Metro Nashville/Davidson County
Municipal Separate Storm Sewer Permit
TNS068047

Annual Report

Reporting Period:
July 1, 2012 through June 30, 2013

METRO WATER SERVICES
STORMWATER

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1.0 Introduction

The Metropolitan Government of Nashville Davidson County (Metro) was issued the third cycle of the Municipal Separate Storm Sewer System (MS4) permit effective February 1, 2012. Under this permit, the reporting period for each permit year coincides with Metro's Fiscal Year (FY) (July 1st through June 30th). The reporting period for this report will be referred to as Fiscal Year 2013 (FY13), which represents the period between July 1, 2012 through June 30, 2013.

Each year there are numerous individuals within different Metro Departments that work toward achieving overall MS4 Permit compliance. As a measure to ensure permit compliance within the various facets of Metro Nashville and Davidson County government, the National Pollutant Discharge Elimination System (NPDES) Section was created to oversee all permit compliance activities. The NPDES Section, within Metro Water Services (MWS) Stormwater Division, is responsible for performing specific MS4 permit requirements such as illicit discharge investigations, runoff sampling, construction site inspections, field screening inspections, industrial inspections etc. In addition, the NPDES Section is responsible for coordinating with various other Metro Departments to ensure permit compliance measures are being followed on a Metro-wide basis.

The following table is a list of individuals that contributed to specific permit compliance activities/information during FY13. Any inquiries regarding information represented in this report should be directed to the MWS Stormwater NPDES Section at 1607 County Hospital Road, Nashville, Tennessee, 37218, Phone: 615-880-2420.

Table 1 - Contact List

Name	Agency	Position/Responsibility
Scott Potter	Metro Water Services	Director
John Kennedy	Metro Water Services	Assistant Director
Tom Palko	Metro Water Services	Assistant Director, Stormwater Division
Sonia Harvat	Metro Water Services	Public Information Officer
Julie Berbiglia	Metro Water Services	Public Education Specialist
Ricky Swift	Metro Water Services	Program Manager, Stormwater Remedial Maintenance Section
Roger Lindsey	Metro Water Services	Program Manager, Stormwater Development Review and Permitting
Angela Foster	Metro Water Services	Engineer, Stormwater Development Review and Permitting
Kimberly Hayes	Metro Water Services	Engineer, Stormwater Codes
Jennifer Hill	Metro Water Services	Administration Service Manager, Stormwater
Michael Hunt	Metro Water Services	Program Manager, Stormwater NPDES Section
Bonnye Holt	Metro Water Services	Office Support Representative, Stormwater NPDES Section
Dale Binder	Metro Water Services	Construction Inspection Manager , Stormwater NPDES
Harold Bryant	Metro Water Services	Construction Site Inspector, Stormwater NPDES Section
Shawn Herman	Metro Water Services	Construction Site Inspector, Stormwater NPDES Section
Katherine O'Hara	Metro Water Services	Construction Site Inspector, Stormwater NPDES Section
Denice Johns	Metro Water Services	Construction Site Inspector, Stormwater NPDES Section
Phil Sadd	Metro Water Services	Construction Site Inspector, Stormwater NPDES Section
Dr. Steve Winesett	Metro Water Services	Watershed Manager, Stormwater NPDES Section
Rebecca Dohn	Metro Water Services	Water Quality Inspector, Stormwater NPDES Section
Josh Hayes	Metro Water Services	Water Quality Inspector, Stormwater NPDES Section
Jason Hewitt	Metro Water Services	Water Quality Inspector, Stormwater NPDES Section
Mary Bruce	Metro Water Services	Water Quality Inspector, Stormwater NPDES Section
Anneli TerryNelson	Metro Water Services	Water Quality Inspector, Stormwater NPDES Section
Veronica Mullen	Metro Water Services	Water Quality Inspector, Stormwater NPDES Section
Travis Drury	Metro Water Services	Water Quality Inspector, Stormwater NPDES Section
Mark Macy	Department of Public Works	Assistant Director - Engineering Division
Veronica Frazier	Department of Public Works	Assistant Director - Operations Division
Donna Ryman	Department of Public Works	Solid Waste Division
Clayton Hand	Department of Public Works	Engineer, Solid Waste Division
Mike Ryman	Department of Public Works	Technician Specialist Hazardous Materials Spill Response
Wade Hill	Codes Department	Chief Plans Reviewer
Anita McCaig	Metro Planning Department	Planner
Spencer Hissam	Metro Public Health Department	Septic System Oversight
Steve Crosier	Metro Public Health Department	Restaurant Inspection
Greg Ballard	Metro Water Services	Overflow Abatement Program Manager
Jim Paulus	Metro Water Services	System Services Overflow Response Program Manager
Rebecca Ratz	Metro Parks Department	Parks and Recreation Planning Division
Tim Netsch	Metro Parks Department	Assistant Director
Scott Harris	Mayor's Office of Emergency Management	Spill Response Coordinator
Stacey Wall	Metro Office of Fleet Management	Fleet Services Manager
Hugh Garrison	Metro Water Services	Laboratory Superintendent
Andy Welch/ Butch Bryant	Metro Water Services	Pre-treatment/FOG program
Anna Kuoppamaki	Metro Water Services	GIS Analyst, Stormwater NPDES Section

The following list is a description of commonly used acronyms throughout the document:

BMP	Best Management Practice
CSS	Combined Sewer System
DRP	Development Review & Permitting
EPA	Environmental Protection Agency
EPSC	Erosion Protection and Sediment Control
FOG	Fats, Oils, and Grease
FY13	Fiscal Year 2013
GIS	Geographic Information System software
GP	Grading Permit
HHW	Household Hazardous Waste
LID	Low Impact Development
MEP	Maximum Extent Practicable
MDPW	Metro Department of Public Works
MHD	Metro Health Department
Metro	Metro Nashville, Davidson County
MNPS	Metro Nashville Public Schools
MS4	Municipal Separate Storm Sewer System
MWS	Metro Water Services
NOV	Notice of Violation
NPDES	National Pollutant Discharge Elimination System Section within MWS Stormwater
OEM	Mayor's Office of Emergency Management
PIO	Public Information Officer
ReM	Stormwater Remedial Maintenance Section
RoM	Stormwater Routine Maintenance Section
SSD	System Services Division
SSS	Sanitary Sewer System
SWAC	Stormwater Advisory Committee
SWMP	Stormwater Management Plan
SWO	Stop Work Order
TDEC	Tennessee Department of Environment and Conservation
TMSP	Tennessee Multi Sector Permit for Industrial Stormwater Discharges
USFWS	United States Fish and Wildlife Service
WMD	Waste Management Division

1.1 Objective of the Program

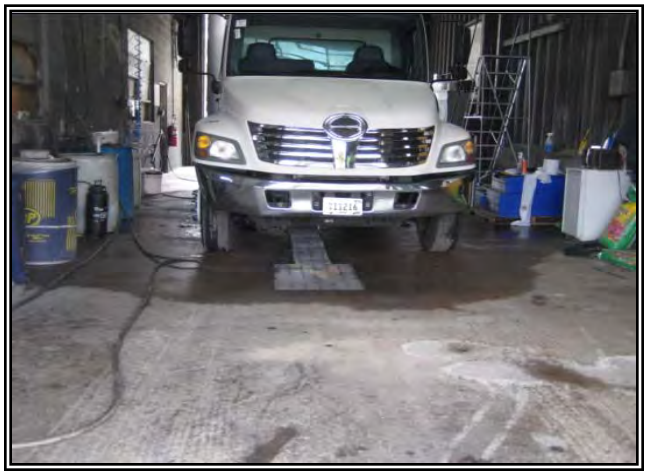
The objective of the Stormwater Management Program is to implement specific pollution prevention programs designed to improve the quality of Metro's water resources to the Maximum Extent Practicable (MEP), particularly as it relates to improving the quality of discharges from Metro MS4. This leads to an overall goal of maintaining MS4 permit compliance, while simultaneously achieving water quality improvements in every Metro stream reach included on the Tennessee Department of Environment and Conservation's (TDEC's) 303(d) list of impaired streams. It is Metro's long term goal to reduce pollutant loadings from the MS4 as much as possible to remove a majority of the streams from the 303(d) list that are indicated as being impaired by MS4 runoff. During the first two MS4 permit cycles, Metro implemented major programs to target the various sources of stormwater pollution (i.e. construction sites, industrial sites, commercial sites, residential sites, etc.). Overall, the implementation of these control programs has worked to significantly reduce and minimize pollutants from entering the MS4 drainage system and the receiving streams. With issuance of the 3rd cycle of the MS4 Permit, Metro has taken the opportunity to evaluate and make necessary modifications to further improve the program's effectiveness.

1.2 Major Findings

Each year there are fewer and fewer major discoveries of pollution to the MS4 drainage, which can be largely contributed to the long term implementation of the core pollution prevention programs described further in this document. Some of the more notable findings impacting water quality of the MS4 and Metro streams during FY13 are described in the following paragraphs:

1.2.1 Illicit Cross Connection of a Commercial Wash Bay to the Storm Sewer

While performing routine field screening activities, an MWS NPDES inspector discovered a suspicious discharge into Browns Creek that exhibited a murky color and the presence of oils and detergents. Upon performing field tests and source tracking of the flow, NPDES was able to trace the discharge back to an unknown cross-connection of an internal commercial wash bay to the outside storm drain. The wash bay had apparently been routed to an oil and water separator, which was erroneously plumbed to the storm sewer instead of the sanitary sewer. The drain was found to be a significant source of pollutants to Browns Creek as it received wash water from a large truck leasing company. NPDES proceeded with enforcement actions, requiring the facility to correct the cross-connection issue. This discharge was ultimately eliminated, representing a drastic reduction in the amount of pollutants from entering Browns Creek, which is listed on the 303(d) list as being impaired for, among other things, oil and grease.



1.2.2 Broken Sanitary Sewer Service Lateral Discharging to the MS4

While investigating a newly-discovered old storm line for inclusion into Metro's Geographic Informational System (GIS) database of stormwater infrastructure, NPDES staff discovered a suspicious dry-weather flow within the storm line. The flow was analyzed to determine if it was natural groundwater or an unpermitted non-stormwater discharge to the MS4. The sample revealed elevated levels of *E. coli* bacteria, which typically indicates of the presence of sewage material. Based on the findings, MWS contracted crews to perform a Close-Circuit Televise (CCTV) inspection of the storm line. As a result, a broken sanitary sewer service lateral was found within the large, old storm drain. NPDES required the private facility responsible for the service lateral to make the necessary repairs to eliminate the input of a sanitary sewer discharge to Browns Creek.

1.2.3 Construction Illicit

Upon performing a routine wet weather inspection of a grading permit site, a construction inspector found a site with inadequate Erosion Prevention and Sediment Controls (EPSC) , resulting in a significant amount of sediment loss during a rain event. The sediment runoff, as can be seen in the pictures below, bypassed the sediment pond, which would have aided treatment the runoff, causing the discharge of large amounts of sediment into the MS4. An NOV with an accompanying $1,000 administrative penalty was issued to the site for the lost sediment and failed controls. The site was required to correct all the deficient controls to prevent future discharges from occurring.

1.2.4 Eliminating a Human Source of Bacteria into a 303(d)-Listed Stream

In previous permit years, the MWS Stormwater NPDES Watershed Group was able to identify, through Polymerase Chain Reaction (PCR) analysis, a small tributary to Richland Creek (Bosley Springs Branch) that contained unusually high levels of bacteria associated with human hosts (HuBac). Bosley Springs Branch is listed on the state of Tennessee's 303(d) list as being impaired by pathogens. The Watershed Group coordinated with an active construction site to discover and repair a broken sanitary sewer service lateral that was causing human sewage to seep into Bosley Springs Branch. After the site made the necessary repairs to eliminate the sewage discharge, the Watershed Group continued to sample for several years, including FY13. As a result of the continuous sampling/monitoring, the Watershed Group was able to determine that the bacteria counts and human host signatures have significantly dropped. Based on these findings, MWS will continue to sample during FY14 to calculate geomeans and, based on results, may formally petition the EPA and TDEC to remove Bosley Springs Branch from the 2014 303(d) list of pathogen-impaired streams.

1.3 Major Stormwater Management Program Accomplishments and Highlights

1.3.1 MWS Stormwater Division:

The MWS Stormwater Division has continued to facilitate major accomplishments in development of the overall Stormwater Management Program. Particular accomplishments performed in recent years are listed below:

In FY13, a major accomplishment included development of the Metro Nashville MS4 StormWater Management Plan (SWMP). The SWMP, as required by the new MS4 permit, is a formal document that provides a comprehensive narrative description of Metro Nashville's overall Stormwater Management Program. The SWMP (Attached in Section 4 of this document) describes Metro's methods of achieving each MS4 permit required activity. The SWMP is an internal program document that will be reviewed each year to determine if improvements or changes need to be made. Updated versions of the SWMP will be included in subsequent Annual Report submittals.

In FY13, MWS NPDES finalized the Public Involvement/Education (PIE) plan and creation of the database to track individual education activities. The new PIE plan designates 18 different "hot areas" in which more targeted/individualized public education efforts will be pursued. The "hot areas" were chosen based on 303(d) listing status and concentrated land uses that are likely contributing high loadings of the pollutants of concern. For example, medium to high density residential areas were chosen that drained to streams listed on TDEC's 303(d) list as being impaired for nutrients. An array of public education methods will be used in each "hot area" as a non-structural BMP designed to promote good stewardship and improved runoff quality. The new PIE database will allow NPDES to better quantify public educational efforts and to better assess the effectiveness of the efforts.

Over the years, MWS Stormwater's floodplain buyout program has worked to restore floodplain storage and riparian habitat in various watersheds within the county. The MWS Stormwater Division has been participating in the FEMA buyout program for more than 15 years. Since MWS began participating in the home buyout program, Metro has purchased more than 300 floodplain properties in which structures and other impervious surfaces such as driveways have been removed from the floodplain. Over the years, MWS Stormwater has coordinated the plantings of hundreds of native trees and shrubs within many of these floodplain properties. Many of the buyout sites are adjoining parcels within the same floodplain, therefore, resulting in the restoration of large continuous tracks of riparian floodplain. Many of these floodplain properties also provide a recreational value to local neighborhoods as they are now managed and protected by the Metro's Parks Department.

In anticipation of stormwater infiltration requirements within the MS4 permits, Metro Nashville previously procured a consulting firm to compile a new volume (Volume V) of the Stormwater

Management Manual. Volume V, also known as the Low Impact Development (LID) Manual, was finalized during FY12 and has been utilized by various developments during FY13. The LID Manual provides incentives to offer future developments the opportunity to utilize green infrastructure design approaches as an alternative to the traditional 80% total suspended solids (TSS) removal design techniques. The use of green infrastructure will become mandatory in 2016, but until then, MWS Stormwater will continue to offer various incentives to developments if green infrastructure approaches are proposed. Such incentives include a waiver of plan review fees, stormwater user fee reduction, and other credits. MWS Stormwater solicited feedback from stakeholder groups that included the local development community during development of the new manual.


1.3.2 Other Metro Department Activities:

In addition to MWS Stormwater Division Activities, many other Metro Departments perform critical roles in promoting improved stormwater quality runoff throughout Metro Nashville.

Parks Department

Metro's Parks Department has been a key player in improving stormwater runoff and riparian habitat on Metro properties throughout Metro. Below are some the major Parks Department activities that have served to improve the quality of stormwater runoff:

Dog Waste Pick-up On Parks Property – During the reporting year, approximately 288,000 dog waste bags (90% of the bags distributed) were estimated as being used at Metro Parks properties. Based on the amount of dog waste bags distributed, it is estimated that approximately 86,400 pounds (43.2 tons) of dog waste were collected for proper disposal.

Tree Planting Projects – During the reporting period, the Parks Department facilitated the planting of 456 trees. Below are the projects in which trees were planted:

- Boyd Taylor Park (Greenway Trail) 25;
- Centennial Park 15;
- Cleveland Park 25;
- Coleman Park 10;
- England Park 6;
- Fannie Mae Dees Park 20;
- Harpeth Knoll Park 10;
- Hope Gardens 2;
- McFerrin Park 20;
- Shelby Park 12;
- Turner Park 2;
- Sevier Park 10;
- Cohn Adult Learning Center 12;

- St. Bernard Park 6;
- 12 South Park 50;
- Downtown (Street Trees) 20;
- Red Caboose Park 1;
- Harpeth River 200; and
- Richland Park 10.

Tree seedling plantings in conjunction with the Tennessee Department of Forestry:

- Downtown greenway;
- Park Terraces along Browns Creek;
- Lenox Village on Mill Creek;
- Hartman Park on Whites Creek;
- Lockeland Springs Park;
- England Park on Richland Creek; and
- Wimpole Drive Community Garden on Mill Creek.

Other Parks Department Projects – The following Parks Department projects have also helped to protect and improve aquatic habitat throughout Davidson County:

- Acquisition of the 600 acre Lytle Farm on the Stones River;
- Whites Creek Community Garden;
- Completion of Cumberland Park: 4 acres of previously industrial land converted to a water play park with an amphitheater, native plantings, and innovative permanent stormwater treatment practices;
- Conservation and transfer to the Parks Department of approximately 60 acres of property along the Cumberland River, now known as Crooked Branch Park. The area includes a 10 acre wetland mitigation site;
- The Metropolitan Board of Parks and Recreation continued working closely in FY13 with the Friends of Bells Bend Park (FOBBP), TDEC, the Tennessee Department of Transportation (TDOT), the Metro Nashville Airport Authority (MNAA), the Tennessee Wildlife Resources Agency (TWRA), local ornithologists, and others on constructing/enhancing wetlands at Bells Bend Park. Construction and planting took place this fall. A five year monitoring period begins in the fall of 2014.
- Metro Parks Nature Centers have presented educational programming related to storm water management, water quality, riparian buffer zones, etc. to an estimated 750 people through topic-dedicated public programming such as rain garden workshops, eco-friendly hard-scaping workshops, earth day festival exhibit & programming and more. Approximately 1,000 students have experienced similar programming through field trips to the four nature centers, including AP Environmental Science high school students and kindergartners alike. Using an conservative 10% of the total visitation to the four nature centers, an additional estimated 6,000 people have been impacted through our water-related exhibits, literature, signage, and speaking with naturalists and volunteers at the centers. Other ways the nature centers work to reach the public about water quality and management is through an informative website (Facebook and podcasts) though numbers for these are not available. In addition, a rain garden, rain chains with cisterns, and a green roof are permanent features at Shelby Bottoms Nature Center, while pervious pavement is in use at three centers and a pervious pavement demonstration is on display at Beaman Park Nature Center. Over 500 trees have been planted in these parks and 135 acres of open space have been added to Shelby Bottoms, which lies within the floodplain.

Planning Department

Metro Nashville's Planning Department has played a key role in ensuring future development within Metro Nashville is conducted in a stormwater-friendly approach. The Planning Department focuses on sustainable development as described in the Community Character Manual, which encourages sustainable development and preservation in Nashville/Davidson County's fourteen community plans guiding future land use and infrastructure decisions. A foundational principle of the Community Character Manual is the commitment to create sustainable communities through sustainable development. Key strategies include actions to address site location, while avoiding sensitive environmental features. Addressing site location protects water quality by promoting the use of best management practices (BMPs) in stormwater and wastewater management. In addition, the Community Character Manual includes objectives such as encouraging green infrastructure, minimizing and/or recovering floodplain loss, and retaining natural stream buffers.

Nashville's Planning Department focuses on sustainable development as described in the Community Character Manual, which encourages sustainable development and preservation in Nashville/Davidson County's fourteen community plans that guide future land use and infrastructure decisions. A foundational principle of the Community Character Manual is the commitment to create sustainable communities through sustainable development. Key strategies include actions to address each property's unique location and features, while avoiding sensitive environmental features. This benefits the community by protecting water quality, as well as reducing the impact of development on surrounding infrastructure and the community through the use of best practices in stormwater and wastewater management. In addition, the Community Character Manual includes objectives of the EPA and Metro Nashville's Stormwater Management Program, such as encouraging green infrastructure, minimizing and/or recovering floodplain loss, and retaining or re-creating natural stream buffers. The Community Character Manual also includes a section of general principles for Healthy Community Design which highlights the importance of minimizing the impact of development on the natural environment, especially air and water quality, and of integrating open space in developments for preservation and recreation.

During the second half of 2012, the Planning Department updated the Antioch-Priest Lake Community Plan, including stormwater management principles. The Planning Department also continues its collaboration with Metro Parks and Greenways and the Land Trust for Tennessee by identifying properties that would be good additions to Nashville's open space network. This includes properties that are important to preserve for headwater areas, for wildlife habitat, and for water management in flood-prone areas.

During 2013, the Planning Department led the city's update to Nashville's General Plan; the process is referred to as NashvilleNext. Early in the process, the Planning Department worked with area professionals and experts, including Metro departments, to create a series of 18 background reports. Each report provided readers with a summary of national best practices and what Nashville is doing to address each topic. The Planning Department continued its partnership with Metro Water Services and the Stormwater Division to highlight current programs and ideas for the future in the background reports as starting places for community involvement in the NashvilleNext process. Background reports that discussed water quantity and quality, including stormwater management practices, include Natural Resources and Green Space; Adaptation and Sustainability; Health, Livability and the Built Environment; and Public Infrastructure. The NashvilleNext process also brought in nationally-recognized professionals as part of a speaker series to discuss important issues. One speaker in particular, Doug Farr, highlighted the importance of designing places while respecting natural features.

On a daily basis, the Planning Department meets with property owners and development professionals to discuss property ideas and projects. Planning staff discuss the importance of working within the natural features of each site, including features such as waterways, wet weather conveyances, drainage patterns, steep slopes, woodlands, riparian habitat and mature trees. Where appropriate, Planning staff direct property owners and development professionals to continue those discussions with Metro Water Services and the Stormwater Division for additional guidance and ideas.

MWS Engineering Division

The MWS Engineering Division and the Overflow Abatement Program (OAP) overseeing the sanitary sewer systems have worked diligently to minimize the volume of unintentional discharges of sanitary sewer to the MS4 and community waterways. MWS has dramatically increased its involvement on projects to reduce overflows from both the Combined Sewer System (CSS) and the Separate Sewer System (SSS). The following list of projects exemplify MWS' recent commitments to reducing discharges of sanitary waste:

- Whites Creek Wastewater Pumping Station (WWPS) - Construction of a new pumping station to improve reliability and increase pumping capacity was initiated during FY12 at a cost of $19,994,234. Project completion is anticipated during FY14
- Construction was initiated in FY13 for improvements to the Driftwood Equalization Basin. This project will add 3 million gallon (MG) capacity to the existing 5 MG storage facility to further minimize discharges from this CSS system. Project completion is anticipated during FY14 and will cost an estimated $1,747,000.
- Construction was initiated in FY13 for improvements to the Dodson Chapel WWPS and Equalization Basin. This project will add capacity to the pumping station and provide an additional 11 MG of storage to reduce sanitary sewer overflow (SSO) events at this location. Project Completion is anticipated in FY14 and will cost an estimated $13,436,000.
- Design was initiated in FY12 for Phases 2 & 3 at the West Park WWPS and Equalization Basin. This project will provide additional storage capacity at this site to reduce SSO events. Major design changes have delayed the anticipated design completion for this project until FY14.
- Construction was initiated in FY13 for the 2011 Collection System Structural Repairs project. This project includes the correction of multiple collection system defects primarily related to structural deficiencies. Project completion is anticipated during FY14 and will cost an estimated $715,525.
- Construction was initiated in FY13 for the Optimization and Disinfection Improvements at the Whites Creek WWTP. This project will increase the overall plant capacity during wet weather by reducing bottlenecks in unit processes and increase the capacity of the disinfection system while transferring from chlorine gas to UV disinfection. Project completion is anticipated during FY14 and will cost an estimated $5,491,400.
- Design was initiated during FY13 for the Joelton Rehabilitation project, which will reduce inflow and infiltration (I&I) into the collection system by rehabilitation or reconstruction of primarily leaking manholes. Construction for this project is anticipated to begin in FY14.

- Design was initiated in FY 2013 for the Shelby Park Rehabiliation Phase 1 (Virginia Avenue) project, which will reduce I&I into the collection system by rehabilitation of the collection system.
- Design was initiated in FY13 for the Shelby Park Rehabilitation Phase 2 (Norville Avenue) project, which will reduce I&I by rehabilitation of the collection system.
- Design was initiated in FY13 for the Dodson Chapel Pipe project, which will provide additional capacity for flows to the Dodson Chapel Pump Station and Equalization Basins.
- Design was initiated in FY13 for the Neely's Bend Rehabilitation project, which will reduce I&I by rehabilitation of the collection system.
- Design was initiated in FY13 for the Apex Pipe project, which will reduce hydraulic restrictions in the Separated Sewer System upstream of the Apex CSS facility.
- Design was initiated during FY13 for the 2013 Annual Rehabilitation project, which will address structural and I&I issues within the collection system in areas not included in the Corrective Action Plan/Engineering Report (CAP/ER) for the Consent Decree program.
- Design was initiated in FY13 for the Mill Creek Opryland EQ Facility Phase 2. This project will add 19 MG of additional flow equalization to this portion of the collection system to further reduce wet weather related overflows. Construction is anticipated to begin on this project in FY14.

MWS System Services Division

The Metro Water Services System Services Division (SSD) and contractor firms continued to inspect and clean sewers to assess conditions and prevent potential overflows. In FY13 SSD inspected with CCTV 2,400,500 linear feet and cleaned 1,152,300 linear feet of sewer line. SSD began using new acoustic technology to make rapid assessments of potential blockages of sewer line segments. The tool called Sewer Line – Rapid Assessment Tool (SL-RAT) will assist SSD in assessing more sewers to prevent blockages and resulting overflows.

During FY13, SSD continuously reviewed information from CCTV sewer inspection reports that indicated sewer problems with grease or roots. In some instances letters were sent out to notify customers of roots or grease in their service lines or main lines and recommend corrective actions to prevent sewer overflows. SSD is considering ways to further educate the public on specific behaviors that customers can do in their homes to help prevent sewer overflows. SSD has already revised the sewer service line brochure to assist customers in correcting private sewer problems and educate them on how to prevent toilet and drain clogs. MWS has a staff member to oversee school-specific education programs, public education events and development of public education materials. The estimated/reported MWS sewer overflows for FY13 are depicted in Table 7H.5 within Section 3 of this report.

2.0 MS4 Program Annual Report Form Required By TDEC

Tennessee Department of Environment and Conservation
Division of Water Pollution Control
Enforcement and Compliance Section
L&C Annex, 6th Floor, 401 Church Street
Nashville, TN 37243

Municipal Separate Storm Sewer System (MS4) Annual Report

1. MS4 Information

Nashville/Davidson County Municipal Separate Storm Sewer System (No. TNS068047)
Name of MS4

Michael Hunt
Name of Contact Person

615-880-2420
Telephone (including area code)

1607 County Hospital Road
Mailing Address

Nashville	TN	37218
City	**State**	**ZIP code**

What is the current population of your MS4? Approximately 600,000

What is the reporting period for this annual report? The second year of this iteration of permit cycle was from 07/01/12 to 06/30/13. This Annual Report covers Metro Nashville's FY13 activities.

2. Protection of State or Federally Listed Species

A. Do any of the MS4 discharges or discharge-related activities likely jeopardize state or federally listed species ☐ Yes **X** No

B. Please attach the determination of the effect of the MS4 discharges on state or federally listed species per subpart Endangered Species Assessment included in Attachment A.

3. Water Quality Priorities

A. Does your MS4 discharge to waters listed as impaired on your state 303(d) list? **X** Yes ☐ No

B. If yes, identify each impaired water, the impairment(s), whether a TMDL has been approved by EPA for each, and whether the TMDL identifies your MS4 as a source of the impairment. (See below Checklist)

Impaired Water	Impairment	Approved TMDL		MS4 Assigned to WLA	
East Fork Hamilton Creek (TN05130203-539-1000)	Habitat Alteration/Siltation	☐ Yes	X No	☐ Yes	X No
West Fork Hamilton Creek (TN05130203-539-1000)	Habitat Alteration/Siltation	☐ Yes	X No	☐ Yes	X No
Suggs Creek (TN05130203-232-1000)	Habitat Alteration/Siltation	☐ Yes	X No	☐ Yes	X No
McCrory Creek (TN05130203-001-0150)	Habitat Alteration/Siltation, Nutrients	X Yes	☐ No	☐ Yes	X No
McCrory Creek (TN05130203-001-0100)	Pathogens, Habitat Alteration/Siltation, Nutrients	X Yes	☐ No	X Yes	☐ No
Unnamed Trib. to Stoners Creek (TN05130203-035-0400)	Habitat Alteration/Siltation	X Yes	☐ No	X Yes	☐ No
Stoners Creek (TN05130203-035-1000)	Pathogens, Habitat Alteration/Siltation	X Yes	☐ No	X Yes	☐ No
Stones River	Low DO, Odor, Sulfides, Flow Alteration	☐ Yes	X No	☐ Yes	X No
Scotts Creek (TN05130203-035-0100)	Nutrients, Habitat Alteration/Siltation	X Yes	☐ No	☐ Yes	X No
Dry Fork Creek (TN05130203-035-0300)	Habitat Alteration/Siltation	X Yes	☐ No	☐ Yes	X No
West Branch Hurricane Creek (TN05130203-036-0200)	Nutrients, Habitat Alteration/Siltation, Low DO	X Yes	☐ No	X Yes	☐ No
Hurricane Creek (TN05130203-036-0100)	Pathogens, Habitat Alteration/Siltation, Nutrients, Low DO	X Yes	☐ No	X Yes	☐ No
Mill Creek (TN05130202-007-5000)	Habitat Alteration/Siltation, Nutrients, Low DO	☐ Yes	X No	☐ Yes	X No
Holt Creek (TN05130202-007-1100)	Pathogens, Habitat Alteration/Siltation	☐ Yes	X No	☐ Yes	X No
Owl Creek (TN05130202-007-0900)	Habitat Alteration/Siltation, Nutrients	☐ Yes	X No	☐ Yes	X No
Indian Creek (TN05130202-007-0800)	Pathogens, Nutrients	☐ Yes	X No	☐ Yes	X No
Turkey Creek (TN05130202-007-0700)	Habitat Alteration/Siltation	☐ Yes	X No	☐ Yes	X No
Collins Creek (TN05130202-007-0600)	Habitat Alteration/Siltation	☐ Yes	X No	☐ Yes	X No

Whittemore Branch (TN05130202-007-1200)	Habitat Alteration/Siltation	☐ Yes	X No	☐ Yes	X No
Mill Creek (TN05130202-007-3000)	Habitat Alteration/Siltation, Nutrients, Low DO	☐ Yes	X No	☐ Yes	X No
Sorghum Branch (TN05130202-007-1300)	Habitat Alteration/Siltation	☐ Yes	X No	☐ Yes	X No
Cathy Jo (TN05130202-007-1490)	Nutrients, Habitat Alteration/Siltation	☐ Yes	X No	☐ Yes	X No
Shasta Branch (TN05130202-007-1410)	Pathogens	X Yes	☐ No	X Yes	☐ No
Sevenmile Creek (TN05130202-007-1450)	Pathogens/Nutrients	X Yes	☐ No	X Yes	☐ No
Sevenmile Creek (TN05130202-007-1400)	Pathogens, Habitat Alteration/Siltation, Nutrients, Low DO	X Yes	☐ No	X Yes	☐ No
Finley Branch (TN05130202-007-0300)	Pathogens, Habitat Alteration/Siltation	X Yes	☐ No	X Yes	☐ No
Mill Creek (TN05130202-007-0300)	Habitat Alteration/Siltation, Nutrients, Low DO	☐ Yes	X No	☐ Yes	X No
Sims Branch (TN05130202-007-0150)	Habitat Alteration/Siltation, Low DO	☐ Yes	X No	☐ Yes	X No
Sims Branch (TN05130202-007-0100)	Pathogens, Habitat Alteration/Siltation, Nutrients, Low DO	X Yes	☐ No	X Yes	☐ No
Mill Creek (TN05130202-007-0100)	Habitat Alteration/Siltation, Nutrients, Low DO	☐ Yes	X No	☐ Yes	X No
Manskers Creek (TN05130202-220-2000)	Pathogens, Habitat Alteration/Siltation	X Yes	☐ No	X Yes	☐ No
Walkers Creek (TN05130202-220-0200)	Pathogens	X Yes	☐ No	X Yes	☐ No
Lumsley Fork (TN05130202-220-0100)	Pathogens	X Yes	☐ No	X Yes	☐ No
Manskers Creek (TN05130202-220-1000)	Pathogens, Habitat Alteration/Siltation	X Yes	☐ No	X Yes	☐ No
Unnamed Trib. to Walkers Creek (TN05130202-220-1000)	Flow Alteration	☐ Yes	X No	☐ Yes	X No
West Fork Browns Creek (TN05130202-023-0300)	Pathogens/Nutrients	X Yes	☐ No	X Yes	☐ No
Middle Fork Browns Creek (TN05130202-023-0200)	Pathogens, Habitat Alteration/Siltation, Nutrients	X Yes	☐ No	X Yes	☐ No

East Fork Browns Creek (TN05130202-023-0100)	Pathogens, Habitat Alteration/Siltation, Nutrients, Oil & Grease	X Yes	☐ No	X Yes	☐ No
Browns Creek (TN05130202-023-2000)	Pathogens, Habitat Alteration/Siltation, Nutrients, Oil & Grease	X Yes	☐ No	X Yes	☐ No
Browns Creek (TN05130202-023-1000)	Pathogens, Habitat Alteration/Siltation, Nutrients, Oil & Grease	X Yes	☐ No	X Yes	☐ No
Richland Creek (TN05130202-314-3000)	Habitat Alteration/Siltation, Nutrients	☐ Yes	X No	☐ Yes	X No
Vaughns Gap Branch (TN05130202-314-0750)	Pathogens, Habitat Alteration/Siltation	X Yes	☐ No	X Yes	☐ No
Vaughns Gap Branch (TN05130202-314-0700)	Pathogens, Habitat Alteration/Siltation	X Yes	☐ No	X Yes	☐ No
Jocelyn Hollow Branch (TN05130202-314-0800)	Pathogens	X Yes	☐ No	X Yes	☐ No
Richland Creek (TN05130202-314-2000)	Pathogens, Habitat Alteration/Siltation, Nutrients	X Yes	☐ No	X Yes	☐ No
Sugartree Creek (TN05130202-314-0400)	Pathogens, Habitat Alteration/Siltation, Nutrients	X Yes	☐ No	X Yes	☐ No
Bosley Springs Branch (TN05130202-314-0300)	Pathogens, Habitat Alteration/Siltation, Nutrients	X Yes	☐ No	X Yes	☐ No
Richland Creek (TN05130202-314-1000)	Pathogens, Habitat Alteration/Siltation, Nutrients	X Yes	☐ No	X Yes	☐ No
Cooper Creek (TN05130202-209-1000)	Pathogens, Habitat Alteration/Siltation	X Yes	☐ No	X Yes	☐ No
Little Creek (TN05130202-010-0700)	Habitat Alteration/Siltation	☐ Yes	X No	☐ Yes	X No
Eatons Creek (TN05130202-010-0100)	Habitat Alteration/Siltation	☐ Yes	X No	☐ Yes	X No
Ewing Creek (TN05130202-010-0800)	Habitat Alteration/Siltation	☐ Yes	X No	☐ Yes	X No
Drake Branch (TN05130202-010-0200)	Pathogens	X Yes	☐ No	X Yes	☐ No
Whites Creek (TN05130202-010-1000)	Pathogens/Nutrients	X Yes	☐ No	X Yes	☐ No

Gibson Creek (TN05130202-212-1000)	Pathogens, Habitat Alteration/Siltation, Flow Alteration	X Yes	☐ No	X Yes	☐ No
Neelys Branch (TN05130202-212-0100)	Pathogens	X Yes	☐ No	X Yes	☐ No
Dry Creek (TN05130202-027-2000)	Habitat Alteration/Siltation	☐ Yes	X No	☐ Yes	X No
Dry Creek (TN05130202-027-1000)	Pathogens	X Yes	☐ No	X Yes	☐ No
Loves Branch (TN05130202-211-1000)	Habitat Alteration/Siltation	☐ Yes	X No	☐ Yes	X No
Pages Branch (TN05130202-202-1000)	Pathogens	X Yes	☐ No	X Yes	☐ No
Davidson Branch (TN05130202-001T-0700)	Pathogens	X Yes	☐ No	X Yes	☐ No
Unnamed Trib. to Cheatham Reservoir (TN05130202-001T-0600)	Iron, TDS	☐ Yes	X No	☐ Yes	X No
Cheatham Reservoir (TN05130202-001-3000)	Pathogens	☐ Yes	X No	☐ Yes	X No
Otter Creek (TN05130204-021-0100)	Habitat Alteration/Siltation	X Yes	☐ No	X Yes	☐ No
Little Harpeth River (TN05130204-021-0100)	Pathogens, Habitat Alteration/Siltation, Low DO	X Yes	☐ No	☐ Yes	X No
Harpeth River (TN05130204-009-3000)	Nutrients, Low DO	X Yes	☐ No	X Yes	☐ No
Trace Creek (TN05130204-009-0900)	Habitat Alteration/Siltation	X Yes	☐ No	X Yes	☐ No
Flat Creek (TN05130204-009-0400)	Habitat Alteration/Siltation	X Yes	☐ No	X Yes	☐ No
Unnamed Trib. to South Harpeth (TN05130204-010-1400)	Flow Alteration	☐ Yes	X No	☐ Yes	X No
Unnamed Trib. to South Harpeth (TN05130204-010-0200)	Flow Alteration	☐ Yes	X No	☐ Yes	X No
Harpeth River (TN05130204-009-2000)	Nutrients, Low DO	X Yes	☐ No	X Yes	☐ No
Newsom Branch (TN05130204-009-0200)	Habitat Alteration/Siltation	X Yes	☐ No	X Yes	☐ No
Beech Creek (TN05130204-009-1100)	Habitat Alteration/Siltation, Nutrients	X Yes	☐ No	X Yes	☐ No

C. What specific sources of these pollutants of concern are you targeting?

Pathogens (pet waste, sanitary sewer leaks), Siltation (construction sites), Oil & Grease (industries/commercial sites), and Nutrients (pet waste, sanitary sewer leaks, fertilizer application)

D. Do you have discharges to any Exceptional TN Waters (ETWs) or Outstanding National Resource Waters (ONRWs)? A large portion of the county drains to Mill Creek, which is listed as an ETW due to the presence of the federally endangered Nashville Crayfish (*Orconectes shoupi*). A portion of the Harpeth River in Davidson County is listed as a State Scenic Riverway. X Yes ☐ No

E. Are you implementing additional specific provisions to ensure the continued integrity of ETWs or ONRWS located within your jurisdiction? Specific public education activities are planned for certain residential areas that drain to the Harpeth River and commercial/industrial areas that drain to Mill Creek. Nutrient and pathogen reduction education will be focused on that area. The MWS NPDES Stormwater Maintenance Sections and the MWS Sanitary Sewer Division have been trained on limiting in-creek excavation work within the Mill Creek watershed. X Ye s ☐ No ☐ N/A

4. Public Education and Public Participation

A. Is your public education program targeting specific pollutants and sources of those pollutants? X Yes ☐ No

B. If yes, what are the specific causes, sources and/or pollutants addressed by your public education program?

Pathogens (pet waste), Siltation (development sites), Nutrients (residential lawn maintenance & pet waste), and Oil & Grease (Commercial/Industrial Facilities)

C. Note specific successful outcome(s) (NOT tasks, events, publications) fully or partially attributable to your public education program during this reporting period.

During the reporting period, NPDES Section mailed out over 3,500 informational flyers to a residential "hot area" for McCrory Creek, as defined within the PIE plan. McCrory Creek has a TMDL developed for nutrient impairments, therefore, the mail-out was focused on educating homeowners on the impairment status

D. Do you have an advisory committee or other body comprised of the public and other stakeholders that provides regular input on your stormwater program? X Yes ☐ No

E. Provide a summary of all public meetings required by the permit. Metro Nashville has various agencies that perform projects involving public meetings. For example, the MWS Stormwater Remedial Maintenance Section holds meetings for certain large-scale maintenance projects on an as-needed basis. The Metro General Services Department holds various public meetings for large Metro Development activities. The Metro Department of Public Works also has various public meetings. Metro Water Services conducts various public meetings relating to "water/sewer" project prone to draw community interest. MWS Stormwater Division, specifically holds stakeholder meetings with a committee referred to as the Stormwater Advisory Committee (SWAC) with the development/engineering community to specifically discuss stormwater regulations. There were 4 SWAC meetings held in FY13.

5. Codes and Ordinances Review and Update

A. Is a completed copy of the EPA Water Quality Scorecard submitted with this report? A copy of the scorecard was submitted in the FY12 annual report. ☐ Yes X No

B. Include status of implementation of code, ordinance and/or policy revisions associated with permanent stormwater management. MWS Stormwater has already developed a new volume of the Stormwater Management Manual (Volume 5) dedicated to promoting/incentivizing the use of Low Impact Development (LID) techniques for post development stormwater management. Within the first year of implementation, MWS has seen an estimated average of 30-40% of the development and re-development projects to include LID components on the design of stormwater permanent treatment practices. MWS Stormwater will continue to evaluate and coordinate with other Metro Departments to implement measures to reduce barriers to LID techniques.

6. Construction

A. Do you have an ordinance or adopted policies stipulating:

Erosion and sediment control requirements?	X Yes	☐ No
Other construction waste control requirements?	X Yes	☐ No
Requirement to submit construction plans for review?	X Yes	☐ No
MS4 enforcement authority?	X Yes	☐ No
Have you developed written procedures for site plan review and approval?	X Yes	☐ No
Do the written procedures for site plan review and approval include an evaluation of plan completeness and overall BMP effectiveness?	X Yes	☐ No
Have you developed written procedures for managing public input on projects?	☐ Yes	X No
MWS began developing a partnership with the Cumberland River Compact and the Nature Conservancy in FY13 to develop a Davidson County Watershed Stewardship Plan. A large component of the plan will involve stakeholder meetings and a process for Public Involvement/Input to the Stewardship Plan development.	(See Notes)	
Have you developed written procedures for site inspection and enforcement?	X Yes	☐ No
Have all MS4 Inspectors maintained certification under the Tennessee Fundamentals of Erosion Prevention and Sediment Control, Level 1?	X Yes	☐ No
Have all MS4 site plan reviewers maintained certification under the Tennessee Fundamentals of Erosion Prevention and Sediment Control, Level 2?	X Yes	☐ No

B. How many active construction sites disturbing at least one acre were there in your jurisdiction this reporting period? Refer to attached Table 6B.1. There were 138 grading permits issued during FY13 and 133 were completed in FY13. Not all of the Grading Permits were for sites over an acre (requiring a TDEC General Construction Stormwater Permit). All sites that grade over an acre are required to also obtain a grading permit and must have coverage under the State's General Construction Stormwater Permit prior to receiving a Metro Grading Permit.

