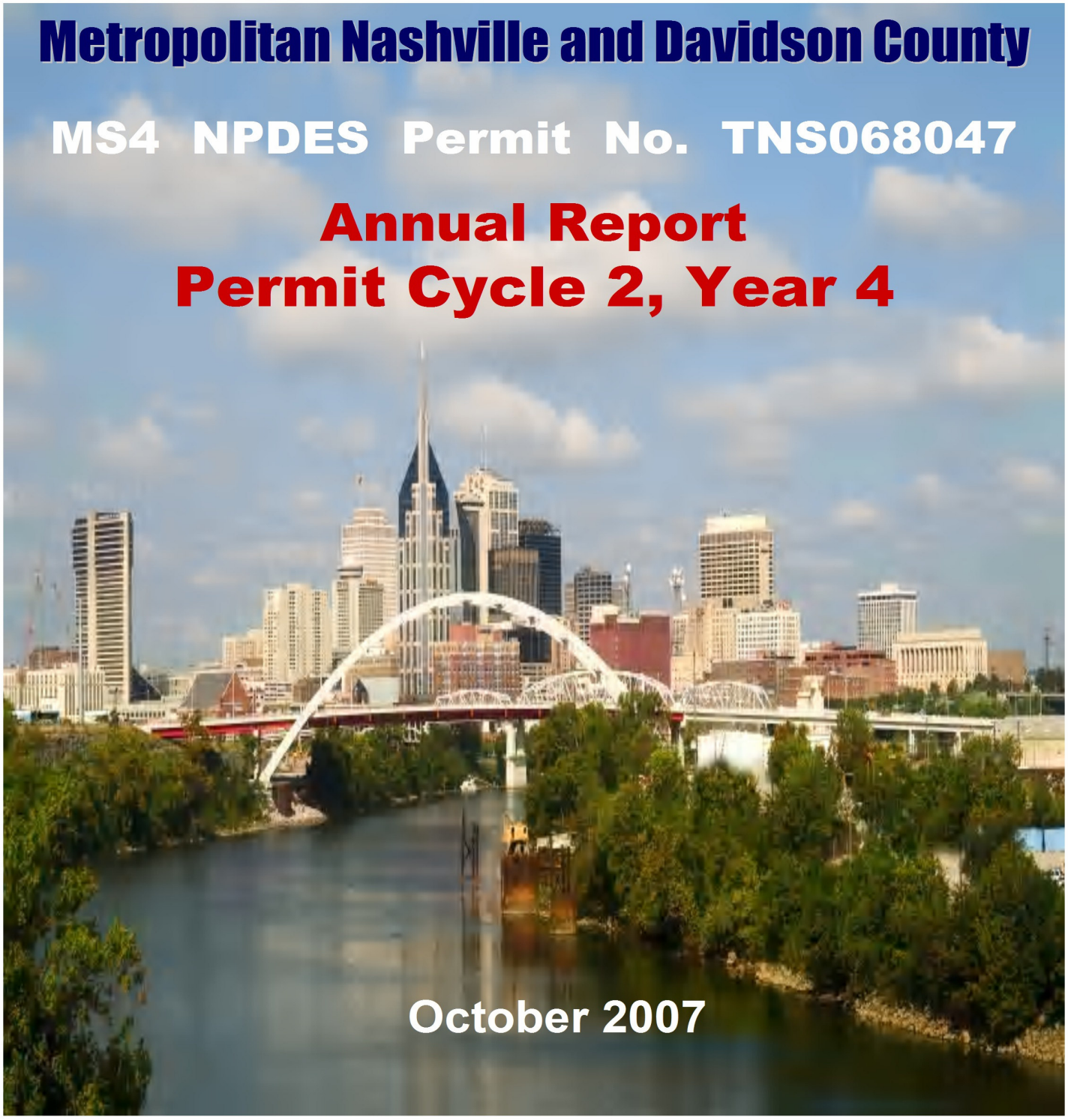
Metropolitan Nashville and Davidson County

MS4 NPDES Permit No. TNS068047

Annual Report
Permit Cycle 2, Year 4



October 2007

METRO WATER SERVICES

Pure Nashville
... right as rain.

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1.0 Contact List

The following table lists the people who contributed to and are responsible for the data collection and/or preparation of the annual report.

Table 1.1 Contact List (as of 9/15/07)

Name	Agency	Position	Phone
Billy Lynch	Department of Public Works	Director of Public Works	615-862-8706
Mark Macy	Department of Public Works	Assistant Director - Engineering Division	615-862-8764
David Himes	Department of Public Works	Assistant Director - Operations Division	615-862-8755
Jenna Smith-Sexter	Department of Public Works	Solid Waste Division	615-862-8705
Clayton Hand	Department of Public Works	Engineer, Public Works Solid Waste Division	615-862-8623
Mike Ryman	Department of Public Works	Technician Specialist Public Works Hazardous Materials Spill Response	615-862-8765
Scott Potter	Metro Water Services	Director	615-862-4505
Sonia Harvat	Metro Water Services	Public Information Officer	615-862-4494
Charles Boddie	Metro Water Services	Training Coordinator	615-862-8744
Tom Palko	Metro Water Services	Assistant Director, Stormwater Division	615-862-4510
Ricky Swift	Metro Water Services	Engineer/Manager, Stormwater Remedial Maintenance Division	615-862-4784
Paula Kee	Metro Water Services	Engineer, Stormwater Plan Review Section	615-880-2334
Steve Mishu	Metro Water Services	Engineer, Stormwater Plan Review Section	615-862-4780
Jennifer Knauf	Metro Water Services	Engineer, Stormwater Plan Review Section	615-862-4793
Gong-Yu Hsu	Metro Water Services	Engineer, Stormwater Plan Review Section	615-862-4518
Brian Halford	Metro Water Services	Engineer, Stormwater Plan Review Section	615-862-4582
Angela Foster	Metro Water Services	Engineer, Stormwater Plan Review Section	615-862-4495
Denny Bone	Metro Water Services	Administration Service Manager, Stormwater Maintenance Division	615-862-4537
Michael Hunt	Metro Water Services	System Services Manager, Stormwater NPDES Department	615-880-2420
Bonnye Holt	Metro Water Services	Office Support Representative, Stormwater NPDES Department	615-880-2420
Dale Binder	Metro Water Services	Construction Inspection Manager , Stormwater NPDES Department	615-880-2420
Harold Bryant	Metro Water Services	Construction Site Inspector, Stormwater NPDES Department	615-880-2420
Shawn Herman	Metro Water Services	Construction Site Inspector, Stormwater NPDES Department	615-880-2420
Tim Mathis	Metro Water Services	Construction Site Inspector, Stormwater NPDES Department	615-880-2420
Katherine O'Hara	Metro Water Services	Construction Site Inspector, Stormwater NPDES Department	615-880-2420
Denice Johns	Metro Water Services	Construction Site Inspector, Stormwater NPDES Department	615-880-2420
Thomas Mauck	Metro Water Services	Construction Site Inspector, Stormwater NPDES Department	615-880-2420
Steve Winesett	Metro Water Services	Watershed Manager, Stormwater NPDES Department	615-880-2420
Megan Sitzler	Metro Water Services	Water Quality Inspector, Stormwater NPDES Department	615-880-2420
Michelle Barbero	Metro Water Services	Water Quality Inspector, Stormwater NPDES Department	615-880-2420
Rebecca Dohn	Metro Water Services	Water Quality Inspector, Stormwater NPDES Department	615-880-2420
Kimberly Moore	Metro Water Services	Water Quality Inspector, Stormwater NPDES Department	615-880-2420
Mary Garmon	Metro Water Services	Water Quality Inspector, Stormwater NPDES Department	615-880-2420
Mike Seremet	Metro Water Services	Water Quality Inspector, Stormwater NPDES Department	615-880-2420
Anna Kuoppanmaki	Metro Water Services	GIS Analyst, Stormwater NPDES Department	615-880-2420

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2.0 Stormwater Management Plan (SWMP) Evaluation

2.1 Objective of the Program

The objective of the SWMP is to maintain or improve the quality of Davidson County water resources and "Waters of the State of Tennessee" to the Maximum Extent Practicable (MEP). This leads to an overall goal of achieving water quality improvements in every Davidson County stream reach included on the Tennessee Division of Environment and Conservation's (TDEC) 303(d) impaired streams list, whereby, each stream can be successfully removed from this list. To accomplish this overall goal, several smaller goals were established in the first permit cycle (1996 – 2001) as a basis for developing a variety of stormwater management programs that address specific issues. The following is a list of refined goals established to facilitate ongoing management program improvements and implementation:

A. Emphasize public education, awareness, and reporting as the primary non-structural Best Management Practice (BMP).

B. Minimize construction-related water quality impacts through developer and engineer education, continued improvement of the plans review process, and construction site inspections and monitoring.

C. Minimize long-term water quality impacts through effective, fair, equitable, and feasible site-design requirements and guidance.

D. Implement an effective, fair, equitable, and feasible enforcement program that reduces water quality impacts from accidental and/or intentional discharge of pollutants into the municipal separate storm sewer system (MS4).

E. Gain a greater knowledge of water quality problems within Metro to be used as a decision-making tool in the Capital Improvement Program (CIP).

F. Base programs on current stormwater management theory and practices.

G. Prioritize efforts to solve the worst problems first.

H. Identify problems that can be corrected with reasonable effort and fiscal commitment.

I. Establish and implement the financial, organizational, and legal foundations to support other program goals.

J. Goals, as developed in the permit application process, resulted in the following program elements being used to achieve the objectives of the SWMP:
    1. Structural Stormwater Controls and Collection Systems;
    2. New Development and Significant Redevelopment;
    3. Roadways;
    4. Landfills and Other Waste Treatment, Storage, or Disposal Facilities;
    5. Pesticides, Herbicides, Fertilizers, Oils, and Other Toxic Materials;
    6. Illicit Discharges and Improper Disposal;
    7. Industrial and High Risk Runoff;
    8. Construction Site Runoff;
    9. Habitat Improvement;
    10. Monitoring;
    11. Public Information and Education (PI&E); and
    12. Reporting.

2.2 Major Findings

As MWS has continued to implement the stormwater program, fewer new major impacts to the MS4 have been discovered. However, the following paragraphs describe some of the more notable findings impacting water quality of Davidson County streams.

2.2.1 Illicit Discharge

While performing a sign-off inspection on an oil changing facility, NPDES noted oil that had been discharged from the outfall of the oil water separator unit. The unit was filled with approximately 30 gallons of FOG (Fats, Oil, Grease). A Notice of Violation (NOV) was sent to management of the facility directing the oil water separator be cleaned/pumped. A follow-up inspection indicated the stormwater interceptor had not been cleaned out resulting in substantial additional grease discharged to the channel beyond the outfall. Furthermore, a employee was noted pressure washing vehicles and engines onto the pavement and into the storm drain. Residual material from the washing could also be observed at the outfall. There was also evidence of a substantial amount of sediment that had been washed into the stormdrain. These actions constituted a subpoena for Environmental Court, but Kar management made a commitment to bring the site into compliance immediately. NPDES conducted a final inspection and found the stormwater interceptor being pumped and all the sediment being removed. The rip-rap was also removed and replaced. The oil water separator was pressure washed on the inside and approximately one foot of sediment was removed from unit along with all the FOG and physical debris. The site achieved compliance, thus foregoing the option of Environmental Court.

Figure 2.2.1.1 Photos of the Illicit Discharge

Figure 2.2.1.1 Photos of the Illicit Discharge Brought Into Compliance

2.2.2 Industrial Illicit Discharge

As part of a stormwater internal audit, personnel from the United States Environmental Protection Agency (EPA), Tennessee Department of Environment and Conservation Divison of Water Pollution Control (TDEC-WPC), and NPDES Stormwater Conducted a Compliance Evaluation Inspection at an asphalt facility to ensure compliance under current permit requirements. There were major stormwater deficiencies observed during the inspection of the facility.

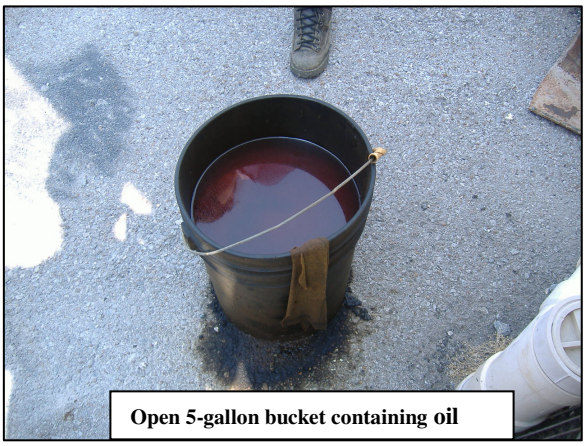
(1) Upon review of the records, it was noted that several reporting requirements of the Storm Water Pollution Prevention Plan (SWPPP) were not being adhered to. Best Management Practices (BMP) were not in place to adequately treat the facility's stormwater runoff. A large portion of the facility was draining through the southwest corner of the property. The stormwater drainage flows down an old paved roadway into a ditch that routes directly to the Cumberland River. NPDES and TDEC-WPC staff traced limestone staining (evidence of polluted stormwater runoff) all the way to the Cumberland River. **(2)** There were copious amounts of raw materials being stored in the open and exposed to stormwater. The limestone aggregate being stored under the covered area had been stockpiled to the point that material had overtopped the retaining walls and was washing off-site. **(3)** There was one large tank (in excess of 20,000 gallons) located along the south border of the property that had ruptured and was leaking a liquid asphalt material. It was apparent that the tank had been leaking for a while as the viscous material had drained off the property. **(4)** There were several unlabeled 50 gallon drums being stored outside along the east boundary of the property. All of the drums were capped, however, there was no secondary containment for leaks or spills and one of the drums contained an oily/greasy residue on the top of the drum that would runoff during a rain event. **(5)** Two water discharges were observed on the site despite the occurrence of dry weather conditions. The sources of the discharges appeared to be non-stormwater as evidence of equipment washing was observed. Discharge of non-stormwater (rinse water) from the facility is a violation under the site's TMSP. **(6)** Poor site housekeeping measures were noted. Oil was observed leaking from an in-loader parked near the scale house and there was no effort being undertaken to clean up the spill. No spill kits were observed during the inspection that could be used to clean spills of this type. There was an approximate 3,000 gallon waste oil tank located near the shop that was currently being leased out. Although this tank had secondary containment, the release valve was left open, which defeated its purpose and could allow material to escape during storm events. The secondary containment berm around the silos was cracked and allowing material to escape. Also, a dumpster located in the southeast corner of the facility was unplugged and was allowing the contents to drain out onto the parking lot.

A notification letter from NPDES to the asphalt facility required these deficient areas to be corrected immediately so as to prevent future stormwater contamination. In addition, TDEC-WPC issued a NOV to the

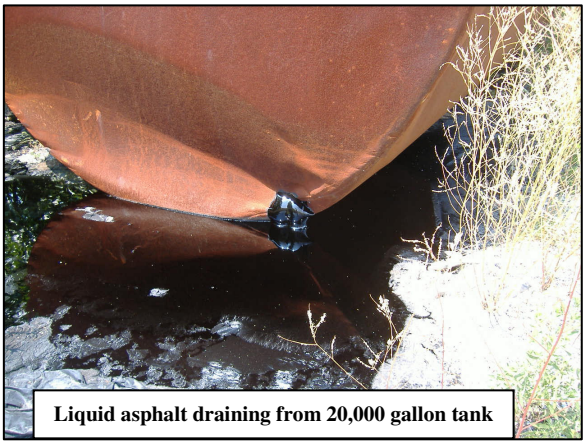
facility for corrective action. The facility proved to be a good environmental steward and corrected all deficiencies.

Figure 2.2.2.1 Photos of the Industrial Illicit Discharge (Compliance Evaluation Inspection)

Oil staining on the parking lot



Open 5-gallon bucket containing oil



Liquid asphalt draining from 20,000 gallon tank

Limestone staining traced to the Cumberland River

Unlabeled drums stored outside

Cracked secondary containment around the silo bins

2.2.3 Construction Illicit Discharge

An NPDES routine inspection of a subdivision under development indicated a tremendous loss of sediment into Mill Creek while grading. Local, state, and federal regulatory agencies were involved and particularly concerned with the endangerment of crayfish in the Mill Creek habitat. A Notice of Violation (NOV) and administrative penalty were issued to the grading permitted site requiring them to bring the site into compliance. The development site completed the required work and NPDES staff continues to conduct routine inspections of the site and Mill Creek. Figures 2.2.3.1 and 2.2.3.2 are photos of the illicit discharge and the site after being brought back into compliance.

Figure 2.2.3.1 Photos of the Construction Illicit Discharge

Figure 2.2.3.2 Photo of the Site Brought Into Compliance

2.3 Major Accomplishments

MWS has continued to facilitate major accomplishments during the fourth permit year of the second permit cycle. These accomplishments include:

1. Metro Water Services (MWS) successfully completed a Municipal Separate Storm Sewer System (MS4) audit conducted by the USEPA, Region 4 and TDEC-WPC, for the Nashville/Davidson County NPDES MS4 permit. Positive feedback and recommendations were received from the USEPA, Region 4 personnel on MWS implementation of the components of the Stormwater Management program as required in the MS4 Permit (TNS068047) issued by TDEC-WPC. The USEPAs evaluation and findings as they relate to requirements under Nashville's Permit Conditions and Storm Water Management Program (SWMP) were based on the following elements: Structural Storm Water Controls and Collection Systems; New Development and Significant Redevelopment Program Management; Roadways; Landfills and Other Waste Treatment, Storage, or Disposal Facilities; Pesticides, Herbicides, Fertilizers, Oil, and Other Toxic Materials; Illicit Discharges and Improper Disposal (IDID); Industrial and High Risk Runoff; Construction Site Runoff; Habitat Improvement; Public Information and Education; Monitoring Requirements; SWMP Resources and Fiscal Analysis.

2. The new and revised regulations reflect technological advances and promote both low-impact development and better design practices on new development and significant re-development. MWS continues to identify other necessary updates to the Manual as ever-changing issues arise to further improve and promote its commitment.

3. In permit year 4, the NPDES section has continued to provide better inspection and enforcement for water quality issues after reorganization (during permit year 3) into two sections: "construction site compliance" and "water quality compliance". The construction site inspection staff inspects for erosion prevention & sediment control measures and infrastructure installation on all grading permitted sites within Metro's jurisdiction. The construction site inspectors also investigate complaints concerning construction issues of non-permitted sites. The water quality staff performs a number of various non-construction water quality investigations, such as industrial inspection, field screening, illicit discharge investigations, and watershed management.

4. Increase in staff levels and reorganization (during permit year 3) by the NPDES section has allowed one NPDES inspector to be dedicated to post-construction BMP inspection and enforcement in permit year 4. This inspector has been able to devote significant time to enhancing the BMP inspection program so as to verify that post-construction BMPs are being adequately maintained. In addition,

increased staff for the watershed management component has allowed a TMDL monitoring program to be implemented.

5. NPDES has begun a better process for collection of outstanding penalties related to grading/construction without a permit, stream/buffer disturbances, illicit discharges, no final sign off (U & O), etc. With approval from the MWS Accounting Department, NPDES has been able to contract with a collection agency to handle the volume of delinquent penalties needing attention.

6. During permit year 4, the Metro Water Services introduced the "Adopt a Stream" program to promote public education, public outreach, and citizen involvement. The program provides an opportunity for local businesses, watershed associations, civic groups, churches, schools, etc. to volunteer in protecting and enhancing the watershed in which they live. By volunteering to Adopt-A-Stream, each group agrees to at least one cleanup per year of their adopted stream (for a minimum of two years) and to stencil storm drains leading to the section of the adopted stream or creek. Each group is provided a custom sign featuring the adopted watershed and organization.

7. The Stormwater Division celebrated its five year anniversary of being moved from the Public Works Department to Metro Water Services. The Stormwater Divison includes five sections: Engineering, NPDES (Water Quality), Remedial Maintenance, Master Planning and Routine Maintenance. Each section has made significant contributions to the growth of the division and positive impacts to development and construction in Nashville/Davidson. Much has been accomplished in five years, and even more is anticipated by 2012, the end of the Permit Cycle Term 3. Note: The Master Planning section duties are currently being performed within the Engineering section.

8. NPDES received approval of wet weather monitoring sample site permit modification from TDEC-WPC. This will provide the qualified sampling events needed annually and will ensure permit compliance. The data collected by monitoring these streams will directly contribute to improving water quality and complying with TMDL requirements.

9. NPDES formulated a Stormwater Pollution Prevention Plan (SWPPP) for the Tennessee Fairgrounds. The SWPPP documents procedures are to be followed by the Fairgrounds for all events that are heldon the grounds. The goal is to improve water quality by reducing the amount of pollutants that could impact Brown's Creek.

10. Metro received a national award, Green Roof Awards of Excellence, for the green roof constructed at the new Metro-Davidson County Courthouse, Nashville Public Square.

Figure 2.3.1 Award Received for Green Roof

2.4 Enforcement Documentation

Enforcement documentation is an important component in the SWMP. MWS has a comprehensive enforcement program that includes the issuance of Notices of Violation (NOVs), Stop Work Orders (SWOs), and administrative penalties. MWS also reserves the right to subpoena noncompliant sites to environmental court if NOVs and SWOs fail to bring a site into compliance or are not appropriate for a particular situation. In permit year 4, NPDES has been able to resolve outstanding administrative penalties through a contracted collection agency. Delinquent account data is transferred to the agency for collection to begin. A first notice/validation letter is then generated and mailed to every responsible party (debtor). As the penalties are collected and processed, the revenues are disbursed to NPDES minus 18% of each penalty. This process has been quite effective in handling the volume of delinquent penalties. Refer to Section 4.2 of this document for a detailed breakdown of documented enforcement statistics since the program's conception.

2.5 Overall Program Strengths

Understanding the strengths and weaknesses of a program is necessary in maintaining a successful SWMP. When strengths and weaknesses are identified, strong points can be featured as the program foundation and weaknesses can be addressed and improved upon each permit year.

One obvious strength of Metro's NPDES Program is the ongoing commitment from the Mayor and MWS officials to meet the requirements of the MS4 permit and improve Metro stormwater resources and waterways for future generations. This is demonstrated by MWS' efforts to make the NPDES program activities known throughout Metro. This continues to result in cross-departmental cooperation in the protection and improvement of stormwater quality. Interdepartmental communication within Metro concerning stormwater issues has increased each year of the NPDES Program's existence.

The commitment from the Mayor and officials of MWS has been further exemplified by the continued support of appropriate staffing levels to oversee development in the Metro area. At the start of permit year 4, staffing levels for the stormwater Plan Review Section totaled 11 individuals, the stormwater NPDES section totaled 16 individuals, and the stormwater maintenance section totaled 43 individuals. Despite staffing increases during the last few years, individual workloads have also increased. MWS staff works to provide quality service in a timely manner and continues to adopt priorities that ensure the most important stormwater concerns and all permit requirements are being addressed first. In addition, MWS staff has pursues many training opportunities to keep up with growing technological advances; over the past permit year, MWS staff have attended several training seminars or workshops. Table 2.5.1 presents some of the training sessions that the NPDES staff has attended.

Table 2.5.1 MWS Staff Training

Training Session Names	Staff Attended	Training Date
JenHill - LID/ Green Building Seminar	Kimberly Moore	July 18, 2006
TDEC Level 1 Erosion Prevention and Sediment Control	Phil Saad	September 21, 2006
CRC – Stormwater Seminar	Kimberly Moore	September 27, 2006
Filtrexx Bank Stabilization Demo	Rebecca Dohn, Kimberly Moore	November 2, 2006
Bioretention & Rain Garden Workshop	Rebecca Dohn, Kimberly Moore	November 30–December 1, 2006
BMP Conference	Rebecca Dohn	February 16, 2007
AWRA Conference	Michael Hunt	April 19-21, 2007
HAZWOPER Operation Spill Response	Michelle Barbero, Dale Binder, Harold Bryant, Rebecca Dohn, Mary Garmon, Shawn Herman, Michael Hunt, Denice Johns, Tim Mathis, Tom Mauck, Kimberly Moore, Phil Saad, Mike Seremet, Megan Sitzler, Preston Winesett	June 21, 2007

In the start of permit year 4, NPDES received official notice from TDEC that the proposed modifications to the wet weather sampling program were approved. These modifications will now focus on hand-picked outfalls in certain watersheds that, for the most part, only flow during rain events. Modifications to the wet weather sampling program are discussed in further detail in Section 5.1.

2.6 Overall Program Weaknesses

Metro Water Services consistently prioritizes and examines how to best achieve both our permit objectives and community benefits. The stormwater quality program continues to make necessary changes and improvements for the better of Nashville/Davidson County. However, the current state of our program still lacks in specific areas. NPDES would list the following items as areas where we are working toward making improvements:

The MS4 infrastructure updating process is still a work in progress. Personnel handling these GIS responsibilities continue to make strides in this area through purchased GPS equipment and logging of the data. Since 1999, with the exception of one subsequent update in 2000, projects that served to create changes to the Metro MS4 have been logged and are included in future updating of the MS4 GIS. NPDES personnel have created an MS4 updating process for MWS Stormwater Capital Improvement maintenance projects and private development sites, and to update the MS4 along the CSO perimeter areas. More information on the MS4 infrastructure updating process is available in Section 4.1.1.

Currently, as described in the MS4 permit, Metro is required to inspect industrial facilities classified as: municipal landfills, hazardous waste treatment, storage and disposal facilities, industries under SARA Title III, Section 313, and facilities that MWS determines to be substantial loaders to the MS4. These categories only represent a fraction of the approximate 180 Tennessee Multi-Sector Permitted (TMSP) industrial sites within Davidson County. The NPDES section has found that many of the SARA Title III, Section 313 sites have non-exposure exemption with virtually no potential for contaminated stormwater runoff, while other sites not within the above-mentioned categories actually pose a greater threat to discharging contaminated stormwater.

2.7 Future Direction Of The Program

The MWS Stormwater NPDES Program continues to define its role in the governmental/regulatory community of Metro Nashville. As stated in previous annual reports, the NPDES program continually gathers information on the state of stormwater quality and trends in order to make positive impacts on the quality of Davidson County's water resources. Communication between governmental agencies has greatly improved and water quality partnerships have been established with other Metro Departments, such as Parks/Greenways and Real Property Services. Open and direct communication is key to these partnerships and to the improvement of stormwater quality in the future.

Since issuance of the MS4 permit and in efforts to meet compliance requirements, the NPDES Program has understood that stormwater solutions must be allowed a sufficient amount of time for implementation so that a greater understanding of the system and the associated water quality issues develops within the community. This understanding is being generated through various program activities: inspections, investigations (including needed enforcement activities), monitoring, master planning, and public awareness/education.

Metro Water Services continues to refine its processes in order to identify and give attention to previously unidentified stormwater quality problems. Currently, MWS is conducting a feasibility study for a proposed dedicated stormwater funding source as commissioned in amended Ordinance No. BL2007-1440, Title 15, Section 15.64.032. http://www.nashville.gov/mc/ordinances/bl2007_1440.html

The dedicated funding source will adequately finance and implement all MS4 permit conditions and the SWMP elements. In February 2008, a report is scheduled to be submitted to Metro Council for adoption of a stormwater utility dedicated funding source.

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3.0 Summary Table

In the summary tables, the required activities that were accomplished during the permit year are denoted by a bullet (•), while activities not performed during the permit year are denoted by an "X". Those activities not required during a permit year are shown for reference but are shaded ( ).

Table 3.1 Summary Activity 1

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
OPERATIONS AND MAINTENANCE OF STRUCTURAL CONTROLS								
1a	Update Stormwater Inventory Geographic Information System (GIS)	Ongoing – by PY 4	•	•	•	•*		* updates currently being made, See Section 4.1.1 for further explanation
1b	Continue Existing System Maintenance	Ongoing	•	•	•	•		
1c	Inspections of Dry Creek Detention facility	1 / quarter	•	•	•	•		
1d	Train Inspection and Maintenance Staff	PY 2 and PY 4		•		•		
1e	Review Maintenance Procedures	PY 2 and PY 4		•		•		
1f	Housekeeping Programs	Ongoing	•	•	•	•		
1g	Stormwater Detention/Retention Facilities	PY 2		•				

Table 3.2 Summary Activity 2

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
CONTROL OF DISCHARGES FROM AREAS OF NEW DEVELOPMENT AND SIGNIFICANT REDEVELOPMENT								
2a	Ordinances, Regulations, and Guidance	----						
	Enforce Existing Ordinances and Regulations intended to limit long-term water quality impacts	Ongoing	●	●	●	●		
	Evaluate and Update Guidance Materials	PY 2 and PY 5		●				
	Public Education	Ongoing	●	●	●	●		
2b	Report BMP Monitoring and Considerations	Annually	●	●	●	●		
2c	Master Planning	----		●				
	Report water quality issues to Planning Commission	PY 2		●				
	Report water quality evaluations performed as part of new water quantity master planning efforts	PY 2 and PY 5		●				
	Report regional water quality practices evaluations performed in any master planning activities	PY 2 and PY 5		●				
	Report watershed prioritization changes	PY 2 and PY 5		●				
	Report master planning performed per prioritized watersheds	PY 2 and PY 5		●				
2d	Training	Annually	●	●	●	●		

Table 3.3 Summary Activity 3

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
ROADWAYS								
3a	Catch Basin Cleaning	----						
	Prioritize	PY 1	●					
	Report and record	Annually	●	●	●	●		
3b	Downtown Street Sweeping	Ongoing	●	●	●	●		
3c	Deicing Practices – Evaluate and Report	PY 1 and PY 3	●		●			
3d	Evaluate Herbicides, Pesticides, and Fertilizers application and storage practices	PY 1 and PY 3	●		●			
3e	Report on Spill Response Program	Annually	●	●	●	●		
3f	Report Modifications to Design and Construction	Each Compliance Report	●	●	●	●		

Table 3.4 Summary Activity 4

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
LANDFILLS AND OTHER WASTE TREATMENT, STORAGE, OR DISPOSAL FACILITIES								
4a	Monitor Activities, Report on Issues	Ongoing	●	●	●	●		

Table 3.5 Summary Activity 5

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
PESTICIDES, HERBICIDES, AND FERTILIZERS								
5a	Operate Household Hazardous Waste Facility	At least 1/quarter	●	●	●	●		
5b	Commercial Distributors – Public Information	Ongoing	X	●	●	●		This permit element has been modified to focus on “applicators” vs. “distributors”
5c	Evaluate Metro Facilities Practices	PY 2		●				

Table 3.6 Summary Activity 6

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
ILLICIT DISCHARGES AND IMPROPER DISPOSAL								
6a	Refine Ordinances and Enforcement Measures	PY 1 and PY 3	●		●			
6b	Update and Prioritize Dry-Weather Field Screening	PY 5			●			
6c	Illicit Discharge Investigations	Ongoing	●	●	●	●		
6d	Distribute Public Information to Residential/Commercial Areas	Ongoing	●	●	●	●		
6e	Evaluate Reporting for Sanitary Sewer Seepage	PY 1 and PY 3	●		●			

Table 3.7 Summary Activity 7

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
INDUSTRIAL AND HIGH RISK RUNOFF								
7a	Data Management – Update Industrial Site Databases	Annually	●	●	●	●		
7b	Inspections	---						
	Refine procedures/criteria to prioritize sites	PY 1, PY 3, and PY 5	●		●			
	Train Inspectors	PY 2 and PY 4		●		●		
	Inspect Facilities	Once by PY 5	●	●	●	●		Ongoing
	Coordinate inspection and enforcement activities with TDEC staff	Ongoing	●	●	●	●		
	Report Inspection Locations	Ongoing	●	●	●	●		
7c	Restaurant Impacts – Report activities that reduce water quality impacts	Annually	●	●	●	●		

Table 3.8 Summary Activity 8

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY 4
			1	2	3	4	5	
CONSTRUCTION SITE RUNOFF								
8a	Ordinances, Regulations, and Guidance	---						
	Enforce existing ordinances and regulations	Ongoing	●	●	●	●		
	Refine procedures to enhance enforcement	PY 1 and PY 3	●		●			
	Evaluate and Update guidance materials	PY 1 and PY 3	●		●			
	Public Education	Ongoing	●	●	●	●		
	Require proof of coverage under the state's Construction General Permit	Ongoing	●	●	●	●		
8b	Train Plans Reviewers and Inspectors	Annually	●	●	●	●		
8c	Records Management - EP&SC inspections	Ongoing	●	●	●	●		
8d	Plan Review and Inspection Resources	Ongoing	●	●	●	●		
8e	Evaluate Metro Activities	PY 2		●				

Table 3.9 Summary Activity 9

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY 4
			1	2	3	4	5	
STREAM HABITAT IMPROVEMENT REPORT								
9a	Report habitat improvement activities/projects	Annually	•	•	•	•		

Table 3.10 Summary Activity 10

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY 4
			1	2	3	4	5	
PUBLIC INFORMATION AND EDUCATION (PI&E)								
10a	Inform Public – General Housekeeping Procedures	Ongoing – at least one activity per year	●	●	●	●		
	Inform Home Owner Associations – Detention Pond Maintenance	Ongoing – at least one activity per year	●	●	●	●		
	Educate Engineering and Development Community – Long Term WQ Impacts	Ongoing – at least one activity per year	●	●	●	●		
	Inform Public – Pesticides, Herbicides, and Fertilizers	Ongoing – at least one activity per year	●	●	●	●		
	Inform Public – Oils and Hazardous Chemicals	Ongoing – at least one activity per year	●	●	●	●		
	Inform Public – Illicit Connections / Discharges	Ongoing – at least one activity per year	●	●	●	●		
	Educate Engineering and Development Community – Construction WQ Impacts	Ongoing – at least one activity per year	●	●	●	●		
	Other Not Yet Identified Opportunities	Ongoing – at least one activity per year	●	●	●	●		
10b	World Wide Web Site	----						
	Enhance Stormwater Website[1]	Ongoing	●	●	●	●		
	Provide Reporting Mechanism	Ongoing	●	●	●	●		
	Establish an Area Dedicated to Recognition	PY 4				●		

[1] Note that since Permit Cycle Term 2 has been issued, the entire Stormwater Division, including the NPDES Department has relocated to Metro Water Services from Metro Public Works.

Table 3.11 Summary Activity 11

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY 4
			1	2	3	4	5	
REPORTING REQUIREMENTS								
11a	Compliance Report	End of each PY (+ 6 months)	•	•	•	•		Annually
11b	Propose Third Permit Cycle Activities	End of PY 4 (+ 6 months)				•		

Table 3.12 Monitoring Summary Activities

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY 4
			1	2	3	4	5	
MONITORING								
A	Ambient – 8 or more in-stream locations Sample each site at least 6 times annually	6X Annually (Bi-monthly)	●	●	●	●		Ongoing
B	Wet Weather – 3 or more outfall locations Sample each site at least 2 times annually	2X Annually	X	●	X	●		Unable to obtain samples due to unusual weather patterns, etc.
C	Industrial – Sampling based on inspections	As needed	●	●	●			2 sites sampled
D	Bioassessment – Perform RPB III at 2 designated sites Perform RPB III at 1 or more reference sites	Annually	●	●	●	●		Ongoing
D	Bioassessment – Refine Procedures	PY 1	●					Ongoing
D	Bioassessment – Perform “quick assessments” as necessary	Annually	●	●	●	●		
E	Loadings Estimate – Report EMC changes	PY 5						Ongoing
E	Loadings Estimate – Report annual volume and loading changes	Complete by end of PY 5						

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4.0 Narrative Report

This section of the annual report presents a discussion of the items depicted in the aforementioned Summary Tables, including descriptions of studies, analyses, and investigations performed. In addition, similar activities that are difficult to quantify in the summary table are described in this section. The narrative report is subdivided according to the eleven program elements of the permit as listed in Permit Part III B. For each program element, this section includes a discussion of each objective, activities in permit year four, and a discussion of future direction activities that the MWS Stormwater Division proposes for the Permit Cycle Term 3.

An abbreviated summary table is presented prior to the activity narrative to facilitate review. Unless otherwise noted, June 30, 2007, is used as the "cutoff date" or "to date" in reporting quantity-based SWMP progress. In the summary tables, the required activities that were accomplished during the permit year are denoted by a bullet (•), while those not completed are denoted by an "X". Those activities not required during a permit year are shown for reference but are shaded ( ).

4.1 Operation and Maintenance of Structural Controls (Part III.B.1)

The objective of this program element is to maintain an understanding of the collection system and its performance as a basis for maintenance activities that are intended to benefit stormwater quality. This program element focuses on optimizing the water quality benefits generated through the proper operation, inspection, and maintenance of the existing storm drainage system under the public domain. The proposed program element activity only pertains to stormwater infrastructure that directly and significantly impacts public infrastructure.

4.1.1 Update Stormwater Infrastructure Inventory GIS (Part III.B.1.a.)

Contact Name: Michael Hunt, MWS, Stormwater Division, NPDES section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
1a	Update Stormwater Inventory Geographic Information System (GIS)	Ongoing – by PY 4	•	•	•	•*		* Updates are being made, proposed to be completed by end of permit year 5

The object of this activity is to maintain/update the stormwater GIS inventory system developed in the first cycle of the permit. The GIS system will be updated to show areas of new development, significant redevelopment, CSO separated areas, and Metro drainage construction/modification activities performed since the initial infrastructure inventory.

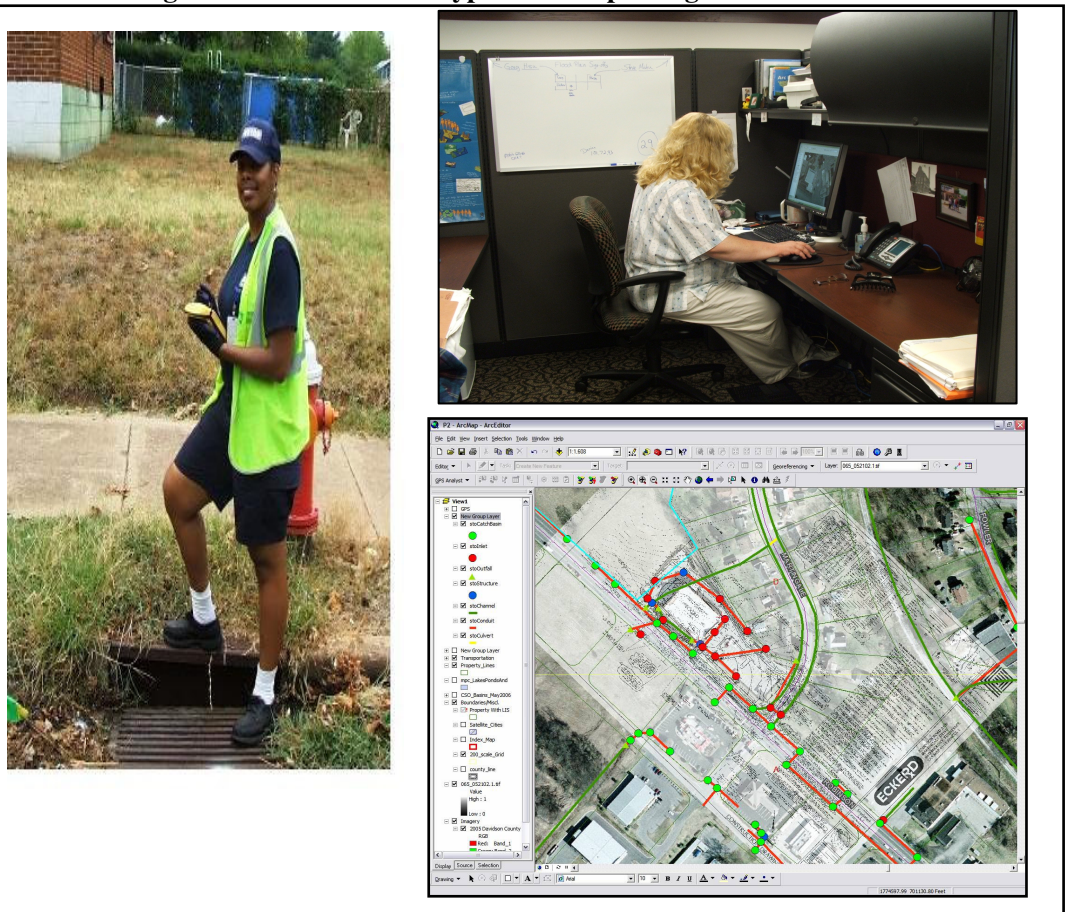
At the end of permit year 1, a full-time GIS employee was hired to perform the necessary MS4 updates. During permit year 2, the NPDES Department worked with consultants and internal staff to create a process by which the MS4 updates would occur. From this coordination, processes have been created to update the MS4 infrastructure to show Metro drainage improvements/modifications, areas of new development and significant redevelopment, and CSO separated areas. In permit year 3, the NPDES section fully realized the enormity of the updating process and, in response, hired a second individual dedicated to bringing the stormwater infrastructure up to date. An aggressive approach was taken to bring six years of backlog projects up to date in the GIS database. In this process, the utilization of a GPS unit was incorporated for prompt, accurate data collection. In permit year 4, Metro aggressively continued with updating the MS4 infrastructure backlogs.

The updates performed by the NPDES section are performed either using one or two methods. First, NPDES staff attempts to obtain any available engineered plans that can be scanned in, geo-referenced, and digitized into GIS. Using engineered plans to update the GIS database has proven to be more efficient as the plans typically depict the much-needed attribute data such as pipe size, type, and elevation. If plans are not available for areas that need to be updated (i.e. CSO fringe areas), the NPDES section then proceeds with the second option for updating by taking a Global Positioning System (GPS) unit to collect the locations of pipes, inlets, outfalls, etc.

As mentioned, Metro has taken an aggressive approach to updating the MS4 infrastructure for approximately six years of backlog. At the current pace, Metro had expected to have the backlog of updates completed by the end of permit year 4. Nearly 400 archived construction projects added more than 4,600 features and more than 6,100 features were collected in the field by GPS in the CSO separated areas. While these numbers are impressive, we were unable to meet our objective of being "up-to-date". Metro will continue to diligently update the MS4 infrastructure so as to ensure we have the latest available information to reflect the changes of recently completed development that served to modify/add MS4 data.

Given the processes involved in performing updates to the MS4 infrastructure, Metro proposes that permit year 5 be used to finalize getting the GIS database updated. We intend to have the MS4 GIS database being "up-to-date" defined as when all MS4 infrastructure updates and additions are accurately entered into the system within nine (9) months of when each respective project/development is finished/archived (when we do our final Grading Permit signoff). We propose that Permit Cycle Term 3 consider "up-to-date" to follow the same, aforementioned criteria. For example, an MS4 modifying project finished/archived on 7/1/08 will be entered into the GIS database system no later than 4/01/09.

Figure 4.1.1.1 Photos of Typical GIS Updating Activities



4.1.2 Existing System Maintenance (Part III.B.1.b.)

Contact Name: Denny Bone, MWS, Stormwater Division, Routine Maintenance Section, 615.862.4537

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
1b	Continue Existing System Maintenance	Ongoing	•	•	•	•		

MWS stormwater maintenance sections continued to maintain the existing public stormwater drainage infrastructure during permit year 4. Maintenance activities were performed on public infrastructure and on private infrastructure that directly impacted public infrastructure. The determination of maintenance service on private infrastructure was made on a case-by-case basis with potential projects identified through customer complaints and otherwise noted through MWS and/or NPDES MS4 permit-related activities.

The MWS Stormwater Routine Maintenance (RoM) section currently employs eight maintenance crews who perform all of the work on the smaller, routine maintenance projects. The crews are assigned to large ditch maintenance, stormwater inlet construction, stormwater inlet cleanout, and stormwater masonry work. Routine maintenance work completed during permit year 4 is presented in Table 4.1.2.1.

During permit year 4, MWS Stormwater RoM section continued to investigate drainage complaints, identify potential drainage projects, and oversee construction projects performed by contractors to remedy drainage issues. The department continued to utilize the services of the consultant, AMEC, to prepare construction plans for drainage construction projects (Remedial and Capital Improvement Projects). Toward the end of permit year 3, MWS scaled back the contract with AMEC and hired personnel to handle the majority of the department's functions. In permit year 4, there were 577 service request investigations completed. Of the 577 investigations, 357 will become actual projects that will be designed and constructed (depending on funding), and 220 were closed for one of the following various reasons:

- Not a stormwater issue;
- Not an issue of functionality;
- Not a government responsibility;
- A problem that no longer exists;
- Referred to another agency; or

In addition, during permit year 4, approximately 98 projects were completed through design and/or construction. Many of these projects were investigated in previous permit years. The complaints that have not been resolved or closed remain open to be addressed by future construction projects.

Table 4.1.2.1 Existing System Routine Maintenance Activity Summary

		Total	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007
Ditch Maint.	Routine	639	137	352	84	66	14	3
	Complaint	1,134	0	203	557	374	403	445
	Class C	40	0	0	1	39	18	0
		1,813	***137***	***555***	***642***	***479***	***435***	***448***
Walls & HW	Routine	125	22	75	17	11	1	0
	Complaint	417	0	45	211	161	183	187
	Class C	0	0	0	0	0	1	0
		542	***22***	***120***	***228***	***172***	***185***	***187***
DW Pipes	Routine	420	151	115	106	48	5	816
	Complaint	667	0	139	249	279	286	165
	Class C	0	0	0	0	0	0	0
		1,087	***151***	***254***	***355***	***327***	***291***	***981***
Cross Drains	Routine	355	85	118	74	78	66	0
	Complaint	329	0	80	135	114	171	148
	Class C	10	0	0	0	10	8	0
		694	***85***	***198***	***209***	***202***	***245***	***148***
Flooding	Routine	73	14	45	4	10	4	0
	Complaint	31	0	2	14	15	1	0
	Class C	2	0	0	0	2	2	0
		106	***14***	***47***	***18***	***27***	***7***	***0***
Debris Removal	Routine	150	39	59	26	26	23	0
	Complaint	101	0	44	29	28	41	1
	Class C	2	0	0	1	1	0	0
		253	***39***	***103***	***56***	***55***	***64***	***1***
Erosion	Routine	4	0	1	2	1	1	0
	Complaint	13	0	0	7	6	1	0
	Class C	1	0	0	0	1	0	0
		18	***0***	***1***	***9***	***8***	***2***	***0***
Mud Removal	Routine	22	4	3	8	7	51	3
	Complaint	11	0	0	3	8	71	144
	Class C	0	0	0	0	0	0	0
		33	***4***	***3***	***11***	***15***	***122***	***147***
Misc	Routine	1,441	35	420	590	396	219	1,013
	Complaint	264	0	94	95	75	86	1,035
	Class C	3	0	0	0	3	1	0
		1,708	***35***	***514***	***685***	***474***	***306***	***2048***
Inlet Maint.	Routine	78,246	177	7,278	33,495	37,296	35,258	20,125
	Complaint	1,029	0	260	416	353	263	3,088
	Class C	5	0	0	0	5	0	0
		79,280	***177***	***7,538***	***33,911***	***37,654***	***35,521***	***23,213***
Sinkhole	Routine	0	0	0	0	0	0	0
	Complaint	5	0	0	0	0	2	3
	Class C	0	0	0	0	0	0	0
		5	***0***	***0***	***0***	***0***	***2***	***3***
		Total	**FY2002**	**FY2003**	**FY2004**	**FY2005**	**FY2006**	**FY2007**
	Routine	81,475	664	8,466	34,406	37,939	35,642	21,960
	Complaint	3,996	0	867	1,716	1,413	1,506	5,216
	Class C	63	0	0	2	61	30	0
	TOTAL	**85,534**	**664**	**9,333**	**36,124**	**39,413**	**37,178**	**27,176**

Figure 4.1.2.1 Typical Complaint Investigation Photograph

4.1.3 Inspections of Dry Creek Detention Facility (Part III.B.1.c.)

Contact Name: Denny Bone, MWS, Stormwater Division, Routine Maintenance Department, 615.862.4537

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
1c	Inspections of Dry Creek Detention Facility	1 / quarter	●	●	●	●		Inspections are conducted more than once per quarter

The NPDES section transferred responsibilities in permit year 2 for inspection and necessary maintenance to the MWS Stormwater RoM section. The inspections were performed by RoM, however, due to a misunderstanding, the inspections performed during the period October 2004 through December 2005 were not documented. This problem has since been corrected and the maintenance crews are currently inspecting and documenting the Dry Creek detention facility more frequently than once per quarter. Figure 4.1.4 is a typical photograph of the debris that routinely accumulates on the outfall structure of the facility.

Figure 4.1.3.1 Typical Maintenance Need at Dry Creek Detention Facility

4.1.4 Training (Part III.B.1.d.)

Contact Name: Michael Hunt, MWS, Stormwater Division, NPDES section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
1d	Staff Training	PY 2 and 4		•		•		

Metro recognizes that periodic training is critical to the success of the water quality program. Since permit year 2, the NPDES office has been conducting training programs for key inspection and maintenance staff from MWS and other Metro departments. The training is intended to educate staff on proper maintenance activities that avoid impacts to water quality and how to recognize and report an illicit discharge when observed in the field. In permit year 4, training was provided to: a residential home owner's association (HOA) and schools concerning stormwater quality and infiltration practices; a community/park workshop on installing residential rain gardens and constructing rain barrels; and, Metro staff, council members, and engineers/developers on the revised stormwater regulations. During permit year 5, the NPDES section will continue to conduct training sessions to other Metro departments to ensure permit compliance.

4.1.5 Maintenance Procedures (Part III.B.1.e.)

Contact Name: Michael Hunt, MWS, Stormwater Division, NPDES section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
1e	Maintenance Procedures	PY 2 and 4		•		•		

NPDES office has been providing oversight and insight to the Stormwater Maintenance sections on matters concerning the appropriate State and Federal permits needed, and proper Erosion Prevention and Sediment Control (EPSC) measures to implement on maintenance jobs. In permit year 4, the NPDES office followed up on the procedures that was discussed during training, mentioned in Section 4.1.4, that were designed to educate maintenance staff on avoiding water quality impacts. Figure 4.1.5.1 depicts the proper installation of erosion control matting on a maintenance jobs to correct a erosion and drainage issue. In permit year 5, the NPDES section will begin a new stormwater compliance inspection program for all Metro facilities (i.e. golf courses, parks, fleet maintenance, etc.). In performing the stormwater compliance inspections, the NPDES section will not only look at how Metro properties are managed for stormwater, but also how maintenance practices are performed in regards to water quality.

Figure 4.1.5.1 Stormwater Maintenance – Correcting Erosion and Drainage Problem

4.1.6 Housekeeping Programs (Part III.B.1.f.)

Contact Name: Jenna Smith-Sexter, Public Works Waste Management Division 615.862.8727

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
1f	Housekeeping Programs	Ongoing	•	•	•	•		

The Metro Public Works, Division of Waste Management (DWM) provides trash collection service to all residents in the Urban Service District (USD), all businesses in the USD and the Downtown Business District (DBD), and all apartments, public housing, and Metro government buildings within the USD. Monthly trash collection statistics for permit year 4 are presented in Table 4.1.6.1. The table represents DWM trash collection, contracted residential trash collection, and convenience center trash collection.

In an effort to promote waste reduction among residents and businesses within Davidson County, DWM provides several opportunities for recycling. Metro has a curbside recycling program as well as several drop-off locations.

Curbside/Convenience Centers:

- Omohundro Center - 1019 Omohundro Place
- Anderson Lane Center - 939 Anderson Lane
- East Center – 943A Dr. Richard G. Adams Drive

Recycling Drop Off Centers:

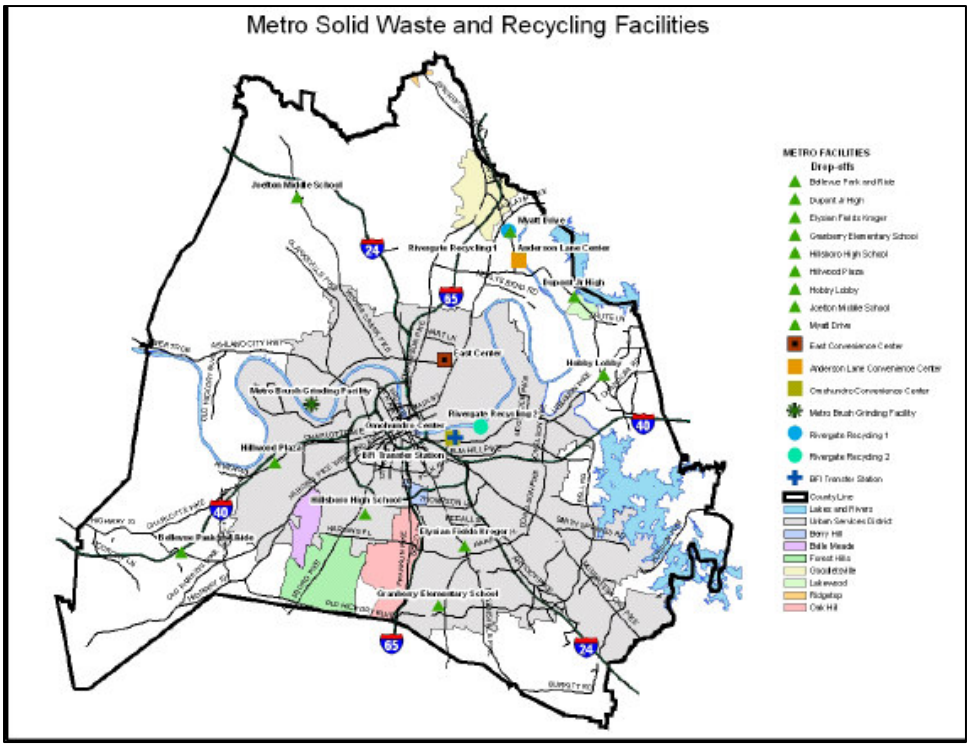
- Bellevue MTA Park & Ride - Coley Davis Road & Highway 70 South
- Elysian Fields Kroger – 3955 Nolensville Road (9 AM ~ Noon Saturday ONLY)
- Hermitage Hobby Lobby – 4101 Lebanon Road
- Hillsboro High School – 3812 Hillsboro Pike
- Charlotte Center Strike & Spare – 3710 Annex Ave (corner of Charlotte Pike & Hillwood Blvd)
- Granbery Elementary School – 5501 Hill Road (9 AM ~ Noon Saturday ONLY)
- Joelton Middle School – 3500 Old Clarksville Highway
- Rivergate Recycling – 630 Myatt Drive

In permit year 4, approximately 51,314.90 tons of various recyclable materials was collected, that included: metal, glass, plastic, oil, cardboard, mixed paper, and brush. Brush collection is provided by Metro Public Works as a curbside service. A route system is utilized to collect brush in the USD and General Services District. Residents of either area will have brush collected automatically at certain times every year. A collection map is available for residents to determine the dates of brush collection. Figure 4.1.6.1 is a map of recycling facility locations. Brush collection statistics are presented in Table 4.1.6.2.

