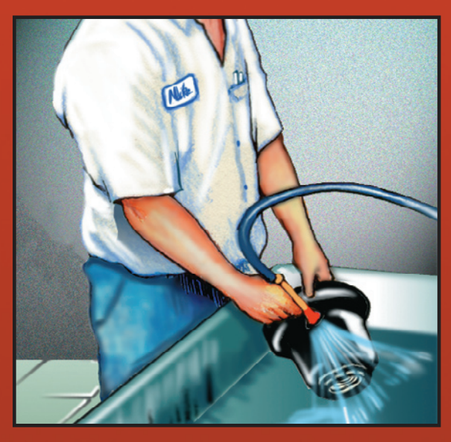
La Ciudad de Falls Church está comprometida con la letra y el espíritu de la Ley sobre estadounidenses con discapacidades. Este documento puede proporcionarse en otro formato, previa solicitud, llamar al (703) 248-5350 (TTY 711).

GOOD CLEANING PRACTICES

AUTOMOBILE REPAIR INDUSTRY

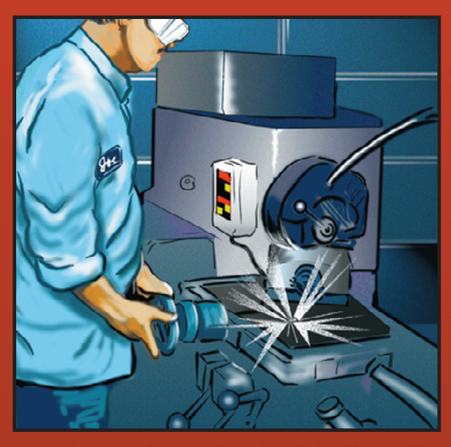
PROPER STORAGE OF HAZARDOUS WASTE

Keep your liquid waste segregated. Many fluids can be recycled via hazardous waste disposal companies if they are not mixed. Store all materials under cover with spill containment or inside to prevent contamination of rainwater runoff.
Mantenga los deshechos líquidos separados. Varios líquidos pueden ser reciclados por compañías que se especializan en deshechos tóxicos si no están mezclados. Guarda y cubre todos los materials dentro de un lugar para prevenir la contaminación del desagüe.



CLEANING AUTO PARTS

Scrape parts with a wire brush or use a bake oven rather than liquid cleaners. Arrange drip pans, drying racks and drain boards so that fluids are directed back into the sink or the fluid holding tank. Do not wash parts or equipment in a parking lot, driveway or street.
Limpie las partes de un cepillo de alambres o use un limpiador de hornos en vez de usar limpiadores líquidos. Arregle las graceras, perchas para secary y tables de escurrir para que los líquidos sean dirigidos al lavadero o recipientes para guarder líquidos. No lave las partes de auto o herramientas en el estacionamiento, la cochera o la calle.



METAL GRINDING & POLISHING

Keep a bin under your lathe or grinder to capture metal filings. Send uncontaminated filings to a scrap metal recycler for reclamation. Store metal filings in a covered container or indoors.
Mantenga un recipiente debajo de las maquinas de tornos o amoladoras para colectar desechos de metal. Mande los deshechos de metal a un centro de reciclaje de metales. Guarde los deshechos de metal en un recipiente cubierto o dentro del local.

PREVENTING LEAKS & SPILLS

Place drip pans underneath to capture fluids. Use absorbent cleaning agents instead of water to clean work areas.
Utilice caserolas para el goteo de líquidos. Use limpiadores absorbentes en lugar de agua para limpiar el área de trabajo.

PROPER DISPOSAL OF HAZARDOUS WASTE

Recycle solvents, oil and used filters, anti-freeze, batteries, lubricants and metal filings collected from grinding/polishing auto parts. Contact a licensed hazardous waste hauler to dispose of saturated absorbents.
Recicle solventes, aceite de motor y filtros de aceite usados, anti-congelante, baterias, lubricantes, y desechos de metal y partes de auto pulidas. Llame a un colector de desechos tóxicos para disponer de absorbentes saturados.

CLEANING UP SPILLS IMMEDIATELY

Follow your hazardous materials response plan, as filed with your local fire department or other hazardous materials authority. Be sure that all employees are aware of the plan and are capable of implementing each phase of the plan. Use dry methods for spill cleanup (sweeping, absorbent materials, etc.).
Siga su plan de como deshacerse de materiales tóxicos, como esta indicado en el departmento de bomberos local u otras autoridades de materiales tóxicos. Asegúrese que todos los empleados estén informados y sean capaces de aplicar cada fase del plan. Use métodos secos para limpiar derramamientos (barriendo, materiales absorbentes, etc.).

To report illegal dumping or spills. Para reportar actividadas ilegales.

City of Falls Church Police Non-Emergency Number

(703) 248-5053

CITY OF FALLS CHURCH

The City of Falls Church is committed to the letter and spirit of the Americans with Disabilities Act. To request a reasonable accommodation for any type of disability, call 703-248-5027 (TTY 711). For more information call 703-248-5178.

Poster Courtesy of San Bernardino County, CA

APPENDIX D – Public Participation

- City Council Meetings
  - July 7, 2014 – Council Work Session-Stormwater Ordinance
  - August 11, 2014 – Stormwater Ordinance
  - September 8, 2014 – Stormwater Ordinance
  - September 22, 2014 – Stormwater Project-Little Falls
  - March 13, 2015 – Stormwater Budget
  - March 23, 2015 – Stormwater Budget
  - March 27, 2015 – Stormwater Budget
  - May 11, 2015 – Mayor Proclamation
- Environmental Services Council
  - May 21, 2015
- Habitat Restoration Flyers
  - 2014
  - 2015
- Neighborhood Tree Program
- City clean-up events (Fall & Spring)
- Rain Barrel Workshop
- Hard copy of MS4 Program Plan (pictures)

PUBLIC NOTICE:

CITY COUNCIL WORK SESSION

MONDAY
JULY 7, 2014
7:30 p.m.
DOGWOOD ROOM
(G level, City Hall)

Agenda:

1. Fire Services Contract with Arlington County 7:30 pm
2. Transportation Issues: 7:50
   a. Status Report on Updating the Neighborhood Traffic Calming Program
   b. NVTC Agent Letter
   c. NVTC / DRPT Project Agreements
   d. Transportation/C&I Equivalent Briefing
3. Stormwater Ordinance Updates 8:10
4. George Washington National Forest Horizontal Fracturing 8:15
5. West End Park Briefing 8:20
6. City Hall Public Safety Renovations & Expansion Process Roadmap 8:45
7. Council Comments and Schedule 8:50
8. Closed Session pursuant to (1) VA Code Section 2.2-3711 (A)(3) for the "[d]iscussion or consideration of the acquisition of real property for a public purpose, where discussion in an open meeting would adversely affect the bargaining position or negotiating strategy of the public body." *[TJ Expansion and Roberts Park]* and (2) VA Code Section 2.2-3711 (A)1. [d]iscussion …. of prospective candidates for employment;…. of specific public officers, appointees, or employees of any public body;…. *[City Attorney Recruitment]*

City Council work sessions are recorded and broadcast on www.fallschurchva.gov/CouncilMeetings.

PLEASE DO NOT REMOVE THIS NOTICE
POSTED: 07-3-14

The City of Falls Church is committed to the letter and spirit of the Americans with Disabilities Act. To request a reasonable accommodation for any type of disability call (703) 248-5014, (TTY 711).
For information in your language please call 703 248-5014 (TTY 711) to request an interpreter. Để có thông tin bằng ngôn ngữ của quý vị, xin gọi 703-248-5014 để yêu cầu người thông dịch. Para recibir información en su idioma por favor llame al 703 248-5014 (TTY 711) para solicitar un interprete.

AGENDA FOR THE REGULAR MEETING
OF THE CITY COUNCIL OF THE CITY OF FALLS CHURCH, VIRGINIA
HELD IN COUNCIL CHAMBERS, 300 PARK AVENUE AT 7:30 P.M.,
MONDAY, AUGUST 11, 2014
Revised 08-11-14

1. **CALL TO ORDER**

2. **PLEDGE OF ALLEGIANCE**

3. **ROLL CALL**

4. **VALIDATION OF NOTICE OF SPECIAL MEETING**

5. **ADOPTION OF MEETING AGENDA**

6. **PROCLAMATIONS**

   (a) Proclamation In Memory of Falls Church Sheriff's Office Sergeant Dale Toler
   (b) Proclamation Honoring The Life Of United States Army Major General Harold J. Greene

7. **OATH OF OFFICE TO NEW BOARD AND COMMISSION MEMBERS**

8. **RECEIPT OF PUBLIC COMMENTS, REQUESTS, AND CONSENT ITEM COMMENTS**. [The public may address Council for one 3-minute period. The Mayor may shorten the time allowed each speaker, depending on the length of the agenda and number of speakers. A chair or representative of a board, commission, or committee may make a 5-minute oral summary of the written report.]

   (a) Summary of Written Comments.
   (b) Council Requests
   (c) Recognition of Eagle Scout Will Velarde

9. **REPORT OF CITY MANAGER TO COUNCIL**

10. **BUSINESS ON THE AGENDA**

    (a) Second readings of ordinances and other items requiring public hearings

    (b) Resolutions and first readings of ordinances

    (1) **(TO14-27)** ORDINANCE TO AMEND CHAPTER 35 "STORMWATER," ARTICLE I "STORMWATER MANAGEMENT" OF THE FALLS CHURCH CITY CODE *(Director of Public Works Mike Collins)*

    (2) **(TR14-29)** RESOLUTION TO AMEND THE COMPREHENSIVE PLAN OF THE CITY OF FALLS CHURCH, VIRGINIA, TO CHANGE THE DESIGNATION OF APPROXIMATELY 3.9 ACRES OF LAND LOCATED AT THE NORTHEAST CORNER OF 110, 112, 112A, 212 & 212A NORTH WEST STREET, 920, 922, 924, 926, 928, 930, 932 & 934 WEST BROAD STREET AND 919, 921 & 925 PARK AVENUE (REAL PROPERTY CODE NUMBERS 51-202-009 THROUGH 51-202-015, 51-202-004, 51-202-005, 51-202-028 AND 51-202-028 OUTLOT) FROM "BUSINESS" AND "LOW DENSITY RESIDENTIAL (6.0)" TO "MIXED USE" ON THE CITY'S FUTURE LAND USE PLAN MAP, ON APPLICATION

BY SPECTRUM DEVELOPMENT COMPANY LLC. *(Development Services Director James Snyder)*

(3) **(TO14-28)** ORDINANCE TO AMEND THE OFFICIAL ZONING DISTRICT MAP OF THE CITY OF FALLS CHURCH, VIRGINIA, BY REZONING A TOTAL OF APPROXIMATELY 2.12 ACRES OF LAND FROM B-3, GENERAL BUSINESS DISTRICT, TO B-1, LIMITED BUSINESS DISTRICT, AT 110, 112, 112A, 212 & 212A NORTH WEST STREET AND 928, 930, 932 & 934 WEST BROAD STREET (REAL PROPERTY CODE NUMBERS 51-202-009 THROUGH 51-202-012, 51-202-028 AND 51-202-028 OUTLOT) AND APPROXIMATELY 0.78 ACRES OF LAND FROM R-1B, MEDIUM DENSITY RESIDENTIAL DISTRICT, TO B-1, LIMITED BUSINESS DISTRICT, FOR RESIDENTIAL PROPERTIES AT 919, 921 & 925 PARK AVENUE (REAL PROPERTY CODE NUMBERS 51-202-013, 51-202-014, AND 51-202-015), ON APPLICATION BY SPECTRUM DEVELOPMENT COMPANY LLC. *(Development Services Director James Snyder)*

(4) **(TR14-28)** RESOLUTION TO GRANT A SPECIAL EXCEPTION ON THE APPLICATION OF SPECTRUM DEVELOPMENT COMPANY LLC FOR RESIDENTIAL USES WITHIN A MIXED USE DEVELOPMENT PROJECT AND TO INCREASE THE BUILDING HEIGHT WITH A BONUS OF THIRTY (30) FEET TO A MAXIMIUM HEIGHT OF EIGHTY- FIVE (85) FEET FOR A MIXED-USE DEVELOPMENT PROJECT ON APPROXIMATELY 3.9 ACRES OF LAND LOCATED AT THE NORTHEAST CORNER OF 110, 112, 112A,212 & 212A NORTH WEST STREET, 920, 922, 924, 926, 928, 930, 932 & 934 WEST BROAD STREET AND 919, 921 & 925 PARK AVENUE (REAL PROPERTY CODE NUMBERS 51-202-009 THROUGH 51-202-015, 51-202-004, 51-202-005, 51-202-028 AND 51-202-028 OUTLOT) KNOWN AS " BROAD AND WEST " BY SPECTRUM DEVELOPMENT COMPANY LLC. *(Development Services Director James Snyder)*

(5) **(TR14-30)** RESOLUTION CREATING A TASK FORCE TO REFINE THE PLAN FOR CITY HALL AND PUBLIC SAFETY FACILITY IMPROVEMENTS *(Assistant City Manager Cindy Mester)*

(6) **(TR14-33)** RESOLUTION AMENDING RESOLUTION 2014-01 "RESOLUTION ADOPTING RULES OF PROCEDURE OF THE CITY COUNCIL OF THE CITY OF FALLS CHURCH, VIRGINIA AS OF JANUARY 1, 2014" *(City Clerk Celeste Heath)*

(7) **(TR14-34)** RESOLUTION APPOINTING CAROL W. MCCOSKRIE AS CITY ATTORNEY AND SETTING COMPENSATION FOR THAT POSITION

(c) Consent items **Motion**: MOVE approval of the Consent Items.

(1) AUTHORIZE THE CITY MANAGER ON BEHALF OF THE CITY TO AMEND THE CONTRACTS FOR STORMWATER CURED-IN-PLACE PIPING

SERVICES WITH PLEASANTS CONSTRUCTION, INC. AND AM-LINER EAST, INC. TO EXPEND UP TO $400,000 ANNUALLY, AND TO AUTHORIZE THE CITY MANAGER TO RENEW THE CONTRACTS FOR THREE (3) ADDITIONAL ONE-YEAR TERMS, SUBJECT TO ANNUAL APPROPRIATION OF FUNDS. *(Director of Public Works Mike Collins)*

(2) AUTHORIZE THE CITY MANAGER ON BEHALF OF THE CITY TO AWARD A CONTRACT FOR SANITARY SEWER AND STORM SEWER SERVICES TO UTILITIES UNLIMITED, LLC IN AN AMOUNT UP TO $800,000 ANNUALLY, AND TO RENEW THE CONTRACT ANNUALLY FOR FOUR (4) ADDITIONAL ONE-YEAR TERMS, SUBJECT TO ANNUAL APPROPRIATION OF FUNDS. *(Director of Public Works Mike Collins)*

(3) APPOINTMENTS:

a) New Appointment: Andrew Crawford - Environmental Services Council - (03/01/12) – 02/28/15 (Unexpired Term)

b) Reappointment: Nancy Bentrup - Library Board of Trustees - 7/1/14 – 6/30/18

(d) Items removed from consent

(e) Other business

11. **BUSINESS NOT ON THE AGENDA**

12. **COUNCIL MEMBER COMMENTS**

13. **APPROVAL OF MINUTES OF PREVIOUS MEETINGS**

14. **CLOSED SESSION** pursuant to Va. Code Section 2.2-3711(A)7: "[c]onsultation with legal counsel and briefings by staff members . . . pertaining to . . . probable litigation, where such consultation or briefing in open meeting would adversely affect the negotiating or litigating posture of the public body" and "consultation with legal counsel employed or retained by a public body regarding specific legal matters requiring the provision of legal advice by such counsel." [Claim of Ghulam M. and Noorsama Ahmadzai; installation of water line outside easement boundaries on property located at 7634 Shreve Road]

15. **ADJOURNMENT**

CELESTE HEATH
CITY CLERK

The City of Falls Church is committed to the letter and spirit of the Americans with Disabilities Act. To request a reasonable accommodation for any type of disability call 703 248-5014 (TTY 711). The City of Falls Church is committed to the letter and spirit of the Americans with Disabilities Act. To request a reasonable accommodation for any type of disability call (703) 248-5014, (TTY 711).For information in your language please call 703 248-5014 (TTY 711) to request an interpreter. Để có thông tin bằng ngôn ngữ của quý vị, xin gọi 703-248-5014 để yêu cầu người thông dịch. Para recibir información en su idioma por favor llame al 703 248-5014 (TTY 711) para solicitar un interprete.

AGENDA FOR THE REGULAR MEETING
OF THE CITY COUNCIL OF THE CITY OF FALLS CHURCH, VIRGINIA
HELD IN COUNCIL CHAMBERS, 300 PARK AVENUE AT 7:30 P.M.,
MONDAY, SEPTEMBER 8, 2014

1. **CALL TO ORDER**

2. **PLEDGE OF ALLEGIANCE**

3. **ROLL CALL**

4. **VALIDATION OF NOTICE OF SPECIAL MEETING**

5. **ADOPTION OF MEETING AGENDA**

6. **PROCLAMATIONS**

7. **OATH OF OFFICE TO NEW BOARD AND COMMISSION MEMBERS**

8. **RECEIPT OF PUBLIC COMMENTS, REQUESTS, AND CONSENT ITEM COMMENTS**. [The public may address Council for one 3-minute period. The Mayor may shorten the time allowed each speaker, depending on the length of the agenda and number of speakers. A chair or representative of a board, commission, or committee may make a 5-minute oral summary of the written report.]

   (a) Summary of Written Comments.
   (b) Council Requests

9. **REPORT OF CITY MANAGER TO COUNCIL**

10. **BUSINESS ON THE AGENDA**

    (a) Second readings of ordinances and other items requiring public hearings

        (1) **(TO14-27)** ORDINANCE TO AMEND CHAPTER 35 "STORMWATER," ARTICLE I "STORMWATER MANAGEMENT" OF THE FALLS CHURCH CITY CODE *(Public Works Director Mike Collins)*

    (b) Resolutions and first readings of ordinances

    (c) Consent items **Motion**: MOVE approval of the Consent Items.

        (1) APPROVAL OF THE FY 2015 AND FY 2016 PERFORMANCE CONTRACT BETWEEN THE FAIRFAX-FALLS CHURCH COMMUNITY SERVICES

BOARD AND THE COMMONWEALTH OF VIRGINIA DEPARTMENT OF BEHAVIORAL HEALTH AND DEVELOPMENTAL SERVICES (*Human Services Director Nancy Vincent)*

(2) AUTHORIZE THE EXPENDITURE OF UP TO $275,000 ANNUALLY FOR THE PURCHASE OF UNLEADED FUEL PER AN EXISTING CONTRACT WITH JAMES RIVER SOLUTIONS, LLC AND AUTHORIZE THE CITY MANAGER TO ANNUALLY RENEW THE CONTRACT ON BEHALF OF THE CITY, SUBJECT TO THE ANNUAL APPROPRIATION OF FUNDS BY CITY COUNCIL *(Public Works Director Mike Collins)*

(3) AUTHORIZE THE CITY MANAGER TO EXECUTE, ON BEHALF OF THE CITY, PROJECT AGREEMENTS FOR NORTHERN VIRGINIA TRANSPORTATION AUTHORITY (NVTA) FUNDED PROJECTS *(Development Services Director Jim Snyder)*

(4) **(TR14-35)** RESOLUTION APPOINTING CITY COUNCIL MEMBER KAREN OLIVER TO THE NORTHERN VIRGINIA TRANSPORTATION AUTHORITY (NVTA) PLANNING COORDINATION ADVISORY COMMITTEE (PCAC) FOR CALENDAR YEAR 2014 *(City Clerk Celeste Heath)*

(d) Items removed from consent

(e) Other business

11. **BUSINESS NOT ON THE AGENDA**

12. **COUNCIL MEMBER COMMENTS**

13. **APPROVAL OF MINUTES OF PREVIOUS MEETINGS**

(a) 03-24-14 Minutes

14. **ADJOURNMENT**

CELESTE HEATH
CITY CLERK

The City of Falls Church is committed to the letter and spirit of the Americans with Disabilities Act. To request a reasonable accommodation for any type of disability call 703 248-5014 (TTY 711). The City of Falls Church is committed to the letter and spirit of the Americans with Disabilities Act. To request a reasonable accommodation for any type of disability call (703) 248-5014, (TTY 711).For information in your language please call 703 248-5014 (TTY 711) to request an interpreter. Để có thông tin bằng ngôn ngữ của quý vị, xin gọi 703-248-5014 để yêu cầu người thông dịch. Para recibir información en su idioma por favor llame al 703 248-5014 (TTY 711) para solicitar un interprete.

AGENDA FOR THE REGULAR MEETING
OF THE CITY COUNCIL OF THE CITY OF FALLS CHURCH, VIRGINIA
HELD IN COUNCIL CHAMBERS, 300 PARK AVENUE AT 7:30 P.M.,
MONDAY, SEPTEMBER 22, 2014

1. **CALL TO ORDER**

2. **PLEDGE OF ALLEGIANCE**

3. **ROLL CALL**

4. **VALIDATION OF NOTICE OF SPECIAL MEETING**

5. **ADOPTION OF MEETING AGENDA**

6. **PROCLAMATIONS**

   (a) Proclamation Declaring October 5-11, 2014 as Fire Prevention Week (*Fire Marshal Tom Polera*)

   (b) Proclamation Declaring September 11-28, 2014 as Day to Serve (*City Clerk Celeste Heath*)

7. **OATH OF OFFICE TO NEW BOARD AND COMMISSION MEMBERS**

8. **RECEIPT OF PUBLIC COMMENTS, REQUESTS, AND CONSENT ITEM COMMENTS**. [The public may address Council for one 3-minute period. The Mayor may shorten the time allowed each speaker, depending on the length of the agenda and number of speakers. A chair or representative of a board, commission, or committee may make a 5-minute oral summary of the written report.]

   (a) Summary of Written Comments.
   (b) Council Requests
   (c) Library Board Annual Report Presentation (*Library Director Mary McMahon*)

9. **REPORT OF CITY MANAGER TO COUNCIL**

   (a) Presentation and Public Comment on Water Sale Proceeds Options

10. **BUSINESS ON THE AGENDA**

    (a) Second readings of ordinances and other items requiring public hearings

    (b) Resolutions and first readings of ordinances

(1) **(TR14-36)** RESOLUTION TO ADOPT FY2015 FUNDING RECOMMENDATIONS FOR THE ARTS AND CULTURAL GRANTS AND VIRGINIA COMMISSION FOR THE ARTS (VCA) LOCAL CHALLENGE GRANT SUBMISSION (*Assistant City Manager Cindy Mester)*

(c) Consent items

(d) Items removed from consent

(e) Other business

(1) AUTHORIZE THE CITY MANAGER, ON BEHALF OF THE CITY, TO AWARD A CONTRACT TO M.K. DEVELOPMENT & INVESTMENT, LLC IN AN AMOUNT UP TO $528,000 FOR THE WEST END PARK IMPROVEMENT PROJECT. (*Public Works Director Mike Collins and Recreation and Parks Director Daniel Schlitt*)

(2) AUTHORIZE THE CITY MANAGER, ON BEHALF OF THE CITY, TO AWARD A CONTRACT TO STEVENS CONSTRUCTION CORPORATION IN AN AMOUNT UP TO $626,000 FOR THE GREAT FALLS - LITTLE FALLS STORMWATER PROJECT. (*Public Works Director Mike Collins)*

11. **BUSINESS NOT ON THE AGENDA**

12. **COUNCIL MEMBER COMMENTS**

13. **APPROVAL OF MINUTES OF PREVIOUS MEETINGS**

(a) 08-11-14 Minutes

14. **ADJOURNMENT**

CELESTE HEATH
CITY CLERK

The City of Falls Church is committed to the letter and spirit of the Americans with Disabilities Act. To request a reasonable accommodation for any type of disability call 703 248-5014 (TTY 711). The City of Falls Church is committed to the letter and spirit of the Americans with Disabilities Act. To request a reasonable accommodation for any type of disability call (703) 248-5014, (TTY 711).For information in your language please call 703 248-5014 (TTY 711) to request an interpreter. Để có thông tin bằng ngôn ngữ của quý vị, xin gọi 703-248-5014 để yêu cầu người thông dịch. Para recibir información en su idioma por favor llame al 703 248-5014 (TTY 711) para solicitar un interprete.

AGENDA FOR THE REGULAR MEETING
OF THE CITY COUNCIL OF THE CITY OF FALLS CHURCH, VIRGINIA
HELD IN COUNCIL CHAMBERS, 300 PARK AVENUE AT 7:30 P.M.,
Monday, April 13, 2015

1. **CALL TO ORDER**

2. **PLEDGE OF ALLEGIANCE**

3. **ROLL CALL**

4. **VALIDATION OF NOTICE OF SPECIAL MEETING**

5. **ADOPTION OF MEETING AGENDA**

6. **PROCLAMATIONS**
   (a) Proclamation Declaring April 18, 2015 as Arbor Day
   (b) Proclamation Declaring April 13-17 2015, Community Development Block Grant Week

7. **OATH OF OFFICE TO NEW BOARD AND COMMISSION MEMBERS**

8. **RECEIPT OF PUBLIC COMMENTS, REQUESTS, AND CONSENT ITEM COMMENTS**. [The public may address Council for one 3-minute period. The Mayor may shorten the time allowed each speaker, depending on the length of the agenda and number of speakers. A chair or representative of a board, commission, or committee may make a 5-minute oral summary of the written report.]

   (a) Summary of Written Comments.
   (b) Council Requests

9. **REPORT OF CITY MANAGER TO COUNCIL**

   (a) Employee of the Year

10. **BUSINESS ON THE AGENDA**

    (a) Second readings of ordinances and other items requiring public hearings

    (1) **(TO15-04)** ORDINANCE FIXING AND DETERMINING THE BUDGET OF EXPENDITURES AND REVENUES, APPROPRIATING FUNDS FOR THE FISCAL YEAR 2016: GENERAL FUND; SCHOOL OPERATING FUND; SCHOOL COMMUNITY SERVICE FUND; AND SCHOOL FOOD SERVICE FUND; SEWER FUND; AND STORMWATER FUND *(City Manager Wyatt Shields)*

    (2) **(TO15-05)** ORDINANCE FIXING AND DETERMINING THE FY2016-FY2020 CAPITAL IMPROVEMENTS PROGRAM BUDGET AND APPROPRIATING EXPENDITURE AND REVENUE FUNDS FOR THE FISCAL YEAR 2016 *(Assistant City Manager Cindy Mester)*

(3) **(TO15-06)** ORDINANCE SETTING THE RATE OF TAX LEVY ON REAL ESTATE, PERSONAL PROPERTY, MACHINERY AND TOOLS AND ALL OTHER PROPERTY SEGREGATED BY LAW FOR LOCAL TAXATION IN THE CITY OF FALLS CHURCH VIRGINIA FOR TAX YEAR 2016 *(City Manager Wyatt Shields)*

(4) **(TO15-07)** ORDINANCE TO AMEND CHAPTER 42, "UTILITIES," TO REVISE SEWER RATES AND FEES AS OF JULY 1, 2015 *(Public Works Director Mike Collins)*

(b) Resolutions and first readings of ordinances

(1) **Mason Row** (**TR14-29)** RESOLUTION TO AMEND THE COMPREHENSIVE PLAN OF THE CITY OF FALLS CHURCH, VIRGINIA, TO CHANGE THE DESIGNATION OF APPROXIMATELY 4.3 ACRES OF LAND LOCATED AT THE NORTHEAST CORNER OF WEST BROAD AND NORTH WEST STREETS, ALSO DESCRIBED AS 110, 112, 112A, 212 & 212A NORTH WEST STREET, 916, 920, 922, 924, 926, 928, 930, 932 & 934, WEST BROAD STREET AND 919, 921 & 925 PARK AVENUE (REAL PROPERTY CODE NUMBERS 51-202-009 THROUGH 51-202-015, 51-202-003, 51-202-004, 51-202-005, 51-202-028 AND 51-202-028 OUTLOT) FROM "BUSINESS" AND "LOW DENSITY RESIDENTIAL (6.0)" TO "MIXED USE" ON THE CITY'S FUTURE LAND USE PLAN MAP, ON APPLICATION BY SPECTRUM DEVELOPMENT, LLC. *(Development Services Director James Snyder)*

(2) **Mason Row** **(TO14-28)** ORDINANCE TO AMEND THE OFFICIAL ZONING DISTRICT MAP OF THE CITY OF FALLS CHURCH, VIRGINIA, BY REZONING A TOTAL OF APPROXIMATELY 3.13 ACRES OF LAND: A PORTION (APPROXIMATELY 2.11 ACRES) FROM B-3, GENERAL BUSINESS DISTRICT; AND A PORTION (APPROXIMATELY 1.02 ACRES) FROM R-1B, MEDIUM DENSITY RESIDENTIAL DISTRICT TO B-1, LIMITED BUSINESS DISTRICT FOR THE COMMERCIAL PROPERTIES AT, 110, 112, 112A, 212 & 212A NORTH WEST STREET, 928, 930, 932 & 934 WEST BROAD STREET AND RESIDENTIAL PROPERTIES AT 919, 921 & 925 PARK AVENUE (REAL PROPERTY CODE NUMBERS 51-202-009 THROUGH 51-202-015, 51-202-028 AND 51-202-028 OUTLOT, KNOWN AS "MASON ROW" ON APPLICATION BY SPECTRUM DEVELOPMENT, LLC. *(Development Services Director James Snyder)*

(3) **Mason Row** **(TR14-28)** RESOLUTION TO GRANT A SPECIAL EXCEPTION FOR RESIDENTIAL USES WITHIN A MIXED USE DEVELOPMENT PROJECT AND TO INCREASE THE BUILDING HEIGHT WITH A BONUS OF THIRTY (30) FEET TO A MAXIMIUM HEIGHT OF EIGHTY- FIVE (85) FEET FOR A MIXED-USE DEVELOPMENT PROJECT ON APPROXIMATELY 4.3 ACRES OF LAND LOCATED AT THE NORTHEAST CORNER OF WEST BROAD AND NORTH WEST STREETS, ALSO DESCRIBED AS 110, 112, 112A, 212 & 212A NORTH WEST STREET, 916, 920, 922, 924, 926, 928, 930, 932 & 934, WEST BROAD STREET AND 919, 921 & 925 PARK AVENUE (REAL PROPERTY CODE NUMBERS 51-202-009 THROUGH 51-202-015, 51-202-003, 51-202-004, 51-202-005,

51-202-028 AND 51-202-028 OUTLOT) KNOWN AS "MASON ROW" ON APPLICATION BY SPECTRUM DEVELOPMENT, LLC. *(Development Services Director James Snyder)*

(4) **(TR15-09)** RESOLUTION TO ADOPT THE FISCAL YEARS 2016 - 2020 CITY OF FALLS CHURCH AND ARLINGTON COUNTY CONSOLIDATED PLAN AND FY2016 ANNUAL ACTION PLAN *(Human Services Director, Nancy Vincent)*

(c) Consent items
(1) Appointments
(a) New Appointment: Victor Wong – Architectural Advisory Board – (06/01/13) – 05/31/16 (Unexpired Term)
(b) Reappointment: Connie Rydberg – Retirement Board - 05/01/15 – 04/30/18

(d) Items removed from consent

(e) Other business

11. **BUSINESS NOT ON THE AGENDA**

12. **COUNCIL MEMBER COMMENTS**

13. **APPROVAL OF MINUTES OF PREVIOUS MEETINGS**

(a) Minutes of June 23, 2014
(b) Minutes of January 26, 2015

14. **ADJOURNMENT**

CELESTE HEATH
CITY CLERK

The City of Falls Church is committed to the letter and spirit of the Americans with Disabilities Act. To request a reasonable accommodation for any type of disability call 703 248-5014 (TTY 711). The City of Falls Church is committed to the letter and spirit of the Americans with Disabilities Act. To request a reasonable accommodation for any type of disability call (703) 248-5014, (TTY 711).For information in your language please call 703 248-5014 (TTY 711) to request an interpreter. Để có thông tin bằng ngôn ngữ của quý vị, xin gọi 703-248-5014 để yêu cầu người thông dịch. Para recibir información en su idioma por favor llame al 703 248-5014 (TTY 711) para solicitar un interprete.

AGENDA FOR THE REGULAR MEETING
OF THE CITY COUNCIL OF THE CITY OF FALLS CHURCH, VIRGINIA
HELD IN COUNCIL CHAMBERS, 300 PARK AVENUE AT 7:30 P.M.,
Monday, March 23, 2015
Revised 3/20/15

1. **CALL TO ORDER**

2. **PLEDGE OF ALLEGIANCE**

3. **ROLL CALL**

4. **VALIDATION OF NOTICE OF SPECIAL MEETING**

5. **ADOPTION OF MEETING AGENDA**

6. **PROCLAMATIONS**
   (a) Proclamation Declaring April 1-7, 2015 as Local Government Education Week

7. **OATH OF OFFICE TO NEW BOARD AND COMMISSION MEMBERS**

8. **RECEIPT OF PUBLIC COMMENTS, REQUESTS, AND CONSENT ITEM COMMENTS**. [The public may address Council for one 3-minute period. The Mayor may shorten the time allowed each speaker, depending on the length of the agenda and number of speakers. A chair or representative of a board, commission, or committee may make a 5-minute oral summary of the written report.]

   (a) Summary of Written Comments.
   (b) Council Requests

9. **REPORT OF CITY MANAGER TO COUNCIL**

10. **BUSINESS ON THE AGENDA**

    (a) Second readings of ordinances and other items requiring public hearings

    (1) **(TO15-03)** ORDINANCE TO AUTHORIZE PARTICIPATION IN VACO/VML VIRGINIA INVESTMENT POOL TRUST FUND FOR THE PURPOSE OF INVESTING MONEYS BELONGING TO THE CITY OR WITHIN ITS CONTROL, OTHER THAN SINKING FUNDS, IN CERTAIN AUTHORIZED INVESTMENTS IN ACCORDANCE WITH SECTION 2.2-4501 OF THE VIRGINIA CODE *(Treasurer Jody Acosta)*

    (b) Resolutions and first readings of ordinances

    (1) **To be deferred at the applicant's request - Mason Row (TR14-29)** RESOLUTION TO AMEND THE COMPREHENSIVE PLAN OF THE CITY OF FALLS CHURCH, VIRGINIA, TO CHANGE THE DESIGNATION OF APPROXIMATELY 4.3 ACRES OF LAND LOCATED AT THE NORTHEAST

CORNER OF WEST BROAD AND NORTH WEST STREETS, ALSO DESCRIBED AS 110, 112, 112A, 212 & 212A NORTH WEST STREET, 916, 920, 922, 924, 926, 928, 930, 932 & 934, WEST BROAD STREET AND 919, 921 & 925 PARK AVENUE (REAL PROPERTY CODE NUMBERS 51-202-009 THROUGH 51-202-015, 51-202-003, 51-202-004, 51-202-005, 51-202-028 AND 51-202-028 OUTLOT) FROM "BUSINESS" AND "LOW DENSITY RESIDENTIAL (6.0)" TO "MIXED USE" ON THE CITY'S FUTURE LAND USE PLAN MAP, ON APPLICATION BY SPECTRUM DEVELOPMENT, LLC. *(Development Services Director James Snyder)*

(2) **To be deferred at the applicant's request - <u>Mason Row</u> (TO14-28)**
ORDINANCE TO AMEND THE OFFICIAL ZONING DISTRICT MAP OF THE CITY OF FALLS CHURCH, VIRGINIA, BY REZONING A TOTAL OF APPROXIMATELY 3.13 ACRES OF LAND: A PORTION (APPROXIMATELY 2.11 ACRES) FROM B-3, GENERAL BUSINESS DISTRICT; AND A PORTION (APPROXIMATELY 1.02 ACRES) FROM R-1B, MEDIUM DENSITY RESIDENTIAL DISTRICT TO B-1, LIMITED BUSINESS DISTRICT FOR THE COMMERCIAL PROPERTIES AT, 110, 112, 112A, 212 & 212A NORTH WEST STREET, 928, 930, 932 & 934 WEST BROAD STREET AND RESIDENTIAL PROPERTIES AT 919, 921 & 925 PARK AVENUE (REAL PROPERTY CODE NUMBERS 51-202-009 THROUGH 51-202-015, 51-202-028 AND 51-202-028 OUTLOT, KNOWN AS "MASON ROW" ON APPLICATION BY SPECTRUM DEVELOPMENT, LLC. *(Development Services Director James Snyder)*

(3) **To be deferred at the applicant's request - <u>Mason Row</u> (TR14-28)**
RESOLUTION TO GRANT A SPECIAL EXCEPTION FOR RESIDENTIAL USES WITHIN A MIXED USE DEVELOPMENT PROJECT AND TO INCREASE THE BUILDING HEIGHT WITH A BONUS OF THIRTY (30) FEET TO A MAXIMIUM HEIGHT OF EIGHTY- FIVE (85) FEET FOR A MIXED-USE DEVELOPMENT PROJECT ON APPROXIMATELY 4.3 ACRES OF LAND LOCATED AT THE NORTHEAST CORNER OF WEST BROAD AND NORTH WEST STREETS, ALSO DESCRIBED AS 110, 112, 112A, 212 & 212A NORTH WEST STREET, 916, 920, 922, 924, 926, 928, 930, 932 & 934, WEST BROAD STREET AND 919, 921 & 925 PARK AVENUE (REAL PROPERTY CODE NUMBERS 51-202-009 THROUGH 51-202-015, 51-202-003, 51-202-004, 51-202-005, 51-202-028 AND 51-202-028 OUTLOT) KNOWN AS "MASON ROW" ON APPLICATION BY SPECTRUM DEVELOPMENT, LLC. *(Development Services Director James Snyder)*

(4) **(TO15-04)** ORDINANCE FIXING AND DETERMINING THE BUDGET OF EXPENDITURES AND REVENUES, APPROPRIATING FUNDS FOR THE FISCAL YEAR 2016: GENERAL FUND; SCHOOL OPERATING FUND; SCHOOL COMMUNITY SERVICE FUND; AND SCHOOL FOOD SERVICE FUND; SEWER FUND; AND STORMWATER FUND *(City Manager Wyatt Shields)*

(5) **(TO15-05)** ORDINANCE FIXING AND DETERMINING THE FY2016-FY2020 CAPITAL IMPROVEMENTS PROGRAM BUDGET AND APPROPRIATING EXPENDITURE AND REVENUE FUNDS FOR THE FISCAL YEAR 2016 *(Assistant City Manager Cindy Mester)*

(6) **(TO15-06)** ORDINANCE SETTING THE RATE OF TAX LEVY ON REAL ESTATE, PERSONAL PROPERTY, MACHINERY AND TOOLS AND ALL OTHER PROPERTY SEGREGATED BY LAW FOR LOCAL TAXATION IN THE CITY OF FALLS CHURCH VIRGINIA FOR TAX YEAR 2016 *(City Manager Wyatt Shields)*

(7) **(TO15-07)** ORDINANCE TO AMEND CHAPTER 42, "UTILITIES," TO REVISE SEWER RATES AND FEES AS OF JULY 1, 2015 *(Public Works Director Mike Collins)*

(8) **(TR15-08)** RESOLUTION TO ADOPT FY2015 FUNDING RECOMMENDATIONS FOR THE ARTS AND CULTURAL OPERATIONAL GRANTS *(Assistant City Manager Cindy Mester)*

(c) Consent items

(1) AUTHORIZE THE CITY MANAGER TO CONTRACT UP TO $175,000 IN FY2015 AND UP TO $105,000 IN FY2016 FOR CRITICAL TEMPORARY STAFFING WITH RANDSTAD, RIDING CITY OF RICHMOND CONTRACT NO. N13022-1 AND SUBJECT TO ANNUAL APPROPRIATION OF FUNDS BY CITY COUNCIL *(Assistant City Manager Cindy Mester)*

(d) Items removed from consent

(e) Other business

11. **BUSINESS NOT ON THE AGENDA**

12. **COUNCIL MEMBER COMMENTS**

13. **APPROVAL OF MINUTES OF PREVIOUS MEETINGS**

(a) Minutes of June 23, 2014

14. **ADJOURNMENT**

CELESTE HEATH
CITY CLERK

The City of Falls Church is committed to the letter and spirit of the Americans with Disabilities Act. To request a reasonable accommodation for any type of disability call 703 248-5014 (TTY 711). The City of Falls Church is committed to the letter and spirit of the Americans with Disabilities Act. To request a reasonable accommodation for any type of disability call (703) 248-5014, (TTY 711).For information in your language please call 703 248-5014 (TTY 711) to request an interpreter. Để có thông tin bằng ngôn ngữ của quý vị, xin gọi 703-248-5014 để yêu cầu người thông dịch. Para recibir información en su idioma por favor llame al 703 248-5014 (TTY 711) para solicitar un interprete.