C. How many of these active sites did you inspect this reporting period? Refer to attached Table 6C.1. MWS NPDES Section performed 5,170 construction related inspections in FY13. The inspections were performed on Grading Permit sites under construction. This includes inspections of smaller construction activities that were under an acre in size, but still required to obtain a Metro grading permit. In addition, MWS Stormwater also provides oversight and guidance to small construction activities with total disturbed area of less than 10,000 square feet (not requiring a standard grading permit). Refer to the attached Table 6C.2 for small construction project oversight numbers.

D. On average, how many times each, or with what frequency, were these sites inspected (e.g., weekly, monthly, etc.)? Monthly MWS Stormwater NPDES adjusted the inspection frequency policy mid-way through the previous permit year to inspect all active construction sites at least once per month.

E. Do you prioritize certain construction sites for more frequent inspections? X Yes ☐ No

If Yes, based on what criteria? All active permit sites are prioritized to receive inspections at least once per month. This meets and exceeds the permit requirement to perform monthly inspections of 303(d) listed siltation-impaired streams.

7. Illicit Discharge Elimination

A. Have you completed a map of all known outfalls and receiving waters of your storm sewer system? X Yes ☐ No

B. Have you completed a map of all known storm drain pipes of storm sewer system? X Yes ☐ No

C. How many outfalls have you identified in your system? Metro has undergone several iterations of mapping of stormwater infrastructure into the Geographic Information System (GIS). Please note that the entire stormwater drainage system was collected for Davidson County over a decade ago. Originally there were over 7,000 outfalls mapped within the GIS system. The criteria used during the original inventory resulted in outfalls being mapped at the intersection of every pipe and channel. This methodology vastly overstated the number of actual MS4 permitted outfalls. During FY13, MWS Stormwater's contractor completed a project to re-delineate the outfall layer (grid by grid) with the focus of verifying "actual" MS4 permitted outfalls. While the focus was mapping MS4-permitted outfalls, MWS NPDES also had the contractor create the following two outfall layers: Sub-MS4 Outfalls – Outfalls within the MS4 system upstream of the dishcharge point to Waters of the State, but usually where two large systems combine; and Private Outfalls – Point at which stormwater from private properties drain to either Waters of the State or MS4. Currently there are 11,848 MS4-Permitted Outfalls, 250 Sub-MS4 Outfalls, and 2,313 Private Outfalls mapped within Metro's GIS database. Please note that in determining the point at which MS4 outfalls drain to Waters of the State, MWS NPDES had to assume the streams GIS layer was an accurate representation of actual streams, even though the coverage is more of an estimate and has not been field verified.

D. How many of these outfalls have been screened for dry weather discharges? In FY13, there were 87 separate stormwater infrastructure points were screened, which accounted for a total of 82 commercial/industrial zoned ¼ mile grids completed. Metro's MS4 permit only requires one outfall located within a ¼ industrial/commercial-zoned grid to be screened for potential illicit discharges. At the conclusion of FY13, there were a total of 1,786 grids left to be screened prior to January 31, 2017.

E. How many of these have been screened more than once? None are required to be screened twice per our new permit, however, a water leak or potential leak is suspected, NPDES initiates an IDDE investigation that is documented within the Cityworks database until the illicit discharge is eliminated.

F. What is your frequency for screening outfalls for illicit discharges? Each ¼ commercial/industrial grid will be screened before the end of Year 5 in the MS4 permit (January 31, 2017).

G. Do you have an ordinance that effectively prohibits illicit discharges? X Yes ☐ No

H. During this reporting period, how many illicit discharges/illegal connections have you discovered (or been reported to you)? During the FY13, there were 3 screening points for suspected water leaks and 6 field screening points for suspected illicit discharges. In addition, MWS NPDES initiated 131 separate water quality investigations initiated during FY13, many of them originating from citizen complaints. Refer to Table 7H.1 for a complete listing of the 131 IDDE investigations initiated during FY13, some of which were initiated as a result of findings during the field screening process. In addition there were 35 spill response investigations and 3 private sewer discharge investigations initiated by NPDES during the reporting period. Refer to Tables 7H.2 and 7H.3 respectively. The Metro Health Department also responds to failing septic systems and issues notices and /or citations requiring failing systems to be abated. During the reporting period, the Health Department issued 19 notifications to property owners for failing septic systems. Refer to Table 7H.4.

I. Of those illicit discharges/illegal connections that have been discovered or reported, how many have been eliminated? All illicit connections found during the reporting period were dealt with swiftly and eliminated.

J. Do you have the authority to recover cost for addressing illicit discharges? ☐ Yes X No

8. Stormwater Management for Municipal Operations

A. Have stormwater pollution prevention plans (or an equivalent plan) been developed for: The NPDES Section developed a comprehensive Stormwater Management Plan included in Attachment B. The SWMP also included site-specific Runoff Management Plans (RMPs) for key municipal Operations and Maintenance (O&M) facilities. RMPs are plans equivalent to SWPPPs.

All municipal parks, ball fields and other recreational facilities X Yes ☐ No

RMPs were developed for O&M facilities such as golf course and park maintenance facilities. RMPs were not developed for every ball field location.

All municipal turf grass/landscape management activities (See Note Above) X Yes ☐ No

All municipal vehicle fueling, operation and maintenance activities X Yes ☐ No

As per the MS4 Permit, RMPs were created for Municipal O&M facilities, some of which include fueling stations. Some fueling sites are stand-alone with no other maintenance operations present.

All municipal maintenance yards All O&M facilities located within the MS4. X Yes ☐ No

All municipal waste handling and disposal areas X Yes ☐ No

SWPPPs were created for the Central Waste Water Treatment Plant and the Dry Creek Wastewater Treatment Plant as they retain a Tennessee Multi-sector permit for Industrial Stormwater runoff. Metro Nashville does not operate any waste transfer facilities or transfer stations, as it contracts those services out.

B. Are stormwater inspections conducted at these facilities? X Yes ☐ No

Each O&M facility where the RMPs were implemented require on-site personnel to perform weekly grounds inspections. MWS NPDES personnel will also perform audit inspections at a frequency yet to be determined.

If Yes, at what frequency are inspections conducted? See above answer

C. Have standard operating procedures or BMPs been developed for all MS4 field activities? (e.g., road repairs, catch basin cleaning, landscape management, etc.) X Yes ☐ No

SOPs have been developed for most of the major O&M field activities. MWS posted all of the RMPs and individual water quality SOPs as well as, a general MS4 educational video to an internal intranet web page for each O&M department to show their key field staff. MWS NPDES will request O&M employee sign-in sheets

from the training sessions to include in the subsequent annual.

D. Do you have a prioritization system for storm sewer system and permanent BMP inspections? (See Attached BMP Inspection/Maintenance Verification Plan included in the appendix of the SWMP – Attachment B.) X Yes ☐ No

E. On average, how frequently are catch basins and other inline treatment systems inspected? Varies

F. On average, how frequently are catch basins and other inline treatment systems cleaned out/maintained? Frequency of cleanings depends on conditions. The MWS Stormwater Routine Maintenance Section has developed a rain route list of common stormwater infrastructure sites that clog with debris, leaves, gravel, and sediment on a frequent basis. Maintenance crews visit and clean out these sites/ perform maintenance prior to many large rain events. Table 8F.1 depicts the number of routine maintenance "service request" activities performed on MS4 stormwater infrastructure during FY13. Please note that each "service request" may include the cleaning out of multiple catch basins. In addition to performing routine maintenance and cleaning of stormwater infrastructure, MWS Stormwater also operates a preventative maintenance program by aggressively sweeping public curb and gutter streets. MWS Stormwater prioritizes certain streets for sweeping activities based on how dirty the streets are. Refer to Table 8F.2 for street sweeping collection numbers in FY13.

G. Have all applicable municipal employees received training, as identified in each of the following permit sections:

3.2.3 - Illicit discharge detection and elimination X Yes ☐ No

If *Yes*, identify the number of municipal employees trained There are approximately 14 MWS NPDES staff members that have the adequate training to respond to and enforce on illicit discharge investigations. Nine employees in particular within the NPDES Section are routinely available to respond to, sample, and follow-up with illicit discharge investigations. Note: NPDES has also worked with various O&M sections to properly identify and report illicit discharges.

3.2.4 - Construction site stormwater runoff control X Yes ☐ No

If *Yes*, identify the number of municipal employees trained At the end of FY13, MWS NPDES hired 4 inspectors to replace a loss of personnel that dates back 3 years. At the time this report was completed, there were 14 NPDES staff members that have adequate training (TDEC Level 1 EPSC Workshop) to respond to and inspect stormwater runoff from construction activities. Six of the employees are dedicated solely to inspecting development sites under construction.

3.2.5 - Permanent stormwater management in new development and redevelopment X Yes ☐ No

If *Yes*, identify the number of municipal employees trained During FY13, there were an average of 6 engineers employed within the Stormwater Development and Review Section that have been through the TDEC Level II Design Principles for Erosion Prevention and Sediment Control for Construction Sites. Four of the engineers are solely dedicated to reviewing plans for grading permit sites.

3.2.6 - Pollution prevention/good housekeeping for municipal operations X Yes ☐ No

If *Yes*, identify the number of municipal employees trained In FY13 MWS NPDES presented to the MWS Stormwater Routine Maintenance Division on the proper techniques on preventing impacts to water quality from maintenance of stormwater infrastructure. All maintenance crews were trained on the new water quality SOPs. The sign-in sheets are attached in Section 4. MWS NPDES will continue to train other Municipal Maintenance staff on the water quality SOPs and include sign-in sheets in subsequent Annual Reports.

9. Permanent Stormwater Controls

A. Do you have an ordinance or other mechanism to require:

Site plan reviews of all new and re-development projects?	X Yes	☐ No
Maintenance of stormwater management controls?	X Yes	☐ No
Retrofitting of existing BMPs with green infrastructure BMPs? During FY12, Metro Nashville put the finishing touches on Volume V of the Stormwater Management Manual. Volume V (also referred to as the LID Manual) provides specifications for development or redevelopment sites to follow in installing "green" stormwater practices and provides an incentive for sites to use the green practices.	X Yes	☐ No

B What is the threshold for new/redevelopment stormwater plan review? (e.g., all projects, projects disturbing greater than one acre, etc.)

Metro actually has more-stringent requirements for development than TDEC's Construction General Permit. All sites grading more than 10,000 square feet must obtain a grading permit. In order to obtain a grading permit, engineered plans must be submitted to the Stormwater Development Review Section for review and approval. All developments increasing the impervious footprint are required to install permanent stormwater treatment devices for water quality and quantity.

C. Have you implemented and enforced performance standards for permanent stormwater controls? X Yes ☐ No

D. Do these performance standards go beyond the requirements found in paragraph and require that pre-development hydrology be met for:

Flow volumes (New LID Manual deals with reductions in flow volumes)	X Yes	☐ No
Peak discharge rates	X Yes	☐ No
Discharge frequency	☐ Yes	X No
Flow duration	☐ Yes	X No

E. Please provide the URL/reference where all permanent stormwater management standards can be found.

https://www.nashville.gov/Water-Services/Developers/Stormwater-Review/Stormwater-Management-Manual.aspx

F. How many development and redevelopment project plans were reviewed for this reporting period? 1,791 plans were submitted to the MWS Development Review Section. This number includes initial grading permit plans, re-submitted plans, as-built final submittals, etc. Refer to attached Table 9F.1 for the total number of plans reviewed by Stormwater Development Review staff in FY13.

G. How many development and redevelopment project plans were approved? 1,411 plans were approved during FY13. This number includes initial grading permit submittals, final as built signoffs, etc. Refer to Table 9F for a complete listing. A better reflection of actual new development projects approved for construction would be the number of grading permits issued. In FY13, there were approximately 138 grading permits issued.

H. How many permanent stormwater management practices/facilities were inspected? 33 inspections by NPDES staff, 152 by outside vendors for compliance with Metro's BMP Maintenance Program (reporting requirements) for a total of 185 inspections. Please note that some of the 152 outside vendor inspections include inspections being performed on Metro facilities.

I. How many were found to have inadequate maintenance? 8 of those inspected by NPDES required maintenance and were notified by NOV, the 152 inspected by outside vendors reported that maintenance was not required or was completed. Note: As reported in Section 11 below, additional NOVs were issued to BMP owners for failure to submit Annual Inspection/Maintenance Reports or for disturbance of an established water quality buffer.

J. Of those, how many were notified and remedied within 30 days? (If window is different than 30 days, please specify) Of the 8 notified by NOV, 4 were remedied within a timeframe of 27,14, 113, and 123 days. The remaining 4 sites are in progress.

K. How many enforcement actions were taken that address inadequate maintenance? All notifications were Notices of Violation (no penalty).

L. Do you use an electronic tool (e.g., GIS, database, spreadsheet) to track post-construction BMPs, inspections and maintenance? The NPDES Section currently uses a Microsoft Access database to track inspections. The database can be linked into GIS. Metro is currently mapping all post-construction stormwater treatment structures as a feature within the GIS database.	X Yes	☐ No
M. Do all municipal departments and/or staff (as relevant) have access to this tracking system?	☐ Yes	X No
N. Has the MS4 developed a program to allow for incentive standards for redeveloped sites?	X Yes	☐ No

O. How many maintenance agreements has the MS4 approved during the reporting period? Approximately 138, which is an assumed number based on the number of grading permits issued during FY13.

10. Industrial and High Risk Runoff

A. Has the MS4 developed and implemented a program to monitor and control pollutants in runoff from the following types of industrial and high risk facilities and activities:

Municipal landfills All municipally operated landfills in Metro have been closed years ago. The Metro Department of Public Works, Division of Solid Waste oversees all closed landfills associated groundwater monitoring.	X Yes	☐ No
Hazardous waste treatment, storage and disposal facilities	X Yes	☐ No
Industries subject to reporting requirements pursuant to SARA Title III section 313	X Yes	☐ No
Industrial facilities that the MS4 determines are contributing a substantial loading of pollutants to the municipal separate storm sewer system	X Yes	☐ No

B. Has the MS4 maintained a database of industrial and high risk facilities and activities in the City which includes the following types of industries: (Specific language within the MS4 permit requires Metro Nashville to monitor and control runoff from the following types of industrial facilities.)

municipal landfills;
hazardous waste treatment, storage and disposal facilities;
industries subject to reporting requirements pursuant to SARA Title III, Section 313; and
industrial and commercial facilities that the permittee determines are contributing a substantial loading of pollutants to the municipal separate storm sewer system.

During the 1st permit year, the NPDES program built a robust industrial inspection database that comprises the above categories of industrial properties. In addition to the above category of industrial sites (Metro is required to inspect), NPDES has also included within the database all of the industrial facilities with active Tennessee

Multi-Sector Permits (TMSPs) for industrial stormwater runoff, all facilities with active Ready Mix Concrete Permits (RMCPs), and all facilities with active individual NPDES permits to discharge process water. The database is a Microsoft Access database that is interactive with GIS. Please note that most TMSP or RMCP do not qualify as industrial facilities subject to SARA Title III, Section 313 reporting requirements.

Those listed in 10 (A) above	X Yes ☐ No
Facilities covered by individual NPDES permits	X Yes ☐ No
Facilities covered under the TMSP	X Yes ☐ No
Facilities regulated by the pretreatment program; and NPDES has an Microsoft Excel spreadsheet list of Pre-treatment Program sites for reference purposes, but the sites are not entered into the Industrial Monitoring Microsoft Access database.	X Yes ☐ No
Facilities defined as industries by the EPA stormwater application rule of November 16, 1990	

C. Has the MS4 updated the database of industrial and high risk facilities and activities at least yearly? X Yes ☐ No

If yes, provide a listing of any additionally identified industrial and high risk facilities and activities which discharge stormwater into the MS4:

Facility/Activity

Refer to the attached Table 10.C for a listing of all the industrial facilities Metro is required to inspect within a 3 year period. As mentioned above, Metro also inventoried other industrial facilities such as TMSP and RMCP facilities in which they are not required to inspect within the 3 year period.

D. Has the MS4 developed and implemented procedures, including an inspector manual and checklist, for routine inspections of industrial and high risk facilities and activities? The MWS NPDES Program has created a Standard Operating Procedure (SOP) for performing inspections of industrial facilities. X Yes ☐ No

E. Is the MS4 performing these inspections at such a rate that all required industries will be inspected at least once every three years? At the end of FY13, Metro was only 17 months into the new permit cycle. As per the MS4 permit, MWS NPDES is required to inspect approximately 47 industrial facilities within a three year period. MWS NPDES inspected 13 industrial facilities druing FY13 and began coordinating an educational workshop that will occur in FY14. After the industrial educational workshop, MWS NPDES will initiate a vigorous inspection schedule that will involve completing industrial inspections on all sites required to be inspected that are listed in Table 10.C. MWS NPDES will also set a goal of inspecting a certain percentage of the TMSP and RMCP, which are considered to be high risk runoff facilities. X Yes ☐ No

F. Provide a listing of inspections perform during this reporting year: During FY13 MWS NPDES inspected 11 industrial facilities. Please note that MWS NPDES also performed follow-up inspections on Industrial facilities in which problems have been noted in the past, which are not represented on this list.

Facility	Date Inspected
Purity Dairies	06/28/13
Harcros Chemicals Inc	06/27/13
Nashville Chemical & Equipment Co Inc	06/27/13
Shrum Auto Salvage	03/21/13
Springs Global Us-Nashville Plant	03/15/13
Green Tree Processing (On-Site Environmental)	03/07/13
Five Star Foods	02/25/13
Metro Ready Mix Concrete, 2nd Ave	02/20/13
Akzo Nobel Coatings Inc.	01/25/13
A. Schulman, Inc.	11/21/12
Rogers Group (Whites Creek Asphalt Plant)	09/11/12

11. Enforcement

A. Identify which of the following types of enforcement actions you used during the reporting period, indicate the number of actions, the minimum measure (e.g., construction, illicit discharge, permanent stormwater control) or note those for which you do not have authority: Please note that Stop Work Orders are included as part of the same Notice of Violation.

Action	Construction	Permanent Stormwater Controls	Illicit Discharge Non-Construction	Authority?
Notice of violation	59	31	13	X Yes ☐ No
Administrative Penalties	$23,547	$300	$1,200	X Yes ☐ No
Stop Work Orders	21	#	#	X Yes ☐ No
Civil penalties	#	#	#	☐ Yes X No
Criminal actions	#	#	#	☐ Yes X No
Administrative orders	#	#	#	X Yes ☐ No
Other: Environmental Court Appearances	2	#		X Yes ☐ No

B. Do you use an electronic tool (e.g., GIS, data base, spreadsheet) to track the locations, inspection results, and enforcement actions in your jurisdiction? X Yes ☐ No

C. What are the 3 most common types of violations documented during this reporting period? Failure to maintain erosion prevention and sediment control measures, illicit discharges from construction and non-construction sites, and grading without applying for or receiving a Metro Grading Permit.

12. Program Resources

A. What was your annual expenditure to implement the requirements of your MS4 NPDES permit and SWMP this past fiscal year? In FY13, the NPDES Section, which oversees various MS4 compliance activities operated under a budget of $1.46 million. The overall MWS Stormwater Division's budget, which includes the NPDES program, development and review engineers, and stormwater maintenance was $13 million. Please note that various other Metro Departments, while not included in this budget analysis, perform activities that contribute to MS4 permit compliance.

B. What is next fiscal year budget for implementing the requirements of your MS4 NPDES permit and SWMP?

The FY14 budget includes $1.51 million dedicated to the Stormwater NPDES Program, while the overall Stormwater Department is operating under a budget of $14.6 million.

C. Do you have an independent financing mechanism for your stormwater program? X Yes ☐ No

D. If so, what is it/are they (e.g., stormwater fees), and what is the annual revenue derived from this mechanism?

Source: Stormwater User Fee; Estimated Amount $14 million

E. How many full time employees does your municipality devote to the stormwater program (specifically for implementing the stormwater program vs. municipal employees with other primary responsibilities that dovetail with stormwater issues)? Currently, there are 73 employees within the overall MWS Stormwater Division. There are 20 vacancies that have been budgeted and will hopefully be filled within FY14, bringing the total number of employees to 93.

F. Do you share program implementation responsibilities with any other entities? ☐ Yes X No

Entity	Activity/Task/Responsibility	Your Oversight/Accountability Mechanism

13. Evaluating/Measuring Progress

A. What indicators do you use to evaluate the overall effectiveness of your Stormwater Management Program, how long have you been tracking them, and at what frequency? Note that these are not measurable goals for individual BMPs or tasks, but large-scale or long-term metrics for the overall program, such as in-stream macroinvertebrate community indices, measures of effective impervious cover in the watershed, indicators of in-stream hydrologic stability, etc?

The NPDES Section's Watershed Group has, within the last few years, been performing detailed sampling for TMDL streams throughout Metro. While long-term trends cannot be extrapolated at this time, the data collection has proven beneficial in identifying segments of streams where pollutants of concern elevated or within loading requirements. Please refer to the attached Table 13A.1 (TMDL Sampling Data) for the complete quarterly sampling results for the FY13 reporting period. Please note that in the previous annual report, TMDL sampling for the several previous years were submitted.

Over the years, the NPDES Program has also looked at other non-analytical data to evaluate the program's effectiveness. Refer to Table 13A.2 (SWMP Quantifiable Statistics). Much of the functions such as IDDE efforts, public education, etc.the NPDES Program performs do not easily translate into quantifiable loading reduction numbers. As an attempt to quantify pollutant loading reduction numbers from various NPDES programs, an NPDES staff member, Jason Hewitt, went back through the CityWorks and other program databases to perform a calculation of estimated loading reductions based on the last 4 plus years. Based on the calculations, it was found that the NPDES Program directly or indirectly contributed to the average estimated reduction of 8,568.14 pounds of general stormwater pollutants such as sediment, metals, etc. and 1,511,414 pounds of sewage-related waste to the MS4 or receiving streams on average each year. The exercise in calculating NPDES Program pollutant removal has also sparked a renewed effort within the program to improve documentation processes to produce more reliable pollutant reduction estimates. Please refer to Table 13A.6 for the pollutant loading reduction estimates directly or indirectly attributed to the NPDES Program.

The NPDES Section performs various monitoring activities as prescribed by the MS4 Permit. The MS4 permit required sampling (i.e. Wet Weather Monitoring, Ambient Sampling, and Benthic Sampling) was changed in the new iteration of the permit. Part of the reasons that TDEC changed the permit-required monitoring plan was so the sample results would be more useful in performing data analyses. Since the new monitoring plan has only been implemented for 2 years, the dataset is incomplete and it will be several years before detailed analysis can be performed on the data. The Ambient Sampling, Wet Weather Sampling, and Benthic Sampling Program data is summarized in Table 13A.3, Table 13A.4, and Table 13A.5 respectively. The NPDES Section's Watershed Group collected a total of approximately 1,157 water quality samples and performed visual stream assessments on approximately 45 miles of 303(d)-listed streams.

Indicator	Began Tracking (year)	Frequency	Number of Locations
E. coli (TMDL Sampling)	2010	5 Dry-weather Samples Each Quarter.	Average 37 sites on a rotating basis

B. Provide a summary of data (e.g., water quality information, performance data, modeling) collected in order to evaluate the performance of permanent stormwater controls installed throughout the system. This evaluation may include a comparison of current and past permanent stormwater control practices. As described above, it is hard to perform any statistical analysis on water quality sampling as sampling locations, methodologies, and frequencies have changed over the 3 permit cycles. Metro Nashville is in the second year of a more-consistent monitoring plan as part of the new MS4 permit and TMDL monitoring requirements. This data will hopefully be useful in performing future analysis on a watershed basis in determining SWMP effectiveness.

In reviewing some of the performance measures over the last 10 years (summarized in Table 13A.2), it becomes obvious to conclude that the overall number of water quality (IDDE) investigations and stormwater-specific enforcements have dramatically reduced the amount of pollutants into the MS4 and receiving streams. We believe this can be contributed to the robust IDDE investigations, public education and outreach and proactive monitoring/screening efforts.

C. What environmental quality trends have you documented over the duration of your stormwater program? (If you have reports or summaries, you can either attach them electronically, or provide the URL to where they may be found on the Web.) Reference the above answer. The NPDES Section has noticed fewer and fewer illicit discharge findings over the years that can be contributed to a robust IDDE program and increased public awareness. In addition, there have been fewer notices of violations issued for construction site infractions. Middle Tennessee contractors have become acutely aware of Metro's construction site requirements and enforcement program and, therefore, have increasingly complied with our regulations.

14. Stormwater Management Program Update

A. Describe any changes to the MS4 program, per Section 3.5 of the permit, during the reporting period including but not limited to:

Changes adding (but not subtracting or replacing) components, controls or other requirements. During the first permit year, MWS NPDES submitted to and received approval from TDEC to change wet weather sampling outfall locations and ambient/benthic sampling creek rotation schedules. Correspondence on the change in permit monitoring locations is contained within the SWMP (Attachment B).

Changes to replace an ineffective or unfeasible BMP. There are no changes to report during FY13.

Information (e.g., additional acreage, outfalls, BMPs) on program area expansion based on annexation or newly urbanized areas. Just prior to issuance of this cycle of the MS4 permit, the former satellite city of Lakewood voted to dissolve and become part of Metro Nashville and Davidson County. Upon that transition becoming official, the NPDES program field screened the commercial areas for potential illicit discharge connections and collected all of the stormwater infrastructure into the GIS database, and began performing maintenance services for the newly annexed area. In addition, during FY13, NPDES performed a re-delineation of MS4 Permitted outfalls. Please reference Section 7 on Page 19.

Changes to the program as required by the division. No changes occurred during FY13.

15. Certification

This report must be signed by a ranking elected official or by a duly authorized representative of that person. See signatory requirements in subpart of the permit.

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

Michael Hunt Sys Srv Mgr
Printed Name and Title

Signature

11/25/13
Date

3.0 Required MS4 Reporting Tables

List of Tables and Other Materials

Table 6B.1 – Grading Permit Projects Initiated/Completed within FY13

Year	Preconstruction Meetings	Grading Permits Issued	Permits Completed
Total FY03	257	198	102
Total FY04	305	270	159
Total FY05	284	271	220
Total FY06	296	252	196
Total FY07	251	239	188
Total FY08	222	165	205
Total FY09	148	109	238
Total FY10	146	121	117
Total FY11	130	135	131
Total FY12	152	142	153
Total FY13	167	138	133
Total	**2,358**	**2,040**	**1,842**

Table 6C.1 – Permitted Construction Site Inspections in FY13

Inspection Type	Initial EPSC	Bond Reduction	Bond Release	Temp U&O	Final U&O	Routine General Permit	Initial Complaint	Follow-up Complaint	Total
Year Previous to Cycle II PY1	198	61	28	46	113	2,235	0	0	2,681
FY04	270	80	44	53	122	4,139	0	0	4,708
FY05	271	23	59	56	177	4,923	0	0	5,509
FY06	273	100	85	85	244	4,799	69	66	5,721
FY07	257	112	143	90	157	5,349	190	254	6,552
FY08	176	132	141	107	174	4,581	382	634	6,327
FY09	124	195	224	104	172	4,480	230	631	6,160
FY10	189	147	127	151	160	3,910	163	232	5,079
FY11	188	149	87	115	161	4,242	136	379	5,457
FY12	197	148	108	135	183	4,482	135	455	5,843
FY13	192	100	96	98	153	4,176	113	242	5,170
Total	**2,335**	**1,247**	**1,142**	**1,040**	**1,816**	**47,316**	**1,418**	**2,893**	**59,207**

Table 6C.2 – Small Construction Site Oversight in FY13

Submitted checklists for permit signoffs	371
Checklists distributed upon demo permit (with intent to possibly build/re-build)	53
Single Family Residences under Grading Permit tier II (includes plans approved, but permits not yet issued)	16
Follow up site visits on Single Family Construction	520
Building permits signed off for new construction	408

Note: Generally, the construction of single family homes distrurbing more than 10,000 square feet is required to obtain a Grading Permit. Instead of requiring Single Family units to obtain a Grading Permit, MWS Stormwater provides oversight by requiring

Table 7H.1 – Illicit Discharge Investigations Initiated During FY13

Service Request #	Date Initiated	Dispatched To	Problem Address
381010	7/6/2012 12:09	HAYES, JOSH	308 MAYFIELD STATION
381674	7/11/2012 5:59	OHARA, KATHERINE	1500 RIVERSIDE DRIVE
382578	7/16/2012 14:52	ERICKSON, SONYA	2106 B 8TH AVE S
382835	7/17/2012 13:57	ERICKSON, SONYA	5502 OLD HICKORY BLVD
383867	7/23/2012 12:50	DOHN, REBECCA	601 OLD HICKORY BLVD 63
384022	7/24/2012 8:43	ERICKSON, SONYA	700 MAIN ST
384078	7/24/2012 10:42	DOHN, REBECCA	3634 CLARKSVILLE HWY
384161	7/24/2012 13:24	ERICKSON, SONYA	6088 HAGARS GROVE PASS
384444	7/25/2012 15:07	ERICKSON, SONYA	470 CRAIGHEAD ST
384450	7/25/2012 15:16	ERICKSON, SONYA	135 BONNABROOK
384795	7/27/2012 10:12	HAYES, JOSH	3310 AMBROSE
384880	7/27/2012 13:43	ERICKSON, SONYA	905 DUE WEST AVE
384915	7/27/2012 14:59	ERICKSON, SONYA	5101 RAYWOOD LANE
385309	7/31/2012 9:10	ERICKSON, SONYA	3404 MEADOW LAKE TERRACE
385693	8/1/2012 15:15	ERICKSON, SONYA	5215 CENTENNIAL BLVD
385699	8/1/2012 15:22	ERICKSON, SONYA	5205 HARDING PL
385885	8/2/2012 12:29	ERICKSON, SONYA	700 2ND AVE S
385901	8/2/2012 12:58	ERICKSON, SONYA	3800 PLANTATION DR
385903	8/2/2012 13:03	ERICKSON, SONYA	3404 MEADOW LAKE TERR
385925	8/2/2012 13:40	ERICKSON, SONYA	185 SPENCE LN
386756	8/7/2012 14:38	ERICKSON, SONYA	4205 VALLEY GROVE DR
387205	8/9/2012 11:50	ERICKSON, SONYA	3117 COUNTRY WAY RD
388491	8/16/2012 9:13	ERICKSON, SONYA	22 MIDDLETON ST
388845	8/17/2012 12:50	ERICKSON, SONYA	2706 WESTWOOD
388871	8/17/2012 14:02	HAYES, JOSH	336 WOODYCREST AVE
389270	8/21/2012 8:22	ERICKSON, SONYA	2284 MURFREESBORO PK
389288	8/21/2012 9:02	ERICKSON, SONYA	3532 MURFREESBORO PK
389331	8/21/2012 10:48	ERICKSON, SONYA	1529 MCGAVOCK PK
389720	8/22/2012 13:49	ERICKSON, SONYA	711 GALLATIN
391747	9/4/2012 11:09	ERICKSON, SONYA	3605 HOBBS RD
391865	9/4/2012 15:07	ERICKSON, SONYA	1716 CHARLOTTE AVENUE
392441	9/6/2012 15:16	DOHN, REBECCA	817 BARRINGTON PLACE DR
392939	9/10/2012 14:05	ERICKSON, SONYA	285 COMROE ST
394902	9/20/2012 12:07	ERICKSON, SONYA	3530 DICKERSON PIKE
395240	9/21/2012 15:04	ERICKSON, SONYA	408 BROADWAY
395295	9/24/2012 9:13	ERICKSON, SONYA	3037 DICKERSON
395402	9/24/2012 12:51	ERICKSON, SONYA	812 SANDBURG PL
395434	9/24/2012 14:16	ERICKSON, SONYA	1346 DALEMERE DR
395789	9/26/2012 9:16	ERICKSON, SONYA	10 INTERSTATE DR
395802	9/26/2012 9:41	ERICKSON, SONYA	2409 DEVON VALLEY DR
396095	9/27/2012 10:19	ERICKSON, SONYA	2521 GALLATIN AVE
396580	10/1/2012 9:27	ERICKSON, SONYA	700 2ND AVE S
396669	10/1/2012 11:49	HUNT, MICHAEL	GALLATIN PIKE N & RIVERGATE PARKWAY
398932	10/12/2012 13:13	ERICKSON, SONYA	5272 VILLAGE WAY
400024	10/19/2012 8:28	ERICKSON, SONYA	907 APPLE VALLEY RD
400293	10/22/2012 9:37	ERICKSON, SONYA	2211 11TH AVE S
400410	10/22/2012 13:25	ERICKSON, SONYA	5509 EULALA DR
401398	10/29/2012 9:37	ERICKSON, SONYA	3616 CENTRAL PIKE
402026	10/31/2012 12:57	ERICKSON, SONYA	DONELSON PK & ELM HILL PIKE
402509	11/2/2012 13:23	ERICKSON, SONYA	11 BURTON HILLS BLVD
402812	11/5/2012 12:20	HAYES, KIMBERLY	2707 Valleybrook pl
403068	11/6/2012 13:34	ERICKSON, SONYA	6042 PANAMA DRIVE
404945	11/19/2012 11:57	ERICKSON, SONYA	701 LAFAYETTE ST
405053	11/20/2012 7:29	SAAD, PHIL	8459 OLD CHARLOTTE PIKE

Table 7H.1 – Illicit Discharge Investigations Initiated During FY13 (Continued)

Service Request #	Date Initiated	Dispatched To	Problem Address
405058	11/20/2012 8:05	ERICKSON, SONYA	15116 OLD HICKORY BLVD
406432	11/30/2012 14:00	HAYES, JOSH	1830 AIRLANE DRIVE
407561	12/7/2012 7:34	HAYES, JOSH	900 44TH AVE
407743	12/7/2012 13:39	ERICKSON, SONYA	660 LAFAYETTE ST
407752	12/7/2012 13:53	HUNT, MICHAEL	110 1ST AVE S
409330	12/19/2012 7:35	HAYES, JOSH	2401 JEFFERSON ST
409516	12/20/2012 9:03	HUNT, MICHAEL	2 FAIRFIELD AVE
409805	12/26/2012 9:23	HUNT, MICHAEL	3041 SIDCO DR
410252	12/28/2012 7:40	ERICKSON, SONYA	5753 NOLENSVILLE
410350	12/28/2012 13:26	WINESETT, STEVE	5505 URBANDALE DR
410736	1/2/2013 14:28	HAYES, JOSH	820 LEALAND COURT
410926	1/3/2013 12:10	DOHN, REBECCA	681 PARK ST
410930	1/3/2013 12:15	DOHN, REBECCA	1001 LAWRENCE AVE
411408	1/7/2013 11:07	ERICKSON, SONYA	5511 CHARLOTTE PK
411940	1/9/2013 10:47	ERICKSON, SONYA	504 INTERSTATE BLVD
412085	1/10/2013 10:06	HUNT, MICHAEL	125 KINGSTON ST
412151	1/10/2013 13:20	ERICKSON, SONYA	1776 HILLMONT DRIVE
413091	1/16/2013 13:41	HAYES, JOSH	320 BIRCHCLAY POINT N
413495	1/18/2013 10:00	DOHN, REBECCA	1857 OLIVE CIRCLE
414158	1/23/2013 9:29	DOHN, REBECCA	1240 BENDING CREEK
414376	1/24/2013 8:44	HAYES, JOSH	3738 DICKERSON PIKE
414639	1/25/2013 8:01	ERICKSON, SONYA	19 BANCROFT PL
415363	1/29/2013 14:38	HOLT, BONNYE	3218 Crislynndale Dr.
415369	1/29/2013 14:40	HUNT, MICHAEL	3837 BRYCE RD
415387	1/29/2013 15:16	HUNT, MICHAEL	2709 WERTHAN AVE
416516	2/5/2013 9:15	ERICKSON, SONYA	4033 GENERAL BATE DR
417188	2/7/2013 13:16	HAYES, JOSH	5289 OLD HICKORY BLVD
417296	2/8/2013 8:00	ERICKSON, SONYA	6028 NEIGHBORLY AVE
418662	2/15/2013 15:17	HOLT, BONNYE	WEST HAMILTON ROAD & FLICKER DR
418663	2/15/2013 15:33	ERICKSON, SONYA	2501 SANTI AVE
419165	2/20/2013 11:38	HOLT, BONNYE	3718 MURFREESBORO PK
419323	2/21/2013 8:44	HOLT, BONNYE	929 HERMITAGE RIDGE
420274	2/26/2013 12:58	DOHN, REBECCA	0 STONE CHIMNEY
420790	2/28/2013 14:26	ERICKSON, SONYA	5251 HICKORY HOLLOW PARKWAY
420873	3/1/2013 8:42	ERICKSON, SONYA	2900 HAMILTON CHURCH RD
421057	3/1/2013 14:56	WINESETT, STEVE	367 ELYSIAN FIELDS
421280	3/4/2013 13:51	ERICKSON, SONYA	550 DONELSON PIKE
421728	3/6/2013 13:01	ERICKSON, SONYA	5902 CANE RIDGE RD
422416	3/11/2013 11:09	HOLT, BONNYE	3930 KNIGHT RD
422941	3/13/2013 12:55	DOHN, REBECCA	1112 BELL
423619	3/18/2013 13:37	ERICKSON, SONYA	288 MCGAVOCK PIKE
423690	3/18/2013 15:22	ERICKSON, SONYA	2417 CLOVERDALE RD
424065	3/20/2013 10:48	ERICKSON, SONYA	1609 NOLENSVILLE RD
424229	3/21/2013 8:34	WINESETT, STEVE	3900 MURFREESBORO RD
424505	3/22/2013 7:23	DOHN, REBECCA	217 BONNALYN DR
425451	3/28/2013 7:28	ERICKSON, SONYA	2965 ARMORY DR
425785	3/29/2013 11:56	HAYES, JOSH	302 MURFREESBORO PK
426160	4/2/2013 7:37	ERICKSON, SONYA	3041 SIDCO DR
426674	4/4/2013 8:15	ERICKSON, SONYA	660 LAFAYETTE ST
426714	4/4/2013 9:21	HAYES, JOSH	2121 26TH AVE N
427553	4/9/2013 9:13	WINESETT, STEVE	3914 WALLACE LN
428103	4/11/2013 7:49	ERICKSON, SONYA	8369 CUB CREEK RD
428251	4/11/2013 13:03	ERICKSON, SONYA	614 FONTANA AVE
430230	4/19/2013 12:22	ERICKSON, SONYA	689 DAVIDSON STREET

Table 7H.1 – Illicit Discharge Investigations Initiated During FY13 (Continued)

Service Request #	Date Initiated	Dispatched To	Problem Address
430421	4/22/2013 7:23	ERICKSON, SONYA	1805 FORREST AVE
430985	4/23/2013 9:51	ERICKSON, SONYA	130 NESTOR ST
431003	4/23/2013 10:02	ERICKSON, SONYA	1406 HOLLY ST
431015	4/23/2013 10:14	WINESETT, STEVE	103 ROBERT YOEST DR
431161	4/23/2013 15:17	HAYES, KIMBERLY	914 KNOX AVENUE
431190	4/23/2013 15:56	ERICKSON, SONYA	BURNETT RD
431702	4/25/2013 10:47	BRYANT, HAROLD	1017 TULIP BLOSSOM
434710	5/6/2013 13:31	ERICKSON, SONYA	100 VANDIVER DR
434756	5/6/2013 13:45	ERICKSON, SONYA	914 KNOX AVE
434820	5/6/2013 14:23	ERICKSON, SONYA	4750 NOLENSVILLE RD
434839	5/6/2013 14:56	ERICKSON, SONYA	3800 CHARLOTTE PK
434841	5/6/2013 15:07	ERICKSON, SONYA	4207 CHARLOTTE PK
435534	5/9/2013 8:13	ERICKSON, SONYA	1672 CUMBERLAND STATION BLVD
436061	5/10/2013 14:05	REMEDIAL,	324 BALMY AVE
436433	5/13/2013 13:12	HUNT, MICHAEL	2963 FOSTER CREIGHTON
436873	5/14/2013 14:57	ERICKSON, SONYA	9 HERMITAGE AVE
438849	5/22/2013 8:02	HAYES, JOSH	3710 LEALAND LANE
440575	5/30/2013 8:11	HUNT, MICHAEL	4061 POWELL AVE
440945	5/30/2013 14:51	OHARA, KATHERINE	1310 LILLIAN STREET
443228	6/7/2013 14:49	DOHN, REBECCA	210 CROSSING PLACE
443531	6/10/2013 12:23	WINESETT, STEVE	860 OLD HICKORY BLVD
445237	6/17/2013 12:48	HAYES, JOSH	5201 LITTLE MARROWBONE ROAD
446580	6/21/2013 11:15	WINESETT, STEVE	278 Becklea Dr.