The Household Hazardous Waste Center, discussed further in Section 4.5.1, allows residents to drop-off recyclable goods as well as refuse. The statistics of the waste and recyclables received are presented in Table 4.1.6.3. Metro Public Works/Metro Beautification and Environment Commission also run educational slides on Channel 3, the local government TV channel. These educational slides include:

- Information and logistics for Trash Cart utilization;
- How to properly use the trash cart and the curb-side recycling;
- Metro Convenience Centers and Drop-off sites/locations; and
- Household Hazard Waste disposal information and drop-off locations.

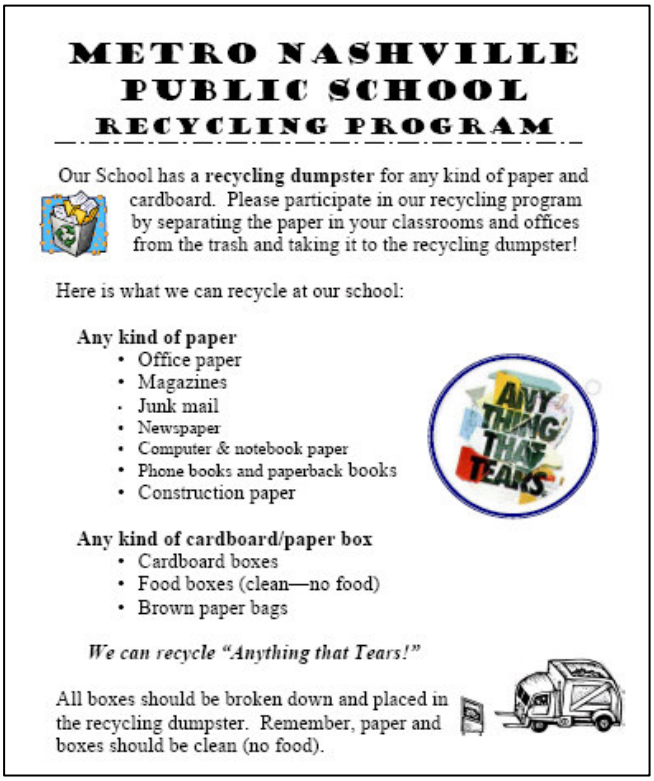
Figure 4.1.6.1 Division of Waste Management – Solid Waste and Recycling Facilities



The Recycling Education Center is a resource tool located at the Rivergate Recycling Center, where all of Nashville/Davidson county recyclables are transported for sorting. Children and adults learn first hand how a Materials Recovery Facility (MRF) operates – how materials are separated, how they are recycled, and get the opportunity to view consumer products that are made from recycled materials.

In an effort to increase awareness and education, Metro Beautification began an initiative to educate and encourage schools on the importance of recycling. Figure 4.1.6.2 depicts the school recycling program initiative. In permit year 4, the initiative was adopted by the Metropolitan Nashville Public School system and has expanded to more than 80 schools. Metro Beautification provides operational and educational support to the participating schools. During permit year 5, Metro Beautification will continue to provide an array of ideas and resource materials for recycling and other environmental programs. The Beautification and Environmental Education Programs Booklet has become a valuable guide for schools and communities in Nashville and Davidson County.

Figure 4.1.6.2 Metro Beautification – School Recycling Program



METRO NASHVILLE PUBLIC SCHOOL
RECYCLING PROGRAM

Our School has a **recycling dumpster** for any kind of paper and cardboard. Please participate in our recycling program by separating the paper in your classrooms and offices from the trash and taking it to the recycling dumpster!

Here is what we can recycle at our school:

Any kind of paper
- Office paper
- Magazines
- Junk mail
- Newspaper
- Computer & notebook paper
- Phone books and paperback books
- Construction paper

Any kind of cardboard/paper box
- Cardboard boxes
- Food boxes (clean—no food)
- Brown paper bags

We can recycle "Anything that Tears!"

All boxes should be broken down and placed in the recycling dumpster. Remember, paper and boxes should be clean (no food).

Table 4.1.6.1 Monthly Trash Collection Statistics

Program Type	Tons of Waste Collected												
	July	*August*	*September*	*October*	*November*	*December*	*January*	*February*	*March*	*April*	*May*	*June*	*Grand Total*
Dumpsters	18.08	24.34	2.0.12	18.42	30.74	19.18	27.23	18.93	22.74	32.62	34.31	18.15	**284.86**
Front Loader Residential	2,128.02	2,596.8	2,187.98	2,151.3	2,385.26	2,103.4	2,343.06	1,947.43	2,239.10	2,019.6	2,433.98	2,181.27	**26,717.2**
Alley/Bulk Items	145.44	133.27	89.22	80.39	72.04	86.7	63.91	98.14	124.26	24.23	25.16	7.35	**950.11**
Downtown Trash	278.43	282.38	271.85	295.03	267.45	252.64	286.22	249.79	302.9	292.82	296.08	317.06	**3,392.65**
Bordeaux Trash	17.62	16.83	54	17.59	11.5	29.49	23.47	44.23	47.62	34.34	22.73	19.15	**338.57**
Club Apartments	18.08	24.34	19.05	18.42	21.44	19.18	17.98	18.93	22.74	19.17	23.11	18.15	**240.59**
Metro Water Services	0	0	1.07	0	1.3	0	9.25	0	0	13.45	11.2	0	**44.27**
Total Metro Public Works Trash Collection	**8,601.5**	**9,933.16**	**8,784.01**	**8,534.53**	**9,452.99**	**8,781.28**	**9,176.80**	**7,336.12**	**9,415.47**	**8,737.29**	**10,489.46**	**9,181.98**	**108,424.60**
Contracted Residential	**7,297.19**	**8,409.58**	**7,44.63**	**7,220.63**	**8,039.31**	**7,414.01**	**7,729.56**	**6,147.07**	**7,942.30**	**7,471.25**	**8,956.98**	**7,854.12**	**91,924.02**
	Convenience Center Trash												
Anderson Lane	0	12.19	105.69	117.67	136.14	136.76	126.25	146.26	288.25	134.11	140.38	180.06	**1,523.76**
East Center	1,185.31	1,053.08	1,084.74	914.89	859.73	750.44	798.55	30.79	37.65	703.77	938.36	186.63	**9,343.94**
Omohundro	48.08	53.87	55.69	54.45	64.29	62.71	425.26	425.26	757.47	226.44	210.17	241.96	**2,263.11**
Paint & Paint Thinners	17.59	18.4	24.55	12	14.33	25.57	36.88	18.54	18.15	29.22	50.61	45.87	**311.71**
Total Convenenience Center Trash	**1,250.98**	**1,137.54**	**1,270.67**	**1,099.01**	**1,074.49**	**975.48**	**1,386.94**	**620.85**	**1,101.52**	**1093.54**	**1,339.52**	**654.52**	**13,005.06**

Table 4.1.6.2 Recycling Statistics in Tons

Program Type	Tons of Recycled Waste Collected												
	July	*August*	*September*	*October*	*November*	*December*	*January*	*February*	*March*	*April*	*May*	*June*	*Grand Total*
Curbside Recycling	1060.65	969.42	1147.67	1021.87	986.92	1218.69	1090.6	964.84	942.21	1100.44	985.33	1132.53	**12,621.17**
Metro Drop Off Facilities:													
Bellevue Park and Ride	95.38	120.4	104.6	113.29	105.71	111.83	135.13	104.07	116.84	106.4	139.74	113.91	**1365.3**
Charlotte Pike	35.26	47.04	37.45	42.73	41.42	40.84	50.49	36.70	40.44	46.14	56.74	51.55	**526.80**
Elysian Fields	23.18	23.58	17.90	23.89	22.25	26.41	26.71	22.13	28.73	24.88	30.78	28.11	**298.55**
Granbery Elem -- Saturday Only	19.03	18.04	20.34	15.89	16.39	21.08	19.50	25.09	22.36	16.19	18.41	20.09	**232.41**
Hermitage	85.48	90.59	76.93	86.36	89.83	96.67	103.56	81.27	90.00	92.80	111.74	96.70	**1,101.93**
Hillsboro High School	150.87	148.54	136.06	143.74	159.69	163.45	162.26	123.22	146.63	154.92	147.35	157.22	**1,790.95**
Joelton Middle School	19.52	26.25	16.26	27.66	22.77	23.65	26.26	20.72	27.22	24.22	28.73	23.64	**286.90**
Dupont Hadley Middle School	4.29	11.95	13.42	11.69	15.03	14.25	14.48	16.49	19.12	17.24	20.34	18.95	**177.25**
Myatt Drive	36.11	43.29	34.17	40.99	36.07	47.03	44.39	33.68	46.72	42.10	37.61	33.73	**475.89**
Anderson Lane -- Recyclables	0	0	0	9.29	7.00	10.88	12.68	17.18	30.10	19.64	18.32	16.81	**141.90**
East Center -- Recyclables	69.75	84.90	63.45	67.73	62.43	51.91	69.43	19.80	28.89	58.27	80.73	67.15	**724.44**
Omohundro -- Recyclables	0	1.95	10.14	9.24	10.59	12.58	20.81	50.4	82.97	41.00	29.19	31.89	**370.17**
Total Drop-off Facilities	***538.87***	***616.53***	***530.72***	***592.5***	***589.18***	***620.58***	***685.7***	***550.75***	***680.02***	***643.8***	***719.68***	***659.75***	***7,492.49***
Brush Collection:													
Unground -- Grapple Hook	566.51	718.89	500.13	572.24	507.26	219.31	458.94	302.90	510.17	558.24	615.80	484.78	**6045.17**
Unground -- Dropped Off	793.71	892.89	598.82	716.80	502.68	352.17	494.46	295.66	717.66	669.04	771.05	656.77	**7451.71**
Unground -- Contractor	1577.41	1739.08	1923.01	1628.94	1184.35	941.26	887.2	500.90	915.07	1201.31	1240.86	1197.75	**14,937.14**
Ground -- Dropped Off	71.79	137.16	108.7	93.42	79.17	46.25	92.28	27.87	49.02	40.3	84.09	117.99	**948.04**
Leaves – Metro	0	0	0	0	52.32	217.09	32.41	8.85	0	0	---	0	**310.67**
Leaves -- Dropped Off	0	0	0.23	2.76	332.88	215.17	16.27	3.04	2.04	4.01	0.27	---	**576.67**
Total Brush	***2999.42***	***3488.02***	***3130.89***	***3014.16***	***2688.66***	***1991.25***	***1981.56***	***1139.22***	***2193.96***	***2472.90***	***2712.07***	***2457.29***	***30,269.40***

Table 4.1.6.2 Recycling Statistics in Tons (Continued)

Program Type	Tons of Recycled Waste Collected												
	Household Hazardous Waste												
	July	***August***	***September***	***October***	***November***	***December***	***January***	***February***	***March***	***April***	***May***	***June***	***Grand Total***
Oil	1.06	2.22	1.8	2.4	1.4	2.36	0.6	1.2	1.51	1.7	1.3	2.72	**20.27**
Anti Freeze	0.43	0	0.3	0.3	0.5	0	0.4	0.22	0	0	0.5	0	**2.65**
Electronics	0	0	0	0	6.47	0	7.31	0	0	0	8.46	0	**22.24**
Batteries	2.62	2.44	1.75	2.25	1.57	1.29	0.84	2.03	0.49	2.31	2.37	1.67	**21.63**
Tanks	0	0.46	0.5	0	0.46	0	0.35	0	0	0	0.58	0.5	**2.85**
Total Household Hazardous Waste													
Tires													
	Other Recycling												
Curby Dumpsters	1060.65	969.42	1147.67	1021.87	986.92	1218.69	1090.6	964.84	942.21	1100.44	985.33	1132.53	**12,621.17**
Nighttime Downtown Recycling	0	0	0	0	0	0	0	0	0	0	0	0.35	**0.35**
Government Building Recycling													
Farmer's Market	0	0	0	0	3.68	0	12.35	0	0	0	0	0	**16.03**
Radnor Lake	0	0	0.95	0	0	1.33	0	0	0	0.77	0.58	0	**3.63**
Total Other Recycling	***538.87***	***616.53***	***530.72***	***592.5***	***589.18***	***620.58***	***685.7***	***550.75***	***680.02***	***643.8***	***719.68***	***659.75***	***7,492.49***
Recycling Total													

Table 4.1.6.3 Household Hazardous Waste Facility Collection Statistics In Permit Year 4

Material Collected	Household Hazardous Waste Collection July 2006 - June 2007												
	July	August	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	Totals
Antifreeze	0.43	0	0.3	0.3	0.5	0	0.4	0.22	0	0	0.5	0	**2.65**
Car Batteries	2.62	2.44	1.75	2.25	1.57	1.29	0.84	2.03	0.49	2.31	2.37	1.67	**21.63**
Electronics	0	0	0	0	6.47	0	7.31	0	0	0	8.46	0	**22.24**
Other HHW	0	0	0	0	14.88	0	12	0	0	0	15.71	0	**42.59**
Paints and Paint Thinners	17.59	18.4	24.55	12	14.33	25.57	36.88	18.54	18.15	29.22	50.61	45.87	**311.71**
Tanks	0	0.46	0.5	0	0.46	0	0.35	0	0	0	0.58	0.5	**2.85**
Used Motor Oil	1.06	2.22	1.8	2.4	1.4	2.36	0.6	1.2	1.51	1.7	1.3	2.72	**20.27**
												Total	***423.94***

4.1.7 Stormwater Detention/Retention Facilities (Part III.B.1.g.)

Contact Name: Michael Hunt, MWS, Stormwater Division, NPDES section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
1g	Stormwater Detention / Retention Facilities	PY 2		•		•		An NPDES inspector is dedicated to post-construction BMP inspection & enforcement -verifiying that BMPS are being adequately maintained.

Metro recognizes that planning and acting upon an understanding of location and function of post construction stormwater detention/retention facilities, or best management practices (BMPs), is important to managing water quantity and quality concerns. The NPDES section has been working on a long-term operation and maintenance strategy for BMPs, which will include educating the public on proper maintenance procedures/schedules for privately owned facilities as well as inspecting and enforcing on improperly functioning BMPs. The following paragraphs give a brief description on the BMP inspection and maintenance program.

BMP Tracking

NPDES BMP Database

In 2002, Metro hired a consultant to identify all of the projects within the jurisdiction of Metro approved for construction that contain a stormwater quantity and/or quality BMP. The plans for these projects were then scanned onto a hard drive, a GIS layer was created with their locations, and the BMPs were cataloged in a database. The NPDES section has found, however, that not all of the approved projects were actually constructed and a fraction of this database includes properties that were never developed. NPDES is continually updating the BMP database to reflect actual field conditions. All subsequent BMPs are entered into the database once the As-Built Certification is approved by the Stormwater Plan Review Section and final stabilization for the project has been reached.

Pre-2006 Stormwater Regulation Revision

BMPs on new projects are also tracked in KIVA, a Metro-wide mainframe database, after either a Use and Occupancy permit is issued for the project or the development bond is released. KIVA schedules an inspection for one year following project completion. A site inspection will then be performed by NPDES staff to insure the BMP has been maintained. This process pertains to BMPs on projects completed since April 2007 under the 1999 Stormwater Regulations.

Post-2006 Stormwater Regulation Revision

For the 2006 revision to the Stormwater Regulations, Metro expanded the Operation and Maintenance agreements for all BMPs. These new agreements require a detailed plan describing the required maintenance for all BMPs on a development site. This agreement will transfer with the property so that subsequent owners are aware of their BMP and its maintenance requirement. Property owners are required to annually inspect their BMPs and submit the inspection report to NPDES. KIVA will track the due dates for these inspection reports and alert NPDES staff when a report is due.

BMP Inspection Pilot Study & Inspection Program

In order to develop a successful BMP inspection and maintenance program, the NPDES section, in earlier permit years, conducted a pilot BMP inspection study. In the pilot study, 100 BMPs installed from 1978 – 2002 were randomly inspected from May to July 2004. All (100%) of the BMPs inspected were found to be in need of some form of maintenance. In looking for trends, the BMPs were divided into land use type and ranked by the percentage of the BMPs requiring major maintenance. The results were as follows:

- Condominiums 40%;
- Commercial 43%;
- Churches 71%;
- Schools 75%;
- Industrial 80%;
- Subdivisions 85%; and
- Apartments 100%.

Between the initial pilot study and the end of permit year 3, the NPDES Division inspected over 100 more BMPs. As a result of these inspections, the NPDES section issued formal letters to 14 BMP owners outlining maintenance needs and requirements.

In permit year 4, NPDES inspected all of the Metro owned BMPs listed in the NPDES BMP database. A BMP inspection program was then developed to target deficient BMPs in TMDL watersheds. Using the results of the pilot study as a guide, NPDES inspected 20% of the BMPs at apartments, subdivisions, and industrial sites and 10% of the BMPs located at churches, commercial sites, and condominiums. Deficient BMPs were issued NOVs that required both maintenance of the BMP and development of an inspection and maintenance schedule. NPDES compiled a list of BMP maintenance companies that it distributed with the NOVs and posted on its website (http://www.nashville.gov/stormwater/docs/pdfs/BMP_Maint_Companies.pdf). The companies on the list have agreed to provide NPDES with their maintenance reports, which include a quantification of the material removed.

In permit year 5, MWS NPDES will inspect the remaining BMPs in TMDL watersheds. During permit year 4, the BMPs that consistently required the most maintenance were the underground proprietary units. In many cases, the property owners were not aware of the BMP's existence. Therefore, in permit year 5, NPDES will inspect one quarter of the approximately 270 underground proprietary units currently in Metro. This should result in the greatest removal of floatables, TSS, etc. from Nashville's waterways.

BMP Public Education Program

In permit year 3, the NPDES section sent over one-thousand flyers to BMP owners that had addresses listed in the BMP database. The flyers notified the property owners that a stormwater BMP was located on their property and gave general inspection and maintenance information. Approximately 30% of these flyers were returned to Metro due to incorrect or outdated addresses. NPDES staff will try to locate the correct address for each of these projects as time allows. In permit year 5, NPDES intends to mail out the notification flyers to the remaining property owners if valid addresses can be obtained. NPDES staff presented information on BMP maintenance and distributed the BMP flyer to the members of the Nashville chapter of the Community Associations Institute (CAI). This organization consists of community managers who are either directly responsible for BMP maintenance or advise those who are. The information provided to CAI should increase both the public awareness of BMPs and their maintenance within Metro.

BMP Retrofit Program

During BMP inspections, special attention is given to the potential for retrofitting water quality BMPs. These include water quantity ponds with outlet structures that could be altered to detain water for longer periods of time. Small quantity ponds with adjacent open space for expansion into a larger pond that could add water quality treatment will also be noted. Other retrofit projects could entail adding a new BMP in series with the existing BMP to add or increase or water quality treatment. Inspectors will pay extra attention to the potential for BMP retrofitting at Metro owned facilities. Metro will continue to identify retrofit candidates during its BMP inspections in permit year 5. Special consideration will be given to projects that utilize LID techniques. As funding allows, Metro Stormwater Remedial Maintenance section will be consulted to identify retrofit projects that would yield significant benefits to local ambient water quality.

Permit Cycle Term 3

The NPDES section is committed to ensuring that the BMPs installed in Metro remain functional throughout their lifespan, and will continue their BMP inspection program by expanding to 303(d) watersheds during Permit Cycle Term 3. The program will initially concentrate on the BMP categories identified in the pilot study as requiring the most maintenance. NPDES will also complete their inspections of all underground proprietary devices. Inspection of BMPs installed under the 2006 regulations is the responsibility of the BMP owner and NPDES will insure these inspections are being preformed through KIVA. NPDES staff will evaluate the program annually to determine the most effective means to pursue ongoing, proactive compliance.

4.2 Control of Discharges from Areas of New Development and Significant Redevelopment (Part III.B.2.)

The goal of this portion of the SWMP is to satisfy the requirements of Permit Part III.B.2. This section was designed to minimize the long-term impacts of new development and significant redevelopment on water quality. Specific activities include enforcing ordinances and regulations that are supported by guidance materials for the proper placement of BMPs and educating local stakeholders about their roles in minimizing long-term water quality impacts.

4.2.1 Ordinances, Regulations and Guidance (Part III.B.2.a.)

Contact Name: Michael Hunt, MWS, Stormwater Division, NPDES section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
2a	Ordinances, Regulations, and Guidance	----				•		
	Enforce Existing Ordinances and Regulations intended to limit long-term water quality impacts	Ongoing	•	•	•	•		
	Public Education	Ongoing	•	•	•	•		

Ordinances, Regulations, and Guidance

In permit year 4, the revised Stormwater Management Manual went into effect and includes changes in the following areas:

- Expanding stream buffers;
- Streamlining enforcement;
- Promoting Low Impact Development;
- Redefining stormwater quality program goals and requirements;
- Examining floodplain management and detention policies; and
- Better defining program responsibilities.

Enforce Existing Ordinances and Regulations

The NPDES office has continued to enforce the provisions of the existing stormwater regulations. Table 4.2.1.1 presents the documented enforcements conducted since 2002, while table 4.2.1.2 depicts the administrative penalties issued in the program's history. It is important to note that SWOs and NOVs are issued on the same enforcement letter. SWOs are reserved for sites with more significant stormwater issues, in which an on-going activity is causing an illicit discharge or other stormwater violation. There were a total of 174 enforcements issued with $36,400 of administrative penalties issued during permit year 4.

Table 4.2.1.1 NPDES Enforcement Cases

Time Frame	Notices of Violation	Stop Work Orders
April 2002 – June 2002	11	1
July 2002 - June 2003	47	23
July 2003 - June 2004	132	96
July 2004 - June 2005	151	46
July 2005 – June 2006	219	64
July 2006 – June 2007	140	50
Totals	**700**	**280**

Table 4.2.1.2 Enforcement Penalties Issued

Month	NOV	SWO	Monthly Total
Dec-03	$2,900	$2,000	$4,900
Jan-04	$3,500	$1,600	$5,100
Feb-04	$1,650	$3,100	$4,750
Mar-04	$2,850	$400	$3,250
Apr-04	$2,800	$4,450	$7,250
May-04	$2,450	$2,000	$4,450
Jun-04	$3,700	$4,400	$8,100
PY 1 Total	$19,850.00	$17,950.50	$37,800.00
Jul-04	$3,300	$1,800	$5,100
Aug-04	$3,500	$3,300	$6,800
Sep-04	$2,350	$1,000	$3,350
Oct-04	$3,450	$1,800	$5,250
Nov-04	$7,200	$1,200	$8,400
Dec-04	$200	$400	$600
Jan-05	$1,000	$1,100	$2,100
Feb-05	$1,100	$1,400	$2,500
Mar-05	$3,900	$0	$3,900
Apr-05	$1,100	$300	$1,400
May-05	$1,000	$1,600	$2,600
Jun-05	$750	$800	$1,550
PY2 Total	$28,850.00	$14,700.00	$43,550.00
Jul-05	$1,450	$500	$1,950
Aug-05	$4,050	$0	$4,050
Sep-05	$3,250	$1,200	$4,450
Oct-05	$2,000	$500	$2,500
Nov-05	$3,250	$2,800	$6,050
Dec-05	$3,000	$400	$3,400
Jan-06	$3,900	$2,700	$6,600
Feb-06	$850	$500	$1,350
Mar-06	$4,750	$1,600	$6,350
Apr-06	$5,200	$700	$5,900
May-06	$4,350	$800	$5,150
Jun-06	$3,200	$300	$3,500
PY 3 Total	$39,250	$12,000	$51,250

Jul-06	1,850	1,200	3,050
Aug-06	4,700	1,000	5,700
Sept-06	1,250	400	1,650
Oct-06	450	800	1,250
Nov-06	1,000	800	1,800
Dec-06	2,300	300	2,600
Jan-07	1,350	1,000	2,350
Feb-07	2,800	900	3,700
Mar-07	3,250	1,500	4,750
Apr-07	2,850	800	3,650
May-07	3,700	300	4,000
Jun-07	1,500	400	1,900
PY 4 Total	**$27,000**	**$9,400**	**$36,400**
Grand Total	**$114,950**	**$43,250**	**$169,000**

Public Education
Metro continues to educate the general public on local stormwater regulations using a variety of outlets, which include public access channel television advertisements, web site information, hand-outs, etc. The public education program is discussed in further detail in Section 4.10.

4.2.2 Stormwater Best Management Practices (Part III.B.2.b.)

Contact Name: Rebecca Dohn MWS, Stormwater Division, NPDES section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
2b	Report BMP Monitoring and Considerations	Annually	•	•	•	•		

Metro continued to monitor BMP sites in permit year 4. There were no BMP sites sampled during permit year 4 to determine the pollutant reduction of different types of BMPs. Metro recognizes that regional facilities and the facilities retrofitted to improve pollutant capture efficiencies are important to the long-term success of an MS4 program. Refer back to Section 4.1.7 of this document for an explanation of the BMP monitoring and retrofitting considerations.

4.2.3 Master Planning (Part III.B.2.c.)

Contact Name: Tom Palko, MWS, Assistant Director, 615.862.4799

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
2c	Master Planning	PY 2 and 5		•				

Master planning is essential to the long-term success of a water quality management program. NPDES understands that the Metro Planning Department is a critical facilitator in this area and in related processes. Therefore, NPDES intends to continue to work closely with Metro Planning Department staff in the future to

help facilitate this process as well as initiate internal Master Planning activities within the Stormwater Division as it relates to overall Stormwater quality and quantity considerations.

The Mill Creek watershed is still identified as a watershed of major importance in Davidson County. Through funds provided by Metro during permit year 2, the U.S. Army Corps of Engineers (COE) began a study on the Mill Creek watershed to improve environmental sustainability within the watershed. It was originally anticipated that the study could be used as a model to be applied across other watersheds in the county, but it was noted that there were several differing characteristics of the watersheds. Based on this information, Ecosystem Restoration Alternatives were proposed - specific to the Mill Creek Watershed. Some of the restoration alternatives proposed and identified in the Mill Creek Watershed Study are below:

Restoration Alternative	Scope of Work
Ezell Park (Mill Creek mile 9.2-10.8)	Restore over 1.5 miles of riparian corridor, stabilize 940 feet of eroding banks, construct two rain gardens (total 1.5 acres), remove 4000 feet of exotic invasive species and provide environmental education.
Whittemore Branch at Antioch Community Center (Whittemore Branch mile 0.4; Mill Creek mile 13.1)	Bank stability, exotic species removal, widen the riparian corridor, construct rain gardens, and provide public education opportunity.
Antioch Middle School (Mill Creek mile 13.6)	Widen the riparian zone, remove exotic species, and construct rain gardens, and school environmental education.
New Metro Park at Culbertson Rd (Mill Creek mile 18.05-18.75)	Collaborate with Metro Parks to construct sustainable features, and public education opportunity.
Paragon Mills area - (Seven Mile Creek Mile 0.5-1.5)	Removal of exotic vegetation and construction of rain gardens, and community involvement
Whitfield, Caldwell, Thompson Lane, Pitts Park (headwaters of Sorgham Branch) and Sevenmile Creek Parks	Collaborate with Metro Parks to construct sustainable features, and public education opportunity.

The Stormwater Division will continue to work with the COE in future years to pursue these projects as funding allows.

The Stormwater watershed manager has remained focused on evaluating State-listed 303(d) impaired watersheds in Davidson by way of stream walks and TMDL sampling (added in permit year 4) to identify the source of the impairments and potential activities that can be undertaken to improve water quality within the watersheds.

4.2.4 Training (Part III.B.2.d.)

Contact Name: Tom Palko, MWS, Assistant Director, 615.862.4799

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
2d	Training	Annually	•	•	•	•		

The Stormwater Division believes firmly in the technical training of plans review engineers and inspector staff on the latest techniques and management practices to address long-term water quality. Table 2.5.1 in Section 2 of this document depicts the technical training that Stormwater staff received during permit year 4.

Stormwater water quality and construction site inspectors and engineers have received Level I EPSC training from TDEC. The Level I training is a foundation-building course intended for individuals involved in land-disturbing activities covered by TDEC's Construction General Permit, including inspection and enforcement personnel from all levels of government, plan preparers and reviewers, designers, and engineers. The course gives participants a solid working knowledge of erosion prevention and sediment control (EPSC) practices. The Stormwater plan review engineers have received the Level II EPSC training, which is an advanced two-day course that is specifically designed for engineers, environmental designers, and plan preparers and reviewers. In the Level II course, detailed instruction is given on the engineering technologies needed to control stormwater on a construction site. Workshop participants obtain the tools needed to develop an acceptable, working erosion and sediment control plan as described in TDEC's *Tennessee Erosion & Sediment Control Handbook* and required by the Tennessee General Construction Stormwater Permit.

4.2.5 Future Direction of Element 2

Ordinances, Regulations, and Guidance

Metro Water Services will continue to take steps toward more effective enforcement of local regulatory mechanisms in order to enhance water quality. The NPDES section will continue to review the effectiveness of the regulations and reserve the right to provide updates when deficient areas are encountered.

Best Management Practices (BMPs)

The NPDES section recognizes that regional BMP facilities and the facilities retrofitted to improve pollutant capture efficiencies are important to the long-term success of an MS4 program, and will continue to implement the BMP inspection program in the upcoming permit years.

Master Planning

Master planning is essential to the long-term success of a water quality management program, and working closely with the Metro Planning Department is a critical facilitator in this area and related processes. Therefore, NPDWS intends to work with the Metro Planning Department staff in the upcoming permit years to help facilitate the long-term planning process that promotes development responsible to stormwater quality.

Training

The Stormwater Division will continue to look for training opportunities for grading permit plan reviewers on the latest techniques and management practices to address long-term water quality issues. MWS will also provide training for the development community on stormwater program changes, such as those resulting from the regulations revision process.

4.3 Roadway Maintenance (Part III.B.3.)

The objective of this section is to satisfy Part III.B.3 by reducing impacts to stormwater runoff from roadways. This objective is accomplished by examining several programs including catch basin cleaning, downtown street sweeping, management practices for the use of de-icing chemicals, stormwater controls at salt storage areas, management practices in the use of herbicides, and spill response. Furthermore, roadway design criteria, construction requirements, and street maintenance responsibilities were explored.

4.3.1 Catch Basin Cleaning (Part III.B.3.a.)

Contact Name: Denny Bone, MWS, Stormwater Division, Routine Maintenance Section, 615.862.4537

	Activity	SWMP Schedule	1	2	3	4	5	Comment for PY 4
3a	Prioritize catch basin cleaning activities	PY 1	●					
	Report catch basin cleaning activities	Annually	●	●	●	●		

MWS Stormwater Routine Maintenance (RoM) section has continued the basic program of catch basin cleaning into the fourth year of the Cycle 2 permit. The RoM section has cleaned out over 20,000 catch basins during the permit year 4. Table 4.3.1.1 presents the statistics on catch basin cleaning from year 4 of the first NPDES permit cycle through year 4 of the second permit cycle. Since the stats have been tracked, nearly 138,000 catch basins have been cleaned.

Table 4.3.1.1 Catch Basin Cleaning

Type of Maintenance	Permit year 4 Cycle 1	Permit year 5 Cycle 1	Permit year 1 Cycle 2	Permit year 2 Cycle 2	Permit year 3 Cycle 2	Permit year 4 Cycle 2	Total Since Tracking Began
Routine	177	7,278	33,495	37,296	35,258	20,125	133,629
Complaint	0	260	416	353	263	3,088	4,380
Class C	0	0	0	5	0	0	5
Total	177	7,538	33,911	37,654	35,521	23,213	138,014

The RoM section uses two trucks mounted with a pressure wash and vacuum system to clean catch basins. They are used daily to clean storm inlets and pipes that are clogged. Maintenance crews perform inspections for required cleanings and are on call to address other reports of clogged inlets as they are received.

Figure 4.3.1.1 Vactor Truck

4.3.2 Downtown Street Sweeping (Part III.B.3.b.)

Contact Name: David Himes, MDPW, Streets Services Division, 615.862.8716

	Activity	SWMP Schedule	1	2	3	4	5	Comment for PY 4
3b	Downtown street sweeping	Ongoing	●	●	●	●		

The Department of Public Works (MDPW) is responsible for downtown street sweeping and has set a goal of sweeping approximately 2,800 miles of street per month. Public Works has increased their number of street sweeper machines to a total of six. There are eight employees that utilize the sweepers daily. During permit year 4, Public Works swept approximately 20,544 miles of streets. The street sweeping program led to the collection and disposal of approximately 3,209 tons of debris that had collected on the street in permit year 4 that would have otherwise drained to the storm drains. Public Works also strives to sweep every curbed and guttered street once per month. Metro will continue to review the procedures associated with these programs to benefit stormwater runoff quality.

4.3.3 Deicing Practices (Part III.B.3c.)

Contact Name: David Himes, MDPW Streets Services Division, 615.862.8716

	Activity	SWMP Schedule	1	2	3	4	5	Comment for PY 4
3c	Evaluate Metro application and storage practices and Report modifications	PY 1 and 3	●		●			

The management practices for deicing chemicals storage and application practices were first addressed in the 1992 Part 2 Application. Since then, many initiatives have been undertaken that have minimized the water

quality impacts of roadway salt application, which is required occasionally during the winter months to create safer driving conditions in Davidson County. Specific aspects of this program are summarized below.

Prior to the formation of the NPDES Program, Public Works conducted a series of studies to determine the safest, most effective, and most economical roadway deicing agent available. These studies concluded that salt was the best de-icing agent alternative for Metropolitan Nashville and Davidson County. MDPW has since initiated brine de-icing of the roadways prior to winter storms to prevent ice from binding to the roadway. This preventative measure has resulted in a reduction of the total amount of salt applied directly to the roads. Brine de-icing can be applied at a much lower rate with successful results, thus reducing chlorides in stormwater runoff and cutting salt usage costs.

MDPW Maintenance Section Salt Usage

Salt costs Metro approximately $33 per ton. Metro prepares for each winter season with approximately 8,000 tons of salt in storage, with any unused salt held until the next year. Metro Public Works currently receives its salt in 1,500-ton barge loads, which is transferred to three strategically located, covered bins. During permit year 4 winter season, approximately 1,254.33 tons of salt/brine was applied to the roadways in Davidson County. Icy weather conditions have occurred infrequently in Davidson County over the past few years, and consequently MDPW has abundant salt reserves that must be stored. Closer attention has been given to management practices applied at salt storage bins.

Salt Storage Facilities

Metro currently has three salt storage facilities. They are located at Public Works East Center, Public Works West Center, and at the Smith Springs Facility. Brine solution is created at the South 5th facility and then stored in sealed units at each of the sites. All three sites have concrete bins in which the salt is stored, making impacts to stormwater runoff non-existent if salt is not tracked outside of the bin areas. Each site has operating procedures aimed at eliminating and/or cleaning up salt tracked from the bins. The NPDES staff periodically inspects the three bin sites to monitor the effectiveness of these procedures. Any observed deficiencies are reported to the proper MDPW officials. Results of inspections performed during permit year 2 are found in Table 4.3.3.1.

Table 4.3.3.1 Salt Bin Inspections Results

Date of Inspections	Public Works East Center	Public Works West Center	I-24/Briley Parkway old Everett Rock Quarry	Public Works Smith Springs
19-Jun-03	Bin 1/4 full, no sign of discharge or loss. Salt completely covered.	Bin 1/2 full, no sign of discharge or loss. Salt completely covered.	Bin empty of salt. Being used as storage of Averitt equipment and supplies. No signs of discharge.	
22-Oct-03	Bin 1/4 full, no sign of discharge or loss. Salt completely covered	Bin 1/2 full, no sign of discharge or loss. Salt completely covered.	Will not be used this year per David Himes.	Bin 3/4 full, no sign of discharge or loss. Salt completely covered. (added this bin this fall)
19-Dec-03	Bin full. Trace of salt exposed. No evidence of discharge.	Bin full. Trace of salt exposed. No evidence of discharge.	Not in use.	Bin full. Trace of salt exposed. No evidence of discharge.
15-Jan-04	Bin full. No evidence of discharge.	Bin full. Trace of salt exposed. No evidence of discharge.	Not in use.	Bin full. Trace of salt exposed. No evidence of discharge.
20-Feb-04	Bin full. No exposed salt.	Bin full, some exposed salt. Salt spilled at parking and drive.	Not in use.	Bin full, some exposed salt. Signs of salt being washed away.
24-Mar-04	Bin full. No exposed salt.	Bin full. No exposed salt.	Not in use.	Bin full. No exposed salt.
21-May-04	Bin full. No exposed salt.	Bin full. No exposed salt.	Not in use.	Bin full, some exposed salt. Signs of salt being washed away.
30-Jul-04	Bin full. No exposed salt.	Bin full. No exposed salt.	Not in use.	Bin full. Minor exposed salt. No signs of washing away.
28-Oct-04	Bin full. No exposed salt.	Bin full. No exposed salt.	Not in use.	Bin full. No exposed salt.
27-Apr-05	No exposed salt.	No exposed salt.	Not in use.	Exposed salt.
25-Jul-05	No exposed salt.	No exposed salt.	Not in use.	Small amount of exposed salt.
08-Dec-05	No exposed salt	No exposed salt	Not in use.	No exposed salt
17-Jan-06	No exposed salt	No exposed salt	Not in use.	No exposed salt
02-Mar-06	No exposed salt	No exposed salt	Not in use.	Some exposed salt
10-Jul-06	Good amount of exposed salt but given the site elevations, salt does not appear to be migrating away from the pile	Empty	Not in use.	Some exposed salt leaching to storm drain.

Salt and Brine Application Control

In 1996, spreader control systems were installed on all Public Works spreader trucks. These systems consist of a computer that dictates the salt spread rate based on a pre-set application rate (determined by the severity of weather conditions) that corresponds to truck speed. This means that as the trucks slow down or stop, the salt spreader slows or stops correspondingly - reducing the amount of salt that is wasted or over-applied. The spread rates used follow nationally recognized spread rates. This computer-aided system has resulted in a 25% annual reduction in salt use. It is reasonable to assume that these reductions are realized during each salt application season. In addition, MDPW has added additional trucks to apply a brine solution at a continuous rate on the roadways of predetermined routes in anticipation of possible icy conditions. This further reduces the need to apply salt directly to roadways. Reducing direct salt application also helps prevent road damage due to salt application and creates a reduction in the possible consequences of water quality.

Automated Road Data

Metro can access automated data from five roadway sensor-sampling sites that supply real-time data (road surface temperature, moisture, subsurface sensor at 18 inches, salt brine percentage, and weather conditions including: temperature, wind speed, dew point, percent humidity) to the main Public Works office. Metro uses this information to determine when salt or brine application needs to begin (road surface temperature registers at or near 32° F) or when salt needs to be reapplied to roads that have already been salted (roadway salt solution percentage drops below the known level needed to prevent ice from forming/reforming). Additionally, Metro subscribes to a real-time weather radar service that allows officials to be more accurate in predicting when and if frozen precipitation is to begin. This prevents the unnecessary application of salt in cases where expected snow or ice does not develop or move into Davidson County as predicted.

Salt and brine application controls and real-time road data have been instrumental in allowing Metro to better manage salt application in areas where water quality can be greatly affected by careless deicing practices, such as bridges located in close proximity to water bodies, waterways, or conveyances. Metro coordinates with the Corps of Engineers on icy roadway conditions on the Bell Road bridge over Percy Priest dam. The Corps of Engineers does not want salt applied to the section of road over the dam. Instead, this section of road is closed during hazardous driving conditions.

Metro's Salt Application Area

The State of Tennessee's Department of Transportation (TDOT) is responsible for both the Interstate and State Highway systems. In actuality, the State only has the resources to salt the Interstate system and approximately one-half of the State Highway system within Davidson County. Therefore, Public Works currently salts the other half of the State Highway system and all major Metro roads. Public Works has formulated a list of roads within Davidson County that are the most problematic during icy conditions. These roads are the first to receive salt with other roads being salted as deemed necessary by Public Works, based on information received from the Police Department, other Metro Departments, citizens, etc.

4.3.4 Herbicides, Pesticides, and Fertilizers (Part III.B.3.d.)

Contact Name: Michael Hunt, MWS, Stormwater Division NPDES section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
3d	Evaluate Herbicides, Pesticides, and Fertilizers application and storage practices	PY 1 and PY 3	•		•			

During the formative stages of Metro's MS4 NPDES permit program, evaluations of the applications and storage practices of herbicides, pesticides, and fertilizers were focused on Metro Public Works, where NPDES staff initially served. During the investigation of usage practices, it was determined that little, if any, routine usage of these substances occurred. The same situation is also true for Metro Water Services (MWS), where NPDES Office staff currently serves. In an effort to gain more knowledge about the amounts, types, storage, and application practices of Metro departments, the NPDES section sent out general information request sheets to various Metro departments. In permit year 4, the NPDES goal was to implement an Environmental Compliance Inspection (ECI) program that will focus on Metro locations, especially those properties identified in the general information request forms as containing pesticides, herbicides, insecticides, and automotive fluids. This goal is expected to have been implemented and operating by end of permit year 5. The ECI program will be a resource on proper storage, mixing, and application procedures for maintenance activities.

4.3.5 Spill Response Program (Part III.B.3.e.)

Contact Name: Michael Hunt, MWS, Stormwater Division, NPDES section, 615.880.2420

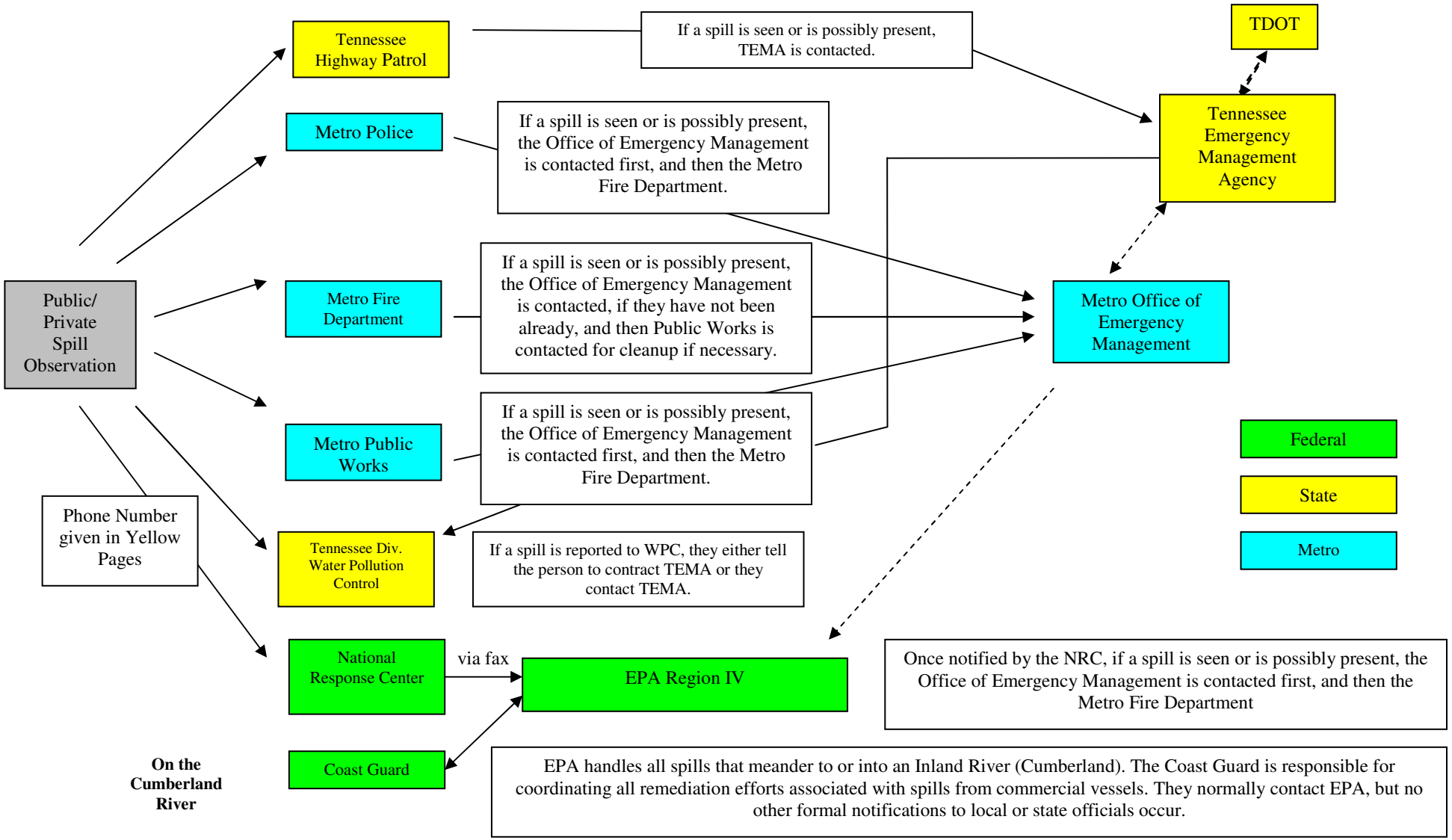
Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
3e	Report on Spill Response Program	Annually	•	•	•	•		

The Metropolitan Nashville and Davidson County Emergency Management Plan (EMP) has developed policies and procedures to coordinate multi-departmental response and recovery from spill incidents. In the Nashville-Davidson County area, small-scale emergencies are typically managed on the scene. Primary responsibility varies among the different agencies depending upon the type of incident. The principal agency should be responsible for taking control of the on-the-scene management of the incident by directing rescue, recovery, and control. The primary HAZMAT responsibilities fall to the Fire Department (Hazard 12 unit) with Public Works contributing two HAZMAT teams and Water Services contributing one HAZMAT team. Principal agency assignments are explained in detail within the EMP. If more than one Metro agency is involved, coordination of overall emergency management related activities is done through the Office of Emergency Management (OEM).

Figure 4.3.5.1 illustrates the order of response and communication protocol. The EMP calls for the Fire Department to be the first contact in the event of a spill. The Fire Department responds, assesses the situation, notifies OEM, and calls Public Works HAZMAT to either perform the cleanup or to notify remediation contractors if the scope of the spill is greater than Public Works can address. The response times for all Fire Department locations in the county are estimated to be less than four minutes. The HAZMAT team is able to respond throughout the county within six to ten minutes. The NPDES office has someone on call 24 hours a day, 7 days a week, to respond to spills from internal notifications or from OEM that are believed to involve stormwater/MS4 related issues. During permit year 4, the NPDES office documented approximately 41 spill responses in the City Works database (a slight reduction from permit year 3 with a reported 47 spill responses). In permit year 3, the NPDES section also started responding to provide technical support on sanitary sewer overflows that were near MS4s or streams. These responses were also documented as spills in the tracking database. Some spill calls that are received and responded to during normal business hours are treated as water quality complaints/illicit discharge investigations.

In addressing spill areas, the policy for the Fire Department, unless in case of emergency, is to no longer wash spills into the MS4. Instead, bag absorbents are used to capture and/or stabilize the spill material. The Public Works HAZMAT teams generally respond to all spills where absorbent has been applied. On the smaller spills, the Public Works HAZMAT team usually performs the necessary cleanup. A list of the spills that the Public Works HAZMAT team responded to in permit year 4 and the previous permit year are included in Attachment A. Larger spills that require more involved cleanup activities are usually contracted out for clean-up. If the party responsible for the spill can be identified, Metro seeks compensation for the remedial activities. If identification of the responsible party is impossible, the costs of remedial services are ultimately borne by Metro.

Figure 4.3.5.1 Metro EMP Order of Response and Communication Protocol for Spills



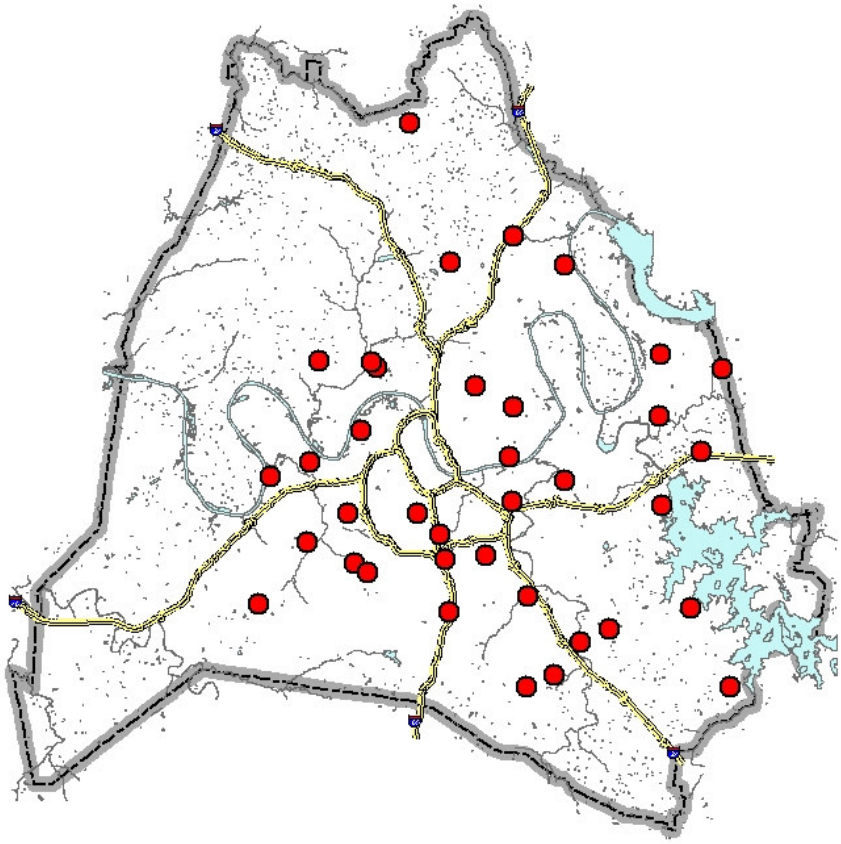
Spills that occur at locations allowing rapid migration into waterways or conveyances would represent a potentially severe threat to water quality in Davidson County. Such spill locations would include sites in the proximity of creeks or streams, sites from which closed impervious stormwater sewer systems route directly to creeks or streams, spills from mobile vehicles on or near waterway bridges, and spills from vessels on waterways. In looking at specific industry types that have the greatest likelihood of having an impact on water quality, companies that transport large volumes of chemicals on a routine basis such as railroad, trucking, and barge companies would be considered to present the greatest threat of an impacting spill. Any companies that handle or utilize chemicals and/or compounds that are extremely poisonous, hazardous, toxic, etc. would also be considered to pose a threat to water quality and should have sophisticated spill prevention measures in place. The NPDES program gives special attention to these and all industries during inspections and complaint investigations to ensure that necessary precautions are taken at each site to prevent spills from impacting water quality.

Historical spill data for Davidson County indicates that the majority of spills do not generally pose an immediate threat to "Waters of the State". Most spills did not reach waterways or conveyances such that water quality impacts to "Waters of the State" occurred. However, the NPDES Program will continue to monitor spill trends within the county and will remain ready to take necessary actions to address pertinent spill issues. Figure 4.3.5.2 depicts some photos of typical spills the NPDES office staff have responded to during permit year 4.

Figure 4.3.5.2 Photos of Spills and Cleanup Activities

In general, the NPDES section only responds to spills involving storm drains and creeks. Excluding sanitary sewer overflows, the majority of spills that NPDES responds to are located along roadways. Since many of the spills happen on highways and interstates, the NPDES section has entered into an agreement with the Tennessee Department of Transportation (TDOT) to better address spill issues on State roadways/Interstates (from which spills might otherwise route into the Metro MS4). Figure 4.3.5.3 depicts the locations of some of the spill/overflow response investigations conducted by NPDES in permit year 4.

Figure 4.3.5.3 Map of Spills Responded to in Permit Year 4



4.3.6 Design and Construction (Part III.B.3.f.)

Contact Name: Tom Palko, MWS, Assistant Director, 615.862.4799

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
3f	Report Modifications to Design and Construction	Each Compliance Report	•	•	•	•		

Roadway design criteria and construction requirements have been reviewed by Metro. The following design considerations were recommended to the Public Works engineering department for reducing the impact of roadways on stormwater pollution:

1. Consider use of permanent treatment control BMPs for all new roads and extensions of roads in newly developed areas.
2. Consider use of permanent treatment control BMPs for projects involving rehabilitation of existing roads if roadway runoff potentially impacts a sensitive water body.
3. Use swales and buffer strips whenever possible.
4. Consider the use of vegetated or bioengineered drainage ditches in lieu of rip-rap whenever possible.
5. Integrate permanent treatment BMPs with temporary construction BMPs whenever possible.
6. Develop design guidelines for permanent treatment BMPs on the basis of specific hydrologic characteristics of the Metro area.

4.3.7 Future Direction of Element 3 - Roadways:

Catch Basin Cleaning and Downtown Street Sweeping

The Stormwater RoM section will continue the ongoing program of catch basin cleaning throughout the permit cycle. The number of catch basins cleaned due to complaints as well as the routine maintenance program is anticipated to increase. The Department of Public Works will continue the ongoing program of sweeping the streets on a monthly basis in the downtown Metropolitan area.

De-icing Chemicals

The Department of Public Works will continue to utilize a combination or either salt or a brine solution as de-icing agents for Metropolitan Nashville and Davidson County. The NPDES section will continue to evaluate de-icing applications and storage practices to determine if any additional or alternative measures might benefit water quality from roadway runoff and salt bin storage locations.

Herbicides, Pesticides and Fertilizers

The NPDES section will continue the Environmental Compliance Inspection program for Metro facilities and practices that store and apply chemicals, and will also continue to educate all Metro departments on proper techniques of land maintenance, including the application of chemicals.

Spills

The NPDES section will continue to work with other Metro departments in responding to and documenting the water quality impacts and cleanup efforts of spills and sanitary sewer overflows. The NPDES section has also entered into discussions with TDOT to reconcile their new MS4 NPDES permit obligations relating to spill response on State roadways in an effort to clearly identify respective responsibilities.

Design and Construction

Any modifications to the standards and procedures applied to reviewing roadways proposed by developers and/or Metro road construction projects will be reported if they are found to benefit water quality. The NPDES section will continue to work with Public Works to try to promote water quality considerations in roadway design.

4.4 Landfills and Other Waste Treatment, Storage, or Disposal Facilities (Part III.B.4)

The objective of this program element of the SWMP is to satisfy Part III.B.4, which will minimize the impacts of municipal facilities on stormwater quality. This includes the investigation of closed and open municipal landfills and other treatment, storage or disposal facilities for municipal waste, including transfer stations, maintenance and storage yards for transportation fleets, and sludge application sites. These investigations are to be used as a basis for establishing procedures and prioritize control measures for reducing pollution in stormwater discharges at these sites.

