Response to Questions on the FY 2011 Budget

Request By: Supervisor Frey

Question: Please recirculate the staff prepared memorandum on the costs to do stormwater pond inspections in- house versus through a contract.

Response: Please find attached the August 14, 2008 memo to the Board of Supervisors regarding the 2009 Stormwater Work Plan which outlines the stormwater pond inspection program and the costs associated with both in-house and contracted activities.

County of Fairfax, Virginia

MEMORANDUM

DATE: AUG 14 2008

TO: Board of Supervisors

FROM: Anthony H. Griffin
County Executive

SUBJECT: 2009 Stormwater Work Plan - Board of Supervisors Environmental Committee Meeting

At the June 9, 2008, Board of Supervisors Environmental Committee (EC) Meeting, the Board directed staff to provide additional information pertaining to the 2009 Stormwater Work Plan.

Supervisor Foust requested a list of ongoing drainage projects in the Dranesville District, with an emphasis on stream restoration projects. A copy of the relevant sections of the most recent Capital Project Summary Report was forwarded under separate cover on June 17, 2008. It is noted that an updated summary report is provided quarterly to each Board member for the County's capital program. The summary is also presented on-line at: http://www.fairfaxcounty.gov/dpwes/construction/cap_quarter.htm.

Supervisor Frey asked for a report on the cost for providing in-house inspection services versus inspections by outside consultants within the Stormwater Program. Staff previously provided a presentation and answered questions at the EC meeting on September 18, 2006, pertaining to the use of in-house resources versus consultants. However, that presentation was primarily based on overall project management functions rather than a specific focus on inspection services. Below is more detailed information pertaining to the stormwater inspections.

Within the stormwater program, inspection services are required for both the storm drainage conveyance infrastructure (pipes, structures, channels, etc.) and the stormwater management facilities (detention ponds, rain gardens, etc.). County inspection services are primarily in support of two separate regulations:

1. Municipal Separate Storm Sewer System (MS-4) Discharge Permit – This permit allows Fairfax County to discharge stormwater into the Commonwealth's waterways. The most recent MS-4 permit expired in January 2007 and the County is currently operating under a permit extension. A new permit is under negotiation and is expected this calendar year. The current MS-4 extension and new permit language both contain requirements for storm drainage conveyance and stormwater management facilities inspections and maintenance activities.

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2. Governmental Accounting Standards Board (GASB) approved *Statement No. 34: Basic Financial Statements – and Management's Discussion and Analysis –for State and Local Governments* (GASB-34) in June 1999 required state and local governments to track and update the value of their assets, including storm drainage conveyance and stormwater management facilities. GASB is one of the tools used for judging the financial health of a jurisdiction. In support of this activity, the County's inspection programs are designed to effectively track County stormwater assets and target maintenance and rehabilitation in an effort to preserve the value of these assets.

Following is a more detailed discussion of the inspection programs for the storm drain conveyance infrastructure and the stormwater management facilities:

Storm Drainage Conveyance Infrastructure – The conveyance infrastructure consists of approximately 1,450 miles of storm pipe, 41,000 structures, and other related conveyance appurtenances.

- Routine Inspections (prior to receipt of the dedicated penny on the real estate tax rate for stormwater) – A surface walk of the entire inventory (walking on the ground above the pipe) was conducted, by in-house staff, on a five-year cycle. This inspection allowed for identification and capture of some new inventory, major changes to the inventory, and identification of certain types of catastrophic failures after they have occurred (e.g. pipe collapses, severe blockages, etc.). Since the underground pipes were not visible from a surface walk, the actual condition of the infrastructure was not assessed. Thus, pipe rehabilitation requirements were not evaluated and potential failures remained unseen. In addition, as the inventory steadily increased and staffing remained constant, the level and quality of inspection continued to recede.

- Advanced Inspection Pilot Program (upon receipt of the dedicated penny on the real estate tax rate for stormwater) - Advanced inspection services were initiated via contract to include an assessment of the underground system. Given the extended age of much of the County's infrastructure, the initial goal was to complete the conditional assessment within a 20-year cycle, and it was assumed that the reinvestment cycle would be on an approximate 75-year cycle. The use of various high resolution zoom camera and/or closed circuit television (CCTV) technologies provides an opportunity for the County to identify deficiencies and rehabilitation needs, prior to system failure, and initiate corrective actions that will extend the life of the asset at a reduced cost. It should also be noted the new MS-4 draft permit language requires additional data capture pertaining to our infrastructure, such as drainage acreage to points of discharge, land use, waterbody impairments, and information concerning interconnectivity with infrastructure from other jurisdictions (e.g. Virginia data is now being collected and verified as part of the advanced inspection program; however, we have only completed about 5% of the system).