Table 7H.2 – Spill Response Investigations Initiated by NPDES During FY13

Service Request #	Date Initiated	Dispatched To:	Problem Address
382653	7/17/2012 6:44	BINDER, DALE	5800 OLD HICKORY BLVD
384342	7/25/2012 10:41	GARMON, MARY	360 Murfreesboro Pike
386729	8/7/2012 13:51	ERICKSON, SONYA	3930 CLARKSVILLE HIGHWAY
387358	8/10/2012 8:02	ERICKSON, SONYA	400 ST FRANCIS AVE
390968	8/29/2012 7:54	ERICKSON, SONYA	0 NEWSOME STATION RD
392158	9/5/2012 14:32	ERICKSON, SONYA	503 FESSLERS LN
395525	9/25/2012 8:10	BINDER, DALE	10 INTERSTATE DR
398993	10/12/2012 15:09	ERICKSON, SONYA	227 SHELBY AVE
400740	10/24/2012 7:14	HAYES, JOSH	1326 ANTIOCH PIKE
402034	10/31/2012 13:16	OHARA, KATHERINE	689 DAVIDSON STREET
404013	11/13/2012 7:48	HAYES, JOSH	5015 HARDING ROAD
406038	11/28/2012 13:49	GARMON, MARY	360 MURFREESBORO PIKE
406959	12/4/2012 15:21	ERICKSON, SONYA	15114 OLD HICKORY BLVD
408934	12/17/2012 10:26	BINDER, DALE	12848 OLD HICKORY BLVD
411913	1/9/2013 9:32	BINDER, DALE	47 HART STREET
412538	1/14/2013 10:06	HAYES, KIMBERLY	814 LYNNWOOD
414124	1/23/2013 8:03	BINDER, DALE	1 AVERITT EXPRESS DR
415295	1/29/2013 12:32	ERICKSON, SONYA	I40 AND MM212-6
418030	2/13/2013 7:19	BINDER, DALE	503 FESSLERS LANE
419593	2/22/2013 7:22	BINDER, DALE	4004 HILLSBORO
420155	2/26/2013 8:56	ERICKSON, SONYA	4601 MURPHY ROAD
420657	2/28/2013 10:17	ERICKSON, SONYA	208 38TH AVE N
420854	3/1/2013 8:08	ERICKSON, SONYA	5252 HICKORY HOLLOW PKY
420868	3/1/2013 8:32	ERICKSON, SONYA	4041 NOLENSVILLE PK
421746	3/6/2013 13:26	ERICKSON, SONYA	550 DONELSON
421755	3/6/2013 13:38	ERICKSON, SONYA	2815 LEBANON PK
422318	3/11/2013 5:59	BINDER, DALE	2311 BRICK CHURCH PIKE
422319	3/11/2013 6:27	BINDER, DALE	2087 HOBSON PIKE
428365	4/12/2013 8:28	HAYES, JOSH	OLD HARDING ROAD & COLICE JEANE ROAD
430016	4/19/2013 7:38	BINDER, DALE	4030 SHURGARD WAY
430999	4/23/2013 10:00	ERICKSON, SONYA	600 46TH AVE N
432766	4/30/2013 9:02	BINDER, DALE	433 OPRY MILLS
434574	5/6/2013 12:32	ERICKSON, SONYA	600 46TH AVE N
434785	5/6/2013 13:55	ERICKSON, SONYA	12924 OLD HICKORY BLVD
437170	5/15/2013 13:25	ERICKSON, SONYA	3025 CHARLOTTE PK

Table 7H.3 – Private Sewer Discharge Investigations Initiated by NPDES During FY13

Service Request #	Date Initiated	Dispatched To:	Problem Address
389261	8/21/2012 7:28	ERICKSON, SONYA	100 PENNINGTON AVE
426479	4/3/2013 9:07	ERICKSON, SONYA	4500 HARDING
439128	5/22/2013 15:06	WINESETT, STEVE	100 CHIMNEY TOP DR

Table 7H.4 - Failing Septic System Investigations Performed by the Health Department in FY13

Map & Parcel	Date Received	Street Name	Last Name	Job Description	Environmentalist	Sewage on Ground	Notice Issued	Citation	Abatement
135-00-0 144.00	7/30/2012	1785 Reynolds Rd	Vasquez	Complaint	Fellwock	7/30/2012	8/1/2012	9/6/2012	3/25/2013
054-14-0 087.00	6/22/2012	104 Rising Sun Court	Bryant	Failure	Fellwock	6/25/2012	6/26/2012	8/7/2012	12/6/2012
168-00-0 084.00	4/29/2013	8969 Hwy 100	Tolleson	Failure	Fellwock	5/9/2013	5/13/2013	7/2/2013	9/11/2013
038-00-0 140.00	5/29/2013	6179 Old Hickory Blvd	Hackwell	Failure	Fellwock	5/29/2013	5/30/2013		9/6/2013
145-00-0 091.00	8/15/2012	1811 Tyne Blvd	Gates	Failure	Fellwock	8/16/2012	10/4/2012		11/15/2012
015-14-0 001.00	2/8/2013	3051 Union Hill Road	Williams	Failure	Fellwock	2/20/2013	2/26/2013		5/9/2013
008-00-0 092.00	3/1/2013	7626 Bidwell Rd	Collier	Failure	Fellwock	3/21/2013	3/25/2013		5/20/2013
018-00-0 101.00	4/8/2013	535 Brick Church Pk	Clarkin	Failure	Fellwock	4/8/2013	5/3/2013	5/13/2013	6/24/2013
021-00-0 002.01	6/21/2013	6534 Clarksville Pk	Simpson	Failure	Fellwock	6/25/2013	6/26/2013		8/26/2013
121-00-0 057.00	7/25/2012	1533 Pleasant Hill Rd	Sawyer	Complaint	Fellwock	7/26/2012	7/27/2012		9/26/2012
057-00-0 027.00	2/14/2013	5304 Old Hickory Blvd	Phillips	CCF	Michie	2/25/2013	2/25/2013		4/10/2013
186-00-0 020.00	7/27/2012	7216 Old Burkitt Rd	Clifton	Failure	Fellwock	8/7/2012	8/8/2012		9/13/2012
075-00-0 093.00	8/23/2012	4401 Lebanon Pk	Clemmons	Failure	Fellwock	8/28/2012	9/11/2012		10/3/2012
126-00-0 112.00	2/4/2013	4504 Heath Road	Sink	Failure	Michie	2/7/2013	2/11/2013		3/7/2013
022-00-0 111.00	9/26/2012	2949 Claylick Rd	Kane	Failure	Fellwock	10/5/2012	10/8/2012		10/26/2012
135-00-0 377.00	2/28/2013	232 Franklin Limestone Rd	Saad	Failure	Fellwock	3/4/2013	3/5/2013		3/27/2013
100-00-0 043.00	6/4/2013	7400 Indian Creek Rd	Mondelli	Failure	Fellwock	6/4/2013	6/5/2013		6/25/2013
121-00-0 181.00	7/5/2012	1537 Pleasant Hill Rd	Walden	Complaint	Fellwock	7/6/2012	7/12/2012		7/25/2012
026-00-0 059.00	4/3/2013	2368 Gallatin Rd	Barrett	Failure	Fellwock	4/3/2013	4/4/2013		4/17/2013

Table 7H.5 – MWS Estimated/Reported Sewage Overflows in FY13

	July	August	September	October	November	December	January	February	March	April	May	June	Total
Wet Weather Overflows - CSO Permitted	25	19	15	15	1	17	14	9	15	19	7	25	181
Wet Weather Overflows - sewer (non pumps)	12	5	1	0	0	1	32	0	1	39	7	0	98
Wet Weather Overflows - Pump Stations	33	2	0	0	0	10	39	0	6	40	4	0	134
Wet Weather Overflows SSO-TOTAL	**45**	**7**	**1**	**0**	**0**	**11**	**71**	**0**	**7**	**79**	**11**	**0**	**232**
Dry Weather Overflows - sewer (non-pumps)	5	5	4	8	5	16	5	3	12	10	5	5	83
Dry Weather Overflows - Pump Stations	0	0	2	3	0	0	1	3	0	2	0	1	12
Dry Weather Overflows - TOTAL	**5**	**5**	**6**	**11**	**5**	**16**	**6**	**6**	**12**	**12**	**5**	**6**	**95**
# of Overflows that Required Remediation*	0	0	0	0	0	0	0	0	0	0	0	0	0
# of Overflows that Reached Creeks - Sewer	12	7	3	3	3	6	26	1	3	28	3	3	98
# of Overflows that Reached Creeks - Pump Stations(All)	33	2	2	3	0	10	40	3	6	40	4	1	144
# of Overflow Response Staff / per sewer event	2	2	2	2	2	2	2	2	2	2	2	2	2
# of Sewer Vac Trucks / per sewer event	1	1	1	1	1	1	1	1	1	1	1	1	1

*Note: Most of the dry-weather overflows involve a small level of clean-up performed by department personnel, but the term “Remediation” is reserved for large overflows/line breaks in which more significant clean-up actions are required.

Table 8F.1 - MWS Stormwater Routine Maintenance Work Order Numbers for FY13

		Total	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013
Ditch Maint.	Routine	739	137	352	84	66	14	3	83	0	0	0	30	34
	Complaint	3337	0	203	557	374	403	445	474	396	485	466	426	265
	Class C	58	0	0	1	39	18	0	0	0	0	0	0	0
subtotal		***4,134***	***137***	***555***	***642***	***479***	***435***	***448***	***557***	***396***	***485***	***466***	***456***	***299***
Walls & HW	Routine	140	22	75	17	11	1	0	14	0	0	0	7	4
	Complaint	908	0	45	211	161	183	187	55	32	34	31	18	17
	Class C	1	0	0	0	0	1	0	0	0	0	0	0	0
subtotal		***1,049***	***22***	***120***	***228***	***172***	***185***	***187***	***69***	***32***	***34***	***31***	***25***	***21***
DW Pipes	Routine	1286	151	115	106	48	5	816	45	0	0	0	29	31
	Complaint	1438	0	139	249	279	286	165	94	89	137	163	171	163
	Class C	0	0	0	0	0	0	0	0	0	0	0	0	0
subtotal		***2,724***	***151***	***254***	***355***	***327***	***291***	***981***	***139***	***89***	***137***	***163***	***200***	***194***
Cross Drains	Routine	613	85	118	74	78	66	0	192	0	0	0	18	33
	Complaint	849	0	80	135	114	171	148	61	62	78	97	71	73
	Class C	18	0	0	0	10	8	0	0	0	0	0	0	0
subtotal		***1,480***	***85***	***198***	***209***	***202***	***245***	***148***	***253***	***62***	***78***	***97***	***89***	***106***
Flooding	Routine	77	14	45	4	10	4	0	0	0	0	0	21	104
	Complaint	289	0	2	14	15	1	0	19	58	180	42	4	2
	Class C	4	0	0	0	2	2	0	0	0	0	0	0	0
subtotal		***370***	***14***	***47***	***18***	***27***	***7***	***0***	***19***	***58***	***180***	***42***	***25***	***106***
Debris Removal	Routine	233	39	59	26	26	23	0	60	0	0	9	32	58
	Complaint	523	0	44	29	28	41	1	80	186	114	167	69	29
	Class C	2	0	0	1	1	0	0	0	0	0	0	0	0
subtotal		***758***	***39***	***103***	***56***	***55***	***64***	***1***	***140***	***186***	***114***	***176***	***101***	***87***
Erosion	Routine	6	0	1	2	1	1	0	1	0	0	0	9	3
	Complaint	62	0	0	7	6	1	0	10	20	18	49	28	18
	Class C	1	0	0	0	1	0	0	0	0	0	0	0	0
subtotal		***69***	***0***	***1***	***9***	***8***	***2***	***0***	***11***	***20***	***18***	***49***	***37***	***21***
Mud Removal	Routine	76	4	3	8	7	51	3	0	0	0	0	0	0
	Complaint	227	0	0	3	8	71	144	0	1	0	0	1	0
	Class C	0	0	0	0	0	0	0	0	0	0	0	0	0
subtotal		***303***	***4***	***3***	***11***	***15***	***122***	***147***	***0***	***1***	***0***	***0***	***1***	***0***
Misc	Routine	2744	35	420	590	396	219	1,013	71	0	0	2	120	172
	Complaint	1473	0	94	95	75	86	1,035	15	39	34	27	15	3
	Class C	4	0	0	0	3	1	0	0	0	0	0	0	0
subtotal		***4,221***	***35***	***514***	***685***	***474***	***306***	***2048***	***86***	***39***	***34***	***29***	***135***	***175***
Inlet Maint.	Routine	138750	177	7,278	33,495	37,296	35,258	20,125	4,841	140	140	108	312	378
	Complaint	6903	0	260	416	353	263	3,088	243	1,880	400	561	231	218
	Class C	5	0	0	0	5	0	0	0	0	0	0	0	0
subtotal		***145,658***	***177***	***7,538***	***33,911***	***37,654***	***35,521***	***23,213***	***5,084***	***2,020***	***540***	***669***	***543***	***596***
Sinkhole	Routine	0	0	0	0	0	0	0	0	0	0	0	0	0
	Complaint	5	0	0	0	0	2	3	0	0	0	0	0	4
	Class C	0	0	0	0	0	0	0	0	0	0	0	0	0
subtotal		***5***	***0***	***0***	***0***	***0***	***2***	***3***	***0***	***0***	***0***	***0***	***0***	***4***
		Total	**FY2002**	**FY2003**	**FY2004**	**FY2005**	**FY2006**	**FY2007**	**FY2008**	**FY2009**	**FY2010**	**FY2011**	**FY2012**	**FY2012**
	Routine	146,178	664	8,466	34,406	37,939	35,642	21,960	5,307	140	140	119	578	817
	Complaint	19,443	0	867	1,716	1,413	1,508	5,216	1,051	2,763	1,480	1,603	1,034	792
	Class C	93	0	0	2	61	30	0	0	0	0	0	0	0
TOTAL		***165,714***	**664**	**9,333**	**36,124**	**39,413**	**37,180**	**27,176**	**6,358**	**2,903**	**1,620**	**1,722**	**1,612**	**1,609**

*Note- Inlet Maintenance numbers reflect a July 2008 change in the way work units are reported. Inlet reporting is now done at the work order level and not the work unit level. This does not reflect any change in the level of effort for this category o

Work Order Labor Hours per Type

Fiscal Year	Total	Preventive Maintenance	Rain Routes	County Hospital Road	Reactive
FY2010	54,713	4,262	3,080	N/A	47,371
FY2011	52,406	7,615	3,188	1,863	39,740
FY2012	51,316	6,669	3,798	1,377	39,472
FY2013	43,056	7,380	2,448	1,423	31,805
Total to date	***201,491***	**25,926**	**12,514**	**4,663**	**158,388**

N/A indicates insufficient data

Miscellaneous Work Information

Fiscal Year	Linear Feet of Redefined Ditch	Cubic Yards of Material Removed
FY2010	99,460	N/A
FY2011	77,795	1,248
FY2012	84,280	1,649
FY2013	34,500	2,556
Total to date	**296,035**	**5,453**

Table 8F.2 - MWS Stormwater Contracted Street Sweeping Collection Numbers for FY13

	July	August	September	October	November	December	January	February	March	April	May	June	Total
Debris Collected *(tons)*	291.84	296.73	249.98	513.24	602.36	429.61	282.77	367.36	348.40	363.52	343.14	273.96	4,362.91
Miles of Street Swept	1,754.16	1,796.71	1,542.50	1,637.82	1,821.47	1,923.98	1,766.45	2,717.67	1,673.90	1,803.69	1,674.94	773.39	20,886.68

Table 9F.1 - Development and Review Section Plan Review Numbers for FY13

	July	August	September	October	November	December	January	February	March	April	May	June	Total
Number of Plan Submittals	111	162	129	116	142	108	184	142	143	168	179	207	**1791**
Number of Plan Approvals	89	119	110	87	108	110	131	114	135	129	147	132	**1411**

* The Number of Plan Submittals line includes: Excel spreadsheet tracked "Site Plan Reviews" that are reviewed for Codes permits and KIVA tracked Grading Plans & As-Builts as well as Preliminaries / Finals that are reviewed for the Planning department. It is all initial submittals, resubmittals and additional information submitted. The excel spreadsheet is called "MonthlyReport_SWEngr(year).xls" and it can be found in the following location, "S:\DevReview\Codes Section\Monthly Reports\SWEngr". The new KIVA report is called "SW_ANNUAL" described as "SW PERMIT ANNUAL REPORTING". The numbers exclude SWUF reviews because they are not plan reviews.

* The Number of Plan Approvals line include Grading Plans review results of APPROVED, CONDITIONALLY APPROVED (Approved Except as Noted) and NO PERMIT Required. The number also includes Preliminaries / Finals that are reviewed for the Planning Department if the result code is APPROVED, COND, IGNORENA. The numbers in this row also now include SWEngr's site plan reviews with a result of Approved because the review result is now tracked seperately. The numbers in this row exclude Grading Plans Approved numbers with review results of Returned for Corrections, Withdrawn, Hold or Denied. The numbers in this row also exclude SWUF reviews because they are not plan reviews. The new KIVA report is called "SW_ANNUAL" described as "SW PERMIT ANNUAL REPORTING" and it pulls all Grading Permit and Preliminary/Final reviews for this line with the proper result code within a given time frame. The excel spreadsheet for site plan reviews is called "MonthlyReport_SWEngr(year).xls" (or some variation of that format) and it can be found in the following location, "S:\DevReview\Codes Section\Monthly Reports\SWEngr". It shows which reviews had a result of Approved in a given month.

Table 10C.1 - Industrial Sites MWS is required to inspect per the MS4 Permit

Industry Name	Address	Industry Category
E. I. Dupont De Nemours & Co., Inc. -	1002 Industrial Road	SARA Title III, Sec. 313
Doodleco Inc. (Dba Superior Trim)	511 Bridgeway Ave	SARA Title III, Sec. 313
Quad Graphics Nashville	2947 Brick Church Pike	SARA Title III, Sec. 313
Ergon Terminaling, Inc. - Nashville	1114 Visco Drive	SARA Title III, Sec. 313
Nashville - Plant 1	1136 Second Ave N	SARA Title III, Sec. 313
Polar Technology Llc	1360 Foster Ave	SARA Title III, Sec. 313
Country Delite Farms Llc	1401 Church St	SARA Title III, Sec. 313
Bp Oil Company/Nashville Terminal	1409 51st Ave. N.	SARA Title III, Sec. 313
Harcros Chemicals Inc	1418 Poplar Ln	SARA Title III, Sec. 313
Triumph Aircraft Industries Inc	1431 Vultee Blvd	SARA Title III, Sec. 313
Whirlpool Corp	1714 Heil Quaker Blvd	SARA Title III, Sec. 313
Motiva Nashville Terminal	1717 61st Ave N	SARA Title III, Sec. 313
Exxon Mobil Corp Nashville Terminal	1741 Ed Temple Blvd	SARA Title III, Sec. 313
Cone Solvents Inc Nashville	1830 Linder Industrial Dr	SARA Title III, Sec. 313
Akzo Nobel Coatings Inc.	20 Culvert Street	SARA Title III, Sec. 313
North American Galvanizing Co.	200 32nd Ave. N.	SARA Title III, Sec. 313
Ashland Distribution	2315 Clifton Ave	SARA Title III, Sec. 313
Marathon Petroleum Company, LLC	2920 Old Hydes Ferry Road	SARA Title III, Sec. 313
Quebecor World Retail Group	2947 Brick Church Pike	SARA Title III, Sec. 313
Nashville Wire Products	295 Driftwood St	SARA Title III, Sec. 313
Palm International Sales	1717 JP Hennessey Dr	SARA Title III, Sec. 313
Land O'lakes Purina Feed LLC	3601 Trousdale Dr	SARA Title III, Sec. 313
Peterbilt Motors Company	430 Myatt Dr	SARA Title III, Sec. 313
Innophos, Inc.	4600 Centennial Blvd	SARA Title III, Sec. 313
A. Schulman, Inc.	481 Allied Drive	SARA Title III, Sec. 313
Greer Stop Nut	481 McNally Drive	SARA Title III, Sec. 313
Marathon Petroleum Company LLC	5 Main St	SARA Title III, Sec. 313
Afl Wire Products Dixie Wire	5901 California Ave	SARA Title III, Sec. 313
Fiberweb, Inc.	70 Old Hickory Blvd.	SARA Title III, Sec. 313
Warren Paint & Color Co	700 Wedgewood Avenue	SARA Title III, Sec. 313
Nashville Chemical & Equipment Co Inc.	7001 Westbelt Dr	SARA Title III, Sec. 313
Carlex Nashvlle Glass Plant	7200 Centennial Blvd	SARA Title III, Sec. 313
Springs Global Us-Nashville Plant	7201 Cockrill Bend Blvd.	SARA Title III, Sec. 313
Cumberland Terminals, Inc.	7260 Centennial Blvd.	SARA Title III, Sec. 313
Reddy Ice-Nashville	7261 Centennial Blvd	SARA Title III, Sec. 313
U S Smokeless Tobacco Manufacturing	800 Harrison St	SARA Title III, Sec. 313
CMC Rebar Nashville	852 Visco Dr Suite 101	SARA Title III, Sec. 313
Marathon Petroleum Company LLC	930 Youngs Lane	SARA Title III, Sec. 313
Purity Dairies	360 Murfreesboro Pike	SARA Title III, Sec. 313
Lawson Ready Mix	5915 River Road	SARA Title III, Sec. 313
Superior Trim	511 Bridgeway Ave	SARA Title III, Sec. 313
Worldcolor Retail Group	2947 Brick Church Pike	SARA Title III, Sec. 313
Perfection Molders	213 Connel Street	SARA Title III, Sec. 313
Hennessey Industries	1601 JP Hennessy Dr	SARA Title III, Sec. 313
Five Star Foods	2621 Euginia	SARA Title III, Sec. 313
Safety-Kleen Systems, Inc.	215 Whitsett Rd	TSD Facility
PSC Metals	710 S. 1st St.	Substantial Loader

Table 13A.1 – TMDL Monitoring Data for FY13

Date	Watershed	Site Name	DO %	DO mg/L	Cond	Temp C	pH	E coli MPN	Flow CFS
7/31/2012	Cooper	Cooper	88.3	8.23	483.6	18.8	7.41	104.6	2.19
8/13/2012	Cooper	Cooper	87.6	8.28	489.7	18.2	7.36	131.4	3.38
8/20/2012	Cooper	Cooper	86.3	8.01	497.8	19.4	7.82	133.3	0.90
8/22/2012	Cooper	Cooper	86.1	8.22	486.6	18.0	7.41	159.4	2.37
8/28/2012	Cooper	Cooper	78.9	7.08	497.5	19.2	7.66	90.6	0.85
10/10/2012	Cooper	Cooper	71.4	6.94	504.0	16.5	7.45	86.0	1.43
10/11/2012	Cooper	Cooper	86.3	8.56	501.0	16.1	7.69	21.4	1.60
10/22/2012	Cooper	Cooper	86.3	8.18	505.0	17.5	7.60	155.3	1.03
10/24/2012	Cooper	Cooper	81.7	8.34	505.0	16.9	7.72	110.0	0.88
10/30/2012	Cooper	Cooper	62.8	6.58	501.0	13.4	7.20	152.9	1.74
1/8/2013	Cooper	Cooper	73.4	7.63	493.3	13.1	7.38	37.3	103.44
1/22/2013	Cooper	Cooper	84.4	8.78	467.2	13.7	6.75	33.2	3.51
1/28/2013	Cooper	Cooper	82.2	7.84	468.4	15.3	7.31	172.3	5.18
1/29/2013	Cooper	Cooper	92.7	9.24	466.5	15.3	7.70	172.5	3.53
2/6/2013	Cooper	Cooper	62.1	7.49	468.4	16.2	7.39	115.3	5.29
7/31/2012	Whites Creek	Drakes	60.2	5.10	660.0	24.3	7.93	325.5	0.00
8/9/2012	Whites Creek	Drakes	72.0	6.06	644.0	23.6	7.82	579.4	0.75
8/13/2012	Whites Creek	Drakes	80.7	7.33	455.0	20.5	7.59	770.1	0.61
8/21/2012	Whites Creek	Drakes	79.3	7.34	637.0	18.8	7.61	120.1	0.37
8/28/2012	Whites Creek	Drakes	87.6	7.30	297.1	24.5	7.95	613.1	0.12
10/10/2012	Whites Creek	Drakes	63.6	6.34	658.0	15.6	7.63	142.1	0.47
10/16/2012	Whites Creek	Drakes	85.6	8.35	665.0	16.4	7.76	85.7	0.86
10/22/2012	Whites Creek	Drakes	83.2	7.94	629.0	16.9	7.35	272.3	1.07
10/24/2012	Whites Creek	Drakes	66.0	6.55	672.0	15.5	7.62	67.6	0.66
10/30/2012	Whites Creek	Drakes	75.8	8.51	656.0	11.5	7.80	57.3	0.39
1/8/2013	Whites Creek	Drakes	88.9	10.49	608.0	7.1	7.61	9.7	39.36
1/22/2013	Whites Creek	Drakes	69.3	8.99	571.0	5.1	6.31	113.7	1.68
1/28/2013	Whites Creek	Drakes	71.6	7.19	560.0	12.9	6.86	79.4	0.95
1/29/2013	Whites Creek	Drakes	93.3	10.21	524.0	11.3	7.46	161.6	13.10
2/6/2013	Whites Creek	Drakes	98.4	10.38	532.0	12.7	7.97	307.6	3.24
7/31/2012	Dry Creek	Dry Creek	83.0	6.84	511.0	25.0	7.69	2419.6	3.70
8/13/2012	Dry Creek	Dry Creek	61.4	6.49	649.0	20.9	7.62	686.7	8.20
8/21/2012	Dry Creek	Dry Creek	64.7	5.85	650.0	19.9	7.97	478.6	2.60
8/22/2012	Dry Creek	Dry Creek	94.1	8.51	649.0	20.5	7.82	613.1	2.10
8/28/2012	Dry Creek	Dry Creek	78.2	6.42	***	24.0	7.64	2419.6	1.50
10/10/2012	Dry Creek	Dry Creek	71.4	7.56	614.0	14.3	7.75	209.8	1.10
10/11/2012	Dry Creek	Dry Creek	83.4	8.86	650.0	12.2	7.98	44.5	1.00
10/23/2012	Dry Creek	Dry Creek	88.4	8.77	636.0	15.5	7.46	115.3	2.78
10/24/2012	Dry Creek	Dry Creek	78.1	7.62	647.0	15.7	7.84	178.5	2.66
10/31/2012	Dry Creek	Dry Creek	65.0	7.48	640.0	9.1	7.59	290.9	2.30
1/8/2013	Dry Creek	Dry Creek	99.6	12.14	583.0	6.2	8.04	142.1	4.45
1/22/2013	Dry Creek	Dry Creek	99.6	12.49	528.0	5.6	6.87	101.0	7.58
1/28/2013	Dry Creek	Dry Creek	87.2	9.53	550.0	10.4	7.63	104.3	8.06
1/29/2013	Dry Creek	Dry Creek	87.0	10.01	551.0	11.3	7.62	52.0	7.10
2/6/2013	Dry Creek	Dry Creek	123.4	13.82	505.0	10.4	8.18	59.4	6.97
7/31/2012	Whites Creek	Eaton's Creek	47.5	3.85	674.0	24.3	7.44	248.1	0.00
8/9/2012	Whites Creek	Eaton's Creek	57.5	5.02	669.0	23.9	7.43	920.8	0.00
8/13/2012	Whites Creek	Eaton's Creek	70.4	6.20	630.0	20.8	7.13	579.5	0.00

Table 13A.1 – TMDL Monitoring Data for FY13 (Continued)

Date	Watershed	Site Name	DO %	DO mg/L	Cond	Temp C	pH	E coli MPN	Flow CFS
8/21/2012	Whites Creek	Eaton's Creek	61.5	5.64	697.0	19.2	7.36	115.3	0.00
8/28/2012	Whites Creek	Eaton's Creek	66.3	5.30	633.0	25.6	7.53	166.4	0.00
10/10/2012	Whites Creek	Eaton's Creek	63.5	6.42	686.0	14.8	7.28	110.6	1.16
10/16/2012	Whites Creek	Eaton's Creek	76.6	7.49	674.0	15.8	7.29	73.8	1.37
10/22/2012	Whites Creek	Eaton's Creek	70.2	7.84	669.0	16.2	7.16	235.9	1.33
10/24/2012	Whites Creek	Eaton's Creek	59.5	5.92	657.0	15.5	7.15	185.0	1.18
10/30/2012	Whites Creek	Eaton's Creek	80.5	8.74	643.0	11.3	7.63	45.5	0.45
1/8/2013	Whites Creek	Eaton's Creek	83.0	10.42	603.0	6.2	7.31	62.4	261.65
1/22/2013	Whites Creek	Eaton's Creek	91.2	11.40	495.7	5.6	6.83	260.3	7.83
1/28/2013	Whites Creek	Eaton's Creek	80.4	9.26	521.0	12.2	6.37	52.0	12.08
1/29/2013	Whites Creek	Eaton's Creek	92.7	9.97	565.0	12.1	7.46	19.7	1.22
2/6/2013	Whites Creek	Eaton's Creek	108.5	11.93	481.0	10.9	7.95	29.2	18.45
7/31/2012	Whites Creek	Ewing	60.0	5.84	669.0	27.0	7.44	88.2	11.34
8/20/2012	Whites Creek	Ewing	83.7	7.61	730.0	20.0	7.90	275.5	5.59
8/21/2012	Whites Creek	Ewing	108.9	9.56	745.0	22.1	8.08	186.0	3.91
8/23/2012	Whites Creek	Ewing	76.8	6.82	747.0	21.2	7.47	770.1	2.05
8/28/2012	Whites Creek	Ewing	116.2	9.20	731.0	27.2	7.91	248.9	11.24
10/10/2012	Whites Creek	Ewing	79.9	7.37	784.0	16.3	7.91	133.4	7.66
10/16/2012	Whites Creek	Ewing	93.6	9.29	783.0	15.7	7.87	178.5	4.51
10/22/2012	Whites Creek	Ewing	88.3	8.72	747.0	15.6	7.94	95.9	12.12
10/24/2012	Whites Creek	Ewing	83.3	8.31	750.0	15.5	7.73	272.3	10.63
10/30/2012	Whites Creek	Ewing	90.2	10.13	752.0	10.0	7.70	157.6	3.00
1/8/2013	Whites Creek	Ewing	103.6	12.74	688.0	6.5	7.42	26.6	26.12
1/23/2013	Whites Creek	Ewing	94.1	12.28	671.0	4.2	7.59	57.4	10.07
1/24/2013	Whites Creek	Ewing	89.6	9.91	658.0	9.2	6.87	41.0	13.77
1/29/2013	Whites Creek	Ewing	82.6	8.32	660.0	13.8	7.92	70.8	5.06
2/5/2013	Whites Creek	Ewing	87.5	9.54	638.0	12.3	7.61	27.5	4.60
7/31/2012	Gibson	Gibson	61.0	7.90	531.0	22.9	6.70	1986.3	0.77
8/13/2012	Gibson	Gibson	44.8	3.97	617.0	21.5	6.81	76.8	2.18
8/21/2012	Gibson	Gibson	53.2	4.72	617.0	21.3	6.89	73.3	0.54
8/22/2012	Gibson	Gibson	50.6	4.40	609.0	21.3	***	25.9	0.43
8/28/2012	Gibson	Gibson	39.4	3.43	615.0	21.7	6.58	43.5	0.48
10/10/2012	Gibson	Gibson	33.0	3.10	572.0	17.9	***	39.3	0.97
10/11/2012	Gibson	Gibson	50.0	4.76	563.0	18.6	7.29	17.1	0.14
10/23/2012	Gibson	Gibson	44.8	4.19	580.0	18.6	6.79	19.9	0.31
10/24/2012	Gibson	Gibson	47.6	4.44	577.0	18.6	7.04	10.9	0.35
10/31/2012	Gibson	Gibson	48.9	4.80	541.0	16.1	7.23	8.6	0.36
1/8/2013	Gibson	Gibson	72.8	7.84	595.0	11.8	7.18	18.5	0.25
1/22/2013	Gibson	Gibson	65.3	7.24	487.3	10.1	6.81	18.7	0.36
1/28/2013	Gibson	Gibson	70.6	8.29	599.0	13.2	6.75	8.6	0.24
1/29/2013	Gibson	Gibson	60.3	6.37	600.0	12.6	7.50	101.7	0.42
2/6/2013	Gibson	Gibson	65.5	6.93	573.0	13.0	7.12	15.8	3.42
7/31/2012	Whites Creek	Little	90.0	6.81	589.0	28.3	7.98	648.8	0.00
8/20/2012	Whites Creek	Little	107.3	9.69	564.0	20.1	8.15	325.5	4.10
8/21/2012	Whites Creek	Little	111.3	9.94	559.0	21.0	7.97	83.3	1.74
8/23/2012	Whites Creek	Little	88.7	8.09	578.0	19.8	7.61	178.2	1.85
8/28/2012	Whites Creek	Little	88.3	7.03	530.0	26.7	7.98	238.2	1.99
10/10/2012	Whites Creek	Little	105.4	10.16	592.0	16.1	8.13	55.6	0.92
10/16/2012	Whites Creek	Little	100.6	10.29	634.0	14.2	8.08	133.4	2.15

Table 13A.1 – TMDL Monitoring Data for FY13 (Continued)

Date	Watershed	Site Name	DO %	DO mg/L	Cond	Temp C	pH	E coli MPN	Flow CFS
10/22/2012	Whites Creek	Little	100.5	10.20	630.0	14.6	7.60	53.7	2.74
10/25/2012	Whites Creek	Little	122.2	12.05	622.0	16.0	7.81	56.5	0.91
10/30/2012	Whites Creek	Little	107.5	12.29	634.0	9.5	7.87	517.2	0.45
1/8/2013	Whites Creek	Little	12.8	10.05	547.0	5.6	7.85	36.4	1.76
1/23/2013	Whites Creek	Little	95.4	12.70	489.6	3.5	7.45	82.6	4.16
1/24/2013	Whites Creek	Little	88.3	11.20	342.0	7.8	6.30	13.4	4.20
1/29/2013	Whites Creek	Little	73.0	7.36	330.8	14.4	7.69	31.8	6.24
2/5/2013	Whites Creek	Little	90.9	9.45	324.8	12.6	7.17	26.9	2.75
7/31/2012	Manskers	Lumsley	136.7	10.38	341.0	29.9	8.45	365.4	1.78
8/20/2012	Manskers	Lumsley	114.6	12.36	447.0	20.2	8.31	298.7	0.85
8/21/2012	Manskers	Lumsley	138.7	12.01	416.4	22.4	8.45	201.4	0.83
8/22/2012	Manskers	Lumsley	157.0	13.11	382.5	24.9	8.50	866.4	1.45
8/23/2012	Manskers	Lumsley	124.3	10.84	406.8	21.5	8.30	517.2	1.63
10/10/2012	Manskers	Lumsley	151.7	15.50	443.1	13.7	8.41	128.1	3.03
10/11/2012	Manskers	Lumsley	120.5	13.74	477.4	9.3	8.28	64.5	0.97
10/23/2012	Manskers	Lumsley	127.3	13.34	500.0	15.1	7.87	61.3	3.43
10/24/2012	Manskers	Lumsley	160.8	15.69	483.3	16.5	8.51	86.7	3.80
10/31/2012	Manskers	Lumsley	112.3	13.75	488.2	6.6	7.98	6.3	1.48
1/8/2013	Manskers	Lumsley	111.5	14.11	350.0	5.3	7.90	57.3	2.28
1/23/2013	Manskers	Lumsley	97.4	13.32	398.3	2.8	6.48	107.6	3.95
1/24/2013	Manskers	Lumsley	101.7	12.58	399.9	5.9	6.02	76.3	3.18
1/29/2013	Manskers	Lumsley	92.3	10.60	426.9	9.1	7.83	98.5	3.97
2/5/2013	Manskers	Lumsley	81.9	9.41	391.9	10.9	7.79	57.8	2.63
7/26/2012	Manskers	Manskers 1	72.4	5.89	512.0	26.1	7.65	410.6	0.47
7/26/2012	Manskers	Manskers 1	72.2	5.77	515.0	26.2	7.70	260.3	0.47
7/31/2012	Manskers	Manskers 1	83.1	6.68	4.2	27.0	7.75	1046.2	0.00
8/20/2012	Manskers	Manskers 1	74.2	6.85	498.4	20.0	7.63	298.7	6.03
8/21/2012	Manskers	Manskers 1	80.1	7.01	500.0	20.7	7.88	203.5	1.28
8/22/2012	Manskers	Manskers 1	90.1	7.84	498.0	21.5	7.88	122.3	0.00
10/10/2012	Manskers	Manskers 1	82.8	8.63	532.0	13.6	7.79	129.6	1.01
10/11/2012	Manskers	Manskers 1	85.5	9.28	531.0	11.8	7.98	25.6	0.00
10/23/2012	Manskers	Manskers 1	82.6	8.38	542.0	15.0	7.31	122.3	4.27
10/24/2012	Manskers	Manskers 1	92.7	9.09	545.0	15.7	7.96	34.4	5.50
10/31/2012	Manskers	Manskers 1	86.1	10.18	544.0	8.0	7.63	101.7	0.46
1/8/2013	Manskers	Manskers 1	***	***	456.9	4.3	6.59	123.6	21.24
1/23/2013	Manskers	Manskers 1	77.1	10.16	437.5	3.4	6.30	39.9	34.98
1/24/2013	Manskers	Manskers 1	89.9	12.11	438.8	5.9	6.28	116.9	38.72
1/29/2013	Manskers	Manskers 1	87.6	9.99	419.4	9.4	7.62	63.3	38.92
2/5/2013	Manskers	Manskers 1	99.8	11.99	433.4	9.6	7.78	32.7	22.14
6/20/2013	Manskers	Manskers 1	81.9	6.36	458.0	26.0	7.22	313.0	38.92
8/23/2012	Manskers	Manskers 2	84.4	7.50	450.0	21.1	7.78	58.3	1.60
7/31/2012	Manskers	Manskers2	95.9	7.67	427.0	26.7	7.94	43.1	0.43
8/20/2012	Manskers	Manskers2	87.3	8.02	448.0	19.5	7.48	114.5	3.04
8/21/2012	Manskers	Manskers2	97.8	8.43	445.0	20.1	8.01	125.9	0.56
8/22/2012	Manskers	Manskers2	95.3	8.50	443.5	21.0	7.90	118.7	1.01
10/10/2012	Manskers	Manskers2	82.4	8.45	484.5	13.7	***	30.9	1.14
10/11/2012	Manskers	Manskers2	85.2	8.42	485.7	10.8	7.29	53.7	1.21
10/23/2012	Manskers	Manskers2	91.2	9.13	475.6	15.3	7.60	42.6	1.30
10/24/2012	Manskers	Manskers2	87.7	8.41	459.0	16.7	7.90	24.9	1.30

Table 13A.1 – TMDL Monitoring Data for FY13 (Continued)

Date	Watershed	Site Name	DO %	DO mg/L	Cond	Temp C	pH	E coli MPN	Flow CFS
10/31/2012	Manskers	Manskers2	76.7	9.02	480.6	8.3	7.61	71.2	0.69
1/8/2013	Manskers	Manskers2	95.8	11.99	385.6	5.2	7.53	98.3	4.63
1/23/2013	Manskers	Manskers2	95.3	12.50	349.0	3.8	6.30	31.3	9.99
1/24/2013	Manskers	Manskers2	130.4	16.64	356.8	7.3	6.67	39.3	11.43
1/29/2013	Manskers	Manskers2	88.7	10.08	348.6	9.6	7.38	81.3	8.02
2/5/2013	Manskers	Manskers2	101.9	10.83	334.0	12.2	7.04	51.2	4.34
7/31/2012	Gibson	Neeley's Branch	82.7	6.81	412.0	25.3	7.90	2419.6	0.79
8/13/2012	Gibson	Neeley's Branch	79.6	6.92	522.0	23.1	8.02	1203.3	2.46
8/20/2012	Gibson	Neeley's Branch	90.8	7.77	619.0	23.3	8.11	387.3	0.87
8/22/2012	Gibson	Neeley's Branch	94.6	8.49	538.0	20.8	8.11	201.4	0.62
8/28/2012	Gibson	Neeley's Branch	75.7	6.01	608.0	24.7	8.13	488.4	0.62
10/10/2012	Gibson	Neeley's Branch	68.8	6.86	594.0	15.3	7.81	547.5	0.45
10/11/2012	Gibson	Neeley's Branch	89.8	9.49	603.0	13.3	8.15	613.1	0.22
10/23/2012	Gibson	Neeley's Branch	92.3	9.07	612.0	16.1	7.52	410.6	0.41
10/24/2012	Gibson	Neeley's Branch	92.1	8.96	611.0	16.6	8.04	298.7	1.81
10/31/2012	Gibson	Neeley's Branch	91.7	10.42	607.0	9.7	7.57	387.3	1.02
1/8/2013	Gibson	Neeley's Branch	94.1	11.33	555.0	7.6	8.26	238.2	367.47
1/22/2013	Gibson	Neeley's Branch	93.3	12.10	566.0	6.5	6.91	98.7	1.15
1/28/2013	Gibson	Neeley's Branch	95.6	9.93	563.0	12.3	7.43	365.4	3.46
1/29/2013	Gibson	Neeley's Branch	88.4	8.53	562.0	12.0	7.93	206.4	2.56
2/6/2013	Gibson	Neeley's Branch	101.5	10.83	560.0	11.9	8.41	118.7	2.55
7/31/2012	Pages Branch	Pages Branch	67.4	5.98	712.0	22.0	7.81	241.5	5.67
8/13/2012	Pages Branch	Pages Branch	79.6	7.05	710.0	20.0	7.22	272.3	5.45
8/20/2012	Pages Branch	Pages Branch	85.8	7.87	600.0	19.4	7.94	201.4	1.35
8/21/2012	Pages Branch	Pages Branch	80.4	7.44	694.0	18.7	7.61	228.2	1.72
8/28/2012	Pages Branch	Pages Branch	***	5.08	727.0	23.7	***	93.3	0.00
10/10/2012	Pages Branch	Pages Branch	78.7	7.61	708.0	15.8	7.61	146.7	2.01
10/16/2012	Pages Branch	Pages Branch	87.6	8.19	715.0	16.9	7.76	81.3	2.19
10/22/2012	Pages Branch	Pages Branch	85.2	8.28	710.0	17.2	7.75	248.9	2.12
10/24/2012	Pages Branch	Pages Branch	79.2	7.85	706.0	15.6	7.58	105.0	1.68
10/30/2012	Pages Branch	Pages Branch	80.6	8.81	685.0	11.9	7.79	35.5	0.98
1/8/2013	Pages Branch	Pages Branch	95.3	10.74	686.0	9.8	7.00	40.4	199.88
1/22/2013	Pages Branch	Pages Branch	56.2	7.22	739.0	10.0	7.09	39.9	2.65
1/28/2013	Pages Branch	Pages Branch	86.3	8.37	675.0	13.8	7.51	137.6	2.86
1/29/2013	Pages Branch	Pages Branch	94.1	9.61	664.0	14.1	7.92	209.8	4.91
2/6/2013	Pages Branch	Pages Branch	83.1	8.55	668.0	14.5	7.94	44.1	5.99
7/31/2012	Manskers	Walkers	86.4	6.92	430.0	26.5	7.81	198.9	2.55
8/20/2012	Manskers	Walkers	89.8	8.30	460.5	19.4	7.94	162.4	7.05
8/21/2012	Manskers	Walkers	98.6	8.92	454.6	20.2	8.01	98.4	4.44
8/22/2012	Manskers	Walkers	101.8	9.12	442.9	20.7	7.63	109.5	6.00
8/23/2012	Manskers	Walkers	84.0	7.58	446.3	20.4	7.87	95.8	4.82
10/10/2012	Manskers	Walkers	90.9	9.66	479.9	12.9	7.91	117.8	4.45
10/11/2012	Manskers	Walkers	90.5	10.15	478.7	10.2	7.57	93.4	4.23
10/23/2012	Manskers	Walkers	95.8	9.70	491.6	14.7	7.80	48.8	6.18
10/24/2012	Manskers	Walkers	102.1	10.20	489.6	15.3	7.94	34.5	6.81
10/31/2012	Manskers	Walkers	87.5	10.58	485.0	7.1	7.46	60.9	3.53
1/8/2013	Manskers	Walkers	107.2	13.69	358.5	4.9	7.80	45.2	15.15
1/23/2013	Manskers	Walkers	95.2	12.70	386.8	3.3	6.25	74.3	20.75
1/24/2013	Manskers	Walkers	102.7	12.33	393.7	5.8	6.54	42.8	22.34