4.4.1 Monitor Water Quality-Related Activities (Part III.B.4.a)

Contact Name: Michael Hunt, MWS, Stormwater Division, NPDES section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
4a	Monitor Activities, Report on Issues	Ongoing	•	•	•	•		

Active Landfills

The Department of Public Works, Division of Waste Management (DWM) is responsible for monitoring active and closed landfills within Metro Davidson County. Currently, only two privately owned landfills operate in the county: Southern Services and Odell Binkley landfills. These landfills receive only demolition waste and operate under TDEC Division of Solid Waste Management permits. No active landfills within Davidson County receive household hazardous waste. There has been no stormwater runoff issues reported to the NPDES section by the DWM. NPDES staff has visited the Southern Services Landfill on numerous occasions with only minor issues noted. The landfill is required to wash down the road periodically for dust control measures. During permit year 3, NPDES staff met with personnel from the landfill and pointed out that washing of the road was causing some suspended solids to discharge directly into a nearby ditch. The landfill quickly installed a rock check with filter fabric to filter the runoff as a result of the road washing. See Figure 4.4.1.1. A follow-up inspection was conducted during permit year 4, and the control measures have proven to be effective.

Figure 4.4.1.1 Photograph of the Rock Check Dam Placed at the Exit to Southern Services Landfill

Inactive Landfills

The most recent Metro-operated landfill to close was the Thermal Ash Monofill located in North Nashville. The capping and stabilization of this landfill was completed during permit year 2.

Metro DWM is currently required to monitor 5 inactive landfills, which include: the Bordeaux Landfill, Thermal Ash Monofill, Due West Landfill, Lebanon Road Landfill, and River Hills Monofill. Only two of these landfills (Thermal Ash Monofill and River Hills Monofill) are required to be monitored per requirements of the Tennessee Multi-Sector Industrial Stormwater Permit. Figure 4.4.1.2 contains the results from the stormwater sampling performed in permit year 4. The elevated magnesium levels at the River Hills Landfill are thought to be due to surface water runoff from the road. The elevated magnesium and aluminum levels at the Thermal Ash Monofill are thought to be due to closure and decommissioning of the site. Metro will continue to monitor for these levels. Photographs of the Metro-monitored landfills are depicted in Figure 4.4.1.3.

Figure 4.4.1.2 Stormwater Sampling Results from Permit Year 4

Landfill Name	Landfill Type	Address	Contact Name	Contact Phone	Sample Results (mg/l)			
					Al	Fe	Mg	TSS
Metro River Hills Landfill	Municipal Combustor Ash Monofill	1821 River Hills Drive	Clayton Hand	862-8623	15	13	11	260
Metro Thermal Ash Monofill	Municipal Combustor Ash Monofill	1915 Cement Plant Road	Clayton Hand	862-8623	0.44	0.43	5.2	21

Figure 4.4.1.3 Municipally-Operated Landfills (Inactive)

Bordeaux Landfill

River Hills Landfill

Due West Landfill

Lebanon Road Landfill

Thermal Ash Monofill

Treatment, Storage, and Disposal Facilities Investigation

In addition to active and inactive landfills located within Davidson County, there are two privately-operated waste transfer stations that receive and temporarily store household hazardous waste: BFI Transfer Station on Freightliner Drive and the Waste Management Transfer Station on Antioch Pike. These facilities were routinely inspected by the DWM for housekeeping issues during permit year 4.

According to the latest list produced by the EPA, there are eight recognized Treatment, Storage, and Disposal (TSD) sites located within Davidson County that are still in operation. Four of the eight facilities have already been inspected by the NPDES section, and no major stormwater issues were observed; two of the businesses are closed and are no longer operational. The remaining TSD sites are scheduled to be inspected by the end of permit year 5. Table 4.4.1.2 lists the TSD sites downloaded from the EPA Envirofacts website that were found to still be in operation.

Table 4.4.1.2 List of TSD Sites Downloaded from the EPA Envirofacts Website

Facility Name	Facility Address	Handler ID#
Clean Harbors/Safety Kleen	215 Whitsitt Road	TND981474125
E. I. Dupont De Nemours & Co	1002 Industrial Road	TND047001979
IIGI Adhesives Inc	6100 Centennial Blvd.	TND001981240
John P. Saad & Sons, Inc.	3655 Trousdale Drive	TND065833543
Lambs Cleaners	310 East Trinity Lane	TND034836866
Lion Oil Company, Nashville Terminal	90 Van Buren Street	TND052143070
Metroplex Limited	2300 Clifton Pike	TND004038790
Mid-State Plating Company, Inc.	14th Avenue North	TND004046033

Note: The facilities shaded in gray have been inspected.

Solid Waste Haulers

The Department of Public Works, Waste Management Division issues licenses to haulers of municipal waste in Davidson County. The NPDES section and the Waste Management Division previously agreed to implement, as a condition of receiving the annual solid waste haulers license, a certification statement to be signed by a designated representative of the licensee that stipulates the operations permitted by the license shall not contribute to neither illicit discharges nor stormwater runoff pollution. Figure 4.4.1.3 is a copy of this new certification statement. Following the statement is a list of all Metro solid waste haulers who have signed this certification statement (Table 4.4.1.3) for license renewal.

Figure 4.4.1.3 Certification Statement

Stormwater Quality Certification Statement for Metro Division of Solid Waste Licensees

On July 1, 1996, the Metropolitan Government of Nashville & Davidson County (Metro) was issued an NPDES Permit from the Tennessee Division of Water Pollution Control in accordance with the Federal Water Quality Act of 1987. This permit requires Metro to initiate various programs and activities aimed at eliminating both illicit and contaminated stormwater discharges within Nashville/Davidson County. Due to these permit responsibilities; henceforth, any entity wishing to secure and maintain a Solid Waste Hauler's License from the Metro Public Works Division of Solid Waste Management must sign and abide by the certification statement below.

I hereby certify, as a duly designated representative of _____ (the licensee), that _____ (the licensee) shall maintain and conduct its entire operation so as to not create or contribute to water pollution within Metro. _____ (the licensee) further understands that failure to meet this requirement can result in a revocation of its Metro Solid Waste haulers license and may additionally lead to other enforcement actions on the part of Metro's NPDES Program.

Note: Water Pollution is considered to include, but is not limited to; illicit discharges (to storm drains, ditches, or creeks) and/or contaminated stormwater runoff and discharges. This stipulation applies to locations utilized by the Solid Waste license holder on a routine basis to conduct its business such as; fleet maintenance/storage sites, transfer stations, and any other location that might be impacted by the license holder's operations. This stipulation shall also extend to any other operational activities related to the exercising of rights granted by the Metro Solid Waste Hauler's License. If you have any questions as to what would create or constitute a water pollution issue, please contact Metro's NPDES/Water Quality Program at (615) 880-2420.

_____ **Signature** _____ **Date**

_____ **Title**

Disclaimer: This certification represents no additional requirements to the licensee as it pertains to State and Federal environmental regulations.

Table 4.4.1.3 Solid Waste Haulers Companies that have Signed the Water Quality Certificate

Certificate #	Issued to	Address	Date issued	Type of Operation
08-001	Gray's Disposal	522 Thompson Lane, Nashville, TN 37204	7-01-07	Collector
08-002	Waste Removal Services, LLC	164-B Old Carters Creek Pike, Franklin, TN 37064	7-01-07	Collector
08-004	Crick Disposal Services, Inc.	2635 Hart Street, Nashville, TN 37207	7-01-07	Collector
08-006	Welsh Disposal	325 Hillcrest Drive, Madison TN 37115	7-01-07	Collector
08-007	Hudgins Disposal Service	400 Crutcher Street, Nashville, TN 37206	7-01-07	Collector
08-008	Waste Management, Inc.	1428 Antioch Pike, Antioch, TN 37013	7-01-07	Operator
08-008	Waste Management, Inc.	1428 Antioch Pike, Antioch, TN 37013	7-01-07	Collector
08-110	J. E. McMurtry	103 Donald Street, Nashville, TN 37207	7-01-07	Collector
08-012	Red River Service Corp.	120 Ewing Drive, Nashville TN 37207	7-01-07	Collector
08-015	MS-COT SERVICES LLC	3516 Central Pike, Hermitage, TN 37076	7-01-07	Operator
08-018	Southeastern Recycling	15 Fairfield Avenue, Nashville, TN 37210	7-01-07	Collector
08-019	H. E. Parmer Co., Inc.	1635 County Hospital Rd, Nashville, TN 37218	7-01-07	Collector
08-020	Waste Management, Southern Services Landfill	4561 Amy Lynn Drive, Nashville TN 37218	7-01-07	Operator
08-021	City of Goodlettsville	215 Cartwright Street, Goodlettsville, TN 37072	7-01-07	Collector
08-031	Cordell Johnson	315 Hickory Street, Madison, TN 37116	7-01-07	Collector
08-039	Olympic Disposal, INC.	148 Volunteer Drive, Hendersonville, TN 37075	7-01-07	Collector
08-040	Odom-Vooys Partnership	148 Volunteer Drive, Hendersonville, TN 37075	7-01-07	Collector
08-042	PDQ Disposal, Inc.	625 Hamilton Avenue, Nashville, TN 37203	7-01-07	Collector
08-043	Burnice Winfrey Disposal, Inc.	1600 Emerald Drive, Nashville, TN 37128	7-01-07	Collector
08-044	Waste Industries, Inc.	7320 Centennial Blvd, Nashville, TN 37209	7-01-07	Collector
08-054	Sweeping Corp of America, Inc.	713 Mel Park Dr, Nashville, TN 37204	7-01-07	Hauler
08-061	American Disposal Service, LLC	340 Rockland Road, Hendersonville, TN 37075	7-01-07	Collector

4.4.2 Future Direction of Element 4

Metro will continue routine inspections of all active and inactive municipally-owned or privately-owned landfills within Davidson County. Treatment, storage, and disposal facilities as well as solid waste haulers will continue to be monitored as necessary.

4.5 Use of Pesticides, Herbicides, Fertilizers, Oils, and Other Toxic Materials (Part III.B.5)

The objective of this section of the SWMP is to satisfy Part III.B.5 regarding the education of the public on the proper use, handling, storage, and disposal of pesticides, herbicides, fertilizers and other household hazardous wastes. This public education element is an ongoing effort.

4.5.1 Operate Household Hazardous Waste Facility (Part III.B.5.a.)

Contact Name: Jenna Smith-Sexter, Public Works, Waste Management Division 615.862.8727

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
5a	Operate Household Hazardous Waste Facility	At least 1/quarter	•	•	•	•		

Metro's Public Works Division of Waste Management operates a household hazardous waste (HHW) facility. The HHW facility or East Recycling Convenience Center is located at 941 Richard Adams Road. The HHW facility is open to all residents of Nashville and Davidson County 361 days a year.

A full-time hazardous waste technician assists customers with unloading waste and then packages the material and finds receptacles for the collected material. Items accepted at the facility include newspaper, mixed paper, paper board, cardboard, aluminum, tin, glass containers, plastic bottles, tires, appliances, furniture, other bulk items, used oil, antifreeze, batteries, cleaners/solvents, insecticides, and lawn and pool chemicals. Items not accepted include tires, trash, ammunition, business and industrial waste, explosives/fireworks, medical waste, flares, smoke detectors, radioactive material, and gas cylinders. Commercial vehicles, rental trucks, and vans are not allowed at the site.

Information on hazardous waste is provided to the public on both the Public Works website and in an educational pamphlet to the right. The DWM's website is: http://www.nashville.gov/Recycle/. Information is provided on identifying hazardous wastes, finding alternatives to hazardous products, and disposing of waste properly.

4.5.2 Commercial Distributors (Part III.B.5.b.)

Contact Name: Michael Hunt, MWS, Stormwater Division, NPDES section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit Year Accomplished					Comments for PY4
			1	2	3	4	5	
5b	Commercial Distributors – Public Information	Ongoing	**X**	•	**X**	•		More effective education program adapted

During permit year 2, the NPDES program began an educational campaign directed toward commercial distributors, as well as landscaping companies who are involved in the application of such chemicals. Metro first obtained a list of Davidson County commercial distributors and landscaping companies through the yellow pages. Once a list was obtained, Metro created and sent a brochure detailing the proper chemical application methods and guidelines to each business on the list. A copy of this brochure is included in Appendix B. During permit year 3, the NPDES section began to refocus efforts from educating the "commercial distributors" to educating the businesses that are applying the chemicals. NPDES believes this effort to be more effective than educating distributors and periodically reviews this component for modifications.

4.5.3 Metro Facilities (Part III.B.5.c.)

Contact Name: Michael Hunt, MWS, Stormwater Division, NPDES section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
5c	Metro Facilities	Permit Year 2		•				

Metro recognizes the importance of preventing stormwater pollution from occurring on Metro properties. The Metropolitan Government of Nashville owns nearly 14,000 acres of land, making it one of the largest landowners in the County. While the majority of the Metro land is owned by the Parks Department and has been left in its natural wooded

state, there are many other Metro properties that receive routine land maintenance activities. During permit year 2, the NPDES section developed a campaign to educate all Metro departments that perform land maintenance activities. The NPDES section continued to educate other Metro departments in permit year 3. On June 22, 2006, NPDES staff held a MS4 permit seminar in which all heads of Metro departments were invited. Many Metro departments were represented at the meeting including: Planning Department, Public Works, MWS System Services, Mayor's Office, Nashville Electric Service, Health Department, Fire Department, Office of Fleet Maintenance, Codes Department, and Real Properties Services. The focus of the meeting was to educate other Metro departments on responsibilities of the MS4 permit. A large part of the meeting was devoted to the management of Metro properties and maintenance procedures and how they can impact water quality.

In permit year 3, the Metro Office of Fleet Maintenance built and opened a new Metro fleet maintenance facility (Metro Southeast). This facility performs maintenance on all light vehicles and small equipment throughout Metro; maintenance that was previously performed at numerous facilities across the county. The Metro Southeast facility is completely indoors and there appears, upon NPDES inspection and discussions with Fleet Management regarding the operation of the facility, to be no impacts to water quality.

In permit year 4, the NPDES section prepared a Stormwater Pollution Prevention Plan (SWPPP) for the Tennessee State Fairgrounds to mitigate the potential pollution sources that could enter Metro's MS4 at this specific location. The goal of the SWPPP is to improve water quality by reducing the amount of pollutants potentially contained in the storm water runoff being discharged to Brown's Creek, which runs through the Fairgrounds facility. In permit year 5, NPDES will continue to collaborate with other Metro Departments on stormwater quality aspects during design considerations.

4.5.4 Future Direction of Element 5

Operate Household Hazardous Waste Facility

The East Recycling Convenience Center (HHW facility) is anticipated to remain open 361 days a year to all residents of Davidson County. Residents can bring up to 15 gallons or 100 pounds of household hazardous waste each month. There is no fee to drop-off household hazardous waste at the East Convenience Center.

Commercial Distributors

It is very difficult, if not impossible, to secure/maintain a list of commercial distributors. In addition, education efforts performed in the past have been ineffective. The NPDES section intends to refocus the efforts within this permit requirement to educating the businesses that are applying the chemicals. In permit year 4, the NPDES section created a brochure for distribution to food service establishments/restaurants that explains the impacts of biodegradable chemicals on water quality. This modified approach will help focus attention on the applicators. See Section 7 of this document.

Metro Facilities

The NPDES section will continue its educational campaign to instruct all Metro departments on the proper handling and use of chemicals and hazardous substances. The NPDES section will also implement the Environmental Compliance Inspection program that will be a resource for chemical storage and application practices at Metro properties.

4.6 Illicit Discharges and Improper Disposal (Part III.B.6)

This element is designed to meet Part III.B.6 by facilitating an ongoing program to detect and stop illicit discharges and improper disposal of wastewater or solid wastes into the municipal separate storm sewer system (MS4). Components of the ongoing program include inspections, ordinances, enforcement procedures, field screening and investigations, spill response procedures, public information, management and disposal of oil and toxic materials, and limiting sanitary sewer seepage.

4.6.1 Ordinances and Enforcement Measures (Part III.B.6.a)

Contact Name: Michael Hunt, MWS, Stormwater Division, NPDES section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
6a	Refine Ordinances and Enforcement Measures	PY 1 and PY 3	•		•			

Metro Nashville has a strong Code of Law that clearly defines illicit discharges. The NPDES section has reviewed the regulations and the enforcement powers for illicit discharges and believes them to be adequate with no need of change. Metro Nashville's main Code of Law addressing illicit discharges is §15.64.205. Metro Code of Law can be found at the following link: http://www.nashville.gov/law/disclamer.htm

4.6.2 Dry Weather Field Screening (Part III.B.6.b)

Contact Name: Mike Seremet, MWS, Stormwater Division, NPDES section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
6b	Update and Prioritize Dry-Weather Field Screening	PY 5						

During permit Cycle 1 of Field Screening, approximately 4400 total sites were investigated. Unfortunately, a large portion of these sites were in the rural/residential areas of Davidson County (1/2 mi grids) which had a very low potential to produce illicit discharges. Consequently, for cycle 2, NPDES made a request to TDEC (which was accepted) to omit the 1/2 mi grid sampling and instead concentrate in the industrial/commercial areas of the county (1/4 mi grids) where experience has shown the majority of illicit discharges to occur. The ¼ mile grid was created from updated GIS-based land use/zoning data, developed by the Metro Planning Commission, to guide and monitor dry-weather field screening activities (See Figure 4.6.2.1). Field screening was conducted in permit year 3 and continued through permit year 4 with over 1,200 sites being inspected. During permit year 5, nearly 2,000 separate outfalls will have been screened for illicit discharges. Field screening will continue in future permit years until all non-residential areas are adequately screened.

During permit Cycle 2, more time and effort was applied to the industrial portion of the city and approximately 1933 industrial/commercial grids were screened. However, the number of actual illicit discharge detections did not increase. Field screening was conducted in non-residential zoned areas using the accepted ¼ mile grid.

Since NPDES has been conducting Field Screening, several inefficiencies have been noted in the current protocol:

- Each "point" screened yields a snap shot of Metro's MS4 points and is not a true indicator of what is occurring in that area. *Example*: NPDES could investigate an outfall during a permit cycle (meaning this outfall was observed *once* in a 5 year span). While the odds of observing a chronic illicit discharge may be very good, the odds of observing an intermittent illicit discharge are extremely small. Nearly all illicit discharges observed during the field screening process were discovered visually, while driving to the target field screening point and not at the field screening point itself.

- Many of the businesses contacted during regular NDPES complaint investigations have little or no prior knowledge of the current stormwater/environmental regulations relating to MS4s and illicit discharges.

Example: NPDES would physically drive into a ¼ grid once during a permit cycle, observe the area and leave. That now leaves the 5 or 10 businesses in that grid to conduct business for another 1825 days (5 years X 365 days), unaware of the current regulatory guidelines. Obviously, this leaves an extremely large potential for illicit discharges.

In June 2005 (during permit year 2), NPDES initiated an educational program to increase the effectiveness of the Field Screening program in conjunction with the Field Screening sweeps. NPDES began with those businesses located along four of the major roads in the city: Lebanon Pike, Dickerson Pike, Murfreesboro Pike, and Nolensville Rd. These four roads contain a large percentage of the ¼ mi grids needing to be field screened. This served as an opportunity to educate businesses on the current Metro NPDES regulations. Several different business/activity specific brochures were created and distributed to each business as part of this educational effort. The results of this approach has been extremely positive; meeting the business owners gave insight on the regulations and promoted awareness on enforcement if found to be out of compliance.

During cycle 2, nearly every business on Gallatin Rd. and its feeder streets was screened using this new proposed field screening method (in conjunction with the present field screening protocol), totaling approximately 250 businesses. The amount of illicit discharges found by visiting commercial sites individually on Gallatin Pike alone (15-20) was drastically higher than those detected throughout the entire county using the original FS protocol (<3). One final example: It's not uncommon for an auto garage to have a few gallons of oil spilled on their lot and in the garage itself. The garage owners sometimes do no understand the environmental issues this can create. Without a phoned in complaint, chances are slim that NPDES would ever venture far enough onto such a property to observe these issues.

Permit Cycle 3

NPDES proposes field screening modifications to the Permit Cycle Term 3 Field Screening Permit. The new approach will greatly reduce the amount of pollutants entering streams; this will enable NPDES staff to concentrate inspection time at the source of the pollutant. The proposed modifications are as listed:

1) Field screening sites will move from an infrastructure point based system to an individual commercial business system. Businesses will include all restaurants, food establishments, auto body repair facilities, car washes, or any other business that would appear to have a potential to create stormwater pollution issues. Educational literature will be distributed to businesses at time of screening/inspection.
2) The previous ¼ grid system for choosing sites will be abandoned for a major roadway/street coverage approach. NPDES will educate and inspect/screen the majority of commercial businesses on the four major roads or "hot spots" in Davidson County. This will include: Gallatin Rd, Dickerson Rd., Murfreesboro Rd., and Nolensville Rd. NPDES will have the flexibility to identify other businesses deemed in need of screening/inspections based on visual inspections, past enforcements, proximity to 303(d) listed streams, and complaints.
3) Sampling and subsequent analysis will only be conducted if it is uncertain or not obvious that a discharge contains pollutants.

Under the proposed protocol, NPDES will now go to sites as an educator and not in an official enforcement capacity. NPDES can meet the business owner/manager, conduct a screening of the site with the owner/manager or employee(s), discuss and explain issues and impacts to the community, make recommendations, provide direction on being compliant, and distribute educational material. The educational material distributed and the knowledge obtained will serve as *preventative* measure tools.

4.6.3 Illicit Discharge Investigations (Part III.B.6.c)

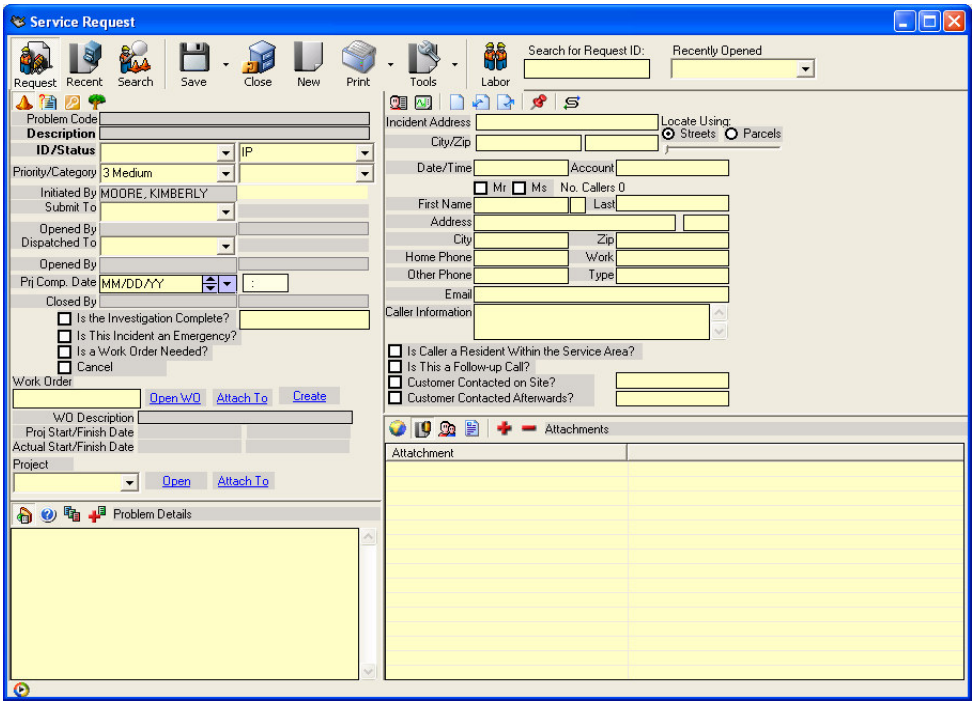
Contact Name: Mike Seremet, MWS, Stormwater Division, NPDES section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
6c	Illicit Discharge Investigations	Ongoing	•	•	•	•		

MWS has a comprehensive illicit discharge investigation program in place. Illicit discharges are detected through a variety of methods that include field screening, citizen complaints, thermograph investigations, and staff observations. Once a potential illicit discharge is detected, a comprehensive investigation is initiated and tracked. All illicit discharge investigations are treated as water quality complaints and are logged into databases that track the investigation status. During permit year 2, NPDES began a transition from an internal database within the NPDES office to a Metro-wide database (KIVA). In permit year 3, the NPDES section realized that the KIVA database was not going to meet the needs for complaint investigation tracking, and therefore, began using the CityWorks database. Any water quality complaint, spill/overflow response calls, and/or construction complaint of non-grading permit sites are logged into the CityWorks database for investigation documentation. Figure 4.6.3.1 is a screen capture of the new CityWorks database. The database works within a GIS program that allows the user to map the location of a complaint if a valid address is available.

In permit year 4, there were approximately 274 complaint investigations tracked in the CityWorks database. Of the 274 complaints tracked, 142 of them were related to construction activities, 95 were considered general water quality complaints, and 37 were spill or sanitary overflow response.

Figure 4.6.3.1 City Works Database for Complaint Investigations



Since permit year 2, the NPDES section has been analyzing illicit discharge (water quality complaint) investigations to determine if any trends were present that could affect policy decisions on public education, enforcement, etc.

The ultimate goal of an illicit discharge investigation is to eliminate pollution. The process of achieving corrective action is different for each scenario and is handled on a case by case basis. Upon discovery of an accidental illicit discharge, the NPDES section contacts the discharger to resolve the issue. If the discharge is considered a recurring or negligent event and depending of the type of discharge, the NPDES section reports/coordinates with TDEC-WPC as necessary on illicit discharge issues. The illicit discharge investigations involve sampling and other water quality field tests depending on the type and severity of the discharge. In some cases, sampling becomes very important in the documentation of illicit discharges, especially in cases that involve enforcement. Whenever possible, the NPDES section attempts to use public education to achieve compliance as appropriate when water quality impacts are not yet present (and can be avoided by the facility conducting site cleanup(s) and/or modify site operational practices, however, in certain cases, enforcement is necessary.

4.6.4 Public Information in Residential/Commercial Areas (Part III.B.6.d)

Contact Name: Michael Hunt, MWS, Stormwater Division, NPDES section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
6d	Distribute Public Information to Residential/Commercial Areas	Ongoing	•	•	•	•		

Public information activities associated with illicit discharges and improper disposals in residential and commercial areas are detailed in Section 4.10.1.

4.6.5 Sanitary Sewer Seepage (Part III.B.6.e)

Contact Name: Michael Hunt, MWS, Stormwater Division, NPDES section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
6e	Evaluate Reporting for Sanitary Sewer Seepage	PY 1 and PY 3	•		•			

The NPDES Department periodically evaluates the protocols for reporting potential sanitary sewer seepage into the MS4 or "Waters of the State". NPDES staff participates in monthly Overflow Abatement Program (OAP) meetings to discuss current investigations related to possible sewage seeps and proposed courses of action. The Overflow Abatement Program is an on-going effort to improve the water quality of the Cumberland River and its tributaries in Middle Tennessee. Significant progress has been made over the last decade in the reduction of combined sewer overflows (CSO) and sanitary sewer overflow (SSO) points.

Rehabilitation and replacement of defective sanitary sewer lines has been an integral part of Metro Water Services' Overflow Abatement Program since it's inception in 1990. Many of the programs are designed to increase the capacity to transmit and treat sanitary flow, which was reduced due to deterioration and leakage of both stormwater and ground water into the sewer lines. Capacity increasing projects include installation of parallel sewer lines, upsizing pumping stations, installation of inflow equalization basins and treatment plant expansions, and rehabilitating or replacing lines. Flows are actually reduced with rehabilitation to normal design levels, particularly during wet weather events due to the exclusion of stormwater infiltration. Eliminating hydraulic overloading brought about by inflow and infiltration reduces overflows and bypasses of wastewater from the collection system, thereby improving the quality of stream water in our community.

MWS spent approximately 9.2 million dollars on the rehabilitation of approximately 18.1 miles of sewer lines during permit year 3. In addition, during permit year 3, approximately 4.24 million dollars were spent on the improvements to the Dodson Chapel Equalization Basin and Pump Station in the Stoners Creek watershed and approximately 2.3 million dollars were spent on the Smith Springs Equalization Basin in the Mill Creek watershed.

In permit year 4, nearly 4.3 million dollars was allocated to rehabilitate 7.5 miles of sewer lines; $377,500 was spent for manhole rehabilitation; and, $760,000 was spent for the Richland Creek/Charlotte Pike Pipe Bridge replacement. During permit year 5, design specifications for the Basswood/West Park Equalization Basin will begin. Information on OAP is also available to the public at the following website: www.nashvilleoap.com/home.html.

Focus was also given in permit year 3 to proper remediation of sanitary seeps or overflows once discovered. As mentioned in Section 4.1.5, the NPDES office and MWS System Services worked together to develop a Sewer Overflow Response Plan (SORP) to remediate sanitary sewer spills, overflows, and/or seeps. During permit year 4, the NPDES Department responded to numerous sanitary sewer overflows and provided technical guidance on proper remediation.

Sanitary sewer seeps are identified through the OAP ambient monitoring program, citizen complaints, and the MWS thermograph investigation program. The thermograph investigation enables staff to identify leaking sanitary sewers and other illicit discharges based on elevated temperatures of illicit flows compared to ambient stream temperatures. The thermography study with cooperation from the Police Department was expanded from four creeks in 2003 to ten creeks in 2004 and includes Richland, Mill, Sevenmile, Manskers, Pages, McCrory, Gibson, Stoners, Browns, and the Stones River. Unfortunately, during the winter of 2005, the NPDES section was unable to conduct the aerial infrared or "thermography" sewer and stormwater line inspection. The camera in the police helicopter was being repaired and was unavailable for NPDES use during the period thermography has to be done (winter, during cold weather when leaves are off the trees). During permit year 4, thermography was conducted at three of the watersheds (Manskers, Richland, Brown). However, the study had to again cease when the camera in the helicopter broke.

The NPDES section initiated a watershed water quality program in permit year 3 aimed at improving water quality by increasing public awareness of water quality issues, developing and coordinating partnership resources, and increasing stream monitoring and illicit discharge detection efforts. The initial phase of this program was to gather as much data as possible, which included physically walking streams from mouth to headwaters, sampling and documenting issues that may have caused streams to be placed on the 303(d) list initially. During the stream walk NPDES staff members collect a sample at every tributary or inflow of water into the creek. The NPDES staff also collects background samples of the main stem of the creek in intervals throughout the walk. Some of the water quality parameters sampled for include fecal coliform, *E. coli*, chlorine, conductivity, dissolved oxygen, pH, and temperature. If while conducting the stream walk, unusual sampling results or observations are found in the field, NPDES staff will follow the discharge upstream in an effort to identify the source. In some cases source identification may be difficult and involve the initiation of a comprehensive illicit discharge investigation.

The NPDES section uses a GPS unit to collect data in the field. Once back in the office, these data are transferred into a GIS database. While the steam walk program's main focus is to find sanitary sewer seeps/leaks or illicit discharges, the NPDES section, also collects data of impacted areas along the creek. For example, GPS points are collected along segments of the stream that are without a riparian buffer, are suffering from severe bank erosion, have large amounts of trash within and around the stream, and have homeless camps along the banks. The watershed manager, Dr. Steve Winesett, intends to compile this data on all of the impaired streams so that future improvement/education projects can be coordinated as needed.

In addition to the stream walks, the watershed water quality program also researched the impacts of septic system failures. At the end of permit year 3, the NPDES section obtained a list of reported septic system failures from the Metro Health Department to determine if any trends are present that might explain elevated bacterial levels in creeks. Table 4.6.5.1 is a list of septic system failures reported by the Metro Health Department in permit year 4.

Table 4.6.5.1 Reported Septic System Failures in Permit Year 4

Date	Reported Location
07/31/2006	Murfreesboro Pike
08/07/2006	Tidwell Hollow Rd.
08/14/2006	Union Hill Rd.
08/22/2006	Hill Road
08/28/2006	Hurst Drive
08/29/2006	Ivey Point Rd.
08/30/2006	Pin Hook Rd.
10/25/2006	Whittmore Lane
01/10/2007	Appleview Rd.
01/17/2007	Harper Road
01/18/2007	Cane Ridge Rd.
01/30/2007	Bernard Road
02/12/2007	Rolling Mill Rd.
02/21/2007	Couchville Pike
02/27/2007	Connor Drive
03/12/2007	Bakers Grove Rd.
03/26/2007	Rolling Mill Rd.
04/03/2007	Old Hickory Blvd.
04/11/2007	Earhart Road
04/13/2007	Pulley Road
04/24/2007	Whites Creek Pike
04/25/2007	Union Hill Rd.
05/02/2007	Morgan Road
05/04/2007	Stewarts Ferry Pike
05/10/2007	Old Charlotte Pike
05/14/2007	Cherry Branch Lane
05/16/2007	Earhart Road
05/30/2007	Pettus Road
05/31/2007	Harper Road
06/07/2007	Grays Point Rd.
06/11/2007	Jackman Road
06/14/2007	Dodson Chapel Rd.
06/14/2007	Una Antioch Pike
06/21/2007	Holt Road

Reported Information received from Metro Health Department

4.6.6 Future Direction of Element 6 – Illicit Discharges and Improper Disposal

Ordinances and Enforcement Measures

Metro Water Services (MWS) will continue to review the ordinance and enforcement measures for effectiveness.

Dry-weather Field Screening

Field screening will continue to be conducted within land uses that are predominantly non-residential, industrial/commercial businesses. Field screening in residential areas will occur as citizen complaints arise.

Illicit Discharge Investigations

The illicit discharge investigation program is an ongoing program to identify discharge sources, educate responsible parties, and implement enforcement measures as appropriate. The program will continue through the second permit cycle with modifications to the investigation procedures as technology develops.

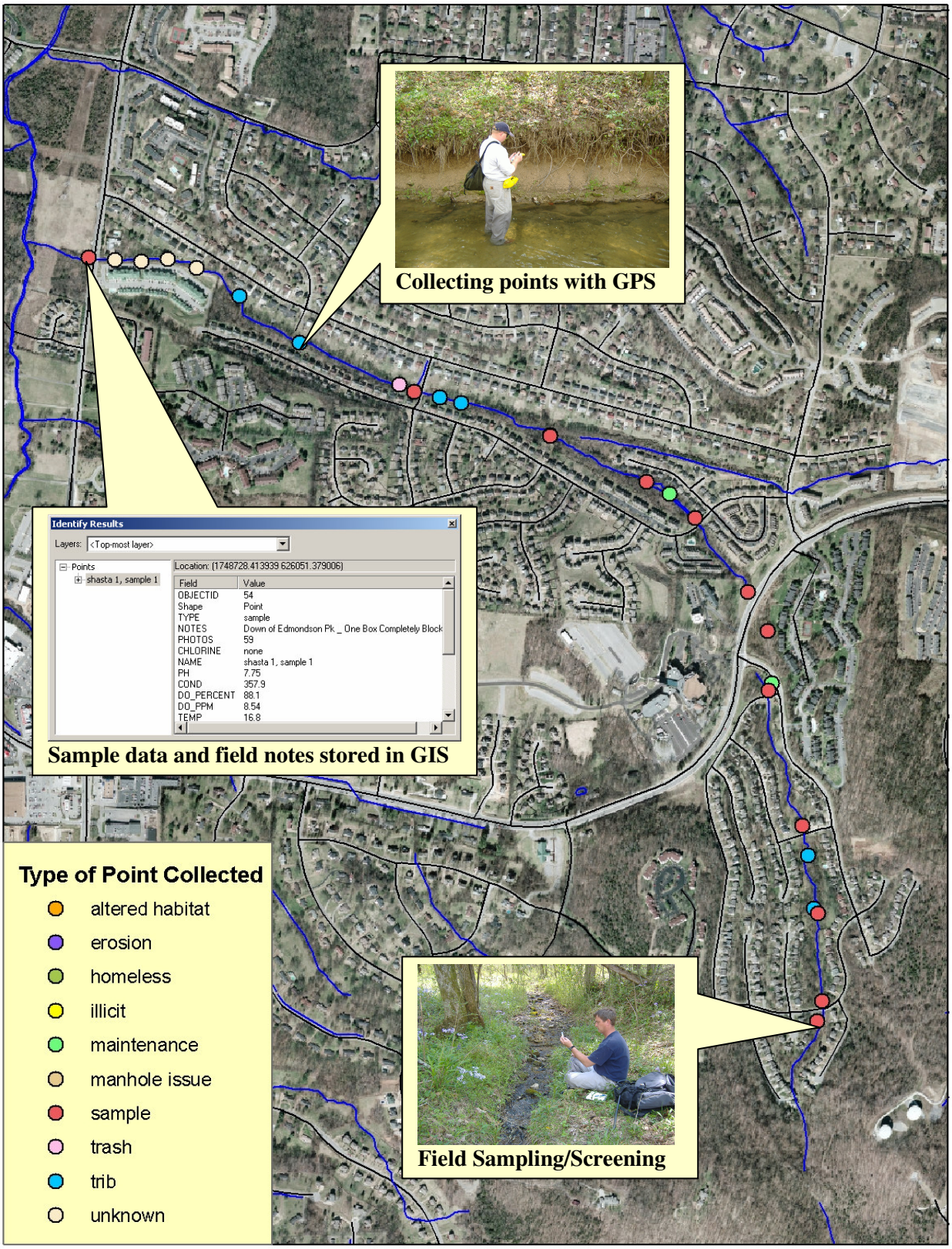
Public Information in Residential/Commercial Areas

Public information activities associated with illicit discharges and improper disposal in residential and commercial areas are presented in Section 4.10.1.

Sanitary Sewer Seepage

Metro will continue to evaluate protocols for reporting potential sanitary sewer seepage into the MS4 and/or "Waters of the State". NPDES staff will work more closely with the MWS System Services Division on proper response/remediation of sanitary sewer spills and overflows. In addition, MWS will use lessons learned from the 2004 aerial infrared flight to improve the process of identifying leaks and illicit discharges by making it more efficient, expanding the scope of flights, and creating quicker responses to illicit discharges. Many of the springs and seeps identified in previous thermograph investigations will not require future sampling/investigation, therefore, allowing more time to be spent on other thermal anomalies.

Figure 4.6.5.2 Example Segment of Stream Walked



4.7 Industrial and High Risk Runoff (Part III.B.7)

The objective of this element is to satisfy Part III.B.7 of the permit, which requires Metro to minimize the impact of high-risk stormwater runoff from industrial facilities, municipal facilities and restaurants. This objective is to be accomplished through inspecting industrial sites, landfill and waste disposal facilities, transfer and storage facilities, researching problems associated with restaurant stormwater runoff, and monitoring selected industries.

4.7.1 Data Management (Part III.B.7.a)

Contact Name: Kimberly Moore, MWS, Stormwater Division, NPDES section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
7a	Data Management – Update Industrial Site Databases	Annually	●	●	●	●		

Metro is required to monitor and control pollutant runoff from the following types of industries and activities:

- Municipal landfills (see Section 4.4 of this report);
- Hazardous waste treatment, storage and disposal facilities (see Section 4.4 of this report);
- Industries subject to SARA Title III Section 313; and
- Industrial facilities that the municipal permit applicant determines are contributing a substantial loading of pollutants to the municipal storm sewer system.

The database for tracking industrial inspections of these facilities was created during permit year 1. In the beginning of permit year 2, the NPDES section emailed a copy of the database to TDEC-WPC for review. The database has been updated in each permit year to reflect updates to the Environmental Protection Agency (EPA) Envirofacts website. In addition, several industrial facilities were added to the inspection list as the office deemed necessary by the NPDES section.

4.7.2 Inspections (Part III.B.7.b)

Contact Name: Kimberly Moore, MWS, Stormwater Division, NPDES section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
7b	Inspections	---						
	Refine Procedures/Criteria to Prioritize Sites	PY 1, PY 3, and PY 5	●					
	Train Inspectors	PY 2 and PY 4		●		●		Kimberly Moore trained by Josh Hayes to perform industrial inspections
	Inspect Facilities	Once by PY 5	●	●	●	●		Ongoing
	Coordinate Inspection and Enforcement Activities with TDEC Staff	Ongoing	●	●	●	●		
	Report Inspection Locations	Ongoing	●	●	●	●		

On August 3, 2004, NPDES staff met with TDEC personnel to discuss industrial stormwater inspection procedures and necessary coordination between the two agencies. It was determined that the NPDES Department would continue

inspections of industrial facilities regardless of the facility's state permit status and that follow-up documentation would be provided to TDEC for each site.

Refine Procedures/Criteria to Prioritize Sites
During the first and second permit year, inspection prioritization was given to those sites the NPDES office had previous involvement with pollutant runoff, facilities located in direct proximity of water bodies, and sites discovered to have pollutant runoff through field screening and/or complaint investigations. In the third permit year, inspection prioritization was given to facilities TDEC listed as "priority 1" on their industrial inspection database. In permit year 4, the NPDES section took a watershed approach to prioritizing industrial inspections. The watershed approach has proven effective, and was used to prioritize sites for permit year 5. The list of industrial site prioritization is included in Appendix A.

Train Inspectors
In permit year 1, NPDES staff attended industrial inspection training in Memphis that was sponsored by the University of Tennessee. During permit year 2, NPDES staff sought additional training by observing an industrial inspection performed by TDEC staff. Currently, there are three inspectors in the NPDES program that are trained in the proper industrial stormwater inspection procedures. NPDES will continue to look for additional training opportunities for industrial inspection staff.

Inspect Facilities
The NPDES office inspected 12 industrial facilities during permit year 4. Inspection result letters were sent to each of the facilities outlining specific site remediation required by the NPDES office. Most of the facilities, with the exception of a few, have performed the required site remediation to correct stormwater runoff violations. At the end of permit year 4, there were 22 industrial facilities on the list that have yet to be inspected by the NPDES program. The NPDES office will inspect all of the remaining industrial facilities in permit year 5, combined with follow-ups to problem sites. A list of all of the industrial sites within the NPDES database and their inspection status is included in Appendix A.

Coordinate Inspection and Enforcement Activities with TDEC Staff
As mentioned above, the NPDES program and TDEC made an effort to coordinate inspections on industrial facilities, but it was decided that NPDES would perform inspections independent of TDEC, unless extraneous circumstances were encountered that required coordination. The NPDES program coordinates all enforcement/follow-up activities with TDEC by copying them on all correspondence relating to industrial inspections.

In permit year 4, NPDES did coordinate with TDEC on an industrial inspection of PSC Metals, Inc. to consider possible stormwater pollution and permit compliance status. This was deemed necessary as a result of findings by the USEPA audit team during their inspection. As a result, TDEC issued PSC Metals an NOV for inadequate best management practices for stormwater runoff, and for failure to update the SWPPP and monitoring data as required in coverage of the TMSP general permit.

Report Inspection Locations
At the end of permit year 4, the NPDES office sent the permit year 5 prioritization list to TDEC. The NPDES Department will continue to report industrial inspection locations and findings.

4.7.3 Restaurant Impacts (Part III.B.7.c)

Contact Name: Michael Hunt, MWS, Stormwater Division, NPDES section, 615.880.2420
Hugh Garrison, MWS, Operations Division, FOG section, 615.862.4590

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
7c	Restaurant Impacts – Report activities that reduce water quality impacts	Annually	•	•	•	•		

MWS has a focused grease management program known as the Fats, Oils, and Grease (FOG) Program to address overflows and blockages of the sanitary sewer system caused by improper disposal of these substances. Overflow or backflow discharges caused by blockages affect ambient water quality. The objectives of this program include:

1. Operation and Maintenance cost reduction,
2. Collection system improvement,
3. Policy development on grease control equipment, and
4. Better tracking of collection system maintenance responses.

The FOG program issues permits to Food Services Establishments (FSE) including restaurants, schools, prisons, entertainment venues, and other food-servicing programs. Through cooperation with and participation by the Metro Health Department, the FOG staff, and subcontractor staff; the goal is to inspect every restaurant within Davidson County annually. During permit year 4, approximately 1,690 Food Service Establishments (FSE) were inspected through the FOG program (275 new, 1415 re-inspections). There were approximately 252 Notices of Noncompliance (NCN) and 7 Notices of Violations issued during permit year 4. Approximately 78 of the site deficiencies were noted as having a potential to impact stormwater, which are routed to NPDES staff for additional consideration/inspection.. In permit year 4, there were 14 MWS sanitary overflows and 5 private property overflows directly contributed to fats, oils, and grease.

Table 4.7.3.1 is a summary of Notices of Noncompliance issued for stormwater impacts at FSEs during FOG inspections since permit year 2. The stormwater impacts include FOG spills, FOG around recycling bins or dumpsters, FOG from vent hoods, overflowing traps or interceptors, pouring floor wash water or food waste water into parking lots, etc. The number of NCNs for stormwater has increased since permit year 2. The increase is due to: 1) FOG inspectors initial concentrations were on sanitary sewer FOG impacts, whereas, now stormwater impacts are being more closely monitored, 2) new inspectors have issued NCNs for slight to moderate stormwater impacts, whereas in the past even mild problems would receive a verbal notice.

Table 4.7.3.1 Notices of Noncompliance Permit Year 4

Permit Year	Notices of Noncompliance to FSEs
Permit year 2	51
Permit year 3	61
Permit year 4	74

The permit program requires FSEs to have their GCE (Grease Control Equipment) certified annually. A copy of the grease interceptor/trap certificate is included in Appendix A. In an attempt to improve maintenance of GCE, the MWS FOG program created a "Grease Interceptor Maintenance Guide" that is distributed to FSEs. A copy of the English and Spanish versions of the guide is included in Appendix B. Items examined during the certification process include: (1) no holes are present causing the leaking of grease into the restaurant or the ground, (2) baffles are in place, (3) tees are

present on inlets and outlets of grease interceptors, and (4) access to each chamber of the grease interceptor is provided for proper maintenance/inspection.

A copy of a field inspection sheet is depicted in Figure 4.7.3.1. In subsequent investigations, grease found on walls of the trap results in the issuance of a warning, and grease found in the sanitary sewer results in a Notice of Violation (NOV), a copy of which can be found in Figure 4.7.3.2.

NPDES staff also investigates various restaurant-related complaints as part of its illicit discharge investigation program. See Section 4.6 for more information on Metro's illicit discharge detection and elimination program.

New regulations for Mobile Food Units states "no material (solid or liquid waste) shall be discharged to the MS4 (or to a locale where such material may be washed via stormwater runoff into the MS4) as it relates to the operation of a mobile food unit per Metro Ordinance, Title 15, section 15.64.205."

4.7.4 Future Direction of Element 7 – Industrial and High Risk Runoff

Data Management

The industrial inspection database will be routinely updated in future permit years to include inspection results, site follow-up/remediation, and EPA updates to the SARA Title III, Section 313 sites.

Inspections

Metro proposes that it will periodically refine procedures to prioritize sites for inspection based on SIC code, State industrial stormwater data, and other pertinent information. Inspections for all of the industrial sites on the list will continue over future permit years. NPDES will continue to coordinate all inspection results and enforcement actions with TDEC. At the end of each permit year, NPDES will provide a map to TDEC depicting the locations and inspection status of industrial sites and a list of industrial sites that will be inspected in the following permit year.

Restaurant Impacts

Through the FOG program and in coordination with its subcontractors and the Health Department, MWS plans to inspect every FSE each year. Inspection priority will be based on emergencies and hotspots, while program emphasis will be placed on continued education and enforcement. FOG plans to continue its partnerships with the Metro Health Department, the Fire Marshall's Office, Codes Department, and the Department of Education with hopes to develop relationships with other Metro entities in the future. The NPDES section has begun the process of educating (through enforcement and brochures) various restaurants on proper disposal of mop wash water and other waste.

Figure 4.7.3.1 FSE Grease Control Inspection Form

METRO WATER SERVICES

FOOD SERVICE ESTABLISHMENT GREASE CONTROL INSPECTION FORM

Facility Name: ___ **Inspection Date:** ___

Facility Representative: Mr. / Ms. ___ **Title:** ___

Phone: ___ **Owner/Regional Manager Name:** ___

Facility Address: ___ Mail Address: (if different) ___

Handy Map ID: ___ **Sewer Plat ID:** ___ **GPS ID:** ___

1. **Grease Interceptor**? ____ Yes ____ No *(For #1, if "NO" then go to # 14)*
2. Interceptor Size (gallons) __500 __750 __1000 __1500 __2000 __ 3000 ___Two Interceptors in series other:___
3. Manhole Access to Interceptor: __1 __2 __3 __4
4. Estimated Grease Layer Depth: ___
5. Effluent T visible? ___Yes ___No (inspector can see the T)
6. Effluent T attached & in good condition: __Yes __No __ Unknown
7. Grease Interceptor Hauler used: ___
9. Bacteria/Enzymes used: ___Yes ___No Product Name: ___
10. Frequency Interceptor Cleaned? ___
11. Complete Contents Pumped? ____Yes ___ No
12. **Records of Maintenance/Cleaning Available? ____ Yes ____ No**
13. Last date cleaned: ___

Grease Trap

14. **Grease Trap**? __ Yes __ No *(For # 14, if "NO" then go to #20)*
15. Location: ___ Under sink trap ___ Floor trap ___ Outside "floor" trap
16. *Grease Trap flow-through rating / grease capacity Estimate:* __ 5 gpm / 10 lb __ 10 gpm / 20 lb __15gpm /30lb ___ 20 gpm / 40 lb ___ 35 gpm / 70 lb ___50 gpm / 100 lb ___ Other: ___
17. Frequency Trap is cleaned: ___
18. **Maintenance/Cleaning Records:** ____ Yes ____ No
19. Grease Trap comments/location disposed of waste: ___

BMPs & outside conditions, other than grease interceptor or trap

20. **Best Management Practices Implemented ___Yes ___No**
21. Grease Recycle Bin ___Yes ___No
22. Cleanout Covers missing or damaged? ___Yes ___No (# Cleanout covers missing: _____ damaged: _____) (Facility needs to repair missing or damaged cleanout covers immediately)
23. FOG impact at dumpster or around recycle bin? ___Yes ___ No (if Yes give explanation below)
24. **DOWNSTREAM MANHOLE:** ___ Evidence of Grease in Manhole (__slight __ moderate __ heavy)

Comments: ___

25. **SAMPLE POINT** Access? __ Yes __No Effluent Temp: ___ Effluent pH: ___
26. Sample point ID: ___Interceptor Effluent T ___Downstream MH ___Cleanout ___Sample drop box
27. **Picture ID:**_______ // ____ **of Interceptor** ____ **of downstream MH** ____**other:** ___

Visual inspection results, comments: ___

Inspector Name: ___ Signature: ___

Facility Representative Signature: ___

Inspection form copy provided to facility? ____Yes

Figure 4.7.3.2 FOG Notice of Violation

Department of Water & Sewerage Services, Environmental Compliance
Noncompliance Notification

DATE ISSUED:_____ Issued by:_____ DATE RESPONSE DUE:_____

Facility:_____ Address:_____
The following marked box(es) ☒ indicate deficiencies or areas of concern that need to be addressed.

☐ Grease Interceptor Effluent T not attached or not acceptable, allowing fats, oils and grease to be discharged. *(replace effluent T and make sure length of T is adequate, to within 18" of bottom of interceptor tank).*

☐ Grease Interceptor Effluent T not visible or accessible for inspection. *(need to verify during pumping of interceptor if effluent T is attached and in good condition, or will have to take action to install access opening over effluent T to ensure it is attached to prevent fats, oils and grease from being discharge. Also you need access to outlet compartment so it can be cleaned properly).*

☐ Grease Interceptor mid baffle wall or side walls indicates deterioration of concrete. *(inspect grease interceptor at the time the grease interceptor is completely pumped, check to ensure deterioration of concrete is not going to cause the mid baffle wall or outside walls to collapse or cause tank contents to leak out of the interceptor. Normally, the concrete thickness on most interceptors is 4", it is recommended that if deterioration of concrete is greater than 50% then the interceptor needs to be repaired or replaced.)*

☐ Grease Interceptor fats, oils and grease layer and food solids layer are greater than 25% of the capacity of the interceptor tank. *(interceptor needs to be pumped immediately, provide record of pumping to Metro; get interceptor on regular schedule to be pumped, minimum of every 3 months but some larger facilities may have to pump monthly to ensure grease does not cause problems).*

☐ Fats, oils and grease evident in downstream manhole from facility, immediate action needs to be taken. *(this could include installing new grease interceptor, controlling flows through the interceptor to prevent washout of grease to the sewer, implementing strict BMPs for all personnel to control grease discharges or other action)*

☐ Facility has no grease control equipment installed. *(if large facility you will need to install an appropriate sized interceptor or trap, refer to Metro Water Services' brochure on minimum size of grease control equipment).*

☐ No Records of interceptor or trap maintenance available at the facility for inspection review. *(keep copy of all grease waste hauler manifests and records at the facility location, if the traps are cleaned by facility personnel then keep written record onsite of cleaning date, person doing cleaning and location the grease and food waste was disposed)*

☐ Sewer cleanout covers need to be replaced, allowing rainfall inflow to sewer system.

☐ Fats, oils and grease on ground around recycle bin or dumpster, causing stormwater impact.
RESPONSE FROM FACILITY (attach additional information if necessary): Mail Response to:
Metro Water Services, ATTN: FOG Program, 1607 County Hospital Rd., Nashville, TN 37218
Facility Contact Name furnishing response:_____Title:_____
(White copy: Metro; Yellow Copy: Facility to submit with response; Pink Copy: For Facility's records)

4.8 Construction Site Runoff (Part III.B.8)

This section of the program is designed to satisfy Part III.B.8 of the permit, which is intended to limit the impact of stormwater runoff from construction sites through the establishment of procedures enforced through ordinances for site planning. The procedures will be implemented by plan reviewers, inspectors, as well as through an extensive public education program.

4.8.1 Ordinances, Regulations, and Guidance (Part III.B.8.a)

Contact Name: Michael Hunt, MWS, Stormwater Division, NPDES section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY 4
			1	2	3	4	5	
8a	Ordinances, Regulations, and Guidance	---						
	Enforce existing ordinances and regulations	Ongoing	●	●	●	●		
	Refine procedures to enhance enforcement	PY 1 and PY 3	●		●			
	Evaluate and Update guidance materials	PY 1 and PY 3	●		●			
	Public Education	Ongoing	●	●	●	●		
	Require proof of coverage under the state's construction general permit	Ongoing	●	●	●	●		

Metro took significant steps in the first and second permit year to enhance local regulatory mechanisms designed to improve water quality by beginning to revise the Stormwater Management Manual. During permit year 1, the Stormwater program focused on identifying inadequacies in the stormwater regulations. Throughout the second permit year, an extensive regulations revision process began that involved numerous meetings and discussions with stakeholder groups consisting of members from Metro Council, the Metro Stormwater Management Committee, the development and engineering community, state and local organizations, and the general public.

In permit year 4 the new stormwater regulations went into effect. Metro conducted training sessions with staff and the development community on key program changes and application of the site development tool. The NPDES section continues to devote a staff member to search for opportunities to revise/improve stormwater regulations. In addition, NPDES staff members meet periodically to discuss site inspection and enforcement experiences. These meetings allow staff opportunities to refine inspection procedures and enforcement mechanisms.