AGENDA FOR THE REGULAR MEETING
OF THE CITY COUNCIL OF THE CITY OF FALLS CHURCH, VIRGINIA
HELD IN COUNCIL CHAMBERS, 300 PARK AVENUE AT 7:30 P.M.,
Monday, April 27, 2015

1. **CALL TO ORDER**

2. **PLEDGE OF ALLEGIANCE**

3. **ROLL CALL**

4. **VALIDATION OF NOTICE OF SPECIAL MEETING**

5. **ADOPTION OF MEETING AGENDA**

6. **PROCLAMATIONS**
   (a) Proclamation Declaring April 2015, Fair Housing Month
   (b) Proclamation Declaring May 3-9, 2015 as Public Service Recognition Week

7. **OATH OF OFFICE TO NEW BOARD AND COMMISSION MEMBERS**

8. **RECEIPT OF PUBLIC COMMENTS, REQUESTS, AND CONSENT ITEM COMMENTS**. [The public may address Council for one 3-minute period. The Mayor may shorten the time allowed each speaker, depending on the length of the agenda and number of speakers. A chair or representative of a board, commission, or committee may make a 5-minute oral summary of the written report.]

   (a) Summary of Written Comments.
   (b) Council Requests

9. **REPORT OF CITY MANAGER TO COUNCIL**

10. **BUSINESS ON THE AGENDA**

    (a) Second readings of ordinances and other items requiring public hearings

    (1) **(TO15-04)** ORDINANCE FIXING AND DETERMINING THE BUDGET OF EXPENDITURES AND REVENUES, APPROPRIATING FUNDS FOR THE FISCAL YEAR 2016: GENERAL FUND; SCHOOL OPERATING FUND; SCHOOL COMMUNITY SERVICE FUND; AND SCHOOL FOOD SERVICE FUND; SEWER FUND; AND STORMWATER FUND *(City Manager Wyatt Shields)*

    (2) **(TO15-05)** ORDINANCE FIXING AND DETERMINING THE FY2016-FY2020 CAPITAL IMPROVEMENTS PROGRAM BUDGET AND APPROPRIATING EXPENDITURE AND REVENUE FUNDS FOR THE FISCAL YEAR 2016 *(Assistant City Manager Cindy Mester)*

(3) **(TO15-06)** ORDINANCE SETTING THE RATE OF TAX LEVY ON REAL ESTATE, PERSONAL PROPERTY, MACHINERY AND TOOLS AND ALL OTHER PROPERTY SEGREGATED BY LAW FOR LOCAL TAXATION IN THE CITY OF FALLS CHURCH VIRGINIA FOR TAX YEAR 2016 *(City Manager Wyatt Shields)*

(4) **(TO15-07)** ORDINANCE TO AMEND CHAPTER 42, "UTILITIES," TO REVISE SEWER RATES AND FEES AS OF JULY 1, 2015 *(Public Works Director Mike Collins)*

(b) Resolutions and first readings of ordinances

(c) Consent items
(1) Appointments: Reappointment of Chuck Anderson to the Architectural Advisory Board for a term of 06/01/15 – 05/31/18

(d) Items removed from consent

(e) Other business

11. **BUSINESS NOT ON THE AGENDA**

12. **COUNCIL MEMBER COMMENTS**

13. **APPROVAL OF MINUTES OF PREVIOUS MEETINGS**

(a) Minutes of June 23, 2014
(b) Minutes of January 26, 2015

14. **ADJOURNMENT**

CELESTE HEATH
CITY CLERK

The City of Falls Church is committed to the letter and spirit of the Americans with Disabilities Act. To request a reasonable accommodation for any type of disability call 703 248-5014 (TTY 711). The City of Falls Church is committed to the letter and spirit of the Americans with Disabilities Act. To request a reasonable accommodation for any type of disability call (703) 248-5014, (TTY 711).For information in your language please call 703 248-5014 (TTY 711) to request an interpreter. Để có thông tin bằng ngôn ngữ của quý vị, xin gọi 703-248-5014 để yêu cầu người thông dịch. Para recibir información en su idioma por favor llame al 703 248-5014 (TTY 711) para solicitar un interprete.

AGENDA FOR THE REGULAR MEETING
OF THE CITY COUNCIL OF THE CITY OF FALLS CHURCH, VIRGINIA
HELD IN COUNCIL CHAMBERS, 300 PARK AVENUE AT 7:30 P.M.,
Monday, May 11, 2015

1. **CALL TO ORDER**

2. **PLEDGE OF ALLEGIANCE**

3. **ROLL CALL**

4. **VALIDATION OF NOTICE OF SPECIAL MEETING**

5. **ADOPTION OF MEETING AGENDA**

6. **SPECIAL PRESENTATION & PROCLAMATIONS**
   (a) Special Presentation: Urban Land Institute (ULI) Award for the Easter Seals Project
   (b) Proclamation Declaring May as Watershed and Floodplain Awareness Month
   (c) Proclamation Declaring the Week of May 10-16, 2015 Police Week

7. **OATH OF OFFICE TO NEW BOARD AND COMMISSION MEMBERS**

8. **RECEIPT OF PUBLIC COMMENTS, REQUESTS, AND CONSENT ITEM COMMENTS**. [The public may address Council for one 3-minute period. The Mayor may shorten the time allowed each speaker, depending on the length of the agenda and number of speakers. A chair or representative of a board, commission, or committee may make a 5-minute oral summary of the written report.]

   (a) Summary of Written Comments.
   (b) Council Requests

9. **REPORT OF CITY MANAGER TO COUNCIL**

10. **BUSINESS ON THE AGENDA**

    (a) Second readings of ordinances and other items requiring public hearings

    (b) Resolutions and first readings of ordinances

        (1) **(TR15-10)** RESOLUTION TO AUTHORIZE THE CITY MANAGER TO EXECUTE A GRANT AGREEMENT TO ACCEPT GRANT FUNDS UP TO $115,000 FROM THE VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY (DEQ) STORMWATER LOCAL ASSISTANCE FUND (SLAF) FOR FY 2015 *(Mike Collins, Director of Public Works)*

    (c) Consent items

    (d) Items removed from consent

(e) Other business

11. **CLOSED SESSION:** Closed Session pursuant to VA Code § 2.2-3711.A.7 for consultation with legal counsel and the receipt of legal advice regarding the recent unsolicited PPEA proposal.

12. **BUSINESS NOT ON THE AGENDA**

13. **COUNCIL MEMBER COMMENTS**

14. **APPROVAL OF MINUTES OF PREVIOUS MEETINGS**

(a) Minutes of June 23, 2014
(b) Minutes of January 26, 2015
(c) Minutes of February 23, 2015
(d) Minutes of March 9, 2015

15. **ADJOURNMENT**

CELESTE HEATH
CITY CLERK

The City of Falls Church is committed to the letter and spirit of the Americans with Disabilities Act. To request a reasonable accommodation for any type of disability call 703 248-5014 (TTY 711). The City of Falls Church is committed to the letter and spirit of the Americans with Disabilities Act. To request a reasonable accommodation for any type of disability call (703) 248-5014, (TTY 711).For information in your language please call 703 248-5014 (TTY 711) to request an interpreter. Để có thông tin bằng ngôn ngữ của quý vị, xin gọi 703-248-5014 để yêu cầu người thông dịch. Para recibir información en su idioma por favor llame al 703 248-5014 (TTY 711) para solicitar un interprete.

Environmental Services Council

Thursday, May 21, 7:30 - 9:30 pm Dogwood Room, City Hall

1. **Call to Order**
2. **Public Comments**
3. **Approval of Minutes (April, 2015)**
    - Tonight's note taker: Sarah Bayldon
4. **New Business**
    - Jason Widstrom, City Stormwater Engineer, will present new information regarding the stormwater MS4 permit.
    - West Broad Street POA Small Area Plan
5. **Old Business**
    - Mason Row comments
    - Vice Chair election
    - Solarize Update
    - Update on VPIS Environmental Goals
    - Further discussion on division of work activities (Peter Oppenheimer)
6. **Informational Items**
    - Committee Items
    - Staff Items
7. **Next Meeting**
    - Thursday, June 18th, 2015 (City Hall, Dogwood Room)
    - Notes: Andy Crawford

The City of Falls Church is committed to the letter and spirit of the Americans with Disabilities Act.

To request a reasonable accommodation for any type of disability call (703) 248-5456, (TTY 711).

Falls Church Habitat Restoration

Restoring natural ecosystems in the City of Falls Church

Join the City of Falls Church Habitat Restoration Team in restoring the local ecosystem in city parks. We will be removing damaging invasive plants as well as planting natives that benefit our local birds and butterflies.

2015 Schedule of Events:

Date	Location	Time
March 21, 2015	Cherry Hill Park	**10am-Noon**
April 25, 2015	Berman Park	**10am-Noon**
May 2, 2015	Crossman Park	**10am-Noon**
May 3, 2015	Native Plant Sale Pick-Up (email melanite@verizon.net for plant list)	**11am-1pm**
September 12, 2015	Cherry Hill Park	**10am-Noon**
October 17, 2015	Crossman Park	**10am-Noon**
November 14, 2015	Crossman Park	**10am-Noon**

Event Locations:

Cherry Hill Park – From West Street head east on Broad Street/Rt. 7. Turn left onto Little Falls Street. Turn left into the Community Center entrance – parking is in the rear. We will be working in the more woody sections of the park either near or behind the basketball court or along the fence line between Park and Great Falls.

Crossman Park – From the intersection of rt. 7 and rt. 29, head north on rt. 29. Turn right on to East Columbia Street then take a left onto Van Buren Street. Enter park from Van Buren Street where the playground is located. You can also walk-in from North Washington Street using the Gresham Place street. We will be working along the trail inside the park.

Berman Park - Head south on West Street then turn left onto Ellison Street. Turn left again on Kent Street. The park begins at the intersection of Ellison and Kent. Meet at the shelter on Kent Street.

For restoration event or Native Plant sale information:
contact Melissa Teates, 703-538-6961 or melanite@verizon.net.

The City of Falls Church is committed to the letter and spirit of the Americans with Disabilities Act. To request a reasonable accommodation for any type of disability call 703-248-5016 (TTY 711)

Annual Spring Clean-up!

The Falls Church Community is invited to come together and clean up the City! Adopt-a-spot groups, families, and organizations are invited to improve the appearance of our City by picking up litter and debris.

April 12, 2014

- Clean up our neighborhood park!
- Litter kits will be prepared ahead of time
- Keep our City beautiful!

City of Falls Church City-Wide Cleanup!

Contact Person: Allison Lohrenz at 703-248-5456

Time: 10:00 a.m.—12:00 p.m.

Date: 04/12/14

CITY OF FALLS CHURCH

The City of Falls Church is committed to the letter and spirit of the Americans with Disabilities Act. To request a reasonable accommodation for any type of disability, call 703-248-5456 (TTY 711).

City of Falls Church
Fall 2014 Cleanup Waiver

On Saturday, October 18, 2014, youth and adult volunteers from the Falls Church community will pick up litter as part of the City's annual Spring Cleanup. Volunteers will receive trash bags and orange safety vests (required in street right-of-way only) from the City and will be grouped into work teams for assignment to designated sites, including public and private property throughout the City.

Litter and debris that will be collected may include glass, metal, and other sharp objects. For their protection, litter pickup participants are advised to wear protective clothing, such as sturdy pants, shoes, and gloves. In addition, some litter sites may be adjacent to roadways, and volunteers are advised to be wary of motor vehicle traffic.

The City of Falls Church does not carry insurance to cover this type of event and cannot assume liability in the case of accident or injury.

We, the undersigned, have read the above statement and understand that the City of Falls Church cannot assume responsibility for accident or injury that may occur during the October 18, 2014 Spring Cleanup. We thus waive any claim against the City, and release its officers and employees from any claims or charges arising out of our/our children's participation in the Cleanup. We agree to make every effort to follow/advise our children of the safety requirements suggested and to follow additional safety instructions as outlined by the event coordinator.

Name (please print)	Address	Group	Signature	Date
Debbie Liang	516 Anne St	Troop 6644		10/18/2014
Kristin Thomas		Alpha Kappa Alpha Sorority, Inc.	Kristin Thomas	10/18/2014
Melissa Teates		Troop 626 + 1251		10/18/2014
Christin Winters	403 Randolph St	Bahai's of TC		10/18/14
Angel Gonzalez		Pack 657		10/18/14
Danielle Welch	404 Great Falls St.			10/18/2014
Katherine Stricker	606 Oak Haven Dr.		Katherine Stricker	10/18/14
Drew Woodrich	6512 Orland St		Drew Woodrich	10/18/14
Rose Ciccarelli / Frankie Schultz	444 W. Broad, #729		Rosemary Ciccarelli	10/18/14
Brian Kropp	6715 Walnut St			10/18/14
Robin Yaghmour and family	428 Great Falls			10-18-14

Name (please print)	Address	Group	Signature	Date
Katherine Allan	6919 mount Daniel Dr.	Allan / cook	Katherine Allan	10/18/14
Robin Cook	6618 Fisher Ave	Allan / cook		10/18/14
Amelia Cook	6618 Fisher Ave	Cook / Allan	Amelia Cook	10/18/14
Marilyn Allan	6919 Mount Daniel Dr.	Allan/cook	Marilyn Allan	10/18/14
Charles Seten	513 Roosevelt Blvd.			10/18/14
DAVE SNYDER	116 Great Falls St.	—		10/18/14
JEFF HILTON	800 Berry St	—		10/18/14
Mana Kian	420 S. maple Ave	Aurora House		10-18-14
Joselyn Ramos	420 S. maple Ave	Aurora house	Joselyn Ramos	10-18/14
Gia Khan	521 great fall St			10-18-14
Sarah Baylor	2024 308 W Rosemary Ln	Eng. S. Council	Sarah Baylor	10/18/2014

MOST UNUSUAL ITEMS:
underwear!! (2 pairs)

÷6 bags of trash/2 recycling
- lots of English Ivy

• CUB SCOUT PACK 657
• FALLS CHURCH PRESBYTERIAN CHURCH
• 10/18/14

City of Falls Church
Fall 2014 Cleanup Waiver

On Saturday, October 18, 2014, youth and adult volunteers from the Falls Church community will pick up litter as part of the City's annual Spring Cleanup. Volunteers will receive trash bags and orange safety vests (required in street right-of-way only) from the City and will be grouped into work teams for assignment to designated sites, including public and private property throughout the City.

Litter and debris that will be collected may include glass, metal, and other sharp objects. For their protection, litter pickup participants are advised to wear protective clothing, such as sturdy pants, shoes, and gloves. In addition, some litter sites may be adjacent to roadways, and volunteers are advised to be wary of motor vehicle traffic.

The City of Falls Church does not carry insurance to cover this type of event and cannot assume liability in the case of accident or injury.

We, the undersigned, have read the above statement and understand that the City of Falls Church cannot assume responsibility for accident or injury that may occur during the October 18, 2014 Spring Cleanup. We thus waive any claim against the City, and release its officers and employees from any claims or charges arising out of our/our children's participation in the Cleanup. We agree to make every effort to follow/advise our children of the safety requirements suggested and to follow additional safety instructions as outlined by the event coordinator.

	Name (please print)	Address	Group	Signature	Date
2	Devin Beauregard	410 S. Maple Ave	Pack 657		18 Oct 14
2	CANAAN DUNN	103 W. CANCI	Pack 657-3		18 Oct 14
2	PETER SHUMAN	124 HANCOCK RD #B-1	PACK 657		10/18/14
2	Nathan Prichard	109 Buxton Road	Pack 657		10/18/14
3	ANGEL GONZALEZ	403 Sherrow Ave	PACK 657		10/18/14
2	Kyle + John Wilson	2810 Greenway Blvd	Pack 657		10/18/14
2	Henry & Connor	501 W Westmoreland Rd	Pack 657		10/18/14
2	Steve Lyons		PACK 657		10/18/14
2	Vilma Yates	912 Illinois St #133 Falls Church	pack 657		10/18/14
2	Evan Dent	2702 Welcome Dr	657		10/18/14
1	Debra Z. Roth	503 A N. Roosevelt Blvd., #A421, FCC			10/18/14

- CUBSCOUT PACK 657
- FALLS CHURCH PRESBYTERIAN CHURCH
- 10/18/14

City of Falls Church
Fall 2014 Cleanup Waiver

On Saturday, October 18, 2014, youth and adult volunteers from the Falls Church community will pick up litter as part of the City's annual Spring Cleanup. Volunteers will receive trash bags and orange safety vests (required in street right-of-way only) from the City and will be grouped into work teams for assignment to designated sites, including public and private property throughout the City.

Litter and debris that will be collected may include glass, metal, and other sharp objects. For their protection, litter pickup participants are advised to wear protective clothing, such as sturdy pants, shoes, and gloves. In addition, some litter sites may be adjacent to roadways, and volunteers are advised to be wary of motor vehicle traffic.

The City of Falls Church does not carry insurance to cover this type of event and cannot assume liability in the case of accident or injury.

We, the undersigned, have read the above statement and understand that the City of Falls Church cannot assume responsibility for accident or injury that may occur during the October 18, 2014 Spring Cleanup. We thus waive any claim against the City, and release its officers and employees from any claims or charges arising out of our/our children's participation in the Cleanup. We agree to make every effort to follow/advise our children of the safety requirements suggested and to follow additional safety instructions as outlined by the event coordinator.

	Name (please print)	Address	Group	Signature	Date
2	JOHN ALVERSON	120 W. CAMERON RD., FC	PACK 657		10/18/14
2	JOHN PORTER → Mason	213 W. CAMERON RD	PACK 657		2014-10-18
2	THOMAS HAWIN	6937 26th ST, FC	Pack 657		18 OCT 14
2	WIL MCMICHEN - Ben	308 N MAPLE AVE, FC	PACK 657		10/18/14
5	Greg Giaccio	112 W. Westmoreland	"		"
2	RANJANA JAIN	118 W. Greenway Blvd	Pack 659		10/18/14
3	Yanek Guziewski	410 S. Maple Ave. #339	F.C. 22046	(Kelly)	10/18/14
4	Jennie Bono	302 Buxton Rd.	Pack 657		10/18/14
4	Larry Lane / Cameron	207 Poplar Drive	"		10/18/14
2	Sue & Casey Dimock	100 Buxton	Pack 657		10/18/14
2	Greyson Carney	1006 N. SYCAMORE ST	PACK 657		10/18/14

City of Falls Church
Fall 2014 Cleanup Waiver

On Saturday, October 18, 2014, youth and adult volunteers from the Falls Church community will pick up litter as part of the City's annual Spring Cleanup. Volunteers will receive trash bags and orange safety vests (required in street right-of-way only) from the City and will be grouped into work teams for assignment to designated sites, including public and private property throughout the City.

Litter and debris that will be collected may include glass, metal, and other sharp objects. For their protection, litter pickup participants are advised to wear protective clothing, such as sturdy pants, shoes, and gloves. In addition, some litter sites may be adjacent to roadways, and volunteers are advised to be wary of motor vehicle traffic.

The City of Falls Church does not carry insurance to cover this type of event and cannot assume liability in the case of accident or injury.

We, the undersigned, have read the above statement and understand that the City of Falls Church cannot assume responsibility for accident or injury that may occur during the October 18, 2014 Spring Cleanup. We thus waive any claim against the City, and release its officers and employees from any claims or charges arising out of our/our children's participation in the Cleanup. We agree to make every effort to follow/advise our children of the safety requirements suggested and to follow additional safety instructions as outlined by the event coordinator.

Name (please print)	Address	Group	Signature	Date
Ann Newburn	2 Garden Ct #1215			10/17/14
Caroline Sherard				10-18-14
Melissa & Emma Ward			Melissa Ward	10/18/14
Melicia Coates				" "
Delany Davis				" "
Claire W				" "

SPRING
Community Clean Up

April 11
10 am - 12 pm

Clean up the City of Falls Church and keep litter out of our waterways. Citizens or groups can request any area of town to clean up or be assigned an area of town the day of. Meet at the Community Center (223 Little Falls St.).

Call Chris McGough, 703-248-5456 (TTY 711)
CMcGough@fallschurchva.gov

The City of Falls Church is committed to the letter and spirit of the Americans with Disabilities Act. To request a reasonable accommodation for any type of disability, call 703-248-5027 (TTY 711). For more information call 703-248-5178.

CITY OF FALLS CHURCH

FALL
Community Clean Up

October 10
10 am - 12 pm

Clean up the City of Falls Church and keep litter out of our waterways. Citizens or groups can request any area of town to clean up or be assigned an area of town the day of. Meet at the Community Center (223 Little Falls St.).

Call Chris McGough, 703-248-5456 (TTY 711)
CMcGough@fallschurchva.gov

The City of Falls Church is committed to the letter and spirit of the Americans with Disabilities Act. To request reasonable accomodation for any type of disability, call 703-248-5456 (TTY 711).

CITY OF FALLS CHURCH

Rain Barrel Distribution

register: www.arlingtonenvironment.org/RainBarrel

Saturday, May 22 **1 p.m. - 4 p.m.** **Cost: $65**

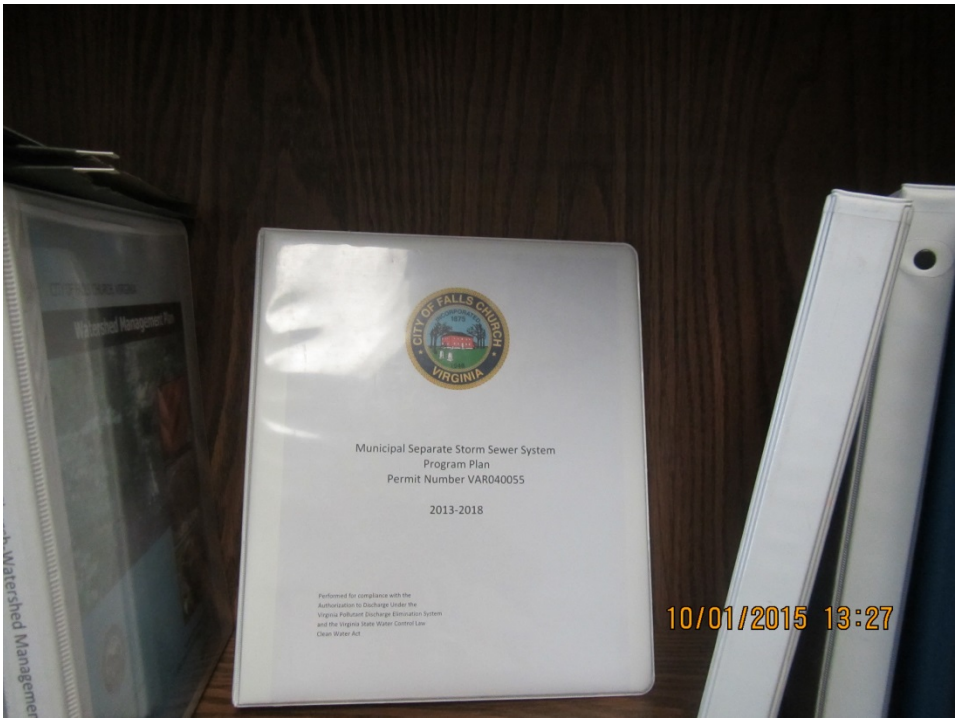
City of Falls Church Property Yard • 7100 Gordon Rd., Falls Church, VA

Purchase a rain barrel for pick-up at our upcoming Rain Barrel Distribution event! Barrels cost $65, and can be reserved by visiting www.arlingtonenvironment.org/RainBarrel and scrolling down to the Reserve a Pre-Made Barrel for Pick-up option.

This event is produced by the Northern Virginia Rain Barrel Program partner organizations and agencies, which include Arlingtonians for a Clean Environment, Northern Virginia Soil & Water Conservation District, Fairfax County, the City of Falls Church, the City of Alexandria, the Reston Association, and Fairfax County Park Authority.

The City of Falls Church is committed to the letter and spirit of the Americans with Disabilities Act.
To request a reasonable accommodation for any type of disability, call 703-248-5030 (TTY 711).

City of Falls Church



Hard copy of MS4 Permit (2013-2018), located in City Hall at 300 Park Ave, Suite 100W

Hard copy of MS4 Permit (2013-2018), located in Mary Styles Library, 120 N Virginia Ave

APPENDIX E – IDDE Manual

Illicit Discharge Detection and Elimination (IDDE) Standard Operating Procedures Manual

Second Edition
January 2015

Department of Public Works
300 Park Ave.
Suite 100 West
Falls Church, VA 22046

Prepared by

GKY &Associates,inc.

4229 Lafayette Center Drive, Suite 1850
Chantilly, Virginia 20151
703-870-7000

One previous edition of the manual has been published. Information in this edition of the manual supersedes that found in all previous editions.

First Edition December 2007

Information regarding the applicability, use, and content of this manual should be directed to:

The City of Falls Church
Department of Public Works
300 Park Ave.
Suite 100 West
Falls Church, VA 22046
Phone (703) 248-5350

Table of Contents

1 Introduction 1

1.1 Overview 1
1.2 Authority 1
1.3 Chapter Overview 3
1.4 Roles and Responsibilities 3

2 Dry Weather Field Screening 5

2.1 Introduction 5
2.2 Preparation for Field Screening 5
2.2.1 Roles and Responsibilities during Field Screening Activities 5
2.2.2 Preparing Field Packages 6
2.2.2.1 Required Data (if available) 6
2.2.2.2 Recommended Data 7
2.3 Procedures for Selecting Appropriate Field Screening Days 7
2.4 Field Screening Preparation 8
2.4.1 Logistics 8
2.4.2 Preparing Equipment and Materials 8
2.5 Conducting Field Screening 8
2.5.1 Introduction and Accessibility 8
2.5.2 Outfall Identification and Inspection 9
2.5.3 Flow Description 11
2.5.4 Procedures for Collecting and Conducting Water Quality Grab Samples 11
2.5.4.1 Using Reagent Powders 12
2.5.5 Interpreting Water Quality Sampling Results 12
2.6 Field Screening Follow-Up 13
2.6.1 Equipment and Housekeeping 13
2.6.2 Documentation 13
2.6.3 Follow-Up and Next Steps 14
2.6.3.1 Addressing Suspect Discharges 14
2.6.3.2 Non-City Outfalls 14

3 Addressing Complaints 15

3.1 Introduction 15
3.2 Complaint Investigation 16
3.2.1 Initial Site Visits 16
3.2.2 Documentation and Recordkeeping 17
3.3 Follow-Up and Reporting 17
3.3.1 Complaints Referred to Other City Departments 17
3.3.2 Suspect Discharge Follow-Up 17
3.3.3 Reporting 17

4 Determining the Source of Suspect Discharges 18

4.1 Introduction ... 18
4.2 Preparing to Investigate Suspect Discharges ... 18
4.3 Investigating Suspect Discharges ... 18
4.4 Documentation and Recordkeeping ... 20
4.5 Follow-Up and Next Steps ... 21

5 Elimination of Illicit Discharges ... 22

5.1 Introduction ... 22
5.2 Prohibited discharges ... 22
5.3 Education and Outreach ... 23
5.4 Notice to Comply ... 23
5.5 Citation to Court ... 23
5.6 Confirmation of Elimination ... 23
5.7 Documentation ... 24
5.7.1 Authorized Discharge ... 24
5.7.2 Education and Outreach ... 24
5.7.3 Notice to Comply ... 24
5.7.4 Court Citation ... 25

6 Contacting Other Agencies ... 27

6.1 Introduction ... 27
6.2 Other Regulatory Agencies ... 27
6.2.1 Fairfax Water ... 27
6.2.2 Virginia DEQ ... 27
6.2.3 Arlington County Department of Environmental Services ... 27
6.2.4 Fairfax County Stormwater Planning ... 28
6.2.5 Virginia Department of Transportation (VDOT) ... 28
6.3 Reporting Illicit Discharges Not Entering the City Storm Sewer System ... 28
6.4 Reporting Discharges to Receiving Waters from City Outfalls ... 28

7 Safety ... 30

7.1 Introduction ... 30
7.2 General Safety ... 30
7.3 Hazardous Materials ... 30
7.3.1 Dangerous Gases ... 30
7.3.2 Water Quality Sampling Materials ... 31
7.4 Physical Hazards ... 31
7.4.1 Removing Manhole Covers ... 31
7.4.2 Traffic Safety ... 32
7.5 If an Emergency Occurs ... 32

8 References ... 33

8.1 OAKTON Multi-Parameter PCSTestr™ 35 ... 34
8.2 Total Chlorine Method 8167 Hach DOC316.53.01027 ... 35
8.3 Ammonia Nitrogen Method 8155 Hach DOC316.53.01077 ... 43
8.4 Turbidity Method 8237 Hach DOC316.53.01332 ... 48
8.5 Reagent Black Correction ... 52

8.6 MSDSs 53
8.6.1 Ammonia Cyanurate 53
8.6.2 Ammonia Salicylate Reagent 59
8.6.3 DPD Total Chlorine Reagent 65
8.7 GasAlert Max XT II Gas Meter Operator's Manual 71

9 Appendices 73

9.1 Equipment and Materials 74
9.2 Field Inspection Form 76
9.3 Illicit Discharge Incident Tracking Form 77
9.4 Spill and Illicit Discharge Response and Reporting Standard Operating Procedure (SOP) 78
9.5 Inspection Equipment Storage 79

1 INTRODUCTION

1.1 Overview

The City of Falls Church (City) operates a municipal separate storm sewer system (MS4) that is regulated under the federal Clean Water Act (CWA). As a result, discharges from the City's MS4 ***OUTFALLS***[1] into downstream waterbodies are authorized under the Virginia General Permit for Stormwater Discharges from Small MS4s (General Permit) issued by the Virginia Department of Environmental Quality (DEQ). As a condition of the General Permit, the City is required to develop and implement a program to detect and eliminate illicit discharges to their MS4.

In order to address illicit discharges, the City is required to eliminate illicit discharges from entry into the MS4 by promoting citizen reporting of illicit discharges and conducting follow-up inspections and proactively identifying and eliminating additional illicit discharges by conducting annual dry weather screenings and follow-ups.

This standard operating procedures (SOP) manual outlines the responsibilities and procedures that are to be implemented by the City in order to comply with the General Permit conditions regarding Illicit Discharge Detection and Elimination (IDDE).

This SOP manual is applicable to the City employees and its contractors assigned to inspect stormwater infrastructure for evidence of illicit discharges. This SOP is published by authority of the City of Falls Church Department of Public Works.

1.2 Authority

The City regulates illicit discharges under Chapter 35, Article I of the City Code. Chapter 35-21 outlines prohibited illicit discharges. In addition, Chapter 35-21 outlines the authority to inspect and monitor stormwater outfalls or other parts of the storm sewer system. Chapter 35-22 authorizes the City to correct any violations with written notification of non-compliance and issuance of penalties.

In addition to Chapter 35 Article I, the City maintains certain authorities under additional City Code. Those chapters include the following:

- The City's Solid Waste Ordinance [Chapter 34-8 (d)] currently prohibits the dumping of solid or hazardous waste onto the public right-of-way and prohibits the disposal of the same into any streams or drainage areas in the City. Furthermore, the ordinance (Chapter 34-9) authorizes the City's Director of Public Works or his designated representative to enforce and administer the provisions of the ordinance, including issuing warnings and citations for violations.
- Pet waste regulations are included in Chapter 4-41 of the City Code. Chapter 4-41 states "It shall be unlawful for any owner, keeper or walker of a dog to fail to

[1] Outfall means, when used in reference to municipal separate storm sewers, a point source at the point where a municipal separate storm sewer discharges to surface waters and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels or other conveyances which connect segments of the same stream or other surface waters and are used to convey surface waters.

immediately remove the dog's excrement from any property other than the dog owner's property. Any violation of section shall, upon conviction, be punishable by a fine or not more than $50.00."

- The Utilities section of the City Code, Chapter 42-171, addresses dumping or tapping into the storm drain or sanitary sewer in the following way:

  (a) Deposits, obstructing flow. No person shall throw or deposit in or upon any public drainage ditch, stream bed, storm or sanitary sewer, or any trap, basin or other appurtenance of any public storm or sanitary sewer in the city, any matter, organic or inorganic, except ground water or roof water discharged into a public storm drain when approved by the administrative authority, or matter normally discharged into a sanitary sewer from industrial, commercial or residential structures. Nor shall any person obstruct, impede or cause to be impeded or obstructed, the flow of any public drainage ditch, stream bed, storm or sanitary sewer, nor interfere with the free discharge or ventilation, nor clog up any appurtenance.

  (b) Cutting, tapping. No person shall cut, break, damage, pierce or tap any public storm or sanitary sewer or appurtenance, or introduce any tube, pipe, trough or conduit into any public storm or sanitary sewer or appurtenance without a written permit from the city manager; provided, that the provisions of this subsection shall not apply to a master plumber acting under circumstances of emergency.

  (c) Lifting manhole covers, etc. No person other than on-duty employees of the city shall turn, lift, remove, raise or tamper with any cover of any manhole, basin, inlet or other appurtenance of any public storm or any sanitary sewer without a written permit from the city manager; provided, that the provisions of this subsection shall not apply to master plumber acting under circumstances of emergency.

  (d) Prohibited discharges. No person shall make or maintain any connection with any public storm or sanitary sewer or appurtenance whereby there may be conveyed into same any hot, suffocating, corrosive, inflammable or explosive liquid, gas, vapor, substance or material of any kind; provided, that the provisions of this subsection shall not apply to hot water heaters when properly connected as required by the plumbing code or to boilers installed and operating in accordance with the provisions of the building code.

1.3 Chapter Overview

This SOP manual establishes City policies and procedures for detecting and eliminating illicit discharges, conduct dry weather screening, addressing citizen complaints, documenting activities and reporting illicit discharges. The manual is comprised of the following chapters:

Chapter 1: Introduction: The purpose and authority of this document are stated in Chapter 1. In addition, Chapter 1 provides an overview of the manual, as well as, the roles and responsibilities of the City.

Chapter 2: Dry Weather Field Screening: Chapter 2 contains the City procedures for conducting annual dry weather screening and includes such guidance as the roles and responsibilities of City staff, creating field maps, and completing initial field screening and water quality testing tasks. Pre-site visit, site visit, and post-site visit tasks are provided. Procedures for collecting and handling water samples are also discussed. The procedures are those required by equipment manual instructions, laboratory protocols, and evidence chain-of-custody requirements.

Chapter 3: Addressing Complaints: Chapter 3 contains procedures to address and document complaints regarding illicit discharges.

Chapter 4: Determining the Source of Suspect Discharges: The procedures provided in Chapter 4 detail how to successfully complete illicit discharge source determination tasks.

Chapter 5: Elimination of Illicit Discharges: The procedures provided in Chapter 5 provide guidance regarding how to eliminate suspect illicit discharges in accordance with City Code and the General Permit.

Chapter 6: Contacting Other Agencies: Chapter 6 provides guidance for contacting the appropriate regulatory and emergency agencies. Information is also given on organizations to call and what to report.

Chapter 7: Safety: Chapter 7 provides guidance for providing a safe work environment.

Chapter 8: *References*: Chapter 8 provides reference documents that have been incorporated into this SOP by reference.

Chapter 9: *Safety*: Chapter 9 provides appendices that have been incorporated into this SOP by reference.

1.4 Roles and Responsibilities

It is the responsibility of the DPW Stormwater Division to lead the City's efforts in addressing illicit discharges. The Stormwater Division oversees dry weather screening, as well as, addressing citizen complaints while coordinating efforts with additional City departments as necessary. Finally, the Stormwater Division documents and maintains records necessary to demonstrate compliance with the General Permit.

The address and contact information for the Stormwater Division of DPW is as follows:

Falls Church City Hall
300 Park Ave., Suite 100W
Falls Church, VA 22046
703-248-5350 (TTY 711)
703-248-5336 fax

As previously mentioned, the Stormwater Division of DPW is primarily responsible for the IDDE program; however, close coordination and communication between the different groups within DPW is essential to the IDDE program. DPW manages many of the daily operations of City's services, which includes; Engineering and Construction; Solid Waste and Recycling; Highways, Streets and Sidewalks; Urban Forestry; Fleet Maintenance; Stormwater System Maintenance; and Facilities Maintenance. Regular briefings, training sessions, and data sharing must occur with appropriate City staff.

2 DRY WEATHER FIELD SCREENING

2.1 Introduction

The City is required by the General Permit to annually conduct dry weather screening at all thirty two (32) MS4 regulated outfalls under its ownership and/or operation. Currently, the City owns and/or operates outfalls within the Four Mile Run, Tripp's Run, and Pmiit Run watersheds. Chapter 2 incorporates the City procedures for conducting dry weather field screening.

The procedures provided in Chapter 2 define general roles and responsibilities of City staff, and explain the procedures for creating field maps, and completing initial screening and water quality testing tasks. In addition, procedures are provided for activities associated with pre-site visits, site visits, and post-site visits. Procedures for collecting and handling water samples are also discussed. The procedures are those required by equipment manual instructions, laboratory protocols, and evidence chain-of-custody requirements.

2.2 Preparation for Field Screening

2.2.1 Roles and Responsibilities during Field Screening Activities

The following descriptions identify the roles and responsibilities of individual City staff while conducting field screening activities:

Stormwater Program Lead:

- Disseminate this SOP to appropriate staff.
- Implement this SOP.
- Provide the materials and equipment necessary to carry out the requirements of this SOP.
- Periodically review and update this SOP to account for changes in activities or regulatory requirements.
- Provide appropriate training to employees undertaking the inspection tasks.
- Take appropriate action when inspection reports indicate evidence of illicit discharge.
- Ensure safety precautions are observed by all field staff.
- Report to the supervisors and other appropriate agencies if evidence of an illicit discharge is discovered.
- Ensure that data is provided to the appropriate staff that it can be entered into the City's GIS database system.
- Report any emergencies, hazardous situations, and suspected illicit discharges.

Stormwater Program Field Staff:

- Follow the guidelines contained in this SOP.
- Follow the direction of the supervisor.
- Conduct inspections using the procedures outlined in this SOP.
- Document findings made during inspections using the form provided in Appendix 1 (Field Inspection Form).
- Manage data following an inspection operation.
- Conduct water quality testing of observed dry weather discharges.
- Determine the likely source of any suspected illicit discharge.
- Report to the supervisor any emergencies, ***HAZARDS***[2], and suspected illicit discharges.

2.2.2 Preparing Field Packages

City staff will prepare a field package for each outfall. Each field package will contain a field map, along with a Field Inspection Form, as contained in Appendix 1.

City staff will utilize the most recent GIS data available to create field maps for each of the City's thirty two (32) MS4 regulated outfalls identified using the procedures included in Chapter 2. Each field map will identify the location of one selected outfall and the extent of storm sewer that flows to the outfall. In addition, field maps should include the following information when available:

2.2.2.1 Required Data (if available)

- MS4 Outfall
- Watershed/Sub-watershed
- Latest Aerial Imagery
- Roads/Streets
- Stormwater Structures
- Stormwater Culverts/Pipes
- Stormwater Channels
- Stormwater BMP's
- Nearby Waterbodies (Rivers and Streams)

[2] Hazard is defined as a situation that poses potential harm to persons, property, or the environment.

2.2.2.2 Recommended Data

- Land Use Data
- Sanitary Sewer Pipes
- Septic Systems
- Sewershed

2.3 Procedures for Selecting Appropriate Field Screening Days

The purpose of conducting dry weather field screening is to identify illicit discharges being discharged into the MS4 system. As such, sufficient time must have passed since the last rain event in order to provide distinction between stormwater runoff and illicit discharges. Field staff must only conduct field screening on ***DRY WEATHER***[3] days. The following procedure should be followed to determine dry weather days:

1. Research the National Weather Service website (http://www.weather.gov) and complete the following:
    a. Enter "Falls Church, VA" into the "Weather.gov Forecast" section and press enter. A web page for Falls Church will open.
    b. Under the "Current Conditions" section, click the "3 Day History" link, http://w1.weather.gov/data/obhistory/KDCA.html to check for hourly estimated rainfall at the KDCA Observation Site station at the Reagan National Airport within the past 48 hours.
    c. If the data listed at the KDCA Station does not appear to be complete, click the "back to Previous Page" button, click "More Local WX", then select "Washington-Dulles International Airport", "Fort Belvoir", or another station from the list. The data at one of the stations should be complete.
    d. Calculate the sum of the hourly rainfall values (the 1-hr. column under the Precipitation heading) to determine the total hourly rainfall over the past 48 hours.
    e. If the sum of the total rainfall over the previous 48-hrs. is less than 0.1-inch, it is a dry weather day and field screening may proceed. If the sum of the total rainfall over the previous 48-hrs. is 0.1-inch or greater, field screening must be postponed for the day.
    f. The amount of rainfall should be provided to the field team for documentation on the Field Inspection Form (Box 6).

[3] Dry Weather is defined as a period in which there has been recorded less than 0.10 inch of rainfall within the preceding 48 hours.

2.4 Field Screening Preparation

2.4.1 Logistics

The following are to be done in preparation for dry weather screening events:

1. If not provided, field staff should create field packages utilizing guidance found in Chapter 2.2.2.
2. Conduct a pre-task briefing to ensure readiness of team and equipment (Appendix 2) to perform field inspections:
    a. Gather equipment and check that it is working properly.
    b. Check batteries.
    c. Check memory card if using a digital camera.
    d. Check expiration dates of reagent kits (if applicable).