Table 13A.1 – TMDL Monitoring Data for FY13 (Continued)

Date	Watershed	Site Name	DO %	DO mg/L	Cond	Temp C	pH	E coli MPN	Flow CFS
1/29/2013	Manskers	Walkers	90.7	10.52	394.1	8.9	7.51	73.3	13.58
2/5/2013	Manskers	Walkers	82.2	8.89	372.5	11.4	7.06	55.6	16.08
7/26/2012	Whites Creek	Whites Creek	72.2	5.10	404.7	29.5	7.92	120.1	***
7/31/2012	Whites Creek	Whites Creek	71.6	5.81	520.0	28.1	7.65	33.2	6.42
8/9/2012	Whites Creek	Whites Creek	84.5	6.54	344.0	28.3	7.35	13.2	100.00
8/13/2012	Whites Creek	Whites Creek	67.2	5.33	273.7	26.5	7.06	18.5	18.50
8/21/2012	Whites Creek	Whites Creek	65.7	5.36	279.2	24.6	7.38	29.4	7.90
10/10/2012	Whites Creek	Whites Creek	90.3	9.70	343.4	17.0	7.33	41.4	6.79
10/16/2012	Whites Creek	Whites Creek	73.1	6.85	527.0	18.1	7.03	63.8	11.72
10/22/2012	Whites Creek	Whites Creek	91.4	8.51	349.5	17.3	7.14	32.7	12.18
10/24/2012	Whites Creek	Whites Creek	97.4	9.33	327.6	17.4	7.19	93.2	8.69
10/30/2012	Whites Creek	Whites Creek	75.8	8.10	417.6	12.9	7.81	43.5	5.50
1/8/2013	Whites Creek	Whites Creek	95.8	11.97	593.0	5.8	7.73	21.3	23.75
1/22/2013	Whites Creek	Whites Creek	79.9	9.66	470.6	7.0	7.00	49.4	47.59
1/28/2013	Whites Creek	Whites Creek	75.5	8.62	450.0	8.2	6.24	190.4	40.43
1/29/2013	Whites Creek	Whites Creek	84.8	9.87	364.6	8.9	7.30	41.7	35.69
2/6/2013	Whites Creek	Whites Creek	81.2	8.17	430.4	11.8	7.68	4.1	27.97
6/20/2013	Whites Creek	Whites Creek	81.9	6.36	458.0	26.0	7.22	224.7	21.87
10/10/2012		Field Blank*						0.0	
10/22/2012		Field Blank*						0.0	
1/8/2013		Field Blank*						0.0	
10/10/2012		Trip Blank*						0.0	
10/22/2012		Trip Blank*						0.0	
1/8/2013		Trip Blank*						0.0	

*indicates QA/QC

*** indicates data unavailable

Table 13A.2 - SWMP Quantifiable Statistics

Categories	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13
Recycled Oil (tons)	16	9.1	17.82	20.27	26.88	35.38	36.4	35.32	36.52	28.15
Recycled Glass (tons)	1,798	1,052.70	1,107.05	1,116.52	1,607.48	2,110.05	1,866.14	2,207.29	2,160.19	2,199.85
Total Brush Collection (tons)	25,613.10	31,702.78	30,498.85	30,269.40	27,785.25	30,972.21	29,456.10	38,634.89	32,795.37	28,486.59
Total Waste Collected (tons)	159,595.04	157,622.99	150,972.54	152,430.24	153,266.01	149,474.79	151,425.06	151,501.17	148,297.40	151,131.01
# of Water Quality Complaints (non-construction) Investigations Initiated in Database	161	213	287	156	135	133	139	138	122	131
# of Construction Stormwater Related Inspections	4,708	5,509	5,721	6,552	6,327	6,160	5,079	5,457	5,843	5,170
# of Grading Permits Issued	270	271	252	239	165	109	121	135	142	138
Plans Submitted to Stormwater Development and Review	868	1,562	1,427	1,505	1,970	1,600	1,367	1,319	1,525	1,791
# of Construction Plans Approved or Declared No Permit Needed by Stormwater Development and Review	387	449	507	619	871	687	506	559	1,174	1,411
# of Stormwater Enforcements (NOVs and SWOs)	228	197	283	190	342	188	123	148	94	96

Table 13A.3 – Ambient Monitoring Data for the FY13 Reporting Period

Site Name	Date	Time	Temp	pH	TKN	BOD5	COD	Lead	Nickel	Copper	Zinc	TSS	Nitrate+ Nitrite	Tot Ammonia Nitrogen	TDS	Tot Phos.	Diss. Phos.	Chrom.	Total N	E-coli	Flow	Oil and Grease	Diss. O_2	Conductivity
Units			˚C		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	MPN	ft^3/Sec	mg/L	mg/L	µS
Manskers 1	7/26/2012	830	26.10	7.65	0.14	<2	10	<0.001	<0.001	<0.001	0.002	2	0.367	<0.1	332	0.12	0.12	<0.001	0.507	410.6	0.47	5	5.89	512.00
Manskers 1	7/26/2012	830	26.20	7.70	0.17	<2	10	<0.001	<0.001	<0.001	<0.001	2	0.365	<0.1	310	0.12	0.12	<0.001	0.535	260.3	0.47	5	5.77	515.00
Manskers 1	10/31/2012	940	8.00	7.63	0.125	<2	***	<0.001	<0.001	<0.001	0.003	3	0.048	<0.1	***	0.12	0.12	<0.001	0.173	101.7	0.46	5	10.18	544.00
Manskers 1	1/29/2013	750	9.40	7.62	0.26	<2	10	<0.001	<0.001	0.001	0.005	233	0.591	<0.1	233	<0.12	<0.12	<0.001	0.851	63.3	38.92	<1.2	9.99	419.4
Manskers 1	6/20/2013	1500	26.00	7.22	0.5	***	20	1.5	5	4	5	3.83	0.32	0.156	284	0.153	0.11	2	0.82	313.0	38.92	2	6.36	458.00
Whites Creek	7/26/2012	915	29.50	7.92	0.82	<2	20	<0.001	<0.001	<0.001	<0.001	1	0.048	<0.1	1	0.12	0.12	<0.001	0.868	120.1	***	5	5.10	404.70
Whites Creek	10/30/2012	1230	12.90	7.81	0.51	5	***	0.05	0.04	0.16	0.086	9	0.091	<0.1	***	0.12	0.12	0.02	0.601	43.5	5.60	83	8.10	417.60
Whites Creek	1/29/2013	710	8.90	7.30	0.12	<2	10	<0.001	<0.001	0.001	0.001	268	0.775	<0.1	268	<0.12	<0.12	<0.001	0.895	41.7	36.50	<1.2	9.87	364.6
Whites Creek	6/20/2013	1400	27.60	7.08	1.1	***	20	1.5	5	4	7.14	8.33	0.25	0.075	185	0.246	0.138	2	1.35	224.7	12.00	2	7.97	334.00
Trip Blank	7/26/2012	715	N/A	MGB/SW	<0.1	1	10	<0.001	<0.001	<0.001	<0.001	1	0.05	<0.1	1	0.12	0.12	<0.001	<0.01	N/A	N/A	5	N/A	N/A
Field Blank	7/26/2012	915	N/A	MGB/SW	<0.1	1	10	<0.001	<0.001	<0.001	0.002	11	0.473	<0.1	236	***	0.12	<0.001	<0.01	N/A	N/A	5	N/A	N/A

*** Data Missing

Table 13A.4 – Wet Weather Monitoring for the FY13 Reporting Period

Date	Time	Site Name	Flow	E. Coli	BOD5	COD	NH3	TKN	NO3/NO2	Total N	Diss P	P	Pb	Zn	Cr	Cu	Ni	Oil and Grease	Suspended Solids	Dissolved Solids
			ft3/sec.	MPN	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	mg/L	mg/L
8/9/2012	1015	Comm 1 HR	0.3506	461	8.00	42.0	0.377	0.597	0.42	1.02	0.02	0.09	2.00	56.30	2.00	7.16	<5	2.0	7.3	80.0
8/9/2012	915	Comm FF	1.4949	228	11.00	55.0	0.432	0.768	0.31	1.08	0.02	0.12	5.07	88.90	2.15	12.20	<5	2.0	18.7	65.0
8/9/2012	1015	Ind 1 HR	0.0022	10500	5.00	31.0	0.241	0.500	0.50	1.00	0.02	0.10	1.72	28.00	2.00	4.00	<5	2.0	6.7	84.0
8/9/2012	915	Ind FF	0.1038	8160	9.00	20.0	0.538	0.630	0.58	1.21	0.153	7.33	3.43	97.80	2.00	4.00	<5	2.0	7.3	49.0
8/9/2012	1015	Trans 1 HR	0.0800	77010	4.00	27.0	0.218	0.500	0.52	1.02	0.053	0.12	1.83	26.40	2.00	6.49	<5	2.2	14.7	90.0
8/9/2012	915	Trans FF	0.8829	411	16.00	89.0	0.529	1.170	0.51	1.68	0.05	0.41	3.45	91.20	2.28	8.50	<5	2.0	49.3	92.0
12/4/2012	1130	Comm 1HR	***	7890	6.00	24.0	0.116	5.650	0.25	5.90	0.02	0.07	2.16	50.10	2.30	8.90	<5	2.0	20.0	54.0
12/4/2012	1030	Comm FF	***	2750	3.00	29.0	0.129	6.720	0.25	6.97	0.02	0.15	2.44	65.60	2.00	10.30	<5	2.0	22.0	29.0
12/4/2012	1120	Trans 1HR	0.0178	23	2.00	22.0	0.797	6.740	0.25	6.99	0.07	0.13	<1.5	18.70	2.00	5.72	<5	2.0	10.0	68.0
12/4/2012	1020	Trans FF	0.0800	20	2.00	20.0	0.691	0.641	0.25	0.89	0.04	0.16	1.82	38.10	2.39	6.05	<5	2.0	34.0	72.0
1/9/2013	1105	Open 1HR	0.0287	770	2.00	20.0	0.075	0.500	1.62	2.12	0.382	0.45	<1.5	12.00	2.49	4.00	<5	2.0	9.8	271.0
1/9/2013	1005	Open FF	0.0480	613	3.00	37.0	0.075	0.500	0.81	1.31	0.565	0.87	<1.5	20.00	3.98	4.00	<5	2.0	23.2	209.0
1/9/2013	1105	Res 1Hr	0.0002	57940	4.00	27.0	0.075	<0.5	0.25	<0.75	1.12	1.76	<1.5	30.10	3.72	4.16	<5	2.0	17.8	159.0
1/9/2013	1005	Res FF	0.1274	34480	4.00	35.0	0.101	0.500	0.25	0.75	0.898	1.25	<1.5	59.30	3.08	4.00	<5	2.0	21.6	125.0
3/18/2013	1000	Comm 1 HR	1.4949	35	<25	240.0	0.426	2.000	0.87	2.87	0.375	0.74	11.00	301.00	6.15	34.80	<5	7.7	199.0	121.0
3/18/2013	900	Comm FF	2.1245	111	6.70	<20	0.167	0.858	<0.25	<1.11	0.074	0.10	<1.5	22.60	<2	<4	<5	<2	13.2	27.0
3/18/2013	1000	Ind 1 HR	***	124	<5	<20	<0.25	<0.5	<0.25	<0.75	0.28	0.22	<1.5	28.10	<2	<4	<5	<2	17.6	54.0
3/18/2013	910	Ind FF	***	1120	<10	127.0	0.230	0.644	0.27	0.91	<0.02	0.69	12.20	336.00	6.69	18.10	5.98	3.1	204.0	40.0
3/18/2013	1110	Open 1HR	***	2420	<5	54.3	<0.075	0.535	0.36	0.89	0.489	1.03	2.12	15.20	5.51	<4	<5	<2	103.0	178.0
3/18/2013	947	Open FF	***	2419	6.88	77.8	0.106	<0.5	<0.25	<0.75	0.847	1.27	3.34	18.40	6.38	4.47	5.23	4.3	121.0	150.0
3/18/2013	1010	Res 1 Hr	0.0043	11260	5.20	45.8	<0.075	<0.5	<0.25	<0.75	0.156	1.83	1.61	22.70	<2	<4	<5	<2	117.0	145.0
3/18/2013	910	Res FF	0.0043	5280	7.33	86.3	0.113	0.694	0.26	0.96	0.496	1.93	4.90	59.80	3.59	6.88	<5	<2	309.0	57.5
3/18/2013	950	Trans 1 HR	***	276	<5	84.2	0.181	<0.5	<0.25	<0.75	<0.02	0.55	4.06	40.00	5.99	6.14	6.29	71.7	3990.0	70.0
3/18/2013	850	Trans FF	***	28	<25	1030.0	0.261	0.666	<0.25	<0.916	<0.02	5.40	17.30	239.00	24.70	28.20	28.30	142.0	10300.0	340.0
4/24/2013	0944	Ind 1 HR	***	770	2.00	20.0	0.076	0.500	<0.25	<0.75	0.257	0.32	1.50	16.30	2.00	4.00	<5	2.0	7.6	61.0
4/24/2013	0827	Ind FF	***	2420	7.00	42.0	0.206	0.642	<0.25	<0.892	0.106	0.46	2.10	60.40	2.00	4.65	<5	2.0	43.1	74.0
4/24/2013	1035	Open 1HR	***	2420	6.00	50.0	0.076	0.835	<0.25	<1.085	0.557	0.87	1.50	5.35	2.00	4.00	<5	10.2	21.4	182.0
4/24/2013	1026	Open FF	***	2420	0.00	61.0	0.075	1.510	<0.25	<1.76	0.847	1.27	1.50	9.02	2.76	4.00	<5	16.8	31.0	135.0
4/24/2013	1001	Res 1Hr	0.0043	2420	6.00	52.0	0.075	0.898	<0.25	<1.148	1.03	1.10	1.50	19.20	2.47	4.26	<5	6.5	41.7	142.0
4/24/2013	0841	Res FF	0.0043	2420	10.00	69.0	0.153	0.695	0.28	0.98	0.883	1.49	2.16	25.80	2.74	6.11	<5	2.5	85.5	141.0

*** Data Missing

Table 13A.5 – Benthic Monitoring Data for the Reporting Period

Stream Name	Biological Score
Fall of 2012	
Whites	0.71
Manskers	0.62
Spring of 2013	
Whites	0.9
Manskers	0.86

Note: All future biological assessments will be performed on streams based on the a rotating schedule that coincides with the Ambient Monitoring Plan. Biological Assessments are performed using the Quality System Standard Operating Procedure.

Table 13A.6 – NPDES Program Estimated Pollutant Loading Reductions

Summary Table	FY10	FY11	FY12	FY13	FY10	FY11	FY12	FY13	FY14 Q1	FY14 Q2	Average
Pollutant	lbs/day	lbs/day	lbs/day	lbs/day	lbs/FY	lbs/FY	lbs/FY	lbs/FY	lbs/Q	lbs/Q	lbs/FY
Chlorine	0.043	0.048	0.00	0.0048	14.22	17.54	0.00	1.75	6.80		8.38
Detergents	0.15	0.00	0.088	0.0003	9.12	0.00	32.09	14.73	0.00		13.99
HumanBacteria	1.25	0.90	0.83	0.19	91.71	11.65	168.18	35.62	72.10		76.79
Hydrocarbons	384.93	79.41	265.68	255.13	4423.60	149.16	985.80	6258.58	34.75		2954.29
Metals	0.00	0.00	90.18	0.00	0.00	0.00	5482.93	0.00	0.00		1370.73
Nutrients (N+P)	0.51	0.00	0.22	0.21	127.08	0.00	15.61	75.89	0.00		54.64
TDS	23.25	9.04	7.79	4.47	923.84	116.52	1681.83	384.37	556.57		776.64
TSS	13.47	37.43	163.84	22.49	759.08	2618.20	8190.53	1682.93	1279.19		3312.68
Total	**423.60**	**126.82**	**551.13**	**282.49**	**6348.65**	**2913.07**	**16556.97**	**8453.87**	**1949.42**		**8568.14**
					Waste						
Sewage	26368.21	18073.91	15587.28	8302.65	1830379	233033	3363666	536042	1113139		1490780
Compactor Effluent	625.83	0.00	125.17	33.38	16155	0	20903	1368	0		9606
FOG	98.71	759.34	32.27	293.29	5133	6356	3487	730	0		3926
Sediment	138.93	277.87	5.56	100.00	20284	1111	6	7000	3500		7100
Total	**27231.69**	**18833.25**	**15750.28**	**8629.32**	**1871952**	**240500**	**3388061**	**545141**	**1116639**		**1511414**

Routine Maintenance MS4 Employee Sign-in Sheets

Title of Training: Routine Maintenance Water Quality SOPs

3-14-2013 (Page 1)

Employee Stormwater Training Sign-in Sheet

(Maintenance Employees to be trained on each Stormwater SOP once per calendar year

Metro Facility Name	Year of the Training	Supervisor Performing Training
Stormwater Routine Maintenance	2013	[illegible] - NPDES Office
Employee Name	**Employee Signature**	**Date Trained**
Robert Rose		14 MAR 13
Jon A. Thomas		March 14
Randy Breedlove	Randy Breedlove	03/14/2014
James W. Madden	James W. Madden	3-14-2013
Rachel Mora	Rachel Mora	3-14-13
McKay Jackson	[illegible]	3-14-13
Steve Foster	[illegible]	3-14-13
A Ward	[illegible]	3-14-13
Robbie Scott	Robbie Scott	3-14-13
Greg Hodges	Greg Hodges	3-14-13
Darrell Golden	[illegible]	3-14-13
Alan Young	[illegible]	3-14-13
Josh Henning	[illegible]	3-14-13
Clifford Page	Clifford Page	3-14-13
Byford Meeks	[illegible]	cl
Brandon Fortson	[illegible]	3/14/13
Lawrence A. Clemons	[illegible]	3/14/13
Scott Fugleberg	Scott Fugleberg	3/14/13
Chris Ford	[illegible]	3-14-13
Joseph P Fedun	Joseph P Fedun	3/14/13
Gary Johnson	[illegible]	3-14-13

Routine Maintenance MS4 Employee Sign-in Sheets

Routine Maintenance Water Quality SOP
3-14-2013 (Page 2)

Employee Stormwater Training Sign-in Sheet
(Maintenance Employees to be trained on each Stormwater SOP once per calendar year

Metro Facility Name	Year of the Training	Supervisor Performing Training
Employee Name	**Employee Signature**	**Date Trained**
Donald Thompson	Donald Thompson	3-14-13
John Madden	John Madden	3-14-13
Kyle McElheney	Kyle McElheney	3-14-13
Lonnie Wells	Lonnie Wells	3-14-13
[illegible]	[illegible]	3-14-13
Thomas Crockett	Thomas Crockett	3-14-13
Steve Shelton	Steve Shelton	3-14-13
[illegible]	Jennifer Hill	3/14/13
Richard Howard	Richard Howard	3/14/13
Daniel Canfield	Daniel Canfield	3/14/13
Dale Binder	Dale Binder	3/14/13

LID Manual Training Sign-in Sheet

Sign-In Sheet for MWS LID Volume 5 Training

Welcome!

Location: **AMEC** Date: **Sept. 7, 2012**

Name	Department	E-mail
Joseph Gore	Barge Cauthen	jgore@bargecauthen.com 356-9911
Steve Mishu	MWS-SW	Steve.mishu@nashville.gov
Michael Hunt	MWS-SW	michael.hunt@nashville.gov
Jennifer Knauf	MWS-SW	jennifer.knauf@nashville.gov
Wesley Harris	Regan-Smith Assoc.	wharris@regansmith.com 244-8591
Andrew Wolthaus	Littlejohn Eng. Assoc.	awolthaus@leainc.com 385-4144
✓ Michael Garrigan	Dale & Assoc.	michael@dalean dassociates.net
✓ Jeff Cundiff	BWSC	jjcundiff@bwsc.net 254-1500
Kevin Gangwisch	Civil Site Design Group	KevinG@civil-site.com 248-9999
Chris Singleton	Metro 3	chris.singleton@nashville.gov
David Hartsmeier	Metro 3	david.hartsmeier@nashville.gov
Rebecca Dohn	MWS	rebecca.dohn@nashville.gov
Gongyu Hsu	MWS	gongang@Nashville.Gov
Sara Johnson	AMEC	sara.johnson@amec.com
Tom Palko	MWS	tom.palko@nashville.gov
Andy Reese	AMEC	andrew.reese@amec.com

Other NPDES Office Training Sign-in Sheets

LUNCH AND LEARN PRESENTATION		
DATE: Wednesday, September 22, 2010		
NAME	DEPARTMENT	CONTACT NUMBER
1. Greg Ballard	greg.ballard@nashville.gov Mayor	862-6022
2. Paul Stoneciffer	Arcadis	313-0365
3. Dale Binder	dale.binder@nashville.gov MWS-NPDES	880-2420
4. Richard Williams	AMCC	333-0630
5. Steve Mishu	steve.mishu@nashville.gov MWS-SW	615-862-4780
6. Roger D. Lindsay	roger.lindsay@nashville.gov MWS-Stormwater	615-862-4706
7. Tom Palko	tom.palko@nashville.gov	615-862-4510
8. Rebecca Dohn	rebecca.dohn@nashville.gov	615-880-2420
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		
17.		
18.		
19.		
20.		

Page 1 of 1 Permapave Presentation

Clean Streets Mean Clean Streams
5/23/13

Name	Phone
Rebecca Dohn	880-2420
Michael Hunt	880-2420
Casey Cooper	862-4529
MIKE SHULTZ	251-8557

Watershed Arithmetic CWP Webcast

4/17/13

Name	Number
Michael Hunt	615 880-2420
Rebecca Dohn	" "

Other NPDES Office Training Sign-in Sheets

Please Come Audit My MS4
5/15/13

Name	Signature
Rebecca Dohn	Rebecca Dohn
Dale Binder	
Josh Hayes	Josh Hayes
Sonya Erickson	Sonya Erickson

Watershed Arithmetic CWP Webcast

4/17/13

Name	Number
Michael Hunt	615 580.2420
Rebecca Dohn	" "

Lose 10 lbs of Pollution w/out Structural BMPs

Name

Michael Hurst
Sonya Erickson 2/13/13
Joya Hayes 2/13/13
Rebecca Dohn 2/13/13

Watershed Arithmetic CWP Webcast

4/17/13

Name	Number
Michael Hunt	615 580.2420
Rebecca Dohn	" "

2/6/13

Inspection Protocols for Maintaining & Verifying LID

Print Name	Sign Name
BOOTS O'HARA	Boots O'H
Dale Binder	
Harold Bryant	Harold Bryant
Rebecca Dohn	Rebecca Dohn
Phil Isaac	
Shawn Herman	Shawn Herman
Michael Hunt	Michael Hunt
DENICE JOHNS	
Sonya Erickson	Sonya Erickson

Watershed Arithmetic CWP Webcast

4/17/13

Name	Number
Michael Hunt	615 580.2420
Rebecca Dohn	" "

Permeable Pavement - The Good, the Bad, & the Ugly

9/5/12

Name

Dale Binder
Gong-Yu Hsu
Michael Hunt

4.0 Supporting Program Data

The following supplemental reports/permit modifications are included within this section.

MWS PIO Public Education Program Activities during FY13

ActivityType: Classroom Activity 177 Programs/Activities

TOTAL	Teacher Led Activity	177	Programs/Activities	3799	Students		Adults
The Journey of Your Water Video		177	Programs/Activities	3799	Students		Adults
8/27/2012	Bellshire Elementary Design Center		3	81	4th grade		
8/28/2012	Crieve Hall Elementary		3	48	4th grade		
8/30/2012	Donelson Christian Academy		3	39	4th grade		
9/4/2012	Gateway Elementary		2	42	4th grade		
9/6/2012	Granbery Elementary		3	66	4th grade		
9/7/2012	Hickman Elementary		4	93	4th grade		
9/10/2012	Haywood Elementary		1	32	4th grade		
9/11/2012	Haywood Elementary		1	45	4th grade		
9/13/2012	Haywood Elementary		1	45	4th grade		
9/14/2012	Caldwell Elementary Enhanced Option		3	39	4th grade		
9/17/2012	Maxwell Elementary School		5	125	4th grade		
9/18/2012	Binkley, Norman Elementary		4	93	4th grade		
9/20/2012	Shayne Elem.		2	53	4th grade		
9/21/2012	Shayne Elem.		3	78	4th grade		
9/24/2012	Goodlettsville Elementary		5	76	4th grade		
9/25/2012	Percy Priest Elem.		4	100	4th grade		
10/1/2012	Shwab Elem.		3	50	4th grade		
10/2/2012	Tom Joy Elem.		4	100	4th grade		
10/4/2012	Cotton, Hattie Elementary		4	67	4th grade		
10/19/2012	Kirkpatrick Elem. Enhanced Option		3	45	4th grade		
10/25/2012	Una Elem.		4	100	4th grade		
10/26/2012	Una Elem.		3	75	4th grade		
11/1/2012	Pennington Elem.		3	63	4th grade		
11/2/2012	Dodson Elementary		4	86	4th grade		
11/5/2012	Rosebank Elem.		3	52	4th grade		
11/9/2012	Napier Elem. Enhanced Option		4	68	4th grade		
11/14/2012	Ruby Major Elem.		3	61	4th grade		
11/15/2012	Cumberland Elementary		3	63	4th grade		
11/16/2012	Buena Vista Elementary Enhanced Option		4	58	4th grade		
11/26/2012	Ross Elem.		2	31	4th grade		

MWS PIO Public Education Program Activities during FY13 (Continued)

11/27/2012	Stanford Elem. Montessori Design Ctr.	3	57	4th grade
11/29/2012	Eakin Elementary	5	125	4th grade
11/30/2012	Glenview Elementary	4	80	4th grade
12/4/2012	Inglewood Elementary	3	60	4th garde
12/5/2012	Ruby Major Elem.	2	45	4th grade
12/12/2012	Dupont Elementary	3	75	4th grade
12/14/2012	Jackson, Andrew Elementary	4	102	4th grade
12/17/2012	Lockeland Elem. Design Center	3	63	4th grade
1/30/2013	Cockrill Elementary	2	36	4th grade
1/31/2013	Cockrill Elementary	2	36	4th grade
2/6/2013	Cole Elementary	3	81	4th grade
2/7/2013	Cole Elementary	2	54	4th grade
2/15/2013	Jones Elem. Paideia Magnet	3	78	4th grade
2/19/2013	Akiva School	1	12	5th grade
2/20/2013	West End Middle	4	100	4th grade
2/22/2013	Charlotte Park Elementary	3	60	4th grade
3/5/2013	Sylvan Park Elem. Paideia Design Ctr.	3	60	4th grade
3/7/2013	Bordeaux Elementary Enhanced Option	3	50	4th grade
3/8/2013	Gower Elementary	4	100	4th grade
3/11/2013	Kelley, A.Z. Elementary	5	110	4th grade
3/12/2013	Carter-Lawrence Elementary Magnet	4	110	4th grade
3/14/2013	Hermitage Elementary	2	40	4th grade
4/5/2013	Harpeth Valley Elementary	6	120	4th grade
4/9/2013	Joelton Elementary	3	51	4th grade
4/12/2013	Green, Julia Elementary	6	120	4th grade

MWS PIO Public Education Program Activities during FY13 (Continued)

ActivityType: Classroom Program 199 Programs/Activities

TOTAL Classroom Program	199 Programs/Activities	4668 Students	Adults
Career Fair	**6 Programs/Activities**	**270 Students**	**Adults**
8/20/2012	Brick Church Middle Enviroscape	6 270	
Enviroscape	**23 Programs/Activities**	**541 Students**	**Adults**
10/23/2012	Hume Fogg High Magnet	2 50	10th grade
11/8/2012	Hume Fogg High Magnet	3 80	10th grade
11/28/2012	Stratford High	2 40	10th grade
1/23/2013	Hume Fogg High Magnet	2 50	9th grade
1/24/2013	Hume Fogg High Magnet	3 66	9th and 11th grade
2/8/2013	Hume Fogg High Magnet APES	2 36	11th and 12th grade
3/6/2013	Antioch Middle	4 140	7th grade
3/18/2013	Apollo Middle Intercession program	1 10	5th - 8th grade
3/20/2013	Bellevue Middle BELL garden intercession program	1 10	
4/2/2013	Franklin Road Academy	1 15	10th grade
4/4/2013	Abintra Montessori School	1 17	5th & 6th grade
6/17/2013	Jr. Master Gardeners water pollution prevention for gardeners and backflow prevention	1 27	
The Water Cycle & Me	**167 Programs/Activities**	**3787 Students**	**Adults**
7/17/2012	Special Group Mt. Bethel Church summer camp	1 20	4th - 8th grade
8/27/2012	Bellshire Elementary Design Center	3 81	4th grade
8/28/2012	Crieve Hall Elementary	3 48	4th grade
8/30/2012	Donelson Christian Academy	3 39	4th grade
9/4/2012	Gateway Elementary	2 42	4th grade
9/6/2012	Granbery Elementary	3 66	4th grade
9/7/2012	Hickman Elementary	4 93	4th grade
9/10/2012	Haywood Elementary	1 32	4th grade
9/11/2012	Haywood Elementary	1 45	4th grade
9/13/2012	Haywood Elementary	1 45	4th grade
9/14/2012	Caldwell Elementary Enhanced Option	3 39	4th grade

MWS PIO Public Education Program Activities during FY13 (Continued)

9/17/2012	Maxwell Elementary School	5	125	4th grade
9/18/2012	Binkley, Norman Elementary	4	93	4th grade
9/20/2012	Shayne Elem.	2	53	4th grade
9/21/2012	Shayne Elem.	3	78	4th grade
9/24/2012	Goodlettsville Elementary	3	76	4th grade
9/25/2012	Percy Priest Elem.	4	100	4th grade
10/1/2012	Shwab Elem.	3	30	4th grade
10/2/2012	Tom Joy Elem.	4	100	4th grade
10/4/2012	Cotton, Hattie Elementary	4	67	4th grade
10/19/2012	Kirkpatrick Elem. Enhanced Option	3	45	4th grade
10/25/2012	Una Elem.	4	100	4th grade
10/26/2012	Una Elem.	3	75	4th grade
11/1/2012	Pennington Elem.	3	63	4th grade
11/2/2012	Dodson Elementary	4	86	4th grade
11/5/2012	Rosebank Elem.	3	52	4th grade
11/9/2012	Napier Elem. Enhanced Option	4	68	4th grade
11/14/2012	Ruby Major Elem.	3	61	4th grade
11/15/2012	Cumberland Elementary	3	63	4th grade
11/16/2012	Buena Vista Elementary Enhanced Option	2	58	4th grade
11/26/2012	Ross Elem.	2	31	4th grade
11/27/2012	Stratford Elem. Montessori Design Ctr.	3	57	4th grade
11/29/2012	Eakin Elementary	5	125	4th grade
11/30/2012	Glenview Elementary	4	80	4th grade
12/4/2012	Inglewood Elementary	3	60	4th grade
12/5/2012	Ruby Major Elem.	2	45	4th grade
12/12/2012	Dupont Elementary	3	75	4th grade
12/14/2012	Jackson, Andrew Elementary	4	102	4th grade
12/17/2012	Lockeland Elem. Design Center	3	63	4th grade
1/17/2013	Charlotte Park Elementary	3	60	4th grade
1/30/2013	Cockrill Elementary	2	36	4th grade
1/31/2013	Cockrill Elementary	2	36	4th grade
2/6/2013	Cole Elementary	3	81	4th grade
2/7/2013	Cole Elementary	2	54	4th grade

MWS PIO Public Education Program Activities during FY13 (Continued)

2/15/2013	Jones Elem. Paideia Magnet	3	78	4th grade
2/19/2013	Akiva School	1	12	5th grade
2/20/2013	Westmeade Elem.	4	100	4th grade
3/5/2013	Sylvan Park Elem. Paideia Design Ctr.	3	60	4th grade
3/7/2013	Bordeaux Elementary Enhanced Option	2	50	4th grade
3/8/2013	Gower Elementary	4	100	4th grade
3/11/2013	Kelley, A.Z. Elementary	5	110	4th grade
3/12/2013	Carter-Lawrence Elementary Magnet	4	78	4th grade
3/14/2013	Hermitage Elementary	2	40	4th grade
4/5/2013	Harpeth Valley Elementary	3	120	4th grade
4/9/2013	Joelton Elementary	3	51	4th grade
4/12/2013	Green, Julia Elementary	3	120	4th grade
Water Fun & Games	**3 Programs/Activities**		**70 Students**	**Adults**
7/5/2012	Library: North Branch	1	30	preschool, k
7/12/2012	Library: Southeast	1	25	school ages
6/20/2013	Library: Hadley Park	1	15	

MWS PIO Public Education Program Activities during FY13 (Continued)

ActivityType: Community Outreach Ev 37 Programs/Activities

TOTAL Booth		**3 Programs/Activities**	**150 Students**	**50 Adults**
Booth/Table		**3 Programs/Activities**	**150 Students**	**50 Adults**
7/21/2012	Special Event CHOMPS event at Adventure Science Center, envirosCape and backflow demonstration	1	150	50
2/28/2013	Nashville Lawn and Garden Show 4 days, Stormwater pollutin prevention, Backflow Prevention	1		
5/18/2013	Master Gardeners Urban Garden Festival - water pollution prevention for gardeners booth	1		
TOTAL Provide Water		**34 Programs/Activities**	**Students**	**Adults**
Water Fountain		**13 Programs/Activities**	**Students**	**Adults**
7/28/2012	Music City Brewers' Festival	1		
9/6/2012	Live on the Green Concerts	1		
9/13/2012	Live on the Green Concerts	1		
9/15/2012	Wine on the River	1		
9/20/2012	Live on the Green Concerts	1		
9/27/2012	Live on the Green Concerts	1		
9/29/2012	Dragon Boat & River Festival	1		
10/3/2012	Special Event MECCC golf scramble	1		
10/4/2012	Live on the Green Concerts	1		
10/11/2012	Live on the Green Concerts	1		
11/17/2012	Mayors Challange 5K	1		
4/20/2013	Earth Day Festival	1		
5/18/2013	Special Event Children's Festival	1		
Water Wagon		**21 Programs/Activities**	**Students**	**Adults**
7/4/2012	Hot Chicken Festival	1		
7/21/2012	Music City Triathlon Kick off, Childrens' race, triathalon over 3 days	3		
9/7/2012	State Fair multi day event	9		
10/2/2012	Special Event 28th/31st Ave Connector Openign	1		
10/3/2012	MECCC Kickoff	1		

MWS PIO Public Education Program Activities during FY13 (Continued)

4/6/2013	Special Event Metro 50th Anniversary	1
4/17/2013	Special Event KVB Grand Opening	1
5/4/2013	Special Event Mayors Field Day	1
6/8/2013	Catfish Rodeo	1
6/17/2013	Special Event Predators Event at Hickory Hollow Mall	1
6/22/2013	Taste of Music City	1

MWS PIO Public Education Program Activities during FY13 (Continued)

ActivityType: Community Presentation 20 Programs/Activities

TOTAL Presentation	**20 Programs/Activities**	**Students**	**334 Adults**
Backflow Prevention	**2 Programs/Activities**	**Students**	**55 Adults**
12/19/2012	Special Group Water Wednesday class - with Cross Connections Staff	1	5
3/14/2013	Master Gardeners backflow and runoff pollution prevention	1	50
Rain Barrels	**4 Programs/Activities**	**Students**	**20 Adults**
6/3/2013	Library - Bellevue Branch	1	5
6/6/2013	Library - Bellevue Branch	1	5
6/25/2013	Library: North Branch	1	5
6/29/2013	Library: Goodlettsville Branch	1	5
Special Presentation	**2 Programs/Activities**	**Students**	**120 Adults**
4/10/2013	Special Group Tribal Utility Summit - "Community outreach for stormwater and public health"	1	50
4/13/2013	Special Group Nashville Zoo Docents - backflow and stormwater pollution prevention	1	70
Water Treatment & Quality	**12 Programs/Activities**	**Students**	**139 Adults**
7/11/2012	National Business College water processes and backflow demonstration	1	25
7/12/2012	National Business College water processes and backflow demonstration	1	20
7/25/2012	National Business College water processes and backflow prevention demonstration	1	7
10/17/2012	National Business College Environmental Science Class	1	10
12/13/2012	Anthem Career College water processes and backflow demonstration	1	10
12/18/2012	Anthem Career College water treatment processes and backflow prevention	1	7
1/22/2013	Anthem Career College Environmental Science Class, backflow demo	1	6
3/28/2013	National Business College water processes, backflow prevention, clog prevention	1	10
4/1/2013	National Business College backflow prevention, water processes, clog prevention	1	8
6/19/2013	National Business College Environmental Science Class, Bell Road Campus	1	13

MWS PIO Public Education Program Activities during FY13 (Continued)

6/27/2013	National Business College Environmental Science Class, Bell Road Campus	1	13
6/27/2013	National Business College Environmental Science Class, Madison Campus	1	10

MWS PIO Public Education Program Activities during FY13 (Continued)

ActivityType: Tour		32 Programs/Activities			
TOTAL Tour: Biosolids		**4 Programs/Activities**	**58 Students**		**17 Adults**
Biosolids Facility Tour: Adults		**1 Programs/Activities**	**Students**		**17 Adults**
3/22/2013	Aquinas	1			17
Biosolids Facility Tour: Students		**3 Programs/Activities**	**58 Students**		**Adults**
4/15/2013	Vanderbilt School of Science & Math (High Schoo	1	28	9th grade	
4/17/2013	Martin Luther King Magnet	1	20	11th and 12th grade	
6/18/2013	Special Group Mayor's Office & MWS interns	1	10		
TOTAL Tour: WTP		**11 Programs/Activities**	**143 Students**		**64 Adults**
K.R. Harrington Tour: Adults		**2 Programs/Activities**	**Students**		**17 Adults**
8/29/2012	University: Meharry Medical College Occupational & Environmental Medicine	1			9
3/25/2013	University: TSU Health Sciences Class	1			8
K.R. Harrington Tour: Students		**4 Programs/Activities**	**73 Students**		**Adults**
8/23/2012	Stratford High Interdisciplinary Science and Research students (STEM)	1	13	10th grade	
8/24/2012	Hillsboro High Interdisciplinary Science and Research students (STEM)	1	20	10th grade	
10/31/2012	Martin Luther King Magnet AP Environmental Science Class	1	12	12th grade	
4/15/2013	Vanderbilt School of Science & Math (High Schoo	1	28	9th grade	
Omohundro Tour: Adults		**1 Programs/Activities**	**Students**		**47 Adults**
7/19/2012	Special Group National League of Cities, with flood presentation	1			47
Omohundro Tour: Students		**4 Programs/Activities**	**70 Students**		**Adults**
11/27/2012	Montgomery Bell Academy	1	20	high school	
12/4/2012	Montgomery Bell Academy	2	40	High School	
6/19/2013	Special Group Mayor's Office & MWS interns	1	10		
TOTAL Tour: WWTP		**17 Programs/Activities**	**180 Students**		**77 Adults**
White's Creek Tour: Adults		**5 Programs/Activities**	**Students**		**66 Adults**
7/17/2012	David Lipscomb University Chemistry Teachers	1			15
10/29/2012	University: Nashville State Community College Environmental Science Class	1			16
3/22/2013	Aquinas	1			15

MWS PIO Public Education Program Activities during FY13 (Continued)

3/27/2013	University: Nashville State Community College	1			15
4/18/2013	University: TSU	1			5
Whites Creek Tour: Students	**12 Programs/Activities**		**180 Students**		**11 Adults**
8/21/2012	Stratford High Interdisciplinary Science and Research students (STEM)	1	13	10th	
8/22/2012	Hillsboro High Interdisciplinary Science and Research students (STEM)	1	20	10th grade	
10/5/2012	Franklin Christian Academy	1	12	6th & 7th grade	
2/21/2013	Hume Fogg High Magnet	1	20	11th and 12th grade	
2/26/2013	Hume Fogg High Magnet	1	18	11th and 12th grade	
2/27/2013	Hume Fogg High Magnet	1	18	11th and 12th grade	
3/21/2013	Youth Life Learning Center	1	6	middle school	
4/10/2013	Martin Luther King Magnet	1	12	11th & 12th grade	
4/15/2013	Vanderbilt School of Science & Math (High Schoo	1	28	9th grade	
4/16/2013	Special Group Tennessee Tech Wastewater Class	1			11
5/2/2013	Harpeth Hall	1	17	11th & 12th grade	
5/7/2013	Harpeth Hall	1	16	11th and 12th grade	

MWS Stormwater NPDES Public Education Events/Presentations during FY13

Date	Target	Event	Location	Estimated Audience Directly Reached	Organizer Initials	Audience	Education Type	First Of Notes
7/2/2012	Leaves/Brush/Trash Dumping	Debris in ditches mail-out	Lickton Pike	1	Hayes	Targeted residences	Mail-out	Education letter to homeowners where significant dumping of debris has been noted in the storm drainage system.
7/14/2012	General Stormwater Pollution	Creation Care Camp	Private Resident	23	Winesett	Youth Camp 5-8 years old	School	Watershed Group provided 1/2 day training that included talks about the water cycle, bird feathers and oil spills, watershed pollution, and identifying bugs.
7/26/2012	MS4 Permit Compliance	New MS4 Permit Intradeparment Coordination	1607 County Hospital Road	5	Hayes	OEM	Metro Employee MS4 Compliance	JH/MH/DB met with OEM on Spill Response and MS4 Permit Compliance
8/15/2012	Constrcution/Development Education	Society of Military Engineers		20	Hunt	Millitary engineers	Presentation	Michael Hunt and Roger Lindsey present the LID manual to military engineers.
8/22/2012	Leaves/Brush/Trash Dumping	Debris in ditches mail-out	Rosedale	8	Hayes	Targeted residences	Mail-out	Education letter to homeowners where significant dumping of debris has been noted in the storm drainage system.
8/24/2012	Leaves/Brush/Trash Dumping	Debris in ditches mail-out	Harwell Drive	2	Hayes	Targeted residences	Mail-out	Education letter to homeowners where significant dumping of debris has been noted in the storm drainage system.
8/28/2012	Leaves/Brush/Trash Dumping	Debris in ditches mail-out	Wimpole Drive	2	Hayes	Targeted residences	Mail-out	Education letter to homeowners where significant dumping of debris has been noted in the storm drainage system.
9/19/2012	Leaves/Brush/Trash Dumping	Debris in ditches mail-out	Lickton Pike	19	Hayes	Targeted residences	Mail-out	Education letter to homeowners where significant dumping of debris has been noted in the storm drainage system.
9/29/2012	General Stormwater Pollution	Dragon Boat Festival	Riverfront Park	200	Bruce	General Public	Citywide Event	Displayed large 303d map and the pollution matching game.
10/11/2012	MS4 Permit Compliance	New MS4 Permit Intradeparment Coordination	1607 County Hospital Road	5	Hayes	Schools Department Maintenance Personnel	Metro Employee MS4 Compliance	JH/MH/RD met with schools on developing SWPPPs for school maintenance site and having them maintenance the BMPs.
10/17/2012	Constrcution/Development Education	TN Stormwater Association Annual Conference	Chattanooga	40	Hunt	TNSA Members/Conference Goers	Presentation	Michael Hunt presented the implementation portion of the new LID Manual.
10/18/2012	Constrcution/Development Education	Southeastern Watershed Association Annual Conference	Chattanooga Choo Choo Hotel/Conference Center	75	Hunt	Various Stormwater professionals	Presentation	Michael Hunt/Andy Reese-AMEC presented the new LID manual to conference goers.
11/8/2012	General Stormwater Pollution	Montessori School Presentation	Shelby Park Nature Center	20	Bruce	3rd & 4th grade field trip	School	Mary Bruce and Josh Hayes performed general education on pollution and aquatic bugs.
11/27/2012	Constrcution/Development Education	TDEC Level One Erosion Control Workshop	Willis Conference Center	87	Binder	People Seeking EPSC Certification	Presentation	Dale presents Grading Permit Information to prospective Level 1 EPSC certified professionals.
2/21/2013	Constrcution/Development Education	TDEC Level One Erosion Control Workshop	Willis Conference Center	120	Binder	People seeking EPSC Certification	Presentation	Dale Binder presents Metro Grading Permit information to people seeking Level 1 EPSC Certification
2/28/2013	Fertilizer/Pesticides	Lawn and Garden Show	Tennessee State Fairgrounds	500	Bruce	Open to the Public	Citywide Event	Mary Bruce and Sonya Erickson (NPDES) helped man the booth that had educational material regarding lawn and garden impacts on water quality. Rebecca Dohn worked at the Metro Tree Advisory Committee's booth distributing trees and discussing their benefits
3/7/2013	General Stormwater Pollution	Murphy Branch Storm Drain Stenciling	Murphy Road Area	25	Erickson	General Residents	Drain Stenciling/Marking	SRE stenciled/painted "No dumping, drains to river" to approximately 25 catch basins located in the Murphy Branch basin that drains to Richland Creek.