Accomplishments from the Advanced Inspection Program:

- A customized inspection software program was developed, along with screening and assessment criteria, life cycle and capital cost data, basis of rehabilitation decision matrices, permit guidelines, etc.
- Over 13,000 notification letters were prepared.
- 70 miles of pipe, five miles of channels, and 4,600 structures were assessed, photographed, and electronically documented for future inclusion in an asset management system.
- Over two miles of pipe (3% of the pipes inspected) were completely blocked and non-functional. These pipes were cleaned and returned to functional status. Another 30 miles of pipe (43% of pipes inspected) were found to be partially blocked with debris. They were also cleaned and returned to fully functional status.
- Design was completed for rehabilitation of 33 site specific, larger scale maintenance projects, and repair of an additional 18,000 feet of pipe, 10,000 feet of channel, and 370 appurtenant structures within the 70 mile inspection area.
- Test and Seal, Cast in Place Liner, Masonry, and Open Cut contracts are all underway to implement the designed projects. These contracts require construction management oversight for implementing 60 construction task orders with a total construction value exceeding $4.0 million.

Learnings from the Advanced Inspection Program:

- Within the inspection area, 5% of the system is in failure and another 10% requires repair to extend the service life (exclusive of the cleaning requirements noted above). Most of the remainder of the County's concrete pipe conveyance system is in fair condition.
- The County's corrugated metal pipe conveyance system is in poor or failing condition.
- Pipe outfalls are in much worse shape than inlet structures.
- Assets in tidal areas are subject to the greatest blockage potential.
- The oldest assets in the County are not necessarily the ones in the worst condition.
- An approximate 10% savings on inspections may be realized by pre-inspecting (triage) all pipes with zoom cameras prior to utilizing CCTV technology. Repair work is more

complex than anticipated and requires multiple subcontractors due to the varied types of deficiencies found within the system.

- A higher level of skill is required to implement the advanced program at both the professional and para-professional level than the routine inspection program due to technology demands, assessment protocols, complex public interaction requirements, etc.

- The Advanced Inspection Program included the development of a baseline for future asset management activities and rehabilitation prioritization.

Annual Inspector Cost by Program (excluding equipment and materials)

- Routine Inspections: The 5-year field walk is conducted by four County inspectors (three Engineer Technician I positions, and one Senior Maintenance Supervisor position) with average unburdened salaries of $43,000 and $54,000 per year, respectively. This equates to a direct average cost of $47,550 per employee per year, excluding equipment, materials, vehicle costs, etc. and represents four staff year equivalents (SYEs) per year. Please note that the County calculates a partial burden rate that includes fringe labor and leave (32.7%), resulting in an average cost of $63,099 per employee per year. This is not a fully burdened rate.

- Advanced Inspection Program: The 20-year zoom camera and CCTV inspections were performed by teams of contract inspectors with an average unburdened salary of approximately $54,500 per employee per year. Seven SYE's performed this work over a two year period, averaging 3.5 SYE's annually. Unlike in-house staff calculations noted above, contracts with outside vendors include fully burdened rates. These rates are based on approved Federal Acquisition Regulation compliant audits by the federal government, or reviews by County auditors. Unlike the County's partial burden rate, consultants recoup allowable costs for business expenses such as indirect labor, office and field rental space, utilities, FICA, Federal and State Taxes, licensing, computer usage, depreciation, insurance, etc. The final compensation factor paid to outside vendors is typically in the 2.6 to 3.0 range. As a result, the final cost to the County for each contract SYE is approximately $163,500

Stormwater Management Facilities (SWM) - The Stormwater Management Facility inventory now consists of approximately 1,300 facilities requiring public inspection and public maintenance, and 2,800 facilities requiring public inspection and private maintenance, for a total of 4,100 facilities.

- Routine Inspections (prior to the dedicated penny) – Based on the 2005 inventory, all 1,200 facilities requiring public inspection and maintenance were inspected annually, by in-house staff, on a one-year cycle. The 2,300 private facilities were inspected on a five year cycle. Similar to the routine storm drainage conveyance inspections, these

stormwater management inspections also allowed for identification of certain types of catastrophic failures (pipe collapses), as well as some functional deficiencies (severe blockages). However, full conditional assessments could not be completed. In addition, inventory growth coupled with static staffing levels, resulted in an overall decrease in quality inspections over time and minimal opportunity to follow-up with private owners after providing them the results of our inspection.