2.4.2 Preparing Equipment and Materials

Field staff is responsible for water quality testing sample cells and testing equipment. As such, field staff must:

1. Prepare sample cells and dipper ladles for sampling as follows:
    a. Clean the sample cells and ladles with laboratory detergent.
    b. Rinse well with tap water.
    c. Rinse well with deionized water at least three times.
    d. Allow to air dry.
2. Calibrate and sterilize field equipment as outlined in References 1-7.

2.5 Conducting Field Screening

2.5.1 Introduction and Accessibility

Field staff must complete annual field screening on all thirty two (32) MS4 regulated outfalls. If a structure to be inspected is located on private property, staff must be granted permission for access. This can be accomplished via preliminary site visit or certified mail. However, Chapter 35 Article I (35-21) provides the City the authority to inspect and monitor discharges and sources of potential discharges to the storm drainage system to ensure compliance with the article, including the authority to enter upon private property to inspect or monitor such discharges or sources of potential discharge.

If accessibility cannot be obtained, field staff should note such on the Inspection Form (Box 17) and select an alternative outfall from those provided.

Some structures may be located in inaccessible areas such as those with thick vegetation or steep slopes. Field staff should not risk injury in order to gain access to such structures.

Procedures should be worked out to provide safe access for all members of the inspection team.

Field staff should conduct field screening activities using the procedures outlined in Chapters 2.5.2 through 2.5.5.

2.5.2 Outfall Identification and Inspection

The following steps are to be completed for each outfall:

1. Follow the safety procedures outlined in Chapter 7.
2. Complete the top portion of the Inspection Form. Field staff should:
    a. Note inspection date and time (Box 1).
    b. Note the field staff present (Box 2).
    c. Note the Node ID of the outfall from the field map (Box 3).
    d. Note the Node ID of the structure downstream, if applicable (Box 4).
    e. Note the Node ID of the first structure upstream of the outfall (Box 5).
    f. Note the node location (Box 7)[4].
    g. Note the node type (Box 8), material (Box 9), size (Box 10), and condition (Box11).
3. If a gas monitor is used to identify the presence of gas in a manhole, complete the Gas Testing section. See Chapter 7 for guidance in safely addressing the presence of gas.
4. Complete the *Area Reconnaissance* portion of the inspection form
    a. Note the receiving channel type, and condition (Boxes 12 & 13).
    b. Note the condition of surrounding vegetation (Box 14).
    c. Note any deposits or stains around the outfall (Box 15).
    d. Note whether flow is coming from the outfall (Box 16).
        i. If flow is not present (or insufficient flow exists to collect a sample) and there is no visual evidence of illicit discharge (e.g., excessive deposits or stains[5]), photo document the outfall using a digital camera. Record photo numbers and descriptions on the inspection form (Box 31). **Check the *Clear* box on the inspection form, sign and proceed to the next outfall.**
        ii. If flow is not present (or insufficient flow exists to collect a sample) and there is visual evidence of illicit discharge, photo document the outfall and evidence using a digital camera. Record photo numbers

[4] Staff may choose to enter the information in Boxes 3-7 in the office prior to or after field activities.
[5] Brown, Edward, Deb Caraco, and Robert Pitt. Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments; Water Permits Division, US EPA Office of Water and Wastewater, Washington, D.C., 2004, p.107 .

and descriptions on the inspection form (Box31). **Check the *Suspect* box on the inspection form, sign and proceed to the next outfall.**

iii. If flow is present, field staff will proceed to Chapter 2.5.3 and implement procedures for sampling when flow is present.

iv. If flow exists but there is insufficient discharge to collect a sample, note absence of flow in Box 16 and add "wet but not flowing" to Box 17.

2.5.3 Flow Description

Field staff is to complete the following procedures when flow is found at an outfall:

1. Complete the *Flow Description* portion of the Inspection Form.
    a. Note flow depth, color, and transparency (Boxes 18, 19, & 20).
    b. Note flow oily sheen or odor (Boxes 21 & 22).
    c. Note floating matter in the flow (Box 23).
    d. Note any specific comments regarding flow (Box 24).
    e. Photograph the outfall and any issues in the area using the digital camera.
    f. Record photo numbers and descriptions on the inspection form (Box 31).
    g. Proceed to the Water Quality Grab Sample portion of the Inspection Form and follow the procedures for collecting and conducting water quality grab samples found in Chapter 2.5.4.

2.5.4 Procedures for Collecting and Conducting Water Quality Grab Samples

Field staff is to complete the following procedures[6] when collecting and conducting water quality grab samples during field screening:

1. Collect a sample of discharge using the sampling dipper fitted with a ladle.
2. Place 100 mL of the collected sample into a beaker for field sampling as follows:
    - Obtain the sample's conductivity level using the OAKTON Multi-Parameter PSCTestr™ 35 as directed in Reference 1. Record the conductivity in Box 26.
    - Follow the directions in Reference 2 to obtain the level of total chlorine using the Hach DR/890 Colorimeter. Record the results in Box 27.
    - Follow the directions in Reference 3 to obtain the level of ammonia using the Hach DR/890 Colorimeter. Record the results in Box 28.
    - Obtain the sample's pH and temperature using the OAKTON Multi-Parameter PSCTestr™ 35 as directed in Reference 1. Record the pH in Box 29 and the temperature in Box 25.
    - Follow the directions in Reference 4 to obtain the level of turbidity using the Hach DR/890 Colorimeter. Record the results in Box 30.
3. Rinse the sample cells with deionized water at least three times after each test. A reagent blank correction subtracts the color absorbed when running a test with deionized water from the sample result to correct for any background color due to reagents. See Reference 5.

[6] Equipment referenced in this manual is the equipment that may be used as part of the field screening process. If the indicated equipment is not available then equivalent equipment should be used to complete the tasks indicated.

4. Rinse the beakers with deionized water at least three times when finished with the sample.
5. Place used reagent packets in a waste bag. This can be thrown away as normal trash.
6. If the flow is suspect, record the source of the discharge on the report form if evident.
7. Ensure that the form has been completed to the maximum extent possible.
8. Clean inspection area and make sure that all equipment is removed from the area prior to leaving.

2.5.4.1 Using Reagent Powders

Dry powdered reagents packaged in individual "powder pillows" are used to test for total chlorine and ammonia with the DR/890 Colorimeter. Pour the pillow contents into the sample cell and continue the procedure according to the instructions. Tap the pillow to remove any powder from the corners.

2.5.5 Interpreting Water Quality Sampling Results

Field staff should use best professional judgment to interpret area reconnaissance and flow description results in order to determine if the outfall contains a suspect discharge. Additional guidance as to how to interpret this data can be found by referencing Chapter 11 of Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments. The field staff should use a severity index of three (3), as noted in the manual, in visually identifying a suspect discharge. A copy of this Guidance Manual is available at http://nepis.epa.gov/Adobe/PDF/20017KFK.PDF.

If the field staff determine that the area reconnaissance and flow description data indicate that the outfall contains a suspect discharge or the results from water quality sampling fail to pass the indicator criteria as identified in Table 1, **the Suspect Box on the Field Inspection Form should be checked, the form signed and the field staff should proceed to the next outfall. Field staff should use professional judgment regarding ambient temperature and sample temperature in order to determine whether the discharge is suspect.**

If the area reconnaissance and flow description data indicate that the outfall does not contain a suspect discharge and the results from water quality sampling pass the indicator criteria, **field staff should check the Clear Box on the Field Inspection Form, sign the form and proceed to the next outfall.**

Table 1: Water Quality Parameter Indicator Criteria

Parameter	Unit	Method	Pass Criteria
Temperature	°F	OAKTON Multi-Parameter PCSTestr™ 35	**BPJ**
Conductivity	µS/cm	OAKTON Multi-Parameter PCSTestr™ 35	**<350**
pH		OAKTON Multi-Parameter PCSTestr™ 35	**6-9**
Turbidity	NTU	Hach DR/890 Colorimeter	**<50**
Ammonia	mg/L	Hach DR/890 Colorimeter	**1.0**
Total Chlorine	mg/L	Hach DR/890 Colorimeter	**0.1**
Odor	Severity Index	Visual	**Severity Index of 3***
Color	Severity Index	Visual	**Severity Index of 3***
Floatables	Severity Index	Visual	**Severity Index of 3***

*Field observations will be rated by the relative severity using a scale from 1 to 3; 1 indicating no visual evidence of potential illicit discharge, and 3 indicating obvious signs of potential illicit discharge activity[7].

2.6 Field Screening Follow-Up

2.6.1 Equipment and Housekeeping

The following tasks are completed daily after field screening:

- All trash such as empty reagent pack should be disposed in a City dumpster.
- All water quality testing equipment should be cleaned as follows:
  - Clean the sample cells and ladles with laboratory detergent.
  - Rinse well with tap water.
  - Rinse well with deionized water at least three times.
  - Equipment should be allowed to air dry.
  - Properly store all equipment.

2.6.2 Documentation

Ensure all collected data, including any field screening documentation and photos are entered into the City's IDDE inspection database.

[7] Brown, Edward, Deb Caraco, and Robert Pitt. Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments; Water Permits Division, US EPA Office of Water and Wastewater, Washington, D.C., 2004, p.103-106

2.6.3 Follow-Up and Next Steps

2.6.3.1 Addressing Suspect Discharges

- If the outfall is identified as suspect and the source of the suspect discharge is not obvious, follow-up must be conducted using procedures outlined in Chapter 4.
- If the outfall is identified as suspect and the source of the suspect discharge is obvious, follow-up must be conducted using procedures outlined in Chapter 5.
- Suspect discharges involving sanitary sewage must be reported to the City Department of Public Works Superintendent immediately.
- Any suspect discharge that has reached or has the potential to reach receiving waters to must be reported to DEQ in accordance with Chapter 6.

2.6.3.2 Non-City Outfalls

If field screening is inadvertently completed on an outfall not owned or operated by the City, the following actions should be taken:

- Any suspect discharge shall be reported to the responsible party.
- Suspect discharges being discharged through an Arlington County, Fairfax County or Virginia Department of Transportation (VDOT) outfall should be reported to the applicable organization using contact information found in Chapter 6.
- Suspect discharges being discharged through privately owned outfalls should be reported to DEQ using contact information found in Chapter 6.
- The City outfall database should be updated to include the property owner, if applicable.

3 ADDRESSING COMPLAINTS

3.1 Introduction

In addition to identifying suspect discharges as part of dry weather screening activities, the City will receive complaints from citizens and City staff regarding suspect discharges. Citizens and City staff are encouraged to report potential illicit discharges by calling (703) 248-5350.

An Illicit Discharge Incident Tracking Form is provided as Appendix 3. The form is intended for use with a phone reporting system, and is designed so that the responder can prompt the caller through each section. A description of the basic information collected during an incident report follows.

- *Incident ID* - Each incident should receive a unique identification code to ensure accurate tracking and public feedback.
- *Complainant Information* - Complainant contact information may be recorded; however, anonymous reporting is often preferred because it frees the complainant from potential reprisal. The date and time of incident must be noted, as it may be different than the time it was called in.
- *Responder Information* - The name of the responder and the time and date of the call should be recorded. The amount of precipitation in the past 24-48 hours, as described in Chapter 2.3 is also recorded for reporting purposes.
- *Incident Location* - The location of the potential illicit discharge is one of the most important yet difficult pieces of information to accurately collect. Unique and visible outfall numbering allows reports to be precisely located. In the absence of field-marked outfall numbering, complainant should be encouraged to provide the nearest street/intersection information and any general descriptions that tie the site to a nearby landmark or major land use (e.g., shopping center, school, etc.), as well as indicate whether the incident site is located in the stream corridor or in an upland area. Other options are to include blank space for narrative descriptions or for the response team to meet the complainant at a nearby known location if the complainant cannot provide sufficient information of the incident location.
- *Problem Type* - Providing a list of likely problems and problem descriptions can help to readily identify the potential source. The problem types will likely fall into the following five categories: (1) unnatural stream conditions, (2) sewage, (3) wash water, (4) oil/solvents, and (5) industrial wastes. "Other" should also be included, as exceptions will likely occur. By identifying a suspected origin, the field team may have a head start on the investigation and suspected repeat offenders can be screened through trend analysis.
- *Problem Indicator Description* - A description of the discharge odor and color, and type of floatables present permits investigators to know what they are looking for and to start preparing for how to handle the situation.

- *Investigation Notes* - To properly track and report suspected illicit discharges, the investigation needs to be documented. Key information to record for the initial and follow-up investigation (if applicable) include the following:
    - The date or dates that the illicit discharge was observed and reported
    - The results of the investigation
    - Any follow-up to the investigation
    - Resolution of the investigation
    - The date that the investigation was closed

Personnel must be trained to provide the basics of illicit discharge identification and details of the tracking and reporting process. The responder should be trained so that they understand the significance of the information being collected.

Potential emergency situations or threats to health and safety should immediately be referred to emergency services. Complaints involving the discharge of sanitary sewage or leaking public water lines should be referred to the City of Falls Church Department of Public Works Superintendent at (703) 248-5013 for immediate follow-up adhering to the procedures in Appendix 4 (Spill and Illicit Discharge Response and Reporting Standard Operating Procedure). All complaints received shall be entered into the IDDE database. In addition to the information provided at the time of the complaint, the following information should be entered into the IDDE database:

- Parcel ID
- MS4 outfall (if applicable)
- Receiving watershed
- Receiving stream
- Department to which the complaint was referred (if applicable)

3.2 Complaint Investigation

3.2.1 Initial Site Visits

An initial site visit to investigate complaints should be conducted. All attempts should be made to conduct the initial site visit as soon as practical but within three (3) business days of receiving the complaint. It is recommended that when possible, staff create a site map as described in Chapter 2.2.2 prior to the site visit. A site map will provide staff valuable information to help locate any potential illicit discharge present.

Staff must obtain permission from the property owner to access private property when investigating complaints. If permission is not obtained, staff should note that they were unable to obtain permission to access the property and document their observations from public property.

When investigating a complaint, staff may encounter one of the following suspect discharges:

- A continuous, active discharge.
- If a continuous active discharge is observed and the source of the discharge is not obvious, staff should utilize procedures included in Chapter 4.
- If a continuous active discharge is observed and the source of the discharge is obvious, staff should utilize procedures outlined in Chapter 5.
- No active discharge but evidence of a previous discharge exists.
- No evidence of a discharge.

3.2.2 Documentation and Recordkeeping

When conducting a site visit, staff should document the following information:

- Date and time of site visit
- Name of staff conducting the site visit
- Observed conditions
- Additional comments such as observed sources
- Photographs should be taken using a digital camera in order to document any observed conditions. Photo numbers and descriptions should be recorded as part of the documentation.

Documentation should be kept in individual log books and entered into the IDDE database.

3.3 Follow-Up and Reporting

3.3.1 Complaints Referred to Other City Departments

Stormwater Division staff should follow-up with the Department to which the complaint was referred to within thirty (30) days of reference to ensure that the complaint was addressed. Documentation of the follow-up including date and results should be entered into the IDDE database.

3.3.2 Suspect Discharge Follow-Up

Stormwater Division staff shall conduct follow-up in accordance to Chapter 4 and Chapter 5 of this SOP manual.

3.3.3 Reporting

Staff must follow any necessary reporting procedures as provided in Chapter 6.

4 DETERMINING THE SOURCE OF SUSPECT DISCHARGES

4.1 Introduction

As a condition of the General Permit, the City is legally obligated to investigate suspect discharges that it determines are being discharged into its stormwater system. The City can become aware of suspect discharges as a result of a complaint, staff observation or while conducting field screening activities. Chapter 4 provides guidance in identifying suspect discharge sources.

4.2 Preparing to Investigate Suspect Discharges

When preparing to investigate suspect discharges, staff should familiarize themselves with the composition and activities of the upstream drainage area as well as the nature of the suspect discharge. Both of these may provide valuable clues in identifying the source of upstream suspect discharges.

If time permits, a field map such as described in Chapter 2.2.2 should be created prior to beginning the field investigation. In addition, equipment such as monitors and sampling equipment should be prepared as described in Chapter 2.4.2.

4.3 Investigating Suspect Discharges

Department staff should attempt to investigate suspect discharges within three (3) business days of their awareness. The investigation can be in conjunction with the complaint investigation described in Chapter 3.

Unless a potential source is not identified as a result of preparation, staff should begin their investigation where the suspect discharge was first identified and track the discharge methodically up the stormwater system following the safety guidelines established in Chapter 7.

If the suspect discharge is intermittent or no longer present, staff should attempt to determine the source by tracking the flow upstream using remaining evidence such as deposits and stains. All activities should be documented in accordance with Chapter 4.4.

If the source of an intermittent suspect discharge cannot be identified, staff must conduct a minimum of two follow-up investigations in attempt to identify the source. If known, staff should attempt to conduct field activities during the same day of the week and approximate time as when the initial suspect discharge was identified. If after six (6) months, the source of the suspect discharge has not been identified and the suspect discharge has not been observed, reported or identified another time, staff may close the investigation and document its closure.

To complete the investigation, field crews strategically inspect manholes within the storm drain network system to measure chemical or physical indicators that can isolate discharges to a specific segment of the network. The goal is to isolate the discharge

between two storm drain manholes. After the pipe segment has been identified, on-site investigations will be used to find the specific discharge or improper connection.

This method involves progressive sampling at manholes, catch basins and inlets in the storm drain network to narrow the discharge to an isolated pipe segment between two manholes. The following three options can be used:

Option 1. Investigation can proceed progressively up the trunk (the largest diameter pipe of the storm drain system leading directly to the outfall) from the outfall and manholes tested along the way. Field crews start with the manhole closest to the outfall, and progressively move up the system, inspecting manholes until indicators reveal that the discharge is no longer present. The goal is to isolate the discharge between two storm drain manholes. Moving up the trunk of the storm drain system is effective for illicit discharge problems in relatively small drainage areas. This is the preferred option for the City of Falls Church.

Option 2. The trunk is split into equal segments and manholes tested at strategic junctions in the storm drain system. When splitting the storm drain system, strategic manholes at junctions in the storm drain network are selected to isolate discharges. This option is particularly suited in larger and more complex drainage areas because it can limit the total number of manholes to inspect, and it can avoid locations where access and traffic are problematic.

Option 3. Investigation can proceed progressively down from the upper parts of the storm drain system toward the problem outfall. In this option, inspection begins with manholes at the "headwaters" of the storm drain system, and progressively moves down pipe. This approach works best in very large drainage areas that have many potential continuous and/or intermittent discharges. Each upstream branch of the storm drain system is certified that it has no contributing discharges before the investigation moves down pipe to a "junction manhole." If discharges are found, testing is performed to pinpoint the discharge. After confirmation that the discharge is removed the investigation then proceeds farther down the pipe system.

Visual observations are used to assess conditions in the manhole that will indicate an illicit discharge. Key visual observations that are made during manhole inspections include the following:

- Presence of flow
- Color
- Odor
- Floatable material
- Deposits, residue or staining

The results of storm drain system investigations should be systematically documented to guide future discharge investigations, and describe any infrastructure maintenance problems encountered.

4.4 Documentation and Recordkeeping

Documentation and recordkeeping is very important when attempting to identify suspect discharge sources. As such, all activities and observations should be documented. Each entry should include, at a minimum:

- Date and time of entry
- Staff names
- Location of the activity (e.g., manhole at 123 E. Main St.)
- The activity (e.g., inspected manhole for flow)
- Observations (e.g., flow is still present; chlorine reading 1.5 ppm)
- If photos are taken, record the photo numbers and photo descriptions

Documentation not only assists staff in tracking progress in determining the source but it also provides a valuable tool if future formal enforcement activities are employed as described in Chapter 5.

In addition, the IDDE database should be updated to include:

- Date of inspection
- Staff names
- The activity
- Observations

All photographs should be uploaded to the designated location from a digital camera using the digital camera hardware and software instructions.

4.5 Follow-Up and Next Steps

Once a source is identified, staff should coordinate with the appropriate regulatory agency as identified in Chapter 6. Staff should note on the IDDE database if the suspect discharge is being referred to another agency for follow-up. Staff should follow-up with agency within thirty (30) days to ensure that the suspect discharge was addressed. Documentation of the follow-up including date and results should be entered into the IDDE database.

5 ELIMINATION OF ILLICIT DISCHARGES

5.1 Introduction

Under the General Permit, the City is required to investigate suspect discharges and eliminate illicit discharges from their stormwater system. The City has several options for ensuring elimination of these illicit discharges once the source has been located.

5.2 Prohibited discharges

The first objective to eliminating illicit discharges is to determine if the suspect discharge is an actual illicit discharge. Chapter 35-2 of the City Code defines illicit discharges as any discharge to the stormwater system that is not composed entirely of stormwater, except discharges pursuant to a VPDES or VSMP permit, discharges resulting from firefighting activities, or discharges expressly allowed under this article. Prohibited substances, whether liquid or solid, include, but are not limited to: waste, trash, and garbage; food and kitchen waste; leakage from dumpsters or trash containers; gasoline, waste oil, lubricants, grease, antifreeze, or any other automotive, motor, or equipment fluids; fertilizers, grass clippings, mulch, and any yard waste; any chemical or solvent; soluble and nonsoluble metals; wash water, detergents, and cleaning agents; paints; plastics; soot, ash, and sludge; animal waste; eroded soils and sediment; carcasses; chlorinated swimming pool water; and, any material that impedes or interferes with the free flow of stormwater.

Certain non-stormwater discharges are allowed to be discharged into the City stormwater system provided they are not found to be discharging sewage, industrial wastes or other wastes into the stormwater system. Potential authorized, non-stormwater discharges may include the following:

- Discharges pursuant to a VPDES permit
- Discharges resulting from firefighting activities
- Water line flushing
- Landscape irrigation
- Diverted stream flows or rising groundwater
- Infiltration of uncontaminated groundwater
- Pumping of uncontaminated groundwater
- Discharges from potable water sources
- Foundation drains
- Irrigation water
- Springs
- Water from crawl spaces or footing drains
- Air conditioning condensation
- Lawn watering

- Residential car washing
- Public street washing
- Dechlorinated swimming pool discharges

These discharges may not be considered illicit and may not require additional activity.

5.3 Education and Outreach

Many parties that are found to be the source of illicit discharges are unaware that what they are doing is illegal and may not even recognize that they are the source of the illicit discharge. City staff should educate and provide outreach as the first step in eliminating illicit discharges. Staff should refer to the City's public education media campaign to assist in outreach.

5.4 Notice to Comply

When public education and outreach has failed to eliminate the illicit discharge within a reasonable time frame or the City determines that the illicit discharge is severe enough to not employ education and outreach, the City may choose to issue a Notice to Comply to eliminate the illicit discharge in accordance with Chapter 35-22 of the City Ordinance. Notice to Comply must include a time frame by which the illicit discharge is eliminated or prevented from entering into the City stormwater system.

As a Notice to Comply is the first step in formal enforcement actions, Stormwater Division staff must coordinate with all appropriate City Departments in order to ensure proper protocol is followed. Notice to Comply should be sent via certified mail with a return receipt requested in order to provide documentation that the Notice to Comply was received by the responsible party.

5.5 Citation to Court

If the responsible party fails to eliminate the illicit discharge from entering into the City stormwater system, the City may choose to pursue legal methods through citation to court in accordance with Chapter 35-22 of the City Ordinance.

Stormwater staff must coordinate with all appropriate City Departments in order to ensure proper protocol is followed and necessary documentation is provided.

5.6 Confirmation of Elimination

Regardless of the method used to eliminate the illicit discharge, staff must confirm that the illicit discharge has been eliminated. Staff should schedule a site visit to document that the illicit discharge has been eliminated. If the site visit may be confrontational, staff should not attempt to contact the responsible party. Confirmation should be made from public property. If a hostile situation arises, staff should leave the area and contact the City officials for guidance.

If the elimination of the illicit discharge is ordered by a Court, staff should obtain confirmation of elimination through the appropriate City authorities rather than attempting to conduct a site visit.

5.7 Documentation

All activities employed by staff must be documented. For the purposes of recording efforts for eliminating illicit discharges the following must be documented in the IDDE Database:

5.7.1 Authorized Discharge

- Responsible party
- Responsible party address
- Type of discharge
- VPDES Number (if applicable)
- City staff
- Summary of activity
- Date of confirmation that the discharge was an authorized discharge

5.7.2 Education and Outreach

- Date of activity
- Responsible party
- Responsible party street address
- City staff
- Summary of educational activity employed and discussion
- Date of confirmation that illicit discharge was eliminated

5.7.3 Notice to Comply

- Responsible party
- Responsible party street address
- Date Notice to Comply sent
- Date Notice to Comply was received
- Date by which illicit discharge must be eliminated
- Date of confirmation that illicit discharge was eliminated

5.7.4 Court Citation

- Responsible party
- Responsible party street address
- Date of Court citation
- Summary of Court decision
- Date of confirmation that illicit discharge was eliminated

Staff should consult with the appropriate City authorities to determine if any additional policies or procedures must be for formal enforcement actions.

6 CONTACTING OTHER AGENCIES

6.1 Introduction

As discussed throughout this SOP manual, often times other agencies have the necessary legal authorities and responsibility to address suspect discharges. Chapter 6 provides contact information for these agencies.

6.2 Other Regulatory Agencies

6.2.1 Fairfax Water

Responsibilities:	Water
Address:	8570 Executive Park Avenue, Fairfax, VA 22031
Phone Number:	(703) 698-5600
After Hours Emergency:	(703) 698-5613

6.2.2 Virginia DEQ

Responsibilities:	Discharges Not Associated with the City of Falls Church Storm Sewer System
	Discharges Regulated Under the VPDES Permitting Program
Address:	13901 Crown Court Woodbridge, VA 22193
Phone Number:	(703) 583-3864

6.2.3 Arlington County Department of Environmental Services

Responsibilities:	Illicit Discharges to or from Arlington County MS4
	Arlington County MS4 Outfalls
	Arlington County MS4 Permit Compliance
Address:	Arlington County
	2100 Clarendon Blvd., Suite 900, Arlington, VA 22201
Phone Number:	(703) 228-6570

6.2.4 Fairfax County Stormwater Planning

Responsibilities:	Illicit Discharges to or from Fairfax County MS4
	Fairfax County MS4 Outfalls
	Fairfax County MS4 Permit Compliance
Address:	Fairfax County
	12000 Government Center Parkway, Fairfax, VA 22035
Phone Number:	(703) 324-7329

6.2.5 Virginia Department of Transportation (VDOT)

Responsibilities:	Illicit Discharges from VDOT Right-of-Way
	VDOT MS4 Outfalls
	VDOT MS4 Permit Compliance
Address:	Northern Virginia District Office
	4975 Alliance Drive Fairfax, VA 22030
Phone Number:	(800) 367-7623

6.3 Reporting Illicit Discharges Not Entering the City Storm Sewer System

If an illicit discharge does not enter into the City's storm sewer system, the City should contact the Northern Virginia Regional Office of the Virginia DEQ, 703-583-3864 immediately and provide the following information:

- The location of the illicit discharge
- When you found the discharge
- The quantity of discharge found
- The parameters that were found at unacceptable levels and their test results
- The likely source of pollution

6.4 Reporting Discharges to Receiving Waters from City Outfalls

If an illicit discharge is found to be entering into the City stormwater system and the illicit discharge is discharging to, or has the potential to reasonably discharge to, receiving waters, the City must contact the Northern Virginia Regional Office of VADEQ, 703-583-3864 immediately or in no case later than 24-hours of the discovery of the discharge.

The City must follow-up within five (5) days of the notification with a written report to Northern Regional Office of containing the following information:

- A description of the nature and location of the discharge
- The cause of the discharge
- The date on which the discharge occurred
- The length of time that the discharge continued
- The volume of the discharge
- If the discharge is continuing, how long it is expected to continue
- If the discharge is continuing, what the expected total volume of the discharge will be
- Any steps that the City has planned or taken to reduce, eliminate and prevent reoccurrence of the present discharge or any future discharges

7 SAFETY

7.1 Introduction

Safety procedures must be followed by all inspection staff. Specific health and safety hazards which staff may encounter include:

- Exposure to hazardous waste and materials
- Removal of manhole covers
- Exposure to traffic operations
- Exposure to reagents used in water quality testing

7.2 General Safety

Staff should take general safety precautions during all activities. These include the following:

- Activities such as field screening and follow-up illicit discharge detection inspections should not be completed in less than teams of two.
- Staff should wear a City-issued safety vests at all times.
- Staff should visually survey the area attempting to be accessed in order to identify all potential hazards and should take all available efforts to minimize their exposure to those hazards.
- If exposure to an identified hazard cannot be eliminated or minimized, the staff should contact their supervisor for guidance and not enter into a hazardous situation.
- Staff must follow Occupational Safety and Health Administration (OSHA) work safety standards and other applicable guidelines.
- Staff should direct any questions concerning safety to their supervisor.

7.3 Hazardous Materials

Staff should avoid direct contact with hazardous materials at all times. Safety procedures and best professional judgment should be used to minimize exposure to hazardous materials.

7.3.1 Dangerous Gases

Dangerous gases, which are combustible or harmful if inhaled, can collect in confined spaces such as culverts. Field staff is most likely to encounter these gases when removing manhole covers. Field staff needs to be aware of the dangers of confined spaces and accumulating gases.

If a gas monitor is used to detect the presence of these gases when removing manhole covers or wherever the presence of combustible or harmful gases is suspected in confined spaces, follow the procedures for operating a gas monitor found in Reference 7. If the gas monitor indicates that there is combustible gas within the manhole, close the manhole and back away immediately. Notify a supervisor and call 911 to report the manhole location where there is combustible gas.

7.3.2 Water Quality Sampling Materials

When testing for water quality parameters using chemical reagents, staff must follow the safety rules below:

- Follow test procedures carefully and observe all precautionary measures. Read the entire procedure carefully before beginning.
- Review material safety data sheets (MSDSs) for each reagent chemical used during testing (Reference 6).
- Do not smoke, eat, or drink in an area where toxic or irritating chemicals are used.
- Use reagents and equipment only as directed in the test procedure.
- Do not use damaged bottles or broken equipment.
- Minimize all chemical exposures. Do not breathe vapors or let chemicals touch your skin. Wear clothing that covers skin. Wear nitrile gloves.
- Wear safety goggles. Staff should become familiar with using portable eyewash units and carry one during all site visits.

7.4 Physical Hazards

7.4.1 Removing Manhole Covers

The following safety measures should be followed to avoid injury while opening manhole covers:

- Bend knees, not waist. Do not lift the manhole cover with your back muscles. Use leg muscles and avoid twisting.
- Wear steel-toed boots or safety shoes to protect feet.
- Do not move manhole covers with hands or fingers.
- Do not enter manholes under any circumstances. Confined space entry must only be done by properly trained and equipped persons.

7.4.2 Traffic Safety

Staff should take extreme caution when working near moving traffic. At a minimum, staff should:

- Configure all lane closures in accordance with the Virginia Work Area Protection Manual.
- Mark the lane with traffic cones and/or signs to give adequate time and space for drivers to react and move around the work area.
- Wear safety vests and/or reflective clothing so that you will be visible to traffic.
- When access is required in extreme situations (e.g., busy highways, sharp turns), staff should coordinate with their supervisor in order to request assistance from City Police and/or Fire Departments, or VDOT, to direct traffic and provide additional safety.

7.5 If an Emergency Occurs

Immediately notify a supervisor using the most effective available mode of communication (cell phone, etc.) if any of the following situations arise:

- Any person is seriously injured or is in immediate danger of injury or death for any reason.
- The gas monitor indicates hazardous or combustible gas.
- The team suspects or discovers any situation requiring the immediate attention of emergency response teams.

Supervisors will call 911 and coordinate an emergency response. If contacting a supervisor first appears to pose an unacceptable risk, staff should call 911 directly prior to contacting their supervisor. Staff should then move to a safe location and wait for emergency responders to arrive.

When calling 911, callers should be prepared to provide the following information and remain on scene until emergency responders arrive:

- The reason for calling (injury, combustible gas, etc.)
- Name of caller
- Location of caller including address and nearest cross street
- Obvious details of the emergency situation
- Any other information requested by the 911 dispatcher

8 REFERENCES

The following documents are made part of this SOP by reference:

1. OAKTON Multi-Parameter PCSTestr™ 35
2. Total Chlorine Method 8167 Hach DOC316.53.01027
3. Ammonia Nitrogen Method 8155 Hach DOC316.53.01077
4. Turbidity Method 8237 Hach DOC316.53.01332
5. Reagent Black Correction
6. MSDSs
7. GasAlert Max XT II Gas Meter Operator's Manual

8.1 OAKTON Multi-Parameter PCSTestr™ 35

This document is referenced by hyperlink as it changes on a regular basis. Please download the most current document using the following hyperlink:

http://www.4oakton.com/SellSheets/35425-00,-05,-10.pdf

8.2 Total Chlorine Method 8167 Hach DOC316.53.01027

Method 8167

CHLORINE, TOTAL (0 to 2.00 mg/L) **For water, wastewater and seawater**

DPD Method (Powder Pillows or AccuVac Ampuls)
USEPA accepted for reporting water and wastewater analyses*
Note: This product has not been evaluated to test for chlorine and chloramines in medical applications in the United States.

Using Powder Pillows

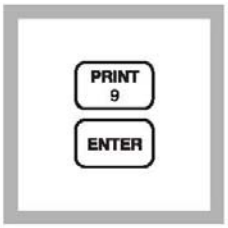
1. Enter the stored program number for total chlorine (Cl_2) powder pillows.

Press: **PRGM**

The display will show:

PRGM ?

Note: For most accurate results, perform a Reagent Blank Correction using deionized water (see Section 1).

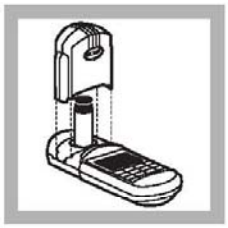


2. Press: **9 ENTER**

The display will show **mg/L, Cl2** and the **ZERO** icon.

3. Fill a sample cell with 10 mL of sample (the blank).

Note: Samples must be analyzed immediately and cannot be preserved for later analysis.

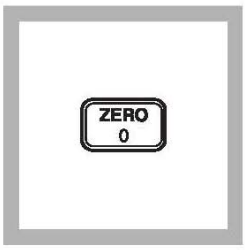


4. Place the blank into the cell holder. Tightly cover the sample cell with the instrument cap.

* Procedure is equivalent to USEPA method 330.5 for wastewater and Standard Method 4500-Cl G for drinking water.

141

CHLORINE, TOTAL, continued

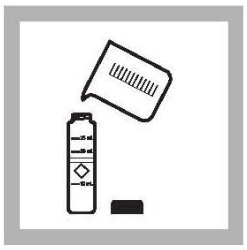


5. Press: **ZERO**

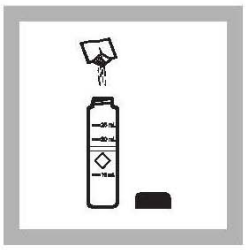
The cursor will move to the right, then the display will show:

0.00 mg/L Cl2

Note: If Reagent Blank Correction is on, the display may flash "limit". See Section 1.

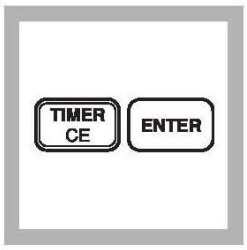


6. Fill a second cell to the 10-mL mark with sample.



7. Add the contents of one DPD Total Chlorine Powder Pillow to the sample cell (the prepared sample). Cap and swirl the sample cell vigorously to dissolve the powder.

Note: It is not necessary that all the powder dissolves.

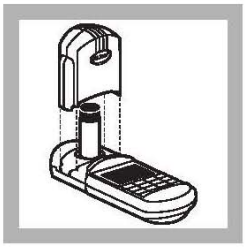


8. Press:

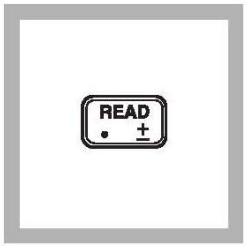
TIMER ENTER

A three-minute reaction period will begin. A pink color will develop if chlorine is present.

Note: The SwifTest Dispenser for Total Chlorine can be used in place of the powder pillows in step 7.



9. After the timer beeps, place the prepared sample into the cell holder. Tightly cover the sample cell with the instrument cap.



10. Press: **READ**

The cursor will move to the right, then the result in mg/L total chlorine will be displayed.

Note: It the sample temporarily turns yellow after sample addition, or the display flashes "limit", it is due to high chlorine levels. Dilute a fresh sample and repeat the test. A slight loss of chlorine may occur during dilution. Multiply the result by the dilution factor; see Section 1. Or use the High Range Total Chlorine test, program #8.

Note: Standard Adjust may be performed using a prepared standard (see Standard Adjust in Section 1).

CHLORINE, TOTAL, continued

Using AccuVac Ampuls

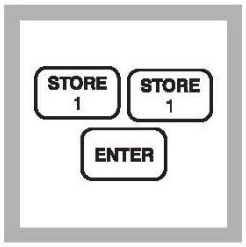
1. Enter the stored program number for total chlorine (Cl_2) AccuVac Ampuls.

Press: **PRGM**

The display will show:

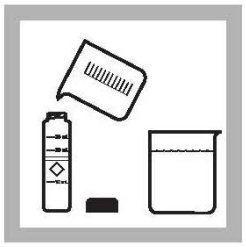
PRGM ?

Note: For most accurate results, perform a Reagent Blank Correction using deionized water (see Section 1).



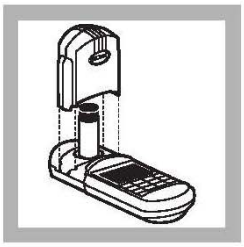
2. Press: **11 ENTER**

The display will show **mg/L, Cl2** and the **ZERO** icon.

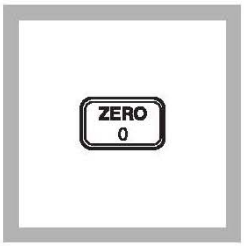


3. Fill a sample cell with at least 10 mL of sample (the blank). Collect at least 40 mL of sample in a 50-mL beaker.

Note: Samples must be analyzed immediately and cannot be preserved for later analysis.



4. Place the blank into the cell holder. Tightly cover the sample cell with the instrument cap.

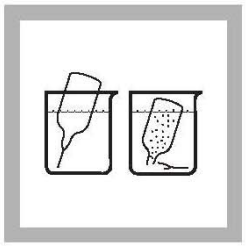


5. Press: **ZERO**

The cursor will move to the right, then the display will show:

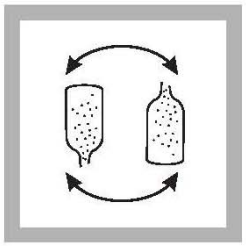
0.00 mg/L Cl2

Note: If Reagent Blank Correction is on, the display may flash "limit". See Section 1.



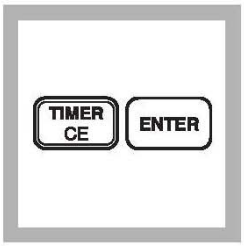
6. Fill a DPD Total Chlorine Reagent AccuVac Ampul with sample.

Note: Keep the tip immersed while the ampule fills completely.



7. Quickly invert the ampule several times to mix. Wipe off any liquid or fingerprints.

Note: A pink color will form if chlorine is present.



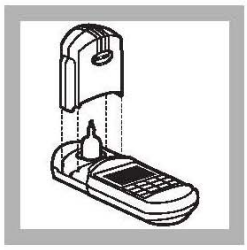
8. Press:

TIMER ENTER

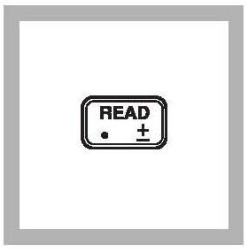
A three-minute reaction period will begin.

143

CHLORINE, TOTAL, continued



9. When the timer beeps, place the AccuVac Ampul into the cell holder. Tightly cover the ampule with the instrument cap.



10. Press: **READ**

The cursor will move to the right, then the result in mg/L total chlorine will be displayed.

Note: If the sample temporarily turns yellow after sample addition, or the display shows "limit", it is due to high chlorine levels. Dilute a fresh sample and repeat the test. A slight loss of chlorine may occur during dilution. Multiply the result by the appropriate dilution factor; see Section 1.

Note: Standard Adjust may be performed using a prepared standard (see Section 1).

Sampling and Storage

Analyze samples for chlorine **immediately** after collection. Free chlorine is a strong oxidizing agent, and it is unstable in natural waters. It reacts rapidly with various inorganic compounds and more slowly oxidizes organic compounds. Many factors, including reactant concentrations, sunlight, pH, temperature and salinity influence decomposition of chlorine in water.

Avoid plastic containers since these may have a large chlorine demand. **Pretreat glass** sample containers to remove any chlorine demand by soaking in a dilute bleach solution (1 mL commercial bleach to 1 liter of deionized water) for at least 1 hour. Rinse thoroughly with deionized or distilled water. If sample containers are rinsed thoroughly with deionized or distilled water after use, only occasional pre-treatment is necessary.