MWS Stormwater NPDES Public Education Events/Presentations during FY13 (Continued)

Date	Target	Event	Location	Estimated Audience Directly Reached	Organizer Initials	Audience	Education Type	First Of Notes
3/14/2013	General Stormwater Pollution	Metro Overall Spill Response Coordination Meeting	Public Works 5th Street Headquarters	7	Hunt	Metro Spill Response Agencies	Metro Employee MS4 Compliance	MH/DB met with PW/OEM/NFD on proper protocol to follow in spill response procedures.
3/14/2013	Maintenance Activities	Routine Maintenance Water Quality SOP Training	1607 County Hospital Road (Building 2)	32	Hayes	MWS Stormwater Routine Maintenance Staff	Metro Employee MS4 Compliance	JH presented powerpoint training to MWS Stormwater Routine Maintenance staff on following the newly developed Water Quality SOPs.
3/21/2013	Leaves/Brush/Trash Dumping	Turley Drive Mailout	Turley Drive	2	Hayes	Residences on Turley Drive	Mail-out	Letter sent to homeowners where leaving/brush dumping has been noted.
3/27/2013	Leaves/Brush/Trash Dumping	HRWA Stream Clean-up Paragon Mills	Paragon Mills Park	45	Hayes	Donnelson Christian School	Public/Group Meeting	JH/SW met the HWRA performing a stream clean-up on the stream near Paragon Mills Park. Helped with the clean-up and gave brief talk on stormwater pollution in area streams.
4/11/2013	General Stormwater Pollution	Nashville State Earth Day/Spring Fling	Nashville State Campus	150	Hayes	Nashville State Students	Citywide Event	JH/SW hosted a booth on general stormwater pollution at the Nashville State Earthday Springfling.
4/20/2013	General Stormwater Pollution	Earth Day Festival Centennial Park	Centennial Park	1000	Hayes	Nashville Citizens	Citywide Event	JH/SRE hosted the earth day booth. Had stream model set up with invertebrates and fish. Gave away 100 trees, big bag of iris bulbs, all our swag, 2 bags of Egyptian onions, and 25 yellow poplar posters. Gave 2 water quality tours of Cockrill Springs an
4/22/2013	Fertilizer/Pesticides	NPT Master Gardener Segment	Blackmond Road Floodplain Buyout Property	5000	Berbiglia	NPT Viewers	Presentation	JB/JH filmed a segment for the Master Gardener Series on NPT that talks about the use of fertilizers, pesticides, etc. and the impacts to water quality. Segment will be aired to thousands of local viewers.
4/25/2013	General Stormwater Pollution	CSX Earthday Celebration	Radnor Rail Yard - Seaboard Drive	200	Erickson	CSX Workers	Citywide Event	SRE and JB hosted a booth at CSX's earthday celebration. Displayed large map of impaired streams and the stream model with invertebrates. Handed out Public Education materials.
5/3/2013	Fertilizer/Pesticides	McCrorry Creek Residential Stormwater Mail-out	McCrory Creek Residential Hot Area	3500	Hayes	Residential neighborhoods within the McCrorry Creek watershed	Mail-out	Josh Hayes/Mary Bruce created a mail-out talking about residential stormwater pollution that is designed for the targeted audience of the McCrory Creek residential hot area.
5/7/2013	Constrcution/Development Education	TDEC Level One EPSC Workshop	Willis Conference Center	100	Binder	Prospective Level 1 EPSC professionals	Presentation	Dale Binder presented Metro's grading permit information to prospective EPSC professionals.
5/16/2013	General Stormwater Pollution	Cloister Owners Association	Emma Neuhoff Court	40	Erickson	Cloister Owners Association	Public/Group Meeting	Sonya Erickson spoke at a their community board meeting about general stormwater pollution focused on residential activities.
6/8/2013	General Stormwater Pollution	2013 Catfish Rodeo	Shelby Park	300	Hayes	Local Nashville Residents and Children	Citywide Event	JH/SW Manned a public education exhibit and the water trailer for the event. There was a scavenger hunt where each child had to get a stamp from each exhibit. Prior to giving the stamp, we gave the kids a brief presentation on typical pollutants that ca
6/11/2013	Leaves/Brush/Trash Dumping	Hardwood Drive Mail-out	1400-1529 Hardwood Drive	42	Hayes	Residences on Hardwood Drive	Mail-out	Mail-out sent to residences educating them on proper disposal of brush, leaves, and grass clippings.
Estimated Audience Directly Reached with a Stormwater Message in FY13				**11,570**				

Metro Department of Public Works Waste Collection During FY13

	July	August	September	October	November	December	January	February	March	April	May	June	Total
Recycling													
Curbside Recycling/Inhouse Recycling/Recycling Dumpsters													
Mixed Recyclables	1,029.89	1,057.78	1,153.16	1,013.37	1,049.93	1,174.86	1,088.23	1,215.61	962.18	1,091.09	1,097.26	1,182.24	13,115.60
Monthly Totals	**1,029.89**	**1,057.78**	**1,153.16**	**1,013.37**	**1,049.93**	**1,174.86**	**1,088.23**	**1,215.61**	**962.18**	**1,091.09**	**1,097.26**	**1,182.24**	**13,115.60**
Household Hazardous Waste Facility													
Oil	3.68	1.3	1.12	5.98	1.4	4.15	1.96	0.58	3.22	2.48	2.28	0	28.15
Anti Freeze	0	0	0	0	0	0	0	0	0	0	0	0	-
Electronics	27.18	19.3	21.96	18.39	0	0	57.02	17.36	12.45	17.49	22.08	15.37	228.60
Batteries	0	0	0	0	0	0	0	0	0	0	0	0	-
Tanks	0	0	0	0	0	0	0	0	0	0	0	0	-
Clean Harbors	1.41	0	6.47	0	0	9.29	0	0.72	0	0.97	7.1	0.79	26.75
Monthly Totals	**32.27**	**20.6**	**29.55**	**24.37**	**1.4**	**13.44**	**58.98**	**18.66**	**15.67**	**20.94**	**31.46**	**16.16**	**283.5**
Drop Off Recycling Centers & Convenience Centers													
Carpet/Carpet Pad	23.36	32.12	23.36	37.96	32.12	29.20	26.28	17.52	40.88	32.12	20.44	40.88	356.24
Mixed Recyclables	10.54	11.59	10.90	10.16	9.07	12.10	11.47	11.93	11.74	12.33	17.48	17.23	146.54
Aluminum & Tin	-	-	-	-	-	-	-	-	0.62	-	-	-	0.62
Glass	197.72	195.19	176.38	195.02	174.02	165.92	216.65	161.55	152.86	199.32	189.10	176.12	2,199.85
Mixed Paper	215.18	226.66	206.05	223.50	254.46	256.39	225.61	197.70	209.34	220.42	225.86	210.14	2,671.31
OCC	147.12	136.82	123.46	143.87	124.39	146.81	155.34	118.54	140.58	151.89	162.16	158.64	1,709.62
Plastic	45.91	42.55	38.29	42.82	41.96	39.03	46.21	35.48	36.11	42.52	43.05	38.07	492.00
Plastic Bottles & Metal Cans	29.22	31.63	25.21	30.34	27.64	28.46	27.40	24.91	28.30	30.22	35.64	27.36	346.33
Scrap Metal	21.38	25.83	22.57	49.48	25.07	18.52	36.73	14.09	21.26	28.40	22.24	16.17	301.74
Tires	0.00	290.79	782.69	521.61	462.38	322.23	187.48	549.20	439.89	392.89	878.32	1,367.75	6,195.23
Monthly Totals	**690.43**	**993.18**	**1,408.91**	**1,254.76**	**1,151.11**	**1,018.66**	**933.17**	**1,130.92**	**1,081.58**	**1,110.11**	**1,594.29**	**2,052.36**	**14,419.48**
Waste Collection													
Total Metro Public Works Trash C	4,233.14	4,307.49	3,761.10	4,121.83	3,961.54	3,714.56	4,310.58	3,500.90	3,851.85	4,216.29	4,486.73	4,110.41	48,576.42
Total Convenenience Center Tras	1,235.56	1,332.91	1,159.65	1,112.20	7,504.78	981.84	1,019.18	1,008.23	1,213.73	1,387.93	1,330.82	1,342.89	20,629.72
Contracted Residential	7,401.93	8,144.92	6,739.59	7,231.00	1,123.26	6,656.44	7,816.83	6,311.93	6,787.33	7,947.20	8,632.87	7,131.57	81,924.87
Monthly Totals	**12,870.63**	**13,785.32**	**11,660.34**	**12,465.03**	**12,589.58**	**11,352.84**	**13,146.59**	**10,821.06**	**11,852.91**	**13,551.42**	**14,450.42**	**12,584.87**	**151,131.01**
Brush Collection													
Unground -- Grapple Hook	321.51	305.15	82.38	19.54	228.12	153.76	189.56	80.03	183.88	142.82	219.28	133.13	2,059.16
Unground -- Dropped Off	1831.96	2230.78	2747.86	2701.82	3111.88	1444.06	1751.04	1962.42	1790.39	1697.69	1750.93	1977.45	24,998.28
Unground -- Contractor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
Ground -- Dropped Off	26.34	51.65	25.08	39.18	50	51.7	162.06	29.73	20.72	20.78	24.57	33.28	535.09
Leaves -- Metro	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
Leaves -- Dropped Off	45.41	67.10	61.02	59.53	146.89	152.10	86.69	61.17	78.30	57.65	59.73	18.47	894.06
Monthly Totals	**2,225.22**	**2,654.68**	**2,916.34**	**2,820.07**	**3,536.89**	**1,801.62**	**2,189.35**	**2,133.35**	**2,073.29**	**1,918.94**	**2,054.51**	**2,162.33**	**28,486.59**

Note: Units are reported in Tons.

Metro Department of Public Works Hazardous Spills Responded to During FY13

Date	Location	Situation	Actions
07/05/2012	2ND. AVE BETWEEN BROADWAY & COMMERCE	HYDRAULIC SPILL FROM MPW SWEEPER TRUCK	USED SPREADER TRUCK TO ABSORB SPILL 2.200 LBS.ABSORBENT
07/20/2012	HORTON @ 14TH AVE S	HYDRAULIC SPILL FROM PW FRONT LOADER TRASH	USED SPREADER TRUCK TO ABSORB FLUID
08/15/2012	121 HICKORY TRACE DR	APPROX 10 GAL ANTI FREEZE SPILL	COVERED WITH 50 LBS SPILL GONE
08/22/2012	5258 BRICK CHURCH PK	HYDRAULIC OIL SPILL	PUT DOWN 100 LBS SPILL GONE
08/22/2012	33RD AVE S @ WEST END	HYDRAULIC OIL SPILL	USED APPROX 900 LBS SPILL GONE TO COVER
09/05/2012	505 FESSLERS LN	APPROX 20 GAL GAS SPILLED ON RD	TRAFFIC CONTROL & MONITORED CLEAN UP
09/12/2012	328 ELMINGTON	HYDRAULIC SPILL	USED SPREADER AND PUT 250 LBS SPILL GONE ON PRODUCT
09/18/2012	GREENLAND AVE @ GALLATIN PK	HYDRAULIC SPILL	USED 50 LBS SPILL GONE ALONG WITH MECHANICS ABSORBENT
09/24/2012	I-24 EAST @ JAMES ROBERTSON PKWY	SULFURIC ACID SPILL	COVERED WITH APPROX 1000 LBS LIME
10/03/2012	1820 PERCY WARNER BLVD	HYDRAULIC LEAK	300 LBS OF SPILL GONE
10/05/2012	PENN MEADE WAY @ RIVER MEADE DR	30 GAL HYDRAULIC OIL ON ROAD	PUT 800 LBS SPILL GONE ON ROAED WITH SREADER TRUCK
10/23/2012	HICKORY PASS LN @ HICKORY RIM CT	50 GAL HYDRAULIC OIL ON ROAD	COVERED WITH 1600 LBS SPILL GONE
10/23/2012	ANTOCH PK @ EZELL RD	TRASH TRUCK FIRE, DIESEL & HYDRAULIC OIL ON ROAD	PUT 1600 LBS SPILL GONE ON ROAD WITH SPREADER TRUCK
10/29/2012	OHB @ HILLSBORO PK	MOTOR OIL ON ROAD	PUT DOWN 50 LBS SPILL GONE AND BROOMED
11/01/2012	TRINITY LN @ DR. RICHARD G ADAMS DR	HYDRAULIC FLUID SPILL	USED SPREADER TRUCK AND PUT DOWN 200 LBS SPILL GONE
11/30/2012	CLIFTON @ 22ND AV	OIL SPILL ON ROAD	USED 300 LBS SPILL GONE TO COVER
12/06/2012	HERMITAGE AV @ FAIRFIELD	MVA WITH 50 GAL OF DIESEL ON RD. WEST NASHVILLE CLEANED UP	PUT 1200 LBS SPILL GONE ON RD WITH SREADER TRUCK
01/05/2013	Vance Dr. @ Ed Temple Blvd	Anti-Freeze Leak	Put down 75 lbs absorbent
01/24/2013	2425 SPRINGVIEW DR	40 GAL HYDRAULIC OIL ON RD	COVERED WITH 300 LBS SPILL GONE
01/30/2013	CHESAPEAKE @ BRICK CHURCH	OIL SPILL FROM ENGIN ABOUT 5 GAL	SPREAD 100 LBS SPILL GONE ON PRODUCT
03/05/2013	175 N 6TH ST	15 GAL HYDRAULIC LEAK	100 LBS SPILL GONE USED TO COVER PRODUCT
03/14/2013	245 Great Cirlce Rd	Tractor Trailer busted gas tank spiled 50 gals of diesel	contain spill with plastic swimming pool & absorbent
03/21/2013	BURGESS AV @ RURAL AVE	40 GAL HYDRAULIC OIL ON RD	PUT 300 LBS SPILL GONE ON PRODUCT
04/03/2013	S. 4TH ST @ SHELBY AVE	HYDRAULIC OIL ON RD	PUT 800 LBS SPILL GONE ON ROAD WITH SPREADER TRUCK
04/09/2013	FESSLERS LN @ LEBANON PK	HYDRAULIC OIL ON ROAD	PUT 700 LBS SPILL GONE ON ROAD WITH SPREADER
05/02/2013	UNION ST @ 4TH AV N	OIL ON RD	PUT 400 LBS SPILL GONE ON RAD WITH SPREADER TRUCK
05/03/2013	CENTER ST @ OHB	60 GAL HYDRAULIC OIL ON RD	PUT 1250 LBS OF SPILL GONE ON ROAD WITH SPREADER TRUCK
05/07/2013	OHB @ BRICK CHRUCH PK	15 GAL OF DIESEL FUEL SPILL	400 LBS OF ABSORBENT AND BROOMED
05/16/2013	2203 MEHARRY BLVD	HYDRAULIC FLUID ON RD (APPROX 50 GALLONS)	COVERED WITH 600 LBS SPILL GONE AND CLEANED UP
05/17/2013	BRIGHTON VALLEY APARTMENTS	HYDRAULIC OIL ON RD APPROX 35 GALLONS	COVERD WITH 300 LBS SPILL GONE AND PUT OUT ABSORBENT PADS WENT BACK 5-19-13 TO CLEAN UP
06/03/2013	UNION ST @ 5TH AVE. N	OIL IN ALLEY	COVERED WITH 800 LBS SPILL GONE WITH SPREADER TRUCK
06/11/2013	WHITFIELD PARK @ EDMONDSON PK	50 GAL HYDRAULIC OIL ON PARKING LOT	COVERED WITH 1600 LBS SPILL GONE

Metro Department of Public Works Deicing Activities During FY13

	July	August	September	October	November	December	January	February	March	April	May	June	Total
Amount of salt/brine applied to Roadways (tons)	0	0	0	0	0	0	46.63	111.8	15.23	0	0	0	173.66

Metro's Public Notice for the FY13 MS4 Permit Annual Report

STORMWATER MANAGEMENT COMMITTEE MEETING NOTICE

Meeting Date: 05-DEC-2013
Meeting Time: 8:00 a.m. – 12:00 p.m.
Location: Metro Water Services – Administration Building
Second Floor Conference Room
1600 Second Avenue North
Nashville, Tennessee 37208
Contact: Paula Kee
Coordinator – Stormwater Management Committee (SWMC)
Phone: (615) 880-2334 Email: Paula.Kee@nashville.gov

AGENDA

I. **Call to Order**

II. **Approval of 03-OCT-2013 Meeting Minutes**

III. **Approval of 03-OCT-2013 Decision Letter**

IV. **Item of Business**

1. MWS – Staff Presentation: 2013 Annual Report – NPDES MS4 Permit

V. **Cases to be Heard**

201300020 FONTANEL – SOUTHERN LIVING HOUSE 4125 WHITES CREEK PK
Uncompensated Fill in the Floodplain

201300021 EXPRESS OIL CHANGE 400 SWISS AVE
Stream Buffer Disturbance
Stormwater BMPs in the Buffer
Continuous Mowing and Maintenance of Buffer

201300022 FONTANEL – IHG RESORT 4225 and O WHITES CREEK PK
Floodway Disturbance
Floodway Buffer Disturbance
Stream Buffer Disturbance
Spacing of Multiple Stream Crossings <1,000 Feet Apart

VI. **Other Items of Business**

VII. **Adjournment**

Next Meeting – 02-JAN-2014

Cc: Mr. Wade Hill – Assistant Director, Codes Administration
Mr. Doug Sloan – Assistant Director, Planning Department
Mr. Scott Potter – Director of Metro Water Services
Mr. Tom Palko – Assistant Director, Stormwater Division
Mr. Michael Hunt – Stormwater, NPDES Section Manager
Mr. Roger Lindsey – Stormwater, Development Review Section Chief
Ms. Shain Dennison – Director, Metro Greenways
Mr. Stephan Kivett – Urban Forester, Codes Administration
Ms. Ana Escobar – Metropolitan Clerk

ATTACHMENT A – Protected Species Report

Nashville's MS4 Program Threatened and Endangered Species Annual Assessment

(Following Section)

Metro Nashville Municipal Separate Storm Sewer System Permit
Federal or State-Protected Species Impact assessment

Permit Year 2
(Period 07/01/12– 06/30/13)

Reviewed and Updated:
November, 2013

Introduction:
As per the Municipal Separate Storm Sewer System (MS4) permit, Metro Nashville is required to perform an annual assessment of potential stormwater impacts to federal and state-protected aquatic species known to exist within Metro Nashville Davidson County (Metro). In order to perform the assessment, the Metro Water Services (MWS) Stormwater NPDES Section downloaded a list of aquatic species located within Davidson County. In order to assess potential impacts to rare species, the list of rare aquatic species was analyzed and broken into specific habitat categories. Table 1 details the list of rare aquatic species that have been known to occur within Davidson County. According to the Tennessee Department of Conservation (TDEC) Natural Heritage Program (NHP), Rare Species Inventory Program there are 19 rare or protected aquatic species that have known to occur or have historically occurred within Davidson County.

Only 5 of the 19 rare aquatic species have a federal protection status, all of which are listed as "Endangered", while 16 of the rare aquatic species have been listed by the state of Tennessee with one of the following legal protection status:

- "D" Deemed in Need of Management,
- "E" Endangered, and,
- "T" Threatened

Typical Habitat Requirements:
While the 19 species may require specific habitat conditions, the general type of aquatic habitat can be broken into 3 main categories:

- Large River/Lake – The Cumberland River is the only large river system within Davidson County. The Cumberland River has portions of two impoundments (Cheatham Lake, and Old Hickory Lake) within Davidson County. Due to the dilution factor, Nashville's stormwater runoff would have negligible effects of the water quality/habitat of the Cumberland River.
- Small Streams to Small/Medium Rivers – This particular habitat represents all of the smaller headwater streams, creeks and small rivers that drain into the Cumberland River. The small streams/rivers are more susceptible to impacts from stormwater runoff from the MS4.
- Ponds/Wetlands/Springs – This particular habitat describes floodplain wetlands, farm ponds and springheads located throughout the county, which would have the potential of being impacted by MS4 runoff.

Table 1 – List of Rare Aquatic Species for Davidson County Tennessee – FY13

General Aquatic Resource	Type	Scientific Name	Common Name	Global Rank	Fed. Status	St. Status	Habitat	State Rank
Small Headwater Streams to Small/Medium Rivers	Invertebrate Animal	*Sphalloplana buchanani*	A Cave Obligate Planarian	G1G2	No Status	Rare, Not State Listed	Aquatic cave obligate; northern Central Basin; Davidson County; taxonomy poorly understood.	S1
	Vertebrate Animal	*Ambystoma barbouri*	Streamside Salamander	G4	No Status	D	Seasonally ephemeral karst streams; middle Tennessee.	S2
	Vertebrate Animal	*Cryptobranchus alleganiensis*	Hellbender	G3G4	No Status	D	Rocky, clear creeks and rivers with large shelter rocks.	S3
	Vertebrate Animal	*Etheostoma luteovinctum*	Redband Darter	G4	No Status	D	Limestone streams; Nashville Basin & portions of Highland Rim.	S4
	Vertebrate Animal	*Etheostoma microlepidum*	Smallscale Darter	G2G3	No Status	D	Small rivers, in deep, strongly flowing riffles with gravel, boulder, and coarse rubble substrates; Cumberland River drainage.	S2
	Vertebrate Animal	*Percina phoxocephala*	Slenderhead Darter	G5	No Status	D	Small-large rivers with moderate gradient in shoal areas with moderate-swift currents; portions of Tenn & Cumb river watersheds.	S3
	Invertebrate Animal	*Orconectes shoupi*	Nashville Crayfish	G1G2	LE	E	1st-order & larger streams, generally with bedrock bottom, under slabrock; endemic to Mill Creek watershed; Davidson & William. cos.	S1S2
	Invertebrate Animal	*Epioblasma florentina walkeri*	Tan Riffleshell	G1T1	LE	E	Found in river headwaters, in riffles and shoals in sand and gravel substrates; Tennessee & Cumberland river systems.	S1
	Invertebrate Animal	*Simpsonaias ambigua*	Salamander Mussel	G3	No Status	Rare, Not State Listed	In sand or silt under large, flat stones in areas of swift current; occurred historically in E Fk Stones R; 2005 obs in lower Duck R.	S1
	Invertebrate Animal	*Lithasia duttoniana*	Helmet Rocksnail	G2Q	No Status	Rare, Not State Listed	Rocky substrates in riffle systems; bedrock in flowing water below main section of riffles; Duck River (TN River system).	S2
Large Riverine Systems/Lakes	Vertebrate Animal	*Haliaeetus leucocephalus*	Bald Eagle	G5	No Status	D	Areas close to large bodies of water; roosts in sheltered sites in winter; communal roost sites common.	S3
	Vertebrate Animal	*Acipenser fulvescens*	Lake Sturgeon	G3G4	No Status	E	Bottoms of large, clean rivers and lakes.	S1
	Vertebrate Animal	*Carpiodes velifer*	Highfin Carpsucker	G4G5	No Status	D	Large rivers, mostly in Tennessee River drainage.	S2S3
	Vertebrate Animal	*Cycleptus elongatus*	Blue Sucker	G3G4	No Status	T	Swift waters over firm substrates in big rivers.	S2
	Vertebrate Animal	*Macrochelys temminckii*	Alligator Snapping Turtle	G3G4	No Status	D	Slow moving, deep water of rivers, sloughs, oxbows, swamps, and lakes; middle and west Tennessee; obscure.	S2S3
	Invertebrate Animal	*Epioblasma brevidens*	Cumberlandian Combshell	G1	LE	E	Large creeks to large rivers, in coarse sand or mixtures of gravel, cobble, or rocks; Tennessee & Cumberland river systems.	S1
	Invertebrate Animal	*Lampsilis abrupta*	Pink Mucket	G2	LE	E	Generally a large river species, preferring sand-gravel or rocky substrates with mod-strong currents; Tennessee & Cumberland river systems.	S2
	Invertebrate Animal	*Plethobasus cooperianus*	Orangefoot Pimpleback	G1	LE	E	Large rivers in sand-gravel-cobble substrates in riffles and shoals in deep flowing water; Cumberland & Tennessee river systems.	S1
Ponds/Wetlands/Springs	Vascular Plant	*Ranunculus aquatilis var. diffusus*	White Water-buttercup	G5T5	No Status	E	Ponds And Streams	S1

Potential Impacts from MS4 Runoff:
Rare species that inhabit smaller streams and rivers, ponds, wetlands, and springs would be the most vulnerable to potential impacts from MS4 runoff. Impacts from MS4 runoff includes:

- Increased sediment loads smothering natural stream substrate;
- Increased nutrient runoff that cause sporadic algal blooms and accompanying reductions in available oxygen;
- Increased levels of toxic chemicals such as pesticides oils, etc;
- General loss of habitat from development activities.

Metro Nashville's Measures to Prevent Impacts to Aquatic Rare Species:
Metro Nashville's MS4 program deploys a simple technique to protect against impacts to rare aquatic species: "*Protect all of Nashville's Aquatic Habitat*". In order to protect Nashville's aquatic habitat, a three-prong approach is in place:

1. Control Future Development –
    a) Establish local regulations that prevent future development from destroying all aquatic habitat.
    b) Monitor runoff during construction to prevent the destruction of aquatic habitat
    c) Enforce on developments that violate local construction regulations that could lead to the further destruction of aquatic resources.
2. Control the quality of stormwater runoff from existing properties
    a) Establish local regulations that prevent the discharging of pollutants to waterways
    b) Monitor existing properties to ensure pollutants are not being discharged to the waterways.
    c) Enforce on properties/individuals that violate local water pollution laws that could potentially impact aquatic habitat.
3. Monitor the overall water quality and health of Nashville's Streams
    a) Analytical sampling of certain water quality parameters
    b) Rotating biological surveys of Davidson County streams.

Controlling Future Development
Metro Nashville has established strict regulations protecting aquatic resources from impacts associated with development activities. All development or redevelopment activities that are over 10,000 square feet in overall footprint or involve more than 100 cubic yards of fill are required to obtain grading permits from the Metro Water Services (MWS) Stormwater Division. In order to obtain a grading permit from MWS, engineered plans have to be developed that illustrate how stormwater runoff will be managed during and after development. Strict erosion and sediment control measures are required at all grading permit properties during construction. In order to ensure that erosion and sediment controls are maintained throughout construction, the MWS Stormwater NPDES Section has 6 inspectors that inspect grading permit site construction controls.

Metro Nashville also requires protection from impacts to aquatic resources after the construction phase of projects by requiring grading permit properties to install permanent stormwater treatment devices that are designed to treat both the volume and quality of runoff from the property.

In addition to requiring development or redevelopment activities to obtain permits and treat stormwater runoff, Metro Nashville was also one of the first municipalities in the state to establish no-disturb buffers along streams and other water resources within Davidson

County. Development activities that have a hardship requiring some impacts to the no-disturb riparian buffer (i.e. for a bridge crossing, etc.) are required to go through a strict variance appeal process. Variance requests for stream crossing or other direct impacts to water resources are not granted unless necessary TDEC Aquatic Resource Alteration Permits (ARAPs) or Section 404 permits from the U.S. Army Corps of Engineers (USACOE) are obtained, which can not be issued if protected species are impacted.

Controlling the Quality of Stormwater Runoff from Existing Properties
Metro Nashville has the following specific ordinance in place that prevents the discharge of pollutants to storm drains or other aquatic resources:

15.64.205 - Non-stormwater discharges.

A. Definitions.

"Community waters" means any and all rivers, streams, creeks, branches, lakes, reservoirs, ponds, drainage systems, springs, wetland, wells and other bodies of surface or subsurface water, natural or artificial, lying within or forming a part of the boundaries of the Metropolitan Government of Nashville and Davidson County.

"Contaminant" means any physical, chemical, biological or radiological substance or matter.

"Director" means the Director of the Metropolitan Government of Nashville and Davidson County's Department of Water and Sewerage Services, or his designee.

"Discharge" means any substance disposed, deposited, spilled, poured, injected, seeped, dumped, leaked, or placed by any means, intentionally or unintentionally, into community waters, the waters of the state, or any area draining directly or indirectly into the municipal stormwater system of the metropolitan government.

"Metropolitan government" means the Metropolitan Government of Nashville and Davidson County.

"Municipal separate storm sewer system of the metropolitan government" means a conveyance, or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, and storm drains) designed or used for collecting or conveying stormwater; provided, however, that sanitary and combined sewers are not included in the definition of the municipal separate storm sewer system.

"Non-stormwater discharge" means any discharge to the municipal separate storm sewer system except as permitted by subsection C of this section.

"Waters of the state" means any water, surface or underground, lying within or forming a part of the boundaries of the Metropolitan Government of

Nashville and Davidson County, over which the Tennessee Department of Environment and Conservation exercises primary control with respect to stormwater permits.

B. Except as hereinafter provided, all non-stormwater discharges into community waters, into the waters of the state, or into the municipal separate storm sewer system of the metropolitan government are prohibited and are declared to be unlawful.

C. Unless the director has identified them as a source of contaminants to community waters, the waters of the state, or the municipal separate storm sewer system of the metropolitan government, the following discharges are permitted:

1. Stormwater as defined in TCA Section 68-221-1102(5);
2. Water line flushing;
3. Landscape irrigation;
4. Diverted stream flows;
5. Rising groundwaters;
6. Uncontaminated groundwater infiltration (as defined at 40 CFR 35.2005(20)) to separate storm sewers;
7. Uncontaminated pumped groundwater;
8. Discharges from potable water sources;
9. Foundation drains;
10. Air conditioning condensate;
11. Irrigation water;
12. Springs;
13. Water from crawl space pumps;
14. Footing drains;
15. Lawn watering;
16. Individual residential car washing;
17. Flows from riparian habitats and wetlands;
18. Dechlorinated swimming pool discharges;
19. Street wash waters resulting from normal street cleaning operations;
20. Discharges or flows from emergency fire fighting activities.

D. The director, with the approval of the mayor, shall have authority to implement this section by appropriate regulations. Such regulations may include but are not limited to provisions for inspection of points of origin of known or suspected non-permitted discharges by appropriate personnel of the metropolitan government.

E. Discharges pursuant to a valid and effective NPDES permit issued by the State of Tennessee are not prohibited by this section.

F. The provisions of this section, including subsection C of this section, shall not apply to sanitary or combined sewers, which are governed by Chapter 15.40 of the Metropolitan Code of Laws.

G. Violation of this section shall subject the violator to a civil penalty of not less than fifty dollars nor more than five thousand dollars per day for each day of violation. Each day of violation may constitute a separate violation.

In addition to controlling polluted runoff from construction activity, the MWS Stormwater NPDES Section implements various other pollution prevention programs:

- Industrial Inspection/Monitoring Program
- Proactive Field Screening/Illicit Discharge Detection Elimination Program
- Pollution Reporting Hotline
- Sewer Leak Detection Program (Using Thermography Technology)
- Post-Construction Stormwater Treatment BMP inspection/maintenance verification program

NPDES issues enforcement notices and administrative penalties to existing facilities found to be in violation of the above non-stormwater discharge code.

Monitoring the Overall Water Quality and Health of Nashville's Streams

MWS Stormwater NPDES performs intense monitoring of Davidson County streams. Dr. Steve Winesett of the NPDES Division has received a permit from the USFWS to perform surveys within the Mill Creek watershed (home to the endangered Nashville Crayfish). The following programs involve field assessments of streams:

- Ambient Sampling - Seasonal water quality samples are taken and analyzed for potential pollutants. Various streams are sampled each year on a rotating basis.
- TMDL Monitoring – Quarterly flow weighted samples are collected and analyzed for bacterial and TSS of various/rotating stream segments in which TMDLs have been developed.
- Visual Stream Assessments – All State-listed 303(d) stream segments with MS4 input are visually inspected on a 5 year cycle.
- Benthic Surveys – Seasonal benthic surveys are performed on various streams each year. The benthic sampling coincides with the same stream rotation schedule as the ambient sampling.

If abnormalities are found in any of the above monitoring results, individual investigations are initiated to find and eliminate potential sources of pollution.

Conclusion:

Metro Nashville's MS4 program has taken substantial steps to protect aquatic resources within Davidson County. By virtue of protecting the Nashville's water resources, critical habitat required for aquatic species has also been preserved. During the first permit year, there have not been any know discharges form the MS4 that have caused the destruction of a rare species or their critical habitat.

ATTACHMENT B – Stormwater Management Plan

Nashville's MS4 Program Stormwater Management Plan

(Following Section)

Metro Nashville, Davidson County
Stormwater Management Plan

Prepared By:
Metro Water Services, Stormwater NPDES
1607 County Hospital Road
Nashville, TN 37218
(615) 880-2420

July, 2013

SWMP TABLE OF CONTENTS

1.0 INTRODUCTION

The Metropolitan Government of Nashville/Davidson County (Metro) was recently issued a third iteration of the Phase 1 Municipal Separate Storm Sewer System (MS4) permit from the Tennessee Department of Environment and Conservation (TDEC). The MS4 permit requires Metro to implement various pollution prevention programs to minimize contaminants within the MS4 that would ultimately discharge to "Waters of the State". The Metro Water Services (MWS) National Pollutant Discharge Elimination System (NPDES) Section is responsible for developing and overseeing programs designed to maintain Metro's compliance with the MS4 Permit and improve the quality of receiving waters. In order to effectively and efficiently communicate Metro's water pollution prevention programs, the following Stormwater Management Plan (SWMP) has been created. The SWMP describes Metro's pollution prevention programs and strategies that have been and will continue to be deployed by various Metro departments. The SWMP will be reviewed and updated yearly during compilation of the MS4 Annual Report.

1.1 Contact Information

Any comments/questions regarding the SWMP, shall be directed to the MWS Stormwater NPDES Section. The NPDES Section's office is located at 1607 County Hospital Road, Nashville, TN 37218, can be contacted by phone at 615-880-2420, by fax at 615-880-2425, or by email at stormwaterquality@nashville.gov.

1.2 Jurisdiction and Legal Authority

Metro's MS4 jurisdiction encompasses the entire county with the exception of the following boundaries, as depicted on Figure 1:

A. City of Belle Meade;
B. City of Berry Hill;
C. City of Forest Hills;
D. City of Goodlettsville;
E. City of Oak Hill;
F. City of Ridgetop;
G. Tennessee Department of Transportation Road Right-of-way;
H. Other Phase II MS4 Permittees (i.e. Tennessee State University); and
I. Combined Sewer System (CSS) Watershed.

Metro's Legal Jurisdiction for implementing the SWMP programs can be found in Metro's Code of Laws: Title 15 Water, Sewers, and Other Public Services, Chapter 15.64 Stormwater Management. The Code of Laws is available at the following website:

http://library.municode.com/index.aspx?clientId=14214

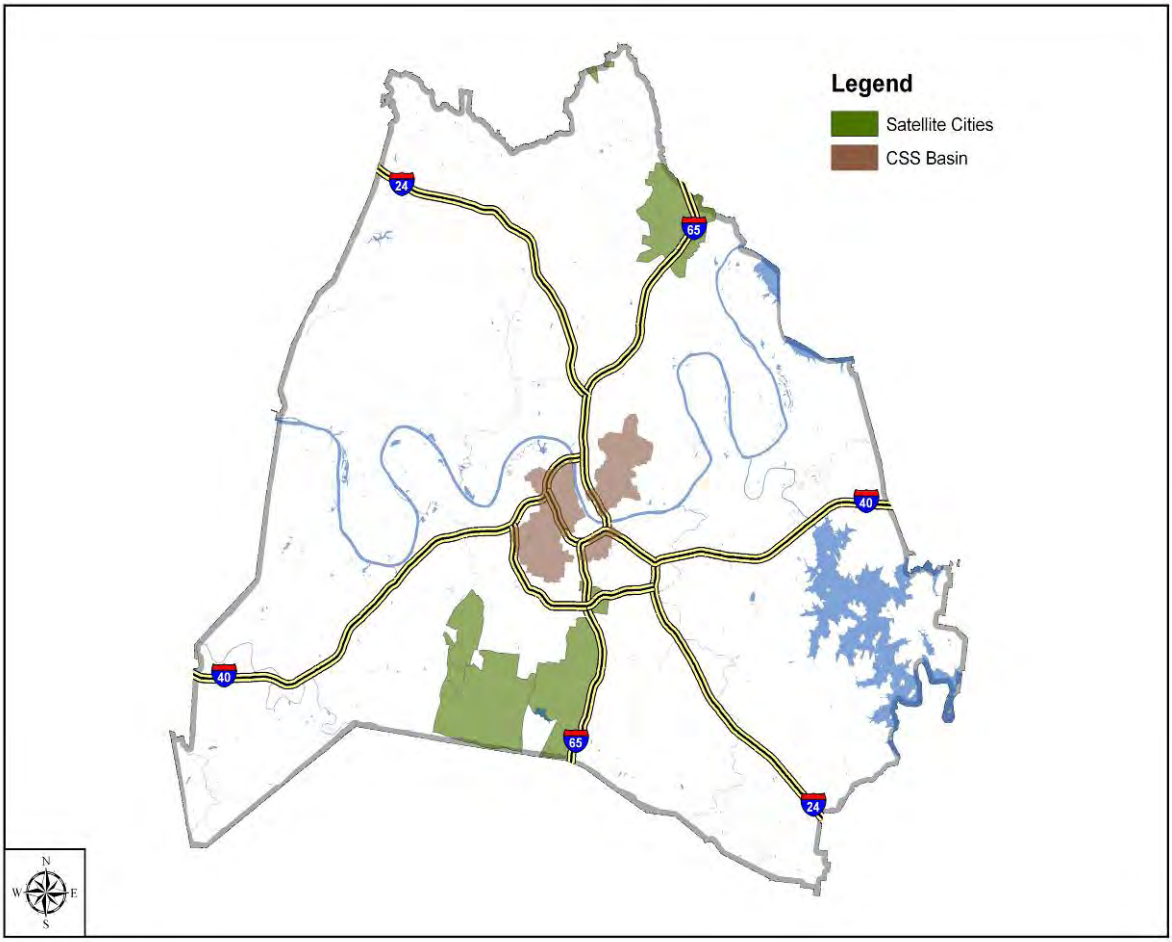


Figure 1 – Metro MS4 Jurisdiction

2.0 STORMWATER POLLUTANTS OF CONCERN AND GENERAL BMP OVERVIEW

While there are numerous biological and chemical pollutants that have the potential to contaminate stormwater runoff from the MS4, Metro Nashville's stormwater program has focused on some of the most common parameters to monitor and control. These parameters include sediment, pathogens (*E. coli*), nutrients, and oil and grease. Over the years, Metro has implemented various programs to minimize to the Maximum Extent Practical (MEP) the runoff of pollutants from private property to the MS4 and from the MS4 to "Waters of the State". The following paragraphs describe the pollutants in which specific Best Management Practices (BMP)s have been developed to minimize concentrations of runoff from the MS4. The specific BMP implementation strategies are detailed further in Section 3 (MS4 Permit Program Elements).