- Advanced Inspection Program (upon receipt of the penny) – Advanced inspection services were initiated via contract to include: 1.) a more thorough dam assessment, 2.) identification of repairs required for deficient, but not yet failing stormwater facilities, 3.) identification and inspection of stormwater facilities that were undocumented (e.g., not in the official County inventory, but still likely regulated under MS-4), and 4.) enhanced follow-up, including providing limited technical assistance, and enforcement of deficiencies identified for privately maintained SWM facilities. Since contract inspectors were provided, available in-house inspectors' responsibilities were shifted to coordinating, managing, and implementing the maintenance repair work identified for the County's SWM facilities

Accomplishments from the Advanced Inspection Program:

- In order to correct deficiencies and prevent further degradation and/or catastrophic failure, over 790 needed maintenance work orders have been written and 693 have been completed to date. Of these, 18 major sediment removal projects were completed in order to prevent dam failure and restore detention capacity, 10 of which also included a retrofit of the facility.

- Over 800 "undocumented" Geographic Information System features or suspected stormwater facilities have been identified and clarified and are now included in the inventory as intended under the MS-4 permit. Since no maintenance has ever been performed, many of the newly identified facilities have safety issues that are now being quantified for corrective action.

- 6 significant dam failures were identified and are being addressed

- 102 public facilities have been added to inventory

- 488 private facilities have been added to inventory.

- 2,570 public inspections have been performed.

- 1,143 private SWM inspections have been performed with enhanced owner coordination, follow-up, and improved enforcement.

- County and regional (via partnerships with Northern Virginia Regional Commission) outreach efforts have been enhanced through development of workshops and printed materials geared toward private owners.

Learnings from the Advanced Inspection Program:

- Shifting the inspection staffing to contract services enables in-house staff to focus on writing maintenance work orders, coordinating with land owners, and implementing construction projects. It is not practical to shift the scoping and management of maintenance work to contractors.

- Managing sediment loadings in stormwater facilities results in enhanced performance and minimizes potential damage to emergency spillways.

- There is a significant volume of needed repair work such as pipe relining, cave-in repairs, debris removal, and replacement of trash racks and best management practice plates to ensure functionality and extend the life of the facility, avoiding costly dam failure repairs/replacements.

- Without thorough interaction between the County and private stormwater facility owners, most of the private system (which represent 68% of all stormwater facilities in Fairfax County) will fall into disrepair and become non-functional.

Annual Inspector Cost by Program (excluding equipment and materials)

- Routine Inspections: The public and private SWM inspections were conducted by four County inspectors (two Engineer Technician III positions and two Limited Term Technician positions) with average unburdened salaries of $50,500 per year, excluding equipment, materials, vehicle costs, etc. and represent four staff year equivalents (SYEs) per year. As previously noted, the County calculates a partial burden rate that includes fringe labor and leave (32.7%), resulting in an average cost of $67,014 per employee per year for the two full time positions and $50,500 per year for the two limited term positions.

- Advanced Inspection Program: The public and private SWM inspections were performed by teams of two contract inspectors with an average unburdened salary of approximately $57,100 per employee per year. Typically five SYE's have performed this inspection work annually. As previously noted, the consultants recoup fully burdened costs and profit with a final compensation factor in the range of 2.6 to 3.0. As a result, the final cost to the County for each contract SYE is approximately $151,637.

In both inspection programs, the cost contract inspectors appears significantly higher than utilizing county staff to complete the program. However, there are several other factors that

make an even comparison difficult to perform. First, as mentioned above, the County rate for staff is only partially burdened. In addition, if this contracted work were to be performed by in-house staff, additional vehicles and adequate office space to operate out of would be required. At this time there is not adequate space at the West Drive maintenance facility, or the government center to house inspectors should this work be done completely by in-house staff. In addition, remotely locating additional inspections staff would significantly decrease the unit's effectiveness. Secondly, the County continues to have difficulty recruiting staff with the necessary technical background. Even if additional positions were granted, it could take considerable time to recruit staff with the appropriate skills, and because of permit requirements, we would have to continue the contracting for a period of time. A final factor difficult to quantify is the amount of supervision required to train new staff, quality control the work, and manage contract maintenance work.

At this time, the use of contract services have enabled us to initiate the Advanced Storm Drainage Conveyance Inspection program and to enhance the Stormwater Management Facilities Inspection program in accordance with tighter permit conditions, by utilizing professional engineering firms with specialized inspections skills. As reported above, we have been taking notes of our learning's and adjusting the programs as we continue to move forward. We believe with the continually changing permit conditions and the rapidly developing stormwater requirements, flexibility in using a balance of contractors and staff has a benefit at this time.

If additional information is required, please advise.

cc: Robert A. Stalzer, Deputy County Executive
Jimmie D. Jenkins, Director, Department of Public Works and Environmental Services