CHLORINE, TOTAL, continued

Do not use the same sample cells for free and total chlorine. If trace iodide from the total chlorine reagent is carried over into the free chlorine determination, monochloramine will interfere. It is best to use separate, dedicated sample cells for free and total chlorine determinations.

A common error in testing for chlorine is introduced when a representative sample is not obtained. If sampling from a tap, let the water flow for at least 5 minutes to ensure a representative sample. Let the container overflow with the sample several times, then cap the sample containers so there is no headspace (air) above the sample. If sampling with a sample cell, rinse the cell several times with the sample, then carefully fill to the 10-mL mark. Perform the chlorine analysis immediately.

Accuracy Check

Standard Additions Method (using powder pillows)

a) Snap the top off a LR Chlorine PourRite Ampule Standard Solution.

b) Use a TenSette Pipet to add 0.1 mL of the standard to the reacted sample (this is the spiked sample). Swirl to mix.

c) Re-zero the instrument using the original sample (the blank).

d) Place the spiked sample into the cell holder and press **READ**. Record the results.

e) Calculate the concentration of mg/L chlorine added to the sample:

$$\text{mg/L chlorine added} = \frac{0.1\ (\text{vol. standard added}) \times \text{Label value (mg/L } Cl_2)}{10.1\,(\text{sample + standard volume})}$$

f) The spiked sample result (step d) should reflect the analyzed sample result + the calculated mg/L Cl_2 added (step e).

g) If this increase does not occur, see *Standard Additions* in *Section 1* for more information.

Standard Additions Method (using AccuVac Ampuls)

a) Snap the top off a LR Chlorine PourRite Ampule Standard Solution.

b) Use a graduated cylinder to measure 25 mL of sample into

CHLORINE, TOTAL, continued

each of two beakers.

c) Use a TenSette Pipet to add 0.2 mL of the standard to one of the beakers (this is the spiked sample). Swirl to mix.

d) Fill a DPD Total Chlorine AccuVac completely from each beaker.

e) Analyze the spiked and unspiked sample as described in
the procedure.

f) Calculate the concentration of mg/L chlorine added to the sample:

$$\text{mg/L chlorine added} = \frac{0.2\ (\text{vol. standard added}) \times \text{Label value (mg/L Chlorine)}}{25.2\ (\text{sample} + \text{standard volume})}$$

g) The spiked sample result should reflect the analyzed sample result + the calculated mg/L Cl_2 added (step f).

h) If this increase does not occur, see *Standard Additions* in *Section 1* for more information.

Method Performance

Precision

In a single laboratory, using a standard solution of 1.00 mg/L chlorine and two lots of reagents with the instrument, a single operator obtained standard deviations of ±0.01 mg/L chlorine.

In a single laboratory, using a standard solution of 1.00 mg/L chlorine and two representative lots of AccuVac Ampuls with the instrument, a single operator obtained a standard deviation of ±0.01 mg/L chlorine.

Estimated Detection Limit (EDL)

The estimated detection limit for programs 9 and 11 is 0.02 mg/L Cl_2. For more information on derivation and use of Hach's estimated detection limit, see *Section 1*.

CHLORINE, TOTAL, continued

Interferences

Interfering Substance	Interference Level and Treatment
Acidity	Greater than 150 mg/L $CaCO_3$. May not develop full color or color may fade instantly. Neutralize to pH 6-7 with 1 N sodium hydroxide. Determine amount to be added on separate sample aliquot, then add the same amount to the sample being tested. Correct for volume addition (See *Section 1, Correcting for Volume Additions*).
Alkalinity	Greater than 250 mg/L $CaCO_3$. May not develop full color or color may fade instantly. Neutralize to pH 6-7 with 1 N sulfuric acid. Determine amount to be added on separate sample aliquot, then add the same amount to the sample being tested. Correct for volume addition (See *Section 1, Correcting for Volume Additions*).
Bromine	Interferes at all levels
Chlorine Dioxide	Interferes at all levels
Chloramines, organic	May interfere
Hardness	No effect at less than 1,000 mg/L as $CaCO_3$
Iodine	Interferes at all levels
Manganese, Oxidized (Mn^{4+}, Mn^{7+}) or Chromium , Oxidized (Cr^{6+})	**1.** Adjust sample pH to 6-7. **2.** Add 3 drops potassium iodide (30 g/L) to a 25-mL sample. **3.** Mix and wait one minute. **4.** Add 3 drops sodium arsenite (5 g/L) and mix. **5.** Analyze 10 mL of the treated sample as described in the procedure. **6.** Subtract the result from this test from the original analysis to obtain the correct chlorine concentration.
Ozone	Interferes at all levels
Peroxides	May interfere
Extreme sample pH and highly buffered samples	Adjust to pH 6-7. See *Interferences, Section 1*.

Summary of Method

Chlorine can be present in water as free available chlorine and as combined available chlorine. Both forms can exist in the same water and be determined together as the total available chlorine. Free chlorine is present as hypochlorous acid and/or hypochlorite ion. Combined chlorine exists as monochloramine, dichloramine, nitrogen trichloride and other chloro derivatives.

The combined chlorine oxidizes iodide in the reagent to iodine. The iodine reacts with DPD (N, N-diethyl-p-phenylenediamine)

CHLORINE, TOTAL, continued

along with free chlorine present in the sample to form a red color which is proportional to the total chlorine concentration. To determine the concentration of combined chlorine, run free chlorine and total chlorine tests. Subtract the results of the free chlorine test from the results of the total chlorine test to obtain combined chlorine.

Pollution Prevention and Waste Management

Samples treated with sodium arsenite for manganese or chromium interferences will be hazardous wastes as regulated by Federal RCRA for arsenic (D004). See *Section 3* for more information on proper disposal of these materials.

REQUIRED REAGENTS & APPARATUS (USING POWDER PILLOWS)

Description	Qty/Test	Unit	Cat. No.
DPD Total Chlorine Reagent Powder Pillows	1 pillow	100/pkg	21056-69
Sample Cell, 10-20-25 mL, w/caps	2	6/pkg	24019-06

REQUIRED REAGENTS & APPARATUS (USING ACCUVAC AMPULS)

DPD Total Chlorine Reagent AccuVac Ampuls	1 ampul	25/pkg	25030-25
Beaker, 50 mL	1	each	500-41H

OPTIONAL REAGENTS

Description	Unit	Cat. No.
Chlorine Standard Solution, PourRite ampule, 25-30 mg/L Cl_2	20/pkg	26300-20
DPD Total Chlorine Reagent, SwifTest	250 tests	28024-00
Potassium Iodide Solution, 30 g/L	100 mL* MDB	343-32
Sodium Arsenite, 5 g/L	100 mL* MDB	1047-32
Sodium Hydroxide Standard Solution, 1 N	100 mL* MDB	1045-32
Sulfuric Acid Standard Solution, 1 N	100 mL* MDB	1270-32
Water, deionized	4 L	272-56

OPTIONAL APPARATUS

AccuVac Snapper Kit	each	24052-00
PourRite Ampule Breaker	each	24846-00
Cylinder, graduated, 25 mL	each	508-40
pH Indicator Paper, 1 to 11 pH units	5 rolls/pkg	391-33
pH Meter, *sension™1*, portable	each	51700-00
Pipet, TenSette, 0.1 to 1.0 mL	each	19700-01
Pipet Tips, for 19700-01 TenSette Pipet	50/pkg	21856-96
Pipet Tips, for 19700-01 TenSette Pipet	1000/pkg	21856-28

For Technical Assistance, Price and Ordering

In the U.S.A.—Call 800-227-4224

Outside the U.S.A.—Contact the Hach office or distributor serving you.

* Marked Dropper Bottle - contact Hach for larger sizes.

8.3 Ammonia Nitrogen Method 8155 Hach DOC316.53.01077

Method 8155

NITROGEN, AMMONIA (0 to 0.50 mg/L NH_3-N) **For water, wastewater, seawater**

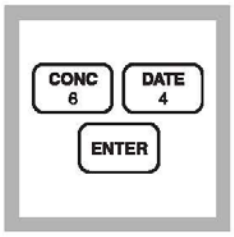
Salicylate Method*

1. Enter the stored program number for ammonia nitrogen (NH_3-N).

Press: **PRGM**

The display will show:

PRGM ?



2. Press: 64 ENTER

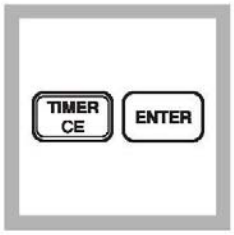
The display will show **mg/L, NH3-N** and the **ZERO** icon.

Note: For alternate forms (NH_3, NH_4), press the **CONC** *key.*

3. Fill a sample cell with 10 mL of deionized water (the blank).

4. Fill a second sample cell with 10 mL of the sample.

5. Add the contents of one Ammonia Salicylate Reagent Powder Pillow to each sample cell. Cap both cells and shake to dissolve.



6. Press:

TIMER ENTER

A three-minute reaction period will begin.

7. After the timer beeps add the contents of one Ammonia Cyanurate Reagent Powder Pillow to each sample cell. Cap the cells and shake to dissolve the reagent.

Note: A green color will develop if ammonia nitrogen is present.

8. The display will show: **15:00 TIMER 2**

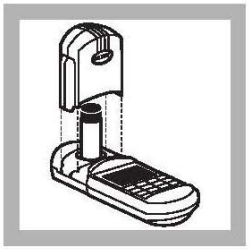
Press: **ENTER**

A 15-minute reaction period will begin.

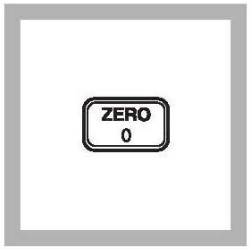
* Adapted from Clin. Chim. Acta., 14 403 (1966)

349

NITROGEN, AMMONIA, continued



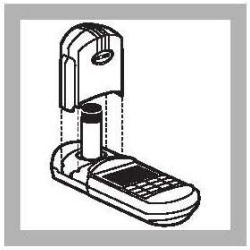
9. After the timer beeps, place the blank into the cell holder. Tightly cover the sample cell with the instrument cap.



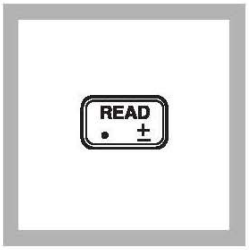
10. Press: **ZERO**

The cursor will move to the right, then the display will show:

0.00 mg/L NH3-N



11. Place the prepared sample into the cell holder. Tightly cover the sample cell with the instrument cap.



12. Press: **READ**

The cursor will move to the right, then the result in mg/L ammonia nitrogen will be displayed.

Note: *Standard Adjust may be performed using a prepared standard (see Standard Adjust in Section 1).*

Sampling and Storage

Collect samples in clean plastic or glass bottles. Most reliable results are obtained when samples are analyzed as soon as possible after collection.

If chlorine is known to be present, the sample must be treated immediately with sodium thiosulfate. Add one drop of Sodium Thiosulfate Standard Solution, 0.1 N, for each 0.3 mg of chlorine present in a one liter sample.

To preserve the sample, adjust the pH to 2 or less with concentrated sulfuric acid (about 2 mL per liter). Store samples at 4 °C or less. Samples preserved in this manner can be stored up to 28 days. Just before testing the stored sample, warm to room temperature and neutralize with 5.0 N Sodium Hydroxide Standard Solution. Correct the test result for volume additions; see *Correction for Volume Additions*, in *Section 1* for more detailed information.

350

NITROGEN, AMMONIA, continued

Accuracy Check

Standard Additions Method

a) Fill three 25-mL mixing cylinders with 20 mL of sample.

b) Use the TenSette Pipet to add 0.1, 0.2, and 0.3 mL of Ammonium Nitrogen Standard, 10 mg/L as NH_3-N to the three samples. Stopper the cylinders and mix well.

c) Analyze a 10-mL portion of sample as described above. The ammonia nitrogen concentration should increase 0.05 mg/L for each 0.1 mL of standard added.

d) If these increases do not occur, see *Standard Additions (Section 1)* for more information.

Standard Solution Method

Prepare a 0.40 mg/L ammonia nitrogen standard by diluting 4.00 mL of the Ammonia Nitrogen Standard Solution, 10 mg/L, to 100 mL with deionized water. Or, using the TenSette Pipet, prepare a 0.40 mg/L ammonia nitrogen standard by diluting 0.8 mL of a Ammonia Nitrogen Voluette Standard Solution, 50 mg/L as NH_3-N, to 100 mL with
deionized water.

Method Performance

Precision

In a single laboratory using a standard solution of 0.40 mg/L ammonia nitrogen (NH_3-N) and two representative lots of reagent with the instrument, a single operator obtained a standard deviation of $\pm$0.02 mg/L ammonia nitrogen.

Estimated Detection Limit

The estimated detection limit for program 64 is 0.02 mg/L NH_3-N. For more information on the estimated detection limit, see *Section 1*.

NITROGEN, AMMONIA, continued

Interferences

Interfering Substances and Suggested Treatments.

Interfering Substance	Interference Level and Treatments
Calcium	Greater than 1000 mg/L as $CaCO_3$
Glycine, hydrazine	Less common. Will cause intensified colors in the prepared sample.
Iron	All levels. Correct for iron interference as follows: **1.** Determine the amount of iron present in the sample using one of the Total Iron procedures. **2.** Prepare a deionized water sample containing the same iron concentration as the original sample. Run the procedure on this solution to determine the interference due to iron. Subtract this value from the result in Step 12 obtained on the original sample.
Magnesium	Greater than 6000 mg/L as $CaCO_3$
Nitrate	Greater than 100 mg/L as NO_3^--N
Nitrite	Greater than 12 mg/L as NO_2^--N
Phosphate	Greater than 100 mg/L as PO_4^{3-}-P
Sulfate	Greater than 300 mg/L as SO_4^{2-}
Sulfide	Sulfide will intensify the color. Eliminate sulfide interference as follows: **1.** Measure about 350 mL of sample in a 500-mL erlenmeyer flask. **2.** Add the contents of one Sulfide Inhibitor Reagent Powder Pillow. Swirl to mix. **3.** Filter the sample through a folded filter paper. **4.** Use the filtered solution in Step 3.
Turbidity, sample color	Turbidity and sample color will give erroneous high values. Samples with severe interferences require distillation. Albuminoid nitrogen samples also require distillation. Hach recommends the distillation procedure using the Hach General Purpose Distillation Set. See the Optional Apparatus list.

Summary of Method

Ammonia compounds combine with chlorine to form monochloramine. Monochloramine reacts with salicylate to form 5-aminosalicylate. The 5-aminosalicylate is oxidized in the presence of a sodium nitroprusside catalyst to form a blue-colored compound. The blue color is masked by the yellow color from the excess reagent present to give a final green-colored solution.

NITROGEN, AMMONIA, continued

REQUIRED REAGENTS AND APPARATUS

	Cat. No.
Ammonia Nitrogen Reagent Set for 10-mL samples (100 tests)	26680-00
Includes: (2) 26531-99, (2) 26532-99	

Description	Quantity Required Per Test	Unit	Cat. No.
Ammonia Cyanurate Reagent Powder Pillows	2 pillows	100/pkg	26531-99
Ammonia Salicylate Reagent Powder Pillows	2 pillows	100/pkg	26532-99
Sample Cell, 10-20-25 mL, w/ cap	2	6/pkg	24019-06

OPTIONAL REAGENTS

Ammonia Nitrogen Standard Solution, 10 mg/L as NH_3-N	500 mL	153-49
Ammonia Nitrogen, PourRite Ampules, 50 mg/L as NH_3-N, 2 mL	20/pkg	14791-20
Cylinder, graduated, mixing, 25 mL	each	20886-40
Sodium Hydroxide Standard Solution, 1.0 N	100 mL MDB	1045-32
Sodium Hydroxide Standard Solution, 5.0 N	50 mL SCDB	2450-26
Sodium Thiosulfate Standard Solution, 0.1 N	100 mL MDB	323-32
Sulfide Inhibitor Reagent Powder Pillows	100/pkg	2418-99
Sulfuric Acid, concentrated, ACS	500 mL	979-49
Sulfuric Acid Standard Solution, 1.0 N	100 mL MDB	1270-32
Water, deionized	4 L	272-56

OPTIONAL APPARATUS

Cylinder, graduated, polypropylene, 500 mL	each	1081-49
Distillation Heater and Support Apparatus, 115 V	each	22744-00
Distillation Heater and Support Apparatus, 230 V	each	22744-02
Distillation Set, General Purpose	each	22653-00
Filter Paper, folded, 12.5 cm	100	1894-57
Flask, Erlenmeyer, polypropylene, 500 mL	each	1082-49
Flask, volumetric, Class A, 100 mL	each	14574-42
Funnel, poly, 65 mm	each	1083-67
pH Meter, *sension™1*, portable, with electrode	each	51700-10
Pipet Filler, safety bulb	each	14651-00
Pipet, TenSette, 0.1 to 1.0 mL	each	19700-01
Pipet Tips, for 19700-01 TenSette Pipet	50/pkg	21856-96
Pipet Tips, for 19700-01 TenSette Pipet	1000/pkg	21856-28
Pipet, volumetric, Class A, 2.0 mL	each	14515-36
PourRite Ampule Breaker Kit	each	24846-00
Thermometer, –20 to 110 °C	each	26357-02

For Technical Assistance, Price and Ordering

In the U.S.A.—Call 800-227-4224

Outside the U.S.A.—Contact the Hach office or distributor serving you.

8.4 Turbidity Method 8237 Hach DOC316.53.01332

Method 8237

TURBIDITY (0 to 1000 FAU) **For water, wastewater, and seawater**

Absorptometric Method*

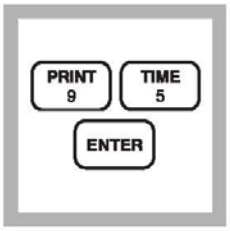
1. Enter the stored program number for turbidity.

Press: **PRGM**

The display will show:

PRGM ?

Note:
1 FAU=1 NTU=1 FTU when measuring formazin. These are not equivalent when measuring other types of standards or samples.



2. Press: **95 ENTER** The display will show **FAU** and the **ZERO** icon.

3. Fill a sample cell with 10 mL of deionized water (the blank).

Note: Wipe the surface of the cell with a soft cloth.

Note: For highly colored samples, use a filtered portion of sample in place of the deionized water.

4. Place the blank into the cell holder. Tightly cover the sample cell with the instrument cap.

5. Press: **ZERO**

The cursor will move to the right, then the display will show:

0 FAU

6. Fill another sample cell with 10 mL of sample.

Note: Mix the sample well before transferring it to the sample cell.

Note: Wipe the surface of the cell with a soft cloth.

7. Place the sample cell into the cell holder. Tightly cover the sample cell with the instrument cap.

8. Press: **READ**

The cursor will move to the right, then the result in Formazin Attenuation Units (FAU) will be displayed.

Note: Standard Adjust may be performed using a prepared standard (see Section I).

* Adapted from FWPCA *Methods for Chemical Analysis of Water and Wastes*, 275 (1969)

595

TURBIDITY, continued

Sampling and Storage

Collect samples in clean plastic or glass bottles. Analyze samples as soon as possible. Store samples up to 48 hours by cooling to 4 °C (39 °F). Analyze the sample at the same temperature as it was collected.

Accuracy Check

Standard Solution Method

The stored program has been calibrated using formazin, the primary standard for turbidity. A 200 FAU formazin solution for checking the accuracy of the test can be prepared using the following procedure.

1. Pipet 5.00 mL of a 4000 NTU Formazin stock solution into a 100-mL volumetric flask.
2. Dilute to the mark with deionized water. Prepare this daily.

Convenient stabilized turbidity stock solution (200 NTU StablCal™ Standard) is available from Hach.

Standard Adjust

To adjust the calibration curve using the reading obtained with the
200 FAU formazin standard, press the SETUP key and scroll (using the arrow keys) to the STD setup option. Press ENTER to activate the standard adjust option. Then enter **200** to edit the standard concentration to match that of the standard used. Press ENTER to complete the adjustment. See *Section 1, Standard Curve Adjustment* for more information.

Method Precision

Precision

In a single laboratory, using a turbidity standard solution of 200 FAU with the instrument, a single operator obtained a standard deviation of ±2 FAU.

Estimated Detection Limit

The estimated detection limit for program 95 is 21 FAU. For more information on the estimated detection limit, see *Section 1*.

596

TURBIDITY, continued

Interferences

Interfering Substance	Interference Levels and Treatments
Air Bubbles	Interfere at all levels. Degass samples using the Degassing Kit or an ultrasonic bath.
Color	Interferes if the color absorbs light at 520 nm.
Temperature extremes	May interfere by changing the turbidity of the sample. Analyze samples as soon as possible after collection. Analyze at the same temperature as the original sample.

Summary of Method

This turbidity test measures an optical property of the sample which results from scattering and absorption of light by particles in the sample. The amount of turbidity measured depends on variables such as the size, shape, color, and refractive properties of the particles.

This procedure is calibrated using formazin turbidity standards and the readings are in terms of Formazin Attenuation Units (FAU). This test cannot be used for USEPA reporting purposes, but it may be used for daily in-plant monitoring. One FAU is equivalent to one Nephelometric Turbidity Unit (NTU) of Formazin. However, the optical method of measurement for FAU is very different than the NTU method (1 NTU = 1 FTU = 1 FAU when traced to formazin primary standards.)

REQUIRED APPARATUS

Description	Quantity Required Per Test	Unit	Cat. No.
Sample Cell, 10-20-25 mL, w/cap	2	6/pkg	24019-06

REQUIRED REAGENTS

Description	Units	Cat. No.
Formazin Stock Solution, 4000 NTU	500 mL	2461-49
Silicone Oil	15 mL DB	1269-36
StablCal Stabilized Turbidity Standard, 200 NTU	500 mL	26604-49
Water, deionized	4 L	272-56

TURBIDITY, continued

OPTIONAL APPARATUS

Description	Units	Cat. No.
Bath, ultrasonic	each	24895-00
Bottle, wash, 250 mL	each	620-31
Flask, volumetric, Class A, 100 mL	each	14574-42
Flask, filter, 500 mL	each	546-49
Filter Holder	each	13529-00
Filter Pump, aspirator	each	2131-00
Oiling cloth, for applying silicone oil	each	26873-00
Pipet Filler, safety bulb	each	14651-00
Pipet, volumetric, Class A, 5.0 mL	each	14515-37
Sample Degassing Kit	each	43975-00
Stopper, rubber, one-hole, No. 7	6/pkg	2119-07
Tubing, rubber, 5/16" I.D.	12 feet	560-19
Tweezers, plastic	each	14282-00

For Technical Assistance, Price and Ordering

In the U.S.A.—Call 800-227-4224

Outside the U.S.A.—Contact the Hach office or distributor serving you.

8.5 Reagent Black Correction

CHEMICAL ANALYSIS INFORMATION, continued

Reagent Blank Correction

The Reagent Blank Correction subtracts the color absorbed when running the test with deionized water instead of sample. The blank value is subtracted from every result to correct for any background color due to reagents.

When using the Reagent Blank Correction feature, the blank correction should be entered before the Standard Adjust feature is used.

To enter a programmed correction for the reagent blank:

1. Run the test using deionized water with each new lot of reagents.
2. Press **READ** to obtain the blank value.
3. Press **SETUP**, scroll to **BLANK** and press **ENTER**. The display will show **BLANK?**.
4. Enter the blank value just read from the instrument.
5. Press **ENTER** to accept the value as the blank to be subtracted from each reading.
6. The display will show 0.00 mg/L (resolution and units vary) and the sample cell icon will be displayed, indicating that the reagent blank feature is enabled and the blank value will be subtracted from each reading. Repeat the reagent blank adjust for each new lot of reagents.

Note: *After entering a reagent blank adjust, the display may flash "limit" when zeroing if the sample used for zeroing has a lower absorbance value than the reagent blank.*

To disable the Reagent Blank adjust feature, press **SETUP**, scroll to **BLANK** and press **ENTER** twice. The concentration readings will be displayed without subtracting the blank. The sample cell icon will no longer appear in the display.

Do not use the Reagent Blank Adjust feature if the procedure uses a reagent blank for zeroing.

Standard Adjust (Adjusting the Standard Curve)

The colorimeter has Hach Programs permanently installed in memory. A program usually includes a pre-programmed calibration curve. Each curve is the result of an extensive calibration performed under ideal conditions and is normally adequate for most testing. Deviations from the curve can occur from using compromised testing reagents, defective sample cells, incorrect test procedure, incorrect technique, or other correctable causes. Interfering substances or other causes may be beyond the analyst's control.

8.6 MSDSs

8.6.1 Ammonia Cyanurate

World Headquarters
Hach Company
P.O.Box 389
Loveland, CO USA 80539
(970) 669-3050

MSDS No: M00128

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Ammonia Cyanurate
Catalog Number: 2653199

Hach Company
P.O.Box 389
Loveland, CO USA 80539
(970) 669-3050

Emergency Telephone Numbers:
(Medical and Transportation)
(303) 623-5716 24 Hour Service
(515)232-2533 8am - 4pm CST

MSDS Number: M00128
Chemical Name: Not Applicable
CAS No.: Not Applicable
Chemical Formula: Not Applicable
Chemical Family: Not applicable
Hazard: Causes burns.
Date of MSDS Preparation:
Day: 11
Month: August
Year: 2012

2. COMPOSITION / INFORMATION ON INGREDIENTS

Sodium Dichloroisocyanurate
CAS No.: 2893-78-9
TSCA CAS Number: 2893-78-9
Percent Range: 1.0 - 5.0
Percent Range Units: weight / weight
LD50: Oral rat LD50 = 1400 mg/kg; Oral human LDLo = 3570 mg/kg
LC50: None reported
TLV: Not established
PEL: Not established
Hazard: Oxidizer. Causes eye burns.

Lithium Hydroxide, Anhydrous
CAS No.: 1310-65-2
TSCA CAS Number: 1310-65-2
Percent Range: 1.0 - 5.0
Percent Range Units: weight / weight
LD50: Oral rat LD50 = 225 mg/kg
LC50: Inhalation rat LC50 = 980 mg/m^3/4H
TLV: 3mg/m^3 Respirable Particles; 10 mg/m^3 Inhalable particles
PEL: 5 mg/m^3 Respirable Fraction; 15 mg/m^3 Total Dust
Hazard: Toxic. Causes severe burns. Harmful if swallowed

Sodium Citrate
CAS No.: 68-04-2
TSCA CAS Number: 68-04-2
Percent Range: 80.0 - 90.0
Percent Range Units: weight / weight
LD50: Oral rat LD50 >8 g/Kg
LC50: None reported

TLV: Not established
PEL: Not established
Hazard: May cause irritation.

Sodium Tartrate
CAS No.: 868-18-8
TSCA CAS Number: 868-18-8
Percent Range: 5.0 - 15.0
Percent Range Units: weight / weight
LD50: Oral rabbit LD50 = 5290 mg/kg
LC50: None reported
TLV: Not established
PEL: Not established
Hazard: May cause irritation.

3. HAZARDS IDENTIFICATION

Emergency Overview:
Appearance: White powder
Odor: Chlorine
CAUSES BURNS HARMFUL IF SWALLOWED
MAY CAUSE KIDNEY OR LIVER DAMAGE BASED ON ANIMAL DATA
HMIS:
Health: 3
Flammability: 1
Reactivity: 1
Protective Equipment: X - See protective equipment, Section 8.
NFPA:
Health: 2
Flammability: 1
Reactivity: 1
Symbol: Not applicable
Potential Health Effects:
Eye Contact: Causes eye burns.
Skin Contact: Causes burns.
Skin Absorption: None reported
Target Organs: None reported
Ingestion: Causes: burns May cause: dizziness nausea kidney damage liver damage
Target Organs: Liver Kidneys Central nervous system Bone marrow
Inhalation: Causes: burns May cause: shortness of breath coughing
Target Organs: None reported
Medical Conditions Aggravated: Pre-existing: Eye conditions Skin conditions Respiratory conditions
Chronic Effects: Lithium compounds have been implicated in development of aplastic anemia. Signs of lithium poisoning include dehydration, extreme weight loss, fine tremor of hands, nausea, vomiting and diarrhea, Chronic overexposure may cause central nervous system effects kidney damage liver damage
Cancer / Reproductive Toxicity Information:
This product does NOT contain any OSHA listed carcinogens.
This product does NOT contain any IARC listed chemicals.
This product does NOT contain any NTP listed chemicals.
Additional Cancer / Reproductive Toxicity Information: None reported
Toxicologically Synergistic Products: None reported

4. FIRST AID

Eye Contact: Immediately flush eyes with water for 15 minutes. Call physician.
Skin Contact (First Aid): Wash skin with soap and plenty of water for 15 minutes. Remove contaminated clothing. Call physician immediately.
Ingestion (First Aid): Do not induce vomiting. Give 1-2 glasses of water. Call physician immediately. Never give anything by mouth to an unconscious person.
Inhalation: Remove to fresh air. Give artificial respiration if necessary. Call physician.

5. FIRE FIGHTING MEASURES

Flammable Properties: During a fire, irritating and highly toxic gases may be generated by thermal decomposition.
Flash Point: Not applicable
Method: Not applicable
Flammability Limits:
Lower Explosion Limits: Not applicable
Upper Explosion Limits: Not applicable
Autoignition Temperature: Not determined
Hazardous Combustion Products: May emit toxic and corrosive fumes.
Fire / Explosion Hazards: Not combustible.
Static Discharge: None reported.
Mechanical Impact: None reported
Extinguishing Media: Dry chemical. Carbon dioxide Water.
Fire Fighting Instruction: As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Spill Response Notice:
Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance. Outside of the US, only persons properly qualified according to state or local regulations should respond to a spill involving chemicals.
Containment Technique: Cover spilled solid material with sand or other inert material. Stop spilled material from being released to the environment.
Clean-up Technique: Scoop up spilled material into a large beaker and dissolve with water. Adjust to a pH between 6 and 9 with an acid, such as sulfuric or citric. Flush reacted material to the drain with a large excess of water. Decontaminate the area of the spill with a soap solution.
Evacuation Procedure: Evacuate local area (15 foot radius or as directed by your facility's emergency response plan) when: any quantity is spilled. If conditions warrant, increase the size of the evacuation.
Special Instructions (for accidental release): Not applicable
304 EHS RQ (40 CFR 355): Not applicable
D.O.T. Emergency Response Guide Number: 154

7. HANDLING / STORAGE

Handling: Avoid contact with eyes skin clothing Do not breathe dust. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.
Storage: Protect from: heat moisture Store away from: acids / acid fumes.
Flammability Class: Not applicable

8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

Engineering Controls: Have an eyewash station nearby. Have a safety shower nearby. Use a fume hood to avoid exposure to dust, mist or vapor. Maintain general industrial hygiene practices when using this product.
Personal Protective Equipment:
Eye Protection: safety glasses with top and side shields
Skin Protection: disposable latex gloves In the EU, the selected gloves must satisfy the specifications of EU Directive 89/686/EEC and standard EN 374 derived from it. lab coat
Inhalation Protection: adequate ventilation
Precautionary Measures: Avoid contact with: eyes skin clothing Do not breathe: dust Wash thoroughly after handling. Keep away from: acids/acid fumes metals
TLV: 3mg/m^3 Respirable Particles; 10 mg/m^3 Inhalable particles
PEL: 5 mg/m^3 Respirable Fraction; 15 mg/m^3 Total Dust

9. PHYSICAL / CHEMICAL PROPERTIES

Appearance: White powder

Physical State: Solid
Molecular Weight: Not applicable
Odor: Chlorine
pH: of a 5% solution = 12.33
Vapor Pressure: Not applicable
Vapor Density (air = 1): Not applicable
Boiling Point: Not applicable
Melting Point: >240 °C, >464 °F
Specific Gravity/ Relative Density (water = 1; air =1): 1.783
Evaporation Rate (water = 1): Not applicable
Volatile Organic Compounds Content: None reported
Partition Coefficient (n-octanol / water): Not applicable
Solubility:
Water: Soluble
Acid: Soluble
Other: Not determined
Metal Corrosivity:
Steel: 0.00 in/yr
Aluminum: 0.803 in/yr

10. STABILITY / REACTIVITY

Chemical Stability: Stable when stored under proper conditions.
Conditions to Avoid: Heating to decomposition. Extreme temperatures Excess moisture
Reactivity / Incompatibility: Incompatible with: acids
Hazardous Decomposition: Contact with acids releases toxic and/or corrosive fumes of: chlorides nitrogen oxides
Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Product Toxicological Data:
LD50: None reported
LC50: None reported
Dermal Toxicity Data: None reported
Skin and Eye Irritation Data: None reported
Mutation Data: None reported
Reproductive Effects Data: None reported
Ingredient Toxicological Data: Sodium Citrate Oral rat LD50 > 8 g/k; Sodium Tartrate Oral rabbit LD50 = 5290 mg/kg; Lithium Hydroxide Oral rat LD50 = 225 mg/kg; Sodium Dichloroisocyanurate Oral rat LD50 = 1400 mg/kg

12. ECOLOGICAL INFORMATION

Product Ecological Information: --
Do not release into the environment. Mobility in soil: No data available
Ingredient Ecological Information: Sodium dichloroisocyanurate: Oncorhynchus mykiss 96 h LC50 = 0,25 mg/l; Daphnia magna 48 hr LC50 = 0,28 mg/l.

13. DISPOSAL CONSIDERATIONS

EPA Waste ID Number: None
Special Instructions (Disposal): Dilute to 3 to 5 times the volume with cold water. Adjust to a pH between 6 and 9 with an acid, such as sulfuric or citric. Open cold water tap completely, slowly pour the reacted material to the drain. Flush system with plenty of water.
Empty Containers: Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.
NOTICE (Disposal): These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

14. TRANSPORT INFORMATION

D.O.T.:

D.O.T. Proper Shipping Name: Lithium Hydroxide Mixture
--
DOT Hazard Class: 8
DOT Subsidiary Risk: NA
DOT ID Number: UN2680
DOT Packing Group: II
I.C.A.O.:
I.C.A.O. Proper Shipping Name: Lithium Hydroxide Mixture
--
ICAO Hazard Class: 8
ICAO Subsidiary Risk: NA
ICAO ID Number: UN2680
ICAO Packing Group: II
I.M.O.:
I.M.O. Proper Shipping Name: Lithium Hydroxide Mixture
--
I.M.O. Hazard Class: 8
I.M.O. Subsidiary Risk: NA
I.M.O. ID Number: UN2680
I.M.O. Packing Group: II
Additional Information: There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

15. REGULATORY INFORMATION

U.S. Federal Regulations:
O.S.H.A.: This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)
E.P.A.:
S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370): Delayed (Chronic) Health Hazard Immediate (Acute) Health Hazard
S.A.R.A. Title III Section 313 (40 CFR 372): This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.
--
302 (EHS) TPQ (40 CFR 355): Not applicable
304 CERCLA RQ (40 CFR 302.4): Not applicable
304 EHS RQ (40 CFR 355): Not applicable
Clean Water Act (40 CFR 116.4): Not applicable
RCRA: Contains no RCRA regulated substances.
C.P.S.C.: Not applicable
State Regulations:
California Prop. 65: No Prop. 65 listed chemicals are present in this product.
Identification of Prop. 65 Ingredient(s): Not applicable
California Perchlorate Rule CCR Title 22 Chap 33: Not applicable
Trade Secret Registry: Not applicable
National Inventories:
U.S. Inventory Status: All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).
TSCA CAS Number: Not applicable

16. OTHER INFORMATION

Intended Use: Laboratory Use Reagent for ammonia test
References: NIOSH Registry of Toxic Effects of Chemical Substances, 1985-86. Cincinnati: U.S. Department of Health and Human Services, April, 1987. Patty, Frank A. Industrial Hygiene and Toxicology, 3rd Revised Edition. Volume 2. New York: A Wiley-Interscience Publication, 1981. Gosselin, R. E. et al. Clinical Toxicology of Commercial Products, 5th Ed. Baltimore: The Williams and Wilkins Co., 1984. Technical Judgment. In-house information. Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992.

Revision Summary: Substantial revision to comply with EU Reg 1272/2008, Reg 1907/2006 and UN GHS (ST/SG/AC.10/36/Add.3).

Legend:

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

USER RESPONSIBILITY: Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

HACH COMPANY ©2012

8.6.2 Ammonia Salicylate Reagent

World Headquarters
Hach Company
P.O.Box 389
Loveland, CO USA 80539
(970) 669-3050

MSDS No: M00127

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Ammonia Salicylate Reagent
Catalog Number: 2653299

Hach Company
P.O.Box 389
Loveland, CO USA 80539
(970) 669-3050

Emergency Telephone Numbers:
(Medical and Transportation)
(303) 623-5716 24 Hour Service
(515)232-2533 8am - 4pm CST

MSDS Number: M00127
Chemical Name: Not applicable
CAS No.: Not applicable
Chemical Formula: Not applicable
Chemical Family: Not applicable
Hazard: May cause irritation. Harmful if swallowed
Date of MSDS Preparation:
Day: 06
Month: August
Year: 2012

2. COMPOSITION / INFORMATION ON INGREDIENTS

Sodium Salicylate
CAS No.: 54-21-7
TSCA CAS Number: 54-21-7
Percent Range: 40.0 - 50.0
Percent Range Units: weight / weight
LD50: Oral rat LD_{50} = 1200 mg/kg; Oral mouse LD_{50} = 540 mg/kg; Oral rabbit LD_{50} = 1700 mg/kg.
LC50: None reported.
TLV: Respirable particles: 3 mg/m^3; Inhalable particles: 10 mg/m^3
PEL: Total dust: 15 mg/m^3; Respirable fraction: 5 mg/m^3
Hazard: May cause irritation. Experimental teratogen. Experimental mutagen. May be embryotoxic.

Sodium Nitroferricyanide
CAS No.: 14402-89-2
TSCA CAS Number: 14402-89-2
Percent Range: < 1.0
Percent Range Units: weight / weight
LD50: Oral rat LD_{50} = 99 mg/kg (anhydrous).
LC50: None reported.
TLV: 5 mg/m^3 as CN^-
PEL: 5 mg/m^3 as CN^-
Hazard: Toxic. May be harmful if inhaled or swallowed

m - Nitrophenol
CAS No.: 554-84-7
TSCA CAS Number: 554-84-7
Percent Range: < 0.5
Percent Range Units: weight / weight
LD50: Oral rat LD_{50} = 328 mg/kg; Oral mouse LD_{50} = 1070 mg/kg.
LC50: None reported.

TLV: Not established.
PEL: Not established.
Hazard: Toxic. Causes severe eye irritation. Causes irritation.

Sodium Citrate
CAS No.: 68-04-2
TSCA CAS Number: 68-04-2
Percent Range: 40.0 - 50.0
Percent Range Units: weight / weight
LD50: Oral rat LD50 >8 g/Kg
LC50: None reported
TLV: Not established
PEL: Not established
Hazard: May cause irritation.

Sodium Tartrate
CAS No.: 868-18-8
TSCA CAS Number: 868-18-8
Percent Range: 10.0 - 20.0
Percent Range Units: weight / weight
LD50: Oral rabbit LD50 = 5290 mg/kg
LC50: None reported
TLV: Not established
PEL: Not established
Hazard: May cause irritation.

3. HAZARDS IDENTIFICATION

Emergency Overview:
Appearance: Tan powder
Odor: None
HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN MAY CAUSE EYE, SKIN AND RESPIRATORY TRACT IRRITATION
CONTACT WITH ACIDS FORMS TOXIC FUMES
HMIS:
Health: 3
Flammability: 1
Reactivity: 0
Protective Equipment: X - See protective equipment, Section 8.
NFPA:
Health: 3
Flammability: 1
Reactivity: 0
Symbol: Not applicable
Potential Health Effects:
Eye Contact: May cause irritiation
Skin Contact: May cause irritiation
Skin Absorption: Harmful if absorbed through the skin Effects similar to those of ingestion Sodium nitroferricyanide produces a delayed cyanide poisoning reaction.
Target Organs: Central nervous system Blood
Ingestion: Sodium nitroferricyanide produces a delayed cyanide poisoning reaction. May cause: headache nausea vomiting central nervous system effects
Target Organs: Central nervous system Blood
Inhalation: Sodium nitroferricyanide produces a delayed cyanide poisoning reaction. May cause: headache nausea, vomiting central nervous system effects
Target Organs: Central nervous system Blood
Medical Conditions Aggravated: Allergies or sensitivity to aspirin or salicylates.
Chronic Effects: Chronic overexposure may cause confusion diarrhea fatigue weakness death Salicylates may cause ringing in the ears (tinnitus), abnormal bleeding, gastric ulceration, mental deterioration, skin eruption, temporary vision loss, and other optical effects.
Cancer / Reproductive Toxicity Information:

This product does NOT contain any OSHA listed carcinogens.
This product does NOT contain any IARC listed chemicals.
This product does NOT contain any NTP listed chemicals.
Additional Cancer / Reproductive Toxicity Information: Contains: an experimental mutagen. an experimental teratogen.
Toxicologically Synergistic Products: None reported

4. FIRST AID

Eye Contact: Immediately flush eyes with water for 15 minutes. Call physician.
Skin Contact (First Aid): Wash skin with soap and plenty of water for 15 minutes. Remove contaminated clothing. Call physician immediately.
Ingestion (First Aid): Never give anything by mouth to an unconscious person. Call physician immediately.
Inhalation: Remove to fresh air. Give artificial respiration if necessary. Call physician.