2.1 Sediment

2.1.1 Potential Stormwater Impacts

In general, sediment is one of the most damaging impacts to receiving streams from the MS4. Reducing the amount of sediment in stormwater runoff is important as sediment can also act as a transport mechanism for other pollutants such as nutrients, metals, etc. The unnatural loading of sediment in MS4 runoff would most likely come from the following types of land uses/activities:

A. Construction activity;

B. Agriculture operations;

C. Public and Private infrastructure Maintenance Operations; and

D. Erosion from private/public lands.

2.1.2 Stormwater BMPs

The main BMP Metro implements, to control sediment runoff from private properties to the MS4, is the construction oversight program. Metro's grading permit program requires all new development and major redevelopment that disturb more than 10,000 square feet (roughly ¼ acre) to obtain permits from the MWS Stormwater Department. Prior to obtaining the actual grading permit, sites are required to install controls designed to reduce sediment runoff from properties during the construction phase. Most sites with grading permits are also required to provide for permanent treatment of water quantity and quality, which will help to prevent future impacts from the built environment. In addition to overseeing the grading permit program, Metro has implemented specific SOPs within certain municipal maintenance departments that are designed to reduce the impact to the quality of stormwater runoff from maintenance activities. The other sources listed above are targeted through the Public Information/Education Plan (PIE) detailed in a separate section of this document.

2.2 Pathogens

2.2.1 Potential Stormwater Impacts

In general, pathogens are measured in the waterways using the typical indicator species of Escherichia coli (*E. coli*). The presence of abnormally high levels of pathogens within waterways is a concern for human exposure and public safety. The sources of pathogens within stormwater runoff from the MS4 usually either comes from human sewage, domesticated animal (pet or livestock) waste, or wildlife. Human sewage will contaminate stormwater runoff if septic systems or sewer collection systems fail. Domesticated animals, most notably pets, will contaminate stormwater runoff when the waste remains on the ground exposed to stormwater, especially when in close proximity to streams or other drainage features.

2.2.2 Stormwater BMPs

In regards to failing sewer infrastructure, large structural fixes are being implemented by the MWS Engineering and Overflow Abatement Program (OAP) Sections. The MWS Stormwater NPDES Watershed Group routinely coordinates with the sanitary sewer sections to determine where sewer upgrades/improvements are being made as it relates to watershed impairments. In addition, the Watershed Group has developed a laboratory to perform host-specific deoxyribonucleic acid (DNA) fingerprints using the polymerase chain reaction (PCR) amplification process. Through use of the PCR analysis, it is MWS' goal to determine the source inputs (animal or human) of bacteria so that targeted pollution prevention programs can be implemented on a watershed basis.

2.3 Nutrients

2.3.1 Potential Stormwater Impacts

Nutrients in form of nitrogen and phosphorus compounds can greatly impact the quality of waterways receiving stormwater runoff. Increased nutrient levels can cause explosions in algae populations, which in turn, deplete the water of much-needed dissolved oxygen levels and thus lowering overall bio-diversity. Increased nutrient levels can result from natural deposits in soils and the groundwater connection to streams or it can result from unnatural inputs from the developed environment. One of the largest sources of nutrient levels in urban stormwater runoff is from the use or overuse of fertilizers, especially those fertilizers containing phosphorus compounds. Fertilizers, when applied improperly, can flow directly into streams. In addition to fertilizers, nutrient levels in stormwater runoff can be attributed to human and animal waste inputs.

2.3.2 Stormwater BMPs

While there are some structural BMPs that can be deployed to treat nutrient levels in stormwater runoff, finding the right areas to implement such BMPs and the overall costs limit the use of such measures. In general, Metro believes that infrastructure improvements designed in preventing sanitary sewer impacts to creeks will be the primary structural BMP to be deployed. In addition, Metro has initiated a vigorous campaign to perform targeted public education activities to geographic areas where nutrient runoff is a problem.

2.4 Oils and Grease

2.4.1 Potential Stormwater Impacts

Oils and grease (hydrocarbons) contaminate stormwater runoff and cause direct adverse impacts to aquatic organisms. The concentrations of oils in stormwater runoff are generally higher in commercial and industrial areas. As fluids drip from vehicles in parking lots or equipment at industrial facilities, they can contaminate stormwater runoff and accumulate in receiving water bodies. In addition to leaking vehicles, wrecks and spills of automotive fluids or, in some cases, intentional dumping of oil products can significantly increase the levels of oils and grease in stormwater runoff.

2.4.2 Stormwater BMPs

There are site specific controls that could be implemented to reduce the exposure of oils and grease to stormwater runoff. In regards to roadway spills, the Metro's Public Works Department and Office of Emergency Management oversee most spill response activities to ensure responsible parties conduct the required remediation activities. When it comes to general housekeeping procedures to minimize oils and grease from running off parking lots, Metro will specifically target "hot areas" with public education materials. For intentional dumping activities, Metro has a robust illicit discharge enforcement program that works to eliminate discharges of non-stormwater materials such as oils and grease.

2.5 Other Pollutants

There are many other types of pollutants such as heavy metals like iron, lead, zinc, aluminum, chromium, etc. that can comprise the quality of stormwater runoff. Many of these other constituents of pollutants typically come from industrial-type properties. Metro has implemented an industrial inspection program, discussed further in this document, which will aid in fining and eliminating discharges of pollutants, as well as educate industrial facilities on proper housekeeping procedures. When it comes to future development, stormwater regulations are typically designed to provide sediment removal from stormwater runoff. Treating and reducing sediment will also help in removing other contaminants such as metals.

2.6 BMP Implementation Plan

Per the MS4 Permit, Metro is required to implement non-structural BMPs within the first year and structural BMPs within the first two years, which are designed to reduce pollutant loading numbers to water bodies with approved TMDLs. With the exception of pathogens, Metro firmly believes non-structural programs (i.e. public education, construction oversight program, industrial oversight program, IDDE program, development restrictions etc.) will be the most cost effective and productive programs needed to minimize pollutant loadings from the MS4 to "Waters of the State". Metro has already begun implementing the non-structural controls, such as sending mass educational mail outs and prioritizing field investigations in the geographical "hot areas" within certain watersheds.

Metro has initially identified one property on McCrory Creek in which space may be available for Metro to install a large structural stormwater BMP. Progress on this potential structural control will be reported in subsequent annual reports. Additionally, any structural improvements made to the separated and combined sanitary sewer systems will be reported within each year's annual report. In

future years, Metro also intends to pursue watershed modeling options in an attempt to identify where specific structural BMPs can be implemented that will help in achieving pollutant loading reduction.

3.0 MS4 PERMIT PROGRAM ELEMENTS

The core MS4 Permit requirements are contained within this section. The following sections first provide a summary of specific permit requirements contained within the MS4 Permit, before providing explanations of how Metro accomplishes the requirements of each permit program element.

3.1 Public Education and Outreach

3.1.1 Public Education/Outreach Specific Requirements

Per this section of the permit, Metro is required to operate a program designed to educate the public on the impacts of stormwater discharges to water bodies and steps the public can take in reducing stormwater pollution. In addition to requiring general stormwater awareness education, this section also requires MWS to perform the following specific actions:

A. Develop an organized approach/plan for public education activities;

B. Target certain groups and areas known as "hot areas" where targeted education messages can be tailored;

C. Perform public education/outreach programs at a minimum of 6 large public events per calendar year; and

D. Establish a system for tracking all public education activities.

3.1.2 Metro's Program on Public Education/Outreach for the MS4 Permit

The following paragraphs describe Metro's programs that have been implemented to meet the above specific permit requirements:

A. MWS NPDES developed a stand-alone Public Information/Education (PIE) plan within the first year of the new permit cycle. The PIE plan details all of the MS4 Permit public education activities and identifies specific targeted groups and geographic "hot areas" in which pollutant-specific messages will be generated. The PIE plan can be amended at any time to make improvements in the public education program. The PIE plan is located in Appendix C of this document.

B. "Hot areas" were chosen during creation of the PIE plan based on land use and TMDL/303(d) status. For instance, in the sub-watersheds that have a TMDL approved for Nutrients, residential areas were chosen since they represent the most potential for impacts from fertilizer runoff. Likewise, commercial and industrial areas were chosen in those watersheds that were listed as being impaired for siltation, pathogens, and oil and grease.

C. NPDES has committed to participating in at least 6 large events per year. The initial PIE plan identified the following events in which MWS NPDES will provide stormwater education: Earth Day Festival, Dragon Boat Race, Catfish Rodeo, Lawn and Garden Show, Adventure Science Center CHOMP, and the Zoo Docents Meeting. These six events are subject to change each year as better opportunities may be presented.

D. Public education activities in relation to stormwater quality are performed by two departments within MWS. The MWS Stormwater NPDES Section performs most of the core education activities for the permit compliance program, however, the MWS Public Information Office assists in performing most of the outreach to local school systems.

3.2 Public Involvement/Participation

3.2.1 Public Involvement/Participation Specific Requirements

Under this program element, Metro is required to identify, prioritize and select opportunities for public involvement. Metro is required to detail how it solicits community involvement on such things as tree plantings, stream clean-ups, etc.

3.2.2 Metro's Actions on Public Involvement/Participation Specific Requirements

Metro solicits public involvement on activities that improve stormwater runoff in the following ways:

A. Adopt a Stream Program: MWS Public Information Office offers the ability for groups to adopt different segments of a stream. The adoption periods are for two years and the adoption process involves the groups performing at least one stream clean-up per year and the stenciling of storm drains that route to the adopted stream segment. Currently, there are 20 separate groups, ranging from neighborhood associations to local businesses that have adopted different stream segments within the county. Information on the 'adopt a stream" program can be found at*:* *http://www.nashville.gov/Water-Services/Community-Education/Volunteer.aspx*

B. Storm Drain Stenciling Program: In addition to the "adopt a stream" program, MWS offers the ability for various groups to sign up to perform storm drain stenciling. MWS provides all of the required materials to the various groups including the stencils that usually contain the following message: "No Dumping, Drains to the River".

C. Stormwater Management Committee Meetings: Metro also provides for public input/involvement on projects seeking variances from certain stormwater regulations. In particular the Stormwater Management Committee (SWMC) meetings are public noticed by the following methods:

1) Preparation and emailing of a public notice agenda to various individuals and entities including Metro Council members, members of the public media, the SWMC members, staff members from various Metro departments (MWS, Codes, Planning, Parks, etc.), staff members from various departments within TDEC, over 200 Neighborhood Organization contacts, several environmental organizations (Harpeth River Watershed Association, Cumberland River Compact, etc.), and the Applicants' representatives;

2) Preparation of Public Notice signs to be picked up and posted by Applicants prior to the meeting;

3) Posting of the Agenda on the Stormwater Division's website; and

4) Posting of the Agenda on the Metro Calendar of Events at www.nashville.gov

3.3 Illicit Discharge Detection and Elimination

3.3.1 IDDE Permit Requirements

Under this requirement, Metro is required to continue implementation of the existing illicit discharge detection and elimination (IDDE) program. The steps and procedures for the IDDE program should be identified within the Enforcement Response Plan (ERP). As such, Metro is required to maintain the existing illicit discharge code that is used as an enforcement mechanism to elliminate illicit discharges and allow for penalties to be issued that are consistent with Tennessee Code Annotated (TCA) 68-221-1106. Metro shall provide mechanisms to the general public that allows them to report suspected illicit discharges via website or hotline.

3.3.1.1 Spill Response Requirements

Metro's IDDE program shall also investigate and analyze spills as they occur. For spills occuring on industrial facilities, Metro is to require the facilities to have adequate spill, prevention, control and

countermeasure (SPCC) plans and/or storm water pollution prevention plans (SWPPPs) in place. In addition, Metro is required to perform appropriate coordination with state agencies such as the Tennessee Emergency Management Agency (TEMA).

3.3.1.2 MS4 Mapping Requirements

MS4 drainage infrastructure specifically operated/maintained by Metro includes all drainage ways within public road right-of-way or publicly owned/operated facilities that convey stormwater to state-regulated streams. Under this section of the IDDE program, Metro is required to maintain the existing MS4 Geographic Information System (GIS) database. In particular, the GIS database shall be updated with all of the known MS4 outfalls and drainage areas contributing to those outfalls, including infrastructure such as inlets, pipes, and channels that are either owned or operated/maintained by Metro. The GIS database shall be considered up to date when updates to the GIS infrastructure are submitted to the GIS technician within 9 months of the changes occurring or when new MS4 infrastructure is discovered.

Per the MS4 Permit, Metro must maintain the following specific information within the inventory database.

A. The location of all known MS4 outfalls and drainage areas contributing to those outfalls that are operated by the permittee and that discharge within the permittee's jurisdiction to a receiving water;

B. The location (and name, where known to the permittee) of all waters receiving discharges from outfall pipes. Each mapped outfall must be given an individual alphanumeric identifier, which must be noted on the map. When possible, the outfalls must be located using a geographic position system (GPS) and photographs should be taken to provide baseline information and track operation & maintenance needs over time.

C. Inputs into the storm sewer system, such as the inlets, catch basins, drop structures or other defined contributing points to the storm sewer system serving that outfall.

D. The location and condition of major structural controls (retention basins, detention basins, major infiltration devices, etc.)

E. General direction of stormwater flow. Monitoring locations indentified under subarts 4.1 below and 4.2 below.

F. The map shall also indentify the following: priority areas with older infrastructure that are more likely to have illicit connections, industrial/commercial or mixed use areas, areas with past illicit discharges; areas with onsite sewage disposal systems, and areas upstream of sensitive waterbodies.

3.3.1.3 Illicit Discharge Education and Training Requirements

Metro is required to ensure staff that work within the IDDE program have adequate training. Specifically, all new employees working within the IDDE program must be trained within 1 year from the date of hiring. In addition, information on reporting illicit discharges must be contained on fleet vehicles.

3.3.1.4 Field Screening Program Requirements

Per the MS4 Permit, Metro is required to continue to implement the field screening program that randomly screens outfalls for purposes of finding non-stormwater discharges such as sanitary sewer leaks, water leaks, potential cross connections, or illicit discharges. Specific requirements of the field screening program include:

A. Updated GIS field screening database with commercial and industrial zoned ¼ mile grids identified to be screened.

B. Prioritization of areas for inspection and monitoring based on watershed or land uses or on previous field screening results, spills, complaints, illicit discharges, etc.

C. Updating illicit discharge identification procedures if necessary

D. Identification of potential discharges to MS4 or "Waters of the State"

E. Identification of means to screen for sanitary sewer seepage into the MS4.

3.3.1.5 Limitation of Sanitary Sewer Seepage Requirements

Under this program element, Metro is required to detail the procedures it undertakes to identify potential sanitary sewer leaks, overflows, or septic tank failures that discharge into the MS4. Metro is required to also detail how identified seepages and/or leaks are reported for correction.

3.3.2 Metro's IDDE Program

Metro began implementing the IDDE program in the late 1990s when the first cycle of the Phase I Permit was issued. As a first step, Metro adopted the Non-stormwater Discharge Code, 15.64.205. Below is the current code in which Metro enforces under to prohibit illicit discharges to the MS4:

15.64.205 Non-stormwater discharges.

A. Definitions:

*"**Community waters**" means any and all rivers, streams, creeks, branches, lakes, reservoirs, ponds, drainage systems, springs, wetland, wells and other bodies of surface or subsurface water, natural or artificial, lying within or forming a part of the boundaries of the metropolitan government of Nashville and Davidson County.*

*"**Contaminant**" means any physical, chemical, biological or radiological substance or matter.*

*"**Director**" means the director of the metropolitan government of Nashville and Davidson County's department of public works, or his designee.*

*"**Discharge**" means any substance disposed, deposited, spilled, poured, injected, seeped, dumped, leaked, or placed by any means, intentionally or unintentionally, into community waters, the waters of the state, or any area draining directly or indirectly into the municipal stormwater system of the metropolitan government.*

*"**Metropolitan Government**" means the metropolitan government of Nashville and Davidson County.*

*"**Municipal separate storm sewer system of the metropolitan government**" means a conveyance, or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, and storm drains) designed or used for collecting or conveying stormwater; provided, however, that sanitary and combined sewers are not included in the definition of the municipal separate storm sewer system.*

*"**Non-stormwater discharge**" means any discharge to the municipal separate storm sewer system except as permitted by subsection C of this section.*

*"**Waters of the state**" means any water, surface or underground, lying within or forming a part of the boundaries of the metropolitan government of Nashville and Davidson County, over which the Tennessee Department of Environment and Conservation exercises primary control with respect to stormwater permits.*

B. Except as hereinafter provided, all non-stormwater discharges into community waters, into the waters of the state, or into the municipal separate storm sewer system of the metropolitan government are prohibited and are declared to be unlawful.

C. Unless the director has identified them as a source of contaminants to community waters, the waters of the state, or the municipal separate storm sewer system of the metropolitan government, the following discharges are permitted:

1. *Stormwater as defined in TCA Section 68-221-1102(5);*
2. *Water line flushing;*
3. *Landscape irrigation;*
4. *Diverted stream flows;*
5. *Rising groundwaters;*
6. *Uncontaminated groundwater infiltration (as defined at 40 CFR 35.2005(20)) to separate storm sewers;*
7. *Uncontaminated pumped groundwater;*
8. *Discharges from potable water sources;*
9. *Foundation drains;*
10. *Air conditioning condensate;*
11. *Irrigation water;*
12. *Springs;*
13. *Water from crawl space pumps;*
14. *Footing drains;*
15. *Lawn watering;*
16. *Individual residential car washing;*
17. *Flows from riparian habitats and wetlands;*
18. *Dechlorinated swimming pool discharges;*
19. *Street wash waters resulting from normal street cleaning operations;*
20. *Discharges or flows from emergency fire fighting activities.*

D. The director, with the approval of the mayor, shall have authority to implement this section by appropriate regulations. Such regulations may include but are not limited to provisions for inspection of points of origin of known or suspected non-permitted discharges by appropriate personnel of the metropolitan government.

E. Discharges pursuant to a valid and effective NPDES permit issued by the state of Tennessee are not prohibited by this section.

F. The provisions of this section, including subsection C of this section, shall not apply to sanitary or combined sewers, which are governed by Chapter 15.40 of the Metropolitan Code of Laws.

G. Violation of this section shall subject the violator to a civil penalty of not less than fifty dollars nor more than five thousand dollars per day for each day of violation. Each day of violation may constitute a separate violation.

(Ord. BL2001-642 § 2, 2001; Ord. 97-1016 §§ 1--7, 1998)

Metro maintains a website with specific information on how to report stormwater pollution to the proper authorities. Citizens can report water quality or maintenance concerns by filling out a form on Metro's website at the following link:

http://www.nashville.gov/Water-Services/Stormwater-Maintenance/Report-A-Concern.aspx

In addition, citizens can report issues by calling the MWS Stormwater, NPDES Office at 615-880-2420 or clicking the following email link: StormWaterQuality@Nashville.gov

3.3.2.1 Metro's MS4 Spill Response Summary

There are several different types of spills that occur and impact the MS4 or streams. For the most part, spills occur from one of the three types: roadway wrecks, private property spills/fires, and/or water or sewer infrastructure failures. Depending on the type and severity of spill, several Metro entities could be involved on spill response activities. Figure 2 provides a depiction of the various roles each Metro department performs in spill response activities.

Table 1 – Summary of Metro Spill Response Activities per the MS4 Permit

Spill Types	*Roadway Wreck/Spill*	*Private Property Spill/Fire (Industrial, Commercial, or Residential Properties)*	*Sewer or Water Infrastructure Failures*
Communication	1. Reported directly to emergency personnel 1st responders (Police and Fire). Perform initial assessment. Determine if Hazardous Materials responders are needed.	1. Reported directly to emergency personnel 1st responders (Police and Fire). Perform initial assessment. Determine if Hazardous Materials responders are needed. For some minor spills at industrial or commercial facilities, the MWS Stormwater NPDES is notified directly by the facility contacts.	1. Reported directly by citizens to OEM or the MWS dispatch office. When reported to OEM, the MWS Dispatch office is notified. The Public Works Street Services Division and emergency personnel are only notified when water or sewer infrastructure failures cause hazardous roadway conditions.
	2. Mayor's Office of Emergency Management (OEM) updated by 1st responders of field conditions. Communication includes information on spilled materials/etc. that may impact the MS4 and/or streams.	2. Mayor's Office of Emergency Management (OEM) updated by 1st responders of field conditions. Communication includes information on spilled materials/etc. that may impact the MS4 and/or streams.	2. MWS dispatchers notify MWS System Services Division (SSD) crews to repair lines and, in the event of sewage discharges, clean up lost material.
	3. OEM notifies appropriate spill response personnel such as the Metro Water Services (MWS) dispatchers. Communication includes updating the Tennessee Emergency Management Agency (TEMA) when incidents occur on access-controlled Tennessee Department of Transportation (TDOT) right-of-way or when spilled materials have been documented as discharging to streams, creeks, or rivers. MWS Stormwater NPDES is also notified by MWS dispatchers when discharges were noted as occurring to the MS4 and/or streams.	3. OEM notifies appropriate spill response personnel such as the Metro Water Services (MWS) dispatchers. Communication includes updating the Tennessee Emergency Management Agency (TEMA) when spills on private property have been documented as discharging to streams, creeks, or rivers. MWS Stormwater NPDES is also notified by MWS dispatchers when discharges were noted as occurring to the MS4 and/or streams.	3. MWS dispatchers notify MWS Stormwater NPDES in the event that sewage discharges are documented as discharging into streams, creeks, or rivers. In some instances MWS SSD personnel notify MWS Stormwater NPDES directly when sewage clean-up advice is needed.
	4. Spill responders provide updates back to OEM, who provides the necessary updates to TEMA and other agencies.	4. Spill responders provide updates back to OEM, who provides the necessary updates to TEMA and other agencies.	4. MWS SSD performs all necessary reporting/coordination to TDEC regarding sewage discharges.
Field Response	1. 1st responders will perform initial treatments of absorbent material that they have at their disposal.	1. 1st responders will perform initial treatments of absorbent material that they have at their disposal.	1. In the event of sewage spills, MWS SSD performs all clean-up activities pursuant to the Sewer Overflow Response Plan (SORP). (Note: The SORP is a guidance document on how to properly respond to sewage overflows that was created for compliance with the waste water treatment plant's individual NPDES permits.
	2. Spill response crews from the Public Works Street Services Division perform follow-up spill response activities when spills on Metro road right-of-ways are larger than what 1st responders can contain. Public Works crews place additional absorbent material/booms as needed until responsible parties complete the clean-up. For minor car wrecks where only small amounts of fluids are spilled on the roadway, Public Works will perform all the necessary clean-up. For most large spills involving spills from tractor trailers of commercial fleet vehicles, the trucking company or company's insurance firm is responsible for hiring the appropriate clean-up companies. When responsible parties can not be identified in a timely manner, OEM dispatches their clean-up contractor, with intentions of billing back the clean-up costs to the responsible parties.	2. Beyond the initial application of spill absorbents, when available, the spill clean-up activities that originate on private properties are the property owner's responsibility with applicable environmental remediation and reporting required.	
	3. In the event that medium to large sized quantities of materials reach storm drains and/or streams, the MWS Stormwater NPDES Office is contacted by MWS dispatchers. Upon response, NPDES documents the impacts to the MS4 and/or streams and performs follow-up communication with the responsible parties to ensure the spilled materials are cleaned-up appropriately.	3. In the event that medium to large sized quantities of materials reach storm drains and/or streams, the MWS Stormwater is contacted by MWS dispatchers. Upon response, NPDES documents the impacts to the MS4 and/or streams and performs follow-up communication with the responsible parties to ensure the spilled materials are cleaned-up appropriately.	2. MWS Stormwater NPDES responds when requested by MWS SSD. MWS provides advice on clean-up procedures and monitors the health of the creek for extremely impacting sewage spills.
Documentation	Each Metro department documents their spill response activities within there own spreadsheets or databases. NPDES documents spill response activities within the CityWorks database.	Each Metro department documents their spill response activities within there own spreadsheets or databases. NPDES documents spill response activities within the CityWorks database.	

3.3.2.2 Metro's MS4 Mapping/Inventory Program

The drainage infrastructure inventory updates are performed on an ongoing basis by a GIS technician located in the MWS Stormwater, Development and Review Section (DRS). Drainage system inventory updates are performed when changes to the infrastructure occurs, such as when private development alters the public drainage systems or when public agencies perform changes or upgrades to the public system as part of a maintenance project. In addition, there are instances when MWS Stormwater field staff discover MS4 infrastructure that is not mapped within the GIS database. Figure 2 details the process Metro undertakes in performing updates to the GIS database. In general, the GIS technician updates the database with any changes to Metro's Stormwater drainage infrastructure within 9 months of any changes being completed.

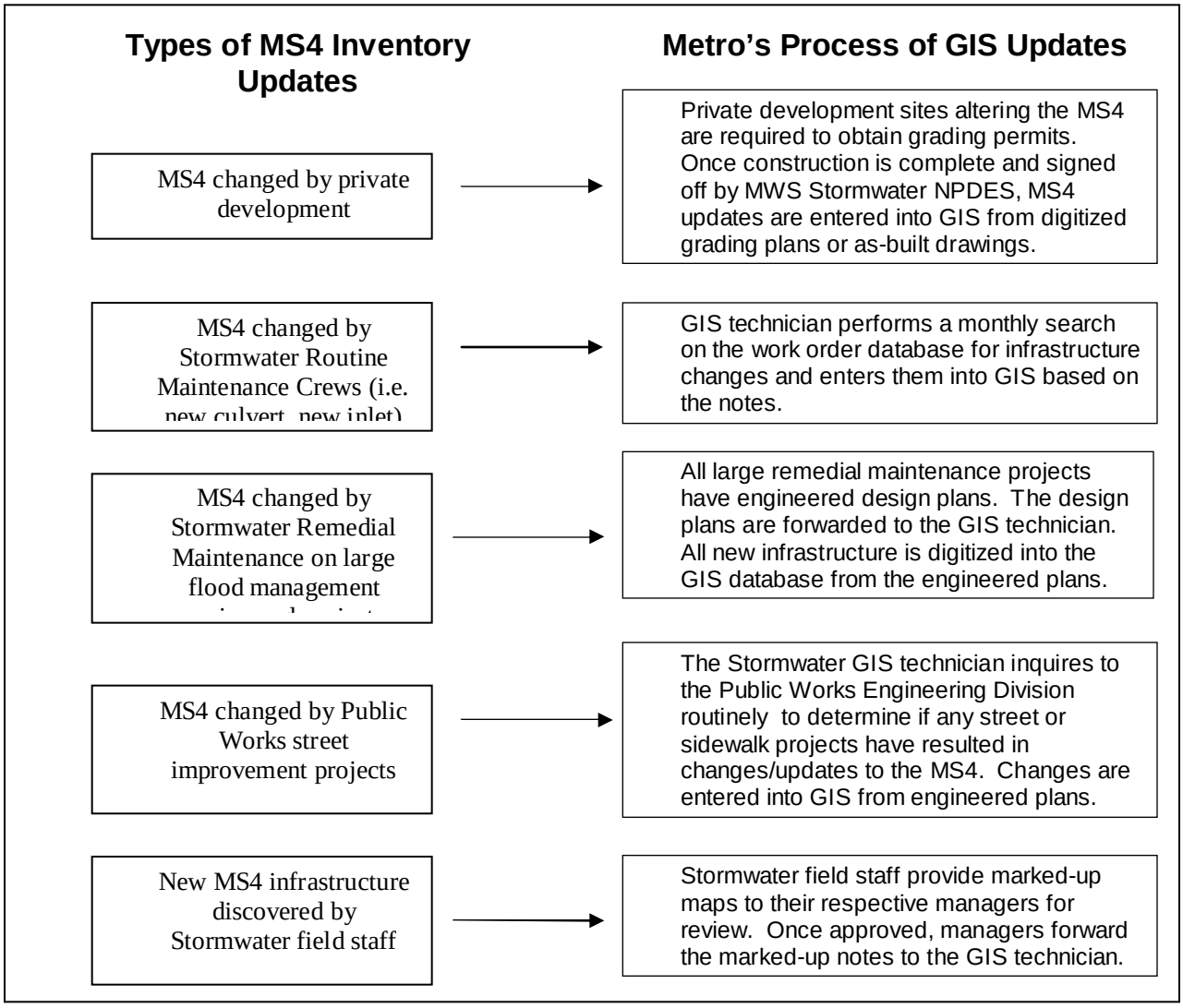


Figure 2 – Metro MS4 GIS Updating Process

Metro performs the following functions to meet the specific permit requirements listed in Section 3.3.1.2 above:

A. MWS Stormwater secured a contractor in 2013 to re-delineate/map MS4 outfalls within the GIS database. Each outfall point added or updated into the GIS database was delineated into one of three categories based on the following criteria:

   1) MS4 Permitted Outfall: Point at which MS4 stormwater drains to the "Waters of the State" layer. In many instances, MS4 drainage routes through private property before discharging to a stream. Despite the fact that the outfall pipe or channel is located on private property. If the outfall receives drainage from Metro roadways or other Metro properties, it was considered an MS4 Permitted outfall. In order to determine actual outfall points, the "Streams and Rivers" layer mapped by the Metro Planning Department was assumed to be the "waters of the State" layer. (This layer has proven to be the most accurate depiction of streams available.) An outfall point was mapped at every intersection point where MS4 drainage routes to "Waters of the State" regardless of whether the drainage structure is a pipe or channel;

   2) Private Outfall: Point at which private facilities drain directly to "Waters of the State" or the MS4. Note: Not all private drainage infrastructure has been inventoried within Metro's GIS, however, in cases where it has, an outfall point was created at the intersection of private drainage and the MS4 or "Waters of the state"; and

   3) Sub-MS4 Outfall: Point at which MS4 drainage area (generally greater than 5 acres) meets another MS4 drainage system. At the intersection of two or more MS4 drainage systems, "sub-MS4 outfalls" was designated on the smaller drainage system. Metro Planning Commission's drainage model layer should be used to determine MS4 drainage area.

   Of the above categories, the "MS4 Permitted Outfalls" that were mapped are the outfalls required to be inventoried per the permit. In addition to inventorying/delineating outfalls within Davidson County, MWS Stormwater also asked the contractor to create drainage area polygons for each outfall point. The drainage polygons were created using the 2-foot contour elevation lines.

B. All of the main stems of streams within Davidson County have been named within several GIS layers available to various Metro staff. In addition, each outfall point has been designated a unique identifying alphanumeric identification number. Not all of the outfall points were inventoried using GPS technology, but MWS Stormwater NPDES does have the technology to update future outfall points using GPS.

C. Metro's original GIS inventory project and all subsequent upgrades have included locations of all inputs into the storm sewer system, such as the inlets, catch basins, etc.

D. Metro recently created a separate layer within the GIS database for stormwater Best Management Practices (BMPs) that have been installed over the years by private and public development projects as required by Metro's grading permits. The layer is continually updated and efforts are currently underway to link the mapped structures to MWS Stormwater NPDES BMP inspection database.

E. All linear stormwater features such as channels and pipes were drawn into GIS from up-gradient to down-gradient directions, which allow flow arrows to be displayed.

F. Separate GIS polygon layers have been created, referred to as "hot areas" in the PIE plan. These areas were created based on their respective land use and watershed impairment status. The "hot areas" will be prioritized for increased inspection and public education urgency and frequency.

3.3.2.3 Metro's IDDE Staff Training Program

All staff that perform functions relating to Metro's IDDE program are located within the MWS Stormwater NPDES Section. All field staff within the NPDES Section have been through the TDEC Level I Erosion Prevention and Sediment Control Certification Workshop. It is the NPDES Section's policy to require all new field staff to receive the Level I training within 6 months of their hiring date. Field staff that perform functions specific to the IDDE program also attend various other workshops/trainings and view appropriate webinar trainings. Training records for each individual are kept within each inspector's training file. In addition, all new employees that perform IDDE functions receive on the job training from senior staff.

3.3.2.4 Field Screening Program Requirements

A. NPDES updated the ¼ mile grids to the most current land use data. Grids were selected that contained parcels with various land-use codes that can be generally considered as "industrial" or "commercial". There are a total of 2,092 grids that will be screened during this current permit cycle.

B. NPDES has selected the grids that are contained within the "hot areas" that will be screened first. All "hot areas" will be screened by June 31, 2014. The remaining grids will be screened by February 1, 2017, the end of the current permit cycle.

C. During the first two permit years of the new cycle, NPDES performed various groundwater screening tests throughout different locations of the county. NPDES utilized a Lamotte Colorimeter field testing device to run a variety of parameters that included chlorine, fluoride, iron, copper, etc. and field test kits to analyze detergents and phenols. Based on the findings and general knowledge of Tennessee water quality standards, NPDES established baseline conditions of the various chemical parameters that were tested. NPDES was also able to conclude what the most beneficial tests to run in order to determine if dry weather flows are comprised of normal groundwater or a potential non-stormwater discharge such as a water leak, sewer leak, or illicit connection. As such, NPDES will complete the remaining field screening grids using the following procedures.

    1) Print 11X17 map sheets of the grids to be screened. The map sheets will contain aerial photographs, road names, and stormwater infrastructure to screen. The map sheets will also contain an area for notes to be taken.

    2) Prepare the field screening equipment (Lamotte colorimeter, YSI 85 Dissolved Oxygen/Conductivity Meter, cooler with ice, 100 ml sample containers, pH meter, and any necessary reagents). Note: (The YSI 85 and pH meter shall be calibrated and logged into the calibration logs each day the meter is used.) Memory cards for the camera should be cleared so that all pictures taken that day can be numbered on the grid sheets.

    3) Wait 24 hours after qualifying rain events of more than 0.1 inches (County-wide). If the outfalls in the grid have no flow 24 hours after a rain event, then no water testing is needed and the normal 72 hour wait period does not apply. If flow is present during the initial 24 hour post rain screening, then the outfall must be revisited after 72 hours to test the flow.

    4) If flow is present at the outfall 72 hours after the rain event, the flow should be tested for the following minimum parameters.

        a) Chlorine;

        b) Fluoride;

        c) Detergents;

d) pH;

e) Dissolved Oxygen;

f) Conductivity;

g) Temperature;

h) Ammonia;

i) Copper

j) *E. coli* (Samples will be taken only when sulfur odors or thick algae is present suspicious of sanitary sewer discharges or if ammonia and fluoride levels are above the below action limits. Samples will be analyzed with NPDES IDEXX procedures.)

5) General notes of the outfall that was screened will be taken on the printed grid sheet maps. A photograph will be taken of all outfalls whether or not flow is present.

6) If testing results for the parameters are higher than the levels noted below, then a formal IDDE source tracking investigation shall be initiated with all documentation taking place within the Cityworks database. (Note: If *E. coli* numbers are the only numbers above the IDDE action levels, then a second sample shall be taken 24 hours later and analyzed. If the second sample is above the action level in Table 2, then an official investigation shall be implemented.)

Table 2 – Field Screening Parameter IDDE Investigation Action Levels

Parameter	**IDDE Action Levels**
Chlorine	> 0.02 mg/l
Fluoride	>0.75 mg/l
Detergents	>0.25 mg/l
Dissolved Oxygen	<5 mg/l
Conductivity	>600 µS/cm
pH	<6 and >9
Temperature	>30.5°C
Total Copper	>0.1 mg/l
Ammonia	>0.75 mg/l
E. coli	941 CFU/100ml

7) If testing results for the parameters are below levels of concern listed in Table 2, then the dry weather flow can be contributed to normal groundwater, unless other factors warrant additional investigation.

8) All field screening notes, sampling data, photographs will be entered into the field screening GIS geodatabase.

9) At a minimum, the LaMotte colorimeter shall be calibrated to standards for each parameter once per quarter.

D. The field screening procedures described above have been designed with the ultimate goal of delineating normal groundwater discharges to the MS4 from potential illicit discharges to the

MS4 (i.e. water leak, sewer leak, cross connection, illegal dumping, etc.). When potential illicit discharges are discovered, an official investigation is opened and tracked through Metro's Cityworks database.

E. Metro uses a variety of different techniques to screen potential discharges of sanitary sewer to the MS4. Once sanitary discharges are confirmed, they are routed to the appropriate agencies, such as MWS Dispatch for sewer mains, Health Department and Code Administration for private service laterals.

3.3.2.5 Limitation of Sanitary Sewer Seepage Requirements

Listed below are some of the main programs that help to screen potential sanitary sewer discharges.

A. Field Screening Program;

B. Stream Walk Program (Visual Stream Assessments);

C. Thermogragh Aerial Reconnaissance Program; and

D. Citizen Reports and follow-up IDDE investigations.

The thermograph program, in particular, is performed for the sole reason of detecting potential sanitary sewer and/or water leaks or faulty septic system leach fields. The thermograph program Metro performs involves utilizing the Police Department's helicopter to fly large streams with thermal infrared video/photography. NPDES personnel video record sections of creeks and look for thermal anomalies. NPDES personnel perform follow-up visits and sampling to determine if the anomaly is a result of a sanitary sewer discharge, water leak, or normal groundwater recharge points in the stream. The thermograph flights are performed in the winter months when ambient stream temperatures are low. There are some years during mild winters, when the thermograph flights can not be performed.

In addition to the above programs, NPDES works diligently to coordinate with other departments on eliminating sanitary sewer seepage into the MS4 and streams. Table 3 below provides an overall summary of the various roles Metro departments play in eliminating sanitary sewer discharges.

Table 3 – Sanitary Sewer Discharge Elimination Functions by Various Departments

Types of Sewage Discharges	Metro Agencies Involvement	Department Role
MWS Sewer Main Overflows/Breaks/Leaks	MWS System Services Division	Make necessary repairs to Metro's sewer main lines. Clean up discharged sewage materials through adherence to the MWS' Sewer Overflow Response Plan (SORP)
	MWS Engineering/Overflow Abatement Program	Performs large engineered projects designed to reduce/minimize the amount of wet weather/dry weather overflows from the separate sanitary sewer (SSS) and combined sanitary sewer (CSS) systems.
	MWS Environmental Compliance	Oversees the Fats, Oils, and Grease (FOG) program requiring Food Service Establishments (FSEs) to implement grease control equipment. Also performs general education activities relating to dumping of FOG products in the sanitary sewer.
	MWS Stormwater NPDES	Performs various screening programs that look for active discharges of sewage material into creeks or the MS4. Assist MWS SSD, when requested, on impact assessments of sewage discharges to the MS4 and or creeks.
Private Service Line Overflows/Breaks/Leaks	MWS System Services Division	Perform checks of sewer mains to ensure private service lateral issues are not caused by sewer main blockages.
	Health Department	Primary enforcement agency requiring private sanitary sewer discharges to be corrected and remediated for all FSEs.
	MWS Stormwater NPDES	Assess impacts of private sewage discharges to the MS4 or creeks. Secondary enforcement agency to the Health Department and Codes Department for sanitary sewer discharges from private FSEs and non-FSEs respectively.
	MWS Environmental Compliance	Perform education activities related to the FOG program when private service lines overflow due to grease concerns.
	Codes	Oversee code enforcement for installation and maintenance of private service laterals and provides primary enforcement to sanitary sewer discharges from private service laterals from non-FSE sites.
Septic System Failures	Health Department	Provide all Metro oversight and enforcement of private septic systems (installation and maintenance). Require failing septic systems to be remediated.
	MWS Stormwater NPDES	Screen for potential sewage discharges from septic system failures. Forward all private septic system failure issues to the Health Department.

3.4 Construction Site Stormwater Runoff Control

In general, the MS4 permit requires Metro to continue oversight of all construction activity within Metro's MS4 jurisdiction that are disturbing one or more acres of land. Metro shall oversee the construction activities of public and private development in order to prevent pollutants from running off into the MS4 or "Waters of the State".

3.4.1 Construction Stormwater Control Specific MS4 Permit Requirements

Metro is specifically required to maintain and enforce an ordinance that allows for penalties to be assessed that are consistent with TCA 68-221-1106. Any modifications needed to Metro's ordinance should be consistent with TDEC's General Construction Permit for construction stormwater runoff and must be implemented by February 2014. In addition, Metro's regulations and guidance for construction site BMPs shall be consistent with the TDEC EPSC Handbook. In addition to the general requirements of the construction stormwater control program, the following specific components shall be in place:

A. Site Inventory Requirements: Metro must maintain an active list or database of all private and public construction activities that are disturbing one or more acres of land. The inventory must include contact information and TDEC permitting tracking numbers.

B. Educational Materials: Metro must distribute educational materials to construction site operators and must provide public notice for all public projects (owned by Metro) that have a planned disturbance of greater than one acre. Metro must also provide information of training opportunities and make available appropriate outreach materials via the website, brochures, flyers, etc.

C. Waste Control Requirement for Construction Site Operators: Metro is to require all operators to control wastes such as discarded building materials, concrete wash-outs, etc. so as not to impact off site water quality.

D. Specific EPSC Reviews and Procedures: As part of verifying EPSC compliance on construction site operators, Metro must at a minimum, identify priority construction activities, hold pre-construction meetings with construction site operators, inspect priority construction sites once per month, and inspect non-priority construction activities once per quarter.

E. Provide for Public Input: Metro shall have mechanisms for public access to information on projects.

F. Procedures for Site Inspection: Metro is required to ensure procedures are in place for inspectors to evaluate and document the effectiveness of construction site BMPs and to enforce on non-compliance findings.

G. Staff Training: Construction site inspectors must maintain certification under the Tennessee Fundamentals of Erosion Prevention and Sediment Control, Level 1. All site plan reviewers must complete the Level 2 design course.

3.4.2 Metro's MS4 Construction Oversight Program

Metro has municipal code/ordinances specifically addressing stormwater management regulations within Davidson County, some of which have been in place more than three decades. The Municipal Code has been updated over the years to reflect changes in federal and state regulations as well as industry technologies. The current chapter within Metro Municipal Code that addresses stormwater regulations is *Chapter 15.64 - Stormwater Management.* Within *Section 15.64.204,* Metro is explicitly granted the ability to create stand-alone stormwater management regulations. As such, Metro created the original Stormwater Management Manual in 1979, which has been continually

updated and expanded upon over the years. Section 3.3 of the Stormwater Management Manual specifically requires all development within the county that meets certain criteria to acquire grading permits from the MWS Stormwater Department. While there are some development categories exempt from obtaining grading permits, most public and private development activities are required to obtain grading permits if the area of proposed disturbance is greater than 10,000 square feet, they are proposing bringing more than 100 cubic yards of fill to the site, or if they are making major alterations to the MS4. The grading permit process requires permittees to attend pre-construction meetings in which they are granted temporary grading privileges to install the erosion and sediment controls. Actual grading permits are not issued until the erosion and sediment controls are inspected by MWS Stormwater NPDES construction inspectors.