Metro recognizes the importance of having a sound public education program in preventing construction site runoff. During permit year 4, NPDES continued with its public education program geared toward construction site run-off. The public education program is explained in further detail in Section 4.10.

Metro currently requires grading permit applicants to submit a copy of their Notice of Coverage (NOC) for a Tennessee Construction General Permit (CGP) prior to receiving approval of grading plans. This policy insures that a permittee is aware of the CGP requirements. In addition, MWS plan review engineers require all other applicable State and Federal permits, such as State Aquatic Resource Alteration Permits (ARAP) and U.S. Army Corps of Engineers Section 404 Permits, to be obtained prior to plan approval.

4.8.2 Training (Part III.B.8.b)

Contact Name: Michael Hunt, MWS, Stormwater Division, NPDES section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY 4
			1	2	3	4	5	
8b	Train Plans Reviewers and Inspectors	Annually	●	●	●	●		

MWS recognizes the importance of seeking technical training for stormwater plan reviewers and inspectors. In permit year 4, the NPDES section conducted a training session with the Plan Review Section on the revisions to the Stormwater Management Manual. Refer to Section 2.5 for the training received by MWS stormwater staff in permit year 4.

4.8.3 Records Management (Part III.B.8.c)

Contact Name: Michael Hunt, MWS, Stormwater Division, NPDES section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY 4
			1	2	3	4	5	
8c	Records Management - EPSC inspections	Ongoing	●	●	●	●		

During permit year 3, the NPDES section was divided into two segments: "Construction Site Inspection Program" and "Water Quality Program". The "Construction Site Inspection Program" staff began performing and tracking both infrastructure inspection and Erosion Prevention and Sediment Control (EPSC) inspections in permit year 3. Previously, each construction site had two separate inspectors; one that inspected for EPSC issues and one that inspected for infrastructure installation. By combining the inspection efforts, the NPDES office has become more efficient in water quality and construction inspections. In permit year 4, NPDES staff conducted nearly 5,300 construction site inspections, which averages to over 440 inspections each month (see Table 4.8.3.1).

The NPDES section formerly recorded inspections and enforcement activities for construction sites in a local database. During permit year 2, Metro Government began the process of replacing its outdated mainframe computer system to a land information and permitting product called KIVA. In permit year 4, NPDES inspection and enforcement records were migrated into KIVA. The Metro-wide database is a more efficient, relational-style database used to manage and report information. The KIVA reporting system is a major accomplishment for the NPDES section due to the ability of the system to link with other departmental information related to a parcel. In addition, KIVA provides the ability to "flag" parcels for disturbances to buffers, floodplains, drainage areas, and streams.

Table 4.8.3.1 Annual Compliance Inspection Tally

	Michael Hunt	Steve Wall	Mike Seremet	Rebecca Dohn	Ann Morbitt	Silas Mathis	Valerie Williams	Josh Hayes	Dale Binder	Sonia Harvat	Kimberly Moore	Dr. Steve Winesett	Jim Whitsitt	Harold Bryant	Bob Vaught/Tom Mauck	Tim Mathis	Shawn Herman	Phil Saad	Megan Sitzler	TOTAL
Total FY02	8	57	103	0	0	0	0	0	0	46	0	0	0	0	0	0	0	0	0	**214**
Total FY03	8	138	710	825	661	509	140	0	91	0	0	0	0	0	0	0	0	0	0	**3,082**
Total FY04	9	0	735	684	269	444	105	394	1,222	0	0	162	0	0	0	0	0	0	0	**4,024**
Total FY05	14	186	393	406	0	0	0	459	669	0	4	430	0	0	0	0	0	0	0	**2,561**
Total FY06	0	0	51	179	0	0	0	19	769	0	38	28	561	801	1564	574	488	0	0	**5,072**
Total FY07	0	0	1	5	0	0	0	2	364	0	0	0	0	862	1475	807	1043	729	1	**5,290**
Total	**39**	**381**	**1993**	**2099**	**930**	**953**	**245**	**874**	**3024**	**46**	**42**	**620**	**561**	**1663**	**3039**	**1955**	**1531**	**729**	**1**	**20,243**

4.8.4 Plan Review and Inspection Resources (Part III.B.8.d)

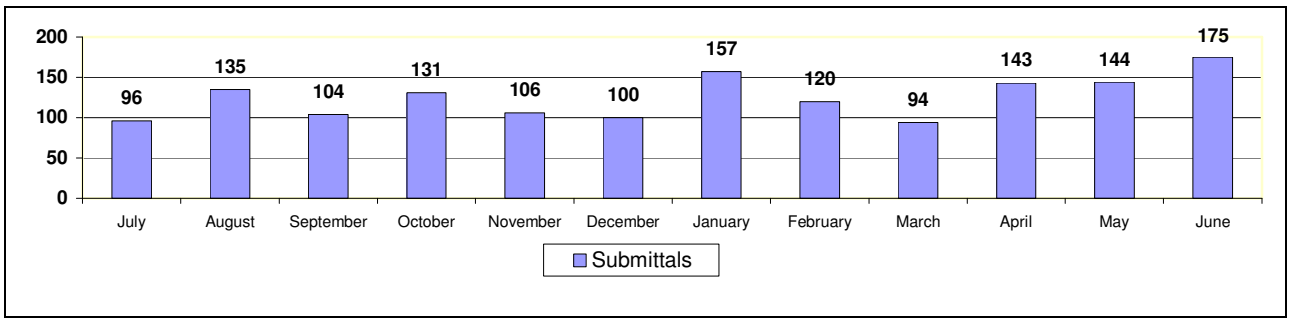
Contact Name: Tom Palko, MWS, Assistant Director, 615.862.4799

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY 4
			1	2	3	4	5	
8d	Plan Review and Inspection Resources	Ongoing	•	•	•	•		

In permit year 4, the NPDES section was able to increase the number of inspectors by 2 individuals (1 construction site, 1 water quality) from the previous permit year. This increase in inspectors in combination with the NPDES section reorganization efforts has allowed Metro to conduct more numerous and frequent inspections of construction sites.

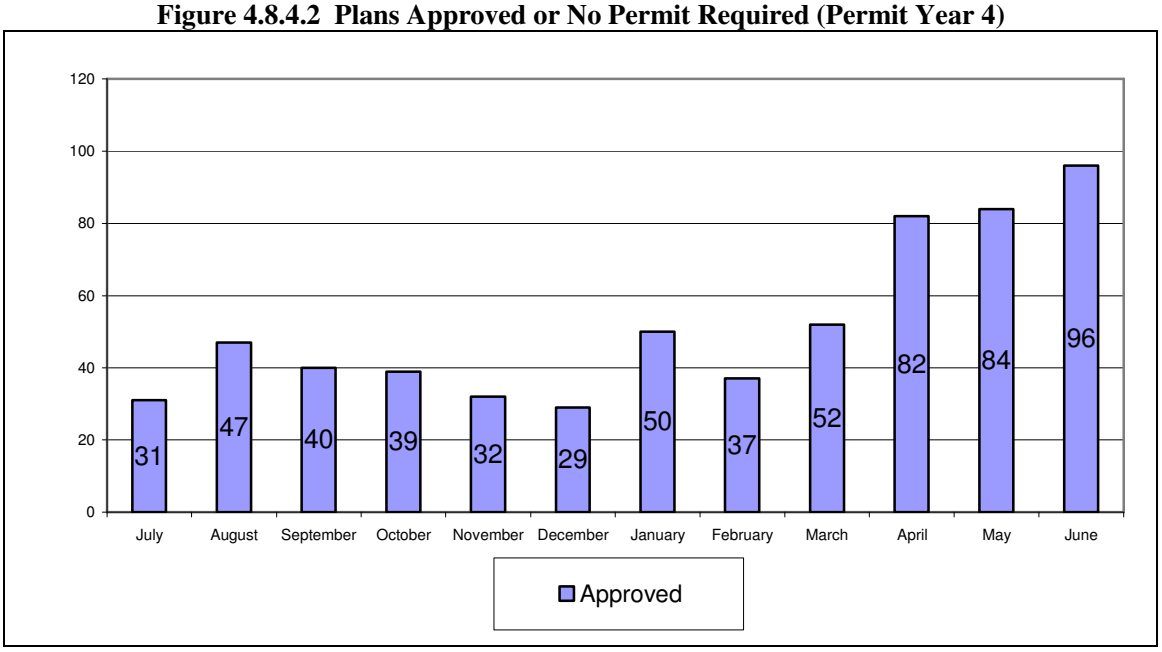
In permit year 4, the stormwater Plan Review Section employed no more than 5 engineers; this is a decrease in the 8 employed engineers during permit year 3. Given the amount of development across the county, the Plan Review Section continued to experience a backlog of plan submittals. In order to compensate for some of the backlogs, the Plan Review Section contracted out a portion of itsgrading permit plan review to an environmental engineering firm. There were approximately 1,505 sets of plans submitted to the Plan Review Section in permit year 4. These submittals include, among other things, initial and re-submittal of grading plans, as-builts, consultant plan reviews and/or Preliminary Planned Urban Development submittals. Overall, there were 619 plans that were approved or designated as "no permit needed" by the Plan Review Section and 979 plans that were not approved during permit year 4.

Figure 4.8.4.1 Plans Submitted for Review (Permit Year 4)



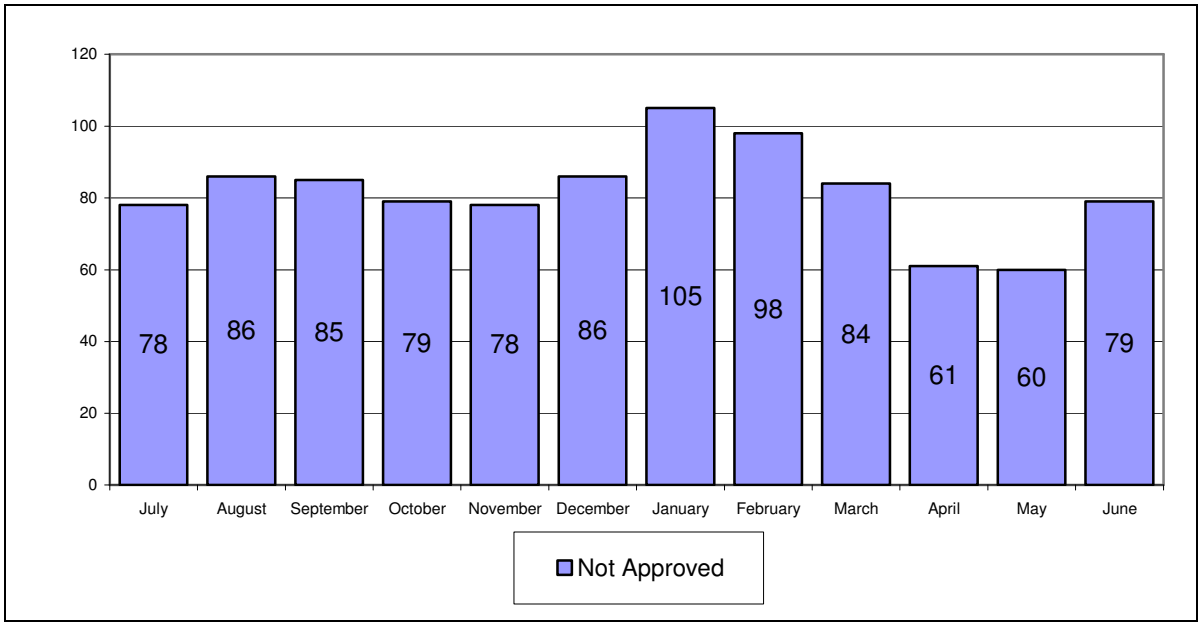
***Note: Submittals include initial and re-submittal of grading plans, as-builts, consultant returned to MWS and/or Preliminary PUDS.

Figure 4.8.4.2 Plans Approved or No Permit Required (Permit Year 4)



***Note: Approval numbers include a result of approved, approved except as noted, and no permit required.

Figure 4.8.4.3 Plans Not Approved by MWS Stormwater (Permit Year 4)



The actual issuance of grading permits is performed by inspectors within the NPDES section. Once the grading, drainage and erosion control plans are approved by the Plan Review Section, the NPDES section facilitates a pre-construction meeting with the developer, contractor, and erosion prevention and sediment control (EPSC) specialist. After the pre-construction meeting, a temporary grading permit letter is issued for the installation of (only) EPSC measures as discussed during the pre-construction meeting. Once the EPSC measures are installed correctly and verified by NPDES staff, the grading permit is issued for complete site grading per the approved site plans. During permit year 4, the NPDES office facilitated 251 pre-construction meetings and issued approximately 239 grading permits. The NPDES section was also responsible during the last permit year for inspection of all the active construction sites within the county. At the end of permit year 4, there were nearly 600 active grading permit sites that required NPDES inspection.

4.8.5 Metro Activities (Part III.B.8.e)

Contact Name: Michael Hunt, MWS, Stormwater Division, NPDES section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY 4
			1	2	3	4	5	
8e	Evaluate Metro Activities	PY 2		•				

During permit year 2, the NPDES section began to evaluate construction site runoff originating from Metro activities. It was determined that there are several different departments within Metro that perform land disturbance activities that could contribute to polluted stormwater runoff. Some of the land disturbance activities that are performed by various Metro departments include: MWS utility construction and rehabilitation, MWS stormwater maintenance projects, Public Works road and sidewalk construction/repairs, Parks Department construction and land maintenance, and Real Properties construction/renovations. Most of the large projects performed by Metro departments are contracted out to private companies that perform the actual site grading work. Currently, utility projects such as water line and road construction are exempt from obtaining grading permits through the NPDES office per Volume 1 of the Storm Water Management Manual. A concerted effort was initiated during permit year 2 to educate various Metro departments and contractors on proper Erosion Prevention and Sediment Control (EPSC) practices, especially on those projects not requiring grading permits. NPDES staff has been providing input to major water, sewer, and stormwater maintenance projects. Most of the smaller projects that involve repairs and rehabilitations are performed by Metro work crews. The NPDES section continued to be a resource to other Metro departments regarding grading activities during permit year 4.

4.8.6 Future Direction of Element 8 – Construction Site Runoff

Ordinances, Regulations and Guidance

In permit year 4, the revised stormwater regulations became effective for new development and significant redevelopment. The revision increases water quality protection by expanding buffers, and encouraging low impact design practices. Metro has approved its list of post-construction water quality treatment practices and developed new standards for Operation and Maintenance Agreements. This will remove more pollutants from site runoff and ensure stormwater treatment structures will function as designed. An NPDES staff member continues to devote adequate review of stormwater regulations and ordinance for potential updates.

Training

Plan reviewers and construction site inspectors will continue to be informed of and educated on the latest and most effective management practices. The two groups will continue to coordinate throughout the permit cycle to learn from plans review and field inspection experiences.

Records Management

Inspections and any enforcement actions will continue at a steady rate through the fifth year of the permit. These inspections will be documented and reported in KIVA for effective records management

Plan Review and Inspection Resources

The Stormwater Program will continue to evaluate whether the staffing levels of the inspection and Plan Review Sections are effective in meeting the permit needs to control construction site runoff.

Metro Activities

The NPDES office will continue to manage construction site runoff from Metro activities. In order to accomplish this task, the NPDES section began in permit year 4 to take a two-prong approach to manage the runoff from activities: 1) requiring a grading permit, and 2) those not requiring a grading permit. Metro activities requiring a grading permit allow NPDES to have adequate oversight to prevent pollutant runoff. For the activities not requiring grading permits, NPDES

will work to continue the education of different departments on proper EPSC measures and in educating those Metro permittees that engage in land disturbance activities which do not rise to the scope of needing a Metro Grading Permit.

4.9 Habitat Improvement (Part III.B.9)

The objective of Part III.B.9 of the permit is for MWS to investigate and report potential areas of stream habitat improvement within Davidson County.

4.9.1 Report Habitat Improvement Activities/Projects (Part III.B.9.a)

Contact Name: Michael Hunt, MWS, Stormwater Division, NPDES section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
9a	Report habitat improvement activities/projects	Annually	•	•	•	•		

Metro recognizes the benefits habitat improvements can bring to the water quality of Davidson County streams. Many of Metro's departmental activities, while designed to benefit society, also provide improvement to aquatic habitat and water quality. One example is the many projects conducted by the Metro Parks Department that are designed to provide recreational opportunities. These activities may ultimately provide long-term habitat improvement and increased water quality. One particular effort has been the establishment by the Metropolitan Council of the Greenways Commission of Metro Parks and its Citizens Advisory Committee (CAC). The Commission and the CAC oversee the community's public/private greenways effort. Several greenways, featuring hiking, biking, horseback riding trails, and walking/running paths have been established along streams in Nashville. MWS presently has a staff member on the greenway committee to promote and enhance habitat and water quality improvements of the program. Overall, greenway projects have improved habitat and water quality across the county by preserving, through a conservation easement, many miles of stream corridor that would, otherwise, be subject to potential development. Greenways are developed by Metro to improve the qualities that make Nashville a desirable environment for work and play.

- **Greenways offer recreational opportunities** by providing safe, accessible routes for walking, running, bicycling, and other forms of exercise, and for enjoying increasingly hard-to-find natural areas close to home.
- **Greenways improve environmental quality** by protecting plant and animal habitat. They help clean our water and air through the dedication of sensitive areas, such as flood plains, wetlands, and forests, to low-impact uses.
- **Greenways facilitate alternative transportation** by providing bicycle- and pedestrian-friendly routes between home, work, and other destinations. By providing such non-automotive facilities, greenways are a part of the infrastructure necessary for an integrated approach to transportation planning.

To date, Metro manages a total of 36.5 miles of greenway within Davidson County. In permit year 4, there was 3.75 miles of greenways constructed: 1.5 miles at Richland Creek, 0.5 miles at the Harpeth River, 0.5 miles at White Creek, 0.75 miles at Peeler Park, and 0.5 miles at Stones River (connector to Stewarts Ferry Pike). Peeler Park Greenway and the Stones River Greenway (Stewarts Ferry corridor) were well received by the community and its citizens during their openings in permit year 4. Figure 4.9.1.1 highlights the opening of the Stones River Greenway that kicked off with a walk led by Mayor Bill Purcell. Currently, Metro Parks has various greenways trails under construction including another corridor of Peeler Greenway (downtown to Metrocenter) and Seven Mile Creek. These greenways are projected for completion by end of permit year 5. Presented below are a list of greenways and other Park projects/activities.

- Adoption of the 2002 Parks & Greenways Master Plan that identifies conservation of Davidson County's seven main water corridors as greenways.

- Completion of 32 miles of greenway trails and conservation of over 3800 acres of land, including:
  - Shelby Bottoms Greenway and Nature Park on Cumberland River (800 acres);
  - Downtown Greenway (connects Riverfront Park to the Bicentennial Mall);
  - Metro Center Levee Greenway;
  - Peeler Park Greenway
  - Mill Creek Greenway – Ezell Park;
  - Mill Creek Greenway – Blue Hole Road;
  - Harpeth River Greenway;
  - Stones River Greenway – Two Rivers Park to Heartland Park;
  - Stones River Greenway – YMCA to Percy Priest Dam;
  - Richland Creek Greenway – Phase I;
  - Brookmeade Park Cumberland River Greenway;
  - Beaman Park – Phase I;
  - Bells Bend Greenway — Master Plan completed; and
  - Bellevue Greenway

Figure 4.9.1.1 Stones River Greenway opening – walk with Mayor Bill Purcell

Another program performed by the Parks Department that directly benefits water quality and, therefore, stream habitat is the "Bag It" campaign. The "Bag It" campaign is an effort to encourage Metro park users to use the mutt mittens provided at most parks to clean up their pet waste. During permit year 4, the Metro Parks Departments distributed an estimated 126,000 dog waste bags. The Parks Department estimates that in distributing the pet waste bags approximately 37,000 lbs (18.9 tons) of pet waste were removed from park properties that would have potentially contaminated stormwater runoff. Metro Parks has established exclusive 'dog park' locations at several of its parks in Davidson County. Figure 4.9.1.2 is a brochure of the "Bag It" campaign distributed by Metro Parks to the public, specifically dog owners.

Figure 4.9.1.2 Metro Dog Parks – Bag It Campaign

The Stormwater Remedial Maintenance section is another agency within Metro that strides to incorporate habitat improvement measures. As the majority of the maintenance projects are designed to relieve residential or public right-of-way flooding, some of the larger stormwater Capital Improvement Projects (CIP) allow flexibility to incorporate some aspect of habitat and water quality improvement. A good example of this is the Flood Emergency Management Agency (FEMA) Home Buyout program. The primary objectives of the Home Buyout program are to: 1) assess residential, floodplain properties on the FEMA repetitive loss list for buyout, and 2) evaluate areas that repetitively flood, but not located in the floodplain to be considered for buyout. This program utilizes funds allotted from the Capitol Improvement budget and matching FEMA funds to purchase residential properties that qualify. To qualify, an application for the property or area must be submitted to FEMA for review and processing. Once a property qualifies for buyout, the property is purchased, the house and/or structure are carefully demolished, and the property is established as open space. Since 2000, MWS has purchased 40 homes for buyout. A total acquisition cost of $7.1 million dollars was appropriated for the 40 homes purchased. Table 4.9.1.1 is a list of the home buyout properties since 2000. Figure 4.9.1.3 depicts before and after photographs of a buyout property on Wimpole Dr.

Table 4.9.1.1 Metro-FEMA Home Buyout List

	STREET NAME	PROPERTY NUMBER
1	Blackman Court	4804
2	Blackman Rd	209
3	Blackman Rd	213
4	Blackman Rd	215
5	Blackman Rd	217
6	Blackman Rd	219
7	Briarwood Drive	5049
8	Brook Drive	637
9	Brook Drive	641
10	Brook View Estates Dr	412
11	Brunswick Drive	2826
12	Cedarvalley Court	105
13	Cedarvalley Court	109
14	Edmondson Pike	4947
15	Edmondson Pk	4955
16	Elysian Fields Road	281
17	Milner Ct	300
18	Milner Ct	303
19	Milner Ct	301
20	Milner Ct	307
21	Milner Ct	305
22	Milner Dr	4754
23	Milner Dr	4800
24	Milner Drive	4804
25	Paragon Mills Road	497
26	Paragon Mills Road	595
27	Suter Drive	5010
28	Suter Court	5016
29	West Durrett Drive	5008
30	Wimpole Dr Unit A	355
31	Wimpole Dr	357
32	Wimpole Dr	359
33	Wimpole Dr	361
34	Wimpole Dr	363
35	Wimpole Dr	369
36	Wimpole Dr	375
37	Wimpole Dr	379
38	Wimpole Dr	383
39	Wimpole Dr	385
40	Wimpole Dr	387

Figure 4.9.1.3 Before and After Photographs - Wimpole Dr. Floodplain Buyout Property

In permit year 4, the NPDES section began looking at possible floodplain enhancement projects to be performed in the established open space of the buyout properties. Enhancement projects such as riparian buffer restoration and restoring native forest vegetation will be used to gain knowledge for restoration projects in future permit years. An enhancement project on at the Blackman Road buyout property is projected to be completed in permit year 5. This project entails the planting of over 160 native trees to help reduce flooding in the Mill Creek watershed, will remove pollutants from stormwater, and will serve as a demonstration project for the development community. Figure 4.9.1.4 depicts the before and after aerial photographs of several buyout properties located on Blackman Road.

Figure 4.9.1.4 Blackman Road Floodplain Buyout Property

The Stormwater Routine Maintenance section also conducts routine cleanouts of ditches and streams by removing trash and other debris that impede flow, thereby, benefiting aquatic habitat and water quality.

In addition to incorporating habitat improvement projects into Metro departmental activities, the NPDES section has been forming partnerships with other agencies and organizations to perform various habitat improvement projects. In one particular project Metro has partnered with the Tennessee Department of Agriculture and several other State and local agencies on the Sevenmile Creek Watershed Community Project. This project is an initiative to improve or preserve water quality in healthy streams and to restore and de-list polluted streams within the Sevenmile Creek Watershed. This project is funded through 319 Grant monies with the goal to restore riparian areas, improve in-stream habitat, install best management practices specific to pollution sources of the watershed, promote public/community interests, awareness, and cooperation in maintaining and improving water quality. This project will also engage developers, regulators, and planners in smart development techniques and practices for water quality. During permit year 3, many of the on-the-ground operations started. Program goals were established to: install stream buffers on public lands, implement model stream buffers in a private residential community, implement in-stream habitat improvements for the Nashville Crayfish (*Orconectes shoupi*), and develop educational greenway trails. In permit year 4, an educational greenway trail was constructed at the Ellington Agricultural Center property. Figure 4.9.1.5 is a photograph of the greenway trail.

Figure 4.9.1.5 Ellington Agricultural Center – Greenway Trail

During routine field work in permit year 3, NPDES staff discovered a large segment of a tributary to Mill Creek (Pavilion Branch) in which habitat had been altered. This stream was located on a large parcel of state-owned property with much of it being channelized and substrate lined with flag stone. Dr. Steve Winesett arranged a meeting with the Tennessee Stream Mitigation Program (TMSP) to see if this site would classify as an in-lieu fee mitigation project. After several meetings, the TMSP decided to perform a stream restoration project on the impaired segment of this stream. The primary objectives of the project were to re-establish in-stream habitat by restoring bedform diversity in the form of pools and riffles, enhancing the ability of the site to filter stormwater by utilizing constructed best management practices, and establishing a protected riparian corridor planted with native vegetation adjacent to each of the project streams. Pavilion Branch has been listed as impaired due to pathogens from MS4 discharge sources. This project provided a rare opportunity to complete larger scale stream restoration in an urban landscape, especially in the Mill Creek watershed. The majority of the system was channelized and armored with slab rock in the mid-1990s. The existing riparian community at Pavilion Branch was sparse and consisted mostly on non-native woody vegetation. Nashville crayfish habitat was also installed in the hope of attracting the species to the project area. In permit year 4, the restoration/mitigation work on Pavilion Branch was completed. Figure 4.9.1.7 depicts the preliminary conceptual design of the restoration project. Figures 4.9.1.8 through 4.9.1.10 are photographs taken during existing conditions, construction, and post construction

Figure 4.9.1.7 Conceptual Map of the Preliminary Stream Restoration Design for Pavilion Branch

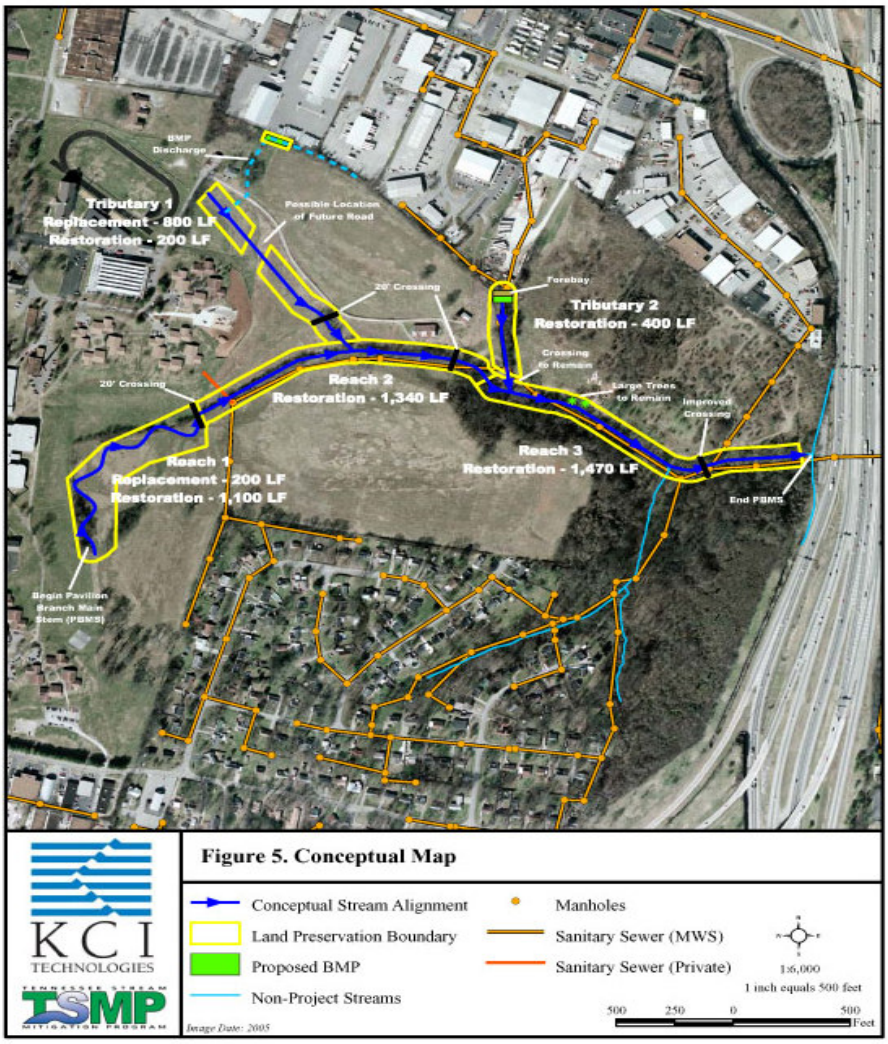


Figure 4.9.1.8 Existing Conditions of Pavilion Branch

Hard-armored channel

Vertical eroding stream bank

Figure 4.9.1.9 Pavilion Branch Mitigation During Construction

Excavation on new channel

Coir fiber matting installation

Figure 4.9.1.10 Pavilion Branch Mitigation Post-Construction

Meander bend

4.9.2 Future Direction of Element 9 – Habitat Improvement

This program element's objective is to make TDEC-WPC aware of habitat improvement activities in the permit area. In satisfying this permit element, Metro takes the opportunity to search for other areas within different departments where habitat improvement could be integrated into normal department tasks. The NPDES section will continue to report any habitat improvement projects performed in the county during future annual reports.

4.10 Public Information and Education (Part III.B.10)

This element is designed to meet Part III.B.10 of the permit by facilitating an ongoing program of public education and outreach efforts. Areas of education include general housekeeping procedures such as the use, storage, and disposal of pesticides, herbicides, fertilizers, used oils, and other hazardous chemicals; identification and prevention of illicit connections and discharges and long-term water quality impacts; responsible construction that prevents erosion and sediment loss; and detention pond maintenance. These topics are presented to audiences ranging from school children to homeowners' associations to developers and engineers.

The NPDES section is committed to addressing the public education requirements of the permit. The public education program involves a joint effort between NPDES staff and the MWS Public Information Officer (PIO), Sonia Harvat, as well as other key Metro departments.

4.10.1 Public Education of Other Elements (Part III.B.10.a)

Contact Name: Michael Hunt, MWS, Stormwater Division, NPDES section, 615.880.2420
Sonia Harvat, MWS Public Information Officer, 615.862.4494

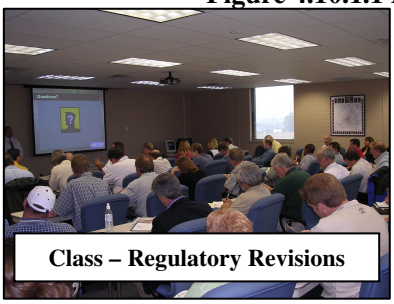
Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
10a	Inform Public – General Housekeeping Procedures	Ongoing – at least one activity per year	•	•	•	•		See Activity 1F
	Inform Home Owner Associations – Detention Pond Maintenance							See Activity 1G
	Educate Engineering and Development Community – Long Term WQ Impacts							See Activity 2A / 2D
	Inform Public – Pesticides, Herbicides, and Fertilizers							See Activity 5B
	Inform Public – Oils and Hazardous Chemicals							See Activity 5B
	Inform Public – Illicit Connections / Discharges							See Activity 6D
	Educate Engineering and Development Community – Construction WQ Impacts							See Activity 8A
	Other Not Yet Identified Opportunities							

Inform Public - General Housekeeping Procedures

The following components of the public education program are geared toward educating the general public on proper housekeeping measures:

- The NPDES section and the Public Information Officer (PIO) held several public education events throughout the year. Representative photographs of events are presented in Figure 4.10.1.1. Some of the events are designed to be a hands-on training, while others are designed to present stormwater quality information to the public. In permit year 4, classes were offered to the engineers, developers, and architects on the revised stormwater regulations and the site development tool for new construction design.

Figure 4.10.1.1 Public Education Events


Class – Regulatory Revisions


Earth Day

- In previous permit years, the NPDES section developed a general brochure that summarizes the Stormwater Program and explains ways for the general public to prevent stormwater pollution. This brochure, titled "Water – Protect It With Your Lifestyle", is given out at presentations and events where NPDES staff are present and is available for pick up at several Metro offices (See Appendix B). During permit year 2, the NPDES section ordered products such as magnets, pens, and cups with water quality logos that are distributed at public education events.

- A Stormwater Pollution Hotline (313-PURE) is provide for reports related to any discharge or activity that is contributing to water pollution. The hotline functions 24-hours a day, 7-days a week and is managed through the NPDES office. This hotline number is included on all of NPDES educational materials. The NPDES section has also created a website that also provides the public a forum for reporting stormwater quality problems via email. The address to the website is: www.nashville.gov/stormwater/.

- Metro runs a video on Channel 3 (public access channel) throughout different times of the year that specifically addresses construction site stormwater runoff and the grading permit process.

- The Stormwater Program has a logo and slogan (Pure Nashville…Right as Rain) that is extensively promoted on program materials such as vehicles, website, etc.

- NPDES staff and the MWS PIO give numerous presentations to educate the general public on what stormwater pollution is and how the public can help to reduce pollution. A list of the presentations provided by NPDES staff are attached in Appendix A. Many of these presentations are also available on the Metro Stormwater website.

- NPDES staff uses government-issued vehicles in performing its functions of sampling, complaint investigation, and construction inspection. In an effort to promote its program and public awareness, the logo and hotline phone number are displayed on the nine NPDES section fleet vehicles. See Figure 4.10.1.2.

Figure 4.10.1.2 NPDES Truck and Van

- Water Works! is a public education program through the Middle Tennessee State University (MTSU) Center for Environmental Education designed to promote clean water in Tennessee through a series of public service announcements, both video and audio, promoting water quality through responsible action. Water Works! is partnering with the Phase I and II MS4 municipalities in Tennessee to complete their required public education mandate. The NPDES section has been participating in the

education campaign over the past few years. In permit year 4, the Water Works! program aired approximately 7,470 radio spots and 81 television spots. The Water Works! radio and television airings equated to a total market value of approximately $342,250.

- MWS routinely sends out notices to all properties located in the special flood hazard area, approximately 10,000 properties. The pamphlet, found in Appendix B, is individualized to show a map of the owner's property and floodplain. The pamphlet also includes general information about flood hazard areas, flood insurance, safety, permitting requirements, drainage system maintenance, and illicit discharges.

- During permit year 3, the NPDES section began a rain barrel distribution program. Through a partnership with a local business, the NPDES section obtained old barrels from the industry, cleaned out the product residue (which was a substance used in a beverage preparation process), and gave them away for free to the interested general public. Along with giving away the barrels, a set of instructions on how to construct a rain barrel were also given out. During permit year 3, the NPDES gave out 72 barrels with instructions on converting them to rain barrels and 20 barrels that were converted to rain barrels by NPDES staff. The rain barrel program continued through permit year 4, with the distribution of 14 rain barrels. The response from the general public was better than anticipated. The NPDES section received numerous phone calls from the public on how to obtain a rain barrel; many times the demand was above the supply of barrels. NPDES participated in a landscaping workshop at the Warner Park Nature Center in permit year 4 in which a rain barrel was given as a door prize. Figure 4.10.1.3 is a photograph of one of the rain barrels given out by the NPDES section.

Figure 4.10.1.3 Constructed Rain Barrel Distributed by the NPDES section

Inform Homeowner Associations - Detention Pond Maintenance

During permit year 2, the NPDES section began a pilot BMP inspection program. The program was initiated to identify compliance issues with detention ponds and the best available methods to bring a site into compliance. It was determined from the pilot inspection program that there are many compliance issues associated with existing detention ponds. In permit year 3, the NPDES section sent over one-thousand flyers to BMP owners that had addresses

listed in the BMP database. The flyers notified the property owners that a stormwater BMP was located on their property and gave general inspection and maintenance information. Approximately 30% of these flyers were returned to Metro due to incorrect or outdated addresses. NPDES staff will try to locate the correct address for each of these projects as time allows. In permit year 5, the NPDES section intends to mail out the notification flyers to the remaining property owners if valid addresses can be obtained. NPDES staff presented information on BMP maintenance and distributed the BMP flyer to the members of the Nashville chapter of the Community Associations Institute (CAI). This organization consists of community managers who are either directly responsible for BMP maintenance or advise those who are. The information provided to CAI should increase both the public awareness of BMPs and their maintenance within Metro.

Educate Engineering and Development Community – Long Term Water Quality/Construction Water Quality Impacts

The NPDES section works along with TDEC and the University of Tennessee in presenting the TDEC Erosion Prevention and Sediment Control Training and Certification Workshops in the Nashville area. This class is a foundation-building course open to the public, but intended for all levels of government, plan preparers and reviewers, and designers and engineers. The course aims to build a solid working knowledge of erosion and sedimentation processes and practices and hydrologic cycles. It provides a better understanding of the impact of erosion on Tennessee's natural resources and of Best Management Practices for erosion prevention and sediment control on construction sites. In permit year 4, there were four Level I workshops offered in the Nashville area. At each workshop, Dale Binder, of the NPDES staff gave a presentation on the Metro stormwater requirements and grading permit process.

In addition to the TDEC Level I Workshop, the NPDES section gave several other presentations in permit year 4 to the local engineering and development community. All of the presentations given by the NPDES office are listed in Appendix B. In addition to the presentations given by them, the NPDES section has worked over the last few years to improve communication with the development and construction community. In an effort to inform the private sector of Metro's latest issues in construction, the NPDES section periodically sends out notices via email to a list of developers, contractors, and engineers that have previously gone through the NPDES pre-construction meeting process.

Oils and Hazardous Materials – Education for the General Public

Nashville operates a household hazardous waste collection facility open seven days a week available to Nashville and Davidson County residents exclusively. Valid Davidson County identification is necessary to drop items off at the household hazardous waste facility. This facility is located at the East Center off Trinity Lane. Residents can bring up to 15 gallons or 100 pounds of household hazardous waste each month. There is no fee to drop-off household hazardous waste at the East Convenience Center. In addition, Public Works has provided outreach to the public thorough events, and brochures to educate the public on recycling and waste management. Over the past few years, Public Works has focused on school based recycling education making presentations at elementary schools throughout Nashville.

As mentioned in Section 4.5, the NPDES office initiated a campaign in permit year 2 to educate commercial distributors of herbicides, pesticides, and fertilizers, as well as landscaping companies that routinely apply these chemicals. In permit year 3, the NPDES section began to work on a brochure that will be handed out to each Food Service Establishment (FSE) that will, among other things, explain stormwater impacts of different chemicals used by businesses such as cleaning detergents. In permit year 4, this brochure was completed and provided to the FSEs as educational literature and material.

Illicit Connections/Discharges – Education for the General Public

The NPDES section continued the ongoing process of educating the public on reporting spills, illegal dumping, illicit connections, and other water quality problems through several types of media, including the use of the telephone hotline, distributing educational brochures, public service announcements, educational events, etc.

The newest and most prevalent form of public education and notification was developed in permit year 1. In 2003, MWS personnel conceived a cartoon character, "Toxic Dude", who is consumer-friendly and approachable. A graphic designer was engaged to bring the staff's concept to life. The cartoon includes a sign that mirrors the design of the catch basin markers used on storm drains. "Toxic Dude" is reminded by fish "What You Dump in a Storm Drain Ends Up in My

Home!" and encourages readers "Don't Dump On Us!" (See Figure 4.10.1.4). The stormwater website and hotline numbers are included in the graphic for additional information. As mentioned earlier in the document, the "Toxic Dude" campaign has been nationally recognized by receiving the National Association of Clean Water Agencies Environmental Achievement Award in 2006.

Figure 4.10.1.4 Toxic Dude

One method the NPDES section uses to judge the success of the public education campaign is to track the number of water quality complaints that are received. As mentioned in Section 4.6, all water quality-related complaints received by or routed to NPDES section and are logged into databases that track the status of all stormwater quality complaints that are investigated by the NPDES staff. In a careful analysis of the databases over the last couple of years, it is apparent that the amount of stormwater quality complaints that the NPDES section receives from the general public is increasing. We believe that part of the reason for this increase is the comprehensive public education program that has increased general stormwater awareness. The NPDES section also reviews the illicit discharge investigation database to determine if there are any trends present within the county. If in analyzing the data regional trends are noted, public education efforts such as the "Toxic Dude" campaign will be more heavily focused in those regions.

In permit year 3, the MWS PIO began two new initiatives, "Inlet Stenciling" program and the "Adopt a Watershed" program, to further increase awareness in the general public on the impacts illicit discharges can have on water quality of streams. Both of the programs are going to be watershed based. The "Adopt a Watershed" program will assign volunteer groups to specific watersheds where they will perform a variety of water quality improvement activities such as inlet stenciling, stream clean-ups, etc. During permit year 3, the MWS PIO purchased stencils that specifically identify the following major watersheds: Browns Creek, Whites Creek, Mill Creek, Stones River, Harpeth River, Manskers Creek, and Richland Creek. An example stencil is depicted in Figure 4.10.1.5.

Figure 4.10.1.5 Typical Stencil Sign based on Watersheds

During permit year 4, MWS PIO introduced the "Adopt a Stream" program to promote public education, public outreach, and citizen involvement. The program provides an opportunity for local businesses, watershed associations, civic groups, churches, schools, etc. to volunteer in protecting and enhancing the watershed in which they live. By volunteering to Adopt-A-Stream, each group agrees to at least one cleanup per year of their adopted stream (for a

minimum of two years) and to stencil storm drains leading to the section of the adopted stream or creek. Each group is provided a custom sign featuring the adopted watershed and organization. Figure 4.10.1.6 is typical sign provided.

Figure 4.10.1.6 Adopt A Stream Issued Sign

Stream segments of Mill Creek, Richland Creek, Franklin Branch, and Sorghum Branch have been adopted by local businesses and watershed associations. In permit year 5, it is anticipated that even more stream segments will be adopted to help protect and enhance these waterbodies.

4.10.2 World Wide Web Site (Part III.B.10.b)

Contact Name: Anna Kuoppamaki, MWS, Stormater Division, Engineering Section, 615.862.4792

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
10b	World Wide Web Site	----						
	Enhance Public Works Website	Ongoing	●	●	●	●		
	Provide Reporting Mechanism	Ongoing	●	●	●	●		
	Establish an Area Dedicated to Recognition	PY 4				●		

Metro's Cycle 2 NPDES permit contains references to Metro Public Works as the Department that oversees the NPDES permit implementation. However, in April 2002, the Stormwater Program moved from Metro Public Works to Metro Water Services. The NPDES section and permit management is now located within Metro Water Services, Stormwater Division. The website can be found on the World Wide Web at www.nashville.gov/stormwater (see Figure 4.10.2.1). This site contains an enormous amount of information including summaries about the NPDES MS4 program activities, documents pertaining to NPDES requirements, informative articles to educate the public about water quality impacts and preventative measures, and links to many websites that provide further information about water quality friendly activities and programs in Nashville.

In previous permit years the NPDES section was given the authority to design and make changes to the Metro stormwater web page. Since this time, the NPDES section has been routinely updating the web site to make sure only the most up to date information is available.

In permit year 3, the Metro Nashville stormwater web page was visited 51,574 times. This was 12,000 more visits than the previous permit year. A complete web trends report is available in appendix B.

Figure 4.10.2.1 Metro Stormwater Webpage

4.10.3 Future Direction of Element 10 – Public Information and Education

Public Education of Other Elements

Over the next couple of permit years, the NPDES section, through cooperation with the PIO, looks to significantly boost the public education program. Metro believes that public education plays, perhaps, the largest role in improving the water quality of the Davidson County streams on a long-term basis. The NPDES section will continue to formulate and distribute educational materials that will promote a better awareness of stormwater pollution prevention within Davidson County. The NPDES section is also committed to pursuing various other educational mechanisms/opportunities within the community. One particular area that the NPDES section and PIO will look to step-up is the education of Metro school students. NPDES is hopeful that the Davidson County Board of Education will adopt the program to be included as a part of the Davidson County Public Schools science curriculum. It is the intent of the NPDES section to facilitate similar programs at any of the various private schools in Davidson County that would like to cover such topics.

World Wide Web Site

As new presentations and revisions to the stormwater program are developed, information will be included on the webpage. It is the desire of MWS to keep the development community and the general public up to date with program changes and/or additions.

4.11 Reporting

This section is designed to meet Part III.B.11 of the permit by summarizing program elements and revisions each permit year and by quantitative and qualitative controls assessment when appropriate. Components of this ongoing element include ongoing data collection, data compilation, and creating the annual report.

4.11.1 Compliance Report (Part III.B.11.a)

Contact Name: Michael Hunt, MWS, Stormwater Division, NPDES section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
11a	Compliance Report	End of each PY (+ 6 months)	•	•	•	•		Annually

During permit year 4, Metro recorded and assessed program activities for the year and compiled the annual compliance report. For year four of the second permit cycle, the annual activities have been reported in a concise form.

4.11.2 Propose Third Permit Term Cycle Activities (Part III.B.11.b)

Contact Name: Michael Hunt, MWS, Stormwater Division, NPDES section, 615.880.2420

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
11b	Propose Third Permit Cycle Activities	End of PY 4 (+ 6 months)				•		

The NPDES sectionhas prepared a proposal on its activities for Permit Cycle Term 3. A brief narrative rationale to support its intent is included in Appendix D.

4.11.3 Future Direction of Program Element 11 – Reporting

Metro will continue to track pertinent components of its stormwater management program to aid in the development of the annual report. Databases will be maintained and updated as an ongoing effort. Also, Metro will investigate the development of management tools to facilitate more efficient data collection and report generation for future annual reports.

5.0 Monitoring Programs

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY 4
			1	2	3	4	5	
A	Ambient – 8 or more in-stream locations Sample each site at least 6 times annually	6X Annually (Bi-monthly)	●	●	●	●		
B	Wet Weather – 3 or more in-stream locations Sample each site at least 2 times annually	2X Annually	●	●	X*	●		* why activity was not accomplished in PY3 is explained in Section 5.1
C	Industrial – Sampling based on inspections	As needed	●	●	●	●		
D	Bioassessment – Perform RPB III at 2 designated sites Perform RPB III at 1 or more reference sites	Annually	●	●	●	●		
D	Bioassessment – Refine Procedures	PY 1	●					
D	Bioassessment – Perform "quick assessments" as necessary	Annually	●	●	●	●		
E	Loadings Estimate – Report EMC changes	PY 5						
E	Loadings Estimate – Report annual volume and loading changes	Complete by end of PY 5						

5.1 Wet Weather Sampling

The NPDES section developed the wet weather sampling program in the first permit cycle. The sampling program was designed as a wet weather characterization approach that focused on stream monitoring to quantify the status and trends in water quality. The data collected was intended to assist the section in ranking stormwater management program resources and practices, and to establish goals for the waterways. Metro has been directed by the permit to obtain samples from an optimum event, and had been striving to sample events where qualifying amounts occur at selection sites for more useful comparative data analysis. This permit requirement had proven difficult to achieve and produced very few useful sampling results. During permit year 3, the NPDES section was only able to sample one wet weather event on the Ewing Creek Watershed. Due to the weather patterns, the remaining sampling events were not able to be obtained.

During permit year 3, the NPDES section coordinated with TDEC to modify the wet weather sampling program to be more aligned with Metro's newly developed Watershed Water Quality Program. The water quality program will combine intensive sampling with pollutant source tracking, development of partnerships with other stakeholders, and public education to remove streams from the 303(d) list. In permit year 4, the NPDES section received approval to perform the modification. Instead of monitoring the same three streams, twice per year during qualifying rain events, the NPDES section will continue to obtain wet weather samples at the Sugartree Creek site, but will replace the Ewing and Sevenmile Creek sites with drainages that flow to "TMDL" streams. The new sample sites are in the Harpeth River Watershed located off General George Patton Road and the Stoners Creek Watershed located off Lebanon Pike. In addition, the modification to the wet weather sampling program is that all three sample sites will not have to be sampled simultaneously during the same rain event. This allows the NPDES section more flexibility to route staff during storm events and greatly improves probability that all samples will be collected during the permit year. Trained NPDES staff

members perform all sample collection and handling. Analyses are conducted using EPA approved methods. Figures 5.1.1, 5.1.2, and 5.1.3 are maps, locations, and outfall photographs of the wet weather sample sites.

Figure 5.1.1 Harpeth River Wet Weather Monitoring Location

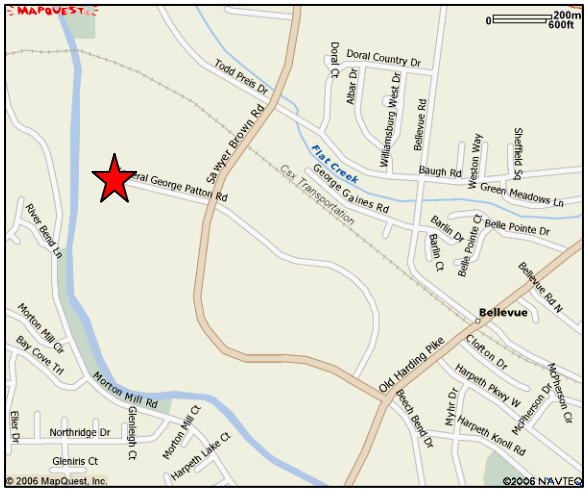


Figure 5.1.2 Stoners Creek Wet Weather Monitoring Location

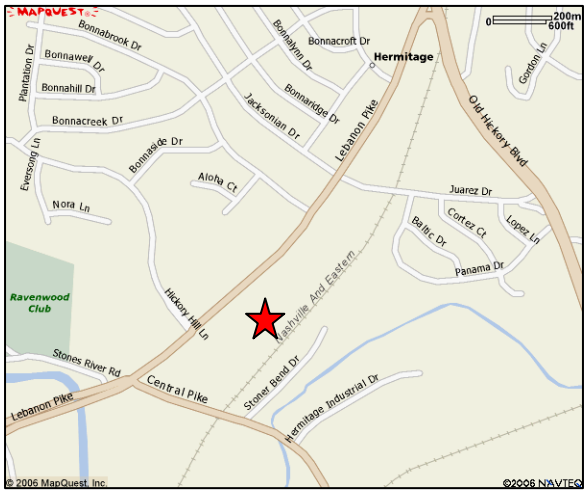
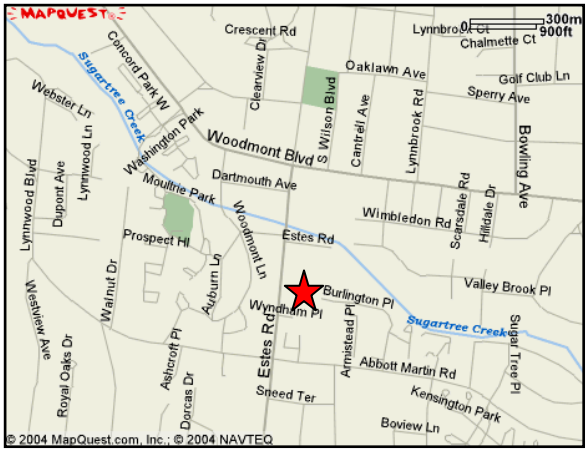
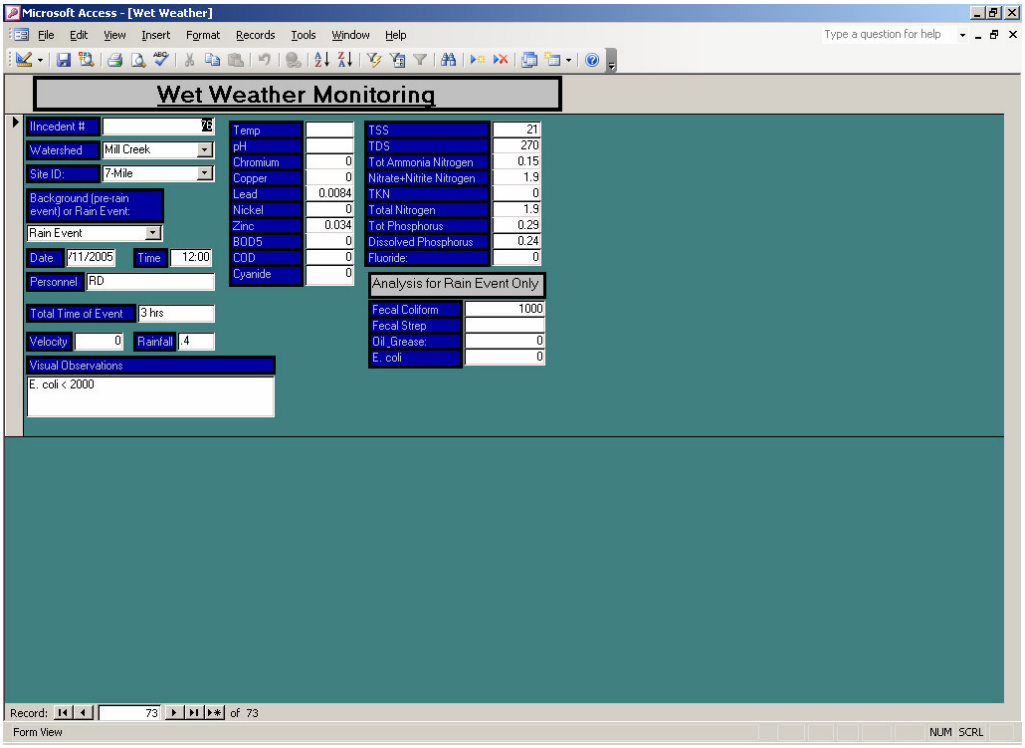


Figure 5.1.3 Sugartree Creek Wet Weather Sample Site Location



The wet weather monitoring data and other observations are stored in a database illustrated in Figure 5.1.4. Appendix C presents detailed records of the wet-weather sampling activities.

Figure 5.1.4 Wet Weather Monitoring Database



5.2 Total Maximum Daily Load (TMDLs)

In permit year 4, TDEC-WPC coordinated with NPDES to discuss approved TMDLs and the pathogen requirements of each in the Harpeth River (Davidson County). As a result of this meeting, the Watershed Group of Stormwater was expanded to four dedicated personnel to complete those requirements as well as to monitor 303(d) listed streams in an attempt to prevent the need for additional TMDLs in Davidson County. Specific requirements include: E. coli shall not exceed 126 CFU/100 ml as a geometric mean on a minimum of 5 samples collected within 30 days; and, E. coli concentrations for individual samples shall not exceed 941 CFU/100 ml.