5. FIRE FIGHTING MEASURES

Flammable Properties: During a fire, this product decomposes to form toxic gases.
Flash Point: Not applicable
Method: Not applicable
Flammability Limits:
Lower Explosion Limits: Not applicable
Upper Explosion Limits: Not applicable
Autoignition Temperature: Not determined.
Hazardous Combustion Products: May emit acrid smoke and fumes.
Fire / Explosion Hazards: This product will not burn or explode.
Static Discharge: None reported.
Mechanical Impact: None reported
Extinguishing Media: Dry chemical. Carbon dioxide Alcohol foam.
Fire Fighting Instruction: As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear. Evacuate area and fight fire from a safe distance.

6. ACCIDENTAL RELEASE MEASURES

Spill Response Notice:
Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance. Outside of the US, only persons properly qualified according to state or local regulations should respond to a spill involving chemicals.
Containment Technique: Releases of this material may contaminate the environment. Stop spilled material from being released to the environment.
Clean-up Technique: Avoid contact with spilled material. Sweep up material. Dilute with a large excess of water. Flush the spilled material to the drain with a large excess of water. Decontaminate the area of the spill with a soap solution.
Evacuation Procedure: Evacuate local area (15 foot radius or as directed by your facility's emergency response plan) when: a pound or more of loose powder is spilled. If conditions warrant, increase the size of the evacuation.
Special Instructions (for accidental release): Mixture contains a component which is regulated as hazardous waste in the U. S. .
304 EHS RQ (40 CFR 355): Not applicable
D.O.T. Emergency Response Guide Number: None

7. HANDLING / STORAGE

Handling: Avoid contact with eyes skin clothing Do not breathe dust. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.
Storage: Store between 10° and 25°C. Keep away from: acids / acid fumes. oxidizers
Flammability Class: Not applicable

8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

Engineering Controls: Use a fume hood to avoid exposure to dust, mist or vapor.

Personal Protective Equipment:
Eye Protection: safety glasses with top and side shields
Skin Protection: lab coat disposable latex gloves In the EU, the selected gloves must satisfy the specifications of EU Directive 89/686/EEC and standard EN 374 derived from it.
Inhalation Protection: laboratory fume hood
Precautionary Measures: eyes skin clothing Do not breathe: dust Wash thoroughly after handling. Use with adequate ventilation. Keep away from: acids/acid fumes oxidizers
TLV: Not established.
PEL: Not established.

9. PHYSICAL / CHEMICAL PROPERTIES

Appearance: Tan powder
Physical State: Solid
Molecular Weight: Not applicable
Odor: None
pH: 7.84 (5% solution)
Vapor Pressure: Not applicable
Vapor Density (air = 1): Not applicable
Boiling Point: Not applicable
Melting Point: 97°C (206.6°F)
Specific Gravity/ Relative Density (water = 1; air =1): 1.689
Evaporation Rate (water = 1): Not applicable
Volatile Organic Compounds Content: None.
Partition Coefficient (n-octanol / water): Not applicable
Solubility:
Water: Soluble.
Acid: Soluble.
Other: Not determined.
Metal Corrosivity:
Steel: Not applicable
Aluminum: Not applicable

10. STABILITY / REACTIVITY

Chemical Stability: Stable when stored under proper conditions.
Conditions to Avoid: Heating to decomposition. Extreme temperatures
Reactivity / Incompatibility: Incompatible with: acids iodine iron salts lead acetate organic materials oxidizers Silver Nitrate sodium phosphate
Hazardous Decomposition: Heating to decomposition releases toxic and/or corrosive fumes of: cyanide nitrogen oxides sodium oxides
Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Product Toxicological Data:
LD50: None reported.
LC50: None reported.
Dermal Toxicity Data: None reported.
Skin and Eye Irritation Data: None reported.
Mutation Data: None reported.
Reproductive Effects Data: None reported.
Ingredient Toxicological Data: Sodium Salicylate: Oral rat LD_{50} = 1200 mg/kg; Sodium Citrate: Oral rat LD_{50} > 8 g/kg; Sodium Tartrate: Oral rabbit LD_{50} = 5290 mg/kg; Sodium Nitroferricyanide: Oral rat LD_{50} = 99 mg/kg.

12. ECOLOGICAL INFORMATION

Product Ecological Information: --
No ecological data available for this product. Mobility in soil: No data available

Ingredient Ecological Information: Sodium salicylate: Pimephales promelas 96 hr. LC50 = 1370 mg/l; sodium citrate: crustea 48h EC50 = 736 mg/l.

13. DISPOSAL CONSIDERATIONS

EPA Waste ID Number: None
Special Instructions (Disposal): Dilute to 3 to 5 times the volume with cold water. Flush system with plenty of water.
Empty Containers: Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.
NOTICE (Disposal): These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

14. TRANSPORT INFORMATION

D.O.T.:
D.O.T. Proper Shipping Name: Not Currently Regulated
--
DOT Hazard Class: NA
DOT Subsidiary Risk: NA
DOT ID Number: NA
DOT Packing Group: NA
I.C.A.O.:
I.C.A.O. Proper Shipping Name: Not Currently Regulated
--
ICAO Hazard Class: NA
ICAO Subsidiary Risk: NA
ICAO ID Number: NA
ICAO Packing Group: NA
I.M.O.:
I.M.O. Proper Shipping Name: Not Currently Regulated
--
I.M.O. Hazard Class: NA
I.M.O. Subsidiary Risk: NA
I.M.O. ID Number: NA
I.M.O. Packing Group: NA
Additional Information: There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

15. REGULATORY INFORMATION

U.S. Federal Regulations:
O.S.H.A.: This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)
E.P.A.:
S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370): Immediate (Acute) Health Hazard Delayed (Chronic) Health Hazard
S.A.R.A. Title III Section 313 (40 CFR 372): This product contains a chemical(s) subject to the reporting requirements of Section 313 of Title III of SARA.
Sodium Nitroferricyanide.
302 (EHS) TPQ (40 CFR 355): Not applicable
304 CERCLA RQ (40 CFR 302.4): Not applicable
304 EHS RQ (40 CFR 355): Not applicable
Clean Water Act (40 CFR 116.4): Not applicable
RCRA: Contains no RCRA regulated substances.
C.P.S.C.: Not applicable
State Regulations:
California Prop. 65: No Prop. 65 listed chemicals are present in this product.
Identification of Prop. 65 Ingredient(s): Not applicable
California Perchlorate Rule CCR Title 22 Chap 33: Not applicable
Trade Secret Registry: Not applicable

National Inventories:

U.S. Inventory Status: All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

TSCA CAS Number: Not applicable

16. OTHER INFORMATION

Intended Use: Laboratory Use Reagent for ammonia test

References: TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. Technical Judgment. Sixth Annual Report on Carcinogens, 1991. U.S. Department of Health and Human Services. Rockville, MD: Technical Resources, Inc. 1991. Sax, N. Irving. Dangerous Properties of Industrial Materials, 7th Ed. New York: Van Nostrand Reinhold Co., 1989. List of Dangerous Substances Classified in Annex I of the EEC Directive (67/548) - Classification, Packaging and Labeling of Dangerous Substances, Amended July 1992. In-house information. IARC Monographs on the Evaluation of the Carcinogenic Risks to Humans. World Health Organization (Volumes 1-42) Supplement 7. France: 1987. Gosselin, R. E. et al. Clinical Toxicology of Commercial Products, 5th Ed. Baltimore: The Williams and Wilkins Co., 1984. Cassaret and Doull's Toxicology, 3rd Ed. New York: Macmillan Publishing Co., Inc., 1986. Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor).

Revision Summary: Substantial revision to comply with EU Reg 1272/2008, Reg 1907/2006 and UN GHS (ST/SG/AC.10/36/Add.3).

Legend:

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

USER RESPONSIBILITY: Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

HACH COMPANY ©2012

8.6.3 DPD Total Chlorine Reagent

World Headquarters
Hach Company
P.O.Box 389
Loveland, CO USA 80539
(970) 669-3050

MSDS No: M00110

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: DPD Total Chlorine Reagent
Catalog Number: 2105669

Hach Company
P.O.Box 389
Loveland, CO USA 80539
(970) 669-3050

Emergency Telephone Numbers:
(Medical and Transportation)
(303) 623-5716 24 Hour Service
(515)232-2533 8am - 4pm CST

MSDS Number: M00110
Chemical Name: Not applicable
CAS No.: Not applicable
Chemical Formula: Not applicable
Chemical Family: Not applicable
Hazard: May cause sensitizaton. May cause irritation.
Date of MSDS Preparation:
Day: 08
Month: June
Year: 2013

2. COMPOSITION / INFORMATION ON INGREDIENTS

Potassium Iodide
CAS No.: 7681-11-0
TSCA CAS Number: 7681-11-0
Percent Range: 20.0 - 30.0
Percent Range Units: weight / weight
LD50: Oral Mouse LD50 = 1,862 mg/kg; LD50 oral mouse = 1,000 mg/kg
LC50: None reported
TLV: Not established
PEL: Not established
Hazard: Causes irritation.

Salt of N,N-Diethyl-p-Phenylenediamine
CAS No.: Confidential
TSCA CAS Number: Confidential
Percent Range: 1.0 - 5.0
Percent Range Units: weight / weight
LD50: Oral rat (female) LD50 = 695 mg/kg; oral rat (male and female) LD50 = 970 mg/kg.
LC50: None reported
TLV: Not established
PEL: Not established
Hazard: May cause sensitizaton.May cause irritation.

Sodium Phosphate, Dibasic
CAS No.: 7558-79-4
TSCA CAS Number: 7558-79-4
Percent Range: 20.0 - 30.0
Percent Range Units: weight / weight
LD50: Oral rat LD50 = 17 g/kg
LC50: None reported
TLV: Not established

PEL: Not established
Hazard: May cause irritation.

Carboxylate Salt
CAS No.: Confidential
TSCA CAS Number: Confidential
Percent Range: 40.0 - 50.0
Percent Range Units: weight / weight
LD50: None reported
LC50: None reported
TLV: Not established
PEL: Not established
Hazard: May cause irritation.

Ethylenediaminetetraacetic Acid, Disodium Salt
CAS No.: 139-33-3
TSCA CAS Number: 139-33-3
Percent Range: 0.5 - 1.5
Percent Range Units: weight / weight
LD50: Oral rat LD50 = 2000 mg/kg
LC50: None reported
TLV: Not established
PEL: Not established
Hazard: May cause irritation.

3. HAZARDS IDENTIFICATION

Emergency Overview:
Appearance: White or light pink powder
Odor: None
MAY CAUSE EYE AND RESPIRATORY TRACT IRRITATION
MAY CAUSE ALLERGIC SKIN REACTION
HMIS:
Health: 1
Flammability: 1
Reactivity: 0
Protective Equipment: X - See protective equipment, Section 8.
NFPA:
Health: 1
Flammability: 1
Reactivity: 0
Symbol: Not applicable
Potential Health Effects:
Eye Contact: May cause irritiation
Skin Contact: May cause irritiation May cause allergic reaction
Skin Absorption: No effects anticipated
Target Organs: Not applicable
Ingestion: Causes: lethargy loss of strength loss of coordination difficult breathing diarrhea May cause iodism, which symptoms include skin rash, conjunctivitis, runny nose, sneezing, bronchitis, headache, fever and irritation of mucous membranes. DPD Oral rat LD50 studies revealed decreased locomotor activity, depressed respiration, muscle spasms, loss of righting reflex and death. Autopsies revealed ulcerated stomach, enteritis, gas and congested lungs.
Target Organs: Liver
Inhalation: May cause: respiratory tract irritation Effects similar to those of ingestion.
Target Organs: Liver
Medical Conditions Aggravated: Allergy or sensitivity to salts of N,N-Diethyl-p-phenylenediamine Pre-existing: Eye conditions Skin conditions Respiratory conditions Persons with pre-existing respiratory conditions may be more susceptible to the effects of Potassium Iodide exposure.
Chronic Effects: Chronic overexposure may cause allergic skin reactions hypothyroidism liver damage DPD may cause allergic skin reactions in some people causing severe skin rashes and itching. Iodines overdose, 'iodism', may cause skin rash, runny nose, headaches, fever and bronchitis.
Cancer / Reproductive Toxicity Information:

This product does NOT contain any OSHA listed carcinogens.
This product does NOT contain any IARC listed chemicals.
This product does NOT contain any NTP listed chemicals.
Additional Cancer / Reproductive Toxicity Information: Maternal ingestion of potassium iodide during pregnancy may cause congenital goiter and hyperthyroidism in the newborn infant.
Toxicologically Synergistic Products: None reported

4. FIRST AID

Eye Contact: Immediately flush eyes with water for 15 minutes. Call physician.
Skin Contact (First Aid): Wash skin with soap and plenty of water. Call physician if irritation develops.
Ingestion (First Aid): Call physician immediately. Give 1-2 glasses of water under medical supervision. Never give anything by mouth to an unconscious person.
Inhalation: Remove to fresh air.

5. FIRE FIGHTING MEASURES

Flammable Properties: During a fire, this product decomposes to form toxic gases. Material is not classified as flammable according to GHS criteria.
Flash Point: Not applicable
Method: Not applicable
Flammability Limits:
Lower Explosion Limits: Not applicable
Upper Explosion Limits: Not applicable
Autoignition Temperature: Not determined
Hazardous Combustion Products: Toxic fumes of: carbon monoxide, carbon dioxide. iodine compounds phosphorus oxides potassium oxides sodium monoxide nitrogen oxides.
Fire / Explosion Hazards: None reported
Static Discharge: None reported.
Mechanical Impact: None reported
Extinguishing Media: Use media appropriate to surrounding fire conditions
Fire Fighting Instruction: As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Spill Response Notice:
Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance. Outside of the US, only persons properly qualified according to state or local regulations should respond to a spill involving chemicals.
Containment Technique: Stop spilled material from being released to the environment.
Clean-up Technique: Scoop up spilled material into a large beaker and dissolve with water. Flush reacted material to the drain with a large excess of water. Decontaminate the area of the spill with a soap solution.
Evacuation Procedure: Evacuate as needed to perform spill clean-up. If conditions warrant, increase the size of the evacuation.
Special Instructions (for accidental release): Mixture contains a component which is regulated as a water pollutant in the U. S. .
304 EHS RQ (40 CFR 355): Not applicable
D.O.T. Emergency Response Guide Number: Not applicable

7. HANDLING / STORAGE

Handling: Avoid contact with eyes skin clothing Do not breathe dust. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.
Storage: Store between 10° and 25°C. Protect from: light heat moisture
Flammability Class: Not applicable

8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

Engineering Controls: Have an eyewash station nearby. Use general ventilation to minimize exposure to mist, vapor or dust.
Personal Protective Equipment:
Eye Protection: safety glasses with top and side shields
Skin Protection: disposable latex gloves In the EU, the selected gloves must satisfy the specifications of EU Directive 89/686/EEC and standard EN 374 derived from it. lab coat
Inhalation Protection: adequate ventilation
Precautionary Measures: Avoid contact with: eyes skin clothing Do not breathe: dust Wash thoroughly after handling. Protect from: light heat moisture
TLV: Not established
PEL: Not established

9. PHYSICAL / CHEMICAL PROPERTIES

Appearance: White or light pink powder
Physical State: Solid
Molecular Weight: Not applicable
Odor: None
pH: of 1% soln = 6.35 @ 20°C
Vapor Pressure: Not applicable
Vapor Density (air = 1): Not applicable
Boiling Point: Not applicable
Melting Point: 145° C
Specific Gravity/ Relative Density (water = 1; air =1): 1.79
Evaporation Rate (water = 1): Not applicable
Volatile Organic Compounds Content: Not applicable
Partition Coefficient (n-octanol / water): Not determined
Solubility:
Water: Soluble
Acid: Soluble
Other: Not determined
Metal Corrosivity:
Steel: 0.038 in/yr
Aluminum: 0.006 in/yr

10. STABILITY / REACTIVITY

Chemical Stability: Stable when stored under proper conditions.
Conditions to Avoid: Exposure to light. Excess moisture Extreme temperatures
Reactivity / Incompatibility: Incompatible with: oxidizers
Hazardous Decomposition: Heating to decomposition releases toxic and/or corrosive fumes of: carbon dioxide carbon monoxide iodine compounds phosphorus oxides potassium oxide nitrogen oxides
Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Product Toxicological Data:
LD50: Oral rat (female) LD_{50} = 4700 mg/kg; Oral rat (male) LD_{50} = 7000 mg/kg.
LC50: None reported
Dermal Toxicity Data: None reported
Skin and Eye Irritation Data: None reported
Mutation Data: None reported
Reproductive Effects Data: None reported
Ingredient Toxicological Data: Salt of DPD: oral rat (female) LD50 = 695 mg/kg; oral rat (male and female) LD50 = 970 mg/kg.; potassium iodide: oral mouse LDLo = 1862 mg/kg; sodium phosphate, dibasic oral rat LD50 = 17 g/kg.

12. ECOLOGICAL INFORMATION

Product Ecological Information: Additive Method: 48 hr crustacea EC50 = 34 mg/L
No ecological data available for this product. Mobility in soil: No data available Do not release into the environment.

Ingredient Ecological Information: --
DPD salt: Daphnia magna EC50 at 48 hrs: 10.8; EDTA disodium slat: EC50 - Daphnia magna 24 hr EC50 > 100 mg/l; KI: aquatic invertebrates 48 hr EC50 = 9.8 mg/L;

13. DISPOSAL CONSIDERATIONS

EPA Waste ID Number: Not applicable
Special Instructions (Disposal): Dilute to 3 to 5 times the volume with cold water. Open cold water tap completely, slowly pour the material to the drain. Allow cold water to run for 5 minutes to completely flush the system.
Empty Containers: Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.
NOTICE (Disposal): These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

14. TRANSPORT INFORMATION

D.O.T.:
D.O.T. Proper Shipping Name: Not Currently Regulated
--
DOT Hazard Class: NA
DOT Subsidiary Risk: NA
DOT ID Number: NA
DOT Packing Group: NA
I.C.A.O.:
I.C.A.O. Proper Shipping Name: Not Currently Regulated
--
ICAO Hazard Class: NA
ICAO Subsidiary Risk: NA
ICAO ID Number: NA
ICAO Packing Group: NA
I.M.O.:
I.M.O. Proper Shipping Name: Not Currently Regulated
--
I.M.O. Hazard Class: NA
I.M.O. Subsidiary Risk: NA
I.M.O. ID Number: NA
I.M.O. Packing Group: NA
Additional Information: There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

15. REGULATORY INFORMATION

U.S. Federal Regulations:
O.S.H.A.: This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)
E.P.A.:
S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370): Immediate (Acute) Health Hazard Delayed (Chronic) Health Hazard
S.A.R.A. Title III Section 313 (40 CFR 372): This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.
--
302 (EHS) TPQ (40 CFR 355): Not applicable
304 CERCLA RQ (40 CFR 302.4): Sodium Phosphate, Dibasic 5000 lbs.
304 EHS RQ (40 CFR 355): Not applicable
Clean Water Act (40 CFR 116.4): Sodium phosphate, dibasic - RQ 5000 lbs.
RCRA: Contains no RCRA regulated substances.
C.P.S.C.: Not applicable
State Regulations:
California Prop. 65: No Prop. 65 listed chemicals are present in this product.
Identification of Prop. 65 Ingredient(s): Not applicable

California Perchlorate Rule CCR Title 22 Chap 33: Not applicable
Trade Secret Registry: New Jersey Trade Secret Registry Number 80100131-5001 (Carboxylate Salt) New Jersey Trade Secret Registry Number 80100131-5002 (DPD Salt) New York Trade Secret Registry Number 478 (DPD Salt) New York Trade Secret Registry Number 479 (Carboxylate Salt) This product complies with Pennsylvania Trade Secret Regulations. This product is registered as a trade secret in the state of Illinois. This product is registered as a trade secret in the state of Massachusetts. This product is registered as a trade secret in the state of New York.
National Inventories:
U.S. Inventory Status: All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).
TSCA CAS Number: Not applicable

16. OTHER INFORMATION

Intended Use: Laboratory Reagent Indicator for total chlorine
References: CCINFO MSDS/FTSS. Canadian Centre for Occupational Health and Safety. Hamilton, Ontario Canada: 30 June 1993. The Merck Index, 11th Ed. Rahway, New Jersey: Merck and Co., Inc., 1989. Outside Testing. Technical Judgment. In-house information. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983.
Revision Summary: Substantial revision to comply with EU Reg 1272/2008, Reg 1907/2006 and UN GHS (ST/SG/AC.10/36/Add.3).

Legend:

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

USER RESPONSIBILITY: Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

HACH COMPANY ©2013

8.7 GasAlert Max XT II Gas Meter Operator's Manual

This document is referenced by hyperlink as it changes on a regular basis. Please download the most current document using the following hyperlink:

http://www.enviromed.ca/Instruments/Manuals/GasAlertMaxXTII_OpsManual.pdf

9 APPENDICES

The following appendices are made part of this SOP by reference:

1. Required Equipment and Material
2. Field Inspection Form
3. Illicit Discharge Incident Tracking Form
4. Inspection Equipment Storage

9.1 Equipment and Materials

Field staff should bring the following equipment to complete the tasks specified in the procedures:

Function	Used in Chapter:	Item	Purpose
Access Structures	2, 4, 5	Manhole hook	Removes manhole cover
	2, 4, 5	Sledge hammer	Removes manhole cover
	2, 4, 5	High powered lamps/flashlights	View structure contents
	2, 4, 5	Field Map	Find structures
Collect Samples	2, 4, 5	Long-handled sampling dipper	Collects sample from bottom of structure
	2, 4, 5	Medium-sized plastic waste bag	To dispose of collection and testing waste material
	2, 4, 5	250 mL glass beakers (one for each structure to be inspected)	Contains sample and pours into sample cells
Test Water Quality	2, 4, 5	Hach DR/890 Colorimeter, sample cells (8 total), and reagent kits (ammonia, and total chlorine,)	Tests for various water quality parameters
	2, 4, 5	Scissors or nail clippers	Opens reagent “powder pillow” packets
	2, 4, 5	OAKTON Multi-Parameter PCSTestr™ 35	Test for pH and temperature
	2, 4, 5	OAKTON Multi-Parameter PCSTestr™ 35	Tests for conductivity
	2, 4, 5	Filtered deionized water and wash bottle	To calibrate colorimeter
	2, 4, 5	Batteries (AA, AAA, and 1.4 Vdc Zinc-Air)	For Pocket Pal™ Testers, colorimeter, gas monitor, and camera
	2, 4, 5	Dipper ladle with extension pole	Collect sample when flow is in a confined space
Record Data	2, 4, 5	Field Inspection form	Provided in appendices
	2, 4, 5	Log book	For general notes
	2, 4, 5	Digital camera, batteries, and extra memory	For pictures at all structures
	2, 4, 5	Waterproof pen	For notes

Function	Used in Chapter:	Item	Purpose
Safety	2, 4, 5	Traffic cones	To redirect traffic
	2, 4, 5	High Visibility safety vests	For inspection team employees
	2, 4, 5	Gas monitor and probe	To detect combustible gases
	2, 4, 5	Portable eyewash kit	In case of chemical emergency
	2, 4, 5	Nitrile gloves	For collecting and testing samples
	2, 4, 5	Full coverage clothing (pants, long sleeves)	Should be worn at all times
	2, 4, 5	Eye goggles	Should be worn when using chemical reagents
	2, 4, 5	Steel-toed boots or safety shoes	Should be worn when removing manhole covers

The supervisor and field staff will require the following equipment to be used at the office:

Function	Used in Chapter	Item	Purpose
Record Data	2, 4, 5	Computer	Store and view data
Prepare and Clean Sample Bottles	2, 4, 5	Laboratory detergent	To clean sample bottles and colorimeter sample cells
	2, 4, 5	Deionized water	To rinse sample bottles and colorimeter sample cells

Other equipment may be needed to make the inspection process more efficient or safe.

9.2 Field Inspection Form

ILLICIT DISCHARGE FIELD INSPECTION FORM **City of Falls Church, Virginia**

1. Inspection Date/Time	**3. Node ID**
2. Inspectors	**4. Downstream Node ID**
	5. Upstream Node ID's
6. Rainfall within previous 48 hours (in)?	
7. Node Location Lat Long	Address
8. Node Type	☐ Outfall ☐ Curb Inlet ☐ Yard Inlet ☐ Manhole w/o Inlet ☐ Other
9. Node Material ☐ Concrete ☐ Metal	**10. Node Size**
11. Node Condition	☐ Good ☐ Fair ☐ Rusting ☐ Crumbling

☐ Clear
☐ Suspect

Inspector's Signature:

Database Entry Date:

Database Operator:

Gas Testing
If node is a manhole, what is the gas monitor reading? ☐ No Gas Present, Safe ☐ Gas Present, Not Safe

Area Reconnaissance	
12. Receiving channel type?	☐ Concrete ☐ Asphalt ☐ Stone ☐ Grass ☐ Bare Soil ☐ Other, Explain
13. Receiving channel condition?	☐ Good ☐ Fair ☐ Poor
14. Vegetation?	☐ None ☐ Abnormal Dead Patches ☐ Normal ☐ Abnormally Lush Green
15. Deposits or stains?	☐ No ☐ Yes, Explain
16. Is there flow?	☐ Yes ☐ No
17. Comments	

Flow Description	
18. Flow Depth (in)?	
19. Water Color?	☐ Clear ☐ Other, Explain
20. Transparency?	☐ Clear ☐ Cloudy, Explain
21. Oily Sheen?	☐ No ☐ Yes
22. Odor? (rotten eggs, oil, gasoline, chemical, chlorine, earthy, sewage, etc.)	☐ No ☐ Yes, Explain
23. Floating Matter? (sticks, scum, scuds, sludge, algae, etc.)	☐ No ☐ Yes, Explain
24. Comments	

Water Quality Grab Sample		**Method**	**Colorimeter Stored Sample #**	**Pass Criteria**	
25. Temperature	_____°F	☐ OAKTON Multi-Parameter PCSTestr™ 35		< 64°F	☐ Pass ☐ Fail
26. Conductivity	_____µS/cm	☐ OAKTON Multi-Parameter PCSTestr™ 35		< 350	☐ Pass ☐ Fail
27. Total Chlorine Test	_____mg/L	☐ Hach Colorimeter	Stored Sample #_____	Zero	☐ Pass ☐ Fail
28. Ammonia Test	_____mg/L	☐ Hach Colorimeter	Stored Sample #_____	Zero	☐ Pass ☐ Fail
29. pH	_____	☐ Multi-Parameter PCSTestr™ 35	Stored Sample #_____	6.5 - 8.5	☐ Pass ☐ Fail
30. Turbidity Test	_____NTU	☐ Hach Colorimeter	Stored Sample #_____	< 5 NTU	☐ Pass ☐ Fail

If any information entered in the spaces above indicate evidence of illicit discharge, mark "Suspect" at top of page; otherwise mark "Clear".

31. Photographs		
Picture Number	Camera Use	Description

9.3 Illicit Discharge Incident Tracking Form

Illicit Discharge Hotline Incident Tracking Sheet	
Incident ID:	
Responder Information	
Call taken by:	Call date:
Call time:	Precipitation (inches) in past 24-48 hrs:
Reporter Information	
Incident time:	Incident date:
Caller contact information (*optional*):	

Incident Location *(complete one or more below)*			
Latitude and longitude:			
Stream address or outfall #:			
Closest street address:			
Nearby landmark:			
Primary Location Description	**Secondary Location Description:**		
☐ Stream corridor *(In or adjacent to stream)*	☐ Outfall	☐ In-stream flow	☐ Along banks
☐ Upland area *(Land not adjacent to stream)*	☐ Near storm drain	☐ Near other water source (storm water pond, wetland, etc.):	
Narrative description of location:			

Upland Problem Indicator Description		
☐ Dumping	☐ Oil/solvents/chemicals	☐ Sewage
☐ Wash water, suds, etc.	☐ Other: _____	

Stream Corridor Problem Indicator Description				
Odor	☐ None	☐ Sewage	☐ Rancid/Sour	☐ Petroleum (gas)
	☐ Sulfide (rotten eggs); natural gas	☐ Other: Describe in "Narrative" section		
Appearance	☐ "Normal"	☐ Oil sheen	☐ Cloudy	☐ Suds
	☐ Other: Describe in "Narrative" section			
Floatables	☐ None:	☐ Sewage (toilet paper, etc)	☐ Algae	☐ Dead fish
	☐ Other: Describe in "Narrative" section			
Narrative description of problem indicators:				
Suspected Violator (name, personal or vehicle description, license plate #, etc.):				

9.4 Spill and Illicit Discharge Response and Reporting Standard Operating Procedure (SOP)

CITY OF FALLS CHURCH
DEPARTMENT OF PUBLIC WORKS
OPERATIONS DIVISION

STANDARD OPERATING PROCEDURE (SOP)

SPILL AND ILLICIT DISCHARGE RESPONSE AND REPORTING

OBJECTIVE

The purpose of this SOP is to ensure that all spills and illicit discharges are handled in a safe and appropriate manner and that they are properly reported. This procedure covers proper response and reporting methods for all types of spills and illicit discharges. It applies to all Department of Public Works (DPW) employees discovering and/or responding to spills and illicit discharges and their supervisors.

Potential spills and illicit discharges may include, but are not limited to, the following:

- Sanitary Sewer Overflows (SSOs)
- Illegal Sanitary Connections, Spills, or Dumping
- Illegal Dumping of Solid or Liquid Hazardous Materials
- Illegal Discharges of Cleaning Products and Solvents
- Illegal Discharges of Wash Waters
- Spills of Oil and Petroleum Products
- Spills of Fuel
- Spills of Hazardous Materials

RESPONSIBILITY

DPW is responsible for coordinating and executing the activities outlined in this SOP.

BACKGROUND

Emergency Spills and Illicit Discharges

A spill or illicit discharge is considered an emergency when it poses a serious threat to human health or the environment. Emergency spills and illicit discharges must be handled by external or internal emergency hazardous materials responders.

Emergency spills and illicit discharges may consist of a significant amount of a hazardous material released or one in which the release of the substance cannot be controlled. Examples of hazardous materials that would be considered an emergency are bleach, sulfuric acid, gasoline and diesel fuel (i.e., more than 25 gallons), and infectious materials.

Non-Emergency Spills and Illicit Discharges

A spill or illicit discharge is considered a non-emergency when it is not life threatening and will not result in serious environmental damage. Non-Emergency spills and illicit discharges are able to be easily handled by DPW staff.

Non-Emergency spills and illicit discharges may consist of a small amount of non-hazardous material released or one in which the substance can be easily controlled. Examples of materials that are non-hazardous that would be considered non-emergency are SSOs, wash waters, small amounts of gasoline or diesel fuel (e.g., less than 25 gallons), household hazardous wastes, etc.

PROCEDURES

Initial Notification and Response

All spills and illicit discharges, regardless of size, must be contained and cleaned up in a safe and effective manner. Spills and illicit discharges that affect or threaten public health, welfare, or the environment will be attended to immediately by protecting human safety, and containing and cleaning up the substance.

In the event that you discover or are alerted to a spill or illicit discharge, the following actions must be immediately taken:

1) Secure the site, taking priority to protect the health and safety of personnel responding to the spill or illicit discharge, bystanders, and the community.
2) Attempt to identify the material and source of the spill or illicit discharge.
3) Attempt to determine if the spill or illicit discharge should be considered an Emergency or Non-Emergency. If you are not able to **easily** make this determination, consider the spill an emergency

If a spill/illicit discharge is investigated and determined to originate or enter into another jurisdiction (i.e., Arlington County or Fairfax County) contact that jurisdiction. If a source was not able to be identified follow the reporting process explained below.

Table 1 below contains a list of applicable contacts for spill and illicit discharge response and reporting. **Figure 1** below contains a flow chart containing the Spill and Illicit Discharge Response Procedures presented in this SOP.

Emergency Spills and Illicit Discharges

1) If the material/product is deemed potentially hazardous or is unknown to the first responder, the first responder must activate emergency response by contacting the Fire Department and Police Dispatch from a safe location and provide the following information:
    a. Name
    b. Telephone Number
    c. Location (Address and public or private property)
    d. Possible injuries
    e. Material/product, if possible (i.e., sewage, gasoline, diesel fuel, etc.)
    f. Type and estimated quantity of spilled material
    g. Source and destination (e.g., contained, storm drain, creek, etc.)
    h. If there is immediate hazard to life or property
    i. Indicate whether the incident appears to be a "Hazmat Incident" or "Possible Spill" to indicate the level of response required
2) Notify your supervisor and/or the DPW Superintendent and provide the same information as outlined under Item 1.
3) If deemed safe by emergency response personnel, control and contain the material using dikes/berms, absorbent booms, socks, and/or soil until emergency response arrives. Focus control measures at location(s) of storm sewers and/or nearby waterways. Use personal protective equipment (PPE) to minimize the responder's exposure to hazardous substances.
4) If not deemed safe by emergency response personnel, stay in a safe area and allow only trained responders in the spill area in accordance with emergency response protocols provided by the responding agency. Keep the public away from area.
5) Document as many details of the spill or illicit discharge and the subsequent response as possible, including if/how much of the material entered the storm drain and if the material was released to nearby waterways.
6) If the material entered the storm drain and/or was released to a nearby waterway, complete the Spill and Illicit Discharge Incident Report Form (**Attachment 1**) and submit the form to your supervisor and/or the DPW Superintendent.

Non-Emergency Spills and Illicit Discharges

1) Notify your supervisor and/or the DPW Superintendent.
2) Control and contain the spill or illicit discharge using absorbent booms, socks, and/or soil (if necessary). Focus control measures at location(s) of storm sewers and/or nearby waterways.
3) If deemed safe, attempt to stop the spill or illicit discharge if it has not already been done. Use PPE to minimize the responder's exposure to hazardous substances.
4) Apply absorbent pads/material to clean up the material. If assistance or additional response materials are required for the cleanup of larger events contact DPW. **Do not hose down spills – use "dry" cleanup methods.**
5) Dispose of the collected waste in the hazardous waste shed located at the City of Falls Church Property Yard or other location approved by the DPW Superintendent.

6) Document as many details of the spill or illicit discharge and the subsequent response as possible, including if/how much of the material entered the storm drain and was released to nearby waterways.
7) If material entered the storm drain and/or was released to a nearby waterway, complete the Spill and Illicit Discharge Incident Report Form (**Attachment 1**) and submit the form to your supervisor and/or the DPW Superintendent.

All spills and illicit discharges, regardless of size or material, should be reported as soon as possible to the DPW Superintendent or their designee. In the event that a spill or illicit discharge is discharging to, or has the potential to reasonably discharge to, a storm drain or waterway and the DPW Superintendent or a supervisor is not immediately available, call the City's Engineering and Construction Division – Stormwater.

The DPW Superintendent will determine the appropriate reporting protocol. The DPW Superintendent will coordinate with the City's Engineering and Construction Division - Stormwater to ensure that the required documentation is completed and proper reporting protocols are followed.

Estimating Spill Volume

Volume of spills and illicit discharges can be estimated using various approaches. Individual spill or illicit discharge specific circumstances may dictate which method is appropriate and whether multiple methods need to be used (contained vs. uncontained spills). The person estimating the spill should make the best judgment on which method(s) to use and make best possible effort to estimate the spilled volume. **Attachment 2** provides details regarding the various approaches.

State, Federal, and Local Reporting

All spills and illicit discharges that reach a storm drain and/or a waterway must be reported to the appropriate agencies within the specified timelines as outlined in **Table 1**. The nature and quantity of the spill or illicit discharge will dictate which Federal, State, and Local agencies that must be contacted to report the incident immediately or within 24 hours of being notified of the event. The DPW Superintendent must follow-up the initial verbal notification within five (5) days of the event with a written report to VADEQ Northern Regional Office containing the following information for each spill or illicit discharge that reach storm drains or receiving waters:

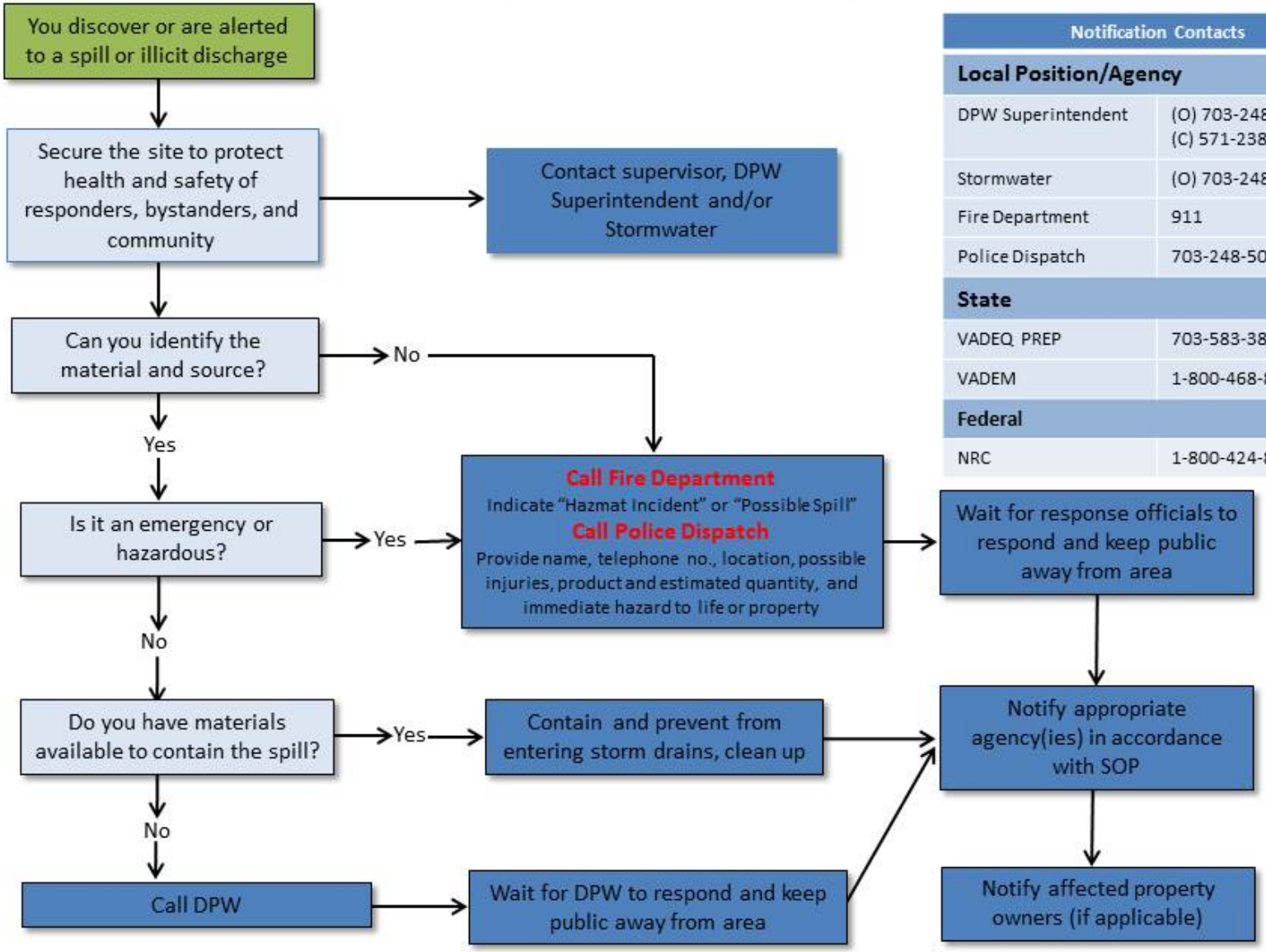
- A description of the nature and location of the discharge
- The cause of the discharge
- The date on which the discharge occurred
- The length of time over which the discharge continued
- The volume of the discharge
- If the discharge is continuing, how long it is expected to continue
- If the discharge is continuing, what the expected total volume of the discharge will be
- Any steps that the City has planned or taken to reduce, eliminate, and prevent reoccurrence of the present discharge or any future discharges

In addition, spills and discharges that resulted in costs to the City for the response to a spill or illicit discharges must be reported to the City's Fire Marshal for evaluation of issuing a citation for violation of City ordinance, cost reimbursement, and/or if more serious actions should be taken (e.g., criminal enforcement).

RECORDKEEPING

For **ALL** spills and illicit discharges, the DPW employees must ensure that a Spill and Illicit Discharge Report Form (**Attachment 1**) is completed for each incident. In addition, the DPW Superintendent must maintain documentation of the time and date that applicable State, Federal, and Local agency(s) and affected property owners were notified of each spill and illicit discharge.