Metro also provides oversight and review for some single family residential properties that disturb an area less than 10,000 square feet. For instance, properties flagged with the city's KIVA database as needing stormwater approval, are required to submit checklists that explain efforts to control erosion and sediment runoff prior to receiving stormwater sign-offs. MWS Stormwater DRS also perform numerous inspections of single family residential construction properties and initiate enforcement when illicit discharges of sediment are discovered. Currently, Metro is exploring options to create a separate mechanism to permit infill development such as the demolition and construction of single family residential properties.

Metro's regulations involving oversight of construction activity is consistent with TCA 68-221-1106. Metro has adapted the following ordinance *15.64.220 - Violations—Penalties*, which allows penalties to be assessed to non-compliant construction activities. It is important to note that non-compliant construction activities resulting in large illicit discharges of sediment to creeks can also receive enforcement actions for violations of *Metro Code 15.64.205 - Non-stormwater discharges*, allowing penalties to be assessed for up to $5,000 per day.

15.64.220 – Violations - Penalties.

A. *Any violation of this chapter shall be punishable by a civil penalty in an amount not to exceed five hundred dollars; provided, however, that any violation of* Section 15.64.205 *shall be punishable by a civil penalty of not less than fifty dollars nor more than five thousand dollars. For purposes of assessing civil penalties under this chapter, each day of violation shall constitute a separate violation.*

B. *In assessing a civil penalty, the following factors may be considered:*
   1. *The harm done to the public health or the environment;*
   2. *Whether the civil penalty imposed will be substantial economic deterrent to the illegal activity;*
   3. *The economic benefit gained by the violator;*
   4. *The amount of effort put forth by the violator to remedy this violation;*
   5. *Any unusual or extraordinary enforcement costs incurred by the municipality;*
   6. *The amount of penalty established by ordinance or resolution for specific categories of violations; and*
   7. *Any equities of the situation which outweigh the benefit of imposing any penalty or damage assessment.*

C. *The department may also assess damages proximately caused by the violator to the municipality which may include any reasonable expenses incurred in investigating*

and/or enforcing violations of this part, or any other actual damages caused by the violation.

D. In addition to all other remedies provided by law, the metropolitan government shall have the right to injunctive relief for any violation of this chapter.

(Ord. BL2010-639 § 1, 2010; Ord. BL2001-642 § 3, 2001; Ord. 95-1329 § 11, 1995)

During the first year of the new permit, Metro reviewed the grading permit regulations and determined that they are consistent with TDEC's General Construction Permit for construction stormwater runoff. While there may be some slight differences in the permitting processes, Metro's requirements on construction activity are actually more stringent than TDEC's General Construction Permit for construction stormwater runoff. In addition, Metro's Volume IV lists specifications for EPSC BMPs that are consistent with the TDEC EPSC Handbook. Based on a review of Metro's stormwater regulations, Metro believes no adjustments are necessary.

Below is an explanation of Metro's program and how it meets the specific requirements detailed in the MS4 Permit.

A. Site Inventory Requirements: As mentioned above, Metro's grading permit regulations are much more stringent than TDEC's General Permit for construction site runoff, requiring sites disturbing more than 10,000 square feet (roughly ¼ of an acre) to acquire a grading permit. Many of Metro's grading permit sites are less than one acre and do not require TDEC permits. For grading sites that are proposing more than 1 acre of disturbance, however, Metro requires under Section 4.2.3.2 - Volume I of the Stormwater Management Manual, (for all grading permit applicants proposing to disturb one acre or greater) to provide a Notice of Coverage for TDEC's General Permit for construction stormwater runoff prior to scheduling a pre-construction meeting. In addition, Metro requires all approved construction plans to be stamped and signed by a project representative that states the project is covered under TDEC's General Permit for construction stormwater runoff. Metro contains contact information and a list of all the active grading permit sites within the city's permitting database.

B. Educational Materials: Metro created numerous educational materials dedicated to construction site management. Some of the most important educational materials Metro has published, is the information describing Metro's development process, which can be accessed via Metro's website at: http://www.nashville.gov/Water-Services/Developers.aspx. In addition to providing guidelines and other information via the website, Metro also performs other construction stormwater educational activities, such as running slide shows on the local public access channel, providing educational materials to developers, contractors, etc. during pre-construction meetings, and routinely sending out emails about construction stormwater topics to large email groups. MWS Stormwater NPDES staff also presents Nashville's grading permit process at TDEC's Level 1 EPSC Workshop when it is held in Nashville. Metro provides a list of active Metro grading sites that were proposed to disturb an acre or more. The list is updated monthly using TDEC's permitting database. The list can be found at: http://www.nashville.gov/News-Media/News-Article/ID/1753/Public-Notice-of-Metro-Construction-Projects-Within-Davidson-County-Tennessee.aspx

C. Waste Control Requirement for Construction Site Operators: Metro requires all grading permitees to include on the Erosion and Sediment Control Plans a description of BMPs that specifically address on-site controls of litter and debris. Below is an excerpt from Volume I of the Stormwater Management Manual:

Volume I-SWMM ~ 6.10.8 Litter and Construction Waste Materials

Grading Permittees shall control site wastes such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary wastes at their construction site that may cause adverse impacts to water quality. "Control" shall constitute BMPs addressing the aforementioned site issues and should be being depicted on the EPSC sheet of the site's approved Grading Permit plan as well as being implemented and maintained on the project site as required to prevent pollution from being lost from the site.

D. Specific EPSC Reviews and Procedures: Metro has taken the following approach to prioritizing construction sites for more frequent inspections. A permitted construction site will be considered a "Priority Construction Site (PCS)" if at any time there is active land disturbances or there is a stormwater pollution discharge potential. It will remain a PCS until the MWS inspector determines that the site is stable and there are no discharge concerns. The location of these sites includes all active sites within Metro's MS4 jurisdiction, which includes sites discharging directly into, or immediately upstream of, waters the state recognizes as impaired (for siltation or habitat alteration) or Exceptional Tennessee Waters. NPDES Section construction site inspectors routinely reference maps of all the sites that drain to streams listed on the TDEC's 303(d) list as being impaired for siltation. NPDES enforcement policy also allows for elevated administrative penalties for construction sites draining to siltation-impaired streams

E. Provide for Public Input: Metro uses a KIVA city-wide database to document all development permit activities. The KIVA database is a web-based application and is available to the general public for search. The KIVA database can be accessed at the below link: https://permits.nashville.gov/kivanet/2/index.cfm

F. Procedures for Site Inspection: The MWS Stormwater NPDES Section performs all inspections and enforcements for grading permit sites relating to all EPSC BMPs. All inspections are documented within the KIVA database. NPDES maintains Standard Operating Procedures (SOPs) for the inspection process in which each construction site inspector is trained on. A copy of the Construction Inspection SOP can be found in Appendix E. All enforcement actions involving grading permits follow procedures outlined in the Enforcement Response Plan (attached in Appendix D.

G. Staff Training: All inspectors within the MWS Stormwater Department, including those that look at single family residential properties, are required to maintain the Level 1 EPSC certification. All new employees are required to sign up for the TDEC Level 1 workshop within 1 year of the hire date. In addition, all grading permit plan review engineers have been through the Level 2 Design Course.

3.5 Permanent Stormwater Management in New Development and Redevelopment

3.5.1 Permanent Stormwater General MS4 Permit Requirements

The MS4 Permit requires Metro to develop, implement, and enforce a program to address permanent (post-construction) stormwater runoff management from new development and significant redevelopment. The program should establish, protect, and maintain water quality buffer zones along streams for new development and redevelopment projects. Any changes necessary to Metro's code or regulations to meet provisions of this section of the MS4 Permit should be fully implemented January 31, 2016. The following paragraphs list specific requirements for permanent stormwater management in new development and redevelopment areas.

3.5.1.1 MS4 Requirements for Performance Standards

Metro is specifically required to develop standards that promote the use of runoff reduction (i.e. infiltration, evapotranspiration, rainfall harvesting, etc.) over standard treatment practices such as stormwater detention. In promoting runoff reduction, Metro should also develop criteria that allow

sites that can not meet the runoff reduction requirements, to treat post construction runoff using alternative methods. Specific performance standards contained within the MS4 Permit are described below:

A. Runoff Reduction (infiltration or green infrastructure): Metro is to develop design standards that are designed to reduce runoff volumes by capturing 100% first inch of every rainfall event preceded by 72 hours of no measurable precipitation through infiltration, evapotranspiration, and/or harvesting. When development and redevelopment can not design to meet the runoff reduction of the first inch of rainfall based on the criteria that Metro develops, then traditional stormwater treatment practices could be allowed. Metro is also required to develop incentive standards for use of "green" type controls that may include providing up to a 30% reduction in volume of rainfall to be managed, while the total combination of credit volumes does not exceed 50% reduction.

B. Pollutant Removal: When development or redevelopment properties can not meet the design standards of 100% runoff reduction of the first inch of rainfall, Metro shall at a minimum require such developments to utilize traditional stormwater treatments that achieve at least a 80% reduction in total suspended solids (TSS). It is Metro's decision whether or not to allow off–site mitigation or payment into a stormwater fund dedicated to performing projects to improve stormwater quality.

C. Off-site Mitigation: Metro is to evaluate and make a determination that may allow development and redevelopment sites that can not perform the appropriate stormwater treatment on-site to perform off-site mitigation, so long as it occurs within the same United States Geological Survey (USGS) 12 digit hydrologic unit code (HUC). If Metro determines off-site mitigation could be performed, Metro is to identify priority areas create an inventory within specific watersheds in which off-site mitigation projects could be completed. In addition, Metro should create minimum standards for such off-site mitigation projects to follow.

D. Payment into Public Stormwater Project Fund: Metro is also required to evaluate and determine if creation of a public stormwater project fund will be an option for sites that can not manage stormwater onsite and find an adequate off-site mitigation project. If Metro decides to create a public stormwater fund, then the fund shall at a minimum require developments or redevelopments to pay 1.5 times the estimated cost of on-site runoff reduction controls. Any projects performed by the fund shall be dedicated to benefitting runoff quality.

3.5.1.2 MS4 Permit Requirements for Codes Review and Update

Metro is required to (within the first permit year) review local codes and ordinances using the EPA Water Quality Scorecard. Based on the findings, Metro shall consider making revision to policies, codes, and ordinances that may restrict applications of stormwater treatments such as rain gardens, curb extensions, planter gardens, porous pavements, water harvesting, etc. Metro shall either adjust the codes and ordinances to remove such restrictions or provide justification as to why the restrictions were not changed.

3.5.1.3 MS4 Permit Requirements for Plan Review, Approval, and Enforcement

Metro is required to develop project review, approval and enforcement procedures that allow for the following options:

A. Pre-application meeting: Allow developers or their engineers to submit a pre-application comment plan or to schedule a pre-application meeting with appropriate MS4 staff;

B. Inter-department Consultations: Develop consultation process and a re-submittal process when an owner request changes to approved plans; and

C. Verification Process: Establish a process to verify permanent stormwater BMPs are installed correctly, that may include enforcement provisions for non-complying sites.

3.5.1.4 MS4 Permit Requirements for BMP Maintenance

Generally, Metro is required to have local ordinance or other enforceable properties are in place to ensure permanent stormwater BMPs are maintained in perpetuity. Such policies shall include development of a maintenance agreement that allows for transfers of responsibilities in leases and/or deeds. The maintenance agreement shall be an enforceable agreement and all enforcement provisions for post construction BMPs shall be detailed within the Enforcement Response Plan.

Metro is required to update the electronic GIS-based databases within the first year of the permit and submit a BMP Inspection and Maintenance Verification Plan in the first 6 months of the permit term. The Inspection and Maintenance Verification Plan shall be implemented and completed by the end of year 5 of the effective permit cycle. For post construction stormwater BMPs owned and operated by Metro, maintenance shall be documented with items such as photos, maintenance logs, contractor invoices, etc. The following paragraphs list specific oversight requirements Metro is to perform on permanent stormwater BMPs.

A. Verification of Maintenance Responsibilities: Metro should verify owners of permanent stormwater BMPs are performing necessary maintenance by establishing legal agreements with the responsible parties.

B. Inventory and Tracking of Management Practices: Metro is required to create an electronic database that tracks permanent stormwater BMPs (including Metro properties) inspection and maintenance status. The database can be linked to GIS and should include standard information such as property owner, location, date installed, description of the BMPs, coordinates or locations of BMPs, maintenance requirements, inspection information, etc.)

C. Owner/Operator Inspections: Metro shall require the owner/operator subject to new development or redevelopment to provide inspection and maintenance reports to Metro. The owner/operator inspections shall be performed by a qualified professional specified by the MS4 program or a Professional Engineer (P.E.) or Landscape Architect (L.A.). Inspection reports should be performed at least once ever five years and should include information such as the facility type, inspection date, BMP location, owner information, BMP conditions, photographs, etc.

3.5.1.5 MS4 Permit Requirements for Watershed Protection

Metro is required to include specific watershed protection provisions when urban development or community plan(s) are updated. Some of the specific provisions include minimizing the amount impervious surfaces, preserving and protecting ecologically sensitive areas, establishing buffers along streams, implementing tree protection, etc.

3.5.2 **Metro's Permanent Stormwater Control Program**

Metro's stormwater management program requires all development or significant redevelop activities that are required to obtain a grading permit to install permanent stormwater BMPs designed for treatment of water quality and quantity. Metro's stormwater regulations also require water quality buffer protections along all community waters. The water quality buffers protections can have one or two zones; Zone 1 – No-disturb buffer and Zone 2 – Managed Vegetation Zone (no structures allowed). The defined water quality buffer widths are as follows:

A. Streams
   1) Streams draining < 100 acres: 30' from top of bank; Zone 1=30'
   2) Streams draining ≥ 100 acres, but < 1 square mile: 50' from top of bank; Zone 1=30' and Zone 2=20' FEMA studied streams, streams with a Local Flood Study, or
   3) Streams with a drainage area ≥ 1 square mile: 75' from the floodway, Zone 1=floodway + 50' and Zone 2=25'. MWS staff may allow a large undisturbed floodway to count towards the buffer requirement in consultation with Metro Parks and Greenways if the undisturbed area complies with the requirements of the floodplain overlay district and if staff determines that the undisturbed area would adequately serve water quality functions.

B. Ponds: Ponds with hydrologic connectivity (stream leading into/out of the pond or obvious spring input): 25' from normal water pool, with Zone 1 = 10' and Zone 2 = 15'
C. Wetlands: 25' from the wetland delineation line (accepted by USACOE, TDEC, or MWS), with no disturbance allowed within the 25'.

All stormwater-specific regulations for development and redevelopment can be found in Volumes 1 through 5 of the Stormwater Management Manual. The Stormwater Management Manual can be downloaded or viewed at the following website: http://www.nashville.gov/Water-Services/Developers/Stormwater-Review/Stormwater-Management-Manual.aspx The Stormwater regulations will be revised/updated to account for any changes deemed necessary from the specific requirements described in the following sections:

3.5.2.1 Metro's Program on Performance Standards

Metro finalized a new Volume 5 of the Stormwater Management Manual in June 2012. Volume V, which is also referred to as Nashville's Low Impact Development (LID) Manual, provides specifications for green stormwater treatment approaches such as bioretention, permeable pavement, green roofs, etc. While, Metro's MS4 Permit mandates the use of runoff reduction requirements for new development and redevelopment by January 31, 2016, Metro Nashville has created an incentive program to promote the use of green stormwater treatment practices over traditional practices in the interim. Some of the incentives include waiving the plan review fees, allowing for reduced water quantity treatment, and giving a reduction of up to 75% of the property's monthly stormwater user fee.

Below are specific programs or measures Metro performs to meet the specific MS4 performance standards for permanent stormwater BMPs:

A. Runoff Reduction (infiltration or green infrastructure): Metro's LID Manual, Volume 5 of the Stormwater Management Manual, provides design specifications for a variety of permanent construction stormwater BMPs that can be used to meet the one inch runoff reduction requirement. Currently, Metro promotes the use of runoff reduction BMPs through providing the incentives described above. Metro is expected to implement the new policy of requiring developments and significant re-developments to perform runoff reduction prior to January 31, 2016.

B. Pollutant Removal: Once the runoff reduction stormwater treatment requirements are fully implemented, Metro will offer (when site conditions are not conducive to runoff reduction technologies) the option of traditional stormwater treatments to a minimum of 80% reduction in TSS. Metro intends to work with other middle Tennessee MS4 programs to develop consistent criteria developers and engineers will use to determine if the option of 80% TSS reduction can be utilized.

C. Off-site Mitigation: Metro's initial determination is to prohibit the use of off-site stormwater mitigation. As it currently stands, development and redevelopment projects can still utilize 80% TSS reduction and Metro believes there are very few instances where such technologies can not be utilized. Once the runoff reduction requirements are fully implemented, Metro intends to reevaluate the option to use off-site stormwater mitigation. If the use of off-site mitigation is allowed, Metro will include, at a minimum, the requirement to perform mitigation within the same HUC 12 watershed that the impacts are proposed. As part of the Watershed Management Program, Metro intends to identify priority areas within impaired watersheds where structural controls could be implemented to reduce pollutant loadings to receiving waters.

D. Payment into Public Stormwater Project Fund: Similar to the off-site mitigation option, Metro has decided against the creation of the public stormwater project fund at this time. This decision will be reevaluated when the runoff reduction requirements become fully implemented. If Metro determines at that point to pursue a public stormwater fund, specific standards will be

implemented that include requirements of developing and redeveloping properties to pay 1.5 times the estimated cost of on-site runoff reduction controls.

3.5.2.2 Metro's Program for Codes Review and Update

Metro hired an outside consultant in 2012 to perform a review of the municipal codes and ordinances using the EPA Water Quality Scorecard. The results of the analysis were submitted in the Year 1 Annual Report. Metro will be reviewing the findings of the scorecard analysis and will determine by the end of year 4, which restrictions, if any, can be adjusted. Metro will provide explanations of any code adjustments or the reasons why codes were not adjusted in the Year 5 annual report.

3.5.2.3 Metro's Program on Plan Review, Approval, and Enforcement

Metro has developed internal processes that do allow for pre-application meetings, inter-department consultations, plan re-submittal processes, and permanent stormwater BMP installation verification. The overall plan submittal, review, and approval process for grading permits is summarized in Figure 3. All steps within the plan approval process are logged into Metro's citywide KIVA database. All Metro departments that are involved in issuing permits to development activities utilize the database and certain hierarchies are built into the database. For instance, parcels flagged by KIVA as having a potential community waters buffer requirement, must first be reviewed and verified if a stream is present prior to grading permit plans being reviewed and approved. The installation of all permanent stormwater BMPs has to be inspected and approved by MWS Stormwater NPDES construction inspectors and as-built certifications must be submitted and approved by MWS Stormwater plan review engineers prior to final sign-off from Metro. All the information required for grading permit plan reviews and sign-offs is located with in Appendix A of Volume 1 of the Stormwater Management Manual: http://www.nashville.gov/Portals/0/SiteContent/WaterServices/Stormwater/docs/SWMM/2012/vol1/09_Appendix_A.pdf

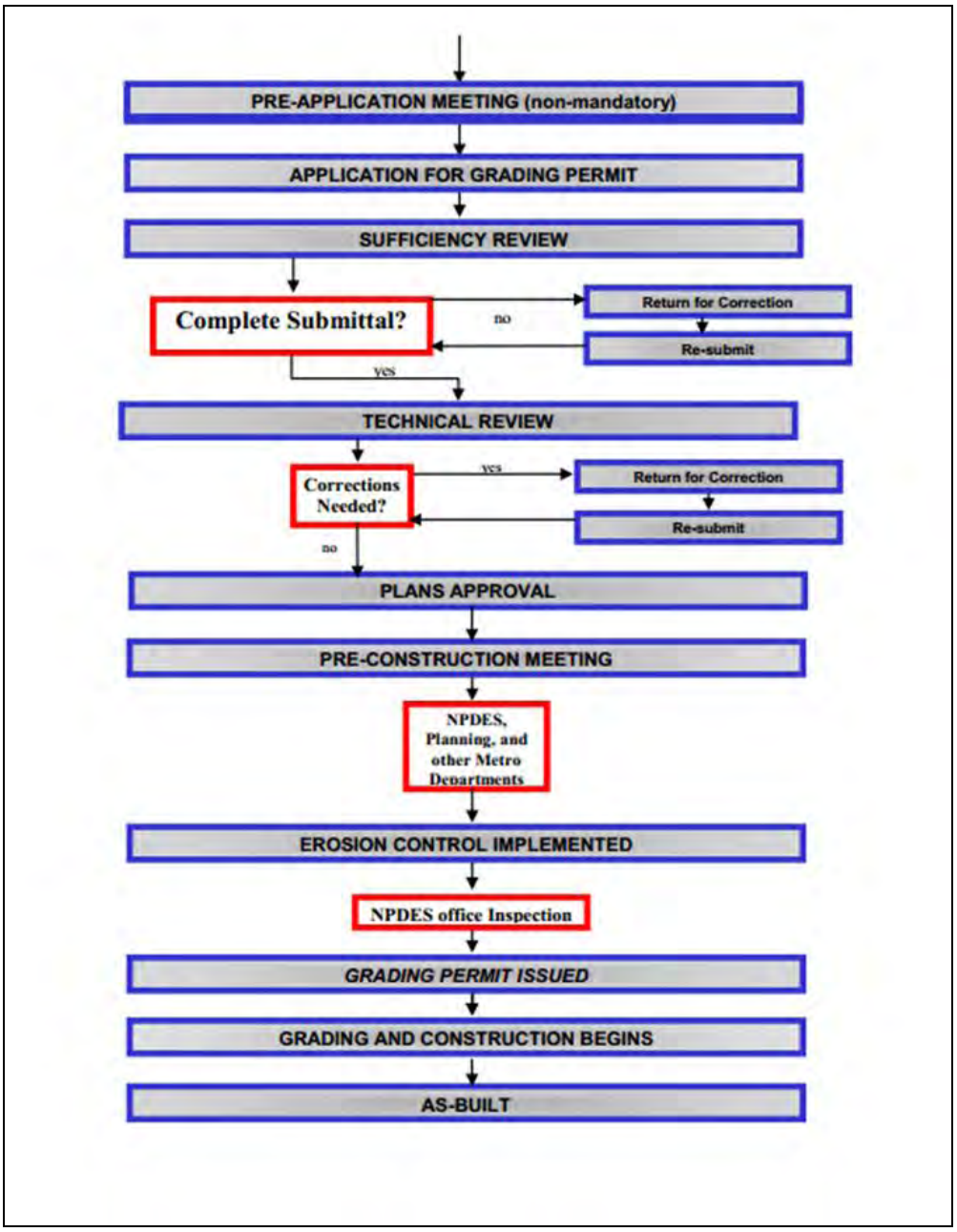


Figure 3 - Plans Review/Approval Process for Grading Permits

3.5.2.4 Metros Program for BMP Maintenance

Metro has a specific maintenance agreement in place for permanent stormwater BMPs that must be recorded at the Register of Deeds before a site is approved for a Pre-Construction Meeting. The maintenance agreements have been in place since BMPs were first required by Metro's grading permit, however, the maintenance agreement has been strengthened over the years to clarify responsibilities of property owners. The current version of the maintenance agreement consists of three main components:

A. Either an Inspection and Maintenance (I&M) Agreement, which includes an easement requirement, or a Declaration of Restrictions and Covenants

B. A long-term maintenance plan prepared by the design engineer; and
C. A system location map.

The owners of BMPs are required to submit annual reports to Metro on inspections and maintenance performed, and general condition of the structures. Enforcement procedures for permanent stormwater BMPs that are not properly inspected or maintained are detailed in the Enforcement Response Plan (ERP) attached in Appendix D.

Metro has several electronic databases it uses to track BMP installation and follow-up inspection/maintenance. The citywide KIVA database is utilized during the plan review and construction phase of BMPs. Information on each BMP is initially logged into the KIVA database by MWS plan review engineers. Once BMPs are installed, approved by MWS Stormwater NPDES inspectors, and the as-builts are approved by MWS Stormwater plan review engineers, the BMP structure is entered into the MS4 GIS database. In addition, the information on each BMP is entered into a Microsoft Access database for purposes of documenting future inspections and maintenance notes.

MWS Stormwater NPDES submitted a BMP Inspection and Maintenance Verification Plan to TDEC on June 27, 2013. Metro did not receive a response from TDEC on the proposed plan and therefore began implementation during the second permit year. A copy of the plan is attached in Appendix E. In summary, Metro will randomly select and inspect a minimum of 30 privately owned BMPs each year. The MWS Stormwater NPDES Section will request copies of inspection and maintenance records from all Metro Departments that own or operate structural BMPs each year. For sites that receive final approval of their stormwater BMP construction after the BMP Inspection and Maintenance Verification Plan went into effect on 8/29/12, Metro will review the annual inspection/maintenance reports that are submitted and will consider initiating enforcements for the owners/operators that have not submitted the required reports. Metro is revising the current regulations to require a more thorough inspection/maintenance report to be performed by a P.E., L.A., or a qualified professional as deemed by Metro once every 5 years.

3.5.2.5 Metro's Program for Watershed Protection

The MWS Stormwater NPDES Section has performed initial coordination with the Planning Department and has been assured that the MS4 Permit requirements will be considered in future community or land use plans. In addition, the MWS NPDES Section will be working on a Watershed Management Plan in one of the sub-watersheds. Development of the Watershed Management Plan will require coordination between the MWS NPDES Section and the Planning Department.

3.6 Pollution Prevention/Good Housekeeping for Municipal Operations

3.6.1 General MS4 Permit Requirements for Pollution Prevention/Good Housekeeping for Municipal Operations

Metro is required to implement various programs designed to minimize pollutant runoff from Metro properties and maintenance processes and private industrial/high-risk commercial properties. Some of the general MS4 Permit requirements include developing maintenance employee training programs, developing inspection procedures of various maintenance locations, providing oversight to high-risk commercial and industrial properties, performing necessary system maintenance such as street sweeping and inlet cleaning, etc. The following sections detail specific program requirements under this section of the MS4 Permit.

3.6.1.1 MS4 Permit Requirements for Separate Storm System Maintenance Activities

Under this section of the MS4 Permit, Metro is required to continue operation of the stormwater maintenance program for the publicly owned/operated stormwater drainage system. The maintenance activities shall be performed based on citizen complaints and general program knowledge of the

drainage system. Maintenance activities shall be performed in an effort to minimize current and future impacts to water quality. In particular, Metro must guarantee that waste removed from the stormwater drainage system is not allowed to re-enter the system. Records shall be kept and maintained for all stormwater maintenance activities such as dates of service, locations serviced, and amount of material removed from the system. In addition, Metro is specifically required to perform inspections and necessary maintenance on the Dry Creek Detention facility and any other Metro-operated regional detention/treatment facility. Metro is also required to analyze the maintenance process priorities to include considerations such as the amount of waste removed from certain locations, frequency of back-up problems, danger to public safety, and amount of citizen complaints.

3.6.1.2 MS4 Permit Requirements for Municipal Activities and Operations

Metro is specifically required to perform a comprehensive review of all Metro Operations & Maintenance (O&M) facilities within the first year to determine if water quality issues are present. In addition to O&M facilities, Metro shall include inspections and reviews of other facilities that have the potential for pollutant runoff such as municipal landfills, west transfer facilities, salt storage facilities, etc. The program shall ensure that the Stormwater Pollution Prevention Plans (SWPPPs) or equivalent site management plans are in place for the maintenance facilities that requires frequent grounds inspections and good housekeeping measures. The plans shall identify potential pollutants that could runoff the properties and develop procedures to prevent such discharges.

3.6.1.3 MS4 Permit Requirements for Street Sweeping and Cleaning

Per the MS4 Permit, Metro is required to operate a program on ongoing basis to effectively sweep streets within the Urban Services District (USD) with the goal of preventing the discharge of materials into the storm drains. Metro is required to analyze the effectiveness of the program on an annual basis and adjust as necessary to achieve maximum sweeping effectiveness.

3.6.1.4 MS4 Permit Requirements for Flood Management

Within one year of the permit effective date, Metro shall develop a process to assess water quality impacts from large flood management projects. The process should be aimed at ensuring water quality impacts from flood management projects are minimized, while still accomplishing the objectives of the program.

3.6.1.5 MS4 Permit Requirements for Pesticide, Herbicide, and Fertilizer Application and Management

This requirements of this section of the permit is somewhat overlapping to the requirements described in Section 3.6.1.2, which requires Metro to develop SWPPPs or equivalent plans for Metro O&M facilities within the first year of the permit. Within the SWPPPs or site management plans, specific attention needs to be devoted to the following items:

A. Potential educational activities, permits, certifications, etc. for municipal employees that apply pesticides, herbicides, and fertilizers;

B. The possible use of integrated pest management measures that rely on non-chemical solutions;

C. Schedules for chemical applications that reduce impacts to water quality;

D. The proper disposal and storage of pesticides, herbicides, and fertilizers.

3.6.1.6 MS4 Permit Requirements for Contractor Oversight

Under this section of the MS4 Permit, contractors hired to perform municipal maintenance operations shall be held to the same standards of Metro municipal operations.

3.6.1.7 MS4 Permit Requirements for Monitoring and Controlling Industrial, Commercial, and High Risk Runoff

Under this permit requirement, Metro must develop a program to monitor and control, to the Maximum Extent Practicable (MEP), pollutants in runoff from the following industrial, commercial, and high risk runoff facilities and activities:

A. Municipal Landfills;

B. Hazardous Waste Treatment, Storage and Disposal Facilities;

C. Industries subject to reporting requirements under Superfund Amendment and Reauthorization Act (SARA), Title III, Section 313; and

D. Industrial and commercial facilities that Metro determines to be contributing a substantial loading of pollutants to the MS4.

Metro is required to develop and maintain a database of the above-mentioned categories that contains such items as the facility locations, receiving waterbody, Standard Industrial Code (SIC). Metro is required to inspect all of the above categories at least once every three years. Metro shall ensure that the industrial facilities implement BMPs, minimize exposure, follow good housekeeping practices, and manage stormwater runoff. Metro shall make sure inspectors are adequately trained and must maintain training records, which may include joint inspection performed with TDEC staff.

3.6.2 Metro's Program for Pollution Prevention/Good Housekeeping for Municipal Operations

Metro has implemented various oversight programs that are designed to prevent pollution from existing municipal O&M facilities as well as private industrial/high risk commercial properties. The sections below describe Metro's efforts to prevent pollution from discharging from these types of land-uses.

3.6.2.1 Metro's Separate Storm System Maintenance Activities

Most of the routine storm sewer system maintenance activities are performed by the MWS Stormwater Routine Maintenance Section (RoM). The type of maintenance activities performed by RoM includes inlet cleaning, ditch clearing/redefining, and culvert/bridge cleaning. The maintenance schedules are determined by various factors that include citizen complaints and known problem areas. RoM developed a rain route list of common stormwater infrastructure sites that clog with debris, leaves, gravel, and sediment on a frequent basis. Maintenance crews visit and clean out these structures prior to many large rain events. In addition to performing routine maintenance and cleaning of stormwater infrastructure, MWS Stormwater also operates a preventative maintenance program by aggressively sweeping public curb and gutter streets, which is discussed in more detail in a separate section. During the 1st permit year, MWS Stormwater NPDES worked with RoM to develop SOPs designed to minimize impacts to water quality from maintenance activities. Each SOP for stormwater infrastructure maintenance activities is attached within Appendix B.

RoM also set up a tracking system using the Cityworks database to track the amount of materials removed from the storm drainage system for reporting in each annual report. The tracking is based on the number of dump trucks of solid materials taken to the landfill for disposal. RoM is working to develop a tracking system for liquid waste disposal from vactor trucks during inlet cleaning.

3.6.2.2 Metro's review of Municipal Activities and Operations

A. Metro O&M Facilities: Metro does not operate a municipal landfill, as the Public Works Department contracts the hauling of domestic trash to landfills out of the county. There are two active construction and demolition landfills within the county, both of which are privately-operated. During the first year of the permit, the MWS Stormwater NPDES Section performed an inventory and review of all of the municipal O&M facilities. NPDES inspected each facility and developed a list of those that needed detailed SWPPPs (if they had a Tennessee Multi-Sector Permit (TMSP) for industrial stormwater discharges) or those that warranted a more simplified Runoff Management Plan (RMP). Depicted in Table 4, is a summary of the locations and status of Metro O&M facilities that Metro

Table 4 – List of Metro O&M Sites Requiring SWPPPs or RMPs

Note: This list does not include Metro O&M facilities that are located within the CSS drainage basins (outside of MS4 Jurisdiction

O&M Facility	Location	Metro Department	SWPPP or RMP Created
Cedar Hill Park Maintenance	860 Old Hickory Boulevard	Parks Department	RMP
Harpeth Hills Golf Course/Maintenance	7820 Coley Davis Road	Parks Department	RMP
McCabe Golf Course	4601 Murphy Road	Parks Department	RMP
Percy Warner Golf Course Maintenance	3150 McGavock Pike	Parks Department	RMP
Shelby Park Golf Course/Maintenance	1919 Fatherland Street	Parks Department	RMP
Ted Rhodes Golf Course/Maintenance Shop	1901 Ed Temple Boulevard	Parks Department	RMP
Two Rivers Park Maintenance	3150 McGavock Pike	Parks Department	RMP
Warner Park Maintenance	50 Vaughn Road	Parks Department	RMP
Public Works Headquarters	750 South 5th Street	Department of Public Works	RMP
West Service Center/Salt Bin	3800 Charlotte Avenue	Department of Public Works	RMP
Metro Transit Authority Bus Terminal	130 Nestor Street	Metro Transit Authority	RMP
Schools Transportation Bus Terminal	336 Woodycrest	Metro Nashville Public Schools	RMP
Stormwater Maintenance/NPDES/Environmental Compliance	1607 County Hospital Road	Metro Water Services, Stormwater	Site under construction. RMP will be completed once site is complete
Tennessee State Fairgrounds	500 Wedgewood Avenue	Metro Fairground Commission	RMP
Dry Creek Treatment Plant	61 Edenwold Road	Metro Water Services	SWPPP
Central Wastewater Treatment Plant	1600 Second Avenue North	Metro Water Services	SWPPP

determined to require either a SWPPP or a RMP. The actual SWPPPs and RMPs for each Metro O&M facility are located in Appendix A. The SWPPPs and RMPs list protective measures and SOPs to be implemented at each site to avoid impacts to water quality from house keeping procedures.

In addition, to the Metro O&M facilities that were identified as needing SWPPPs or RMPs, MWS Stormwater NPDES identified several other O&M sites that generally lack maintenance processes exposed to stormwater or are located within the Combined Sewer System (CSS) basin. The O&M sites with very few if any maintenance processes exposed to stormwater runoff are identified within Table 5. NPDES created a generic inspection form to be used by the facility's personnel in inspecting parking lots, etc. on a routine basis to ensure no fluids or other materials are spilled and exposed to stormwater. MWS Stormwater, NPDES will follow-up with the facilities listed in Table 5 to distribute the forms to ensure they are inspecting the outside areas for potential pollution problems.

Table 5 – List of Metro O&M Sites Not Requiring SWPPPs or RMPs

Metro O&M Facility	Location	Reason SWPPP or RMP Not Warranted
MDHA Maintenance Facility	701 South 6th Street	All maintenance activities performed indoors.
Parks Administration Building	511 Oman Street	Located within the CSS
Public Works East Center & Household Hazardous Waste Facility	943 East Trinity Lane	Located within the CSS
Public Works East Salt Bin	2068 Smith Springs Road	No maintenance processes located at the site. Just the salt bin, which is covered.
Police Department (Tow-in Lot)	1201 Freightliner Drive	No outside maintenance performed
Whites Creek Treatment Plant	1360 County Hospital Road	No exposed maintenance processes;Previously received No Exposure certification from TDEC.
Metro Fleet Center (Genesco Park)	1415 Murfreesboro Pike	All maintenance activities performed indoors.

Note: The salt bin located on Smith Springs Road is also inspected by MWS Stormwater NPDES once per quarter to ensure no salt is lost from the facility.

B. Metro O&M Activities: In addition to reviewing Metro's facilities, MWS Stormwater NPDES also performed a review of -common Metro maintenance activities. As such, NPDES created standard SOPs (attached in Appendix A) that will be promoted to various departments about general maintenance practices for the following activities:

1) Pesticide, Herbicide, Fertilizer Application, Storage, and Disposal;
2) Petroleum Product Storage & Spill Clean-up;
3) Grass Clipping/Leaf Disposal;
4) Equipment Washing/General Maintenance Activities;
5) Bare Soil//Sand /Stockpile Management;
6) Pit Pumping/Dewatering;
7) Material Collection/Disposal; and

8) Work In and Around Creeks and Drainage Ditches.

In addition to the above-mentioned O&M processes, the Metro Department of Public Works (MDPW) has enacted certain BMPs designed to minimize impacts to stormwater runoff from deicing processes. Through the years MDPW has developed application methods that restrict the application of deicing materials to only what is required. Such technology includes the use of spreader control systems and automated pavement temperature recordings.

The spreader control system consists 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. In addition, MDPW has applies 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.

The automated pavement temperature readings 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).

3.6.2.3 Metro's Street Sweeping and Cleaning Program

In general, Metro sweeps an average of approximately 20,500 miles of streets within the Urban Services District (USD) each year. Street sweeping is performed by contractors managed by the MWS Stormwater Remedial Maintenance Section (ReM).
All street sweeping quantities such as miles of streets swept or estimated amount of material removed from the roadways are reported in the Annual Report at the conclusion of each Permit Year. ReM also performs an analysis each year on the effectiveness of the program and performs modifications as warranted.

As part of the street sweeping program, the following BMPs are implemented to ensure the street sweeping program is the most efficient and least impacting to stormwater quality. ReM has ensured the following BMPs have been implemented by the street sweeping contractor to prevent impacts to water quality/stormwater runoff during the sweeping and waste disposal processes.

A. Routes: Street sweeping routes are planned and executed on a performance basis to maximize the amount of material collected from the streets that would have otherwise drained to the stormwater drainage system. For instance, more frequently traveled roads or roads adjacent to certain land uses that are subject to a more-rapid deposition of debris/grit are swept more often than other roads that experience smaller traffic levels and are located in innocuous areas. While sweeping routes are usually pre-determined, there is flexibility that would allow problem streets to be swept upon request.

B. Material Disposal: Unless there are reasons to assume a hazardous substance was collected during the sweeping process, all collected material (liquid and solid) is taken to the local landfill for disposal. The ReM contractor routinely washes out the hopper of the sweeper trucks (after being emptied at the landfill) into a sanitary sewer wash bay at their facility, which routes to the sanitary sewer. The drains have screens that filter out solids, while allowing liquids to drain to the sewer. While a minor amount of water collected from the roadway during wet weather

conditions may discharge from the overflow port, generally no liquid waste used as part of the sweeping process is discharged onto the roadways.

C. Machine Maintenance: All equipment maintenance procedures conducted by the contractors are conducted indoors or in such places where leaked or spilled fluids can be contained and captured. Any equipment washing is performed in designated wash bays that route to the sanitary sewer.

D. Spill Response: Each driver is trained routinely on the proper spill response techniques ranging from the proper agency notification to the proper containment and clean-up measures to be deployed in the event of a spill.

3.6.2.4 Metro's Flood Management Program and Water Quality

During the first year of the new permit, MWS Stormwater, NPDES coordinated with the MWS Stormwater ReM to develop a process that allowed for large flood control projects to be reviewed for water quality aspects prior to the design phase. As a result, it was determined that a Water Quality Impact Analysis Worksheet would be filled out and signed by a Professional Engineer (P.E.) prior to completing the project design. Most of ReM design work is contracted out. All contractors are required to complete the Water Quality Impact Analysis Worksheet. A copy of the worksheet is attached in Appendix E.

3.6.2.5 Metro's Program for Pesticide, Herbicide, and Fertilizer Application and Management

As mentioned in Section 3.6.2.2, MWS Stormwater, NPDES developed SOP's (Attached in Appendix A) for various maintenance practices, which include the application, storage, and disposal of pesticides, herbicides, and fertilizers. This SOP was included within each RMP for Metro O&M facilities. NPDES will also be requesting O&M departments to train their field employees on each process SOP.

3.6.2.6 Metro's Contractor Oversight Program

Within the first year of the permit, MWS Stormwater NPDES worked with the Metro Department of Finance to include the following language within Metro contracts for construction and design projects:

All activities performed in under this contract shall be conducted in full compliance with Metro Code of Law §§ 15.64 et al (Stormwater Management) including §§ 15.64.205

(http://www.nashville.gov/stormwater/illicit_discharge_ordinance.asp).

This requirement pertains to Unlawful/Prohibited Discharges to the Metro Storm Sewer System/Community Waters. It prohibits the discharge of "wastewater" and "non-stormwater" discharges such as wash water, process wastewater, etc. into the Municipal Storm Sewer System (MS4) or into Community Waters. Any questions relating these provisions should be routed to the Metro Water Services NPDES Office at (615) 880-2420. This requirement shall apply to all Metro construction projects in the service area, including areas outside Davidson County.

Contractor shall bear responsibility for all of Contractor's actions that cause MWS to violate project regulatory permits or Federal, State or local environmental regulations. Such permits and regulations may include, but are not limited to:

- *U.S. Army Corps of Engineers 404 Permits*
- *TDEC Aquatic Resource Alteration Permits*
- *TDEC Construction General Permits*
- *Any State or Federal permits/approvals related to Threatened and Endangered Species*
- *Metro Individual NPDES permits*
- *Metro Code §15.64.205 - Metro Illicit Discharge Ordinance*
- *Metro Stormwater Management Manual*

Contractor's responsibility shall include, but not be limited to, payment of all fines, assessments and/or civil penalties incurred due to Contractor's work, actions, design or installation and payment for any mitigation measures required due to the violation and cleanup associated with any violation.

3.6.2.7 Metro's Program for Monitoring and Controlling Industrial, Commercial, and High Risk Runoff

A. Industrial Database: Metro has developed the following program to monitor and control runoff to the MS4 from private industrial and high risk runoff areas. The MWS Stormwater NPDES Section created a GIS/Microsoft Access database of industrial facilities that will be inspected. The database includes the following facilities that will be inspected once every 3 years:

1) Hazardous Waste Treatment, Storage, and Disposal Facilities – Facilities recognized by EPA as performing Treatment, Storage, and Disposal (TSD) of hazardous waste. A list is obtained from the EPA Envirofacts website at: http://www.epa.gov/enviro/facts/rcrainfo/search.html

2) SARA Title III, Section 313 – Industrial facilities required to submit Tier II (Form R) reports because have certain chemicals as identified by the EPA in certain quantities. A list is downloaded from the EPA Envirofacts Website: http://www.epa.gov/enviro/facts/datadownloads.html

3) Substantial Loaders to the MS4 - Metro considers certain criteria in determining if industrial or high-risk commercial facilities are "substantial loaders" to the MS4. One of the following conditions should be present before a facility is added to the "substantial loader" list:

- Sampling results or visible evidence (i.e. photographs, witnessed discharges) of pollutants discharging from individual facilities.
- Repetitive citizen complaints of pollutants draining to the MS4.