SQSH (square kick) samples per stream segment listed in the TMDL must be collected in the same time frame. For Metro Water those streams include the Harpeth, Little Harpeth and Trace Creek. Identification must be to genus level or lower. To examine seasonal trends in water quality, the NPDES section, watershed group will sample twice (2) yearly for macroinvertebrates at each required reach listed in the TMDL. Samples will be collected in April and September utilizing the SQSH method and identified to genus.

Pathogen sample sets will be collected on the Harpeth, Little Harpeth, and Trace creek. A sample set is defined as five (5) samples collected within a thirty (30) day period with each individual sample collected more than twelve (12) hours apart. To examine seasonal trends and recognizing the variety in weather conditions associated with differing seasons MWS proposes to collect five (5) pathogen samples in a thirty (30) day period in all reaches quarterly. This sampling procedure will satisfy the pathogen TMDL requirements.

The purpose of the visual stream assessment is to not only isolate sources of contaminants but to also provide MS4 managers a way to prioritize areas that are in need of increased scrutiny and attention. Although several documents have been approved for use by MS4's in completing this requirement, MWS will adopt the protocols set forth in Maryland's Stream Corridor Assessment Survey. All streams and tributaries impacted by the MS4, crossed by or in close proximity

to water and/or sewer lines will be assessed. Those tributaries not impacted by the MS4 or water/sewer lines will be assessed for potential impacts using GIS images. All field data will be electronically stored and accessible by ArcGIS.

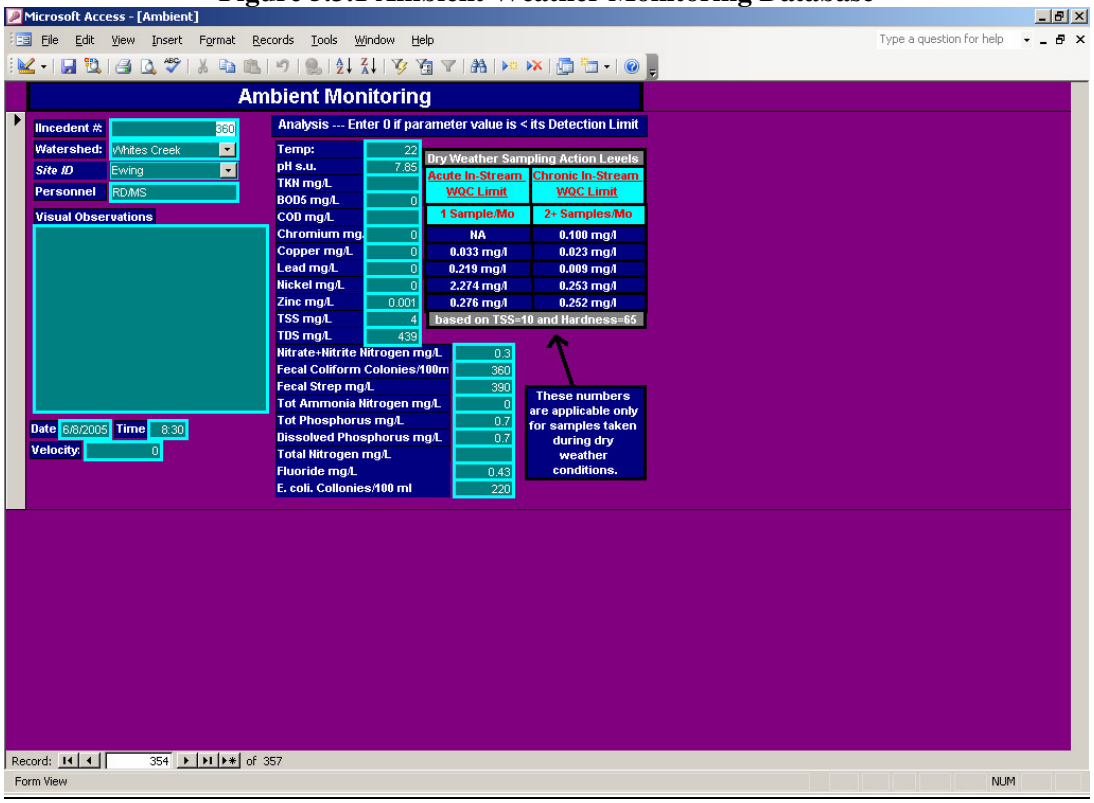
5.3 Ambient Monitoring Program

Ambient stream monitoring occurs in three Metro watersheds and includes both grab samples and the measurement of field parameters. In two of the ambient watersheds, samples are collected in the two main upstream tributaries and at a downstream location near the mouth of the stream. The sampling sites in the other ambient watershed are near the mouth of the stream and at a point approximately two-thirds up the stream's length. The ambient sample site locations are described for each watershed below:

- Ewing Creek: North and South tributaries approximately 20 ft. upstream of their confluence accessed through Ewing Lane and the main Ewing Creek branch at the Knight Drive bridge.
- Sugartree Creek: Upstream near the Hobbs Road crossing and downstream under the Kroger on Harding Place.
- Sevenmile Creek: East and West tributaries approximately 20 ft. upstream of their confluence accessed through the Players Club apartment complex and the main Sevenmile Creek branch at the Antioch Pike bridge.

Ambient monitoring is conducted on the first three Wednesdays of even numbered months. Samples are analyzed for the parameters listed in the permit and field measurements of pH, dissolved oxygen, temperature, and conductivity are taken. Ambient monitoring results are entered and stored in the database displayed in Figure 5.3.1. The ambient sampling data is presented in Appendix C.

Figure 5.3.1 Ambient Weather Monitoring Database



5.4 Industrial Sampling

In permit year 4, the NPDES office did not perform industrial sampling; the prioritization list did not include sites declared to be substantial loaders.

5.5 Biological Assessment

Metro conducted its program of periodic biological assessment of two urban streams and one reference stream during permit year 3. Early in April of 1999, the NPDES section submitted its chosen bioassessment sampling sites and protocols to TDEC. The Director of Water Pollution Control subsequently approved the submittal. The NPDES section originally chose Sevenmile Creek and Sugartree Creek as the two stream bioassessment locations. These sites were chosen because they allowed the NPDES section to combine new biological data with sampling data that has been and will be gathered; thus providing a better understanding of the streams' conditions and how activities and situations affect watersheds. Although Sevenmile Creek wasn't actually listed as a currently impacted stream, it was anticipated that it would be designated by TDEC in the 2004 303(d) list. In addition, the "endangered" Nashville crayfish (*Orconectes shoupi*) are present in Sevenmile Creek, and it was decided that this stream should be monitored carefully and improved to ensure the well-being of the species. Subsequently, in cycle 1, permit year 5, the NPDES section determined that Sugartree did not have the base flow necessary to collect adequate biological data. The NPDES section consulted with TDEC staff and chose Browns Creek as the second stream for biological assessments. It is anticipated that Browns Creek will maintain the base flow necessary to support biological monitoring and was sampled in permit year 1 and 2.

Metro's Standard Operating Procedure (SOP) of the Rapid Bioassessment Protocol (RBP) III, developed in September of 1999, was refined during the first permit cycle. Figures 5.5.1 through 5.5.3 depict samples of stream survey forms that are used in the field.

For the past 3 years, the NPDES section has more consistently applied the scoring system for the habitat assessments. Instead of having multiple people performing assessments on the same stream, one person handles the assessment. Since the habitat assessment scoring is mostly subjective, keeping staff consistency in conducting the assessment removes some of the variability. Since one staff member has conducted the scoring, that staff member can conduct a quick check for noticeable changes in the field instead of re-assessing the stream at each visit. In the future, if no changes are noted, a new habitat assessment will not be conducted.

Figure 5.5.1 Sample Stream Survey

Stream Survey Information **Storet #**

Stream: Browns Creek
Stream Location: _____
County Code:(FIPS) _____ Field # _____ Assessors: _____MS
Major Basin: _____ Date: 05/10/2004
WBID#/HUC: _____ Time: 11:00 AM
WBID Name: _____ Stream mile: _____
Lat/Long Deg: _____ Stream Order: _____
Lat/Long Dec: _____ Reach file: _____
USGS Quad: _____ 3Q20: _____
Drains to: _____rm_____rm____ Elevation (ft): _____
Ecological Subregion: _____
Objectives:

Samples Collected **Meters used:**

Chemicals Y or **N** Life Assessed? **Macroinvertebrates** Fish Algae Other:
Additional List Attached? Yes / **No** Samples Returned? Yes or **No** Sampling Method: _____

Field Analysis:

pH	8.2	SU	Dissolved Oxygen	99.90	%
Conductivity		UMHOS	Time	11:45 AM	
Temperature	17.5	C	Others		

Previous 48 hours Precip: UNKNOWN **NONE** LITTLE MODERATE HEAVY FLOODING
Ambient Weather: SUNNY **CLOUDY** BREEZY RAIN SNOW

Watershed Characteristics **App. % of watershed observed:**

Upstream Surrounding Land Use: (estimated %)

Pasture		Urban	15	Residential	15
Crops		Industry	70	Other	
Forest		Mining			

Impacts: rated S(light), M(oderate), H(igh) magnitude. Blank = not observed

Causes		Sources	
Pesticides (0200)	Flow Alter. (1500)	Point Source: Indust (0100) **S**	Unknown (9000)
Metals (0500)	Habitat Alt. (1600)	Logging (2000)	Municipal (2000)
Ammonia (0600)	Thermal Alt. (1400)	Construction; Land Dev. (3200)	Mining (5000)
Chlorine (0700)	Pathogens (1700)	U/S Dam (8800)	Road/Bridge (3100)
Nutrients (0900) **S**	Oil & Grease (1900)	Riparian Loss (7600)	Urban Runoff (3100)
pH (1000)	Unknown (0000)	Agriculture: Row Crop (1000)	Bank Destabilization (7700)
Organic Enrichment / Low D.O. (1200)	Siltation (1100)	Livestock grazing-riparian (1410)	Intensive Feedlot (1600)
Other:		Other:	Dredging (7200)

Physical Stream Characteristics **Length of stream area assessed (m):**

Surrounding Land Use (facing downstream):

Estimate %	RDB	LDB		RDB	LDB		RDB	LDB
Pasture			Urban	15	15	Residential		
Crops			Industry	70	70	Other		
Forest	15	15	Mining					

% Canopy Cover: ____80_____Open (0-10) Partly shaded (11-45) Mostly shaded (46-80) Shaded (>80)
Bank Height (m): ___.5_____ High water mark (m): _____
Sediment Deposits: None **Slight** Moderate Excessive Blanket
Type: Sludge Mud **Sand** **Silt** None Other Contaminated Y or N
Turbidity **Clear** Slight Moderate High Opaque
Excessive Algae Present? **None** Slight Moderate Choking
Aquatic Vegetation Rooted Floating Type _____
Additional Comments: (Oil sheen, Odor, Color) Strong Vomit Odor

Physical Stream Characteristics (cont.)

	Riffle	Run	Pool
Depth (m)	3"	8"	18"
Width (m)	3	3	4
Reach Length (m)	40	40	20

Staff Guage/ Bench Ht. _
Velocity (CFS)
Flow (CFS)
Habitat Assessment Sco
RR# _____

Gradient (sample reach): Flat Low Moderate High Cascade
Size (stream width): Very Small (<1.5m) Small (1.5-3m) Medium (3-10m) Large (10-25m)

Substrate (%) **(Visual estimates)**

	Riffle	Run	Pool		Riffle
Boulder (>10")	45%	25%	10%	Clay (slick)	1%
Cobble (2.5-10")	20%	25%	15%	Silt	5%
Gravel (0.1-2.5")	15%	15%	5%	Detritus (CPOM)	3%
Bedrock	5%	10%	60%	Muck-Mud (FPOM)	1%
Sand	5%	10%	5%	MARL (shell frag.)	%

Biological Assessment

List Log Numbers of Samples _____

Relative Abundance of Taxa

Dominant (>50): _____
Very Abundant (30-40): _____
Abundant (10-29): _____
Common (3-9): _____
Rare (<3): _____

Stream Use Support: **Specifically Classified for:** (circle)

Dom. H2O Supply Ind. H2O Supply Navigation Tier II/ Tier III Trout>> N
Water Withdrawl noted _____
Is stream posted? Fish Tissue Advisory: Do Not Consume Precauti
Bacteriological Advisory

Based on Observations and Data, stream is: (circle)
Fully Supporting (FS) Supporting, but Threatened (TH) Partially Supporting (PS) Nonsupp

Comments: Photos **Y** or N Roll # Photo #
8 Crayfish

Stream Sketch

Figure 5.5.2 Sample Habitat Assessment Field Data Sheet (Front)

HABITAT ASSESSMENT FIELD DATA SHEET -- LOW GRADIENT STREAMS

STREAM NAME Browns	LOCATION	
STATION RIVERMILE	STREAM CLASS	
LAT. LONG.	RIVER BASIN	
STORET #	AGENCY	
INVESTIGATORS		
FORM COMPLETED BY	DATE 5/11/04 TIME 11:00 **AM** PM	REASONS FOR SURVEY

Parameters to be evaluated in sampling reach

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
1. Epifaunal Substrate/ Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat ; lack of habitat is obvious; substrate unstable or lacking.
SCORE 20	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Pool Substrate Characteristics	Mixture of substrate materials with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
SCORE 10	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Pool Variability	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large deep, very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.
SCORE 8	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE 16	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower bank, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE 18	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Figure 5.5.3 Sample Habitat Assessment Field Data Sheet (Back)

HABITAT ASSESSMENT FIELD DATA SHEET -- LOW GRADIENT STREAMS

Parameters to be evaluated in sampling reach

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
SCORE 19	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
SCORE 6	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank) Note: determine left or right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank had erosional scars.
Score (LB) 8	Left Bank 10 9	8 7	5 4	2 1 0
Score (RB) 8	Right Bank 10 9	8 7	5 4	2 1 0
9. Vegetative Protection (score each bank)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
Score (LB) 7	Left Bank 10 9	8 7	5 4	2 1 0
Score (RB) 7	Right Bank 10 9	8 7	5 4	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters; little or no riparian vegetation due to human activities.
Score (LB) 10	Left Bank 10 9	8 7	5 4	2 1 0
Score (RB) 7	Right Bank 10 9	8 7	5 4	2 1 0

Total Score= 144

Figure 5.5.4 Example Biological Assessment Calculation Sheet

(Note: this presents only a portion of the assessment data sheet)

Reference Stream	Whites 5/11/04
Test Stream	7-Mile
Date	05/11/2004

Special Notes - Do not use "0"s when enteri
You must enter DIC's
You must enter habitat scor

Phylum / Class / Order / Suborder / Taxa	Tolerance Value (TV)	Functional Feeding Group (FFG)	Reference Stream Abundance (a)	Test Stream Abundance (b)	Calculation Column tv*a/n	Calculation Column tv*b/n
Platyhelminthes						
Turbellaria						
Planariidae	6.1	2		2	0.00	0.06
Annelida					0.00	0.00
Oligochaeta					0.00	0.00
Lumbriculidae	7.03	7	1	4	0.03	0.14
Naididae	6.10	4			0.00	0.00
Mollusca					0.00	0.00
Gastropoda					0.00	0.00
Ancylidae	7.02	4			0.00	0.00
Physidae	8.80	4			0.00	0.00
Planorbidae	6.30	4			0.00	0.00
Pleuroceridae	3.40	4	17	11	0.29	0.19
Pelecypoda					0.00	0.00
Corbiculidae	6.10	2			0.00	0.00
Sphaeriidae	6.60	2			0.00	0.00
Arthropoda					0.00	0.00
Crustacea					0.00	0.00
Amphipoda					0.00	0.00
Gammaridae	6.60				0.00	0.00
Crangonyx	7.87	3		2	0.00	0.08
Gammarus	9.10	3			0.00	0.00
Hyalellidae					0.00	0.00
Hyallela	7.75	3			0.00	0.00
Decapoda					0.00	0.00
	7.50	6	1	9	0.04	0.34
Isopoda					0.00	0.00
Asellidae					0.00	0.00
Asellus	9.11	3			0.00	0.00
Lirceus	7.85	3	58	7	2.25	0.27
Arachnoidea					0.00	0.00
Hydracarina	5.53	5			0.00	0.00
Insecta					0.00	0.00
Ephemoroptera					0.00	0.00
Baetidae	6.10	3	49	102	1.48	3.11
Caenidae					0.00	0.00
Caenis	7.41	3			0.00	0.00
Ephemeridae					0.00	0.00
Hexagenia	4.90	3			0.00	0.00
Ephemerellidae					0.00	0.00
Eurylophella	4.34	3	1		0.02	0.00
Serratella	1.57	3			0.00	0.00
Heptageniidae					0.00	0.00
Stenacron	3.58	4			0.00	0.00

Reference Site =	a
Test Site =	b
Ttl. Organisms - a	202
Ttl. Organisms - b	200
Taxa Richness - a	16
Taxa Richness - b	14

Comparitive Taxa Richness	%	88
North Carolina Biotic Index Comparitive NCBI	%	104
Functional Feeding Group % Similarity - FFGPS	%	79
Indicator Assemblage Index (IAI)		0.67
Dominants in Common		2
Percent EPT Index	%	43
Community Loss Index		0.50

Metric	Scoring Criteria			
	6	4	2	0
1. Taxa Richness	6	----	----	----
2. NCBI	6	----	----	----
3. FFGPS	----	4	----	----
4. IAI	----	4	----	----
5. DIC	----	----	2	----
6. EPT Index	----	----	----	0
7. CLI	6	----	----	----

BIOLOGICAL CONDITION		0.67
Habitat Percent Comparibility	%	78

NCBI= Σ xi ti / n

NCBI=	
Ref.	Test
5.98	5.77

Comparitive Biotic Index = NCBI sample a x 100 / NCBI sample b

Sab = Σ min (Pia, P

Number of Individua in each FFG	
FFG	# A
0	0
1	1
2	37
3	117
4	32
5	9
6	1
7	1

Relative Abundance Each FFG (%)	
FFG	# A / Pia
0	0.000
1	0.005
2	0.183
3	0.579
4	0.158
5	0.045
6	0.005
7	0.005

Min (Pia, Pib)	
0	0.000
1	0.000
2	0.075
3	0.555
4	0.135
5	0.010
6	0.005
7	0.005
QSI / Sab =	0.79
FFGPS =	79

Figures 5.4.5 and 5.4.6 depict typical photographs of Whites Creek, the reference stream, which was assessed in fall and spring of the permit year.

Figure 5.5.5 Whites Creek (Reference Stream) Bioassessment

Figure 5.5.6 Whites Creek (Reference Stream) Bioassessment

Table 5.1 summarizes the bioassessment findings for both the reference stream and the test streams. This data is derived through biometric calculations generated through procedures outlined in Tennessee's Biological Standard Operating Procedure Manual.

Table 5.1 Bioassessment Findings

Test Stream	Reference Stream	Biological Score
Whites Creek		
5/4/2000	N/A	---
11/20/2000	"too dry, not done"	---
5/11/2001	Whites 5/4/00	76
10/10/2001	Whites 5/11/01	86
6/4/2002	Whites 5/11/01	76
10/28/2002	Whites 10/10/01	71
5/13/2003	Whites 6/4/02	71
10/22/2003	Whites 10/21/02	76
5/11/2004	Whites 5/13/03	67
10/15/2004	Whites 10/22/03	67
5/11/2005	Whites 5/11/04	81
10/18/2005	Whites 10/15/04	90
5/16/2006	Whites 5/11/05	62
Sevenmile		
5/3/2000	Whites 5/4/00	52
11/20/2000	"too dry, not done"	---
5/7/2001	Whites 5/11/01	90
10/9/2001	Whites 10/10/01	57
5/3/2002	Whites 6/4/02	52
10/21/2002	Whites 10/21/02	52
5/13/2003	Whites 5/13/03	57
10/21/2003	Whites 10/22/03	52
5/11/2004	Whites 5/11/04	67
10/14/2004	Whites 10/15/04	86
5/10/2005	Whites 5/11/05	62
10/17/2005	Whites 10/18/05	76
5/15/2006	Whites 5/16/06	76
Browns		
5/29/2001	Whites 5/11/01	52
10/9/2001	Whites 10/10/01	38
5/30/2002	Whites 6/4/02	48
10/23/2002	Whites 10/21/02	33
5/13/2003	Whites 5/13/03	29
10/23/2003	Whites 10/22/03	38
5/10/2004	Whites 5/11/04	24
10/13/2004	Whites 10/15/04	62
5/11/2005	Whites 5/11/05	33
10/17/2005	Not done-severe illicit discharge made conditions hazardous to health	---
5/15/2006	Whites 5/16/06	43
Sugartree		
Spring 2000	Whites 5/4/00	24
Fall 2000	"too dry, not done"	---

5.6 Loading Estimates

In permit year 5, Metro is responsible for reporting changes from Permit Cycle 1 to Permit Cycle 2 for Event Mean Concentrations (EMC) of a representative storm event, seasonal pollutant loadings, and runoff volume. During permit year 3, the NPDES section began to evaluate the method for calculating EMC, runoff volume, and seasonal pollutant loadings. In Permit Cycle 1, Metro performed the loading estimates utilizing a portion of the MS4 wet weather monitoring data supplemented with Knoxville monitoring data and National Urban Runoff Program (NURP) data. For purposes of comparison, Metro intends to utilize the same data sources and model developed in the first permit cycle for the second permit cycle analysis. Utilizing Metro MS4 monitoring data, however, may prove difficult in the second permit cycle due to a lack of samples collected under the old wet weather monitoring program and the recent permit modification that changed locations of the monitoring locations. Metro will make every effort to incorporate MS4 monitoring data into the loading estimates for permit year 5.

In permit years 3 and 4, Metro began to analyze important characteristics of each of the major watersheds within the county that directly affect pollutant runoff. Table 5.6.1 illustrates the amount of imperviousness per watershed, while Table 5.6.2 breaks down the land use types per watershed. In the past, imperviousness for the county was estimated based on land use types. Due to the advancement of Metro GIS inventory, the NPDES section was able to obtain an estimate of imperviousness for each watershed by running queries on the pavement, sidewalk, parking lot, and building footprint GIS coverage per watershed. Obviously, there will be some impervious objects that are not included in this analysis, however, the NPDES section believes this estimate to be more accurate than the previous land use-based estimates.

Table 5.6.1 Imperviousness per Watershed

Watershed	Building Footprint (Acres)	Pavement (Acres)	Parking Lot (Acres)	Sidewalk (Acres)	Total Impervious (Acres)	Total Watershed Area (Acres)	Percent Impervious per Watershed
Back Creek	3.36	21.57	0	0	24.93	1620.26	1.54
Bull Run Creek	8.17	49.98	0	0	58.15	2952.05	1.97
Cooper Creek	222.18	190.39	83.8192	7.58	503.97	2373.63	21.23
Cub Creek	3.91	13.54	0.2951	0	17.75	1605.16	1.11
Overall Cumberland River	3548.08	2555.39	2178.9831	422.33	8704.78	51129.34	17.02
Davidson Branch	106.64	116.55	57.6951	0.82	281.71	2391.79	11.78
Dry Creek	260.34	319.02	241.2161	3.13	828.53	5635.37	14.70
Browns Creek	787.55	686.94	1017.7252	22.09	2514.31	8847.37	28.42
Ewing Creek	350.64	751.78	268.7138	8.07	1380.19	9003.38	15.33
Gibson Creek	250.18	226.55	258.7747	11.42	745.67	2749.19	27.12
Gizzard Branch	123.92	133.55	280.1381	2.19	538.10	1466.61	36.69
Harpeth River	508.80	663.48	229.8721	16.04	1417.82	18170.91	7.80
Indian Creek	8.55	28.05	0.826	0	37.39	3929.99	0.95
Island Creek	0.59	10.63	0	0	11.22	516.92	2.17
Little Harpeth	171.1	306.88	63.5401	1.92	543.44	8889.23	6.11
Loves Branch	87.71	181.21	75.3992	1.52	345.84	1457.59	23.73
Manskers Creek	273.78	664.86	270.1081	4.27	1213.48	13075.79	9.28
Marrowbone Creek	59.04	245.26	12.8097	0	316.96	12182.46	2.60
Mill Creek Lower	1638.92	1398.68	1935.2137	31.02	5004.75	20437.24	24.49
Mill Creek Upper	323.95	449.48	328.784	12.1	1114.31	14479.56	7.70
Overall Creek	70.95	146.7	59.0893	1.11	277.94	4950.36	5.61
Pages Branch	132.07	262.95	125.8339	7.12	527.64	2068.73	25.51
Percy Priest Lake Lower	267.20	265.94	314.1108	3.97	850.93	13376.47	6.36
Percy Priest Lake Upper	437.87	495.6	209.3401	8.05	1150.65	19575.01	5.88
Pond Creek	2.65	10.12	0	0	12.77	1688.32	0.76
Richland Creek	1051.20	1020.47	585.9616	38	2690.91	14680.11	18.33
Sevenmile Creek	871.33	790.14	620.3712	24.3	2314.86	10962.35	21.12
South Harpeth River Lower	29.96	145.99	1.4193	0	177.54	9256.78	1.92
Stoners Creek	421.15	479.72	335.3915	13.37	1251.46	7543.58	16.59
Stones River	335.43	436.15	517.885	8.1	1302.97	9258.64	14.07
Sugartree Creek	298.66	204.18	169.6179	5.62	684.42	3030.72	22.58
Sulphur Creek	17.94	103.15	2.0562	0	123.15	3839.61	3.21
Sycamore Creek	88.38	417.6	34.5312	0.1	541.96	13066.82	4.15
Whites Creek	429.25	1220.5	185.0075	3.6	1846.30	31738.54	5.82
Overall County	**13,191.45**	**15,013**	**10,464.53**	**657.74**	**39,356.02**	**327,949.85**	**14.57**

Note: The small Sandy Creek watershed was included in the Overall Cumberland River watershed. Sidewalk data was unavailable for some of the watersheds.

Table 5.6.2 Major Land Use Categories per Watershed

Watershed	Percent Commercial	Percent Industrial	Percent Residential	Percent Open Space/Natural	Percent Transportation	Total Watershed Area (acres)
Back Creek	0.00	0.00	0.00	98.77	1.23	1620.26
Bull Run Creek	0.00	0.00	0.00	97.08	2.92	2952.05
Cooper Creek	0.46	3.09	74.37	6.96	15.12	2373.63
Cub Creek	0.00	0.00	0.00	99.95	0.05	1605.16
Overall Cumberland River	3.53	16.54	30.24	46.85	2.84	51129.34
Davidson Branch	10.48	0.00	86.19	3.31	0.03	2391.79
Dry Creek	7.72	5.52	61.52	22.63	2.61	5635.37
Browns Creek	5.86	23.68	54.93	2.75	12.79	8847.37
Ewing Creek	4.10	5.71	62.34	15.53	12.32	9003.38
Gibson Creek	16.62	2.32	78.32	1.65	1.09	2749.19
Gizzard Branch	51.93	2.26	45.77	0.03	0.00	1466.61
Harpeth River	3.94	0.00	48.88	47.12	0.07	18170.91
Indian Creek	0.00	0.00	0.00	100.00	0.00	3929.99
Island Creek	0.00	0.00	0.00	91.90	8.10	516.92
Little Harpeth	0.48	0.00	59.28	35.75	4.48	8889.23
Loves Branch	8.18	0.00	80.00	1.32	10.50	1457.59
Manskers Creek	6.40	3.29	16.11	71.31	2.90	13075.79
Marrowbone Creek	0.00	0.71	4.50	93.01	1.78	12182.46
Mill Creek Lower	8.92	25.65	51.14	4.05	10.23	20437.24
Mill Creek Upper	5.33	3.03	65.31	20.59	5.74	14479.56
Overall Creek	8.95	0.52	55.94	34.58	0.00	4950.36
Pages Branch	6.25	12.37	59.80	4.80	16.78	2068.73
Percy Priest Lake Lower	1.95	11.56	34.63	47.92	3.94	13376.47
Percy Priest Lake Upper	1.51	0.74	26.86	66.87	4.02	19575.01
Pond Creek	0.00	0.00	0.00	99.96	0.04	1688.32
Richland Creek	3.09	8.74	78.80	7.54	1.83	14680.11
Sevenmile Creek	2.38	4.18	73.61	7.16	12.66	10962.35
South Harpeth River Lower	0.00	0.00	0.00	99.96	0.04	9256.78
Stoners Creek	6.17	4.28	69.50	8.15	11.90	7543.58
Stones River	4.12	39.15	33.65	14.55	8.53	9258.64
Sugartree Creek	6.63	0.00	80.76	1.57	11.04	3030.72
Sulphur Creek	0.00	0.00	0.58	96.21	3.21	3839.61
Sycamore Creek	0.00	0.29	3.06	93.00	3.64	13066.82
Whites Creek	0.69	1.47	20.13	72.77	4.94	31738.54

Note: The small Sandy Creek watershed was included in the Overall Cumberland River watershed. These major categories can be further broken down in future annual reports.

In permit year 4 Metro also performed an analysis of total runoff volume from the MS4. The total runoff volume was calculated using the "Simple Method" as developed by the Stormwater Manager's Resource Center (SMRC). The formula for calculating annual runoff (R=P*Pj*Rv) requires the following information: annual rainfall (P), fraction of annual rainfall events that produce runoff (Pj), and the runoff coefficient. The NPDES section obtained the Nashville's permit year 4 rainfall amount from the National Weather Service website. Table 5.6.3 illustrates the monthly totals in permit year 4. The fraction of annual rainfall events that produce runoff was obtained from the SMRC website (0.9). The runoff coefficient is based on imperviousness per watershed. Using the watershed imperviousness percentages from Table 5.6.1, the runoff coefficient was obtained for each watershed. The total annual runoff estimates for each watershed is illustrated in Table 5.6.4. Overall in permit year 3, there was an estimated 147,160 acre-foot of runoff from the Metro Nashville MS4.

Table 5.6.3 Monthly Rainfall Totals for Nashville, Davidson County

Month	Rainfall Data (inches)
July-06	2.64
August-06	5.20
September-06	4.00
October-06	2.98
November-06	4.05
December-06	3.41
January-07	3.32
February-07	1.84
March-07	2.26
April-07	2.75
May-07	3.30
June-07	1.30
Total	**37.05**
Average Total	**3.0875**

Table 5.6.4 Annual Runoff Volume Estimates

Watershed	(P) Rainfall Total (ft)	(Pj) Fraction of Rain Events Producing Runoff	(R_v) Runoff Coefficient	Annual Runoff (ft)	Impervious Area (acres)	Impervious Area (ft^2)	Total Runoff Volume (ft^3)
Back Creek	0.275	0.9	0.06	0.179685	24.93	1085950.8	16126
Bull Run Creek	0.275	0.9	0.07	0.179685	58.15	2533014	43884
Cooper Creek	0.275	0.9	0.24	0.71874	503.97	21919392	1302011
Cub Creek	0.275	0.9	0.06	0.179685	17.75	773190	11481.87
Overall Cumberland River	0.275	0.9	0.20	0.539055	8704.78	379180351	18769427
Davidson Branch	0.275	0.9	0.15	0.449213	281.71	12271287.60	455571.55
Dry Creek	0.275	0.9	0.19	0.569003	828.53	36090766	1697168
Browns Creek	0.275	0.9	0.3	0.898425	2514.31	109523343.60	8132108
Ewing Creek	0.275	0.9	0.19	0.569003	1380.19	60121076.4	2827193
Gibson Creek	0.275	0.9	0.29	0.868478	745.67	32873425.2	2359490.09
Gizzard Branch	0.275	0.9	0.36	1.07811	538.10	23439636	2088471
Harpeth River	0.275	0.9	0.11	0.329423	1417.82	61760239.20	1681422.51
Indian Creek	0.275	0.9	0.05	0.149738	37.39	1628708.40	20155
Island Creek	0.275	0.9	0.08	0.23958	11.22	488743.20	9677.11
Little Harpeth	0.275	0.9	0.10	0.299475	543.44	23672246.40	585888.0984
Loves Branch	0.275	0.9	0.25	0.748688	345.84	15064790.40	932133.91
Manskers Creek	0.275	0.9	0.13	0.389318	1213.48	52859188.80	1700744.40
Marrowbone Creek	0.275	0.9	0.07	0.209633	316.96	13806777.60	239202
Mill Creek Lower	0.275	0.9	0.26	0.778635	5004.75	218006910	14028744.66
Mill Creek Upper	0.275	0.9	0.12	0.35937	1114.31	48539343.60	48539343.63
Overall Creek	0.275	0.9	0.10	0.299475	277.94	12107066.40	299649.89
Pages Branch	0.275	0.9	0.28	0.83853	527.64	22983998.40	1592791.09
Percy Priest Lake Lower	0.275	0.9	0.10	0.299475	850.93	37066510.80	917369.14
Percy Priest Lake Upper	0.275	0.9	0.09	0.269528	1150.65	50122314	1116474.54
Pond Creek	0.275	0.9	0.06	0.179685	12.77	530430.12	7876.89
Richland Creek	0.275	0.9	0.21	0.628898	2690.91	117216039.60	4351645.47
Sevenmile Creek	0.275	0.9	0.25	0.748688	2314.86	100835301.60	6239184.29
South Harpeth River Lower	0.275	0.9	0.07	0.209633	177.54	7733642	133985
Stoners Creek	0.275	0.9	0.19	0.569003	1251.46	54513597	2563501
Stones River	0.275	0.9	0.18	0.539055	1302.97	56757373.20	2528540.98
Sugartree Creek	0.275	0.9	0.24	0.71874	684.42	29813335.20	1770912.11
Sulphur Creek	0.275	0.9	0.08	0.23958	123.15	5364414	106215.40
Sycamore Creek	0.275	0.9	0.08	0.23958	541.96	23607777.60	467434
Whites Creek	0.275	0.9	0.09	0.269528	1846.30	80424828	3582926.09
						Overall County (ft^3) = 131,118,781.58	
						Overall County (gallons) = 980,836,668	

Annual Rainfall, P, is the total average in feet (3.0875 inches/12). The runoff coefficient, R_v=0.05 + 0.9(Ia) where "Ia" is the impervious fraction (see Table 5.6.1). Conversion factors: 1 acre = 43,560 ft^2, 1 ft^3 = 7.48 gallons = 2.3 x 10^{-5} acre-ft.

5.7 Future Direction

Metro will continue to meet its monitoring requirements throughout the remaining permit cycle and will analyze the benefits received from the monitoring programs.

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6.0 Assessment of Controls

The effectiveness of the SWMP is assessed for the following reasons:

- To determine whether the most cost-effective best management practices are included in the stormwater management program;
- To assist in design of ongoing monitoring, inspection, and surveillance programs that help refine estimates of program effectiveness;
- To serve as a baseline and ongoing measure of the program's progress; and
- To develop a strategy to evaluate progress toward achieving water quality goals.

Direct measurements of the effectiveness of the SWMP include:

- Expected pollutant load reductions (part 2 application);
- Removal efficiencies of BMPs;
- Reductions in the volume of stormwater discharged; and
- Reductions in event mean pollutant concentrations.

The permit requires the estimation of expected reductions of pollutants from discharges of the MS4 as the result of the municipal stormwater management program. This includes identifying known impacts of stormwater controls on groundwater quality. It is difficult to quantify the performance of controls, since no reasonable conclusions can be made on monitoring and other programs that have recently been initiated. It is recognized that the measures described in this annual report will provide a better definition of the problems and make a positive impact on Metro's contribution to the quality of the "Waters of the State" and groundwater. As more long-term monitoring information and other types of data become available, assessments of the controls operated or otherwise implemented by the NPDES section will be conducted.

Generally speaking, the post-development BMP requirements for developed sites since 1998 have served to provide a 70 to 80 percent reduction in Total Suspended Solids (TSS) and other selected runoff pollutant parameters. The amount of acreage served by these measures, which serve to reduce stormwater pollutants, will obviously increase as time goes on. In addition, the NPDES section's increased focus on EPSC measures on construction sites over the past few years has undoubtedly kept hundreds of thousands (if not millions) of tons of sediment on sites as opposed to being washed into the MS4 and local streams. As Metro moves through its second permit cycle, it is anticipated that enhanced stormwater modeling capabilities will allow more technical considerations of pollutant load reductions.

One of the more practicable ways to measure the success of the SWMP is to use quantifiable indirect measurements. Some indirect measurements that can be used to assess the effectiveness of the SWMP include:

- Amount of recyclables performed by Metro (glass, oil, plastic, paper, etc.);
- Amount of waste collected by Metro;
- Number of water quality complaints received;
- Number of construction plans submitted for stormwater review;
- Number of construction plans approved through stormwater;
- Number of stormwater-related enforcements; and
- Number of stormwater-related inspections.

Table 6.1 depicts a comparison between the permit years of Cycle 2 of some evaluated categories. More categories may be added to the comparison in future permit years as the program develops. In addition, future control assessments may include a listing of projects implemented to improve State-listed 303(d) streams. In permit year 2, MWS hired a watershed/water quality manager whose sole job is to develop and oversee implementation of a Watershed Management Plan. The goal of the Watershed Management Plan is to reduce/eliminate pollutant runoff into community waters with special focus given to State-listed 303(d) streams. Future annual reports will include a section devoted to reporting projects and/or specific activities that have been undertaken to improve the water quality of State-listed 303(d) streams.

Table 6.1 Indirect Measurement Statistics for Permit Years

Categories	Permit Year 1	Permit Year 2	Permit Year 3	Permit Year 4
Recycled Oil	16 tons	9.1 tons	17.82 tons	20.27 tons
Recycled Antifreeze	2 tons	1.7 tons	1.96 tons	2.65 tons
Recycled Plastic	266 tons	300.42 tons	**233.28 tons	** 244.86 tons
Recycled Paper	4,477 tons	2,573.84 tons	2,954.69 tons	3,333.47 tons
Recycled Glass	1,798 tons	1,052.7 tons	1,107.05 tons	1,116.52 tons
Total Brush Collection	25,613.10 tons	31,702.78 tons	30,498.85 tons	30,269.40 tons
Total Waste Collected	159,595.04 tons	157,622.99 tons	150,972.54 tons	152,430.24 tons
# of Water Quality Complaints Received	161	213	287	156
# of Construction Plans Submitted to Stormwater	868	1,562	1,427	1,505
# of Construction Plans Approved or no Permit Needed	387	449	507	619
# of Stormwater Enforcements (NOVs and SWOs)	228	197	283	190
# of Stormwater Inspections	4,024	2,561*	5,072	5,349

*This inspection tally does not include the 5 stormwater infrastructure inspectors, who, during Permit Year 2, began inspecting construction sites for stormwater runoff. Recordkeeping for permit year 3 has been modified to include EPSC-related inspections done by infrastructure inspectors.
**The recycled plastic total does not include plastic bottles collected with metal cans.

It is impossible to analyze trends or draw conclusions from three years worth of data. At the end of permit year 5 the data from each permit year will be analyzed to determine if any trends are present that would indicate that the SWMP is or is not functioning as designed.

7.0 Summary of Modifications, Replacements, or Changes

Metro has determined it necessary to modify two MS4 permit elements that will greatly benefit the effectiveness and efficiency of Metro's SWMP. The following paragraphs discuss the changes that will be necessary.

7.1 Permit Element 5b-Use of Pesticides, Herbicides, Fertilizers, Oils, and Other Toxic Materials Commercial Distributors – Public Information

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY4
			1	2	3	4	5	
PESTICIDES, HERBICIDES, AND FERTILIZERS								
5a	Operate Household Hazardous Waste Facility	At least 1/quarter	●	●	●	●		
5b	Commercial Distributors – Public Information	Ongoing	**X**	●	**X**	●		This permit element has been modified to focus on "applicators"
5c	Evaluate Metro Facilities Practices	PY 2		●				

Under this permit requirement, Metro is required to distribute educational materials to businesses that sell/distribute chemicals. Metro has concluded this activity to be ineffective. Metro believes that a more effective activity would be to educate the commercial and industrial applicators. In other words, instead of educating the companies and businesses that sell the chemicals, education focus should be shifted toward the businesses and industries that apply chemicals. In permit year 4, the NPDES section began to distributing public education brochures to all Food Service Establishments (FSE) in Metro Davidson County. Part of the focus of this flyer will be on the use of chemicals such as detergents. Figure 7.1.1 depicts the brochure distributed to FSEs.

Figure 7.1.1 Public Education Brochure for Food Service Establishments

Minimizing Stormwater Pollution Impacts From Your Food Service Establishment:

Additional examples of illicit discharges:

Always maintain a clean lot. Make sure used cooking oils are not spilled around the oil recycling bin and that bins are serviced/emptied regularly. See that dumpster drain plugs are in place and that food dumpster seals are functioning properly and preventing seepage. Always dispose of mop bucket water down an inside drain, mop sink, or sanitary line and never pour mop water outside onto the lot. Clean up all spills using "Dry" clean-up methods (absorbent material), shovel or scoop up, place in sealed container and dispose of in trash.

Never place oil recycling bins near a garbage dumpster. Bins placed too near a garbage dumpster could be knocked over by the garbage truck during collection.

Never pour fats oils or grease (FOG) down storm drains, sewer drains, storm grates, or on the ground!

When outside lots or hood vents must be washed/pressure washed, always use proper contain and capture practices and never allow wash water to enter a storm drain even when using biodegradable detergents. The term "biodegradable" simply means that the product will not harm bacteria in the sewage treatment plant and that it breaks down faster than more conventional products. Biodegradable detergents can cause a fish kill in a creek just as fast as any other type of detergent.

Prevent rainwater "inflow" to the Sanitary Sewer. Repair all sewer cleanout covers, cover outdoor mop sinks, and remove gutters that are discharging to any outdoor mop sinks and drains.

Have Questions?... Call the MWS Storm Water Control Team - Phone: (615) 880-2420 or 313-PURE
WEBSITE: www.nashville.gov/stormwater

Restaurant / Food Service Establishment (FSE)
Guide to "Good Housekeeping"

The following reference material is to be used by the restaurant / FSE as a guide to facilitate compliance under the current Davidson County, **Metro Water Services (MWS) environmental regulations**. However, in order to insure compliance within Metro Nashville/Davidson County, a restaurant / FSE manager must be aware of ***all*** pertinent Metro, State, and Federal regulations and not simply those contained within this document.

When cleaning and sanitizing the floors, kitchens, restrooms, outside dumpster areas and parking lots of a restaurant / FSE, all individuals involved must first understand that the wastewater produced is harmful to the environment and **must be disposed of in a drain which routes to a MWS sanitary waste treatment plant**. **The storm drains and parking lots in Metro Davidson County do not route water to the MWS sanitary waste treatment plant.** Instead, the storm drains and parking lots within Davidson County are part of Metro's Municipal Separate Storm Sewer System (MS4). This MS4 includes all storm drains, roads, ditches, culverts, or parking lots that are designed to route **clean/unpolluted stormwater,** safely into the streams of Metro Nashville/Davidson County.

The NPDES division of MWS has the specific task of monitoring all discharges into this MS4 for the purpose of maintaining the water quality of the streams within Davidson County. If disposed of improperly into the MS4 or stream, **the waste washwater from the restaurant's floor, kitchen, restrooms, outside dumpster area, vent hoods, and parking lot would damage this stream and the aquatic life within it, even when biodegradable cleaners are used**. Nearly all discharges into the MS4 and streams (including the restaurant's waste washwater) are deemed "Illicit Discharges" and are illegal in Davidson County under Metro Code of Laws (Metro Code) § 15.64.205. Additional examples of Illicit Discharges can be found on the back side of this document. If you have questions, contact the MWS NPDES office at (615) 880-2420.

As stated previously, **the dumping of restaurant cleaning wastewater down a drain which routes to a MWS sanitary treatment plant is the proper method of disposal for the restaurant and food prep industry.** Most internal drains including floor drains, sinks, and toilets route wastewater directly to the sanitary treatment plant. By dumping this waste material down a sanitary drain, it is insured that this wastewater will be properly treated at a treatment plant and not have any detrimental effects on the environment. All discharges into sanitary lines/drains that route to a treatment plant are monitored by the Industrial Compliance Section of MWS and are regulated under Metro Code of Laws (Metro Code) §15.50 "Industrial Waste Discharges". If you have questions, call the MWS Industrial Compliance office at (615) 862-4590.

Thank you very much for recognizing the importance of our streams as a valuable natural resource and your help in the protection and improvement of the streams within Metro Nashville/Davidson County.

This publication is a public service of:
Metro Water Services
NPDES Program
Storm Water Quality Control Team
1607 County Hospital Road
Nashville, TN 37218
Phone (615) 880-2420
www.nashville.gov/stormwater

Metro Water Services is in the process of complying with all appropriate Americans with Disabilities Act Guidelines. For additional information contact Joseph A. Estes, Sr., 1600 2nd Avenue North, Nashville, TN 37208-2206; telephone 615-862-4862.

7.2 Monitoring Programs

Wet Weather Sampling

Activity ID	Activities Required By SWMP	SWMP Schedule	Permit year Accomplished					Comments for PY 4
			1	2	3	4	5	
MONITORING								
A	Ambient – 8 or more in-stream locations Sample each site at least 6 times annually	6X Annually (Bi-monthly)	●	●	●			
B	Wet Weather – 3 or more in-stream locations Sample each site at least 2 times annually	2X Annually	X	●	X	●		
C	Industrial – Sampling based on inspections	As needed	●	●	●	X		Not needed in PY4
D	Bioassessment – Perform RPB III at 2 designated sites Perform RPB III at 1 or more reference sites	Annually	●	●	●	●		
D	Bioassessment – Refine Procedures	PY 1	●					
D	Bioassessment – Perform “quick assessments” as necessary	Annually	●	●	●	●		
E	Loadings Estimate – Report EMC changes	PY 5						
E	Loadings Estimate – Report annual volume and loading changes	Complete by end of PY 5						

As mentioned earlier, Metro will be modifying the wet weather sampling program. The modifications are discussed in detail in Section 5.1.

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8.0 Fiscal Analysis

Metro remains committed to not only meeting, but exceeding, its MS4 NPDES permit compliance obligations. The Stormwater program and associated activities is solely funded by Metro Water Services (MWS) revenues. Permit-specific activities performed by other Metro Departments are paid for by ad valorem property taxes on property in The General Services District (countywide). MWS intends to evaluate other funding options during this permit cycle. MWS continues to refine its processes in order to identify and give attention to unidentified stormwater issues. Currently, MWS is conducting a feasibility study for a proposed dedicated stormwater funding source as commissioned in amended Ordinance No. BL2007-1440, Title 15, Section §15.64.032. http://www.nashville.gov/mc/ordinances/bl2007_1440.html

The dedicated funding source will adequately finance and implement all MS4 permit conditions and the SWMP elements. In February 2008, a report is scheduled to be submitted to Metro Council for adoption of a stormwater utility dedicated funding source. This annual report reflects the budget information for permit year 4. Table 8.1 shows the budgets for fiscal year 2007 and projected budget for fiscal year 2008.

Table 8.1 Stormwater Budget

Stormwater Division		Annual Expenditure FY2007	Annual Expenditure "Projected" FY2008
Operating Budget	Administration	$939,600	$1,334,200
	Engineering and Permits	$1,023,200	$1,156,700
	NPDES Office	$1,238,200	$1,288,200
	Pumping Stations	$12,500	$8,300
	Remedial Maint.	$710,100	$1,834,900
	Master Planning	$2,000	--
	Routine Maint.	$3,351,600	$3,432,700
Capital Budget	Capital Projects	$7,696,700	
	Total	**14,973,900**	**9,055,000** *
FEMA Buyout	FEMA Buyout	$3,000,000	$3,000,000

* FY2008 Annual Projected Expenditure does not include Capital Budget/Capital Projects funds.

This table shows the program elements and their associated stormwater activities. These activities have a direct affect on water quality in Nashville and are further described below:

- Administration – manages programs, provides public with information, offers clerical and support staff;
- Engineering – reviews plans, serves development community, applies regulations;
- NPDES – oversees construction, protects viability of streams, ensures water quality;
- Remedial Maintenance – minor construction to restore existing drainage systems without major improvement or upgrades;
- Master Planning – capital construction projects that replace segments of the drainage system or improve its capacity;
- Routine Maintenance – restores function of the existing system through cleaning and stabilizing without major construction; and
- Capital Projects – improvements or upgrades to existing drainage systems or construction of needed drainage systems.

Several other Metro Programs/Entities (which are not included in the referenced financial information) also benefit water quality in the Nashville area. These programs include the MWS FOG program, various Metro Parks environmental-related programs/initiatives, solid waste disposal, recycling and litter control, Metro Beautification, various Metro Schools environmental programs, etc. It is often extremely difficult and somewhat subjective to attempt to quantify the resources expended by other staff and Metro Programs for water quality-related activities vs. what those same staff and Programs expend on their other non-water quality-related activities. Therefore, it should be noted that while the aforementioned figures apply to the main office responsible for fulfilling Metro's Phase I MS4 NPDES permit obligations (MWS NPDES section), there are various other Metro expenditures not included in this figure. Future annual reports will better attempt to quantify these expenditures to the maximum extent possible.

Appendix A

Supporting Storm Water Management Program Documents

List of Spill Response Investigations Documented in the City Works in PY4

Tracking #	Date Initiated	Location
81653	7/6/2006 7:06	1015 44th Ave N
82893	7/22/2006 11:00	Lindsley & 3rd Ave S
84119	8/7/2006 10:43	Winfrey & Fairfield
84226	8/8/2006 13:57	619 Old Hickory Blvd
84496	8/11/2006 12:46	428 Cedar Valley
84504	8/11/2006 13:31	5810 Nolensville
85031	8/17/2006 5:45	125 Robert Yoest Dr
85163	8/17/2006 14:56	Nashboro Village & Murfreesboro
85535	8/23/2006 6:45	Milbridge Drive & Smith Springs
93131	10/30/2006 9:04	3800 Charlotte
93238	10/31/2006 8:11	I-24 & Harding
93241	10/31/2006 8:17	4400 Nolensville Road
95726	12/14/2006 6:56	204 Cedarcreek Dr
95797	12/14/2006 15:48	4124 Central Pk
96062	12/21/2006 7:34	3436 Cainbrook Crossing
96140	12/27/2006 9:47	3204 Gallatin
96265	1/2/2007 7:20	2299 Cabin Hill Rd
96742	1/9/2007 7:59	Old Hickory Blvd & Hghy 70 S
96744	1/9/2007 8:06	228 Burlington Pl
96747	1/9/2007 8:13	6601 Centennial Blvd
96771	1/9/2007 10:26	2411 Mansker Dr
96776	1/9/2007 10:37	Centennial & Briley
98105	1/31/2007 7:39	4982 Edmonson Pke
98529	2/9/2007 6:55	1212 Foster Ave
99748	3/5/2007 7:29	0 S Cartwright St
101189	3/26/2007 8:23	3815 Nolensville
101418	3/28/2007 7:15	1064 Jacobs Valley Rd
101944	4/4/2007 7:42	8538 Whites Creek Pike
102027	4/5/2007 6:32	801 Brook Hollow Rd
102355	4/11/2007 7:06	2930 Old Franklin Rd
102608	4/16/2007 6:36	5442 Granny White
102738	4/17/2007 7:13	720 Murfreesboro Pike
102928	4/18/2007 18:57	3908 Lebanon Pike
103236	4/24/2007 10:13	2515 Eugenia Ave
103438	4/26/2007 12:15	3868 Central Pike
129647	5/7/2007 7:59	3205 Clarksville Highway
129654	5/7/2007 8:27	5734 Hickory Plz
131006	5/22/2007 6:34	716 Center St
132422	6/11/2007 6:46	2297 Tinnin Rd
132639	6/12/2007 4:03	2130 Gallatin Pike
134078	6/29/2007 6:07	1501 Old Hickory Blvd.