City of Falls Church Spill and Illicit Discharge Response Procedures



Notification Contacts	
Local Position/Agency	
DPW Superintendent	(O) 703-248-5013 (C) 571-238-5127
Stormwater	(O) 703-248-5350
Fire Department	911
Police Dispatch	703-248-5050
State	
VADEQ PREP	703-583-3864
VADEM	1-800-468-8892
Federal	
NRC	1-800-424-8802

Emergency – A spill or illicit discharge that poses a serious threat to human health or the environment that must be handled by external or internal emergency hazardous materials responders.

Non-Emergency – A spill or illicit discharge that is not life threatening and will not result in serious environmental damage.

Table 1. Notification Procedures and Contacts

Depending on the nature and quantity of the spill or illicit discharge, the following individuals and organizations must be contacted by the DPW Superintendent, or their designee.

Agency/Organization	Contact Information	Circumstances	When to Notify
Local Agencies			
DPW Superintendent	Office – 703-248-5013 Cell – 571-238-5127	All spills and illicit discharges, regardless of size or material.	Immediately (verbal)
DPW Engineering and Construction – Stormwater	703-248-5350, ext. 2 (TTY 711)	Any discharge into the storm sewer, regardless of size or material and oil that reaches receiving waters.	
Fire Department	911	All spills and illicit discharges that pose emergency conditions, regardless of the size or material. **AND** Discharges of oil that reach storm drains or receiving waters.	
Police Dispatch	703-248-5050	All spills and illicit discharges that pose emergency conditions, regardless of the size or material. AND Discharges of oil that reach storm drains or receiving waters.	
State Agencies			
VADEQ Pollution Response and Preparedness (PREP)	DEQ Northern Regional Office Coordinator 703-583-3864 (8:30 AM to 4:30 PM) Alternative website reporting at: http://www.deq.virginia.gov/Programs/PollutionResponsePreparedness/PollutionReportingForm.aspx	All spills and illicit discharges that discharge, or have the potential to reasonably discharge, to receiving waters regardless of size or material. **OR** All spills and illicit discharges causing a film or sheen on a waterway's surface, or leaves sludge or emulsion beneath the surface.	Immediately or within 24 hours (verbal or internet report) **AND** Within 5 calendar days (written)
Virginia Department of Emergency Management (VADEM)	1-800-468-8892 (nights, holidays, and weekends)	Non-business hour emergency spills and illicit discharges that reach storm drains or receiving waters, regardless of size or material. **OR** Non-business hour emergency spills and illicit discharges causing a film or sheen on the receiving water's surface, or leaves sludge or emulsion beneath the surface.	Immediately during non-business hours.
Federal Agencies			
National Response Center (NRC)	1-800-424-8802	Spills and illicit discharges reaching waterways or causing a film or sheen on the water's surface, or leaves sludge or emulsion beneath the surface.	Immediately upon gaining control of spill or illicit discharge (verbal)
Others			
Response and Cleanup Contractors	TBD	Spills and illicit discharges that exceeds the capacity of local agency capabilities for response and cleanup.	As needed
Arlington County	TBD	Spills and illicit discharges originating outside of City's Jurisdiction	As needed
Fairfax County	TBD	Spills and illicit discharges originating outside of City's Jurisdiction	As needed

Attachment 1

Spill and Illicit Discharge Report Form

Spill and Illicit Discharge Report Form

Instructions: This form is to be completed by DPW field personnel and maintained by the DPW Superintendent following the Spill/Illicit Discharge Response and Reporting SOP.

Initial Spill/Illicit Discharge Identification

Name and Address of Person Making Report	Contact Information Phone: Email:	
Date	Time of Identification ☐ AM ☐ PM	Time of Report to City ☐ AM ☐ PM
Description of event (material, source of discharge, etc.)		

Spill/Illicit Discharge Description

Location (address (preferred), cross streets, boating instructions, and/or gps coordinates)		Responsible Party (name and address)	
Date	Event Start Time ☐ AM ☐ PM	Event End Time ☐ AM ☐ PM	Occurring at time of Discovery? ☐ Yes ☐ No
Material (sewage, oil, chemicals, etc.)	☐ Continuous flow ☐ Intermittent flow ☐ Discrete release (spill or dumping)		Estimated volume of the discharge in gallons
Cause of the discharge (SSO from manhole, sewage pumping from bus, oil spill, etc.)			
If the discharge is continuing, how long it is expected to continue and what will the expected total volume of the discharge be?			
Surface contacted *(check all that apply and describe)* ☐ Asphalt ☐ Concrete ☐ Soil ☐ To atmosphere		Resources entered *(check all that apply and describe)* ☐ Sewer, manhole number ☐ Storm drain, catch basin number ☐ Waterway ☐ Atmosphere	
Description of the nature and location of the discharge			
List immediate actions taken to stop / control / contain the spill and describe the results *(calls made, equipment used)*			

Spill area diagram: Include scale, north arrow, and nearby buildings for reference. Indicate the closest down-gradient catch basin and its distance from spill.

Internal Notification and Reporting		
City Contact	**Name**	**Phone Number(s)**
Person(s) Responding to Spill		
Supervisor		
Superintendent		

Reportable Quantity						
Substance	**Reportable Quantity**	**Fire Department**	**VADEQ PREP**	**VADEM**	**City E&C - Stormwater**	**NRC**
Any Emergency Spill	Any	Yes	Yes	Off Business Hours	---	Yes
Oil (in or on waterways)	Any	Yes	Yes	Off Business Hours	Yes	Yes
Sewage (into storm drains and/or in waterways)	Any	---	Yes	---	Yes	---
Hazardous Chemicals	See 40 CFR 302	Yes	Yes	Off Business Hours	---	---

Immediate External Agency Contact Log (to be completed by the Superintendent or their designee)				
Agency	**Contact**	**Contact Person**	**Time**	**Date**
Fire Department	Emergency Events 911	Tom Polera / Dispatcher		
Police Dispatch	Emergency Events 703-248-5050	Dispatcher		
VADEQ Pollution Response and Preparedness (PREP)	Business Hours Emergency/Non-Emergency Reaching Waterways or Causing a Film or Sheen on Water's Surface 703-583-3864 (alternatively via web address in SOP)	Mark Miller		
Virginia Department of Emergency Management (VADEM)	Emergency Non-Business Hours 1-800-468-8892	N/A		
City of Falls Church DPW Engineering and Construction – Stormwater	Events reaching storm drain system (703-248-5350, ext. 2 (TTY 711))	Jason Widstrom		
National Response Center (NRC)	Events Reaching Waterways or Causing a Film or Sheen on Water's Surface reaching 1-800-424-8802	N/A		
Follow-Up External Agency Contact Log (to be completed by the Superintendent or their designee)				
VADEQ Pollution Response and Preparedness (PREP)	Written Report of All Events Reaching Waterways or Causing a Film or Sheen on Water's Surface	Mark Miller		

Describe the steps the City has planned or taken to reduce, eliminate and prevent reoccurrence of the present discharge or any future discharges (alternative: attach written report submitted to PREP):

Attachment 2

Estimating Spill and Illicit Discharge Volume

Attachment 2 - Estimating Spill and Illicit Discharge Volume

METHOD 1: EYEBALL ESTIMATE

This method can be useful for smaller spills up to approximately 200 gallons. To use this method, imagine the amount of water that would spill from a bucket or barrel. A bucket contains 5 gallons and a barrel contains 50 gallons. If the spill is larger than 50 gallons, try to break the standing water into barrels and multiply by 50 gallons.

METHOD 2: MEASURED VOLUME

The volume of most smaller spills that have been contained can be estimated using this method. The shape, dimensions, and depth of the contained spill are needed. The shape and dimensions are used to calculate the area of the spill and the depth is used to calculate the volume.

Step 1 - Sketch the shape of the containment area

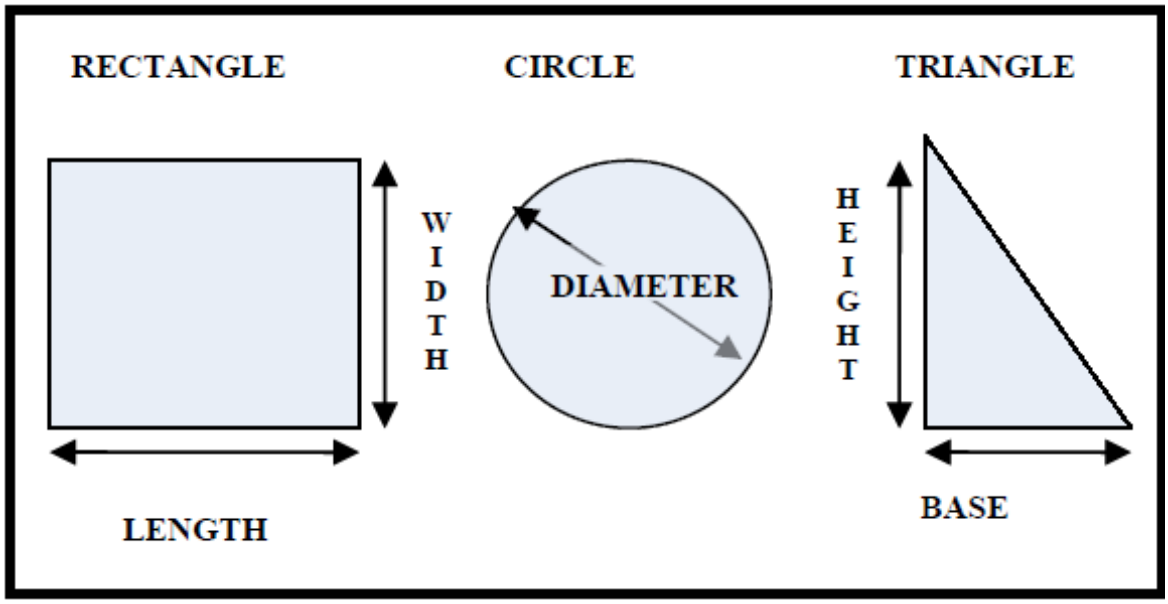
Step 2 - Measure or pace off the dimensions (length, width, diameter, etc.)

Step 3 - Measure the depth at several locations and calculate an average

Step 4 - Convert the dimensions including depth to feet

Step 5 - Calculate the area using the following formulas:

Rectangular Area	**Circular Area**	**Triangular Area**
length (feet) x width (feet)	diameter (feet) x diameter (feet) x 0 .785	base (feet) x height (feet) x 0.5



Step 6 - Multiply the area (square feet) times the depth in feet to obtain the volume in cubic feet

Step 7 - Multiply the volume by 7.48 (number of gallons in one cubic foot) to convert it to gallons

METHOD 3: DURATION AND FLOW

This method is used when it is difficult or impossible to measure area and depth. The volume of the spill is estimated by multiplying the duration (in hours or days) by the flow rate (in gallons per hour or gallons per day).

Attachment 2 - Estimating Spill and Illicit Discharge Volume

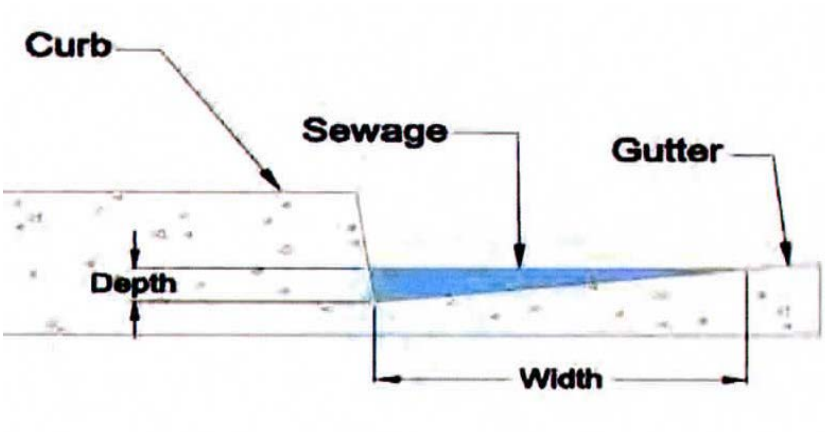
Duration

The time elapsed from the start of the spill to the time the spill has stopped.

Flow Rate

Flow rate is the average flow leaving the sewer system at the time the spill has stopped. Three ways to estimate the flow rate are:

- **Pictorial Reference:** Use a pictorial reference such as the California Water Environment Association (CWEA) Southern Section Collections System Committee (SSCSC) picture chart (Page 3) to determine the flow velocity then multiply the gallons per minute (gpm) times the time duration of the spill in minutes to obtain the total volume of the spill. The CWEA Southern Section sheet shows the sewage flowing from a manhole cover for a variety of flow rates.
- **Drop Bucket Method.** This method can be used for small spills where entire flow stream can be captured in a bucket. Time how long it takes to fill the bucket and divide the volume of the bucket (in gallons) by the elapsed time to fill the bucket (in minutes). This equals the flow rate in gpm.
- **Open Channel Spill Estimation.** For ditches, channels, gutters, etc. measure the cross sectional dimensions of the channel and determine the velocity of the flow. Measure the velocity by dropping a floating object into the flow and time over a measured distance (Flow (Q), ft^3/sec = Velocity (V), ft/sec X Area (A), ft^2). Flow times duration equals amount of spill.

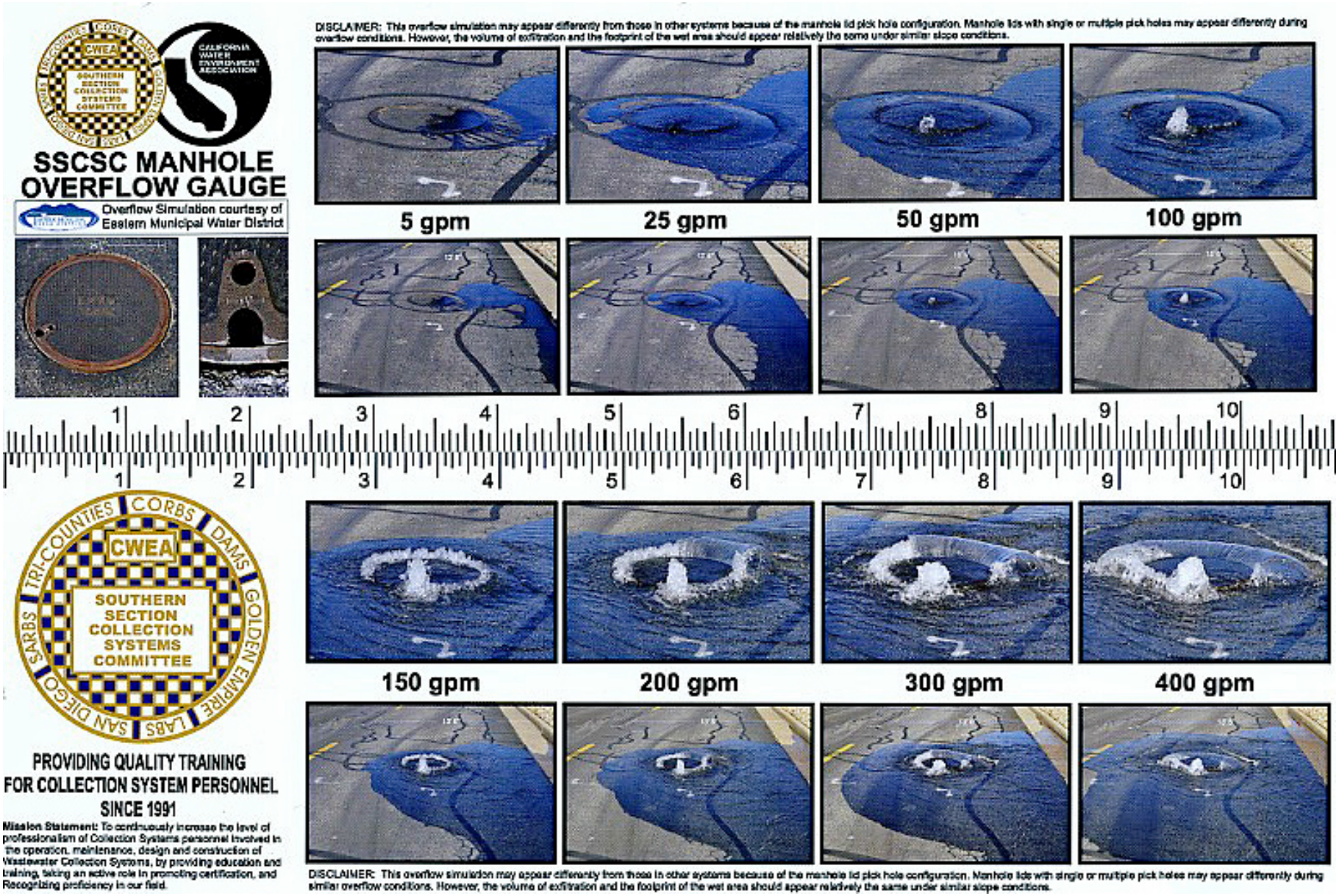


  Example: If it takes 30 seconds to fill a 5-gallon bucket and the spill has occurred for 20 minutes the total spill volume would be 200 gallons (5gal/0.5min = 10gpm X 20min = 200gal.)

- **Upstream Connections.** Once the location of the spill is known, the number of upstream connections can be determined from the field maps. Multiply the number of connections by 150 gallons per day per (gpd) connection or 8-10 gallons per hour (gph) per connection.

Once the duration and flow rate have been estimated, the volume of the spill is the product of duration in hours or days times the flow rate in gph or gpd.

Attachment 2 - Estimating Spill and Illicit Discharge Volume



9.5 Inspection Equipment Storage

The supervisor should organize the inspection equipment so that it is easily accessible in the field. Five trunks or boxes will be used to organize, store, and transport equipment. Laminated inspection procedure cards should be kept with associated equipment in the trunks so that inspection team members can easily review the procedures.

Safety Trunk

Contents:

1. Traffic cones
2. Rubber gloves
3. Portable eyewash kit
4. Safety vests
5. Laminated "Safety" card
6. Eye goggles

Product:

1. A large plastic storage box (Rubbermaid) should be used.

2458-04, 33 gal/124.9 L

Manhole Trunk

Contents:

1. Gas monitor
2. Batteries
3. Manhole hook
4. Crow bar
5. Flashlight
6. Laminated "Manhole Cover Removal Procedures" card

Product options:

1. A medium-sized (at least 18" long) plastic trunk or storage box (Rubbermaid) can hold all materials.

223, 11 gal/41.6 L

Recording Materials and Maps Box

Contents:

1. Outfall maps or storm sewer maps
2. Road maps
3. Log book
4. Inspection forms
5. Pens
6. Camera
7. Laminated "Visual Inspection/Sample Collection Procedures" card

Product:

1. A small plastic box (Rubbermaid) should hold all materials.

2283, 4.1 gal/15.5 L

Testing Trunk

Contents:

1. HACH Pocket Pal Tester
2. HACH Conductivity Pocket Pal Tester
3. HACH DR/890
4. Total Chlorine Powder Pillows
5. Ammonia powder pillows
    a. Ammonia Salicylate Reagent Powder Pillows
    b. Ammonia Cyanurate Reagent Powder Pillows
6. pH
    a. Litmus paper
    b. Phenol Red Indicator Solution
    c. Dropper
7. Copper test strips
8. Long handled sampling dipper and liners
9. Deionized water
10. Sample cells for DR/890
11. Glass beakers
12. Batteries
13. Scissors
14. Stop watch
15. Waste bag
16. Soft cloth
17. Laminated "Temperature/Conductivity Testing Procedures" card
18. Laminated "Total Chlorine Testing Procedures" card
19. Laminated "Ammonia Testing Procedures" card

20. Laminated "pH Testing Procedures" card
21. Laminated "Turbidity and Copper Testing Procedures" card
22. Laminated "Inspection Wrap-up Procedures" card

Product:

1. A large plastic trunk can be used with smaller labeled boxes or bags for organization (Rubbermaid). Equipment, reagents, and procedure cards can be organized by testing parameter in the smaller boxes.

2463, 45 gal/170 L 7720-00-BRN, Tack Box 2217, 1.5 gal/5.68 L

2. An auto cabinet with drawers for organization (Hobart Cabinet Company) can be used alternatively.

4-drawer locking auto cabinet

<u>Other Items Trunk</u>

Contains:

1. Sand bags
2. Laboratory bottles and cooler with ice
3. Measuring stick

Product:

1. Use a similar trunk as the one discussed above for the safety trunk.

APPENDIX F – Outfall Inspections and Report

SUMMARY OF REGULATED OUTFALL CHARACTERIZATION

Old Outfall ID	New Outfall ID	Watershed	Sub-Watershed	Land Use	2013 Characterization	2014 Characterization	2015 Characterization
A1-2.1	A0121	Four Mile Run	Trammel Branch	Suburban Residential	Unlikely	Unlikely	Unlikely
A51.1	A5101	Four Mile Run	N/A	Commercial	Unlikely	Unlikely	Unlikely
B81.1	B8101	Four Mile Run	Osborne Branch	Commercial/Industrial	Potential	Unlikely	Potential
C4	C1040	Four Mile Run	N/A	Suburban Residential	Unlikely	Potential	Unlikely
CC24B-1	C2260	Tripps Run	N/A	Commercial/Industrial	Unlikely	Unlikely	Unlikely
E8.1A	E1082	Four Mile Run	N/A	Commercial	Unlikely	Unlikely	Unlikely
E8C-A	E1094	Four Mile Run	N/A	Commercial	Unlikely	Unlikely	Unlikely
E8EA	E1097	Four Mile Run	N/A	Commercial	Unlikely	Unlikely	Unlikely
E19.1B	E1192	Four Mile Run	N/A	Commercial	Unlikely	Potential	Unlikely
E19.1C	E1193	Four Mile Run		Commercial	Unlikely	Potential	Unlikely
EE73	E2731	Tripps Run	Church Branch	Industrial	Unlikely	Potential	Potential
EF4	E4040	Four Mile Run	N/A	Commercial	Unlikely	Unlikely	Potential
F33.1	F1331	Four Mile Run	Crossman Branch	Suburban Residential	Potential	Potential	Unlikely
F36F	F1366	Four Mile Run	Crossman Branch	Suburban Residential	Unlikely	Unlikely	Unlikely
G54.1	G1541	Four Mile Run	Harrison Branch	Suburban Residential	Unlikely	Suspect	Potential
H44	H1440	Four Mile Run	Wrens Branch	Suburban Residential	Unlikely	Potential	Unlikely
HH3A	H2031	Tripps Run	Robertson Branch	Suburban Residential	Unlikely	Unlikely	Unlikely
IX1	I3010	Four Mile Run	N/A	Suburban Residential	Unlikely	Unlikely	Unlikely
IX2	I3020	Four Mile Run	N/A	Suburban Residential	Unlikely	Unlikely	Suspect
J53A	J1531	Tripps Run	Pearson Branch	Commercial	Potential	Potential	Potential
JX20	J3200	Tripps Run	Pearson Branch	Industrial	Unlikely	Suspect	Unlikely
JX27	J3270	Tripps Run	Pearson Branch	Industrial	Unlikely	Potential	Unlikely
K28B	K1282	Tripps Run	Pearson Branch	Suburban Residential	Unlikely	Unlikely	Unlikely
O17	O1170	Tripps Run	N/A	Suburban Residential	Unlikely	Unlikely	Unlikely
Q3.1	Q1031	Tripps Run	N/A	Suburban Residential	Unlikely	Unlikely	Unlikely
R51.1	R1511	Tripps Run	Reagan Branch	Suburban Residential	Unlikely	Unlikely	Unlikely
S71.1	S1711	Tripps Run	Coe Branch	Suburban Residential/Commercial	Unlikely	Unlikely	Unlikely
T7A	T0701	Tripps Run	Coe Branch	Suburban Residential	Unlikely	Unlikely	Unlikely
U3.1A	U0311	Tripps Run	Coe Branch	Suburban Residential	Unlikely	Unlikely	No Longer Exists
U7A	U0701	Tripps Run	Coe Branch	Suburban Residential/Commercial	Unlikely	Unlikely	Unlikely
X13.1	X1131	Tripps Run	N/A	Suburban Residential	Potential	Unlikely	Unlikely
Y27.1	Y2701	Tripps Run	Gundry Branch	Suburban Residential	Unlikely	Unlikely	Unlikely
Z5	Z0500	Tripps Run	N/A	Suburban Residential	Unlikely	Potential	Unlikely

PY2 IDDE Investigation Summary

Incident ID	Date of Observation	Description	How Resolved	Resolution	Date of Closure
14_002	8/21/2014	Rear parking lot behind 102 W. Jefferson Street and 531 N. Washington Street. Car washing is taking place behind 106B W. Jefferson Street as part of the business operations of EuroWerks of 531 N. Washington St	Discussed and mailed violation notice to buisiness operator and property owner.	Carwasing operations ceased	8/24/2014
14_003	9/8/2014	Oil discharge behind 1222 W. Broad found to be a tipped waste oil container behind a foodservice establishment	Contacted property manager and met on-site to discuss cleanup.	Owner cleaned spill	9/8/2014
14_004	9/23/2014	Carwashing behind 156 Hillwood Ave auxilary to operations of Enterprise Car Wash	Discussed with business manager. Mailed notice of violation.	Business operator obtained DEQ General Permit #VAG750239	11/7/2014
15_001	2/19/2015	Flow from 311/315 S Maple Parking Lot	Observed and could not see any proof of illicit discharge. Runoff could be snowmelt but is alleged to be washwater. Discussed with business staff.	Continue to monitor for illicit discharge evidence.	2/24/2015
15_002	4/2/2015	Sewer overflow	City crews investigated	Blockage removed and overflow stopped.	4/2/2015
15_003	5/22/2015	E&S IDDE at 1008 Madison Ln	City inspector contacted site operator, sent violation and fine	E&S controls implemented per approved plan	5/22/2015
15_004	6/11/2015	Hose observed discharging from front door of 98 N. Washington	Contacted business operator, sent violation to operator and property owner.	Discharge ceased	6/11/2015
15_005	6/16/2015	Discharge observed from parking lot of 311/315 S. Maple	Flow observed but any washing activities had ceased when City inspectors arrived. Contacted property owner to discuss buisiness operations.	Continue to monitor for illicit discharge evidence.	6/13/2014

APPENDIX G – Construction Site Manual

Construction Site Runoff Control Inspection Standard Operating Procedure (SOP) Manual

June 2015

DRAFT

Department of Public Works
300 Park Ave.
Suite 100 West
Falls Church, VA 22046

Table of Contents

1 Introduction 1

1.1 Overview 1

2 Construction Site Runoff Control 1

2.1 Authority / Stormwater Permit 1
2.2 Land Disturbance Calculation 1
2.3 Plan Requirements 1
2.3.1 Erosion and Sediment Control Plan 1
2.3.2 Pollution Prevention Plan 3
2.4 Inspection Procedures & Practices 4
2.4.1 Inspection Procedure 4
2.4.2 Inspection Tracking 4
2.4.3 Enforcement Procedure 4
2.5 Bonding 5

3 Appendices 5

DRAFT

1 INTRODUCTION

1.1 Overview

The City's stormwater management program is regulated under the federal Clean Water Act (CWA) and Virginia State Water Control Law as a municipal separate storm sewer system (MS4). The City is required to implement certain procedures in order to comply with the associated regulations including the Virginia General Permit for Stormwater Discharges from Small MS4s (MS4 General Permit). This document establishes the Standard Operating Procedures (SOPs) for ensuring that the City's regulates construction site runoff in a manner compliant with the MS4 General Permit; in accordance to the MS4 General Permit requirements outlined in 9VAC25-890-40, Section II B 5.

2 CONSTRUCTION SITE RUNOFF CONTROL

2.1 Authority / Stormwater Permit

The City regulates construction activities under Chapter 35, Article I of the City Code. Chapter 35-4 states, that *"no person may engage in any land disturbing activity, nor may any grading, building, or other permits for activities involving land disturbing activities be issued, until a stormwater management permit has been issued by the director in accordance with the requirements set forth in this article."* An exemption to the City Code is granted to activities disturbing less than 2,500 square feet of land.

When a Stormwater Permit is required the Director of Public Works, or his staff, identifies the appropriate elements of the permit for a particular activity. For example, smaller, simpler activities can be granted an agreement in-lieu of a plan, while land disturbance activities in a resource protection area require a stormwater plan, stormwater pollution prevention plan, water quality impact analysis, erosion and sediment control plan, and landscape conservation plan. Chapter 35 does not specifically identify each activity and the required plan to allow flexibility on a case-by-case basis.

2.2 Land Disturbance Calculation

Prior to issuance of any permits for construction an applicant is required to fill out a Land Disturbance Form to identify how much land is anticipated to be impacted by a given project. The City's plan review engineers check this form for accuracy (e.g. adequate space provided for footprint, access, stockpile). The Stormwater Permit handout demonstrates how to estimate land disturbance.

2.3 Plan Requirements

2.3.1 Erosion and Sediment Control Plan

City Code 35-14 outlines plan requirements when a land disturbing activity requires an erosion and sediment control plan. The City's engineering staff reviews all plans for consistency with Chapter 35 and the latest version of the Virginia Erosion and Sediment

DRAFT

Control Handbook. The City's goal is to review a plan within 15 business days. The requirements for an erosion and sediment control plan are as follows:

a. The erosion and sediment control plan shall be of sufficient detail to demonstrate, to the satisfaction of the director, compliance with the provisions of section 35-15 and with the Virginia Erosion and Sediment Control Handbook, whichever is more restrictive. The plan may be contained on a separate sheet or included with the drainage or grading plan submitted as a part of the development plans required in chapter 6, pertaining to buildings, chapter 28, pertaining to subdivisions, or chapter 48, pertaining to zoning.

b. Requirements for those preparing plans. The plan must be prepared and certified by a professional engineer, architect, certified landscape architect or land surveyor licensed in Virginia pursuant to Article 1 (Code of Virginia, § 54.1-400 et seq.) of Chapter 4 of Title 54.1 of the Code of Virginia.

c. Agreement in lieu of a plan. Where a land disturbing activity results from the construction of a single-family residence, an agreement in lieu of a plan may be substituted for an erosion and sediment control plan if executed by the director.

d. Applicability to state agencies. Any state agency that undertakes a project involving a land disturbing activity shall have the erosion and sediment control plan approved by the Virginia Soil and Water Conservation Board or Virginia Department of Environmental Quality, as appropriate.

e. Applicability to multi-jurisdictional activities. Any person whose land disturbing activities involve lands which extend into the jurisdiction of another local erosion and sediment control program shall have either an erosion and sediment plan approved by the Virginia Soil and Water Conservation Board, or Fairfax County or Arlington County or the city. Such persons shall comply with the requirements of section 35-18 concerning an installation and maintenance agreement and bond.

f. Responsibility of owner of the land when activity is conducted by contractor. Whenever a land disturbing activity is proposed to be conducted by a contractor performing construction work pursuant to a construction contract, the preparation, submission and approval of the required erosion and sediment control plan shall be the responsibility of the owner of the land.

g. Wetland mitigation banks. In accordance with the procedure set forth in Code of Virginia, § 62.1-44.15:55.E, any person engaging in the creation and operation of wetland mitigation banks in multiple jurisdictions, which have been approved and are operated in accordance with applicable federal and state guidance, laws or regulations for the establishment, use and operation of mitigation banks pursuant to a permit issued by the state department of environmental quality, the marine resources commission or the U.S. Army Corps of Engineers, may at the option of that person, file general erosion and sediment control specifications for wetland mitigation banks annually with the Virginia Soil and Water Conservation Board for review and approval consistent with guidelines established by the Virginia Department of Environmental Quality.

h. Responsible land disturber. The responsible land disturber shall be designated prior to land disturbing activity. In addition, as a prerequisite to engaging in the land disturbing activities shown on the approved plan, the person responsible for carrying

DRAFT

out the plan shall provide the name of an individual holding a certificate of competence to the program authority, as provided by Code of Virginia, § 62.1-44.15:52, who will be in charge of and responsible for carrying out the land disturbing activity. However, the director may waive the certificate of competence requirement for an agreement in lieu of a plan for construction of a single-family residence. If a violation occurs during the land disturbing activity, then the person responsible for carrying out the agreement in lieu of a plan shall correct the violation and provide the name of an individual holding a certificate of competence, as provided by Code of Virginia, § 62.1-44.15:52. Failure to provide the name of an individual holding a certificate of competence prior to engaging in land disturbing activities may result in revocation of the approval of the plan and the person responsible for carrying out the plan shall be subject to the penalties as provided in this article.

2.3.2 Pollution Prevention Plan

City Code 35-9 outlines plan requirements when a land disturbing activity requires an pollution prevention plan. The City's engineering staff reviews all plans for consistency with Chapter 35 and state standards. The City's goal is to review a plan within 15 business days. The requirements for a pollution prevention plan are as follows:

a. Plan contents, implementation and amendments. The pollution prevention plan, if required, shall include the content specified by 9VAC25-870-56, shall be developed, implemented, and updated as necessary, and must detail the design, installation, implementation, and maintenance of effective pollution prevention measures to minimize the discharge of pollutants. At a minimum, such measures must be designed, installed, implemented and maintained to:

    i. Minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other wash waters. Wash waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge;

    ii. Minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, and other materials present on the site to precipitation and to stormwater; and

    iii. Minimize the discharge of pollutants from spills and leaks and implement chemical spill and leak prevention and response procedures.

b. Prohibited discharges. The pollution prevention plan shall include effective best management practices to prohibit the following discharges:

    i. Wastewater from washout of concrete, unless managed by an appropriate control;

    ii. Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds, and other construction materials;

    iii. Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance; and

DRAFT

iv. Soaps or solvents used in vehicle and equipment washing.

c. Prohibitions on dewatering activities. Discharges from dewatering activities, including discharges from dewatering of trenches and excavations, are prohibited unless managed by appropriate controls.

2.4 Inspection Procedures & Practices

The City's Department of Public Works is responsible for inspection of land-disturbing activities for compliance with the approved erosion and sediment control plan, compliance with the approved stormwater management plan, development, updating and implementation of the pollution prevention plan, and development and implementation of any additional control measures necessary to address water quality concerns.

2.4.1 Inspection Procedure

The City's Civil Engineering Inspectors are responsible for all stormwater pollution prevention inspections. Inspectors must have the appropriate Virginia Inspector Certifications issued by VADEQ within 6-months of being hired to perform inspections.

City inspectors perform periodic inspections during or immediately following initial installation of erosion and sediment controls, at least once in every two-week period, within 48 hours following any runoff producing storm event, and at the completion of the project prior to the release of any performance bonds. City inspectors perform inspections when potential concerns are raised by the public; typically by email, but also by phone and the City's Request Tracker program on the website. Inspectors perform periodic inspections to ensure stormwater construction best management practices in the stormwater pollution prevention plan are adequate and functioning properly.

Onsite inspect reports are completed by staff and contain any observed issues that require corrective action, and provide a date by which any corrective action noted on the report should be completed. The data is then entered into a Microsoft Access database for record retention.

In the event an inspection finds the approved plans are inadequately protecting the site from construction site runoff, the inspectors notify the City's engineers to revise the appropriate plan and amend the bond, if needed.

2.4.2 Inspection Tracking

Site inspection results shall be tracked with care throughout the resolution of any deficiencies noted in the inspection report to prepare for any potential enforcement actions, if necessary. The City shall then monitor the contractor's progress, and eventually confirm completion of issues, as needed. Inspection reports must be retained by the City for a minimum of three years.

2.4.3 Enforcement Procedure

If the City's inspector determines a site is not in compliance, verbal notification of corrective measures is given to the responsible party and noted in the inspection report. If

DRAFT

this is an on-going issue written notice is provided to the responsible party as a notice to comply and the inspection report is then either emailed or hand-delivered to the contractor, citing a detailed description and time to complete the corrective measures. If there is a lack of corrective action being commenced for erosion and sediment control measures within the timeline specified in the notice, the director shall has the authority to fine the contractor up to $1,000 for each violation per day of non-compliance not to exceed $10,000. As a last resort, if corrective action is still needed, the director will send a letter of intent to utilize the performance bond or cash escrow to perform the corrective measures. If the cost performing the corrective actions is greater than the security held, the director will issue a fee in the amount of the difference to the responsible party.

If there is a substantial or imminently harmful violation, or if land-disturbing activities have commenced without an approved plan, a stop work order may be issued. Otherwise, a stop work order may be issued only after the operator has failed to comply with a notice to comply and perform corrective measures within the timeframe established by the City. The order shall remain in effect for seven days from the date of service. If an approved plan or required permits are not obtained, a stop work order may be issued for all construction other than corrective measures, until an approved plan and any required permits have been obtained. The order will be lifted upon compliance. If there is a failure to comply with such measures within the time specified, the site plan may be revoked and the responsible party shall be deemed to be in violation and upon conviction shall be subject to the penalties provided Sec. 35-22.

2.5 Bonding

If a construction activity requires erosion and sediment controls the City requires cash, surety, or letter of credit to cover the costs associated with replacing the control measures. The minimum bond amount is $750.00 plus $0.40 per square foot of land disturbance. Applicants are required to fill out bond form once a plan is approved. The form is then reviewed by the City's engineers to ensure the quantities and values are sufficient.

3 APPENDICES

The appendices include the following reference documents:

- Stormwater Permit handout
- Land Disturbance Form
- Site Construction Inspection Form

DRAFT

Stormwater Permit

Land Disturbance, Geothermal Well, & Direct Connection

The Commonwealth of Virginia mandated that all local governments adopt new stormwater regulations to reduce the amount of "non-point source" pollution and water volume flowing to the Chesapeake Bay. In response, on March 24, 2014, City Council eliminated stormwater management development criteria from Chapter 14 "Environment" and Chapter 48 "Zoning" and adopted an all-inclusive stormwater management ordinance, Chapter 35 "Stormwater," that contains existing regulations and the state's new development criteria. As of July 1, 2014, stormwater development criteria for projects will be reviewed as part of a Stormwater Permit. The Stormwater Permit must be issued before commencement of any regulated work.

The following is a list of the types of projects now regulated under the Stormwater Permit and the minimum required support documentation.

Grading Plan/Site Plan- For projects exceeding 2,500 SF of land disturbance.

- General permit registration statement and evidence of general permit coverage
- Stormwater management plan
- Erosion and sediment control plan
- Landscape conservation plan

Work within a Resource Protection Area (RPA)

- Stormwater management plan
- Erosion and sediment control plan
- Landscape conservation plan
- Water Quality Impact Statement

Geothermal Well

- Erosion and Sediment Control Plan

Direct Connection to the Stormwater System

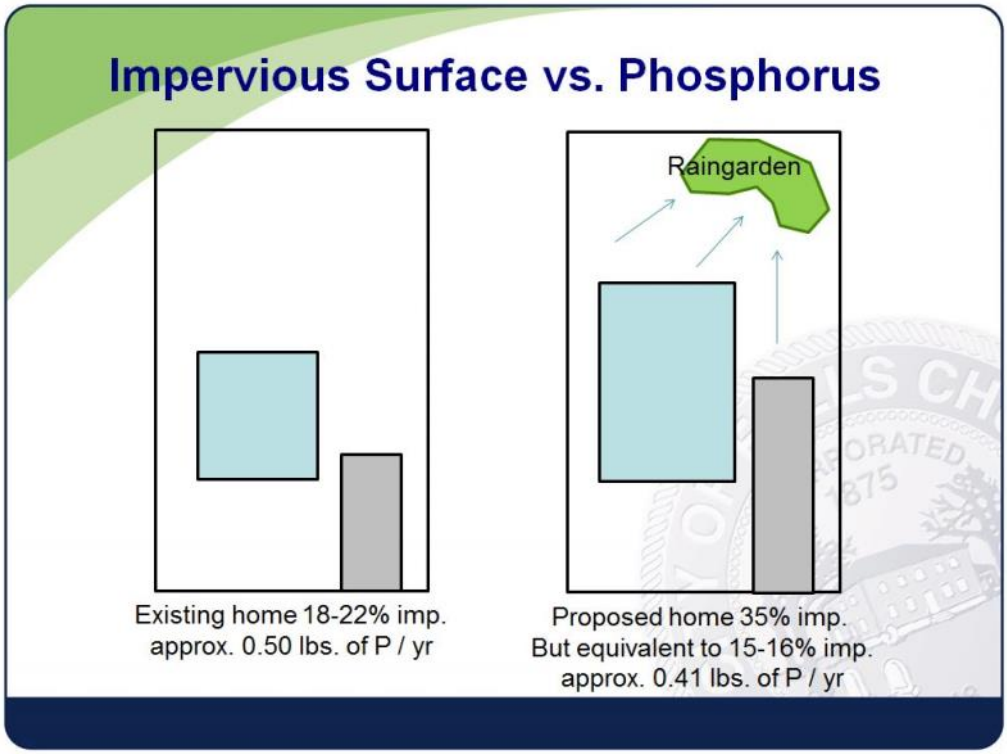
- Stormwater Management Plan

Table of Contents

Page 2 - Ordinance Changes
Page 3 - Stormwater Permit Flow Chart
Page 4 - Land Disturbance less than 2500SF
Page 5-6 - Grading Plan Requirements
Page 7 - Resource Protection Areas
Page 8 - Direct Connection to the Stormwater System
Page 8 - Geothermal Well
Page 8 - Sump Pump
Page 8 - Stormwater Management Review Team (SMRT)
Page 9 - Stormwater Permit Approval Process
Page 10 - Virginia Stormwater Management Permit (VSMP)
Page 11 - Bonds
Page 12 - Fees
Page 12 - Additional Information
Page 13 - Glossary

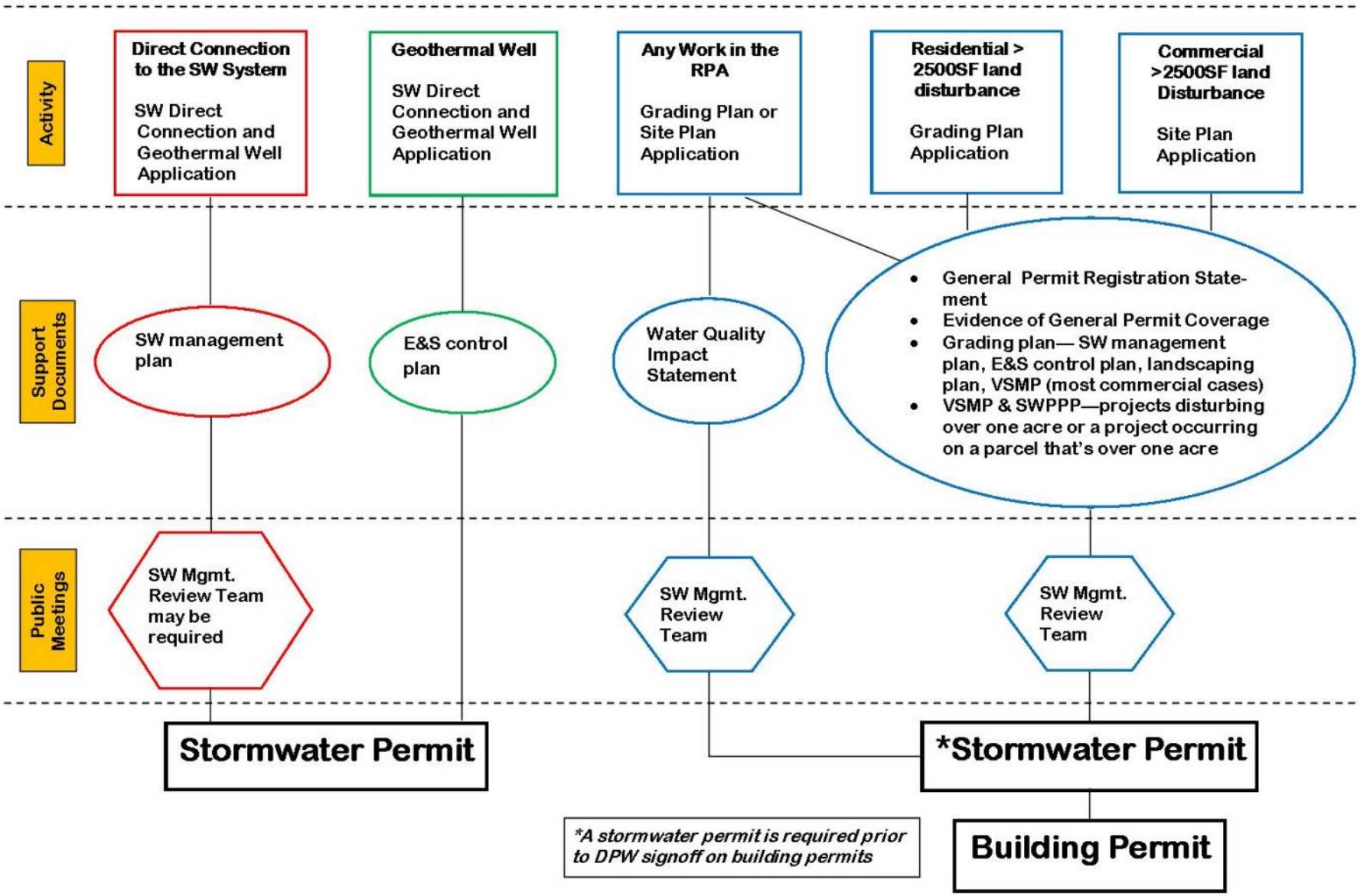
Stormwater Ordinance Changes for Development

- Introduction of City-issued Stormwater Permit.
- The installation of geothermal wells and direct connections to the City's stormwater infrastructure are now reviewed and permitted by the City under the Stormwater Permit.
- 0.41lbs of Phosphorous per acre per year requirement replaces 35% cap on impervious coverage for water quality calculation purposes on parcels zoned R1A and R1B.
- New development must meet the 0.41lbs of Phosphorus per acre per year standard.
- Redevelopment of all parcels not zoned R1A or R1B must reduce Phosphorus loading by 20% if land disturbance is one acre or greater or by 10% if land disturbance is less than one acre (not to exceed 0.41lbs standard for new development).
- Phosphorus load calculations must be done by the Virginia Runoff Reduction Method.
- Water quantity calculations must address (1) channel protection, (2) flood protection, and (3) sheet flow.
- Projects disturbing over 1 acre of land must have a City-approved Stormwater Pollution Prevention Plan (SWPPP). The City is now required to review the SWPPP and issue a Virginia Stormwater Management Permit, which had been done previously by Virginia Department of Environmental Quality.
- The Stormwater Management Review Team (SMRT) replaces the Chesapeake Bay Interdisciplinary Review Team (CBIRT) and becomes advisory to the Director of Public Works.



Stormwater Permit

The Department of Public Works performs the reviews for Stormwater Permits.
The following flow chart explains the support documents and public meetings required for each activity.

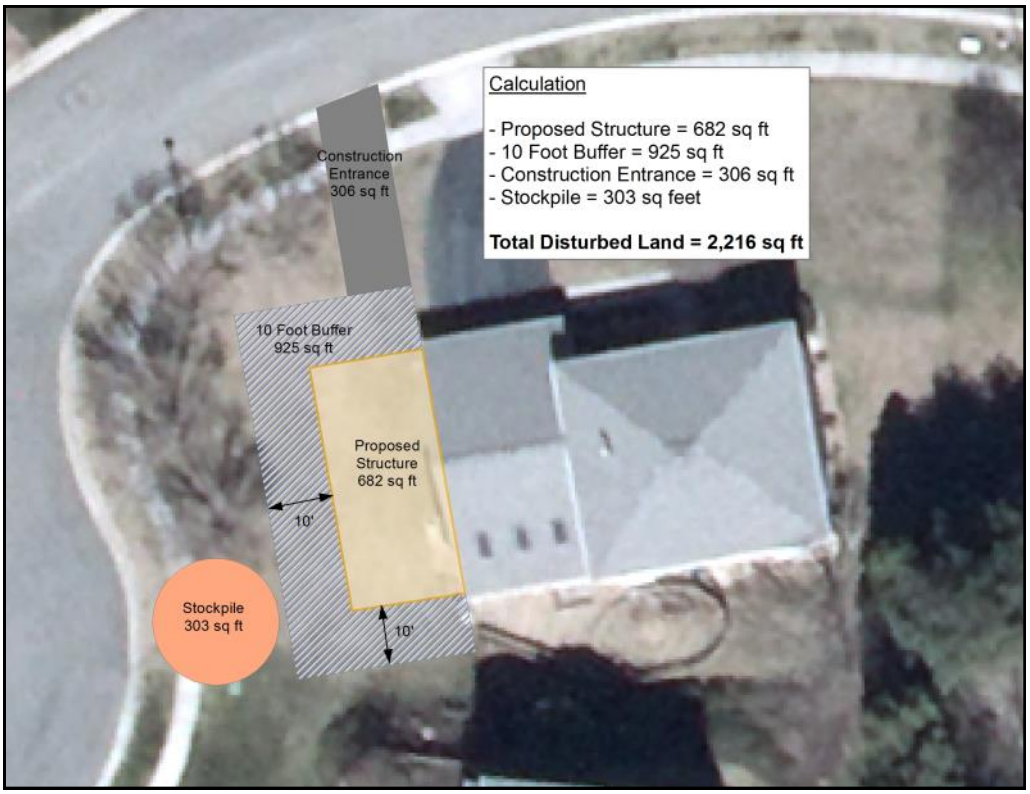


How to Determine Land Disturbance for a Stormwater Permit

If you are submitting a building permit application which includes exterior work, and plan to disturb less than 2,500 square feet of land, you must complete the [“Addendum to Permit Application - Land Disturbance & Exterior Work”] form. If your land disturbance calculated on that form approaches 2,500 s.f. or if it is un-clear how you estimated land disturbance, then a drawing may be required by the Department of Public Works (DPW).

Follow these guidelines to prepare a land disturbance drawing

- **Start with a plat or similar scaled drawing of the existing property**
- **The original drawing should be clear and un-faxed**
- **Draw a box around the footprint of the new construction on the plat**
- **Draw a 10’ buffer around the work area and calculate the area**
- **Draw a 10’ wide strip from street/driveway to edge of project footprint and calculate the area**
- **Draw any stockpile areas and any access paths that will cause land disturbance**
- **The seal of the original preparer must be crossed-out and initialed by the person editing**
- **Clearly label all areas in square feet and show a calculation adding the total disturbed area**



To calculate disturbed area, add the following:

Area of project footprint

+

Area of 10 foot buffer around project footprint

+

Area of stockpile footprint

+

Area of 10 foot wide strip from street/driveway to edge of project

_____

Disturbed Area

Grading Plan Requirements

An approved Grading Plan is required for all residential projects exceeding 2,500 square feet of land disturbance. The plans shall be prepared by a registered Professional Engineer, Land Surveyor, or Landscape Architect and shall be in conformance with City Code, specifically Chapter 35, Stormwater.

The following information must be provided on a grading plan for it to be considered for review:

◊ **Minimum plan size is 24x36 inches**

◊ **Minimum scale of 1 inch = 20 feet**

◊ **Signed seal of a land surveyor, architect, landscape architect, or professional civil engineer licensed in the Commonwealth of Virginia**

◊ **Existing site information including the following:**

- **Address and lot number**
- **RPC number**
- **Lot & parcel dimensions, area, lot line bearings and distances**
- **Deed book and page number for private streets and easements**
- **Owner Information**
- **Zoning district and any variance required for the development**
- **Existing contours in one or two foot intervals**
- **Existing utilities (water, sewer, stormwater, electricity, gas)**
- **Existing drainage divides and flow arrows to show existing drainage patterns**
- **Vicinity map**
- **Soils map**
- **Floodplain and Resource Protection Areas as appropriate**

◊ **Proposed site conditions including the following:**

- **Limits of clearing and grading**
- **Proposed improvements**
- **Proposed contours in the same interval as existing contours**
- **Proposed utilities**
- **Locations of all downspouts and foundation drain outfalls**

◊ **Erosion and Sediment Control Plan including:**

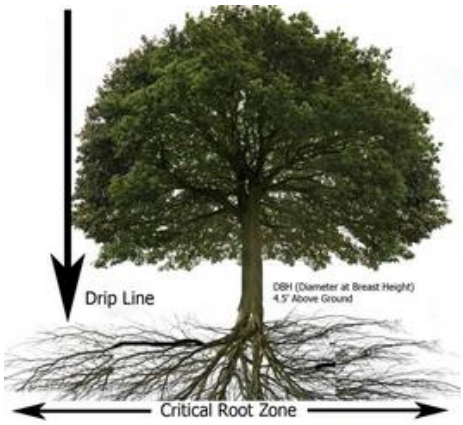
- **Erosion and sediment control practice location**
- **Arrows showing the direction of surface water flow**
- **Limits of clearing and grading**
- **Responsible Land Disturber and certification number**

◊ **Erosion and Sediment Control Narrative including:**

- **Project description**
- **Existing conditions**
- **Adjacent area and off-site area descriptions and if they are affected by the project**
- **Soils description**
- **Critical area description or an explanation that no critical areas exist on-site**
- **E&S Control measure description**
- **Permanent stabilization description**
- **Stormwater runoff calculations for pre and post-development conditions**

Grading Plan Requirements (cont.)

- ◊ Stormwater drainage divides and calculations for pre-developed and post-developed conditions including water quantity and water quality.
- ◊ Stormwater management systems (Best Management Practices) with accompanying calculations if applicable
- ◊ The location, dimensions, and height of existing and proposed buildings or structures
  - For decks, height is measured from the finished grade to deck floor
  - For additions and accessory structures, height is measured from average finished grade to the midpoint of the highest roof
- ◊ Existing and proposed vegetation inventory and plans in accordance with City Code Chapter 44 and the latest Urban Forestry Grading Plan Guide titled "Tree Preservation and Replacement Guide for Development and/or Redevelopment on Single Family Residential Lots"
- ◊ Proposed tree preservation measures
- ◊ Landscape re-vegetation plan
- ◊ Canopy coverage calculations
- ◊ Name of affected watershed and disturbed area within it



Zoning Requirements for Grading Plans

- ◊ For all lots zoned R1A/R1B the maximum impervious lot coverage is 35%, or more per City Code §48-238.
- ◊ Uncovered driveways, walks, and patios using pervious materials shall be reduced up to 25% of the entire pervious surface area (as determined by the Zoning Administrator)
- ◊ R1A/R1B Residential Building Height - 35 feet or 2 1/2 stories
- ◊ R1A Residential Setbacks - 30 feet front yard, 15 feet side yard, 40 feet rear yard
- ◊ R1B Residential Setbacks - 25 feet front yard, 10 feet side yard, 30 feet rear yard
- ◊ Max driveway width 14 feet

Is your project in a floodplain?

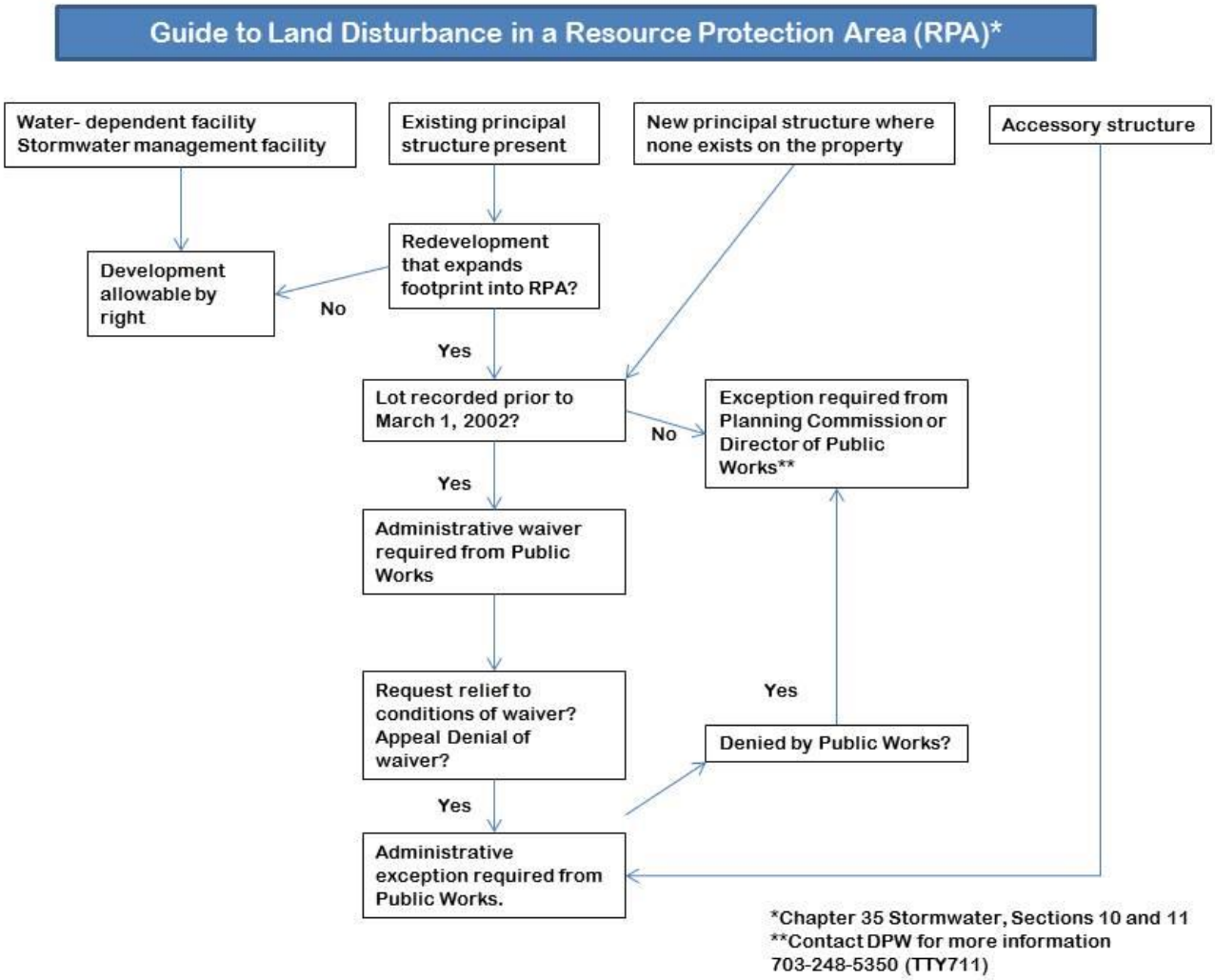
If you live along a stream your property may be in a floodplain. Restrictions for construction and added requirements may apply. Not all floodplains are near visible streams as many streams in the City are in underground storm sewer pipes.

For more information go to www.fallschurchva.gov/Stormwater and look under the "Floodplain" and "Resource Protection Areas" links.

Resource Protection Area

A Resource Protection Area (RPA) is environmentally sensitive and legally protected land that lies alongside or near a stream or other water body, which eventually drains to the Potomac River and Chesapeake Bay. RPAs protect and benefit water quality by helping reduce the impacts of nonpoint source pollution. The flow chart below explains the process and options for land disturbance in a RPA.

- **The RPA is a 100' buffer away from either side of the top of a stream bank or wetland.**
- **RPAs protect water quality, filter pollutants, reduce runoff, and prevent erosion.**
- **RPAs are regulated under the Chesapeake Bay Preservation Ordinance §35-10 and §35-11, which requires a grading plan or site plan for all land disturbance in the RPA.**
- **Go to the city's mapping services webpage to see if there is an RPA on your property. (http://property.fallschurchva.gov/ParcelViewer/)**
- **If a survey of the stream bank has not been performed as part of your plat, you may use the boundary on the city maps in some cases; denote your plan with the following: "Approximate RPA boundary from the City of Falls Church Chesapeake Bay Preservation Area Map." The City Engineer may require the RPA to be surveyed.**
- **To learn more about RPAs, contact DPW at 703-248-5350 (TTY 711).**



Geothermal Well (minimum requirements)

- Erosion and Sediment Control Plan including:
  - 8 1/2" by 11" sheet ; not required to be sealed by a registered professional
  - Erosion and sediment control practice location
  - Arrows showing the direction of surface water flow
  - Limits of clearing and grading
- Erosion and Sediment Control Narrative including:
  - Project description
  - Existing conditions
  - Erosion & Sediment Control measure description
  - Permanent stabilization description

Direct Connection to the Stormwater System (minimum requirements)

- Stormwater drainage divides and calculations for pre-developed and post-developed conditions including both water quantity and water quality
- Increases in peak flow must be sealed by a registered Professional Engineer
- Inventory of existing storm infrastructure (size, material, location, condition)
- Layout of proposed piping to be connected to City's storm conveyance system
- Details on how the connection will be made (Note: connections to existing structures must be core drilled and sealed with non-shrink grout)
- No blind connections will be allowed
- A description of potential impacts to existing vegetation (on-site and off-site)
- A description of temporary and permanent stabilization

Can my sump pump be connected to a storm drain?

Yes! File a Direct Connection permit showing the location and a description of how the installation work will be performed.

Stormwater Management Review Team (SMRT)

The Stormwater Management Review Team (SMRT) will meet to review Stormwater Management Permits. SMRT meetings will be advertised and open to the public for input on stormwater management issues related to development. Property owners within 150 feet of land disturbing activities that are the subject to review will be mailed notification of applicable SMRT meetings at least 10 days prior to the meeting date. The Director of Public Works makes the final decision based on the recommendation of SMRT. The team is comprised of City staff, to include but not limited to the Director of Public Works, a senior or principal planner from the Development Services Department, the City Engineer, and City Arborist.

Stormwater Permit Approval Processes

The approval process for your grading plan is parallel to the stormwater permit application process. The process below is the most common and is not applicable for all projects.

Step 1 Before Application	Calculate Land Disturbance. If less than 2,500 square feet follow the process in the left column. If greater than 2,500 square feet follow the process in the right column. Most large projects will require a both a building permit and a grading plan.	
	No Grading Plan (< 2,500 S.F, Direct Connection, Geothermal Well)	**Grading Plan and Site Plans (>2,500 S.F. or any work in the RPA)**
Step 2 Permit Counter	Submit • 3 copies of plan sets • Addendum for land disturbance form	Submit • Application for Grading Plan Review • 4 copies of grading plan • Review fee is paid at this step • Related building or other permits or may be submitted now or separately
Step 3 Plan Review	Your application and plans will be reviewed by all necessary departments in this step. Grading plan submissions take at least 15 business days per submission. The City will contact applicants for any supplemental information or if revisions are needed. Direct Connection and Geothermal Well applications take at least 5 business days.	
Step 4 Plan Approval	Dept. of Development Services will contact applicants when permits are ready for pickup.	DPW will notify applicants that their grading plan is approvable and schedule a SMRT meeting date. Plans will be approved at this meeting. Attend this meeting to receive an approved set of plans.
Step 5 Permit Counter	Pay fees, post bonds and then you can pick up your stormwater permit to display onsite. Your project may now begin.	Post all required bonds at the permit counter prior to receiving permit.
Step 6 Site Inspections	Site inspections of your land disturbance may occur at any time.	Contact the City Arborist and E&S inspector to arrange inspection of E&S and tree preservation measures prior to demolition. Stormwater and demolition permits contingent on your grading plan may be issued after this inspection.

Virginia Stormwater Management Program (VSMP) Permit

Construction activities resulting in land disturbance equal to or greater than one acre must have a City approved Stormwater Pollution Prevention Plan (SWPPP). The City is now required to review the SWPPP and issue a Virginia Stormwater Management Permit, which had been done previously by the Virginia Department of Environment Quality.

◊ **Construction activities resulting in land disturbance equal to or greater than once acre.**

Permit Process

◊ **Complete the General Permit for Discharges of Stormwater from Construction Activities application and submit to the City of Falls Church Department of Development Services counter, 300 Park Avenue, Suite 300 West**

◊ **15-day review turnaround; reviewed by the Department of Public Works, Stormwater Division**

◊ **Fees: Applicable Development Fee to the City of Falls Church, $756 to VA Department of Environmental Quality**

◊ **Falls Church Hydrologic Unit Codes (HUC): Four Mile Run - PL25, Tripp's Run - PL26**

Stormwater Pollution Prevention Plan (SWPPP)

◊ **A SWPPP is required to be developed prior to submitting a VSMP permit application. Submit the SWPPP with the permit application.**

◊ **The SWPPP outlines the methods that the operator will implement in order to comply with the VSMP permit, specifically in regards to water quality and water quantity. The following minimum measures must be installed and maintained as stated in 9VAC25-870-56:**

- **Minimize the discharge of pollutants from equipment and wheel washing, wheel wash water, and other wash waters**
- **Minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, and other materials present on the site to precipitation and to stormwater**
- **Minimize the discharge of pollutants from spills and leaks and implement chemical spill and leak prevention and response procedures**
- **The SWPPP shall include a plan for prohibiting the following discharges: wastewater from washout of concrete; wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds, and other construction materials; fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance; soaps or solvents used in vehicle and equipment washing**
- **Discharges from dewatering activities are prohibited unless managed by appropriate controls**

◊ **The approved SWPPP must be kept on site at all times.**

Bonds

Grading Plans – Residential Development
Several types of bonds are required by the City prior to issuance of permits. Bond Agreement forms must be signed by applicants when bonds are posted. Some bonds (or portions of bond amounts) must be paid in cash; for the rest, Surety bonds or Letters of Credit are acceptable.

◊ Erosion & Sediment Control (ES&C) Bond
Applicant must submit a completed Estimate of Cost for E&SC Measures form. The estimate amount will be approved by the DPW engineer at completion of the SMRT meeting. (***cash only***)

◊ New Landscape (NL) Bond
Amount will be determined by the City Arborist, based on review of the grading plan and estimate form completed by the Applicant. (***First $2000 cash only***)

◊ Existing Tree (ET) Bond
Amount will be determined by the City Arborist, based on review of the grading plan and a set amount per existing tree. (***First $2000 cash only***)

◊ Right of Way (ROW) Bond
In most instances, the ROW bond will be $2500.

◊ Demolition (DEMO) Bond, if applicable
DDS will determine the bond amount, which must be paid prior to issuance of any Demo Permit. (***cash only***)

Site Plans - Bond Packages for Commercial Development
For commercial development involving the Site Plan approval process, Bond Package submittal is handled by the Department of Public Works. For more information please see the Commercial Bonds Guidelines and Requirements handout.

Bond Releases
Every type of bond release or refund requires submission of 1) Request for Bond Release Form; and 2) Current W-9 form. Submit requests to the Permits Counter. Cash refunds will be issued only to the specific party which posted the cash bond initially. Bond release eligibility is as noted:

◊ E&SC Bond (inspection by the DPW required)
6 months after the Final Certificate of Occupancy is issued.

◊ NL Bond (inspection by the City Arborist required)
One year after the City Arborist approved inspection date.

◊ ET Bond (inspection by the City Arborist required)
1/2 of the bond amount is eligible for release when Final Certificate of Occupancy issued. The remaining 1/2 is eligible for release 2 years after the initial release.

◊ ROW Bond (inspection by DPW required)
Concrete: inspection 30 days after final pour. Asphalt: 6 months after final inspection.

◊ DEMO Bond (inspection by Building Official required)
As soon as Demo clean-up inspection is complete.

Fees & Other Permits

VSMP Permit

Applicable Development Fee to the City of Falls Church; $756 to the VA Department of Environmental Quality

Grading Plans (payable at submission)

Minor — less than 1/2 acre $1,200
Major — greater than 1/2 acre $2,000
(includes E&S, SMRT, bond management, tree & landscape review requirements, VSMP)
Geothermal Well - $100
Direct Connection to Stormwater System - $200

Building Permits

Fee calculated based on the size of your project. For new construction a building permit is issued separately from any required grading plan.

Demolition Permit

Fee and required bond calculated based on the size of your project. A demolition permit is issued separately from any required grading plan.

Right-of-Way (ROW) Permit $200

- Applicable to driveway apron, sidewalk, retaining walls, utility work
- Includes review, inspection, and bond management
- This permit is required separately from either your grading plan or building permit

PODS/Dumpsters $100
ROW - Road Closure Only $100

For More Information

Development Services:
300 Park Avenue
Suite 300 West

Zoning/Permit Counter
(703)248-5080 (TTY 711)

Hours: 8AM - 4PM
Monday-Friday

Public Works:
300 Park Avenue
Suite 100 West

Engineering/Stormwater
(703) 248-5350 (TTY 711)

Hours: 8:30AM - 5PM
Monday-Friday

www.fallschurchva.gov/Permits
www.fallschurchva.gov/Stormwater
www.fallschurchva.gov/Development
www.deq.virginia.gov/Programs/Water/StormwaterManagement.aspx

Glossary

Best Management Practice (BMP) -

Buffer area - an area of natural or established vegetation managed to protect other components of a resource protection area and state waters from significant degradation due to land disturbances.

Dripline - a vertical projection to the ground surface from the furthest lateral extent of a tree or shrub's canopy

Impervious land cover - a surface composed of any material that significantly impedes or prevents natural infiltration of water into the soil. Impervious surfaces include, but are not limited to: nonvegetated roofs; buildings; streets; parking areas; sidewalks; driveways; swimming pools; recreational surfaces such as tennis courts or basketball courts; and, any concrete, asphalt, or compacted gravel surface.

Land disturbing activity - a manmade change to the land surface that potentially changes its runoff characteristics including any clearing, grading, or excavation except that the term shall not include those exemptions specified in City Code section 35-4.

Nonpoint source pollution - pollution consisting of constituents such as sediment, nutrients, and organic and toxic substances from diffuse sources, such as runoff from agriculture and urban land development and use.

Peak flow rate - the maximum instantaneous flow from a given storm condition at a particular location

Pervious land cover - a surface composed of any material that allows for natural infiltration of water into the soil in varying degrees

Pre-development conditions - conditions at the time an applicant becomes subject to the provision of City Code Chapter 35. Where phased development or plan approval occurs (preliminary grading, roads and utilities, etc.), the existing conditions at the time the applicant first becomes subject to the provisions of City Code Chapter 35 shall establish pre-development conditions.

Responsible Land Disturber - an individual from the project or development team, who will be in charge of and responsible for carrying out a land-disturbing activity covered by an approved plan or agreement in lieu of a plan who (a) holds a Responsible Land Disturber certificate of competence (b) holds a current certificate of competence from the Board in the areas of Combined Administration, Inspection, or Plan Review (c) holds a current Contractor certificate of competence for erosion and sediment control or (d) is licensed in Virginia as a professional engineer, architect, certified landscape architect or land surveyor pursuant to Article 1 (§54.1-400 et seq.) of Chapter 4 of Title 54.1 of the Code of Virginia.

Resource Protection Area (RPA) - that component of the Chesapeake Bay preservation area as defined in City Code section 35-10(b). Resource protection areas consist of sensitive lands that have an intrinsic water quality value due to the ecological and biological processes they perform or are sensitive to impacts which may result in significant degradation to the quality of state waters.

Stormwater Management Review Team (SMRT) - a team composed of City staff, to include but not be limited to the director, a senior or principal planner from the development services department, the City engineer, and the City arborist.

Stormwater Pollution Prevention Plan (SWPPP) - a document that is prepared in accordance with good engineering practices that identifies potential sources of pollution that may be reasonably be expected to affect the quality of stormwater discharges from the construction site and otherwise meets the requirements of City Code sections 35-8 and 35-9. In addition, the document shall identify and require the implementation of control measures, and shall include, but not be limited to the inclusion of, or the incorporation by reference of, an approved erosion and sediment control plan, and approved stormwater management plan, and a pollution prevention plan.

Tree canopy coverage - the area surrounding a tree or shrub located within the dripline.

Revised 4/15

Department of Development Services
Building Safety Division
300 Park Avenue, Suite 300W, Falls Church, VA 22046
Phone: 703-248-5080 (TTY 711) Fax: 703-248-5214
permits@fallschurchva.gov www.fallschurchva.gov

Addendum to Permit Application
Land Disturbance & Exterior Work

Permit No. _____

Address of Land Disturbance

Street Address	Unit #	Falls Church, VA	Zip Code

This application must accompany any permit application involving digging, grading, filling, the creation of impervious surface, the removal of vegetation or any other land-disturbing activity. It is a guide for the City to determine if the project in question is in compliance with the *Chesapeake Bay Preservation Area Overlay District, Zoning Ordinance Section 48-824*. Information obtained on this form will be used to determine if the project falls under the regulations of this code provision. This application is not necessary if the project has a grading plan.

Area of Land Disturbance		Property Information
1. Land area of the actual work being done. ***Include a buffer zone of ten feet on all sides.***		Property in Resource Protection Area (RPA): ☐ Yes ☐ No If you are unsure if the property is within the RPA, contact the Department of Development Services (DDS) or ask at the Development Services Counter. If the property is within the RPA, show the surveyed boundaries of the RPA on development plans. Properties within the RPA are subject to additional requirements for development. Please see the handout *Instructions for Development Within the RPA* and speak to the Planning Department for more information. All properties not within the RPA are in the RMA.
2. Land area to be covered by soil stockpiles		
3. Land area covered by building materials, supplies or debris that will damage vegetative cover or compact soil		
4. Area of vehicular access to construction area, including space for turning/parking vehicles, construction equipment and dumpsters		
Total area of land disturbance:		

If the total area of land disturbance is less than 2,500 ft^2 and the property is not in the RPA, then no grading plan is required. If the total area of land disturbance exceeds 2,500 ft^2 then the project will require submission and approval of a grading plan. Please see the Department of Public Works handout *Instructions for Development Within the City of Falls Church Resource Management Area (RMA)* for further information.

I hereby state that land disturbance for this project will not exceed 2,500 square feet of disturbance. In the event the disturbance does exceed 2,500 square feet at any time during construction under this building permit, I am aware that I will be subject to the requirements of sections 14-93 and 14-94 of the Falls Church City Code (including a grading plan, bond and permit) and may be subject to penalties (including a fine and civil penalty) for having violated those statutes.

Applicant's Signature: _____ _____
Date

Print Applicant's Name: _____

The City of Falls Church is committed to the letter and spirit of the Americans with Disabilities Act. This document will be made available in alternate format upon request. Call 703 248-5080, (TTY 711).

Department of Public Works
Engineering Division
300 Park Avenue Suite 100W, Falls Church, VA 22046
Phone: (703) 248-5350 Fax: (703) 248-5214

Stormwater Construction Site Inspection Report

Project Name: _____ Location: _____ Date: Click to enter date

Inspector's Name: _____ Weather Conditions: _____

Time Since Last Precipitation: _____ Precipitation Amount: _____

STAGE OF CONSTRUCTION

Pre-Construction Conference ☐ *Building Construction* ☐ *Demolition* ☐
Clearing & Grubbing ☐ *Finish Grading* ☐ *Bond Release* ☐
Rough Grading ☐ *Final Stabilization* ☐ *Other*_____ ☐

Reason for Inspection: ☐ Qualifying Rainfall Event ☐ Bi-weekly Inspection ☐ Other

Enforcement or Follow-up Action / Inspection Result:

☐ Notice to Comply ☐ Stop work Order ☐ Re-inspection ☐ N/A

Erosion and Sediment Control Measures						
Ref. No.	**BMP Installed & Operating Properly?**			**Type of BMP / Activity**	**Location and Corrective Action Needed**	**Date to complete corrective action**
	Yes	***No***	***N/A***			
1	☐	☐	☐	Temporary or permanent stabilization of exposed areas		
2	☐	☐	☐	Stabilization of stockpiles		
3	☐	☐	☐	Adequate stabilization using vegetative cover		
4	☐	☐	☐	Installation and maintenance of perimeter sediment control		
5	☐	☐	☐	Stabilization of earthen structures		
6	☐	☐	☐	Installation of sediment basins and or sediment traps		
7	☐	☐	☐	Stabilization of slopes		
8	☐	☐	☐	Installation of proper controls on new disturbed areas		
9	☐	☐	☐	Adequate catch basin inlet protection		
10	☐	☐	☐	Channel lining/outlet protection for storm water conveyance channels		
11	☐	☐	☐	Measures used to minimize impact for in-stream construction		

12	☐	☐	☐	Non-erodible material for temporary stream crossings		
13	☐	☐	☐	Re-stabilization of in-stream construction		
14	☐	☐	☐	Underground utilities being installed in accordance with applicable standards		
15	☐	☐	☐	Construction entrance/exit and prevention of offsite tracking		
16	☐	☐	☐	Dust control to prevent sediment from leaving the site		

Pollution Prevention Measures						
Ref. No.	**BMP Implemented and Maintained?**			**Type of BMP / Activity**	**Corrective Action Needed**	**Date to complete corrective action**
	Yes	**No**	**N/A**			
1	☐	☐	☐	Vehicle and equipment fueling, cleaning, storage, and maintenance areas free of spills, leaks, or any other deleterious material		
2	☐	☐	☐	Covered dumpster for trash and litter		
3	☐	☐	☐	Concrete washout clearly marked and being used		
4	☐	☐	☐	Sensitive areas (e.g., RPA, streams, mature trees) protected with barriers, flags, or similar		
5	☐	☐	☐	Additional control measures to address a TMDL		
6	☐	☐	☐	Materials with potential to impact stormwater stored under cover		

Stormwater Management Facility								
Ref. No.	**SWM Facility Under Construction?**			**Is Construction Complete?**			**Type of SWM Facility**	**Type of work being performed**
	Yes	***No***	***N/A***	***Yes***	***No***	***N/A***		
1	☐	☐	☐	☐	☐	☐		
2	☐	☐	☐	☐	☐	☐		
3	☐	☐	☐	☐	☐	☐		
4	☐	☐	☐	☐	☐	☐		
5	☐	☐	☐	☐	☐	☐		
6	☐	☐	☐	☐	☐	☐		

Stormwater Pollution Prevention Plan (SWPPP)			
Yes	***No***	***N/A***	**SWPPP Check**
☐	☐	☐	Is the SWPPP onsite?
☐	☐	☐	Does the SWPPP need to be modified?
☐	☐	☐	Has the SWPPP been modified since the last inspection? If so, note the date:

Completion Deadline: Click to insert date
Verbal / Written Notification given / faxed to:
Please use space below if needed for additional instruction:

The City of Falls Church is committed to the letter and spirit of the Americans with Disabilities Act. This document will be made available in alternate format upon request. Call 703-248-5080 (TTY 711).

APPENDIX H – BMP Database (new additions)

City of Falls Church
New BMPs in PY2

ID	PLAN	CBPO Release BMP Type	HUC6	Acres Treated	Impervious Acres Treated	Pervious Acres Treated	BMP Online Date
131	20130205 - Taco Bell	Dry Detention Ponds & Hydrodynamic Structures	Tripps Run	0.3	0.24	0.06	01-Jul-14
134	20130168 - 116 W. George Mason	Infiltration Trench	Tripps Run	0.143	0.143	0	29-Jul-14
135	20110671 - 706 W Broad	Filtering Practices	Tripps Run	0.89	0.89	0	29-Jul-14
163	20131126 - CDC	Filtering Practices	Four Mile Run	0.96	0.68	0.28	01-May-15
164	20131126 - CDC	Dry Detention Ponds & Hydrodynamic Structures	Four Mile Run	0.96	0.68	0.28	01-May-15
174	20110671 - 706 W Broad	Dry Detention Ponds & Hydrodynamic Structures	Tripps Run	0.78	0.78	0	28-Jul-14

APPENDIX I – BMP Program Update and Manual

CITY OF FALLS CHURCH

Memo

To: Jason Widstrom, P.E., MS4 Program Manager

From: Matthew Hansen, P.E., BMP Program Manager

Date: September 30, 2015

Subject: 2015 BMP Program Update

I have reviewed the results of our Best Management Practices (BMPs) Assessment Program in MS4 Permit Year 4 and prepared this summary information. This document briefly presents the findings of our ongoing BMP assessments.

Summary of Inspection Results

Inspection for this cycle included both new installations and existing BMPs

- 34 facility inspections were conducted.
- 6 new BMP installations were accepted as properly constructed
- All City and Falls Church City Public Schools (FCCPS) facilities were inspected

Maintenance Needed

BMP inspection efforts focused on FCCPS and City-owned facilities. 15 of the 34 PY2 inspections found maintenance needed. 13 of those 15 were FCCPS-operated facilities. One City facility needed maintenance and one private facility needed maintenance.

9 FCCPS-operated facilities were included in the annexation of the George Mason High School and Mary Ellen Henderson Middle School land from Fairfax County. These FCCPS facilities had outstanding maintenance issues which were unresolved according to records obtained from Fairfax County. These maintenance issues were found to be ongoing and impacting facility functionality.

Enforcement

BMP Inspection reports have been delivered to FFCPS and they have done significant work towards compliance. The City is presently awaiting reports from their maintenance contractor and will continue to pursue compliance.

New BMPs in PY-2
6 new BMPs came online during PY2. 4 facilities treating 2.11 acres drain to Tripp's Run (PL-26) and 2 facilities treat 1.92 acres draining to Four Mile Run (PL-25). The City also annexed land containing a middle and high school complex including 9 BMPs draining to Pimmit Run (PL-24).

BMP Inventory Changes
City BMP records were improved in PY2 to inventory multiple facilities on individual properties separately; several sites previously were listed once in City records but contained multiple BMPs. These factors increased the City's BMP inventory to 143 facilities in PY2, up from 106 in PY1.

PY3
Approximately 70 privately owned BMP facilities require inspection in PY3 to meet the MS4 permit requirement for inspection once every 5 years at minimum. Annual inspection of City-owned, including FCCPS, facilities is required under our MS4 permit. Next year approximately 12 City and 17 FCCPS facility inspections are required. Including anticipated new private BMP installations more than 100 inspections will occur in PY3.

Conclusion
The inspection program worked effectively in PY2 to identify maintenance deficiencies which require follow-up in PY3. PY3 will demand increased planning to effectively carry out several times more inspections than PY2. A standard series of maintenance required letters should be prepared for use

Stormwater Management (SWM) Facility Inspection Standard Operating Procedure (SOP) Manual

June 2015

DRAFT

Department of Public Works
300 Park Ave.
Suite 100 West
Falls Church, VA 22046

Prepared by

GKY &Associates,inc.