List of Water Quality Investigations Documented in City Works in PY4

Tracking #	Date Initiated	Location
58657	4/24/2007 15:46	204 Cahaba Cove
81920	7/8/2006 9:09	Central Pike Bridge Over Stoner
82186	7/12/2006 11:07	1450 Gallatin Pike
82252	7/13/2006 6:38	1737 Merrit St
82253	7/13/2006 6:48	3800 Charlotte Ave
82468	7/17/2006 9:39	2001 South Hamilton Rd
82650	7/19/2006 7:37	Ft. Nashboro & Broadway Regulat
82720	7/19/2006 13:25	5252 Hickory Hollow Pky
82839	7/21/2006 9:02	104 Queen St
83362	7/27/2006 8:11	3860 Augusta Dr
83443	7/28/2006 6:43	121 Moving Center Ct
83444	7/28/2006 6:53	3115 Clarksville Pike
83445	7/28/2006 6:58	2055 Metrocenter Bv
83844	8/2/2006 12:22	917 Bell Rd
84110	8/7/2006 10:26	335 Forrest Park Rd
84476	8/11/2006 10:24	452 Cedarvalley
84925	8/16/2006 9:20	412 Brookview Estates Drive
85081	8/17/2006 10:16	2615 Elm Hill Pk
85184	8/18/2006 6:41	802 Ramsey
85185	8/18/2006 6:45	802 Ramsey
85188	8/18/2006 7:47	Elm Hill & Donnelson
85320	8/21/2006 10:32	30 White Bridge Pike
85427	8/22/2006 8:11	74 Trimble St
85432	8/22/2006 8:27	4300 Hillsboro Pike
85433	8/22/2006 8:28	Page Rd & Harding Rd
85745	8/24/2006 14:00	4671 Trousdale
85759	8/24/2006 14:33	1120 Jacksons Valley Rd
85817	8/25/2006 9:03	1903 Holly St
85911	8/28/2006 9:52	2508 Nolensville Rd
86668	9/7/2006 14:41	344 White Bridge Rd
86968	9/12/2006 11:24	221 Gallatin Pk
87467	9/19/2006 10:17	Edencrest Dr & Bridgecrest Dr
87786	9/25/2006 7:35	Rainwood Dr & Moorewood Dr
87965	9/26/2006 10:09	3008 Lakeshore Dr
88094	9/27/2006 14:24	1014 Shadow Ln
88583	10/4/2006 14:15	3287 Ezell Pike
88652	10/5/2006 12:24	5771 Nolensville Rd
88709	10/6/2006 10:06	3710 Annex
88738	10/6/2006 12:31	2920 Harlin Dr
89024	10/11/2006 13:49	5751 Nolensville Rd
89192	10/16/2006 9:31	1531 9th Avenue North
89296	10/17/2006 10:47	604 Hill Rd
92671	10/20/2006 6:52	3969 Apache Tr
92672	10/20/2006 7:02	3641 Central Pike

Tracking #	Date Initiated	Location
92683	10/20/2006 8:54	2284 Murfreesboro Pk
92707	10/20/2006 11:47	4905 Timberdale Dr
93886	11/10/2006 15:12	4934 Stillwood Drive
93888	11/10/2006 15:48	4587 Artelia Dr
94023	11/14/2006 7:51	5316 Harding
94268	11/16/2006 15:08	1635 County Hopital Rd
94526	11/22/2006 12:39	4801 Nolensville Rd
94893	11/30/2006 6:58	3008 Lakeshore Dr
94897	11/30/2006 7:35	4601 Packard Dr.
95258	12/5/2006 14:05	138 Welworth
95372	12/7/2006 7:53	1830 Linder Industrial
95374	12/7/2006 8:03	1720 Ed Temple Blvd
95684	12/13/2006 13:25	3111 Lakeland Dr
95857	12/18/2006 9:27	6231 Brownlee Dr
96061	12/20/2006 18:00	438 Tampa
96063	12/21/2006 7:39	2086 Graceland Dr
96080	12/21/2006 10:24	808 Muskeet Trail
96749	1/9/2007 8:57	1104 Babtist World Center Dr
97129	1/16/2007 9:13	20 Culvert St
97255	1/17/2007 8:33	210 Townes Dr
97324	1/18/2007 8:32	Spence Ln & Lebanon Rd
97353	1/18/2007 10:55	2008 Ed Temple Blvd
97583	1/23/2007 8:11	7021 Bonnafair
97673	1/24/2007 8:29	1455 Lebanon Pk
97731	1/24/2007 14:13	468 Ponder Pl
98415	2/7/2007 7:26	1691 Murfreesboro Pike
98528	2/9/2007 6:22	2373 Murfreesboro Pke
98654	2/12/2007 14:28	401 Harding Industrial Dr
98740	2/13/2007 13:37	7000b Charlotte Pke
99124	2/21/2007 13:09	701 Douglas Ave
99126	2/21/2007 13:22	410 A Old Hickory Blvd
99129	2/21/2007 13:29	2200 Elm Hill Pike
99130	2/21/2007 13:36	5753 Nolensville Pike
99181	2/22/2007 10:42	5210 Harding Pk
99501	2/28/2007 7:37	5316 Mt View Rd
99507	2/28/2007 8:19	5255 Hickory Hollow Pw
99744	3/2/2007 16:02	778 Hospital Dr
100252	3/12/2007 10:13	709 South 14th St
100419	3/14/2007 6:21	1301 Murfreesboro Pke
100420	3/14/2007 6:30	6457 Holt Rd
100421	3/14/2007 6:39	4301 Harding Pike
100787	3/19/2007 14:38	Brentwood Place
101005	3/22/2007 6:22	468 Ponder Place
101006	3/22/2007 6:33	4047 Nolensville Pike
101007	3/22/2007 6:41	137 Southridge
101008	3/22/2007 7:01	Antioch Pike & Franklin Limesto

Tracking #	Date Initiated	Location
101009	3/22/2007 7:07	270 Tampa Dr
101010	3/22/2007 7:14	Harding Place & Tampa Dr
102028	4/5/2007 6:50	2030 Lucas Lane
102126	4/6/2007 7:26	2911 Kraft Dr
102435	4/12/2007 7:21	324 East Webster St
102617	4/16/2007 8:23	741 Thompson Lane
102636	4/16/2007 9:14	1520 Hampton St
102657	4/16/2007 9:54	2025 Metrocenter Blvd
103235	4/24/2007 9:48	20 Harding Mall Dr
103298	4/25/2007 6:42	420 Murfreesboro Pke
103353	4/25/2007 11:49	204 Cahaba Cove
103444	4/26/2007 13:05	7659 Highway 70 S
129438	5/2/2007 8:14	1121 Bell Rd
129439	5/2/2007 8:15	420 American Rd
129849	5/8/2007 9:03	2570 Murfreesboro Rd
129862	5/8/2007 9:31	1010 Camilla Caldwell Ln
130163	5/11/2007 6:23	2209 Abbott Martin Rd
130400	5/15/2007 6:56	635 Murfreesboro Rd
130401	5/15/2007 6:59	4112 Nolensville Rd
130402	5/15/2007 7:02	2424 14th Av N
130487	5/15/2007 13:25	3744 Nolensville Road
130671	5/17/2007 6:26	1437 Cowan Ct
130673	5/17/2007 7:45	7043 Highway 70 S
131007	5/22/2007 6:57	1003 Hickory Hill Lane
131099	5/22/2007 14:33	3201 Clarksville Pike
131124	5/23/2007 7:10	7100 Cockrill Bend Blvd
131525	5/30/2007 7:10	905 Massman Dr
131623	5/30/2007 14:41	720 South Fifth Street
131744	6/1/2007 6:26	3914 Charlotte Ave
131745	6/1/2007 6:58	317 Lutie St
131746	6/1/2007 7:48	4000 Nolensville Rd
131772	6/1/2007 9:32	Elysians Field Road &Seven Mile
131845	6/4/2007 7:53	9 Hermitage Ave
132116	6/6/2007 8:28	6864 Hickory Rim Court
132221	6/7/2007 8:24	7501 Highway 70 South
132379	6/8/2007 12:07	1020 Carriage Way
132613	6/11/2007 15:02	1439 Robinson Rd
132760	6/13/2007 9:36	912 Home Rd
133089	6/18/2007 14:54	5207 Nolensville Rd
133125	6/19/2007 8:00	1120 Jackson Valley Rd
133225	6/19/2007 14:53	492 Craighead St

List of Construction-Related Investigations of Non-Permitted Sites in PY4

Tracking #	Date Initiated	Location
81460	7/3/2006 8:10	Cowan St & Jefferson St
81544	7/3/2006 15:16	726 1st Ave
81561	7/5/2006 8:52	513 Pascal Ct
81658	7/6/2006 8:09	304 Roundhill Cove
81742	7/6/2006 13:45	2165 Baker Rd
81921	7/8/2006 9:24	8256 River Rd
81922	7/8/2006 9:40	1239 Mcgavock Pike
82623	7/18/2006 13:05	Mccory Creek Rd& Donelson Pik
82878	7/21/2006 14:02	Amalie Dr & Old Hickory Blv
83319	7/26/2006 13:13	Map 128-10a-46c
83364	7/27/2006 8:31	725 Preston Rd
83673	8/1/2006 7:26	112 Fern Ave
83674	8/1/2006 7:37	110 One Mile Parkway
84076	8/7/2006 8:25	Cane Ridge Rd/Map 182 Parcel 20
84093	8/7/2006 9:32	6476 Holt Rd
84369	8/10/2006 9:33	6151 Mt Pisgah Rd
84412	8/10/2006 14:31	2215 Abbott Martin Rd
84484	8/11/2006 11:14	5446 Cane Ridge Rd
84557	8/14/2006 10:09	5540 Maplesong Dr
84693	8/15/2006 9:48	629 Brook Dr
84916	8/16/2006 8:56	3009 Cody Hill Dr
85121	8/17/2006 12:41	5524 Maplesong Dr
85154	8/17/2006 14:07	7153 Riverfront Drive
85886	8/25/2006 16:42	914 Anderson Ln
86622	9/7/2006 10:04	6969 River Road Pk
86628	9/7/2006 10:25	3501 Charlotte Pk
86629	9/7/2006 10:27	917 Percy Warner Blvd
86778	9/11/2006 7:54	1806 Natchez Trace
86786	9/11/2006 8:17	47th Ave N & Utah
86808	9/11/2006 9:44	321 Rayon Drive
86954	9/12/2006 10:32	Bell Rd & Lincoya Bay Dr
87128	9/13/2006 14:56	2010 & 2012 Overhill Dr
87537	9/20/2006 8:01	2948 Greer Rd
87670	9/21/2006 11:24	Hoggett Ford Road
87886	9/25/2006 12:46	100 Cherry Branch Lane
87960	9/26/2006 9:26	3503 Wilbur Pl
87975	9/26/2006 10:25	Brighton Rd & S. Wilson Blvd
88097	9/27/2006 14:29	1516 Kirkwood Ave
88120	9/28/2006 7:52	3701 Dickerson Pike
88481	10/3/2006 12:08	153 Cheek Rd
88598	10/4/2006 16:07	3603 Doge Pl
88751	10/6/2006 13:38	Temple Rd. & Hwy 100
88761	10/6/2006 14:15	River Rd. - Overall Creek
89007	10/11/2006 12:38	4200 Hillsboro Pk

Tracking #	Date Initiated	Location
89130	10/13/2006 9:59	1300 Clayton
89224	10/16/2006 11:36	809 William Howard Ct
89274	10/17/2006 7:02	305 Chestnut St
89361	10/18/2006 8:18	1053 Antioch Pk
92970	10/26/2006 7:45	Ezell Rd Map134-15 Parcel 26
93256	10/31/2006 9:09	10601006600
93401	11/2/2006 9:16	810 Bellevue Rd
93424	11/2/2006 10:43	1606 Shackleford Rd.
93882	11/10/2006 14:44	6125 Mt Pisgah Rd
93899	11/13/2006 8:33	1504 Clairmont Pl
94098	11/14/2006 14:33	5484 Clarksville Pk
94158	11/15/2006 14:04	31st Ave N & Belwood
94205	11/16/2006 10:03	7100 Still Springs Hollow
94206	11/16/2006 10:08	West End Circle
94208	11/16/2006 10:11	4503 Wayland Dr
94209	11/16/2006 10:15	4511 Harpeth Hills Dr
95275	12/6/2006 7:34	1118 Oman Dr
95642	12/13/2006 7:21	Roehrig Subdivision
95653	12/13/2006 9:05	641 Brook Hollow Rd
95841	12/15/2006 14:41	439 Grayson Dr.
96302	1/2/2007 10:03	3101 Doak Ave
96307	1/2/2007 10:18	4061 Hollis Hills Dr
96781	1/9/2007 11:14	3175 Anderson
96902	1/10/2007 14:12	4504 Belmont Park Ter
96963	1/11/2007 9:30	100 Hunters Run Ct
97206	1/16/2007 14:10	1327 Neelys Bend Rd
97246	1/17/2007 6:52	2400 Belmont Ave
97294	1/17/2007 13:39	200 Carden Ave
97298	1/17/2007 14:18	118 Dellway Dr
97302	1/17/2007 14:23	Maplewood Quary
97483	1/22/2007 7:34	5570 Granny White Pike
97792	1/25/2007 12:09	0 Haynes St
97798	1/25/2007 13:48	Nesbitt Drive
98106	1/31/2007 7:43	2201 18th Ave North
98115	1/31/2007 8:43	865 Bellevue Rd
98121	1/31/2007 9:42	9039 Highway 100
98124	1/31/2007 10:52	2330 Claylick Dr
98194	2/1/2007 12:28	Granny White Pike And Otter Cre
98195	2/1/2007 12:33	904 Buford
98292	2/5/2007 9:40	5221 Harding Place And Mill Cre
98521	2/8/2007 14:53	0 Mt. Pisgah Rd
98533	2/9/2007 8:06	7955 Charlotte Pike
98632	2/12/2007 13:16	7585 Old Hickory Bv
99267	2/23/2007 14:58	Corner Of Mason & Long
99321	2/26/2007 10:09	
99342	2/26/2007 10:30	

Tracking #	Date Initiated	Location
99376	2/26/2007 11:39	
99919	3/6/2007 11:04	705 E Trinity
100025	3/7/2007 12:28	189 Little Green Street
100087	3/8/2007 10:05	6820 Charlotte Pike
100093	3/8/2007 10:46	Metro Parks-Peeler Park Greenwa
100239	3/12/2007 9:37	Nashville's Children Theatre
100292	3/12/2007 11:58	8737 Hwy 100
100422	3/14/2007 7:15	307 Carney
100424	3/14/2007 7:44	200 Glenrose Ave
100854	3/20/2007 13:19	Shiaway Dr
101485	3/28/2007 14:42	1600 Boscobel
101628	3/30/2007 9:35	Old Murfreesboro Rd & Smith Spr
102001	4/4/2007 12:34	108 Duluth Ave.
102008	4/4/2007 15:45	306 33rd Ave N
102285	4/10/2007 8:17	31 Fairway Drive
102286	4/10/2007 8:30	2916 Simmons Ave
102374	4/11/2007 9:07	3527 Hamilton Church Road
102419	4/11/2007 14:48	729 Mcmurray Drive
102445	4/12/2007 9:33	8000 Montcastle Dr
102874	4/18/2007 10:59	840 Sutton Hill Rd
102931	4/19/2007 8:39	2201 Milan Ct
103150	4/23/2007 11:29	0 Hester Beasley Rd
103266	4/24/2007 13:33	1024 Tulip Blossom
103379	4/25/2007 14:49	1011 Caruthers
103385	4/25/2007 14:59	6020 Mt. Pisgah Rd
103524	4/27/2007 13:53	2123 8th Ave S
129435	5/2/2007 7:59	541 Brewer
129482	5/2/2007 13:37	509 Cedarmont Dr
129762	5/7/2007 12:58	4017 Wallace Lane
130324	5/14/2007 11:43	1510 Cahal
130732	5/17/2007 14:48	306 Page Rd
131073	5/22/2007 11:38	840 Old Lebanon Dirt Road
131167	5/23/2007 10:56	6751 Centennial
131217	5/23/2007 15:33	6701 Burkitt
131524	5/30/2007 6:39	4136 Longfellow Dr
131564	5/30/2007 10:45	6220 Jocelyn Hollow Rd
131874	6/4/2007 9:29	4019 Skyline Dr
132289	6/7/2007 14:37	660 Bell Rd
132298	6/7/2007 14:44	630 Bell Road
132304	6/7/2007 15:01	660 Bell Rd
132306	6/7/2007 15:12	4100 Crystal Spring
132307	6/7/2007 15:15	5424 Edmondson Pk.
132332	6/8/2007 8:49	2310 Carter Avenue
132357	6/8/2007 10:18	1413 Bending River Drive
132529	6/11/2007 11:02	2403 Abbott Martin Road
132640	6/12/2007 5:51	2724 Leesa Ann Ln

Tracking #	Date Initiated	Location
132850	6/14/2007 9:50	Blackburn & Windsor
132985	6/18/2007 8:14	3668 Georgia Court
133086	6/18/2007 14:41	14663 Old Hickory Blvd
133780	6/26/2007 9:31	4004 Harding
134000	6/28/2007 9:41	5029 Cobblestone Creek Dr
134139	6/29/2007 11:28	40 Park Crescent Circle

List of Public Works HAZMAT Team Spill Responses in Permit Year 4

Date	Location	Reason
7/22/2006	800 2nd Ave. South	oil clean up
7/26/2006	121 Moving Center Ct.	hazardous waste poured down storm drain
7/26/2006	Bordeaux Bridge	sheen on river
8/17/2006	Nashboro Blvd. & Murfreesboro Pike	diesel leak from underground tank
9/21/2006	I-440E before Murphy Rd. exit	semi-fire
10/7/2006	I-40E, MM 201	MVA-fatality
10/26/2006	I-40E & I440W	MVA with fuel spill
10/27/2006	I-24W & Harding Place	MVA fuel down drain
11/23/2006	I-40E, MM 209	MVA - rollover
12/14/2006	Old Hickory Blvd. & Rochels Lane	tractor trailer leaking diesel
2/12/2007	Mainstream Dr. & Great Circle Rd.	oil spill
2/15/2007	I-65N, MM87	MVA-diesel spill
3/3/2007	Cartwright & Long Hollow Pike	car in creek
3/12/2007	5412 Oakmont Circle	creek cloudy and green
3/20/2007	Nolensville Rd. & Old Hickory Blvd.	MVA
3/24/2007	Nolensville Rd. & Elysian Fiels	fuel truck leak
3/27/2007	1052 Jacobs Valley Rd.	MVA-cement truck rollover
3/28/2007	Franklin Pike & Kirkwood Ave.	gas leaking into storm drain
3/31/2007	Brick Churck Pike & Ewing Dr.	fuel spill
4/1/2007	601 Brook Hollow Rd.	MVA-rollover
4/4/2007	Whites Creek Pike & Robertson Co.	fuel leak
4/5/2007	2930 Old Franklin Rd.	fuel spill/missing manhole cover
4/26/2007	908 Woodland St.	
6/2/2007	2297 Tinnin Rd.	MVA
6/11/2007	2311 Brick Church Pike	fuel spill
6/12/2007	N. Gallatin Pike & Conference Dr.	gas tank ruptured, running to storm drain

Industrial Inspections SOP

M1

1. Before Inspection:
    a. Review Cycle 1 database to reference previous inspections and problems.
    b. Review following links to see if any other information is available:
        i. OSHA – search for any reported incidents for the site and to find site SIC code.
        ii. TDEC Permits – see if site has stormwater permit (multisector/individual)
        iii. If possible, review the TMSP permit for the identified industry sector
    c. Call ahead and make an appointment to inspect the facility (hopefully, within a week of planned inspection).
        i. Specify in the phone conversation to have all TDEC permit related documentation (SWPPP, Sampling Records, Inspection forms, etc.) ready for review:
        ii. If site refuses to allow inspection, contact TDEC (615) 687-7000 for co-inspection.
    d. Make sure you have the following information:
        i. Metro Identification,
        ii. "Opening Meeting Questions" and "Inspection Form", and/or
        iii. Safety Equipment (hard hat, steel toed shoes, safety glasses, safety vest, and air meter).
    e. Obtain copy of GIS map of site address that illustrates if the site drains into MS4, CSO, etc.
2. During Inspection:
    a. Conduct opening meeting asking the set of prepared questions.
    b. Obtain map of facility from personnel if indicated one would be available during the initial phone call.
    c. Tour facility with the plant personnel.
    d. Look for deficiencies, some of which include:
        i. Chemical storage (inside vs. outside)
        ii. Spill clean-up and response kits
        iii. Exposed tanks - make sure valve's in secondary containment are closed
        iv. Exposed dumpster – make sure drain plug is shut
        v. Drain plumbing – make sure that all drain pipes are connected to the proper destination (sanitary vs. storm sewer), and/or
        vi. General illicit discharges
        (Note: during inspection pay close attention to loading, cleaning, and storage areas)
    e. Determine if sampling would be needed, if so follow sampling guidelines.
    f. Educate personnel on areas where water quality could be improved.
    g. Document inspection through comments/notes on inspection report and discuss comments with the operator. Discuss and try to agree to a timetable for any improvements that are to be implemented.
3. After inspection:
    a. Within 10 days of the inspection, send a follow-up letter that contains noted deficiencies and suggested remedies. Always include hard deadline in letter. (Copy TDEC designated representative on letter via email)
    b. Document notes in the database. Link follow-up letter.
        i. If issues remain unresolved or if sites need to be inspected again by the end of the permit cycle, leave record active in the database; however, if there are no issues click the archive button.
    c. Follow-up with facility contact until site is in compliance as early as possible and at least by end of Permit Year 5. Coordinate with TDEC, if necessary.
    d. If it is noted that stormwater runoff issues exist on the site and they do not have a TN Multisector Permit (TMSP), notify TDEC Division of Water Pollution Control.

Industrial Inspections Opening Meeting Questions

ATTENDEE NAME	COMPANY/TITLE	PHONE

Date:_____

1. What does the facility do or produce? What are the basic raw materials involved? What are the major manufacturing processes?

2. How many shifts do they operate? **1 2 3** How do they handle environmental issues on the 2nd and 3rd shifts?

3. How many storm water outfalls do they have? Where are they located? How often are the outfalls inspected?

4. Are there any roof drains, and do they inspect and/or clean the roof?

5. How many dumpsters are on the site? Are the dumpsters covered and plugged and is the area around the dumpster inspected?

6. Is there an up to date SWPPP for the site? **Y N** Have the Quarterly Inspections been performed? **Y N**
Is sampling required by the TMSP permit? **Y N** Are sampling records present from the past three years? **Y N**
Are any of the sampling results over the permit cut-off concentrations? **Y N**
Has the facility performed an annual site compliance inspection? **Y N** Is there a non-stormwater certification? **Y N**

7. Are there any outside storage tanks? **Y N** Do they have secondary containment? **Y N**
What materials are stored in the outside tank(s)?

8. Are there any detention ponds or treatment structures? **Y N** How often are they inspected/monitored?

9. Where are inside floor drains and do they connect to the sanitary sewer? **Y N Unknown**

10. Have there been any spills within the last 10 years? If so, when, what, and how much spilled and was it remediated? **Y N**

Industrial Inspection Report Checklist

Date:_____/Time:_____

Facility Name

Street Address

City

ZIP

Contact Name

Contact Phone

SIC

Watershed

Industrial Type

Storage **Tanks/Barrels:**

Equipment:

Loading

Drains **Storm:**

Roof:

Floor:

Dumpsters

Outfalls: **Odor:**

Color:

Foam:

Erosion

Pond

Other

Is Reinspection Necessary? Circle One: Yes No

Industrial Inspection Database Status

Facility	Sector	Date of Inspection	SIC Code
SPRINGS INDS. INC. BATH FASHIONS DIV.		6/03/04	2273
REDDY ICE NASHVILLE		7/14/04	2097
MARCUS PAINT CO.	C	07/26/04	2851
NORTH AMERICAN GALVANIZING CO. NASHVILLE	AA	07/26/04	3479
MARATHON ASHLAND PETROLEUM L.L.C.	P	08/26/04	5171
AFL WIRE PRODS. NASHVILLE	F	9/22/04	3357
AFL WIRE PRODS. NASHVILLE	AA	9/22/04	3357
DU PONT OLD HICKORY PLANT	C	09/30/04	2297
Building Materials Manufacturing (GAF)	E	10/15/04	3229
FERRO CORP. (International Paints)	C	10/15/04	2851
NASHVILLE WIRE PRODS.	AA	11/04/04	3471
IMI (Irving Materials Reddy Mix)	RMCP	11/10/04	3273
BP NASHVILLE TERMINAL	P	11/19/04	5171
CONE SOLVENTS INC.		11/23/04	5169
NASHVILLE CHEMICAL & EQUIPMENT CO. INC.		11/24/04	2816
Aerostructures (Vought Industries)	Individual	12/01/04	3728
National Linen Service		12/08/04	3582
CUMBERLAND TERMINALS INC.	P	12/13/04	5171
Chemrock		12/16/04	3295
THERMAL ASH PHASE 3		1/18/05	
BRUCE HARDWOOD FLOORING L.P. NASHVILLE PLANT	A	01/19/05	2426
RHODIA INC. (Innophos)	C	01/19/05	2819
MID SOUTH WIRE	F	04/20/05	3479
Quality Plating	AA	04/26/05	3471
Pepsi Cola	P	05/24/05	2086
MEGUIAR'S INC.	C	06/08/05	2842
PURINA MILLS L.L.C.	U	08/03/05	2048
PURITY DAIRIES INC.	U	08/11/05	2024
Lawson Ready Mix	RMCP	12/29/05	3273
Metro Reddy Mix - Vulcan Quarry	RMCP	01/11/06	3273
ALLADIN TEMP RITE		02/09/06	3089
Metro Ready Mix Concrete	RMCP	02/09/06	3273
ASHLAND DISTRIBUTION CO.	P	03/03/06	5169
Nashville Ready Mix	RMCP	03/07/06	3273
Reostone Quarry	Mining	05/10/06	1442
ERGON TERMINALING INC. NASHVILLE	P	05/25/06	2951
IKG INDS		06/01/06	3446
THOMAS NELSON INC.		06/08/06	2731
EXXON MOBIL CORP. NASHVILLE TERMINAL	P	06/27/06	5171
WARREN PAINT & COLOR CO.	C	06/28/06	2851
SAFETY-KLEEN CORP. 3-109-01	K	06/29/06	7399

Facility	Sector	Date of Inspection	SIC Code
VISTEON CORP. NASHVILLE GLASS PLANT	Individual	06/30/06	3211
APAC NASHVILLE CITY ASPHALT PLANT (Lojac)	D	7/20/06	2951
WHIRLPOOL CORP.	AB	8/01/06	3585
KOHL & MADDEN (Sun Chemical	C	8/25/06	2893
A. SCHULMAN INC. NASHVILLE PLANT		8/29/06	3087
Advanced Plating Inc.	AA	4/13/07	3471
COUNTRY DELITE FARMS			
Eagle Ready Mix	RMCP	3/6/07	3273
Emmanuel Stained Glass Studios Inc.		6/26/07	3231
HARCROS CHEMICALS INC.		12/8/06	5169
HARPER INDUSTRIES (NASHVILLE PLANT 1)			
IBP INC. GOODLETTSVILLE (Tyson Foods)		4/03/07	2013
IMI - Park Drive	RMCP		3273
IMPERIAL ADHESIVES INC.		3/21/07	2891
INGRAM INDUSTRIES (NASHVILLE PLANT 2)	J		4449
JOHN P SAAD & SONS, INC.		3/02/07	48411
KEY OIL CO.	P		5171
LAMBS CLEANERS		3/02/07	7218
LION OIL COMPANY	P		42271
Metalworking products	AB		3545
METROPLEX LIMITED			335221
MID-STATE PLATING	AA		332813
Nashville Ready Mix	RMCP		3273
NASHVILLE TN TERMINAL	P		
NATIONAL PAINT & COATINGS CO.	C	7/18/06	2851
NORTH AMERICAN COMPOSITES	C		5169
ODOM'S TENNESSEE PRIDE SAUSAGE INC.	U		2011
OUIMET CORP.		1/23/07	2295
PERFECTION MOULDERS INC.	F		3365
PETERBILT MOTORS CO.	AB		3711
PORTION PAC			9999
QUEBECOR WORLD RETAIL GROUP		4/03/07	2752
SERVICE PAINT & COATINGS CO. INC.	C	3/02/07	2851
U.S. SMOKELESS TOBACCO MFG. L.P.			2131
U.S. TVA Pinhook 500 KV Substation		8/29/06	

List of Industrial Sites That Will Be Prioritized in Permit Year 5

Facility Name
Country Delite Farms
Harper Industries (Nashville Plant 1)
IMI - Park Drive
Ingram Industries (Nashville Plant 2)
Key Oil Co.
Lion Oil Company
Metalworking Products
Metroplex Limited
Mid-State Plating
Nashville Ready Mix
Nashville Tn Terminal
National Paint & Coatings Co.
North American Composites
Odom's Tennessee Pride Sausage Inc.
Perfection Moulders Inc.
Peterbilt Motors Co.
Portion Pac
U.S. Smokeless Tobacco Mfg. L.P.

FOG Program Grease Interceptor Certification Form (Page 1)

GREASE INTERCEPTOR CERTIFICATION (Form A)

Every food service establishment in the Metro Nashville Department of Water & Sewerage Services' area must have their grease interceptor inspected annually, as required by their FOG permit, to verify that all components of the grease control equipment are present and in good working condition. Furthermore, the inspection will identify any structural problems with the grease interceptor.

Facility Name:_____ Phone #:_____

Address:_____ City:_____,TN. Zip Code_____

	PASS	FAIL*
1. Interceptor completely emptied and cleaned before inspection?	☐	☐
2. There is access to all interceptor chambers for cleaning and inspections?	☐	☐
3. Influent (inlet) T is attached and extends downward at least 2/3 depth of tank?	☐	☐
4. Effluent (outlet) T is attached and extends downward to within 12" of tank bottom?	☐	☐
5. Effluent (outlet) T is made of non-collapsible material that does not easily flex or bend (i.e. minimum- schedule 40 PVC, etc.), and is secure, not allowing fats, oils or grease to escape around edges?	☐	☐
6. Interceptor tank does Not have visible holes or leaks?	☐	☐
7. Mid-wall baffle(s) is secure and operational?	☐	☐
8. Interceptor maintaining structural integrity?	☐	☐
9. No Sewer clean-out covers missing or damaged?	☐	☐

*** IMPORTANT REQUIRED INFORMATION & RESPONSE: If the answer to any of the above questions is "Fail", the equipment has failed certification. A statement of the plan of action to be taken, with date to be completed, needs to be provided on the attached sheet under "Response Comments" (attach additional sheets to explain corrective action if necessary):**

Inspector Certification **– This grease interceptor has** ☐ PASSED ☐ FAILED **certification.**

I _____ of _____
(print name of inspector) *(print company name)*

certify that the above listed facility has an approximate _____ gallon capacity interceptor. I have examined the interceptor and provided the above information.

_____ _____ _____
(signature) *(date)* *(phone number)*

Facility Owner/Manager Certification

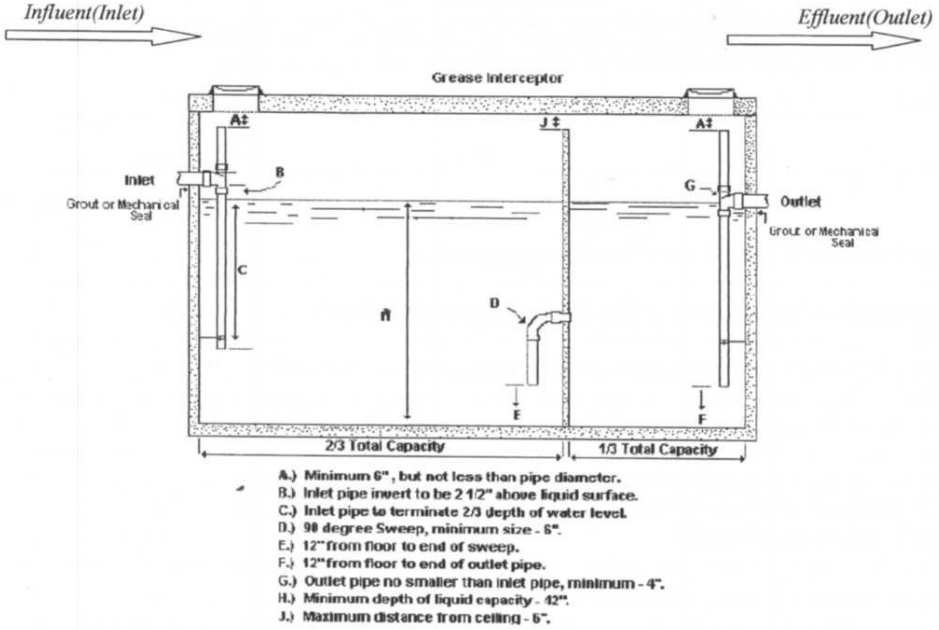
I _____ certify to the best of my knowledge the above
(print name)

statements to be true and correct. _____ _____
(signature) *(date)*

*SUBMIT **ORIGINAL** CERTIFICATION FORM TO:*
Metro Water Services, FOG Control Program, 1607 County Hospital Road, Nashville, TN 37218

FOG Program Grease Interceptor Certification Form (Page 2)

Grease Interceptor Diagram



A.) Minimum 6", but not less than pipe diameter.
B.) Inlet pipe invert to be 2 1/2" above liquid surface.
C.) Inlet pipe to terminate 2/3 depth of water level.
D.) 90 degree Sweep, minimum size - 6".
E.) 12" from floor to end of sweep.
F.) 12" from floor to end of outlet pipe.
G.) Outlet pipe no smaller than inlet pipe, minimum - 4".
H.) Minimum depth of liquid capacity - 42".
J.) Maximum distance from ceiling - 6".

RESPONSE COMMENTS (required if "Fail" checked, identify problem, corrective action and provide planned date of corrective action)

FOG Program Grease Trap Certification Form (Page 1)

METRO WATER SERVICES

GREASE TRAP CERTIFICATION (Form B)

Every food service establishment in the Metro Nashville Department of Water & Sewerage Services' area must have their grease trap (under-the-sink units) inspected annually, as required by their FOG Permit, to verify that all components of the grease control equipment are present and in good working condition.

Facility Name:_____ Phone #:_____

Address:_____ City:_____ ,TN. Zip Code_____

	PASS	FAIL*
1. Grease trap completely emptied and cleaned before inspection?	☐	☐
2. There is access to all trap chambers for cleaning?	☐	☐
3. Flow restrictor device is installed (before grease trap or at grease trap inlet)?	☐	☐
4. Flow restrictor device installation is correct (proper flow direction and orientation)?	☐	☐
5. Grease trap is vented (vent on flow restrictor)?	☐	☐
6. Grease trap has NO visible holes or leaks?	☐	☐
7. Baffle(s) (inlet, middle and outlet…depending on design) are secure and operational?	☐	☐
8. Automatic or machine dishwasher is NOT connected to the grease trap?	☐	☐
9. No Sewer clean-out covers missing or damaged?	☐	☐

*** IMPORTANT REQUIRED INFORMATION & RESPONSE: If the answer to any of the above questions is "Fail", the equipment has failed certification. A statement of the plan of action to be taken, with date to be completed, needs to be provided on attached sheet under "Response Comments" (attach additional sheets to explain corrective action if necessary):**

Inspector Certification - This grease trap has ☐ PASSED ☐ FAILED **certification.**

I _____ of _____
(print name of inspector) *(print company name)*

certify that the above listed facility has a _____ gallons per minute / _____ pound capacity grease trap. I have examined the grease trap and provided the above information.

_____ _____ _____
(signature) *(date)* *(phone number)*

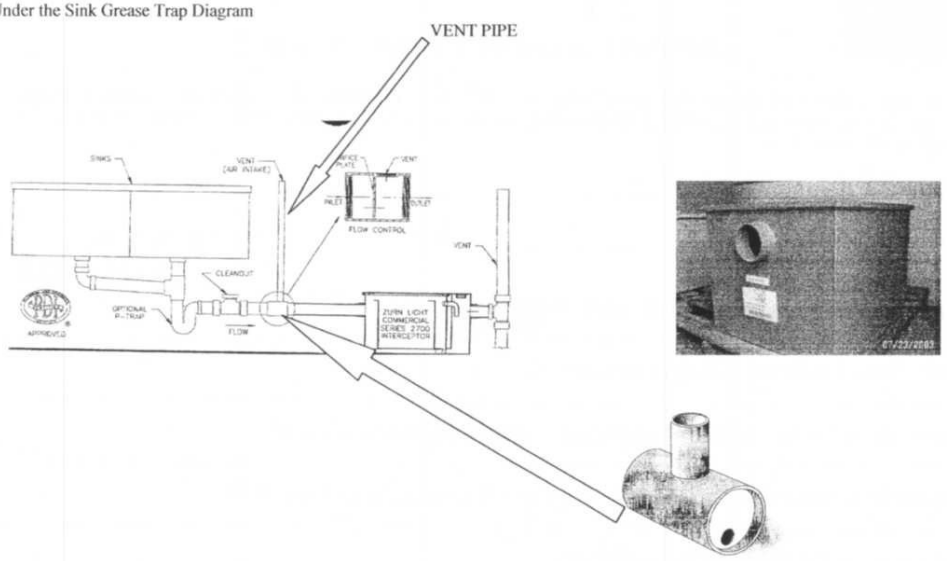
Facility Owner/Manager Certification

I _____ certify to the best of my knowledge the above
(print name)
statements to be true and correct. _____ _____
(signature) *(date)*

*SUBMIT **ORIGINAL** CERTIFICATION FORM TO:*
Metro Water Services, FOG Control Program, 1607 County Hospital Road, Nashville, TN 37218

FOG Program Grease Trap Certification Form (Page 2)

Under the Sink Grease Trap Diagram



FLC SERIES

FLOW RESTRICTOR (Key component)

RESPONSE COMMENTS (required if "Fail" checked, identify problem, corrective action and provide planned date of corrective action)

Stormwater Ordinance

ORDINANCE NO. BL2007-1440

An ordinance amending Title 15 of the Metropolitan Code pertaining to the storm water division of the Department of Water and Sewerage Services, all of which is more specifically described herein.

WHEREAS, Section 8.402 of the Charter of the Metropolitan Government of Nashville and Davidson County delegates the authority for the design, construction, maintenance, repair and cleaning of storm sewers to the Department of Public Works; and

WHEREAS, since the adoption of the Charter in 1963, state and federal water quality regulations have been enacted, including the Clean Water Act of 1977 and the National Pollution Discharge Elimination System permit (NPDES) requirements, that affect the Metropolitan Government's storm water management functions and require the Metropolitan Government to take certain protective actions; and

WHEREAS, in May 2002, the Metropolitan Department of Water and Sewerage Services and the Metropolitan Department of Public Works entered into a memorandum of understanding placing the personnel and operational activities relating to the storm water responsibilities with MWS; and

WHEREAS, in order to protect the health and safety of the citizens of Nashville and Davidson County, the Metropolitan Council deems it appropriate that the Metropolitan Code be amended to specifically create a storm water division within Metro Water Services and to provide for the creation of a reasonable storm water user fee to act as a funding mechanism for the storm water division; and

WHEREAS, it is the express intent of the Metropolitan Council that no part of this ordinance be deemed to be a transfer of the authority delegated by the Charter to the Department of Public Works regarding the construction and maintenance of storm sewers.

NOW, THEREFORE, BE IT ENACTED BY THE COUNCIL OF THE METROPOLITAN GOVERNMENT OF NASHVILLE AND DAVIDSON COUNTY:

Section 1. That Title 15 of the Code of the Metropolitan Government of Nashville & Davidson County, Water, Sewer and Other Public Places be and the same is hereby amended by adding the following new definitions to Section 15.64.010:

"Storm water facilities" or "flood control facilities" shall mean all natural and manmade conveyances and structures for which the partial or full purpose or use is to convey surface flood runoff water within the jurisdictional boundaries of the Metropolitan Government. This includes all natural conveyances (1) for which the Metro Government has assumed a level of maintenance responsibility; (2) to which the Metro Government has made improvements; (3) which have or may pose a threat to public property because of flooding; or (4) or for which the Metro Government is accountable under federal or state regulations for protecting the water quality within its jurisdictional boundaries.

"Storm water" shall mean storm water run-off, snow melt run-off, surface run-off, street wash waters related to street cleaning and maintenance, infiltration other than infiltration contaminated by seepage from sanitary sewers or other discharges and drainage.

Section 2. That Title 15 of the Code of The Metropolitan Government of Nashville and Davidson County, Water, Sewer and Other Public Places be and the same is hereby amended by adding the following new Section 15.64.015 "Storm water division".

15.64.015 Storm Water Division.

There is hereby created a Storm Water Division within the Metropolitan Department of Water and Sewerage Services ("MWS"), which in coordination with the Department of Public Works, the Metropolitan Finance Director, the Metropolitan Department of Codes Administration and the Metropolitan Planning Commission, shall have the responsibility for compliance with the Clean Water

Act of 1977, as amended and the National Pollution Discharge Elimination System permit (NPDES) and applicable regulations for storm water discharges; developing storm water management plans; identifying capital requirements and developing necessary financing for maintenance and rehabilitation of existing and new storm water facilities; collecting fees and charges for the division; educating the public on the importance of storm water management and pollution control; developing written regulations and technical guidelines as may be necessary to enforce the terms of this chapter; and other related duties as required by the director ("Director") of MWS. Nothing in this chapter shall constitute a transfer of the authority from the department of public works to MWS regarding the design, construction, maintenance, repair, and cleaning of storm sewers, which authority is delegated to the department of public works by Section 8.402 of the Charter.

MWS shall be responsible for plan approval and construction inspection of both private storm water facilities and public storm water facilities not owned by the Metropolitan Government. Notwithstanding the foregoing, MWS shall not accept storm water management responsibilities for property located within the jurisdictional boundaries of any other government entity within Davidson County unless such responsibility has been agreed to, contracted for and approved by the Metro Council and the appropriate authority for the other government entity. Additionally, MWS may accept the responsibility for the operation and maintenance of private storm water facilities only pursuant to criteria defined and adopted by the storm water management committee and upon a written agreement approved by the Metropolitan Council.

Section 3. That Title 15 of the Code of The Metropolitan Government of Nashville and Davidson County, Water, Sewer and Other Public Places be and the same is hereby amended by adding the following new Section 15.64.031 "Funding":

15.64.031 Funding.

To accomplish the purposes of this chapter and pursuant to T.C.A. § 68-221-1107, the Storm Water Division may collect storm water user fees. Such fees shall be reasonable in amount and based on actual or estimated use of storm water and or flood control facilities of the Metropolitan Government. Storm water user fees may be augmented by other funding sources, including but not limited to, allocations of local option sales tax and general tax revenue to storm water drainage improvement projects, collection of fees for special services including but not limited to plans review and inspections, and establishment of a capital recovery fee or fees consistent with state law.

A storm water user fee credit may be applied in those cases where a property owner operates and maintains private storm water facilities or through other actions and activities help reduce or eliminate the burden of storm water quantity and quality control service requirements and costs that a property or properties pose for the Metropolitan Government. All storm water user fees and other funding sources shall be approved by ordinance of the Metropolitan Council. All revenues generated by or on behalf of the Storm Water Division shall be deposited in a storm water fund and used by the Division exclusively for the functions and purposes of the storm water division as provided in this chapter. Storm water fee credits shall be defined, adopted and implemented by the storm water management committee.

Section 4. That Title 15 of the Code of The Metropolitan is hereby amended by adding the following new Section 15.64.032 "Storm water fees":

15.64.032 Storm water fees.

The Director of MWS is hereby directed to develop, with the assistance of a qualified consultant, a complete business plan for the Storm Water Division including, but not limited to, a cost of service analysis, rate study and capital improvement plan and to recommend to the Metropolitan Council no later than February 1, 2008, a fee schedule for the funding of Storm Water Division.

Section 5. That Title 15 of the Code of The Metropolitan is hereby amended by adding the following new Section 15.64.033 "Collection of fees":

15.64.033 Collection of fees.

The frequency of billing is to be established by the Director of MWS based on an assessment of the most efficient, effective and equitable method of billing and collections available to the Storm Water Division.

Section 6. That Title 15 of the Code of The Metropolitan Government is hereby amended by adding the following new Section 15.64.034 "Reports of storm water division":

15.64.034 – Reports of storm water division.

The Director of MWS shall submit an annual written report to the Metro Council, and shall personally appear annually before a joint meeting of the council public works and budget and finance committees on the storm water management program. Such report shall contain, at a minimum:

The status of the storm water management program in Metro.
The fee structure imposed to fund the implementation of the storm water program and the adequacy of funds to implement the program.
Any long-range plans which have been developed to implement the provisions of this chapter.
The status of any projects to control storm water run off.
Any other information deemed relevant by the Director.

Section 7. That Title 15 of the Code of The Metropolitan Government of Nashville and Davidson County, Water, Sewer and Other Public Places be and the same is hereby amended by amending Section 15.64.050 "Storm water management committee –Organization" by deleting the phrase "director of public works" and substituting in lieu thereof the phrase "director of the Department of Water and Sewerage Services."

Section 8. That Title 15 of the Code of The Metropolitan Government of Nashville and Davidson County, Water, Sewer and Other Public Places be and the same is hereby amended by amending Section 15.64.100 "Appeals procedure" by deleting the phrase "director of public works" and substituting in lieu thereof the phrase "director of the Department of Water and Sewerage Services."

Section 9. That Title 15 of the Code of The Metropolitan Government of Nashville and Davidson County, Water, Sewer and Other Public Places be and the same is hereby amended by amending Section 15.64.110 "Issuance of building and occupancy permits" by deleting the phrases "director of public works" and the "department of public works" and substituting in lieu thereof the phrase "director of the Department of Water and Sewerage Services."

Section 10. That Title 15 of the Code of The Metropolitan Government of Nashville and Davidson County, Water, Sewer and Other Public Places be and the same is hereby amended by amending Section 15.64.130 "Review of building permits" by deleting the phrases "director of public works" and "department of public works" and substituting in lieu thereof the phrases "director of the Department of Water and Sewerage Services" or "Department of Water and Sewerage Services," as appropriate.

Section 11. That Title 15 of the Code of The Metropolitan Government of Nashville and Davidson County, Water, Sewer and Other Public Places be and the same is hereby amended by amending Section 15.64.180 "Alteration of floodplains and drainage channels" by deleting the phrases "director of public works" and "department of public works" and substituting in lieu thereof the phrases "director of the Department of Water and Sewerage Services" or "Department of Water and Sewerage Services," as appropriate.

Section 12. That Title 15 of the Code of The Metropolitan Government of Nashville and Davidson County, Water, Sewer and Other Public Places be and the same is hereby amended by amending Section 15.64.200 "Flood proofing measures" by deleting the phrases "director of public works" and "department of public works" and substituting in lieu thereof the phrases "director of the Department of Water and Sewerage Services" or "Department of Water and Sewerage Services," as appropriate.

Section 13. That 15 of the Code of The Metropolitan Government of Nashville and Davidson County, Water, Sewer and Other Public Places be and the same is hereby amended by Section 15.64.205 "Non-storm water discharges" by deleting the phrases "director of public works" the "department of public

works" and substituting in lieu thereof the phrases "director of the Department of Water and Sewerage Services" or "the Department of Water and Sewerage Services," as appropriate.

Section 14. That this Ordinance shall take effect from and after its passage, the welfare of The Metropolitan Government of Nashville and Davidson County requiring it.

Sponsored by: Emily Evans, Parker Toler, Jim Hodge

Amendment No. 1
To Ordinance No. BL2007-1440

Mr. President:

I move to amend Ordinance No. BL2007-1440 by deleting Section 4 in its entirety and substituting in lieu thereof the following new Section 4:

"Section 4. That Title 15 of the Code of The Metropolitan is hereby amended by adding the following new Section 15.64.032 "Storm water fees":

15.64.032 Storm water fees.
A. The Director of MWS is hereby directed to develop, with the assistance of a qualified consultant, a complete business plan for the Storm Water Division including, but not limited to, a cost of service analysis, rate study and capital improvement plan and to recommend to the Metropolitan Council no later than February 1, 2008, a fee schedule for the funding of Storm Water Division.
B. Upon recommending a fee schedule for the funding of the Storm Water Division, the Director of MWS shall also provide the Council with a reduced water and sewer rate schedule that would offset the amount of revenue to be generated by the new storm water user fee.
C. The Director of MWS shall also provide the Council not later than February 1, 2008, with a report outlining all sources of funding for Storm Water Division. This report shall include both capital and operating funds, as well as a chart detailing the amount from each source of funding."

Sponsored by: Jim Gotto

LEGISLATIVE HISTORY	
Introduced:	May 15, 2007
Passed First Reading:	May 15, 2007
Referred to:	Budget and Finance Committee Public Works Committee
Deferred:	June 5, 2007
Amended:	June 19, 2007
Passed Second Reading:	June 19, 2007
Passed Third Reading:	July 17, 2007
Approved:	July 23, 2007

Sewer Overflow Response Plan

SORP

Submitted to EPA May 4, 2007

Executive Summary
MWS's Sewer Overflow Response Plan

The Sewer Overflow Response Plan (SORP) outlines the actions MWS will take to reduce the impact of sanitary sewer overflows (SSOs) on our customers and the environment as well as to comply with regulatory requirements.

1. Staff Communication and Duties

To ensure that MWS is made aware of each SSO as expeditiously as possible, there are several methods by which SSOs will be identified. The most common and effective notification comes from individuals who witness the event and call MWS's Customer Service Center (CSC). CSC representatives take reports ranging from manhole overflows to sewage on private property. MWS employees/field crews, city employees, 911, or other agencies may also report SSOs to the CSC Dispatch. Some calls originate in the Control Room at the Omohundro Water Treatment Plant as a result of the Department's Supervisory Control and Data Acquisition System (SCADA). Automated systems, such as ADS flow monitors with Intelliserve and Data Acquisition System (SCADA) at pumping facilities, alert MWS that an investigation is warranted. The processes by which SSOs are reported and the actions generated from a report of an overflow are detailed in Sections 4.1, 4.2, and 4.3.1. The responsibilities of MWS employees charged with responding to SSOs are outlined in Sections 3.3-3.6.

2. Prompt Response to SSOs

MWS will make all reasonable efforts to respond to an SSO with qualified and equipped personnel within sixty (60) minutes of being notified (Section 4.2). Allowances will be made to ensure that the safety of the Responder and the public is the first priority. Records of all SSO responses, including response times, will be maintained (Sections 3.4, 4.3.1, 4.6, and 4.10). The details pertaining to MWS's response to SSOs will be stored in a database that will be used for reporting and to analyze MWS's performance. A log of building backups will be maintained in a database separate from other SSOs (Section 2.3).

3. Assessment of Cause and Impact

An important first step is the identification of the cause of an SSO (Section 4.3.2). The various causes will determine the type of mitigation or remediation that is most appropriate. Wet weather overflows are usually caused by inflow and infiltration (I/I), while dry weather overflows may result from blockages caused by roots, debris, grease or a combination of some or all. SSOs occurring during rain events are not in themselves considered wet weather events. When evaluating the potential impact of an SSO on public health and the environment, sensitivity factors will be identified. These factors will determine the level of public notification and clean up activity required. These sensitivity factors may include:

- Streams, creeks, and other natural waterways
- Heavy pedestrian areas
- Special facilities to include schools, public parks, walking trails, etc.

The process by which MWS will assess if an SSO has had any adverse impact on human health or the environment is described in Sections 4.3.5, 4.3.6, and 4.3.9. If a backup has occurred on private property, MWS will respond to backups in accordance with the SORP. MWS will conduct an investigation to determine if the cause is a problem in the MWS system or is a result of a failure on the customer's side (considered private trouble). The process a property owner will follow to dispute the determination that a building backup is caused by a failure in their private lateral is outlined in Section 4.3.2.

4. Elimination of Cause and Mitigation of Impact

Once the cause of an SSO has been identified, the proper type of remediation can be chosen. Section 4.3.11 summarizes common abatement resolution activities and repairs that can be used independently or combined based on field conditions and television inspection. The MWS resources, including personnel and equipment needed and available to perform these activities and repairs, are listed in Sections 3.5, 3.6 and 3.8 .When possible, flow diversion techniques provide an effective means of conveying the overflow back into the sewer system. This procedure reduces additional potential impact on the immediate area and the possible impact downstream. Flow diversion techniques employed by MWS when practicable are listed in Section 4.3.10. Control zones will be established for every SSO to help prevent public access around the perimeter of the affected surface area using appropriate signs and barricading practices (Section 4.3.6). Other methods for minimizing human contact with overflows can be found in Sections 4.3.9, 4.3.10, 4.3.12, and 4.4. Standard containment procedures for typical SSOs can be found in Section 4.3.9.

5. Clean up of SSOs

After an overflow has occurred, MWS's clean up of the impacted area will be thorough and comprehensive. General practices, depending on the individual situation, are outlined in Section 4.3.12. To minimize any further impact on human health or the environment, follow-up inspections and root cause analyses will be performed to identify the specific cause of the overflow. Methods for determining the causes of SSOs may include television inspection, smoke testing, visual inspection, etc. (Section 4.3.13). If a building backup is found to be caused by a collection system failure on the public main, MWS notifies Metro Nashville Legal Claims to dispatch an independent cleaning and restoration contractor to assist in cleaning, sanitizing, and repairing damage (Section 4.3.2). If a building backup is found to be caused by a service lateral failure, the customer will be advised that the public collection system is functional and that they may need to seek the services of a third party agent (plumber) to remedy the problem. If efforts on the part of the customer to remedy their service lateral failure is unsuccessful, MWS will perform any investigatory and corrective work on portions of the customer's service lateral that are inside the right-of-way or easement. Residential customers will not be charged for this service. Commercial customers will be charged the actual cost of this service at no profit.

6. Routine Reports to the Public

MWS will provide an initial notice to TDEC of an SSO within twenty-four (24) hours of the time it becomes aware of an SSO, as required by NPDES permits. The complete reporting process that includes the Immediate, Final, and Monthly Overflow Reports by which MWS notifies TDEC is summarized in Sections 4.2 and 4.5. MWS will post a monthly summary of each SSO (excluding building backups) on MWS's Web site.

NPDES Sewage Overflow Response Report (Form)

NPDES Sewage Overflow Response Report (for MWS overflows to MS4 or Streams only)

Location:

Date: | NPDES Notified By: | CW#:

Time MWS notified: | Time MWS arrived on site:
Time NPDES notified: | Time NPDES arrived on site:

System Services 1st Responder: | NPDES Responder:

Public or Private: | Flow Rate (gpm) or ttl. Volume Discharged:

Is/Has flow entered the MS4? No / Yes If "Yes" explain/describe: _____

Estimated volume that entered MS4:
Estimated volume still in MS4:

Is/Has sewage entered a stream or river? No / Yes If "Yes", explain/describe: _____

Stream or River Name: | Volume of sewage discharged to stream or river:
DO upstream during event: | DO upstream after evet: Date/Time:
DO immediately downstream during event: | DO downstream after event: Date/Time:
DO 500' downstream during event:

Explain/describe work necessary to resolve overflow: _____

Work supervisor on site:
Repair started: Date: Time: | Repair Completed: Date: Time:

Was the necessary manpower and equipment on site to make repair? No / Yes If "No", explain _____

Is/Was the spill contained? Yes / No Explain/describe: _____

Containment supervisor on site:
Containment started: Date: Time: | Estimated Volume contained:

Was the necessary manpower and equipment on site to contain spill? No / Yes If "No" explain: _____

Is remediation of the MS4, stream, or river necessary? Yes / No If "Yes", explain/describe: _____

Was remediation performed? Yes / No. Explain/describe: _____

Remediation supervisor on site:
Remediation Started: Date: Time: | Volume of material remediated/recovered:
Remediation Completed: Date: Time: | Supervisor verifying remediation complete:

Was the necessary manpower and equipment available on site to perform remediation? Yes / No If "No", explain: _____

Estimated Sewage Volume Totals (numbers taken from above)	
ttl. Gal Discharged	
ttl. Gal Discharged to the MS4	
ttl. Gal Discharged to a stream	
ttl. Gal Contained	
ttl. Gal Remediated/Recovered	

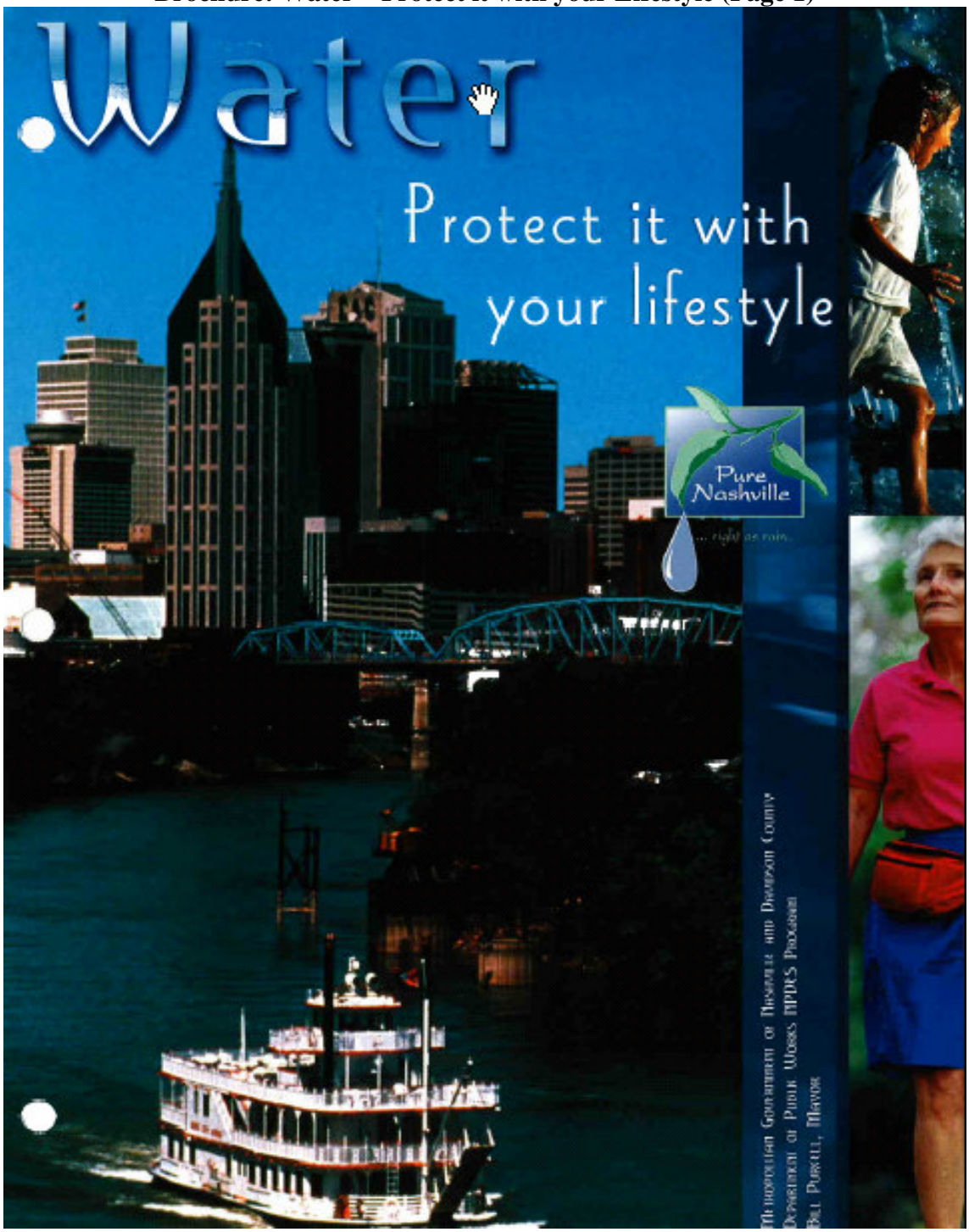
Appendix B

Public Education

Public Education/Outreach by NPDES Staff in Permit Year 4

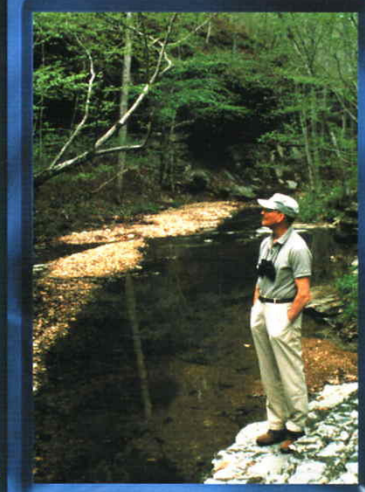
Date	Forum/Outreach Group	Title/Description of Outreach	Presenter	Number of Attendees
9/20/2006	Whitland Creek HOA	Stormwater Quality, Infiltration Practices	Kimberly Moore	8
9/21/2006	TDEC Level 1 Erosion Control Workshop	Grading Permit Process & Erosion Control	Josh Hayes	150
9/23/2006	Warner Park Nature Center	Rain Gardens and Rain Barrels	Kimberly Moore	35
10/06/2006	Real Properties Services – Annual Retreat	Grading Permit Process & LID	Steve Winesett	25
11/07/2006	Watershed Conference	Metro Nashville's Watershed Mgmt Plan	Steve Winesett	40
11/09/2006	MS4 Working Group	Metro Nashville Stormwater Reg Revision	Michael Hunt	54
11/29/2006	Metro Staff	SWMM Revision Training	Rebecca Dohn	10
12/06/2006	KY-TN Water Environment Association Watershed Conference	Metro Nashville Stormwater Program	Michael Hunt	15
12/12/2006	Development Community	SWMM Revision Training	Rebecca Dohn/Danny Smith	19
12/14/2006	Development Community	SWMM Revision Training	Rebecca Dohn/Danny Smith	29
12/18/2006	Gresham Smith	SWMM Revision Training	Rebecca Dohn/Danny Smith	22
12/19/2006	Barge Waggoner Sumner & Cannon	SWMM Revision Training	Rebecca Dohn/Danny Smith	10
1/09/2007	Development community	SWMM Revision Training	Rebecca Dohn/Danny Smith	45
1/12/2007	Metro Council Suburban Caucus	Metro Nashville Stormwater Reg Revision	Michael Hunt/Danny Smith	6
2/01/2007	Metro Water Services "Direct Report Supervisors"	Metro Nashville Stormwater Program-including water quality and where to report issues	Michael Hunt	47
2/01/2007	Greening Up Your Home Class – University School of Nashvill	Innovative Stormwater Practices	Michael Hunt	35
2/21/2007	Metro Planning Staff	SWMM Revision Training	Rebecca Dohn, Michael Hunt, Dale Binder, Tom Palko	11
2/28/2007	TDEC Level 1 Erosion Control Workshop	Grading Permit Process & Erosion Control	Dale Binder	130
3/22/2007	Cumberland River Compact – Water Quality Advisory Committee	2006 Metro Stormwater Reg Revision	Michael Hunt/Rebecca Dohn	12
3/27/2007	Design Engineers	2006 Metro Stormwater Reg Revision	Rebecca Dohn/Tom Palko	12
3/29/2007	Hugh Garrison's Waste Haulers Training	Stormwater Compliance	Steve Winesett	50
5/08/2007	TDEC Level 1 Erosion Control Workshop	Grading Permit Process& Erosion Control	Dale Binder	100
5/09/2007	Metro Chamber of Commerce Staff	Orientation of Metro Stormwater Mgmt Regulations and NPDES Permit Requirements	Michael Hunt	4
6/06/2007	TDEC Level 1 Erosion Control Workshop	Grading Permit Process & Erosion Control	Michael Hunt	140

Brochure: Water – Protect it with your Lifestyle (Page 1)



Brochure: Water – Protect it with your Lifestyle (Page 2)

The Clean Water Challenge



According to the Environmental Protection Agency, the primary cause of water quality problems in the U.S. today is not from factories or waste-water treatment plants, but rather something called "nonpoint source pollution." Nonpoint source pollution is runoff from rainfall, snowmelt, or irrigation that picks up soil and contaminates as it runs over land or under ground, eventually depositing them into surface waters or introducing them into ground water.

To address specifically the problem of pollution from storm water runoff, industries and municipalities across the nation are being required to obtain National Pollutant Discharge Elimination System (NPDES) permits. The Tennessee Department of Environment and Conservation, under the direction of our nation's Clean Water Act, issued an NPDES permit to Davidson County, making us responsible for improving and protecting the quality of water allowed to enter the "Waters of the State." This means that any ditch, culvert, or conveyance that routes water to area streams and rivers must be kept free of pollutants.

What Metro N is Doing

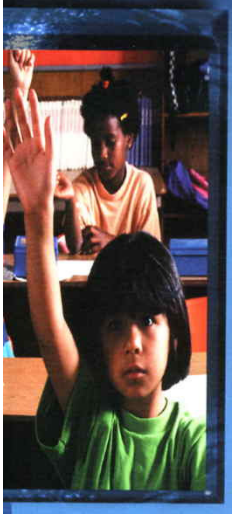
In Metropolitan Nashville/Davidson County, storm water that flows into drainage ditches, gutters, and storm drains is not treated before it makes its way into our waterways. As a result, the products of our everyday activities - oil and gasoline, litter, pet wastes, pesticides, fertilizers, wash water, even soil and yard clippings - get swept up in storm water and become pollutants that can kill aquatic life, limit the use of our waters for recreational and other purposes, and create eyesores. More than half of the contamination in our waterways today is caused by storm water pollution.

The goal of the Metropolitan Government of Nashville and Davidson County (Metro) NPDES permit is to develop and implement storm water pollution controls that will make our waterways "fishable, swimmable, and environmentally safe." As part of this effort, the Department of Public Works has in place a multifaceted storm water management program that addresses:

CONSTRUCTION: We encourage and enforce proper erosion control measures at construction sites.

Brochure: Water – Protect it with your Lifestyle (Page 3)

ASHVILLE



SPILL RESPONSE: Metro has an established hazardous materials spill response plan that minimizes damage to the environment.

INDUSTRIAL INSPECTIONS: We are providing ongoing inspection and/or monitoring of local industries for environmental compliance.

MONITORING: We regularly monitor the water quality of our local streams/watersheds.

ROADWAYS: We are increasing street sweeping efforts and are utilizing more efficient, environmentally friendly road salting methods.

ILLICIT DISCHARGE AND DUMPING: We are identifying illegal discharges to our storm water conveyances and enforcing discharge regulations.

PUBLIC EDUCATION: We are developing and carrying out programs and methods to educate the public and industries on storm water-related environmental issues.

PUBLIC REPORTING: We provide a storm water pollution telephone hotline (313-PURE) for reports related to any discharges or activity that is contributing to water pollution. An inspector follows up on all notifications.

INFRASTRUCTURE: We have inventoried and documented the location and condition of the county's storm water drainage system.

DEVELOPMENT/ REDEVELOPMENT: We consider, implement, and encourage best management practices to minimize negative environmental impacts from storm water runoff.

Healthy lakes, rivers, and streams directly impact property values and the quality of life we enjoy. Each of us has a responsibility to be a part of Metro's pollution solution by controlling what we purposefully and inadvertently put down our storm drains. This responsibility begins by understanding where pollutants come from. For example, many common household products - such as oven cleaners, paint and paint removers, cleaning fluids, and moth balls - and motor oil contain toxic ingredients that can become a threat to public health and the environment if not properly used or discarded. Wash water contains detergents, oil, grease, metals, dirt, and other pollutants released by the washing process. Fertilizers and pesticides washing off our lawns can deplete lakes and rivers of oxygen needed by aquatic life and wildlife. Even waste from the family pet can contain bacteria and viruses that contaminate waterways.

By following the suggestions on the back of this publication, you take an important step in helping to clean up our waterways and assist Metro in meeting its NPDES permit requirements.

Brochure: Water – Protect it with your Lifestyle (Page 4)

Minimizing Storm Water Pollution: What You Can Do

AROUND THE HOME

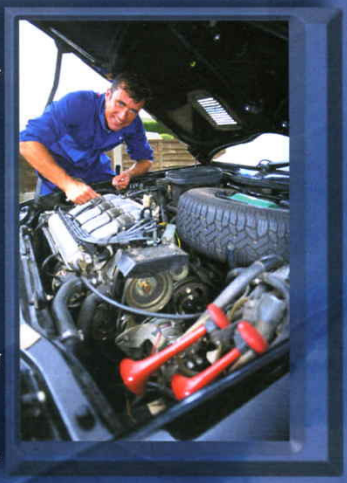
- Use household cleaners that are labeled nontoxic and biodegradable, and use the smallest quantity possible.
- Properly use and store all toxic products, including cleaners, solvents, and paints. Clean up spills immediately. Follow label directions regarding container disposal or take to a local collection site.
- Recycle reusable materials, and throw litter into trash cans that are tightly covered.
- Dispose of paint in an enviromentally friendly manner. For disposal methods, visit www.nashville.org/pw/paint.html or call 615-862-8620.

IN THE YARD

- Use pesticides, herbicides, and fertilizers sparingly and in accordance with label instructions. Do not apply if rain is expected or near ditches, gutters, or storm drains. Use products labeled nontoxic, biodegradable, or water-soluble when possible.

- "Go natural" by using natural fertilizers such as compost or bone meal and natural insect repellents, such as marigolds (for nematodes and white flies), soapy water from dishes (for flowers and roses), or spearmint gum (for moles).
- Do not over irrigate - this can cause sediment to wash into storm drains.
- Do not blow, sweep, or rake leaves or grass clippings into gutters or storm drains. Compost yard waste or bag and dispose using solid waste collection programs.
- Divert rainspouts and garden hoses from paved surfaces onto grass.
- Pick up animal wastes and dispose of in garbage cans or by flushing down toilets.

VEHICLE- AND BOAT-RELATED ACTIVITIES



- Take used motor oil to a participating oil recycling center. For a list of centers and to find out how to dispose of antifreeze, transmission fluids, engine cleaners, and battery acid, call 615-862-8620 or visit our web site.
- Properly maintain your car or boat to reduce the leakage of oil and other fluids.
- Wash cars on lawns or ground rather than paved surfaces to minimize runoff, and use biodegradable, nonphosphate soap.
- Use marine sanitation devices or pump-out facilities to get rid of boat sewage.
- When spills occur, use kitty litter, sawdust, or wood chips to soak up fluid and dispose in garbage can.

GENERAL

- Report illicit discharges or illegal dumping into storm drains by calling Metro's storm water pollution hotline at 615-313-PURE.
- For more information about Metro's solid waste collection programs, please call 615-862-8620.

Metro Water Services NPDES Program

1607 County Hospital Road
Nashville, TN 37208
Stormwater Pollution Hotline: (615) 313-PURE
www.nashville.gov/stormwater

Bill Purcell, Mayor

If you need any assistance or accommodation(s), please contact Mr. Joseph A. Estes, Sr., Metro Water Services, ADA Coordinator, 1600 2nd Avenue North, Nashville, TN 37208-2206; telephone 615-862-4862.

Metro Parks Brochure on Pet Waste Clean-up

metro parks

Fun With Your Dog!

Nashville's Canine Clean-Up Campaign - The Tail of a Clean City

Residents of Davidson County, as with most other areas of the nation, are crazy about their dogs! The Shelby Dog Park is the first project that the Department has launched to fill a void for our furry friends. No one could have anticipated the enormous popularity of the city's first official dog park!

In an effort to help meet the demands for locations to enjoy recreational time with our dogs, the Metro Board of Parks and Recreation has been working to identify ways to meet the needs of a growing population that considers their dogs as part of their family.

But along with enjoying our dogs in both public and private spaces comes the responsibility of cleaning up after our pets. Nationwide the problem of land and water pollution caused by dog waste is growing. So together with the Nashville Humane Association, the Tennessee Veterinarian Medical Association, Metro Public Health Department/Metro Animal Services and Metro Water Services, Metro Parks and Recreation is making a public appeal to dog owners to please clean up after their dogs.

We are launching a ***"Bag It!"*** Public Service Campaign. The campaign encourages dog owners to help us keep our parks clean by using the plastic mutt mitts provided in most parks and picking up after their pets. It's a simple message with a big impact – keeping the environment clean and healthy for *everyone*.

We hope you will participate in our efforts to **Keep Our Parks Clean**.

Demolition Guidelines Handed Out with Demolition Permit

Building Demolition Reference Guide

The following reference material is to be used when demolishing buildings or structures as a guide to facilitate compliance under the current Davidson County, **Metro Water Services (MWS) environmental regulations**. However, in order to insure compliance within Metro Nashville/Davidson County, persons conducting demolition activities must be aware of ***all*** pertinent Metro, State, and Federal regulations and not simply those contained within this document.

During every demolition project, numerous pollutants are liberated, both from the materials used to construct the building and from materials that may have been used or stored inside the building itself. These pollutants may include airborne materials such as asbestos, or water-soluble materials such as heavy metals, toxic organic compounds, and solids (dust). During a rain event, these pollutants dissolve or suspend in the stormwater and are transferred into Metro's Municipal Separate Storm Sewer System (MS4). This MS4 includes all storm drains, roads, ditches, culverts, and parking lots that are designed to route **clean stormwater only** safely into the streams of Metro Nashville/Davidson County.

The NPDES division of MWS has the specific task of monitoring all discharges into this MS4 for the purpose of maintaining the water quality of the streams within Davidson County. If not addressed properly on site, the pollutants produced by demolition activities will enter the MS4 and be routed to a nearby stream. **These pollutants will then damage this stream and the aquatic life within it**. Nearly all pollutant discharges into the MS4 and streams (including pollutants liberated and discharged during demolitions) are deemed "Illicit Discharges" and are illegal in Davidson County under Metro Code of Laws (Metro Code) §§ 15.64.205. If you have questions, contact the MWS NPDES office at (615) 880-2420.

Fortunately, the same Best Management Practices (BMPs) applied on general grading sites (such as those used to control sediment and dust) also work effectively in keeping demolition pollutants on site. Silt fence, storm drain covers, and storm drain insert filters are just a few of the BMPs that can be utilized to control these pollutants on site and prevent them from migrating into the MS4 or nearby streams.

It is also important to note **that demolition projects not exempted by section 3.4 of the MWS Stormwater Management Manual require a MWS grading permit** before the demolition work may take place. For additional information on who or what projects need a grading permit, go to www.nashville.gov/stormwater/grading_permits.doc.

Also, be sure to recycle or dispose of demolition debris properly. For additional information on Nashville's Construction and Demolition Material Recycling Program, go to www.nashville.gov/recycle/Publications/Construction_Recycling_Directory.pdf.

Thank you very much for recognizing the importance of our streams as a valuable natural resource and your help in the protection and improvement of the streams within Metro Nashville/Davidson County.

This publication is a public service of:
Metro Water Services
NPDES Program
Storm Water Quality Control Team
1607 County Hospital Road
Nashville, TN 37218
Phone (615) 880-2420
www.nashville.gov/stormwater

Metro Water Services is in the process of complying with all appropriate Americans with Disabilities Act Guidelines. For additional information contact Joseph A. Estes, Sr., 1600 2nd Avenue North, Nashville, TN 37208-2206; telephone 615-862-4862.

FEMA Buyout Literature

Flood: Are You Protected from the Next Disaster?

Devastating floods occur throughout the U.S. every year. Changing weather patterns, coupled with over-development and leveling of forests that reduce the land's natural ability to absorb water, are increasing the flood risk for many... even those who don't live near water.

Flooding causes more than $2 billion in property damage each year, and losses due to flooding are not covered under most homeowners or business policies. However, flood insurance is available to protect homes and businesses and their contents in communities that participate in the National Flood Insurance Program (NFIP).

FLOODING IS A NATIONAL PROBLEM

Until the late 1960s, most property owners were unable to get insurance coverage against flood damage. Private insurance firms, aware of the potential for catastrophic losses, were unwilling to assume the financial risk alone. This put the burden on taxpayers to provide costly disaster relief to a growing number of flood victims.

In 1968, Congress addressed this issue by creating the NFIP. This Federal program provides flood insurance at a reasonable cost in exchange for the careful management of flood-prone areas by local communities.

Today, the NFIP insures more than 4 million policyholders in more than 19,000 communities across the U.S. It is administered by the Federal Emergency Management Agency (FEMA).

FACTS YOU SHOULD KNOW

1. There is a 26% chance of experiencing a flood during the life of a 30-year mortgage compared to a 4% chance of a fire.
2. Find out if you are located in a floodplain, which is considered a Special Flood Hazard Area. If you are, you are *still* eligible for flood insurance. In fact, in some cases, you may be *required by law* to have flood insurance. Your city or county government (start with the Building or Planning Department) has Flood Insurance Rate Maps, published by FEMA, which are available for public inspection. If your building is located in a flood zone that begins with the letter A or V, you are in a Special Flood Hazard Area.
3. The average premium is approximately $400 per year depending on where you live and the coverage you choose.
4. In low-to-moderate risk areas, coverage can be purchased for just over $100 a year.
5. Buy as much flood coverage as you can. Primary residences insured for 80% of their value, or the maximum amounts available, get replacement cost coverage. It pays the amount needed to repair or replace most of the building elements up to the policy limits, without deduction for depreciation, once repairs are made.
6. There is a 30-day waiting period from the time a policy is purchased until you are covered, with the following exceptions:

   There is no waiting period if you have an existing flood insurance policy and an additional amount of flood insurance is required with the making, increasing, extending or renewing of a loan, such as a second mortgage, home equity loan, or refinancing. Coverage is effective immediately, as long as the premium is presented at or prior to loan closing.

   There is no waiting period when flood insurance is required as a result of a lender determining that a loan which does not have flood insurance should be protected by flood insurance. Coverage is effective immediately, as long as the premium is presented at the completion of a loan application.

   There is a one-day waiting period when an additional amount of insurance is required as a result of a map revision. This applies when the map revision is from a non-Special Flood Hazard Area to a Special Flood Hazard Area and only if the endorsement is received within 13 months following the map revision. The increased amount of coverage will be available 24 hours after the amount of coverage is applied for and the additional premium is made.
7. Flood insurance is required by law in some instances. To get Federally secured financing to buy, refinance, build, repair, reconstruct or improve structures in Special Flood Hazard Areas, you may be required to purchase flood insurance. This includes most types of mortgage loans, as well as FHA and VA loans.
8. A flood insurance policy also reimburses you for actions you take to prevent flood damage. For example, costs for moving insured contents, in imminent danger of flooding, to a safe location are reimbursed up to $1,000 with no deductible. Other costs, such as for sandbags, plastic sheeting and lumber, pumps, fill for temporary levees, and wood to save the building can be reimbursed up to a limit of $1,000 with no deductible.

For more information about the NFIP and flood insurance, contact your insurance company or agent, or call the NFIP at **1-888-CALL-FLOOD, ext. 314.**

top10 FACTS

Every CONSUMER needs to know about the National Flood Insurance Program

1. **Everyone lives in a flood zone.**
   - ❒ You don't need to live near water to be flooded.
   - ❒ Floods are caused by storms, melting snow, burst dams and water backing up due to inadequate drainage, overloaded or failed sewer systems, dam or levee failure, etc.
2. **Flood damage is not covered by homeowners policies.**
   - ❒ You can protect your home, business, and belongings with flood insurance from the National Flood Insurance Program.
   - ❒ You can insure your home with flood insurance for up to $250,000 for the building and $100,000 for your contents.
3. **You can buy flood insurance no matter what your flood risk is.**
   - ❒ It doesn't matter whether your flood risk is high, medium, or low, you can buy flood insurance as long as your community participates in the National Flood Insurance Program.
   - ❒ And, it's a good idea to buy even in low or moderate risk areas: between 20 and 25 percent of all flood insurance claims come from low- to moderate-risk areas.
4. **There is a low-cost policy for homes in low- to moderate-risk areas.**
   - ❒ The Preferred Risk Policy is available for just over $100 a year.
   - ❒ You can buy up to $250,000 of coverage for your home and $60,000 of coverage for your contents.
5. **Flood insurance is affordable.**
   - ❒ The average flood insurance policy costs approximately $400 *a year* for about $100,000 of coverage.
   - ❒ In comparison, a disaster home loan can cost you more than $300 *a month* for $50,000 over 20 years.
6. **Flood insurance is easy to get.**
   - ❒ You can buy NFIP flood insurance from private insurance companies and agents all over the country today!
   - ❒ You may be able to purchase flood insurance with a credit card.
7. **Contents coverage is separate, so renters can insure their belongings too.**
   - ❒ Up to $100,000 contents coverage is available for homeowners and renters.
   - ❒ Whether you rent or own your home or business, make sure to ask your insurance agent about contents coverage. It is not automatically included with the building coverage.
8. **Up to a total of $1 million of flood insurance coverage is available for non-residential buildings and contents.**
   - ❒ Up to $500,000 of coverage is available for non-residential buildings.
   - ❒ Up to $500,000 of coverage is available for the contents of non-residential buildings.
9. **There is usually a 30-day waiting period before the coverage goes into effect.**
   - ❒ Plan ahead so you're not caught without flood insurance when a flood threatens your home or business.
10. **Federal disaster assistance is not the answer.**
    - ❒ Federal disaster assistance is only available if the President declares a disaster.
    - ❒ More than 90 percent of all disasters in the United States are not Presidentially declared.
    - ❒ Flood insurance pays even if a disaster is not declared.

FEMA

For more information, call the National Flood Insurance Program toll free at
1-888-CALL-FLOOD, ext. 304
TDD# 1-800-427-5593
http://www.fema.gov/nfip

F-301 (5/03)

Metro Waste Management Division Mailing (Page 1)

Metro Waste Management Division Mailing (Page 2)

NEW PROGRAM INFO

Automated Trash Pick-up Next Step in City's Waste Management Plan

The automated trash pick-up program is the next step in the waste management plan adopted by Metro Council in 2002.

The Curby curbside recycling program and the closing and demolition of the thermal plant were two important parts of the plan which have already been implemented. The new trash program will mean significant savings for taxpayers.

With the new trash program, all homes will have uniform-looking carts, and trash bags will no longer be scattered throughout neighborhoods. The new rolling trash carts will also help keep rodents from getting into trash.

Trash collectors will also benefit from the program because their employees will face fewer injuries on the job. Mechanical arms on the trucks will empty the trash carts. The automated program will make trash day faster and more efficient for everyone.

Help your trash professionals and do your part to help our city achieve the goal of making Nashville a cleaner place to live.

RULES OF USE

- Look under your cart lid for your pick-up day.
- When your trash cart is delivered, it will be placed where it should be positioned on pick-up day.
- On your pick-up day, place your cart where it was delivered with the arrow on the lid pointing toward the street or alley. Your trash will be picked up between the hours of 7 a.m. and 5 p.m.
- Do not place the cart within 3 feet of any stationary object such as a car, mailbox, utility pole, Curby cart, etc.
- Do not place the cart under wires, tree limbs, building overhangs or other items that could be damaged. Please make sure there is 15 feet of clearance.
- Items that are placed outside the trash cart will not be picked up.
- Please remove your cart from the street by 7 p.m. on pick-up day.

You've got questions? N

When will I get my new cart?

Your new cart will be delivered within a few weeks of receiving this newsletter. The transition for all residents should be complete by summer. Carts will be delivered about one week before the first trash collection.

How should I use my new trash cart?

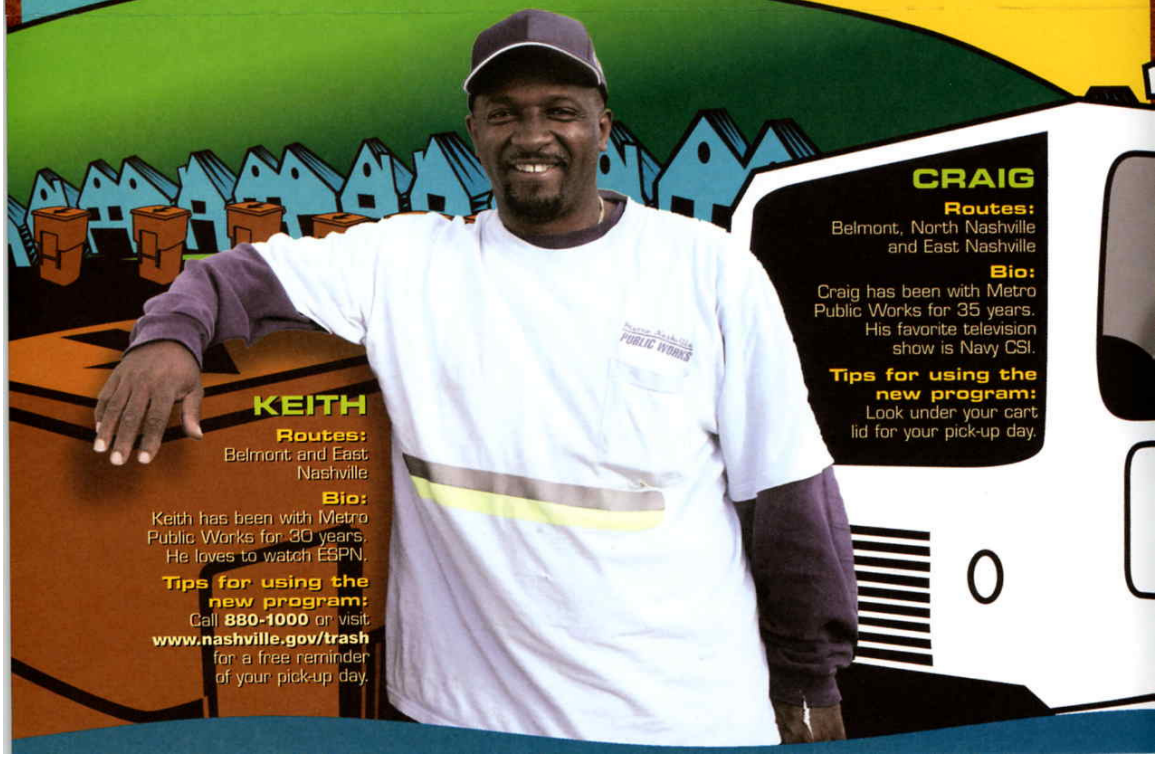
Place your bagged trash inside your cart and on your pick-up day, place the cart at the curb or in the alley, 3 feet from any stationary object. Make sure to place the cart so the arrow on the lid opening faces the street or alley.

Will my trash pick-up day change?

Trash pick-up days will change for some residents. Your weekly trash pick-up day will be the same day as your monthly curbside recycling pick-up day.

How will I know when my pick-up day is?

When Metro delivers your new trash cart, look for the sticker under the cart lid to find out your pick-up day and a number to call if you have questions or need help.



KEITH

Routes: Belmont and East Nashville

Bio: Keith has been with Metro Public Works for 30 years. He loves to watch ESPN.

Tips for using the new program: Call **880-1000** or visit **www.nashville.gov/trash** for a free reminder of your pick-up day.

CRAIG

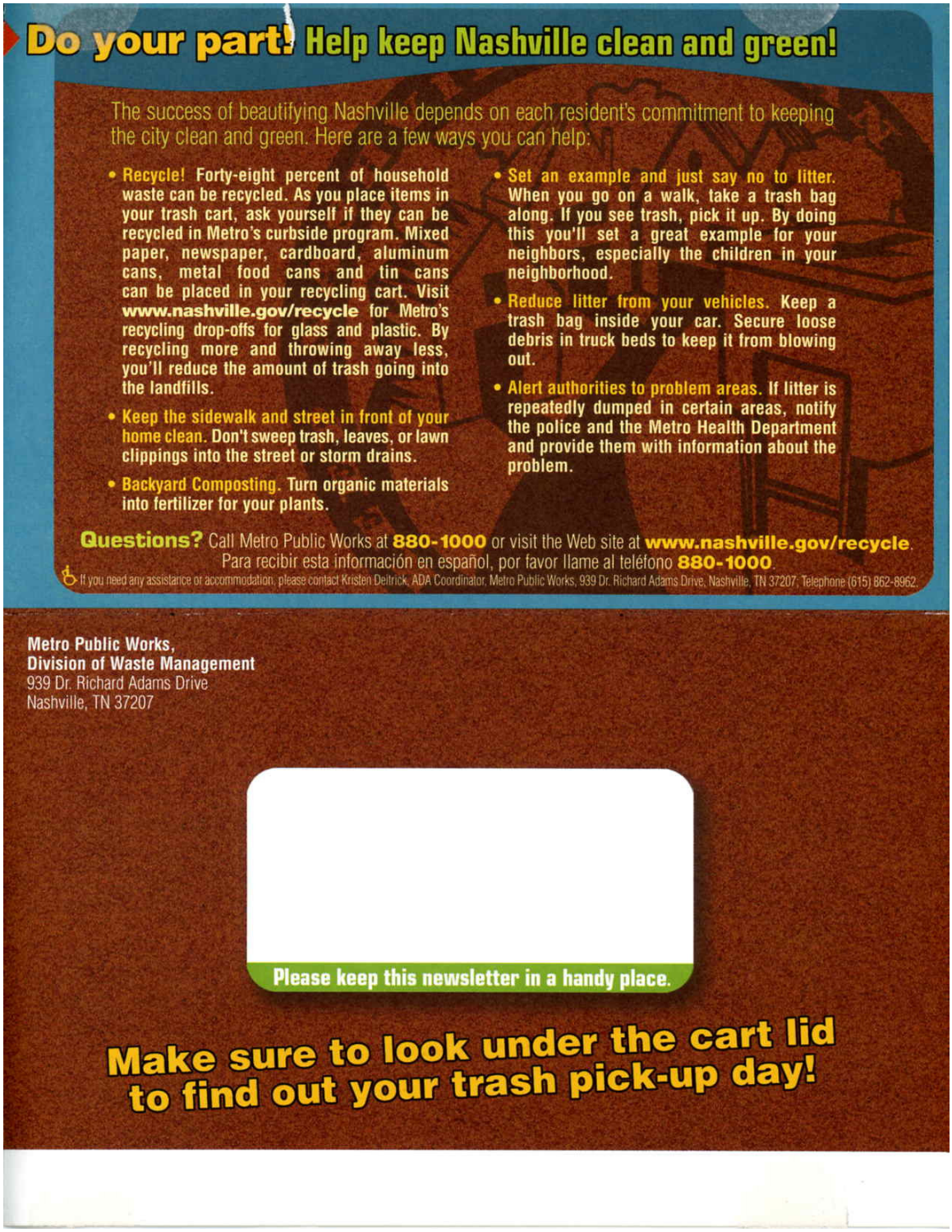
Routes: Belmont, North Nashville and East Nashville

Bio: Craig has been with Metro Public Works for 35 years. His favorite television show is Navy CSI.

Tips for using the new program: Look under your cart lid for your pick-up day.

Metro Waste Management Division Mailing (Page 3)

Metro Waste Management Division Mailing (Page 4)



Fats, Oils, and Grease Program Handout (Page 1)

Sewer Cleanouts: Regularly check all sewer cleanouts on your facility's property to make sure the covers are solid and secure. Replace damaged or missing cleanout covers immediately to prevent rainwater inflow and problems.

Damaged cleanout cover

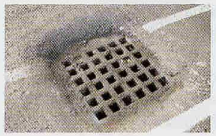
Missing cleanout cover

STORMWATER...
MINIMIZE YOUR RESTAURANT'S
STORMWATER IMPACTS

1. **Maintain clean area around the grease recycle bin.** Make employees aware to be careful not to spill any fats, oils and grease. If there is a spill, clean it immediately.

Stormwater impact from recycle bin spill

2. **Do NOT pour oils or grease down storm grates, storm drains, sewer drains or on the ground.**



Grease evidence at storm gate. Grease was discharged into stream Enforcement action was taken.

3. **Clean vent hoods regularly** to prevent fats, oils and grease discharge to the roof of your facility or on ground near your facility.
4. Design and locate dumpsters and outdoor wash areas to minimize stormwater impacts.

Restaurants & Food Service Establishments need to make sure they:

1. Have proper grease control equipment **installed**.
2. **Maintain** (routinely clean or pump out) grease control equipment. Check interceptor regularly to make sure it has outlet Ts, and the structure is in good operating condition.
3. **Keep records on-site** of grease control equipment pumping/cleaning and maintenance to provide to Metro inspectors.
4. **Implement Best Management Practices.**

BEST MANAGEMENT PRACTICES (BMPs)

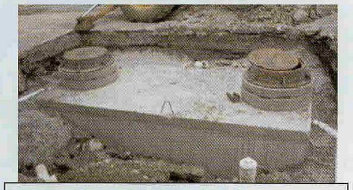
- Recycle waste cooking oil. Do NOT pour down sinks or any drains. Do NOT pour into any storm grate or on ground.
- "Dry wipe" all pots, pans, & plates prior to dishwashing. Dry wiping and scraping pots, pans, & plates' food particles and grease residue into the trash helps prevent grease buildup in your sewer lines and Metro's sewer lines.
- Use strainers in sink drains to catch food scraps and other solids, and empty strainer contents into trash.
- Post "NO GREASE" signs above sinks.
- Food grinders are allowed but the use is discouraged since these will contribute to grease discharge and decrease efficiency of interceptors and traps.
- Educate and train kitchen staff that grease control is important and inform them how they can work to provide a positive impact on the environment and your plumbing system.

Metro Department of Water & Sewerage Services

GREASE CONTROL EQUIPMENT

Policy for

New Food Service Establishments
and
Upgrade to Existing Food Service Establishments



Grease Interceptor Installation

As per Metro Code of Laws all food service establishments need to control fats, oils and grease discharges from their facility. This brochure is provided as guidance for new restaurants and existing facilities that are upgrading, or have change of ownership.

Fats, Oils, and Grease Program Handout (Page 2)

Why is Grease Control Equipment Installation Required?

Fats, oils and grease can cause serious problems in the sewer system and in a restaurant or food service establishment. Problems include raw sewage overflows due to blocked sewer lines, rancid odors, potential contact with microorganisms that can cause hepatitis and gastroenteritis, expensive cleanup, repair and replacement of damaged property. Sewer line blockages due to fats, oils and grease from food service establishments have increased cost to the Metro Department of Water & Sewerage Services and increased reporting of sanitary sewer overflows to the Tennessee Department of Environment & Conservation and the EPA.

What is a food service establishment?

Any facility or business engaged in preparing, serving or making food available for consumption.

There are 5 classifications for food service establishments with **minimum** grease control equipment requirements.

Class 1: Deli, mobile food vendors, defined by NAICS* 72213 & 722330 (minimum 20 gallon per minute/40 pound capacity grease trap)

Class 2: Limited Service Restaurants/Caterers, defined by NAICS 722211 & 722320 (minimum 500 gallon grease interceptor)

Class 3: Full Service Restaurants, defined by NAICS 722110 (minimum 1000 gallon grease interceptor)

Class 4: Buffet and Cafeteria Facilities, defined by NAICS 72212 (minimum 1500 gallon grease interceptor)

Class 5: Institutions-schools, hospitals, prisons, defined by NAICS 722310 (minimum 2000 gallon grease interceptor)

***NAICS:** North American Industry Classification System

1. What must a new food service establishment, or upgrade to existing food service establishment, or change in ownership of an existing food service establishment do?

Submit a Fats, Oils & Grease (FOG) Control Plan to:

Metro Water Services
Environmental Compliance
FOG Control Plan
1607 County Hospital Road
Nashville, TN 37218

2. What needs to be included in the FOG Control Plan?

- Identification and number of all cooking and food preparation equipment (i.e. fryers, grills, woks, etc...)
- The number and size of dishwashers, sinks, floor drains, mop sinks and other plumbing fixtures
- Type of Food Service Establishment classification (see inside left of brochure)
- Type of food to be served
- Plans for the grease interceptor, including dimensions and location

3. What does Metro Water Services do when the FOG Control Plan is received?

Metro Water Services will review the FOG Control Plan, grease interceptor sizing and approve, or make changes as necessary to aid in the protection of a FOG discharge from the food service establishment. Remember, the 3 compartment sink is NOT the only source of grease.

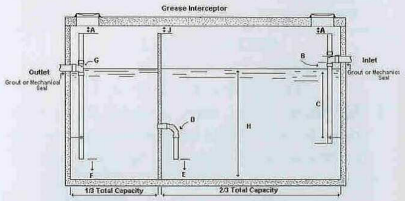
Grease Control Equipment Specifications

Grease Control Equipment must remove fats, oils & grease at or below the Metro Code of Laws Title 15.60.70 limit of 100 mg/L. Failure to comply, will require enforcement action in accordance with the Enforcement Response Plan as required in Metro Code of Laws Title 15.60.390.

GREASE CONTROL EQUIPMENT

GREASE INTERCEPTOR...

Is an underground tank with usual capacities ranging from 500 gallons to 2000 gallons. Interceptors need to be cleaned (pumped out) of complete contents at a recommended minimum frequency of every 90 days. Some facilities will need to pump interceptors more frequently (i.e. monthly). Class 2 through Class 5 food service establishments need to have grease interceptors installed.



A.) Minimum 6", but not less than pipe diameter.
B.) Inlet pipe invert to be 2 1/2" above liquid surface.
C.) Inlet pipe to terminate 2/3 depth of water level.
D.) 90 degree Sweep, minimum size- 6".
E.) 12" from floor to end of sweep.
F.) 12" from floor to end of outlet pipe
G.) Outlet pipe no smaller than inlet pipe, minimum- 4".
H.) Minimum depth of liquid capacity- 42".
I.) Maximum distance from ceiling- 6"

GREASE TRAP...

Is an indoor, "under the sink" unit with minimum size requirement of 20 gallon per minute / 40 pound capacity trap. Traps are for Class 1 facilities only. Traps must have flow restrictor installed and be vented. Traps should be cleaned regularly (every 2 weeks) to prevent grease discharge from the food service establishment.

Grease Interceptor Maintenance Guide (Spanish Version, Page 1)

Transportadores permitieron acarrear la basura del interceptor de la grasa
(listó alfabéticamente):

A-1 Septic Pumping	615-444-0833
Atlas Septic Service	615-794-0960
GreaseMaster	615-865-4445
Kennedy Septic Service	931-645-6577
Music City Grease Service	615-399-8400
Nashville Recycling	615-244-5423
Residue Rescue	615-883-2544
Richards Septic Service	615-262-0667
Roberts Plumbing Service	615-822-3596
Septic Maintenance, Inc.	615-776-2090
Sidewinder	615-851-1517

Someta 'Grease Interceptor' Forma de certificación anualmente (según su FOG Permit requiere):
Metro Water Services
FOG Control Program
1607 County Hospital Road
Nashville, TN 37218

*Contact su transportador o fontanero de la basura de la grasa para terminar el Grease Interceptor Certification Form. Una copia de la forma de la certificación se puede encontrar en el Web site de Metro Water Services (Section II. Grease Management):
www.nashville.gov/water/environmental_compliance.htm

Las mejores prácticas de gerencia (BMPs):
1. Mantenga el interceptor de la grasa , bombeando cada 90 días, llevando registros del bombeo
2. Recicle el aceite del freír. NO vierte en los fregaderos o cualesquiera drenan. NO vierte en cualquier rejilla de la tormenta o en la tierra.
3. "Limpieza seque " y raspe todos los cazuelas, cacerolas, y placas en un envase de la basura para quitar partículas residuales del aceite, de la grasa y del alimento.
4. Utilice las pantallas en drenes del fregadero y suele los drenes, y el contenido periódicamente vacío en el envase de la basura.
5. Fije "no grasa" los signos encima de fregaderos
6. Eduque y entrene todos empleados sobre control de la grasa.
7. Si ocurre un derramamiento del aceite, limpie encima de usar "secan" el material absorbente del aceite o utilizan el hielo. ¡NO en drenes!
8. El uso de la muela del alimento se desalienta.

WATER SERVICES
Metropolitan Government of Nashville & Davidson County
Department of Water and Sewerage Services

Interceptor de la grasa, 'grease interceptor'
Guía del mantenimiento

Interceptor nuevamente instalado de la grasa

El mantenimiento apropiado del interceptor de la grasa es necesario prevenir los desbordamientos y obstrucciones en el sistema de alcantarilla de Metro Nashville. Su gorduras, aceite y grasas (FOG) Permite requiere que el interceptor de la grasa de su facilidad sea mantenido y tenga registros apropiado.

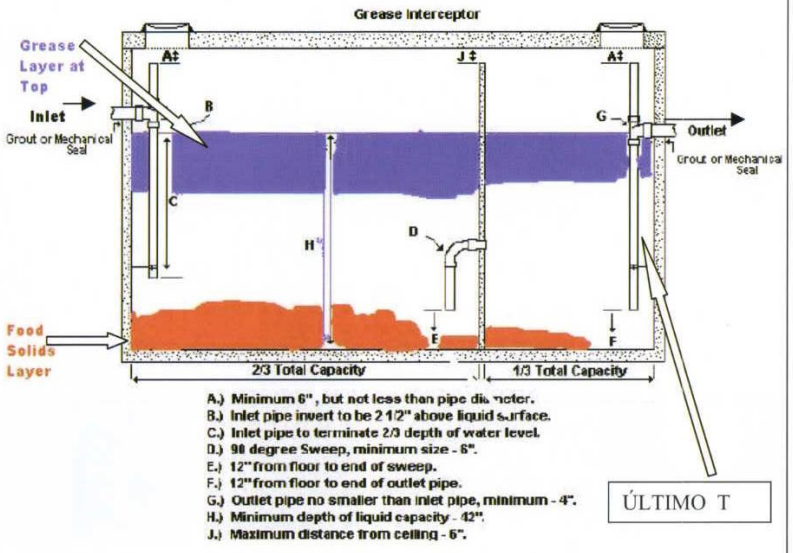
La descarga de las gorduras y aceite y grasas (FOG), de un establecimiento del servicio de alimento, causa obstrucciones en las líneas de la alcantarilla, que dan lugar a desbordamientos de la alcantarilla.


Prevenga los desbordamientos y cuestes de mantenimiento crecientes de la alcantarilla, siguiendo Metro código de leyes.

Para más información vea Metro Agua Servicios, Web site de ambiental acatamiento:
www.nashville.org/water/environmental_compliance.htm
(véase Section II. Grease Management)

Grease Interceptor Maintenance Guide (Spanish Version, Page 2)

La conservación apropiada del 'grease interceptor' es necesaria para prevenir las capacidades excesivas de la alcantarilla!



ÚLTIMO T

Ningún Último T instalado
(permite que FOG sea descargado que causa obstrucciones de la alcantarilla)

Instalación apropiada de Último T
(Numero 40 PVC tuberia, abajo a 12 "del fondo del tanque previene descarga de FOG)

Mantenimiento requerido del interceptor de la grasa:

1. **Limpie o bombee el contenido completo del interceptor en un mínimo de cada 90 días.** Algunas establecimientos necesite limpiar mensual o cada dos meses, para evitar màs que 25% de capacidad del interceptor con los sólidos de la grasa y del alimento Cheque con su transportador de la basura grasa para determinar si su frecuencia necesita ser 30, 60 o 90 días.

2. **Cerciórese de que el contenido completo del interceptor esté bombeado.** No se permite ningún bombeo parcial (capa de la grasa solamente). Contacto su transportador de la basura grasa para cerciorarse de que el contenido completo está bombeado.

3. **Tenga una registra del bombea y limpia del interceptor, en l facilidad para los inspectores**. La registra deben incluir la fecha bombeada, el volumen bombeado y la identificación del transportador de la grasa basura. También, repase su permiso de FOG y guarde el permiso y registra en su facilidad.

4. **Tenga su transportador de la grasa basura terminan un Metro Water Services Grease Interceptor Certification Form cada año y someten (correo) la forma a Metro Water Services.** Corrija cualquier deficiencia en forma de la certificació especialmente el ùltimo que falta T o la deterioración del interceptor.

5. NO descarga de cualesquiera aceites o grasa en los drenes del piso, drenes del fregadero, mop se hunde, las conexiones de la alcantarilla o las rejillas de lluvia. Disponga correctamente de los aceites y la grasa adentro recicla compartimientos o los envases basuras.

6. Repase Best Management Practices (BMPs) en este folleto con todos los empleados, y eduque empleados sobre grasa..

Grease Interceptor Maintenance Guide (English Version, Page 1)

Permitted Grease Interceptor Waste Haulers
(listed alphabetically):

A-1 Septic Pumping	615-444-0833
Atlas Septic Service	615-794-0960
GreaseMaster	615-865-4445
Kennedy Septic Service	931-645-6577
Music City Grease Service	615-399-8400
Nashville Recycling	615-244-5423
Residue Rescue	615-883-2544
Richards Septic Service	615-262-0667
Roberts Plumbing Service	615-822-3596
Septic Maintenance, Inc.	615-776-2090
Sidewinder	615-851-1517

Submit Grease Interceptor Certification Form annually (as per your FOG Permit requires) to:
Metro Water Services
FOG Control Program
1607 County Hospital Road
Nashville, TN 37218

*Contact your grease waste hauler or plumber to complete the Grease Interceptor Certification Form. A copy of the certification form can be found at Metro Water Services website (Section II. Grease Management):
www.nashville.gov/water/environmental_compliance.htm

Best Management Practices (BMPs):
1. Maintain grease interceptor
2. Recycle waste cooking oil. Do NOT pour down sinks or any drains. Do NOT pour into any storm grates or on ground.
3. "Dry wipe" and scrape all pots, pans, and plates into a trash container to remove residual oil, grease and food particles.
4. Use strainers in sink drains and floor drains, and periodically empty contents into trash container.
5. Post "NO GREASE" signs above sinks.
6. Educate & train employees on grease control.
7. If an oil or grease spill occurs, clean up using "dry" oil absorbing material or use ice. Do NOT wash into drains!
8. Food grinder use is discouraged due to build up of solids.

METRO WATER SERVICES

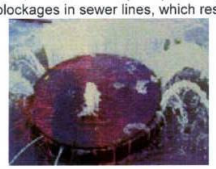
Metropolitan Government of Nashville & Davidson County
Department of Water and Sewerage Services

Grease Interceptor Maintenance Guide


Newly installed grease interceptor

Proper grease interceptor maintenance is necessary to prevent sanitary sewer overflows and sewer line blockages in the Metro Nashville sewer system. Your Fats, Oils & Grease (FOG) Permit requires that your facility's grease interceptor be maintained and have proper equipment.

Fats, Oils & Grease (FOG) discharge from a food service establishment causes blockages in sewer lines, which result in sanitary sewer overflows.

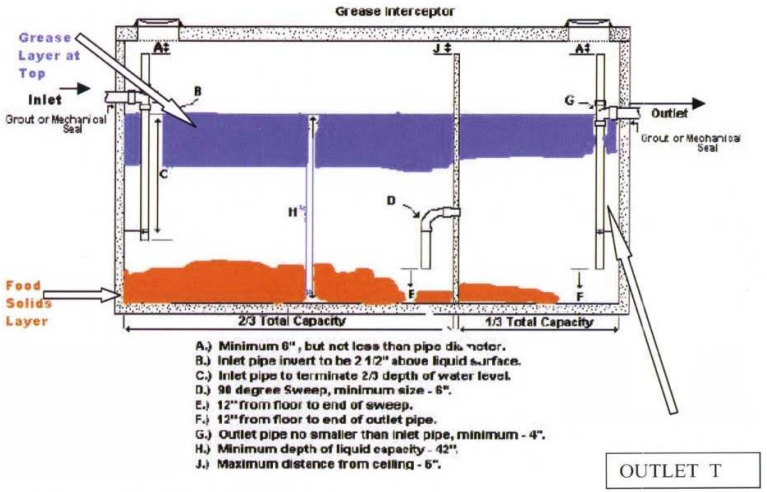


Prevent Sanitary Sewer Overflows & increased sewer maintenance costs, as per Metro Code of Laws.

For more information see Metro Water Services, Environmental Compliance website:
www.nashville.gov/water/environmental_compliance.htm
(see Section II. Grease Management)

Grease Interceptor Maintenance Guide (English Version, Page 2)

Proper Grease Interceptor Maintenance is Necessary to Prevent Sewer Line Interference & Blockage and Sewer Overflows!



OUTLET T

*NOTE: If the outlet T cannot be seen during grease waste hauler pumping and there is no access manhole over outlet T, then an access manhole must be installed.

No Outlet T installed
(Allows FOG to be discharged, which causes sewer blockages)

Proper Outlet T installation
(PVC schedule 40, to within 12" of the tank bottom prevents FOG discharge)

Required Grease Interceptor Maintenance:

1. **Clean or pump complete contents of interceptor at a minimum of every 90 days.** Some facilities may need to clean monthly or every two months to prevent exceeding 25% of capacity of interceptor with grease and food solids. Check with your grease waste hauler to determine if your interceptor pump frequency needs to be 30, 60 or 90 days.

2. **Make sure that complete contents of interceptor are pumped.** No partial pumping (grease layer only) is allowed. Contact your grease waste hauler to make sure complete contents are pumped.

3. **Keep records onsite of interceptor pumping or cleaning for inspectors**. Pump records must include date pumped, volume pumped & grease waste hauler ID info. Also, review your FOG permit and keep the permit at your facility.

4. **Have your grease waste hauler complete a Metro Water Services Grease Interceptor Certification Form each year and submit (mail) the form to Metro Water Services.** Correct any deficiencies noted on certification form, especially missing outlet T or deterioration of the interceptor.

5. Do NOT dump any oils or grease into floor drains, kitchen sink drains, mop sinks, sanitary sewer connections or storm water grates. Properly dispose of oils and grease in recycle bins or containers.

6. Review Best Management Practices (BMPs) in this brochure with all employees.

Local News Article 1

Tennessean – November 19, 2006

MIDSTATE

DAVIDSON AND NEIGHBORING COUNTIES

1 NASHVILLE

Wal-Mart gives foundation $750,000

Wal-Mart donated $750,000 to the Jason Foundation Inc. on Saturday during the University of Tennessee and Vanderbilt football game, supporting the group's mission of providing information, tools and resources for youth suicide prevention.

The donation is the largest grant the foundation has received from a private company.

Lawrence Jackson, the president and chief executive officer of procurement for Wal-Mart, gave the check to Clark Flatt, the president and founder of the Jason Foundation, before the opening kickoff at Vanderbilt Stadium in Nashville. Flatt started the group after his 16-year-old son shot himself in October of 1997.

– JOHN BOM

Volunteers plant trees in three areas

Close to 100 volunteers spent Saturday morning on their knees planting trees in three Nashville neighborhoods.

This year, Sylvan Heights, Historic Germantown and the area around Park Avenue Enhanced Option School in west Nashville benefited from ReLeafing Day, an annual event put on by the Nashville Tree Foundation, Metro Tree Advisory Committee, Metro Parks and Nashville Electric Service.

The 90 trees divided among the three communities are approved for growing under power lines and won't have to be trimmed because of growth. They include dogwoods, redbuds and maples, organizers said.

ReLeafing Day was started by the ReLeaf Nashville project that replaced 6,500 trees lost in the 1998 tornadoes, which destroyed 20,000 trees in the region. It is held each year on the Saturday before Thanksgiving.

– NATALIA MIELCZA

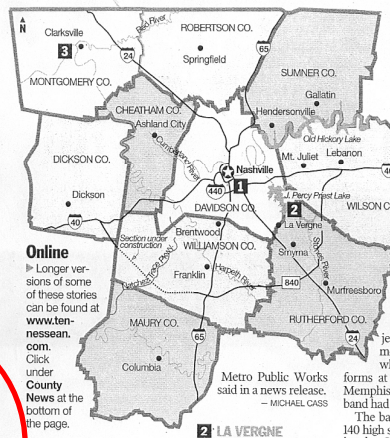
Fats, oil and grease can be recycled

Metro residents can recycle fats, oils and grease and keep them out of drains, sewer lines and the landfill under a new program announced today.

Residents can take those items in sturdy, sealed containers to Metro's Omohundro Convenience Center, 108 Omohundro Place, between 8:30 a.m. and 5 p.m. Tuesday through Saturday.

About 100,000 gallons of fryer and waste cooking oil go into the landfill each year, Metro Water Services and Metro Public Works said in a news release.

– MICHAEL CASS



Online

Longer versions of some of these stories can be found at **www.tennessean.com**. Click under **County News** at the bottom of the page.

2 LA VERGNE

Fundraising to let band buy uniforms

Inflatable playgrounds, carnival games, baked goods and crafts helped the La Vergne High School marching band raise money toward new uniforms Saturday.

The new uniforms will cost about $60,000, and before Saturday's bazaar the band was still $46,000 short.

"I believe we're the fastest-growing band program in Rutherford County, and with that comes all the negatives like not enough equipment and uniforms," said band director Phillip Simpson.

The band is projected to have 150 members next year when the band performs at the Liberty Bowl in Memphis. Two years ago, the band had about 60 students.