4229 Lafayette Center Drive, Suite 1850
Chantilly, Virginia 20151
703-870-7000

Table of Contents

1 Introduction 1

1.1 Overview 1

2 Public Facilities 1

2.1 MS4 General Permit Requirements 1
2.2 Responsibilities 1
2.2.1 Pre-Inspection 2
2.2.2 Inspections 2
2.2.3 Maintenance 2

3 Private Facilities 3

3.1 MS4 General Permit Requirements 3
3.2 Authority 3
3.3 Inspection Procedures & Practices 4
3.3.1 Pre-Inspection 4
3.3.2 Inspection 5
3.3.3 Reporting 5
3.3.4 Inspection Tracking 5
3.3.5 Enforcement 5

4 Inspection and Maintenance Records and Documentation 7

5 Safety 7

5.1 Introduction 7
5.2 General Safety 7
5.3 Hazardous Materials 8
5.4 Dangerous Gases 8
5.5 Physical Hazards 8
5.5.1 Removing Manhole Covers 8
5.5.2 Traffic Safety 8
5.5.3 Wildlife 9
5.6 If an Emergency Occurs 9

6 Appendices 10

DRAFT

1 INTRODUCTION

1.1 Overview

The City of Falls Church operates and regulates numerous stormwater management (SWM) facilities as part of their stormwater management program. As a result, the City has the responsibility to maintain these facilities in order to ensure that they function as designed. In addition, as the City's stormwater management infrastructure is regulated under the federal Clean Water Act (CWA) and Virginia State Water Control Law as a municipal separate storm sewer system (MS4), the City is required to implement certain procedures in order to comply with the associated regulations including the Virginia General Permit for Stormwater Discharges from Small MS4s (MS4 General Permit). This document establishes the Standard Operating Procedures (SOPs) for ensuring that the City's publically and privately owned and/or operated SWM facilities are operated and maintained in a manner compliant with the MS4 General Permit.

2 PUBLIC FACILITIES

2.1 MS4 General Permit Requirements

As the owner and/or operator of SWM facilities, the City has an obligation to ensure their proper operation. The City must do this in accordance to the following MS4 General Permit requirements (§II.5):

1. The operator [City of Falls Church] shall provide for adequate long-term operation and maintenance of its SWM facilities in accordance with written inspection and maintenance procedures included in the MS4 Program Plan.
2. The operator shall inspect these SWM facilities annually. The operator may choose to implement an alternative schedule to inspect these SWM facilities based on facility type and expected maintenance needs provided that the alternative schedule is included in the MS4 Program Plan.
3. The operator shall conduct maintenance on its SWM facilities as necessary.

The development and implementation of the SOPs contained in this document allows the City to operate a public SWM facility inspection and maintenance program that is compliant with the MS4 General Permit.

2.2 Responsibilities

The Department of Public Works (DPW) Stormwater Division is responsible for conducting inspections and maintenance on SWM facilities owned and/or operated by the City. Inspections shall be conducted annually on all facilities. However, the use of close circuit TV to conduct a more intensive inspection of underground detention facilities is only required on an as-necessary basis as determined by the DPW inspector.

DRAFT

2.2.1 Pre-Inspection

Prior to the inspection, the DPW Stormwater Division Inspector (Inspector) shall obtain a copy of the original design or as-built drawings of the SWM facility for review and use during the inspection.

2.2.2 Inspections

The Inspector shall complete the appropriate SWM Inspection Checklist listed in Table 1 for each inspection completed, to document the results of the inspection. The Inspector shall complete the appropriate portions of the SWM Inspection Checklist (Appendix). Portions of the SWM Inspection Checklist that are not applicable to the inspection should be left blank.

The Inspector shall note in the comments section when maintenance is required. When a SWM facility requires maintenance, the Inspector shall forward copies of the SWM Inspection Checklist to the City of Falls Church DPW, Stormwater System Maintenance Department (Maintenance Department). The Inspector's name and contact number must be included on the SWM Inspection Checklist so that the Maintenance Department can contact the Inspector if they have any additional questions.

Upon notification that the Maintenance Department has completed the required maintenance, the Inspector shall conduct a follow-up inspection of the SWM facility to document that the required maintenance has been completed. Documentation that the required maintenance has been completed must be made on the original inspection checklist. This shall be accomplished by initialing and dating the maintenance completion denotation beside the location where the maintenance requirement was originally noted by the Inspector.

2.2.3 Maintenance

The Maintenance Department is responsible for conducting required maintenance on most SWM facilities; however, maintenance of bioretention facilities is contracted out to landscape contractors. Upon receipt of notification that maintenance on a SWM facility is required, the Maintenance Department or landscape contractor will attempt to conduct the required maintenance within ninety (90) days. If maintenance is required to correct a safety issue (e.g., missing manhole lid), maintenance is done as soon as possible. If the required maintenance is going to take longer than ninety (90) days, the Maintenance Department shall notify the Inspector for documentation purposes.

Once the Maintenance Department has conducted the required maintenance, the Maintenance Department shall notify the Inspector so that the Inspector may document that the required maintenance has been completed. It is recommended that the notification be conducted via e-mail.

DRAFT

3 PRIVATE FACILITIES

3.1 MS4 General Permit Requirements

The City has an obligation to ensure the proper operation of privately owned and operated SWM facilities The City must do this in accordance with the following MS4 General Permit requirements (§II.5):

1. The operator shall require adequate long-term operation and maintenance by the owner of the SWM facility by requiring the owner to develop a recorded inspection schedule and maintenance agreement to the extent allowable under state or local law or other legal mechanism.
2. The operator or his designee shall implement a schedule designed to inspect all privately owned SWM facilities that discharge into the MS4 at least once every five years to document that maintenance is being conducted in such a manner to ensure long-term operation in accordance with the approved designs.
3. The operator shall utilize its legal authority for enforcement of maintenance responsibilities if maintenance is neglected by the owner. The operator may develop and implement a progressive compliance and enforcement strategy provided that the strategy is included in the MS4 Program Plan.
4. Beginning with the issuance of this state permit [MS4 General Permit], the operator may utilize strategies other than maintenance agreements such as periodic inspections, homeowner outreach and education, and other methods targeted at promoting the long-term maintenance of stormwater control measures that are designed to treat stormwater runoff solely from the individual residential lot. Within 12 months of coverage under this permit, the operator shall develop and implement these alternative strategies and include them in the MS4 Program Plan.

The development and implementation of the SOPs contained in this document allows the City to operate a private SWM facility inspection and maintenance program that is compliant with the MS4 General Permit.

3.2 Authority

The City regulates privately owned SWM facilities under Chapter 35, Article I of the City Code. Chapter 35-18 requires the owner of any component of a stormwater management system to provide adequate maintenance to ensure that the system functions as designed. In addition, §35-20.f and §35-21.e outline the process, timeline, and authority to inspect and monitor stormwater outfalls or other parts of the storm sewer system. Chapter 35-22 authorizes the City to correct any violations with written notification of non-compliance and issuance of penalties.

The City's standard Storm Water Detention and BMP Maintenance Agreement outlines the performance expectations of BMP owners and the City's role and responsibility to assess the maintenance and functionality of their facilities. Recorded agreements are filed in the Clerk's Office of the Circuit Court of Arlington County, and include reference to the Grading/Site Plan of record for the parcel. Agreements note the requirement that

DRAFT

stormwater BMPs be constructed as outlined on the plan and that "the Landowner(s) shall maintain the storm water detention and/or BMP facilities as shown in the Plan in good working order per manufacturer's specification and acceptable to the City." The Agreement also grants the City permission to enter the property in question to inspect any related facilities, whenever it deems necessary, noting that the City will notify the property owner before entering the property whenever possible.

For facilities that are not currently covered by a maintenance agreement, the City investigates the use of the health, safety, and welfare provisions of the City Zoning ordinance for authority to inspect the facility, if needed. Any City maintenance agreements that have been put to record may be retrieved from the Clerk's office of the Circuit Court of Arlington County.

3.3 Inspection Procedures & Practices

The DPW Stormwater Division is responsible for conducting inspections of SWM facilities owned and/or operated by private parties. Inspections of these privately owned SWM facilities shall be conducted at least once every five years to document that maintenance is being conducted in such a manner to ensure long-term operation in accordance with the approved designs.

3.3.1 Pre-Inspection

The first step in the inspection process is to conduct facility research to obtain valuable information for use both during and after the inspection. Pre-inspection research activities include:

- Researching the property owner of record
- Retrieval of "as built" drawings of the installed/constructed facility
- Retrieval of approved design plans if "as built' drawings of the facility are not available
- Researching and retrieving a copy of the Storm Water Detention and BMP Maintenance Agreement
- Researching any complaints that may have been generated for the facility (standing water, mosquitoes, etc.)
- Using recent GIS data to create field maps for the facility
- Retrieval of any additional information related to the facility
    - Includes any previous inspection reports, redevelopment changes to the site, cross referenced complaint history, and/or other pertinent data

Properly identifying the current owner of a private facility is a vitally important step when conducting private SWM facility inspections. Owner identification is typically confirmed through the meticulously maintained real estate tax records. The remainder of the pre-inspection research is performed to ensure the inspector's timely and efficient inspection of the correct facility. It also allows the Inspector to more easily identify the facility's original

DRAFT

design components and capabilities, identify any redevelopment changes to the site, and recognize the reoccurrence of any past concerns or deficiencies.

3.3.2 Inspection

The Inspector shall complete the appropriate SWM Inspection Checklist listed in the appendices for each inspection completed to document the results of the inspection. The Inspector shall complete the appropriate portions of the SWM Inspection Checklist. Portions of the SWM Inspection Checklist that are not applicable to the inspection should be left blank.

3.3.3 Reporting

When interacting with the owner and while drafting the inspection report, it is important to remember that this is a "point in time" visual inspection of the infrastructure; the City is not providing a warranty on the facility's future condition. To that end, all language used in the inspection report shall be as descriptive as possible without being prescriptive; this focus will ensure that any noted deficiencies are explained and directly referenced to the facility's design and function, which is more meaningful to the facility owner. For all facilities, but especially for facilities without a current maintenance agreement, the Inspector shall limit language that outlines what the owner "should" or "must" do to remedy the deficiency as this verbiage underscores the "point in time" nature of these inspections and protects the municipality, to some extent, in the event of a future facility issue or failure, regardless of the inspection findings. The inspection report sent to the owner shall include photos with captions, the maintenance agreement, and design plans (if applicable).

3.3.4 Inspection Tracking

Facility inspection results shall be tracked with care throughout the resolution of any deficiencies noted in the inspection report, both to ensure completion of proper maintenance and to prepare for any potential enforcement actions, if necessary. The City shall then monitor the owner's progress, and eventually confirm completion of the maintenance items, as needed. A successful maintenance program is supported by the City's follow-through on required maintenance items, especially when the need for enforcement actions arises. If actions are not taken to restore the SWM facility to its designed operating status, enforcement shall be evaluated. The operator shall implement the progressive compliance and enforcement strategy in accordance with the City's ordinance and outlined in Section 3.3.5 of this document.

3.3.5 Enforcement

As mentioned above, enforcement of the City's maintenance agreements is a necessary part of implementing a holistic SWM facility inspection and maintenance program. The fundamental components of enforcement include both technical criteria for enforcement and community political will. The City defines its level of service expectations for its SWM facilities via the City's Storm Water Detention and BMP Maintenance Agreement. Like

DRAFT

many other neighboring communities, a basic threshold for maintenance compliance is that a facility functions to its original design capability.

The outline for enforcement and the alternatives available to the City are noted in paragraph 4 of the City's Storm Water Detention and BMP Maintenance Agreement, which states:

> *In the event the Landowner(s) fails to maintain the storm water detention and/or BMP facilities, as shown on the Plan, in good working order per manufacturer's specification and acceptable to the City, the City may enter upon the Property and take whatever steps it deems necessary to maintain said storm water detention and BMP facilities. This provision shall not be construed to allow the City to erect any structure of a permanent nature on the land of the Landowner(s). It is expressly understood and agreed that the City is under no obligation to maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation on the City.*

Furthermore, paragraph 5 of the Agreement notes that the Landowner must reimburse the City within 10 days for any work performed or materials used, pursuant to this agreement.

The City's SWM enforcement procedures have been developed in accordance with the City's ordinance. As such, prior to the initiation of any enforcement action against an owner, the City needs to confirm it has documented and compiled data showing the following:

- The facility is either failing or has a high likelihood of failing in the near future (within the next five weeks).
- The City has provided documentation, via inspection reports, of facility deficiencies and maintenance requirements.
- The owner has ignored the City's documentation and requests for maintenance of the facility in question within the prescribed number of days allowed for response.

Oftentimes, facility owners contact the City for contractor recommendations to address deficiencies that require maintenance. While some neighboring communities provide such lists, some do not; any such lists must be clearly worded so that the listing is not intended to "endorse" one contractor over another. At this time, the City does not provide a list of maintenance contractors.

When owners do not respond as requested, the City must decide how best to enforce the provisions of its program and the associated maintenance agreements. It is important that the City's political will support any enforcement actions. It is vital that the City's Stormwater Management staff brief City council and other senior City staff on the program, its goals, its compliance thresholds, its timeframes, and any initial targets selected to begin the enforcement process. This briefing ensures that elected officials are aware of what the City's SWM program technically requires with regard to enforcement and why.

Currently, the City sends a Notice of Inspection, including the inspection report and documentation, to the facility owner (see Appendix) requesting that maintenance of noted items are corrected in a timely manner. If no response or confirmation is received that the noted maintenance work has been completed within 45 days, a 45-day standard enforcement letter (see Appendices) is sent to the facility owner advising the owner that they have 45 days to correct any facility deficiencies or the case will be reviewed for possible enforcement. If a response or confirmation is still not received within the requested 45

DRAFT

days, a 90-day standard enforcement letter (see Appendix) is sent to the facility owner, advising the owner that they have another 45 days to correct any facility deficiencies or formal enforcement may occur in accordance with the City's Ordinance.

4 INSPECTION AND MAINTENANCE RECORDS AND DOCUMENTATION

Documentation of inspection and maintenance is very important in demonstrating MS4 General Permit compliance. Copies of all inspection checklists and associated documentation must be maintained by DPW. All documentation is organized by individual SWM facility. For the purposes of this SOP, the date of the last inspection is the date of the inspection unless a follow-up site visit is required to document that maintenance has been completed. When a follow-up visit is necessary, the date of the follow-up site visit shall be used as the date of the last inspection.

Facility inspection results shall be tracked with care throughout the resolution of any deficiencies noted in the inspection report, both to ensure completion of proper maintenance and to prepare for any potential enforcement actions, if necessary. The City shall then monitor the owner's progress, and eventually confirm completion of the maintenance items, as needed. A successful maintenance program is supported by the City's follow-through on required maintenance items, especially when the need for enforcement actions arises.

5 SAFETY

5.1 Introduction

Safety procedures must be followed by all inspection staff. Specific health and safety hazards which staff may encounter include, but are not limited to, the following:

- General health and safety
- Slips, trips and falls
- Exposure to hazardous waste and materials
- Removal of manhole covers
- Exposure to traffic operations
- Exposure to reagents used in water quality testing

5.2 General Safety

Staff shall take general safety precautions during all activities. These include the following:

- Staff shall wear a City-issued safety vests at all times.

DRAFT

- Staff shall visually survey the area attempting to be accessed in order to identify all potential hazards and shall take all available efforts to minimize their exposure to those hazards.
- If exposure to an identified hazard cannot be eliminated or minimized, staff shall contact their supervisor for guidance and not enter into a hazardous situation.
- Staff must follow Occupational Safety and Health Administration (OSHA) work safety standards and other applicable guidelines.
- Staff shall direct any questions concerning safety to their supervisor.

5.3 Hazardous Materials

Staff shall avoid direct contact with hazardous materials at all times. Safety procedures and best professional judgment shall be used to minimize exposure to hazardous materials.

5.4 Dangerous Gases

Dangerous gases, including those that are harmful if inhaled or combustible, can collect in confined spaces such as culverts. Field staff is most likely to encounter these gases when removing manhole covers. Field staff need to be aware of the dangers of confined spaces and accumulating gases.

If a gas monitor is used to detect the presence of these gases when removing manhole covers or wherever the presence of combustible or harmful gases is suspected in confined spaces, follow the standard procedures for operating a gas monitor. If the gas monitor indicates that there is combustible gas within the manhole, close the manhole and back away immediately. Notify a supervisor and call 911 to report the manhole location where combustible gas is detected.

5.5 Physical Hazards

5.5.1 Removing Manhole Covers

The following safety measures shall be followed to avoid injury while opening manhole covers:

- Bend knees, not waist. Do not lift the manhole cover with your back muscles. Use leg muscles and avoid twisting.
- Wear steel-toed boots or safety shoes to protect feet.
- Do not move manhole covers with hands or fingers.
- Do not enter manholes under any circumstances. Confined space entry must only be done by properly trained and equipped persons.

5.5.2 Traffic Safety

Staff shall take extreme caution when working near moving traffic. At a minimum, staff shall:

DRAFT

- Configure all lane closures in accordance with the Virginia Work Area Protection Manual
- Mark the lane with traffic cones and/or signs to give adequate time and space for drivers to react and move around the work area.
- Wear safety vests and/or reflective clothing so that you will be visible to traffic.
- When access is required in extreme situations (e.g., busy highways, sharp turns), staff shall coordinate with their supervisor in order to request assistance from City Police and/or Fire Departments, or VDOT, to direct traffic and provide additional safety.

5.5.3 Wildlife

As part of the initial visual survey of the area and during any inspection activities, staff shall maintain an awareness of their surroundings, which includes the presence of any poisonous plants or aggressive and/or venomous animals. All available efforts shall be taken to minimize exposure to identified wildlife hazards. If exposure to an identified wildlife hazard cannot be eliminated or minimized, the staff shall contact their supervisor for guidance and not enter into a hazardous situation.

5.6 If an Emergency Occurs

Immediately notify a supervisor using the most effective available mode of communication (cell phone, etc.) if any of the following situations arise:

- Any person is seriously injured or is in immediate danger of injury or death for any reason.
- The gas monitor indicates hazardous or combustible gas.
- The team suspects or discovers any situation requiring the immediate attention of emergency response teams.

Supervisors shall call 911 and coordinate an emergency response. If contacting a supervisor first appears to pose an unacceptable risk as a result of potential response delay, staff shall call 911 directly prior to contacting their supervisor. Staff shall then move to a safe location and wait for emergency responders to arrive.

When calling 911, callers shall be prepared to provide the following information and remain on scene until emergency responders arrive (unless remaining on-scene presents a safety risk:

- The reason for calling (injury, combustible gas, etc.)
- Name of caller
- Location of caller including address and nearest cross street
- Obvious details of the emergency situation
- Any other information requested by the 911 dispatcher

DRAFT

6 APPENDICES

The appendices include the following reference documents:

- Inspection Checklist Forms as noted in Table 1
- Photo Log Worksheet
- Standard Storm Water Detention and BMP Maintenance Agreement
- Standard Private SWM Facility Notice of Inspection Letter
- 45-Day Private SWM Facility Enforcement Letter
- 90-Day Private SWM Facility Enforcement Letter

Table 1: SWM Facility Checklists

Checklist Number	Checklist Title
SWM Inspection Checklist #1	
SWM Inspection Checklist #2	
SWM Inspection Checklist #3	
SWM Inspection Checklist #4	
SWM Inspection Checklist #5	
SWM Inspection Checklist #6	

DRAFT

APPENDIX J – Street Sweeping Log

2014 FALLS CHURCH SWEEPING LOG

7/14/2014 AREA SWEPT QUADRANT SWEPT FROM GORDONS ROAD TO ANNANDALE RD

WEATHER	TRUCK #	GROSS WEIGHT	TARE WEIGHT	CUBIC YARD CAPACITY	OPERATOR	LOADS	CUBIC YARDS	TONS
SUNNY	101	24330	21770	4.5	KEVIN	3	9	5.1
	13	10030	9980	4	ZACH	2	6	1.2

7/15/2014 AREA SWEPT QUADRANT SWEPT FROM ANNANDALE RD TO UNDERWOOD ST

WEATHER	TRUCK #	GROSS WEIGHT	TARE WEIGHT	CUBIC YARD CAPACITY	OPERATOR	LOADS	CUBIC YARDS	TONS
PARTLY	101	24330	21770	4.5	KEVIN	3	9	5.1
SUNNY	13	10030	9980	4	ZACH	2	6	1.2

7/16/2014 AREA SWEPT ARTERIALS AND PARKING LOTS

WEATHER	TRUCK #	GROSS WEIGHT	TARE WEIGHT	CUBIC YARD CAPACITY	OPERATOR	LOADS	CUBIC YARDS	TONS
CLEAR	105	24330	21770	4.5	DEREK	3	9	5.1

7/17/2014 AREA SWEPT QUADRANT SWEPT FROM UNDERWOOD ST TO LITTLE FALLS ST

WEATHER	TRUCK #	GROSS WEIGHT	TARE WEIGHT	CUBIC YARD CAPACITY	OPERATOR	LOADS	CUBIC YARDS	TONS
SUNNY	101	24330	21770	4.5	KEVIN	2	6	3.4
	13	10030	9980	4	ZACH	1	3	0.6

7/18/2014 AREA SWEPT QUADRANT SWEPT FROM LITTLE FALLS STREET TO BIRCH STREET

WEATHER	TRUCK #	GROSS WEIGHT	TARE WEIGHT	CUBIC YARD CAPACITY	OPERATOR	LOADS	CUBIC YARDS	TONS
SUNNY	101	24330	21770	4.5	KEVIN	2	6	3.4
	13	10030	9980	4	ZACH	1	3	0.6

TOTALS	**19**	**57**	**25.7**

2014 FALLS CHURCH SWEEPING LOG

9/15/2014 QUADRANT SWEPT FROM GORDONS ROAD TO TIMBER LANE

AREA SWEPT

WEATHER	TRUCK #	GROSS WEIGHT	TARE WEIGHT	CUBIC YARD CAPACITY	OPERATOR	LOADS	CUBIC YARDS	TONS
SUNNY	101	21700	23220	4.5	KEVIN	5	15	8.5
	13	10440	10290	4	RAY	2	6	1.2

9/16/2014 QUADRANT SWEPT FROM TIMBER LANE TO ROOSEVELT STREET

AREA SWEPT

WEATHER	TRUCK #	GROSS WEIGHT	TARE WEIGHT	CUBIC YARD CAPACITY	OPERATOR	LOADS	CUBIC YARDS	TONS
SUNNY	101	21700	23220	4.5	KEVIN	4	12	6.8
	13	10440	10290	4	RAY	2	6	1.2

9/17/2014 ARTERIALS AND PARKING LOTS

AREA SWEPT

WEATHER	TRUCK #	GROSS WEIGHT	TARE WEIGHT	CUBIC YARD CAPACITY	OPERATOR	LOADS	CUBIC YARDS	TONS
CLEAR		21700	23220	4.5	LESTER	5	15	8.5

9/18/2014 QUADRANT SWEPT FROM ROOSEVELT STREET TO LITTLE FALLS STREET

AREA SWEPT

WEATHER	TRUCK #	GROSS WEIGHT	TARE WEIGHT	CUBIC YARD CAPACITY	OPERATOR	LOADS	CUBIC YARDS	TONS
SUNNY	101	21700	23220	4.5	KEVIN	5	15	8.5
	13	10440	10290	4	ZACH	2	6	1.2

9/19/2014

QUADRANT SWEPT FROM LITTLE FALLS STREET TO BIRCH STREET

AREA SWEPT

WEATHER	TRUCK #	GROSS WEIGHT	TARE WEIGHT	CUBIC YARD CAPACITY	OPERATOR	LOADS	CUBIC YARDS	TONS
SUNNY	101	21700	23220	4.5	KEVIN	6	18	10.2
	13	10440	10290	4	RAY	2	6	1.2
TOTALS						**33**	**99**	**47.3**

2015 FALLS CHURCH SWEEPING LOG

3/16/2015	AREA SWEPT	QUADRANT SWEPT FROM GORDONS ROAD TO TIMBER LANE						
WEATHER	TRUCK #	GROSS WEIGHT	TARE WEIGHT	CUBIC YARD CAPACITY	OPERATOR	LOADS	CUBIC YARD	TONS
SUNNY	101	26930	22010	4.5	KEVIN	5	15	8.5
	14	8860	8340	4	NANA	2	6	1.2

3/17/2015	AREA SWEPT	QUADRANT SWEPT FROM TIMBER LANE TO WASHINGTON STREET						
WEATHER	TRUCK #	GROSS WEIGHT	TARE WEIGHT	CUBIC YARD CAPACITY	OPERATOR	LOADS	CUBIC YARD	TONS
SUNNY	101	26930	22010	4.5	KEVIN	5	15	8.5
	13	8860	8340	4	NANA	2	6	1.2

3/18/2015	AREA SWEPT	ARTERIALS AND PARKING LOTS						
WEATHER	TRUCK #	GROSS WEIGHT	TARE WEIGHT	CUBIC YARD CAPACITY	OPERATOR	LOADS	CUBIC YARD	TONS
CLEAR	109	26930	22010	4.5	LESTER	12	36	20.4

3/19/2015	AREA SWEPT	QUADRANT SWEPT FROM WASHINGTON ST TO JEFERSON ST						
WEATHER	TRUCK #	GROSS WEIGHT	TARE WEIGHT	CUBIC YARD CAPACITY	OPERATOR	LOADS	CUBIC YARD	TONS
SUNNY	101	26930	22010	4.5	KEVIN	5	15	8.5
	13	8860	8340	4	NANA	2	6	1.2

3/20/2015	AREA SWEPT	QUADRANT SWEPT FROM JEFFERSON ST TO BIRCH ST						
WEATHER	TRUCK #	GROSS WEIGHT	TARE WEIGHT	CUBIC YARD CAPACITY	OPERATOR	LOADS	CUBIC YARD	TONS
SNOW/RAIN	101	26930	22010	4.5	KEVIN	5	15	8.5
	110	26930	22010	4.5	BUTCH	5	15	8.5

3/24/2015	AREA SWEPT	QUADRANT SWEPT FROM LITTLE FALLS ST TO GORDONS RD (RESWEEP NORTH SECTION OF FALLS CHURCH)						
WEATHER	TRUCK #	GROSS WEIGHT	TARE WEIGHT	CUBIC YARD CAPACITY	OPERATOR	LOADS	CUBIC YARD	TONS
CLEAR	101	26930	22010	4.5	KEVIN	5	15	8.5

TOTALS						**48**	**144**	**75**

2015 FALLS CHURCH SWEEPING LOG

4/13/2015	AREA SWEPT	QUADRANT SWEPT FROM GORDONS ST. TO S. LEE ST						
WEATHER	TRUCK #	GROSS WEIGHT	TARE WEIGHT	CUBIC YARD CAPACITY	OPERATOR	LOADS	CUBIC YARDS	TONS
SUNNY	101	25190	21620	4.5	KEVIN	5	15	8.5
	15	8980	8330	4	NANA	2	6	1.2

4/15/2015	AREA SWEPT	QUADRANT SWEPT FROM S. LEE ST TO LINDEN LANE						
WEATHER	TRUCK #	GROSS WEIGHT	TARE WEIGHT	CUBIC YARD CAPACITY	OPERATOR	LOADS	CUBIC YARDS	TONS
SUNNY	101	25190	21620	4.5	KEVIN	4	12	6.8
	14	8980	8330	4	NANA	2	6	1.2

4/15/2015	AREA SWEPT	ARTERIALS AND PARKING LOTS						
WEATHER	TRUCK #	GROSS WEIGHT	TARE WEIGHT	CUBIC YARD CAPACITY	OPERATOR	LOADS	CUBIC YARDS	TONS
CLEAR	107	25190	21620	4.5	LESTER	6	18	10.2

4/16/2015	AREA SWEPT	QUADRANT SWEPT FROM LINDEN LANE TO LITTLE FALLS STREET						
WEATHER	TRUCK #	GROSS WEIGHT	TARE WEIGHT	CUBIC YARD CAPACITY	OPERATOR	LOADS	CUBIC YARDS	TONS
SUNNY	101	25190	21620	4.5	KEVIN	5	15	8.5
	14	8980	8330	4	NANA	1	3	0.6

4/17/2015	AREA SWEPT	QUADRANT SWEPT FROM LITTLE FALLS STREET TO GORDONS STREET						
WEATHER	TRUCK #	GROSS WEIGHT	TARE WEIGHT	CUBIC YARD CAPACITY	OPERATOR	LOADS	CUBIC YARDS	TONS
	101	25190	21620	4.5	KEVIN	5	15	8.5
	14	8980	8330	4	NANA	1	3	0.6

TOTALS						**31**	**93**	**46.1**

2015 FALLS CHURCH SWEEPING LOG

6/15/2015	AREA SWEPT	QUADRANT SWEPT FROM GORDONS RD TO ANNADALE ROAD						
WEATHER	TRUCK #	GROSS WEIGHT	TARE WEIGHT	CUBIC YARD CAPACITY	OPERATOR	LOADS	CUBIC YARDS	TONS
CLOUDY	101	25690	21670	4.5	KEVIN	4	12	6.8
	15	8940	8410	4	NANA	2	6	1.2

6/16/2015	AREA SWEPT	QUADRANT SWEPT FROM ANNADALE ROAD TO SOUTH MAPLE						
WEATHER	TRUCK #	GROSS WEIGHT	TARE WEIGHT	CUBIC YARD CAPACITY	OPERATOR	LOADS	CUBIC YARDS	TONS
SUNNY	101	25690	21670	4.5	KEVIN	3	9	5.1
	15	8940	8410	4	NANA	2	6	1.2

6/17/2015	AREA SWEPT	ARTERIALS AND PARKING LOTS						
WEATHER	TRUCK #	GROSS WEIGHT	TARE WEIGHT	CUBIC YARD CAPACITY	OPERATOR	LOADS	CUBIC YARDS	TONS
RAINY	107	25690	21670	4.5	LESTER	2	6	3.4

6/18/2015	AREA SWEPT	QUADRANT SWEPT FROM NORTH MAPLE TO GORDONS ROAD						
WEATHER	TRUCK #	GROSS WEIGHT	TARE WEIGHT	CUBIC YARD CAPACITY	OPERATOR	LOADS	CUBIC YARDS	TONS
CLOUDY	101	25690	21670	4.5	KEVIN	3	9	5.1
	15	8940	8410	4	NANA	2	6	1.2

TOTALS						**18**	**54**	**24**

APPENDIX K – Training

Employee Training Schedule and Program – Final (6/2015)

Frequency	Date	Training	Internal Trainer	External Trainer	Staff
Year 1	June 2014	1. Good House Keeping	X		Public Works
Year 2	June 2015	1. Illicit Discharge Recognition and Reporting 2. Spill Response Procedures	X		Public Works, Recreation and Parks
Year 3	June 2016	1. Street, Parking and Drainage Operations and Maintenance 2. Fleet and Facility Operations	X		Public Works
Year 4	June 2017	1. Parks and Grounds Operations and Maintenance		X	Recreation and Parks and School Maintenance
Year 5	June 2018	1. Land Disturbance	X		Development Service, Public Works

Falls Church Employee Stormwater Training
Illicit Discharge Recognition and Reporting

Training Objective: Learn the procedures to prevent, detect, and eliminate illicit connections and discharges to minimize stormwater pollution.

Training Date: 6/25/15 Total Number of Employees Attending: 26

Name	Department	Job Title
Jennifer Wang	DPW	Transportation engineer
Jina S. Freiberg	DPW	Grants Administrator
Jeremy Edwards	PPW - operations	Green Space Manager
Charles Prince	DPW-operations	Sr. Greenspace Worker
Kate Walker	DPW	Forestry Intern
Eric Jones	DPW	Senior Tech
Karin Battle	DPW	Contract Manager
MATT VIVERITO	DPW	GIS
Juan Salguero	R and P.	Custodian
Matt Hansen	DPW	
Orlando Tapia	DPW	Maint Tech

Name	Department	Job Title
Darnell Pendleto	Public works	Crew Leader
MARCELO OSORIO	"	SENIOR MAINTANCE
Jonathan Kneman	Public Works	Maintenance Worker
Brandon Brown	Public Works	
Greg Mosley	Rec/Parks	M. W.
Mike Whitfield	Public Works	CM
MARK KOORNEEF	DPW	AUTO SPECIALIST
Henry Castillon	Rec/Park	M W
Paul Chatlque	Rec/Parks	M.W.
Kathy Allen	Ops	Assistant Super
Kathy Crandall	Ops	Sr Admin

Falls Church Employee Stormwater Training
Illicit Discharge Recognition and Reporting

Training Objective: Learn the procedures to prevent, detect, and eliminate illicit connections and discharges to minimize stormwater pollution.

Training Date: 6-25-2015 Total Number of Employees Attending:_____

Name	Department	Job Title
Clifton Rector	Public Works	Shop Supervisor
Matt Brown	DPW	Civil Engineering Inspector
Darnell P	DPW	Mayor
Stephane Rogers	DPW	Transp. Eng. Supervisor

Name	Department	Job Title

Falls Church Employee Stormwater Training Module 1

Illicit Discharge Recognition and Reporting

Training Objective: Learn the procedures to prevent, detect, and eliminate illicit connections and discharges to minimize stormwater pollution.

Training Date: July 30, 2015 Total Number of Employees Attending:_____

Name	Department	Job Title
Eddie Sanjines	Public Works	Maintenace worker
Joe Dowling	Public works	
Robert Goff	PW	Super
Brian Benson	PW	Equpt. Operator
Jonathan Brown	PW	Senior Maintenace W
SAM Stribling	P/W	
Greg Grayson	P/W	
Kyle KLING	DPW	ENGINEERING Inspector
LEAC Y	RW	
Richard Hodge	P/W	mechanic
Chris McGough	DPW	SW coordinator.

Name	Department	Job Title

Falls Church Employee Stormwater Training

Module 1

Minimizing Stormwater Pollution from Illicit Discharges

Prepared By:
GKY & Associates, Inc.
4229 Lafayette Center Drive, Suite 1850
Chantilly, VA 20151
(703) 870-7000
www.gky.com

Oh, No!! It's a Quiz

1. The City's storm sewer system is connected to the sanitary sewer.

   True or false.

2. It is acceptable to dump oil and antifreeze down the storm drain.

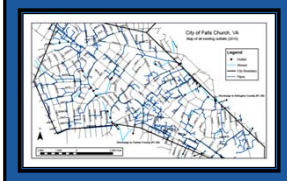
   True or false.

3. If an illicit discharge is suspected or identified, and is NOT an emergency, you should contact:
   - **A. Department of Public Works Superintendent**
   - **B. 911**
   - **C. Local Hardware Store**
   - **D. Local News Outlet**

4. Which of the following scenarios are NOT an indicator of an illicit discharge?
   - **A. Grey/discolored water, toiler paper/feces and foul odor**
   - **B. Oily sheen with petroleum/gasoline odor**
   - **C. Clear water occurring during a rain event**
   - **D. White pleasant smelling bubbles**

2

Why Are We Here Today?



- Discharges from the City's storm sewer system are regulated by the Virginia Department of Environmental Quality (DEQ) under the federal Clean Water Act.
- It is the responsibility of **all** employees to ensure that the City complies with its stormwater permit.
- A key component of ensuring compliance is to prevent, detect, and eliminate illicit connections and discharges at City facilities and throughout the City.

3

What is an Illicit Discharge?

Any discharge to a municipal separate storm sewer (MS4) that is not composed entirely of stormwater, with some exceptions as allowed by the City Ordinance.

All discharges to a municipal separate storm sewer (MS4) are released back in to the environment . They do not get treated with sanitary sewer discharges.

4

What is an Illicit Discharge?

Examples:
Used oil, grass clippings, pet waste, paint, sewage, chemicals, trash, dewatering, cleaning products and solvents, and vehicle/equipment wash water

Exceptions:
Water line flushing, irrigation/lawn watering, firefighting water, and air conditioning condensate, VA DEQ permitted discharges

5

Why do we care about illicit discharges?

- The City is required by their MS4 Permit to "develop, implement, and enforce a program to detect and eliminate illicit discharges."

- Minimize pollutant impact on downstream water bodies.
- Eliminating illicit discharges is a critical component to restoring and protecting urban waters.

6

Identifying Illicit Discharges?

Indications of potential illicit discharges include:

- Presence of flow during dry weather
- Unusual flow during wet or dry weather
  - Color
  - Odor
  - Turbidity
  - Sheen
  - Floatable liquids
  - Dead fish
  - Algae blooms

7

What Can You Do?

How can City staff help prevent illicit discharges?

- Ensure chemicals are properly managed.
- Protect storm drain inlets during activities that cause potential pollutants:
  - Concrete cutting
  - Soil disturbing activities
  - Material stockpile storage
  - Salt storage
- Identify activities that may result in illicit discharges.
- Report pollution or questionable discharges to the storm sewer system or local waterways.

8

Common Illicit Discharges

Commercial Car Washes

9

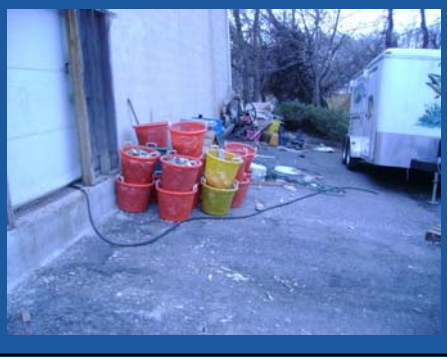
Common Illicit Discharges

Commercial/Industrial Facilities

10

Common Illicit Discharges

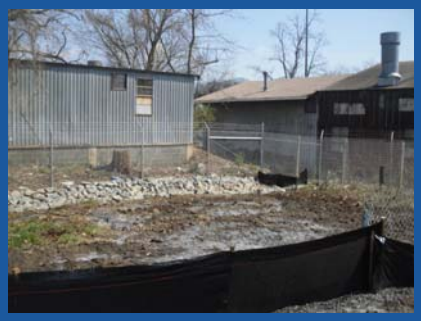
Food Establishments



11

Common Illicit Discharges

Property Yards



12

Common Illicit Discharges
Concrete Cutting

13

Common Illicit Discharges
Concrete Washout

14

Common Illicit Discharges
Illegal Dumping

15

Common Illicit Discharges
Swimming Pools

16

Effects of Illicit Discharges

17

Effects of Illicit Discharges

Effects of Illicit Discharges

Effects of Illicit Discharges

Effects of Illicit Discharges

Effects of Illicit Discharges

22

Reporting Illicit Discharges?

- If an illicit discharge and/or connection is found in the city drainage system (MS4) and/or impacting Waters of the State, notify:
  - DPW Superintendent (703-248-5013)
    - All spills and illicit discharges regardless of size or material
  - DPW Engineering - Stormwater (703-248-5350, ext. 2 (TTY 711)
    - Any discharge into the storm sewer, regardless of size or material.
  - DEQ Northern Regional Office Coordinator (703-583-3864)
    - All spills and illicit discharges that discharge, or have the potential to reasonably discharge, to receiving waters regardless of size or material
- If an illicit discharge smells and/or appears to contain petroleum and/or any other unknown/ hazardous chemical(s)
  - Call 911, DPW Operations or Engineering - Stormwater, or DEQ

23

Reporting Illicit Discharges?

- What information do I need for reporting?
  - If reported to you, contact information for informant.
  - Who discharged the material?
  - Is anyone cleaning it up?
  - What was/is being discharged?
  - How much appears to have been discharged?
  - Where is the discharge?
  - When did the material spill?
  - Photos?

24

Summary

- What is an illicit discharge?
  - Any discharge to a MS4 that is not composed entirely of stormwater (with some exceptions). Examples?
- Why do we care about illicit discharges?
  - Critical component to restoring and protecting urban waters and for MS4 compliance.
- How to identify an illicit discharge?
  - Presence of flow during dry weather or unusual flow during wet or dry weather. What are some examples of unusual flow?
- How to respond to illicit discharges?
  - Notify DPW, DEQ, and/or 911 depending on the nature of the discharge.
- How much information do I need to report an illicit discharge?
  - As many details as possible. Examples?

25

Oh, Yes!! It's another Quiz!

1. The City's storm sewer system is connected to the sanitary sewer.

   True or false.

2. It is acceptable to dump oil and antifreeze down the storm drain.

   True or false.

3. If a non-emergency illicit discharge is suspected or identified, you should contact:
   A. Department of Public Works Superintendent
   B. 911
   C. Local Hardware Store
   D. Local News Outlet

4. Which of the following scenarios are NOT an indicator of an illicit discharge?
   A. Grey/discolored water, toiler paper/feces and foul odor
   B. Oily sheen with petroleum/gasoline odor
   C. Clear water occurring during a rain event
   D. White pleasant smelling bubbles

26

Last Question

Can anyone think of an illicit discharge you have noticed inside or outside the City?

27

APPENDIX L – SWPPP Facilities (photos)

The City's new waste oil container; a need identified in the 2014 SWPPP for the City Property Yard.

The City's new hazardous materials storage shed; also a need identified in the 2014 SWPPP for the City Property Yard.