The band placed 10th out of 140 high schools in the country in the U.S. Scholastic Band Association. That's quite a feat, considering Simpson's band competed for only half of the season. In addition to the Liberty Bowl, the band was invited to perform at the Sugar and Gator bowls, held in New Orleans and Jac
respectively.
– MEALAND RA
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3 CLARKSVI

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The report
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removing dryw
sleeping area an
cinder block wal
against moisture
GA

ACROSS THE STATE

TENNESSEE

State Democrats pick majority leader

State House Democrats said. "I think it was a broad representation of the caucus that supported me."

As House leader, Odom will be responsi-

caucus vice

District Court or
Judge Ronnie Gr
Greer ordered
Moncier into
summary cont
alleging that he

Local News Article 2

Nashville Business Journal – August 4, 2006

Details: Barkley talks about the 'green' nature of Terrazzo

BY JANEL WATSON LACY
NASHVILLE BUSINESS JOURNAL

Crosland Inc. recently broke ground on Terrazzo, a 109-unit condo tower in The Gulch and Nashville's first LEED-certified residential building.

Leadership in Energy and Environmental Design is a program of the U.S. Green Building Council and a rating system for green buildings.

Bill Barkley, Tennessee president of Crosland and developer of Terrazzo, talked with the *Business Journal* about the concept of green building.

How would you define a "green" building? A "green" building is sustainable. It prioritizes environmental considerations such as energy use, water efficiency, indoor environmental quality, transportation and efficient resource use, along with traditional considerations like style and cost.

How does a structure receive LEED certification?

The U.S. Green Building Council (USGBC) reviews the design and documentation for the project. Buildings that meet LEED criteria are certified at varying levels of compliance – certified, silver, gold, and the highest – platinum.

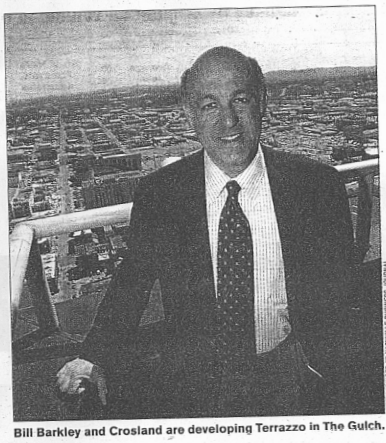
Terrazzo is registered in a new LEED program: CS or core and shell. As a CS project, Terrazzo is targeting silver certification before construction is complete. It promises to be the first pre-certified LEED building of its kind in Tennessee.

What is the difference between "green" and LEED-certified? The LEED program provides third-party verification that a building and its design and construction actually implement sustainable practices, materials and systems.

With LEED certification, Crosland and the community have confirmation that the building truly meets established prerequisites and criterion in six categories determined by the USGBC, all helping to reduce its environmental footprint.

Are there any commercial structures that meet this certification? Terrazzo will be the first LEED-certified residential (multi-family) building once construction – and the certification process – is completed. It's LEED-registered in the CS program and is targeting silver pre-certification during construction.

Hastings Architecture Associates – one of the two architectural firms on the Terrazzo team, the other is Manuel Zeitlin Architects – achieved LEED certification for its office studio in 2004. According to the USGBC site, the Hastings building is the only LEED-certified project in Nashville. However, there are several other LEED-registered projects in design or construction in Nashville.



TODD STRINGER ■ NASHVILLE BUSINESS JOURNAL

Bill Barkley and Crosland are developing Terrazzo in The Gulch.

What are some of its Terrazo's unique features? The building team will use recycled content materials comprising 20 percent of the materials cost and reduce negative environmental effects of transporting materials by purchasing building materials locally wherever possible.

The building core will use 18 percent less energy than one built to meet the national ASHRAE HVAC code, which is more stringent than the code requirements of Davidson County.

Energy Star appliances reduce the homeowner's energy consumption and energy bills. Low-VOC (non toxic) paints, carpets, adhesives and sealants will be installed at Terrazzo, contributing to superior indoor air quality for occupants.

Areas of vegetated roof, combined with white roof materials help to keep the building cool, while reducing the urban heat island effect, and storm water run-off from the site.

A cistern collects storm water and reuses it with a high-efficiency landscape irrigation system. No potable water will be used for Terrazzo's landscape irrigation.

Water-efficient plumbing fixtures including dual-flush toilets will reduce water-use in the building by as much as 30 percent – and this may be the first dual-flush toilet installation of this magnitude in Nashville.

The bamboo floors are rapidly renewable and therefore highly sustainable. And in the kitchen, the wood cabinetry is formaldehyde-free and the Okite countertops have a high recycled content.

jwatson@bizjournals.com ■ 615-846-4276

Local News Article 3

Nashville City Paper – August 8, 2006

THE CITY PAPER

CP City News

Westin developer receptive to green roof for hotel

BY BILL HARLESS
bharless@nashvillecitypaper.com

The would-be developer of a $100 million, 19-story Westin Hotel/condo tower proposed to anchor the east end of the Broadway entertainment strip is retooling its strategy to garner city approval for the project and to avoid a regulation forcing a significant scale-back of the building's Third Avenue side.

Springdale, Ark.-based developer The Barber Group will soon submit an application to the Metro Planning Commission to rezone the land on which the building would sit to a zoning called "Specific Plan" in order to avoid the skyplane regulation.

Meanwhile, the Metro councilman who would carry the rezoning through the legislative body, Mike Jameson, has said he will be more inclined to support the project if Barber offers to incorporate significant environmentally friendly architecture with the project — to which Barber committed last week.

"We will do a green roof, and we will look into doing LEED certification," Brandon Rains, the Barber Group project manager who is heading the Westin project, said in an interview. LEED is a national standard for the building of environmentally-friendly projects, and a green roof is, literally, a garden planted atop a building to prevent stormwater runoff.

Rendering courtesy of F.M. Constantino

Metro Councilman Mike Jameson wants a green roof for the building tentatively called The Crown, proposed for SoBro. A proposed Westin Hotel building could also be built with a green roof.

Crown may go green too

The Westin situation is similar to that of the other proposed tall building for the area, the so-called "Crown" tower, into which local law giant Bass Barry & Sims would move if it is built and that would sit south of the proposed Westin and border Demonbreun Street.

The would-be Crown developer, Barry Real Estate Companies, of Atlanta, filed an application with the Metro Planning Commission last week to also rezone its property to SP, to allow it to avoid a height restriction that is incorporated into its existing zoning. And Jameson is encouraging Barry, as he is Barber, to put a green roof on its building.

Another similarity: Proponents of both projects suggest tight restriction could drive development into Williamson County if Metro rejects the proposals. In a written comment last week, Barber's local attorney, James Weaver of Waller Lansden Dortch & Davis, indirectly referenced Metro Planning Department Director Rick Bernhardt — who thinks the Westin should rise no more than 11 stories — saying the density the Westin provides downtown is in alignment with the New Urbanism planning philosophy Bernhardt generally espouses.

"I would think that any New Urbanist would not have to think very long about whether a 28-story office building and/or a 380-room Westin Hotel should be built in downtown Nashville on asphalt parking lots or on 15 acres of cow pasture in Williamson County," Weaver wrote in an e-mail to *The City Paper*.

Bernhardt responded succinctly on Monday, noting through a spokesperson, "The issue is not intensification but preserving the unique heart and soul of Nashville."

Both Bernhardt and Metro Historical Commission Executive Director Ann Roberts sit on the Metro Development and Housing Agency Design Review Committee, which must approve the project — no matter whether the property is rezoned — and both have expressed opposition to the Westin's height, saying it would damage the historic character of Lower Broadway.

Jameson, for his part, said he still has not taken a position one way or the other on the Westin and said that after he studies the reasons behind the skyplane regulation further, he may, indeed, wind up supporting a scaling back of the building.

But, Jameson said, "… If these projects come forward seriously and substantially advancing environmental issues, then it becomes a tradeoff and I would feel more inclined to support them if they would do that."

"I think it's important for Nashville in general to begin exhibiting environmental sensitivity in its downtown developments, and the flagship buildings should be ones that demonstrate it in an obvious way."

Rains said his firm will soon submit a refined building design to the MDHA Design Review Committee that incorporates a suggestion he received to more clearly demarcate where, at the 13th and 14th floors, the hotel ends and the condominium project begins.

The committee is scheduled to meet Aug. 15 to review the new design. CP

Chattanooga con gives testimony

Local News Article 4

Nashville City Paper – September 27, 2007

4 ■ THURSDAY, SEPT. 27, 2007
CP City News
■ SMART, FAST, FREE & ONLINE

Sewer lawsuit could cause Metro a budget pain

BY BILL HARLESS

Metro may have to dip into its reserves to plug a multimillion gap in the already-tight Metro Water Department budget this year.

As the city continues in its lawsuit against the towns of Brentwood, Millersville and LaVergne demanding they pay their bills for wholesale sewer service in full, the Metro Water Department is facing a budget gap of around $3 million — money the Metro Council budgeted for the department this spring based on the higher wholesale sewer rates.

Dewey Branstetter, an attorney representing the three cities in the case, said they hope to be able to settle the issue in negotiations with new Nashville Mayor Karl Dean but said that if the lawsuit is followed all the way through court, he does not anticipate it ending until after the current fiscal year — when Metro would have to account for the budget gap.

'Litigation could drag on'

"We would like to be able to reach an amicable resolution with Metro," Branstetter said. "We believe that that's appropriate and that there should be a way to resolve the case, because if we don't, the litigation could drag on for many, many months. … I would not anticipate a final resolution before June 30, 2008."

The Metro Council passed an ordinance earlier this year charging the following higher sewer rates — Belle Meade, $1.49 per hundred cubic feet of sewage; Brentwood, $1.15; Millersville, $1.32; and LaVergne, $1.41. The rates would increase annually until 2010, topping out at $1.56, $1.24, $1.40 and $1.48 respectively. Of the cities, Belle Meade is the only city paying its bill in full. In total, the higher rates would net Metro about $3.7 million this fiscal year.

However, both the Metro Water Department and the Metro Finance Department said yesterday they believe Metro will be able to cover the gap if the higher payments are not received by the end of the fiscal year.

"I'm comfortable [with] the ability of Water Services of being able to absorb a $3.7 million shortfall in revenue this year," interim Metro Finance Director Gene Nolan said, noting that Metro has an unencumbered fund balance totaling several tens of millions of dollars it can draw from for various expenses.


EVANS

Water Department spokeswoman Sonia Harvat said the department has a contingency account — totaling 4 percent of the department's roughly $179 million operating budget — it can pull from if necessary.

Metro Councilwoman Emily Evans said Metro could also sell the amount of the unpaid sewer bills as an accounts receivable, if absolutely necessary.

'We're getting more cash flow'

Evans, who follows the Water Department budget closely, said the department — despite the tightness of its budget — is financially healthy this year. She said the fact that water consumption increased as a result of this summer's drought actually helped Metro.

"When we budget our expenses, we budget them for an average year, so the unit cost for a gallon of water — the costs associated with that and how we man our water plants and so forth — is based on an average year. If we're producing more water, we're stretching those costs out over [greater amounts of] water, and so we're getting more cash flow. Now, that doesn't mean we're going to be rolling in more money — at all."

Brentwood, Millersville and LaVergne claim Metro is including costs specific to Davidson County residents in the higher rates it is charging them.

The towns recently moved to dismiss the lawsuit, which is pending in the Davidson County Chancery Court.

Harvat said she is confident that Metro will receive the money it believes the three towns owe it this fiscal year.

"Even though it could have some cash flow implications, we really don't see any long-term issues," Harvat said. "Obviously, the delay of the payments is occurring, but we feel that it is a receivable and it will ultimately be collected. Right now, there are no contingency plans in place [for filling the possible budget gap], and we're not even looking at one. We're confident that it will be collected." CP

Local Stormwater News Article 5 (Page 1)

Tennessean – July 10, 2006

THE TENNESSEAN

LOCAL NEWS B

MONDAY, JULY 10, 2006

Water budget cuts hinder repairs

Metro Council postpones mayor's proposal to end bulk discounts

By LEE ANN O'NEAL
Staff Writer

Jerry Brown has been calling the city since 1997 to get water runoff problems in front of his Goodlettsville home fixed.

After cuts by the mayor and Metro Council to the Water Department's budget, Brown likely will still be waiting this time next year.

The mayor proposed reducing the stormwater operating and capital budget from $19.4 million last year to $15.1 million this year.

The council pared the water agency's budget by an additional $2.19 million during its budget deliberations, money that water officials said would have to come from stormwater work as well.


HAUSSER


SHULMAN

The council essentially postponed a measure Mayor Bill Purcell proposed to bring in that roughly $2.19 million from groups such as Vanderbilt, Opry Mills and others that receive bulk water discounts. Instead of ending the discounts this year, the council postponed it until next July.

"That's so frustrating," said Brown, 65, whose project was slated to be done this summer. "I've just practically gave up. I just can't get anything done."

The ditches on Brown's 5-acre lot have been eroded by rainwater that fills the creek, Brown said as he pointed to an electric guide wire that once was anchored in the ground but now extends into

▷ Please see WATER, 3B

Teens welcome chance to help

Volunteer program an opportunity to lend hand, have fun

By CHELSEA HADAWAY
Staff Writer

Maya Johnson decided it's more fun playing jail when the big kids play.

"One of the big kids runs away and then we go get him. Then the big kids try and get him out again," explained Maya, 5, of their frequent playground game at the

Alderman: No conflict in funding his own agency

He abstained from final budget vote

By ANNE PAINE
Staff Writer

HENDERSONVILLE — A $9,999 request from the Henderson-

Local Stormwater News Article 5 (Page 2)

Tennessean – July 10, 2006

MIDSTATE & TENNESSEE

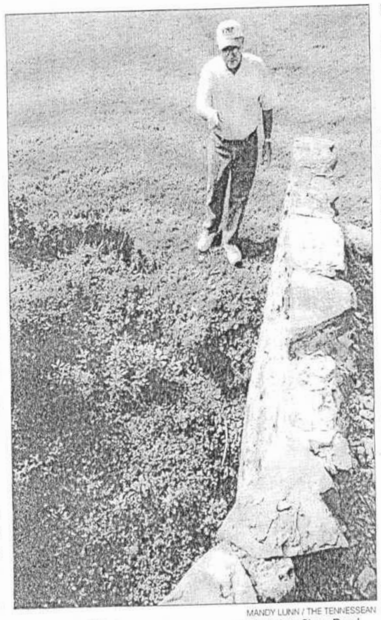
STORMWATER WOES

Cuts in the Water Services budget totaling $6.47 million will force delays of 31 stormwater projects planned for this year.

Delayed capital stormwater projects of $100,000 or more

1	2700 Bronte Ave.	$492,366
2	3138 Larkspur Dr.	$373,120
3	509 Patterson St.	$352,338
4	112 Glenrose Ave.	$233,009
5	249 Lovell St.	$228,836
6	2629 Old Buena Vista Pk.	$199,934
7	1601 Northview Ave.	$150,000
8	50 Visco Ct.	$100,000

THE TENNESSEAN



MANDY LUNN / THE TENNESSEAN

Jerry Brown points to water damage in his front yard on Shaw Road. He has been trying to get Metro to fix the problem since 1997.

Water: Agency has a long to-do list

FROM PAGE 1B

the ditch.

Brown, retired from the Nashville Fire Department, said he's spent $2,000 of his own money to try to fix the problem, including $1,200 to clean the ditch. His efforts haven't stopped the erosion.

Metro Water officials said the budget changes would prevent them from applying for a federal grant that last year added $3 million to their budget because they don't have money to match the grant.

The agency will have $9.6 million for stormwater, enough to work on smaller right-of-way projects, such as ditch and storm-drain cleaning, but not enough to undertake any new construction projects such as work at Brown's home, said Metro Water spokeswoman Sonia Harvat.

Councilwoman Ginger Hausser, one of the sponsors of the bulk discount delay, questioned whether the administration had "to throw people off the stormwater list" to make up the council change to the overall water budget.

"There was more than enough money in Metro Water's reserves to deal with what is essentially a 1 percent reduction in their budget," Hausser said.

Councilman Jim Shulman pointed to $52.9 million listed as cash on hand at the water agency at the end of fiscal year 2005 as a possible source, but Metro Finance Director David Manning said that money was already committed to

MORE ONLINE

▶ View a database of stormwater projects by address and priority.
▶ View a list of the groups with multiple water meters that will continue to get "bulk" discounts on their water rates.
Go to **Tennessean.com** and type the keyword **WATER**.

MAKE YOUR VOICE HEARD

▶ **Mayor Bill Purcell**
Phone: 862-6000
E-mail: mayor@nashville.gov
Mail: Metro City Hall, 225 Polk Ave., Nashville, TN 37203
▶ **Metro Council**
Phone: 862-6780.
E-mail all council members: councilmembers@nashville.gov.
Mail: 225 Polk Ave., Suite 102, Nashville, TN 37203.
Web: www.nashville.gov/council.
▶ You may wish to copy your e-mail to politics@tennessean.com.

about $100,000 a year and they learned of the proposal "about a week before it came up for a vote."

Ellenburg said the university didn't have a clear understanding of what would constitute hardship under the measure.

"We did not think we could rely on that," Ellenburg said.

But Brown said he's frustrated and feels overlooked in favor of companies, universities and the like.

"They always take care of the big guys. The little guys have to suffer," he said. "That doesn't surprise me."

But Shulman, of Green Hills, said the council was trying to avoid what would have been "a pretty hefty increase" without notice. "There are small businesses, there are nonprofits, there are churches" on the bulk-rate list, he said. "There were big entities. There were also individuals on that list." ■

FIXES PRIORITIZED

▶ Stormwater issues are evaluated and scored to determine which projects are fixed first. Factors include whether human health or safety is affected and how often the flooding occurs. For more information: www.mwsstormwatersr.com.

SOURCE: METRO WATER SERVICES

Staff Writer Michael Cass contributed to this report. Lee Ann O'Neal can be reached at 259-8814 or loneal@tennessean.com.

EDUCATION NOTEBOOK

Donelson Christian team wins marketing contest

What: Three area high schools participated in the Boy Scouts of America's Explorers program, designed to give high school students real-life work experience. The program teamed up with Shoney's Restaurants Marketing Department.
Who: Teams from Brentwood High, Ravenwood High and Donelson Christian Academy designed and executed marketing strategies to increase sales at three area Shoney's. The six students on the DCA team won the marketing competition.
When: The competition was January through March, and the award ceremony was May 18.
Where: The DCA team was assigned to the Shoney's on Donelson Pike; Brentwood had the one on Old Hickory in Brentwood; and Ravenwood had the one on Highway 96 in Franklin.
How: The teams were judged on creativity, execution and same-store sales. DCA focused on couponing and conducting Shoney Bear pep rallies at elementary schools. The same-day sales at their Shoney's restaurant increased by 12 percent.

California couple given award from Lipscomb

What: Jerry and Lori Rushford of Malibu, Calif., received Lipscomb University's annual Barnabas award, which is given each year to someone who has provided an encouraging ministry to the Churches of Christ community.
Who: Jerry Rushford is a professor at Pepperdine University and has written several books. Lori is the education program administrator for Pepperdine's Straus Institute for Dispute Resolution.
When: The award was presented Thursday at Lipscomb's Summer Celebration lecture series.
Where: The dinner honoring the Rushfords was held at Lipscomb's Allen Arena.
Why: Jerry Rushford became the director of church relations at Pepperdine University in 1982 and built up the Pepperdine Lectureship into the largest lecture series within the Churches of Christ fellowship.

Nashville native studying apartheid in South Africa

What: Gabby Schonder of Nashville is in Cape Town, South Africa, studying the effects of apartheid education policy there. She is using museums and the University of Cape Town manuscript and archive library.

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Local News Article 6

Building Toward a Sustainable Future

An Evening with WILLIAM McDONOUGH

ARCHITECT ❧ ENVIRONMENTALIST ❧ CAPITALIST
DESIGNER ❧ TEACHER ❧ VISIONARY

SEPTEMBER 26, 2006
Public Lecture ❧ 7:00 p.m.
Benton Chapel, Vanderbilt

Overflow seating is available in Vanderbilt Law School's Flynn Auditorium. Please visit *www.tnfund.org* for links to maps and directions.

Co-hosted by:
Middle Tennessee Regional Environmental Forum • The Tennessee Fund for Sustainability • Vanderbilt University

With generous support from:
Hastings Architecture Associates, LLC • Montgomery Bell Academy

Additional support from:
AIA Middle Tennessee Chapter • AIA Tennessee • AIGA Nashville • The Atticus Trust • Cold Feet Creative • Corrections Corporation of America • Crosland Inc. • Cumberland Region Tomorrow • Cumberland River Compact–Building Outside the Box • Encore Condominiums by Novare Group • Harwell Howard Hyne Gabbert & Manner, P.C. • Hawkins Partners, Inc. • The Land Trust for Tennessee • The Mathews Company • Nashville Civic Design Center • NAIOP–Nashville • Nashville Cultural Arts Project at Neuhoff • Ray Bell Construction • Seigenthaler Public Relations • Smith Seckman Reid, Inc • Southern Alliance for Clean Energy • Stites & Harbison, PLLC for the Environmental Law Section of the Tennessee Bar Association • Struever Bros. Eccles & Rouse, Inc. • Tennessee Department of Environment and Conservation • Tennessee Department of Transportation • Turner Universal • US Green Building Council–Middle Tennessee Chapter • Waller Lansden Dortch & Davis, PLLC • World Wildlife Fund–Southeast Rivers and Streams Program

The Vanderbilt Center for the Study of Religion and Culture's Project on Ecology and Spirituality in America • Vanderbilt Center for Environmental Management Studies

Local News Article 7

Water Works Agreement (Page 1)

bill hudson & associates, inc.

August 29, 2005

Mr. Michael Hunt
Program Manager
Metro Water Services/Stormwater Division
1607 County Hospital Rd.
Nashville, TN 37218

Dear Mr. Hunt:

Bill Hudson & Associates is the sole provider of the WaterWorks! program for the Middle Tennessee State University Center for Environmental Education. As such we are offering local storm water management agencies the chance to participate in the program. This letter serves as our proposal to provide radio and television public service announcements to support your public education and outreach programs.

Our firm will edit the television and radio PSAs produced for WaterWorks! to include a sponsorship reference to the Metro Water Services. The PSAs will then be distributed to radio and television stations serving Metro Nashville via the Non-Commercial Sustaining Announcement Program of the Tennessee Association of Broadcasters. Since these announcements are not paid commercials, neither Bill Hudson & Associates nor the TAB can guarantee that these spots will air at specific times. The scope of services provided is further detailed in the attached "Local Public Education and Outreach Opportunity" document.

Bill Hudson & Associates will provide a report to you listing the radio and television stations that did report airplay times and dates once a quarter after receiving the documents from TAB.

The cost of this service is $500 per quarter plus an annual production fee of $150. Bill Hudson & Associates will invoice you at the end of the first month of each quarter of your participation in this program. Your participation will begin October 1, 2005 through September 30, 2006.

With your payment and participation localized PSAs will be produced for cable and local access television.

If you have any questions please contact Melissa Douso at 615.259.9002.

Sincerely,

Wayne Edwards
Executive Vice President
Bill Hudson & Associates

Please sign and mail one copy to Bill Hudson & Associates, 1701 West End Avenue, Nashville, TN 37203.

Accepted by:

Name

Title/Davidson County, Metro Nashville Date Signed

1701 West End Avenue · Nashville, Tennessee 37203-2600 · www.billhudson.cc · ph: 615.259.9002 · fax: 615.256.0105

Water Works Agreement (Page 2)

WaterWorks!

Local Public Education and Outreach Opportunity

The WaterWorks! Broadcast Campaign

Local stormwater management committees and agencies now have a cost-effective and powerful tool to use in reducing stormwater pollution and in meeting EPA's public education and outreach requirements.

Background

In September 2003, the Center for Environmental Education at Middle Tennessee State University launched the statewide WaterWorks! Campaign. Designed to raise awareness of the role of individual citizens in reducing stormwater pollution, the campaign includes a series of professionally-produced radio and television public service announcements that have aired across the state.

To ensure that radio and television stations would air the announcements, WaterWorks entered into a contract with the Tennessee Association of Broadcasters (TAB) to utilize that organization's Non-Commercial Sustaining Announcement (NCSA) program. Once WaterWorks! provides TAB copies of the television and radio announcements, TAB handles distribution of the spots to their 331 member stations. TAB then provides a monthly report to WaterWorks showing the number of spots aired and their total value. Under terms of the contract, WaterWorks! is guaranteed a four-to-one ratio of advertising value generated to cost. In other words, a $10,000 investment would yield at least $40,000 in advertising value. The minimum cost of the program to WaterWorks! is $2,500 per quarter.

During the first two years, the actual results show that the advertising value of the WaterWorks! campaign was $771,914. The television spots aired more than 2,028 times and radio announcements had 32,749 airings.

Because not all stations report the airing of these announcements, we are confident that the true value of this program is actually much higher.

Starting in FY2006, the WaterWorks campaign will be expanded by a partnership with the Tennessee Department of Environment and Conservation (TDEC). Under this partnership, TDEC will provide matching funds for additional production and placement of radio and television public service announcements.

Some of the new ads produced under this partnership will be devoted solely to communicating the role automotive products play in water pollution from stormwater runoff and steps consumers can take to reduce pollution created from these products. TDEC will also support production of ads which simply include automotive products as sources of stormwater pollution (mixed ads).

Water Works Agreement (Page 3)

The Local Opportunity

Local stormwater agencies and committees can now participate in the campaign.

Broadcast television PSAs close with "A message from Tennessee broadcasters and your local stormwater management agency." These announcements will strongly promote the WaterWorks website, which will include a link to contact information for each participating local agency.

Ads for local cable television systems and local access channels can also be "localized" to include your agency name and telephone number.

Local stormwater agencies are urged to personally deliver the PSAs to their local access channels.

The minimum cost to a local entity would be $500 per quarter to participate in the TAB program, plus a one-time production cost of approximately $150. Local agencies who do not wish to participate in the TAB program, can pay the one time production cost for a localized spot that they can provide their local access channel and cable system.

Under the new TDEC partnership, the local agency investment in the TAB will be leveraged by matching grants from TDEC. For placement of ads which are solely devoted to automotive products, TDEC will match the local investment by 100%. For placement of mixed ads, TDEC will match the local investment by 33%.

Example:
Local agency buy-in at $2,000 per year. During two quarters, the ads are devoted solely to automotive products. During the other two quarters, the "mixed" ads run.

Quarter	Local Buy-in	TDEC Match	Total TAB Buy
1st (auto only)	$500	$500	$1000
2nd (mixed)	$500	$165	$665
3rd (auto only)	$500	$500	$1000
4th (mixed)	$500	$165	$665
Totals	**$2000.00**	**$1330.00**	**$3330.00**

Local Agency Benefits

- Use of high-quality radio and television announcements with local identity.
- High rate of return on dollars invested.
- Identity on the WaterWorks! website.
- Increased public awareness
- Use of media market reports to achieve complete reporting of this part of your public education and outreach programs

Water Works Agreement (Page 4)

How to Participate

The program is being administered by Bill Hudson & Associates, the advertising agency for WaterWorks.

To participate in the program, the local agency should contact Bill Hudson & Associates and provide the participation amount (how much you want to spend per quarter), agency name, telephone number and, if desired, the agency logo. The logo should be provided in either a JPEG or TIFF format. BHA will provide a letter of agreement to the local agency that should be signed and returned to BHA with an authorized purchase order.

BHA will then produce the local version of the announcements and provide copies for the local agency to use on its local cable television system and the local access channel.

Local agencies would then be invoiced by BHA for the cost of the TAB program and production costs.

BHA will provide quarterly reports to the local agencies showing the number of TV and Radio spots aired in their media market area and the value of the airplay.

The contact information at BHA is as follows:

Melissa Douso
Bill Hudson & Associates
1701 West End Avenue
Nashville, TN 37203
615-259-9002
615-256-0105 (fax)
melissa@billhudsonagency.com

Water Works Agreement (Page 5)

Summary by Media

Broadcast Television

All spots will be tagged with "A message from Tennessee broadcasters and your local stormwater management agency." The spots will promote the WaterWorks website that includes a link to contact information for local participating agencies.

NOTE: In major television markets, (Memphis, Jackson, Nashville, Chattanooga, Knoxville and Tri-Cities), we can include contact information for up to four participating local agencies in surrounding counties on the closing screen.

Cable Television

Cable television systems are not included in the TAB program. For the one-time production fee of approximately $150, we will localize the spots and distribute them to cable systems serving participating local agencies.

Local Access Television

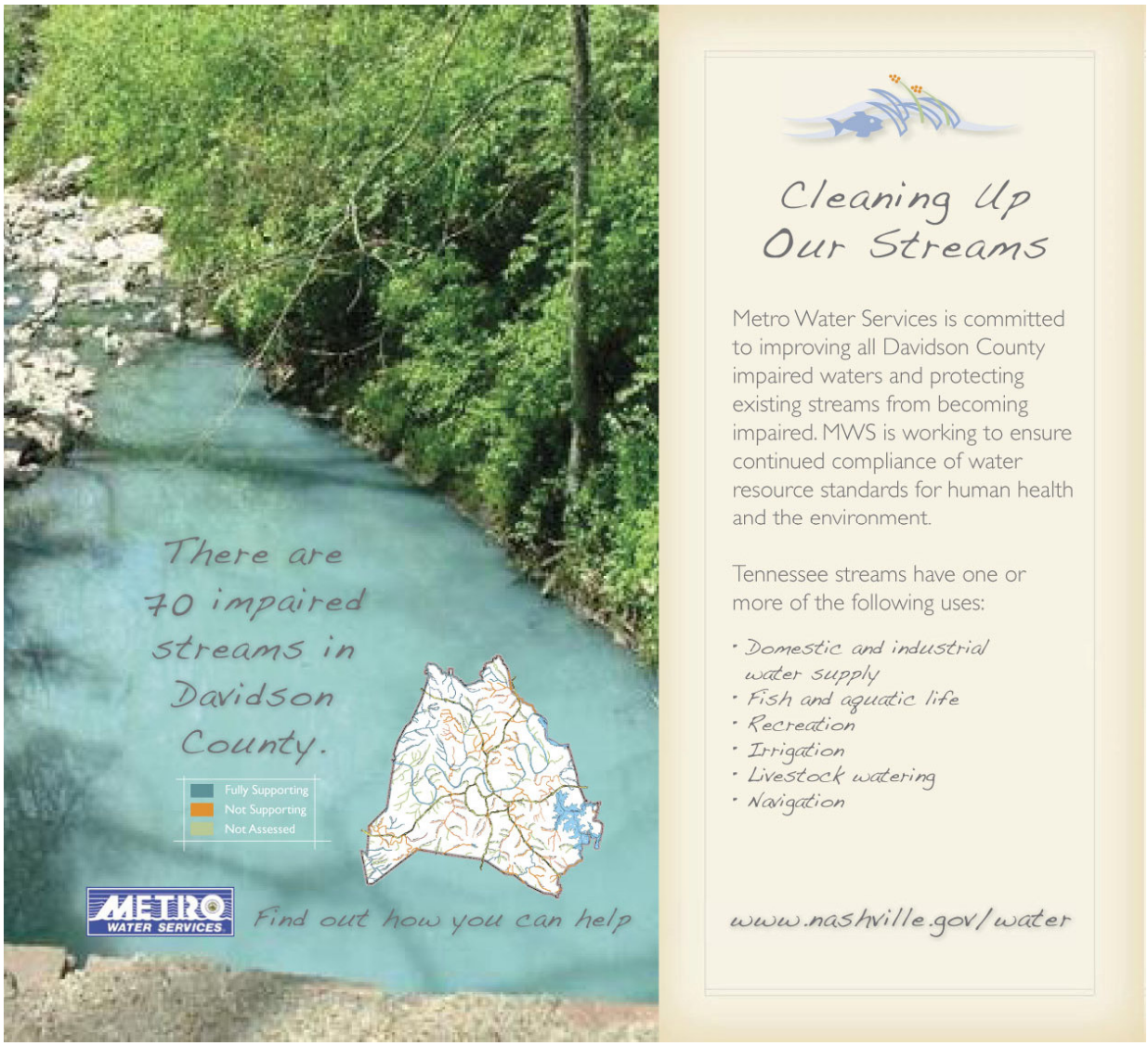
Local agencies should contact their local access cable channel to determine the format required. This information, as well as the name and telephone number of the contact at the local access channel, should be provided to BHA. BHA will then localize the ad and provide it to the local agency for delivery to the local access channel. (If requested, BHA will deliver the spots directly to the local access channel; however experience has shown that run rates are much better when spots are delivered by the local agency.)

Radio

Radio ads will have a voice tag stating "A message from Tennessee broadcasters and your local stormwater agency." BHA will provide the spots to TAB for distribution to local stations.

If requested by a local agency, BHA will provide a CD of the radio ads without a voice tag at the end. The local agency may then take this CD to local radio stations and request that the station add a tag stating, "A message from the (name of agency)." As an alternative, BHA will provide the CD directly to the local radio station (s) and request the addition of the localized.

303(d) Watershed Poster To Be Used at Events



Permit Year 4 Internet Services Report

Stormwater

http://www.nashville.gov/stormwaterCustom Report:

July 1, 2006 12:00:00 AM – June 30, 2007 11:59:59 PM

Overview Dashboard

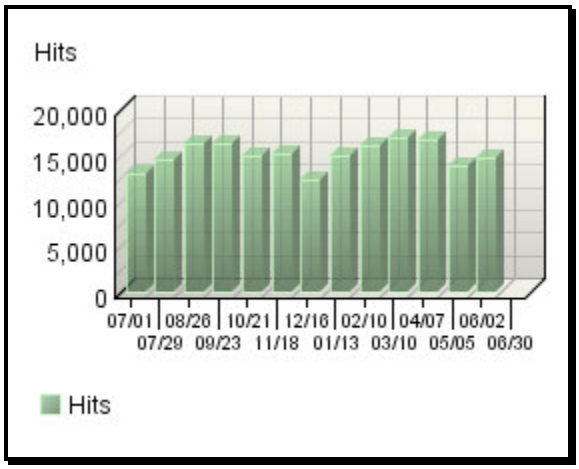
This displays key graphs and tables that provide an overview of the entire report. Click on the title of a graph or table to navigate to the corresponding page.

Visits Trend

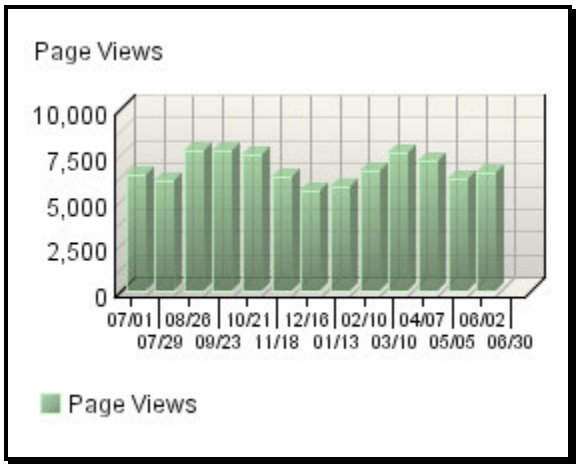
Visitor Summary	
Visitors	10,837
Visitors Who Visited Once	7,761
Visitors Who Visited More Than Once	3,076
Average Visits per Visitor	3.65

Visit Summary	
Visits	39,571
Average per Day	108
Average Visit Duration	00:03:40
Median Visit Duration	00:01:24
International Visits	0.00%
Visits of Unknown Origin	100.00%
Visits from Your Country: United States (US)	0.00%

Hits Trend



Page Views Trend



Hit Summary	
Successful Hits for Entire Site	195,591
Average Hits per Day	535
Home Page Hits	17,852

Page View Summary	
Page Views	86,904
Average per Day	238
Average Page Views per Visit	2.2

This report was generated by WebTrends 7 - Professional, Version: 7.0d, Build: 13917 .
Wednesday, October 4, 2006 1:10:18 PM
Final report conversion by WebTrends Report Exporter, Version 7.0d (build 13916)

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Appendix C

Monitoring Program Data

Wet Weather Sampling Data for Permit Year 4

Incident #	Date	Watershed	Site ID	Background (pre-rain event) or Rain Event	Time	Personnel	Total Time of Event	TSS	TDS	Total Ammonia Nitrogen	TKN	Total Phosphorus	Dissolved Phosphorus	Chromium	Copper	Lead	Nickel	Zinc	Fecal Coliform	BOD_5	COD	Nitrate + Nitrite Nitrogen	Total Nitrogen	*E. Coli*	Cyanide
1	09/12/2006	Richland Creek	Sugartree	Rain Event	9:20	RD/MS	2 hrs	54	150	0.16	0.99	0.6	0.16	0	0	0.0089	0	0.089	22,000	9	41	0.46	1.4	9,000	0
2	09/12/2006	Richland Creek	Sugartree	Background	9:15	RD/MS	2 hrs	85	1400	0.15	1.1	0.78	0.24	0	0.024	0.0097	0	0.087	41,000	12	42	0.74	1.8	> 1600	0
3	09/12/2006	Richland Creek	Sugartree (dup)	Background	9:15	RD/MS	2 hrs	86	170	0.14	0.87	0.84	0.27	0	0.027	0.0072	0	0.095	38,000	13	42	0.72	1.6	> 1600	0
4	10/31/2006	Harpeth River	Harpeth	Rain Event	10:45	MS	1 hr	37	85	0	1.0	0.19	0.86	0	0	0	0	0.12	220	10	39	0.68	1.7	< 20	0
5	10/31/2006	Stones River	Stoners	First Flush	11:05	RD/KM	1 hr	450	380	0.77	26	2.1	0.19	0	0.12	0.029	0	0.91	640,000	49	85	2	28	90,000	0
6	10/31/2006	Stones River	Stoners	Rain Event	11:07	RD/KM	1 hr	140	140	0.35	4.9	0.64	0.10	0	0.04	0.013	0	0.33	18,000	31	82	0.94	5.8	5,000	0
7	10/31/2006	Harpeth River	Harpeth	First Flush	10:45	MS	1 hr	110	120	0	2.1	0.87	0.03	0	0	0	0	0.30	280	11	58	0.69	2.8	20	0.0064
8	6/08/2007	Stones River	Stoners	Rain Event	1:00	PW	2 hrs	120	110	0.45	2.0	0.73	0.62	0	0.064	0.024	0	0.26	100,000	26	150	0.55	2.6	1,300	0
9	6/08/2007	Stones River	Stoners	First Flush	1:00	PW	2 hrs	290	200	0.70	3.8	1.1	084	0.022	0.11	0.062	0.022	0.72	110,000	74	210	0.75	4.6	1,800	0
10	6/08/2007	Harpeth River	Harpeth	Rain Event	12:54	MAS/MB	2 hrs	100	55	0.24	2.1	0.85	0.76	0.057	0.057	0	0	0.18	14,000	7.9	51	0.26	2.4	400	0
11	6/08/2007	Harpeth River	Harpeth	First Flush	12:54	MAS/MB	2 hrs	450	270	0.28	6.6	2.2	1.5	0.01	0.30	0.026	0	1.0	12,000	26	130	1.3	7.9	< 90	0
12	6/19/2007	Richland Creek	Sugartree	First Flush	9:10	PW/MB	3 hrs	190	150	0.24	3.0	1.6	1.5	0	0	0.006	0	0.082	89,000	10	43	1.1	4.1	64,000	0
13	6/19/2007	Richland Creek	Sugartree (dup)	First Flush	9:10	PW/MB	3 hrs	150	160	0.21	2.6	1.6	1.4	0	0	0	0	0.068	90,000	9	48	0.87	3.47	79,000	0
14	6/19/2007	Richland Creek	Sugartree	Rain Event	9:10	PW/MB	3 hrs	97	110	0	0.93	0.66	0.64	0	0.028	0.0057	0	0.075	140,000	6	55	0.56	1.49	26,000	0

Ambient Sampling Data for Permit Year 4

Inc. No.	Watershed	Site ID	Date	Time	Staff	Visual Observations	DO (mg/L)	DO (%)	Cond US	Vel	PH (sU)	Temp	TSS (mg/L)	TDS (mg/L)	BOD5 (mg/L)	COD (mg/L)	Nitrate+Nitrite Nitrogen	Fluoride	Fecal Strep	Fecal Coliform	Tot Phos	Dissolved Phos.	Total Ammonia Nitrogen	TKN	Chromium	Copper	Lead	Nickel	Zinc	Total Nitrogen	E. Coli
417	Richland Creek	Sugartree	8/2/2006	8:45	RD/MS		2.96	36.3	608	0	6.97	23.2	2	413	0		0.8	0.34	3000	1200	1.3	1.3	0.42		0	0	0	0	0.002		400
418	Richland Creek	Sugatree south	8/2/2006	9:00	RD/MS		6.55	79.6	741	0	7.56	24.6	3	594	0		0.4	0.44	2600	2800	1	1	0.29		0	0	0	0	0.001		800
418	Whites Creek	Ewing north	8/9/2006	8:15	RD/MS		6.48	79	490	0	7.32	24.9	15	599	0		0.3	0.32	410	72	1	1	0		0	0	0.002	0.004	0		72
420	Whites Creek	Ewing south	8/9/2006	8:20	RD/MS		6.46	78	619	0	7.39	25	10	561	0		0.3	0.42	620	240	0.9	0.9	0		0	0	0.003	0.003	0		171
421	Whites Creek	Ewing	8/9/2006	8:30	RD/MS		3.87	48.5	342	0	7.3	27.3	6	573	0		0.1	0.37	280	135	0.8	0.8	0		0	0.0005	0.003	0.002	0		45
422	Whites Creek	Ewing	8/9/2006	8:30	RD/MS	Duplicate	0	0	0	0			6	570	0		0.1	0.36	280	54	0.9	0.9	0		0	0	0.004	0.003	0		18
423	Mill Creek	Sevenmile east	8/16/2006	9:00	RD/MS		8.38	95.7	512	0	7.38	21.5	5	508	0		1.3	0.32	2800	2400	1.1	1.1	0.2		0	0	0.004	0.002	0		1500
424	Mill Creek	Sevenmile w.(Brentwood branch)	8/16/2006	9:05	RD/MS		7.74	88.3	496	0	7.43	22.3	6	543	0		1.1	0.45	2500	1500	1.1	1.1	0.2		0	0	0.002	0.004	0		730
425	Mill Creek	Sevenmile	8/16/2006	9:30	RD/MS		8.29	94.4	495	0	7.71	22.2	4	494	0		1.4	0.44	800	1300	1.1	1.1	0.2		0	0	0.002	0	0		450
428		Trip Blank	10/3/2006	7:30	RD/MS		0	0	0	0				30	0		0	0.03	0	0	0.2	0.2	0		0		0	0			0
429	Richland Creek	Sugartree	10/3/2006	8:10	RD/MS		4.26	45.5	671	0	7.56	17.9	0	458	0		1.4	0.33	2700	160	0.9	0.9	0		0	0	0.0006	0.0025	0.0053		160
430	Richland Creek	Sugatree south	10/3/2006	8:30	RD/MS		7.52	80.2	765	0	7.91	18.4	4	569	0		0.5	0.48	990	550	0.7	0.7	0		0	0.0005	0.001	0	0.003		260
431	Whites Creek	Ewing north	10/11/2006	8:15	RD/MS		6.1	65	774	0	8.02	17.9	1	497	0		0.04	0.32	1100	570	0.8	0.8	0		0	0	0	0	0		440
432	Whites Creek	Ewing south	10/11/2006	8:20	RD/MS		6.24	66.5	565	0	7.7	18.4	1	466	0		0.1	0.44	730	1800	0.7	0.7	0		0	0	0	0	0.0022		1500
433	Whites Creek	Ewing	10/11/2006	8:30	RD/MS		5	57.5	756	0	7.42	18.2	5	490	0		0	0.36	2300	1500	0.8	0.8	0		0	0	0	0	0.003		1300
434	Whites Creek	Ewing	10/11/2006	8:30	RD/MS	Duplicate	5	57.5	756	0	7.42	18.2	5	485	0		0.04	0.36	1300	1500	0.6	0.6	0		0	0	0	0	0.0032		1000
435	Mill Creek	Sevenmile east	10/18/2006	8:10	RD/MS		7.42	0	0	0	7.83	17.6	0	408	0		0.7	0.36	1636	910	1.2	1.2	0.05		0	0	0	0.0015	0.0032		820
436	Mill Creek	Sevenmile w.(Brentwood branch)	10/18/2006	8:15	RD/MS		7.27	78	553	0	7.53	17.1	0	374	2		0.5	0.48	9046	1400	1.1	1.1	0.05		0	0	0	0	0.002		1100
437	Mill Creek	Sevenmile	10/18/2006	8:40	RD/MS		7.92		425	0	8.02	17.7	0	348	0		0.8	0.5	1636	570	0.9	0.9	0.04		0	0	0	0	0.0011		520
438	Richland Creek	Sugartree	12/6/2006	9:20	RD/MS		9.75	88	576	0	7.32	9.8	0	404	0	0	1.5	0	750	200	0.7	0.7	0.04	0	0	0	0	0	0	1.5	130
439	Richland Creek	Sugartree	12/6/2006	9:20	RD/MS	Duplicate	10.2	99.8	580	0	7.35	9.8	0	396	0	0	1.5	0	780	200	0.8	0.8	0	0	0	0	0	0	0.002	1.5	120
440	Richland Creek	Sugatree south	12/6/2006	9:35	RD/MS		12.21	103	318	0	7.84	8.2	0	457	0	0	0.3	0	470	630	0.4	0.4	0	0	0	0	0	0	0.009	0.3	550
441	Whites Creek	Ewing north	12/13/2006	8:05	RD/MS		11.7	102	577	0	7.42	9.1	1	376	0	0	0.24	0	1200	750	0.8	0.8	0.1	0	0	0.002	0	0	0.004	0.24	530
442	Whites Creek	Ewing south	12/13/2006	8:10	RD/MS		10.7	95	660	0	7.63	10.4	0	484	0	0	0.29	0	640	330	0.8	0.8	0.12	0	0	0.001	0	0.002	0.003	0.29	130
443	Whites Creek	Ewing	12/13/2006	8:20	RD/MS		11.3	99	617	0	7.76	9.4	1	423	0	0	0.26	0	820	360	0.8	0.8	0.14	0	0	0.003	0	0	0.007	0.26	170
444	Mill Creek	Sevenmile east	12/20/2006	9:30	RD/SH		12.14	107.6	534	0	8.06	10	2	375	0	0	0.83	0	1063	100	0.9	0.9	0	0	0	0.006	0	0	0.007	0.83	80
445	Mill Creek	Sevenmile w.(Brentwood branch)	12/20/2006	9:35	RD/SH		11.4	97.1	637	0	8.17	9.2	1	402	1	0	0.7	0	270	60	1.1	1.1	0	0	0	0.003	0	0	0	0.70	30
446	Mill Creek	Sevenmile	12/20/2006	10:00	RD/SH		12.08	102.6	533	0	8.57	10.1	0	349	2	0	0.74	0	99	2500	0.8	0.8	0.04	0	0	0.001	0	0	0.004	0.74	730
447	Richland Creek	Sugartree	2/7/2007	8:45	RD/MS		10.34	92.9	415	0	7.42	8.6	0	367	2	27	1.58	0.4	81	30	0.8	0.8	0.1	0.84	0	0	0	0	0	2.42	30
448	Richland Creek	Sugatree south	2/7/2007	9:00	RD/MS		13.5	106	656	0	8.31	4.9	0	416	2	24	0.25	0.38	45	20	0.2	0.2	0.08	0	0	0.0008	0	0	0	0.25	10
449	Whites Creek	Ewing north	2/14/2007	8:45	RD/MS		14.38	110.8	573	0	7.85	4.2	5	364	2	28	0.7	0.33	2400	550	0.9	0.9	0.23	0	0	0.001	0.0012	0	0.004	0.70	450
450	Whites Creek	Ewing south	2/14/2007	8:50	RD/MS		14.52	114.8	484	0	7.52	5.1	3	508	0	0	0.64	0.42	620	220	0.8	0.8	0.22	0	0	0.0004	0	0	0.001	0.64	120
451	Whites Creek	Ewing	2/14/2007	9:00	RD/MS		14.85	114.9	610	0	8.07	4.3	6	397	0	31	0.58	0.34	2500	430	0.9	0.9	0.23	0	0	0.0021	0.0009	0	0.002	0.58	360
452		Field blank	2/21/2007	8:30	SW/KM	Blank was from MWS				0			0	1	0	0	0.03	0.03	0	0	0	0	0.15	0	0	0.018	0.0032	0.0021	0.005	0.03	0
453	Mill Creek	Sevenmile w.(Brentwood branch)	2/21/2007	9:30	SW/KM		13.02	118.5	471	0	8.18	10.8	0	404	2	0	0.63	0.41	108	82	0.6	0.6	0.14	0	0	0.001	0.0017	0.0021	0.003	0.63	73
454	Mill Creek	Sevenmile east	2/21/2007	9:40	SW/KM		9.21	84.9	442	0	8.29	11	0	374	0	21	0.8	0.32	144	130	0.7	0.7	0.14	0	0	0.0005	0.0017	0	0	0.80	120
455	Mill Creek	Sevenmile	2/21/2007	10:05	SW/KM		7.43	64.9	407	0	8.48	11.5	0	339	2	32	0.76	0.4	72	50	0.7	0.7	0.14	0	0	0.0005	0.0011	0	0.005	0.76	50
456	Richland Creek	Sugartree	4/4/2007	8:50	RD/PW		7.34	67.3	482	0	7.63	14.8	1	283	2	0	1	0.33	6400	1750	0.8	0.8	0.07	0	0	0	0	0	0.001	1.0	1300
457	Richland Creek	Sugatree south	4/4/2007	9:05	RD/PW		5.73	68.6	311	0	6.78	15.9	5	329	2	0	0.5	0.34	2400	360	0.7	0.7	0.09	1	0	0	0	0.0018	0.002	1.5	310

Inc. No.	Watershed	Site ID	Date	Time	Staff	Visual Observations	DO (mg/L)	DO (%)	Cond US	Vel	PH (sU)	Temp	TSS (mg/L)	TDS (mg/L)	BOD5 (mg/L)	COD (mg/L)	Nitrate+Nitrite Nitrogen	Fluoride	Fecal Strep	Fecal Coliform	Tot Phos	Dissolved Phos.	Total Ammonia Nitrogen	TKN	Chromium	Copper	Lead	Nickel	Zinc	Total Nitrogen	E. Coli
458		Field Blank	4/4/2007	8:15	RD/PW	ASTM Type II distilled water	0	0	0	0			1	0	0	0	0.1	0.05	0	0	0.1	0.1	0.06	0	0	0	0	0	0	0.10	0
459	Whites Creek	Ewing	4/11/2007	9:45	PW		4.51	47	432	0	6.56	13.2	18	359	7	0	0.2	0.3	7000	2800	1.1	1.1	0.12	0.76	0	0.0018	0	0	0.012	0.96	2200
460	Whites Creek	Ewing north	4/11/2007	9:15	PW		4.22	43	348	0	6.58	14.5	85	245	15	22	0.4	0.25	16000	5000	2.4	2.4	0.13	0.92	0	0.0053	0.0025	0	0.051	1.32	4000
460	Whites Creek	Ewing south	4/11/2007	9:30	PW		4.71	49.5	291	0	6.76	13.4	25	279	7	28	0.3	0.24	25000	3700	1.2	1.2	0.2	1.6	0.0009	0.0042	0.0008	0	0.026	1.9	2900
462	Mill Creek	Sevenmile east	4/18/2007	8:55	RD/MS		8.17	80.1	608	0	7.76	13.9	2	357	0	0	0.9	0.3	390	3600	0.8	0.8	0	0	0	0.0019	0.001	0	0.001	0.90	3600
463	Mill Creek	Sevenmile w.(Brentwood branch)	4/18/2007	9:00	RD/MS		8.92	84.4	603	0	7.8	13.5	1	366	0	0	0.9	0.41	350	140	0.9	0.9	0	0	0	0	0	0	0	0.90	130
464	Mill Creek	Sevenmile	4/18/2007	9:20	RD/MS		6.58	68	555	0	8.03	14.2	3	335	0	0	1	0.4	320	230	1	1	0	0	0	0	0	0	0.003	1.0	230
476	Richland Creek	Sugartree	6/6/2007	8:40	MAS/MB/SW		4.67	0	533	0	6.4	18.5	1	364	0	0	1.18	0.38	3636	910	0.9	0.9	0.1	0.96	0	0.0007	0	0	0.11	2.14	640
477	Richland Creek	Sugartree	6/6/2007	8:40	MAS/MB/SW	Duplicate			0	0			0	359	4	0	1.19	0.38	3636	1200	0.9	0.9	0.1	0	0	0.0004	0	0	0.005	1.19	910
478	Richland Creek	Sugatree south	6/6/2007	9:10	MAS/MB/SW		6.65	0	645	0	6.46	19.7	0	452	0	0	53	0.52	3181	3400	0.5	0.5	0.05	0	0	0.0016	0	0	0.002	0.53	2000
479		Trip Blank	6/6/2007	8:20																0											0
480		Field Bland	6/6/2007	8:40																0											0
481	Whites Creek	Ewing	6/13/2007	9:25	RD/MAS/MB		4.61	47	648	0	6.98	20.6	1	432	0	0	0.27	0.47	280	180	0.9	0.9	0.1	0	0	0	0	0	0	0.27	150
482	Whites Creek	Ewing south	6/13/2007	9:15	RD/MAS/MB		7.37	83	597	0	7.89	20.1	2	413	0	0	0.32	0.6	930	300	0.9	0.9	0.1	0	0	0	0	0	0	0.270.32	300
483	Whites Creek	Ewing north	6/13/2007	9:10	RD/MAS/MB		7.78	84	682	0	7.65	19.7	14	466	0	0	0.25	0.35	1200	180	0.9	0.9	0.1	0	0	0	0	0	0.004	1.260.25	180
484	Mill Creek	Sevenmile	6/20/2007	11:30	RD/MAS		8.53	75.1	468	0	6.74	22.7	2	281	2	0	0.69	0.43	2600	1000	1	1	0.2	0.57	0	0.0006	0	0	0.003	1.26	910
485	Mill Creek	Sevenmile w.(Brentwood branch)	6/20/2007	12:20	RD/MAS		7.55	75	570	0	7.51		4	341	2	0	0.62	0.43	1300	2400	1.4	1.4	0.2	0.57	0	0.0011	0	0	0.007	1.19	1500
486	Mill Creek	Sevenmile east	6/20/2007	12:25	RD/MAS		7.4	85.6	663	0	7.58	22.5	1	421	0	0	0.59	0.54	1100	1300	1.1	1.1	0.2	0	0	0.004	0	0	0.002	0.59	640

Appendix D

Third Permit Cycle – Proposed Activities