There are no Municipally operated landfills located within Davidson County. The are two privately-operated Construction & Demolition (C&D) landfills within the county. The Metro Department of Public Works, Division of Solid Waste provides local oversight to the private landfills and to the closed former Municipal landfills. Also included within the industrial database, are industrial facilities permitted through the Tennessee Multi-Sector Permit (TMSP) for industrial stormwater discharges.

B. Industrial Inspections: Per the MS4 permit, Metro is only required to inspect industrial facilities that are either SARA Title III, Section 313, EPA recognized TSD facilities, and/or those facilities proven to be "substantial loaders" of pollutants to the MS4. Table 6 provides a list of industrial facilities (as of July 2013) that will be inspected within a 3 year period. MWS Stormwater NPDES will prioritize inspections of the facilities listed in Table 6 located within the geographic "hot areas" indentified within the PIE plan. Table 7 provides a list of all other active TMSP permitted facilities in Davidson County, not required to be inspected per the MS4 Permit. Metro intends to inspect a percentage of these facilities prior to the end of the permit term, focusing first on the facilities located within the geographic "hot areas".

Metro inspections of industrial facilities is a thorough process that includes a review of TMSP records, if permitted through TDEC, and a walk-around inspection of industrial processes exposed to stormwater. Each industrial facility is left with a written inspection report and/or a detailed follow-up letter. TDEC field office personnel are copied all inspection findings via email. The MWS Stormwater NPDES Section has one inspector that has been inspecting industrial facilities for over 8 years and has received proper training that include attending EPA training workshops and performing co-inspections with TDEC staff. MWS Stormwater NPDES is currently training additional inspectors internally to assist on industrial inspections.

Table 6 – List of Industrial Facilities Metro is Required to Inspect within 3 Year Period

Industry Name	Address	Industry Category
E. I. Dupont De Nemours & Co., Inc. -	1002 Industrial Road	SARA Title III, Sec. 313
Doodleco Inc. (Dba Superior Trim)	511 Bridgeway Ave	SARA Title III, Sec. 313
Quad Graphics Nashville	2947 Brick Church Pike	SARA Title III, Sec. 313
Ergon Terminaling, Inc. - Nashville	1114 Visco Drive	SARA Title III, Sec. 313
Nashville - Plant 1	1136 Second Ave N	SARA Title III, Sec. 313
Polar Technology Llc	1360 Foster Ave	SARA Title III, Sec. 313
Country Delite Farms Llc	1401 Church St	SARA Title III, Sec. 313
Bp Oil Company/Nashville Terminal	1409 51st Ave. N.	SARA Title III, Sec. 313
Harcros Chemicals Inc	1418 Poplar Ln	SARA Title III, Sec. 313
Triumph Aircraft Industries Inc	1431 Vultee Blvd	SARA Title III, Sec. 313
Whirlpool Corp	1714 Heil Quaker Blvd	SARA Title III, Sec. 313
Motiva Nashville Terminal	1717 61st Ave N	SARA Title III, Sec. 313
Exxon Mobil Corp Nashville Terminal	1741 Ed Temple Blvd	SARA Title III, Sec. 313
Cone Solvents Inc Nashville	1830 Linder Industrial Dr	SARA Title III, Sec. 313
Akzo Nobel Coatings Inc.	20 Culvert Street	SARA Title III, Sec. 313
North American Galvanizing Co.	200 32nd Ave. N.	SARA Title III, Sec. 313
Ashland Distribution	2315 Clifton Ave	SARA Title III, Sec. 313
Marathon Petroleum Company, LLC	2920 Old Hydes Ferry Road	SARA Title III, Sec. 313
Quebecor World Retail Group	2947 Brick Church Pike	SARA Title III, Sec. 313
Nashville Wire Products	295 Driftwood St	SARA Title III, Sec. 313
Palm International Sales	1717 JP Hennessey Dr	SARA Title III, Sec. 313
Land O'lakes Purina Feed LLC	3601 Trousdale Dr	SARA Title III, Sec. 313
Peterbilt Motors Company	430 Myatt Dr	SARA Title III, Sec. 313
Innophos, Inc.	4600 Centennial Blvd	SARA Title III, Sec. 313
A. Schulman, Inc.	481 Allied Drive	SARA Title III, Sec. 313
Greer Stop Nut	481 McNally Drive	SARA Title III, Sec. 313
Marathon Petroleum Company LLC	5 Main St	SARA Title III, Sec. 313
Afl Wire Products Dixie Wire	5901 California Ave	SARA Title III, Sec. 313
Fiberweb, Inc.	70 Old Hickory Blvd.	SARA Title III, Sec. 313
Warren Paint & Color Co	700 Wedgewood Avenue	SARA Title III, Sec. 313
Nashville Chemical & Equipment Co Inc.	7001 Westbelt Dr	SARA Title III, Sec. 313
Carlex Nashvlle Glass Plant	7200 Centennial Blvd	SARA Title III, Sec. 313
Springs Global Us-Nashville Plant	7201 Cockrill Bend Blvd.	SARA Title III, Sec. 313
Cumberland Terminals, Inc.	7260 Centennial Blvd.	SARA Title III, Sec. 313
Reddy Ice-Nashville	7261 Centennial Blvd	SARA Title III, Sec. 313
U S Smokeless Tobacco Manufacturing	800 Harrison St	SARA Title III, Sec. 313
CMC Rebar Nashville	852 Visco Dr Suite 101	SARA Title III, Sec. 313
Marathon Petroleum Company LLC	930 Youngs Lane	SARA Title III, Sec. 313
Purity Dairies	360 Murfreesboro Pike	SARA Title III, Sec. 313
Lawson Ready Mix	5915 River Road	SARA Title III, Sec. 313
Superior Trim	511 Bridgeway Ave	SARA Title III, Sec. 313
Worldcolor Retail Group	2947 Brick Church Pike	SARA Title III, Sec. 313
Perfection Molders	213 Connel Street	SARA Title III, Sec. 313
Hennessey Industries	1601 JP Hennessy Dr	SARA Title III, Sec. 313
Five Star Foods	2621 Euginia	SARA Title III, Sec. 313
Safety-Kleen Systems, Inc.	215 Whitsett Rd	TSD Facility
PSC Metals	710 S. 1st St.	Substantial Loader

Table 7 – List of TMSP/RMCP Sites the MS4 Permit does not Require Metro to Inspect

Industry Name	Address	Industry Category
Embraer Aircraft Maintenance Services,	10 Airways Blvd	TMSP
Nashville Recycling Co	10 Van Buren St.	TMSP
M & W Transportation Co., Inc.	101 Terminal Ct	TMSP
John Bouchard & Sons Co	1024 Harrison St.	TMSP
Ingram Materials Sand Yard	1030 Visco Drive	TMSP
BFI of Nashville	700 Murfreesboro Pike	TMSP
Birmingham-Nashville Express	317 Arlington Avenue	TMSP
Coca-Cola Bottling Co. of Nashville	407 Craighead Street	TMSP
Earthgrains Banking Co., Inc	2407 Franklin Pike	TMSP
Flex Sol Packaging Corp.	1105 Visco Drive	TMSP
John C. Tune Airport	110 Tune Airport Drive	TMSP
Essex Plastics Midwest, LLC D.B.A.	1105 Visco Drive	TMSP
Star Transportation	1125 Foster Avenue	TMSP
American Appliance Products - Madison	1129 Myatt Blvd	TMSP
Firstexpress Inc.	1135 Freightliner Drive	TMSP
The Mulch Company	1215 Everett Road	TMSP
Circle Delivery Service, Inc.	125 Caden Drive	TMSP
Rolling Frito-Lay Sales, LP - Nashville DC	130 Spence Ln.	TMSP
Howard Baer, Inc.	1301 Foster Ave	TMSP
Neely's Bend Inc.	1327 Neely's Bend Road	TMSP
First Response, Inc.	1411 S. Dickerson Pike	TMSP
Waste Management Truck Maintenance	1428 Antioch Drive	TMSP
Magellan Terminals Holdings LP	1441 51st Ave. N.	TMSP
Rivergate Auto Parts, Inc.	1471 N. Gallatin Rd	TMSP
Green Tree Processing	1501 Baptist World Center Dr.	TMSP
Dry Creek Wastewater Treatment Plant	1600 2nd Ave. N.	TMSP
Nashville Central STP	1600 2nd Ave. N.	TMSP
Nashville Wire Products	1604 County Hospital Rd	TMSP
Magellan Nashville I Terminal	1609 63rd Ave. N.	TMSP
Smitty's Auto Parts	1609 Bell Road	TMSP
Lone Star Industries,	1702 2nd Ave N	RMCP
Steel Summit Tennessee	1718 J.P. Hennessy Dr.	TMSP
FTEC, Inc. (Palfleet Truck)	1801 Lebanon Pike	TMSP
River Cement Sales	1818 Cement Plant Rd	RMCP
Metal Management Nashville, LLC	1840 Linder Industrial Drive	TMSP
Laager Investment	1845 Elm Hill Pike	TMSP
Federal Express - BNAA	1931 Air Lane Drive, Suite G	TMSP
Metro Salvage, Inc.	1975 Springfield Highway	TMSP
Sherman-Dixie Concrete Industries, Inc.	200 42nd Avenue N.	TMSP
Wikoff Color Corporation	214 Omonhundro Place	TMSP
Tennessee Commercial Warehouse	22 Stanley Street	TMSP
Tennessee Air National Guard	240 Knapp Boulelvard	TMSP
Hilltop Auto Salvage	2408 Dickerson Rd.	TMSP
Dicaperl Minerals Corp. (Chemrock)	2601 Osage Road	TMSP
Pull-A-Part, LLC	7114 Centennial Boulevard	TMSP
Besway Systems Inc	305 Williams Ave	TMSP
Advanced Composites (TN)	3050 Sidco Drive	TMSP

Table 7 – List of TMSP/RMCP Sites the MS4 Permit does not Require Metro to Inspect (Continued)

Industry Name	Address	Industry Category
Sequatchie Concrete Service, Inc.	306 Cowan St.	TMSP
CSX Intermodal, Inc - Nashville Terminal	3086 Sidco Dr	TMSP
TREW Industrial Wheels Inc.	310 Wilhagan Road	TMSP
AAA Industries Inc.	3141 Ambrose Ave	TMSP
BNE Properties, Inc.	317 Arlington Ave	TMSP
Lojac Danley Plant	3185 Franklin Limestone Rd	TMSP
Lee Brick and Block	3201 Franklin Limestone Road	TMSP
United Parcel Service - Nashville Whites Creek Pike	3205 Whites Creek Pike	TMSP
Paulo Products Company	3206 Ambrose Ave	TMSP
Waste Management C&D Recycle Center	3211 Franklin Limestone Road	TMSP
Tennessee Imports Auto Salvage	326 Oriel Avenue	TMSP
Fed Ex Ground - Nashville Knight Rd	3301 Knight Rd	TMSP
Truck Shine	332 Wilhagan Rd	TMSP
Central Pike Class IV Landfill	3530 Central Pike, Suite 105	TMSP
LoJac Hermitage Asphalt Plant	3552 Hermitage Industrial Drive	TMSP
N & S Inc.	361 Herron Drive	TMSP
Sherman-Dixie Concrete Industries, Inc.	3641 Central Pike	TMSP
John W. McDougall Co., Inc.	3731 Amy Lynn Drive	TMSP
Four Lane Auto Salvage Inc.	400 W Trinity Ln.	TMSP
Kohl & Madden Plant #1	404 Harding Ind. Dr.	TMSP
Southeastern Freight Lines, Inc.	4141 Murfreesboro Rd	TMSP
TRANSFLO Terminal Services, Inc. (Nashville)	426 Chestnut St	TMSP
Schreiber Foods, Inc.	4350 Hurricane Creek Blvd.	TMSP
Sadler Bros Trucking & Leasing Company, Inc.	436 Enos Reed Drive	TMSP
LoJac Nashville River Road Plant	4404 River Rd	TMSP
Cummings Signs Arch. and Banking Div.	4560 Trousdale Dr	TMSP
Clopay Plastics Products	463 Harding Industrial Drive	TMSP
Hamilton Machine Co Inc	464 Woodycrest Ave	TMSP
Waste Management of Tennessee-Nashville	4651 Amy Lynn Drive	TMSP
Lojac Downtown Plant	500 Cowan St	TMSP
USF Holland, Inc.	500 Oak Bluff Ln	TMSP
All State Auto Parts, Inc.	515 Nawakwa TL	TMSP
Truck Center, Inc.	518 Hagan Street	TMSP
Cherokee Marine Terminal	520 Cowan Street	TMSP
Nashville Machine Elevator Inc	520 Interstate Blvd S.	TMSP
Vintage Millworks Inc	525 Merritt Ave	TMSP
Nashville Machine Company	530 Woodycrest Ave	TMSP
Portland Express, Inc.	531 Woodycrest Avenue	TMSP
Servitech Industries, Inc.	550 Brick Chruch Park Drive	TMSP
VF Imagewear, Inc.	554 Hickory Hills Blde	TMSP
Clopay Advanced Printing	555 Harding Industrial Drive	TMSP
West Nashvlle Auto Recycling Inc.	5604 Centennial Blvd	TMSP
Grooms Engines	611 4th Ave. S.	TMSP
D & R Motors & Recycling	616 Durett Drive	TMSP
Vietti Foods Company, Inc.	636 Southgate Ave.	TMSP

Table 7 – List of TMSP/RMCP Sites the MS4 Permit does not Require Metro to Inspect (Continued)

Industry Name	Address	Industry Category
Quikrete - Nashville	6614 Robertson Road	TMSP
Bellar Auto Parts, Inc.	670 James Avenue	TMSP
Allied Waste	700 Murfreesboro Road	TMSP
Southland Brick and Block	3201 Franklin Limestone Rd	TMSP
United Parcel Service	705 Massman Drive	TMSP
Smurfit-Stone Container	707 19th Ave. N.	TMSP
Nashville VMF	707 Chestnut St	TMSP
Quality Plating	71 Fesslers Lane	TMSP
Techno-Aide, Inc.	7117 Centennial Blvd	TMSP
Pepsi Bottling Group	715 Thompson Lane	TMSP
Allied Systems Ltd - Nashville	743 Harding Place	TMSP
United Parcel Service - TCI	7525 Hickory Hills Court	TMSP
HMA Contractors Asphalt Plant #1	820 Ezell Pike	TMSP
Milan Express Co., Inc. - Nashville	825 Visco Dr	TMSP
Abernathy Truck Salvage, Inc.	865 W. Trinity Ln.	TMSP
ABF Freight System, Inc. - Nashville	890 Visco Dr	TMSP
Metro Nashville District Energy System	90 Peabody Street	TMSP
Lion Oil Company - Nashville	90 Van Buren Street	TMSP
Nashville Wilbert Burial Vault Co.	432 Woodycrest Ave	TMSP
GAF Materials Corp.	970 Fiberglass Road	TMSP
Vaughn Manufacturing Co	757 DOUGLAS AVE	TMSP
Jones Brothers, LLC	129 BUSH RD	TMSP
Hailey's Harbor, Inc.	3730 AMY LYNN DR	TMSP
Rogers Manufacturing Company	110 Transit Avenue	TMSP
Dixie Wire	5901 California Avenue	TMSP
Smyrna Ready Mix	3040 Brandau Road	RMCP
Metro Ready Mix - Basswood Drive	711 Basswood Drive	RMCP
Nashville Ready Mix - Cowan Ct.	1436 Cowan Street	RMCP
Metro Ready Mix Concrete	6677 River Road Pike	RMCP
All Star Recycling	460A Craighead Street	TMSP
Associated Wholesale Grocers	500 S Cartwright St	TMSP
ATI Metal Working Products	1 Teledyne Place	TMSP
Rogers Group (Asphalt Plant)	2827 Whites Creek Pike	TMSP
Shrum Auto Salvage		TMSP
IMI Ready Mix- Robertson Road	6616 Robertson Road	RMCP
Plasticycle	5801 Centennial Boulevard	TMSP
Nashville Ready Mix of West Nashville	5853 River Road	RMCP
Nashville Ready Mix, Inc. Baptist World	1326 Baptist World Center Drive	RMCP
Metro Ready Mix Concrete, Inc.	1020 Visco Drive	RMCP
IMI Ready Mix - Cowan Street	1433 Cowan Court	RMCP
Metro Ready Mix Concrete, 2nd Ave	1136 2nd Avenue North	RMCP
3M Old Hickory	400 Swinging Bridge Road	TMSP
Mid-South Wire	1070 Visco Drive	TMSP
Supreme Oil Central, Inc.	189 Spence Lane	TMSP
QRS River Hills Recycling Facility	630 Myatt Dr	TMSP

4.0 MS4 MONITORING PROGRAM

4.1 MS4 Permit Monitoring Requirements

Per the MS4 Permit, Metro is required to perform the following monitoring programs. All MS4 monitoring is performed primarily by the MWS Stormwater NPDES Watershed Group. The NPDES Watershed Group has obtained all the necessary equipment and laboratory contracts to perform the required monitoring, and the program has been reviewed and approved by personnel at TDEC.

4.1.1 MS4 Permit Requirements for Wet Weather Monitoring

The MS4 Permit requires Metro to collect wet weather samples from 5 separate homogeneous land-use outfalls for 3 storm events each year. A sample event shall involve collecting a first flush grab (within first 30 minutes of discharge) and another sample 1 hour after the first flush sample is collected. Attempts should be made to collect the 3 samples during different seasons. Over the years, monitoring associated with wet weather conditions has proven difficult to obtain due to the varying weather patterns and timing of storms. For years, when Metro is unable to collect all of the required samples, attempts will be made in future years to collect extra samples. The following minimum parameters should analyzed within each sample:

- *E. coli*
- Total Suspended Solids
- Total Dissolved Solids
- Total Ammonia Nitrogen
- Nitrite/Nitrate
- Oil and Grease
- Total Recoverable Copper
- Total Recoverable Nickel
- Biological Oxygen Demand
- Chemical Oxygen Demand
- Dissolved Phosphorus
- Total Phoshorus
- Total Kjeldahl Nitrogen
- Total Recoverable Chromium
- Total Recoverable Lead
- Total Recoverable Zinc.

At the end of the 5th permit year, Metro is required to calculate and report the average seasonal pollutant loadings (SPL) and event mean concentration (EMC) for each wet weather site.

4.1.2 MS4 Permit Requirements for In-Stream Ambient Monitoring

Metro is required to collect dry weather stream samples within various rotating watersheds as defined by Metro at a minimum of 4 times a year. The ambient sampling shall occur when there has been a preceding period of at least 72 hours of dry weather. The samples should consist of flow-weighted grabs and should be analyzed for the same parameters as required for the wet weather monitoring program.

4.1.3 MS4 Permit Requirements for Biological Monitoring

Metro is required to continue to perform a program of biological assessments of identified urban streams. The streams to be assessed should ideally work in conjunction with the ambient yearly rotating monitoring schedule. The assessment shall occur during the second and fourth quarters of each year and should follow protocol found in TDEC's Division of Water Pollution Control's Quality System Standard Operation Procedure for Macroinvertebrate Stream Surveys.

4.1.4 MS4 Permit Requirements for Watershed Characterization

Metro is required to continue a watershed management program that specifically characterizes discharges of *E. coli* and TSS through various monitoring programs. By year five of the permit cycle, Metro is required to develop a Watershed Management Plan (WMP) for a critical watershed within it's jurisdiction. The WMP shall incorporate components of analytical monitoring, assessment of monitoring data, design and implementation of BMPs to address specific pollutants of concern, master planning of critical impervious areas, and assessments of targeted BMP effectiveness. The WMP shall be drafted in a way that can be extrapolated to other watersheds within the county.

4.1.5 MS4 Permit Requirements for Industrial Monitoring

Metro is required to sample stormwater runoff once per permit year from a facility permitted through the TMSP or RMCP. Metro shall, at a minimum, run parameters that generally match what the facility is required to sample for per their permit.

4.1.6 MS4 Permit Requirements for Post Construction BMP Monitoring

Metro is required to collect a minimum of 5 wet weather samples from each the following post construction BMPs before the end of Year 5:

- Bioretention;
- Dry Detention;
- Proprietary Water Quality Unit;
- Green Roof;
- Wet Pond; and
- Pervious Pavement.

Metro is required, at a minimum, to perform analysis for each sample that include TSS, nutrients, and oil and grease for inlet and outlet sample points. For green roofs, bioretention, and pervious pavement BMPs, flow calculation reductions from inlet to outlet could be analyzed in lieu of the chemical parameters.

4.1.7 MS4 Permit Requirements for TMDL Monitoring

A. Pathogen TMDLs: For all streams listed in an approved TMDL as being impaired on the 303(d) list for pathogens, Metro is required to perform collect 5 in-stream samples and flow measurements within a 30 day period between the months of June to September.

B. Nutrient/Sediment/Habitat Alteration TMDLs: For all streams listed in an approved TMDL as being impaired on the 303(d) list for Nutrients, Sediment, or Habitat Alteration, Metro is required to perform TDEC Semi-Quantitative Single Habitat (SQSH) biological samples once within a 5 year period. In addition, visual stream surveys should be performed throughout the entire HUC 12 subwatersheds of a stream segment listed in the TMDL once every 5 years. The visual stream surveys shall, at a minimum, be performed upstream and downstream of known MS4 outfalls

4.2 Metro's MS4 Wet Weather Monitoring Program

During the first year of the permit, wet weather events failed to produce adequate flows at several of the homogeneous land use outfalls listed within the proposed wet weather sampling portion of the MS4 Permit. MWS Stormwater NPDES coordinated with the TDEC Nashville Field Office to adjust the outfall locations. The current outfall sampling locations and schedule are depicted in Table 8

.

Table 8 – Metro's MS4 Permit Wet Weather Sampling Schedule

Type	Location	Coordinates	Waterbody	Frequency
Residential	Culvert street drain near the address of 841 Russleo Drive	-86.877607 36.138553	Cumberland River	3 storm events occurring at different seasons during each permit year
Commercial	Behind the Bellemeade Kroger Shopping Plaza	-86.85033132 36.12449873	Sugartree Creek	3 storm events occurring at different seasons during each permit year
Industrial	Intersection of Cockrill Bend Bvld. and West Belt Drive.	-86.87703781 36.17095549	Richland Creek	3 storm events occurring at different seasons during each permit year
Transportation	On the north side of Ashland City Highway near the address of 4882 Ashland City Highway	-86.9069884 36.21046404	Cumberland River	3 storm events occurring at different seasons during each permit year
Open/ Undeveloped	Entrance road to the trail head parking area of Bells Bend Park located off Old Hickory Boulevard.	-86.925799	Cumberland River	3 storm events occurring at different seasons during each permit year

Metro is committed to performing the wet weather sampling requirements as described within Section 4.1.1. If weather patterns prohibit sampling in certain years, Metro will attempt to make up samples in future years with the ultimate goal of collecting at least 15 separate wet weather samples at each homogenous land use.

4.2.1 Metro's MS4 In-Stream Ambient Monitoring Program

Metro also coordinated with TDEC to adjust the proposed in-stream ambient sampling watershed rotation schedule depicted within the MS4 Permit during the first year of the permit. Table 9 depicts the current in-stream ambient sampling schedule. Metro will continue to collected the MS4-prescribed samples at the various in-stream ambient locations.

Table 9 – Metro's MS4 Permit In-Stream Ambient Sampling Schedule

Year	Waterbody	Location	Frequency
1	Browns Creek Richland Creek Davidson	At least one sampling point within the main stem of the Creek.	4 dry weather sampling events per year
2	Whites Creek Mansker's Creek	At least one sampling point within the main stem of each Creek.	4 dry weather sampling events per year
3	Gibson Neeley's Dry Creek	At least one sampling point within the main stem of the Creek.	4 dry weather sampling events per year
4	Pages Branch Cooper Creek Harpeth River	At least one sampling point within the main stem of each river.	4 dry weather sampling events per year
5	Mill Creek Stones River	At least one sampling point within the main stem of each Creek.	4 dry weather sampling events per year

4.2.3 Metro's MS4 Biological Monitoring Program

Metro is committed to performing the MS4 Permit prescribed biological monitoring. The biological assessments will be performed to SQSH methods and the schedule of streams/watersheds to be assessed will mimic the in-stream ambient sampling program, as depicted in Table 9.

4.2.4 Metro's Watershed Characterization Program

The MWS Stormwater NPDES Watershed Group has been proactive over the previous permit cycles in collecting numerous *E. coli* and TSS samples from various watersheds, beyond what was required within the MS4 Permit. This data will be used in conjunction with future data collection to develop WMPs that can be used as a tool to reduce pollutant of concerns discharging to and from Metro's MS4. Metro will have the first WMP completed by Year 5 of the current permit cycle. The Watershed Group has initially chosen the Richland Creek watershed to develop the first detailed WMP, as it is completely located within the county, contains a wide array of land uses, and has active concerned citizen groups to partner with. The Richland Creek WMP will be written in a format that can be used as a template for future WMPs to be completed by Metro.

4.2.5 Metro's Industrial Monitoring Program

MWS Stormwater NPDES has already begun collecting samples from TMSP and RMCP sites at a frequency of once per year. Each sample is analyzed for parameters consistent to those described within the facility's TMSP or RMCP from TDEC. In most industrial sampling events, NPDES chooses to run extra chemical analysis that could include one of the following parameters:

- BOD (mg/l)

- COD (mg/l)
- Nitrate-Nitrite (mg/l)
- Oil & Grease (mg/l)
- Phosphorus, Total (mg/l)
- Kjeldahl Nitrogen, TKN (mg/l)
- Dissolved Solids (mg/l)
- Suspended Solids (mg/l)
- Iron (mg/l)
- DO mg/l
- DO %
- Specific Conductance (Us)
- pH
- temp C°
- *E. coli*
- Total Coliform
- Ammonia
- Metals
- Cyanide:
- TKN

4.2.6 Metro's Post Construction BMP Monitoring Program

Metro is committed to collecting inflow and outflow wet weather samples at each of the post construction BMPs described in Section 4.1.6. Metro has been working on identifying good representative post construction BMPs to sample and is expected to begin sampling the BMPs in the third year of the permit. Results will be reported in the Year 5 Annual Report.

4.2.7 Metro's TMDL Monitoring Program

A. Pathogen TMDLs: The MWS Stormwater NPDES Watershed Group has been very proactive in previous permit years in performing the required TMDL sampling for pathogens. For many of the watersheds, 5 days of flow-weighted *E. coli* samples were collected within a 30 day period, not just during the prescribed summer months, but also during the fall, winter and spring months. The Watershed Group will continue to, at a minimum, collect the TMDL required *E. coli* samples during the summer months.

B. Nutrient/Sediment/Habitat Alteration TMDLs: The Watershed Group will continue to perform SQSH biological assessments for stream reaches that are listed within approved TMDLs as being on the State's 303(d) impaired list for nutrient, sediment, and habitat alterations. The Watershed Group also performs visual stream assessments (stream walks) utilizing a modified version of the Natural Resource

Conservation Services (NRCS) Stream Visual Assessment Protocol to perform the visual stream assessments. Metro's current program is to perform visual stream assessments on all segments of streams depicted on TDEC's 303(d) list as being impaired for siltation, habitat alteration, and pathogens. In the past, Metro understood that the entire segments of the streams listed within an approved TMDL had to be walked and assessed/scored individually. With issuance of the new permit and coordination with TDEC, it is now understood that only segments with MS4 outfalls have to be walked and assessed/scored individually, which includes streams listed on the 303(d) list for siltation, habitat alteration, and pathogens whether or not they are listed within an approved TMDL. Metro will work proactively to meet the new permit requirement by altering the stream walk process, which may include eliminating large segments of rural streams where no MS4 outfalls are present.

SWMP APPENDIX A

RMPS OR SWPPPS FOR METRO O&M FACILITIES

Note: The Appendices to each RMP and SWPPP were omitted for inclusion in this document.

Metro Maintenance Facility
Site Runoff Management Plan

Metro Nashville Public Works
Improving the Quality of Life for Nashvillians and our Visitors

Public Works West Center & Salt Bin

3800 Charlotte Avenue
Nashville, TN 37209
615-405-1436

Prepared By:

Metro Water Services
Stormwater, NPDES Section
1607 County Hospital Road
Nashville, TN 37218

May, 2013

1.0 OVERVIEW

1.1 INTRODUCTION

This Runoff Management Plan (RMP) covers all maintenance operations at the Public Works West Center Facility located at 3800 Charlotte Avenue. It has been developed as required under Metropolitan Nashville Davidson County's (Metro's) Municipal Separate Storm Sewer System (MS4) NPDES permit issued to Metro by the Tennessee Department of Environment and Conservation. This RMP identifies potential sources of storm water pollution at the facility and recommends appropriate best management practices (BMPs) or pollution control measures to reduce the discharge of pollutants in storm water runoff from the facility. The RMP shall be reviewed annually by maintenance personnel to determine the effectiveness of the plan and if any changes are necessary. It is the Public Works West Center personnel's responsibility to follow the procedures outlined in the plan and maintain appropriate documentation. If situations develop that require the plan to be altered, please contact the Metro Water Services, Stormwater NPDES Section at 615-880-2420 to update the plan.

1.2 OBJECTIVES

The goal of the RMP is to prevent impacts to surface waters from the stormwater runoff or illicit discharges from the Public Works West Center. The goal of only clean stormwater discharging from the facility will be accomplished by eliminating the exposure of pollutants during maintenance procedures and overall materials storage.

2.0 STORM WATER POLLUTION PREVENTION TEAM

The storm water pollution prevention team is responsible for developing, implementing, maintaining, and revising this RMP. Table 1 provides a list of team member(s) and their primary responsibilities of the SWPPP.

Table 1 – Storm Water Pollution Prevention Team

Name & Title	Phone	Responsibility
Mike Ryman Street Services Division- Technical Specialist 2	**615-862-8765**	**Making sure all Public Works Maintenance Facilities are following RMPs**
Jeff King Public Works West Center Site Manager	**615-405-1436**	**Making sure the site-specific RMP is followed and the appropriate documentation is in place at the Public Works West Center Location**

3.0 POTENTIAL SOURCES OF POLLUTANTS

Pollutants from Metro maintenance activities/facilities can include the following:

- Sand and/or soil flowing off-site from stockpile areas;
- Fertilizer, pesticides, fungicides, and herbicides;
- Detergents and other cleaning agents;
- Petroleum products or asphalt products from spills, leaking equipment, and/or washing equipment;
- Salt stockpiling area and salt brine tanks;
- Other general maintenance products such as paint, solvents, etc.

3.1 GENERAL MAINTENANCE ACTIVITIES

Maintenance activities, if not performed properly, can lead to significant impacts to stormwater runoff. The following maintenance activities have been identified as having the potential for impacting stormwater runoff and Standard Operating Procedures (SOPs) have been developed for each. In general, maintenance activities at all Metro facilities shall follow the below-listed SOPs, which are located in Appendix A of this document.

- Pesticide, Herbicide, Fertilizer Application, Storage, and Disposal.
- Petroleum Product (including asphalt) Storage & Spill Clean-up
- Equipment Washing/General Maintenance Activities;
- Sand/Soil Stockpiling Activities; and
- Salt Bin Storage and Brine Mixing Operations

3.2 SITE-SPECIFIC MANAGEMENT PRACTICES

Each Metro facility that houses operations and maintenance activities is different. Some Metro facilities have many sensitive areas such as streams, storm drains, or ditches, while others have very few. The Public Works West Center Facility has drainage features which are in close proximity to key maintenance operations. Figure 1 depicts general stormwater drainage throughout the facility. All stormwater drainage features, including inlets, ditches, and streams shall be protected from pollutant runoff that could result from maintenance activities such as chemical spraying and general material storage.

The area within the Public Works West Center that poses the most threat of pollutant runoff is the area located near the salt bin storage building. Much of the back part of the property drains to the inlets located by the Public Works West Center as depicted on Figure 1. Potential materials exposed to stormwater runoff in this area consists of granular salt, salt brine solution tanks, oil containers, sand stockpiling, and heavy equipment storage. In addition to the back part of the property, the fueling station also poses a risk to stormwater runoff. The fuelling station should be routinely checked for leaks or spills. Any issues observed with the tanks shall be reported to the Office of Fleet Management at 862-5078. Any residue found on the ground should be cleaned up with absorbent material promptly. The critical sensitive areas are depicted on Figure 2.

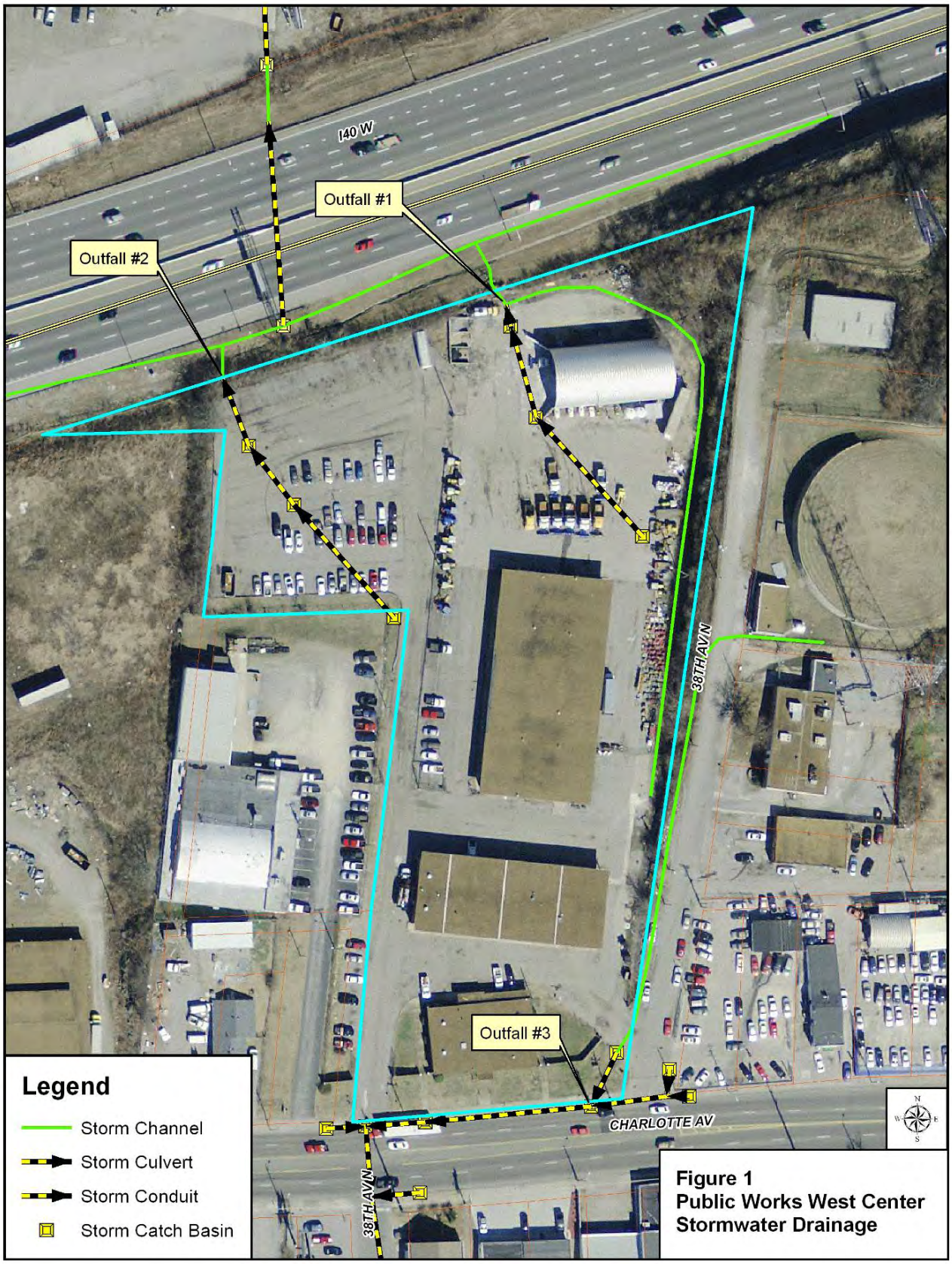


Figure 1
Public Works West Center
Stormwater Drainage

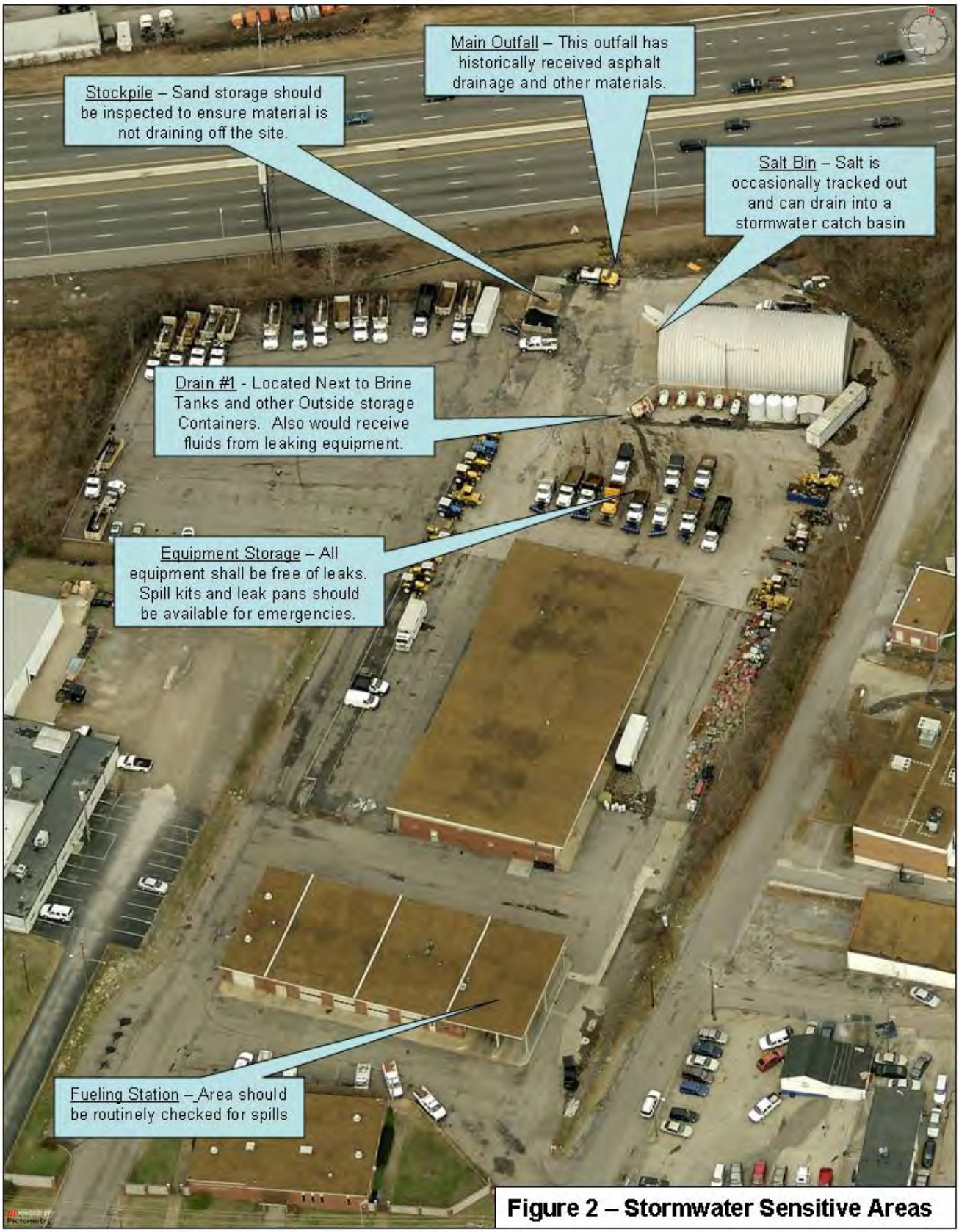


Figure 2 – Stormwater Sensitive Areas

4.0 SITE SPECIFIC BMP PLAN

In general, following the SOPs outlined in Appendix A shall prevent pollutants from entering the storm drain. Specific BMPs, however, shall be deployed, if persistent pollution problems are noted at any of the sensitive area inspections.

4.1 Weekly Inspections

The stormwater outfall points and sensitive areas identified on Figures 1 and 2 above should be inspected at least once per week (preferably prior to any large rain events). The inspections shall be documented on the template inspection forms within Appendix B and completed inspection forms shall be stored within Appendix C of this document for a period of at least 3 years. The weekly inspections shall pay specific attention to the following areas:

- Sand Stockpiles: The sand stockpile needs to be inspected for any evidence of sand discharging from or being tracked out of the containment area that can be washed into the nearby storm channel.
- Salt Bin: The salt bin and adjacent salt brine solution tanks should be inspected to determine if any product has been tracked out of or has leaked out onto the ground that can be washed off site during a rain event.
- Equipment Storage/Maintenance: Any place in which equipment is stored and/or maintained shall be inspected for oily residue on the ground or dripping fluids. Any observed product on the ground shall be cleaned up appropriately. Any active leaks in any equipment stored outside need to be immediately contained with catchment pans until the leak can be repaired.
- Fueling/Oil Storage Areas: Any fleet fueling areas or oil storage tanks/containers should be inspected for leaks or drips. Any oil product found exposed to stormwater contact shall be cleaned up immediately with proper absorbent materials. (Note: Sand is not an effective absorbent product). Absorbent material shall be swept up and properly disposed of.
- Chemical Storage (i.e..): Any maintenance chemicals such as fertilizers, paints, pesticides, cleaners, etc shall be stored indoors or under cover in a contained area. These areas should be inspected to ensure no materials are leaking out. Any leaks/spills shall be cleaned-up immediately.
- Dumpster/Disposal Areas: Any dumpsters shall be inspected to ensure no contents are leaking out onto the ground that can contact stormwater. Most dumpsters have plugs and lids. The lids should stay closed and the plugs should remain in.

4.2 Employee Training

It is imperative that all maintenance employees are properly trained on the SOPs located within Appendix A. Each year, management shall go over the SOPS with each employee and document the training with employee signatures on the form located within Appendix B.

Metro Maintenance Facility
Site Runoff Management Plan

Metro Nashville Public Works
Improving the Quality of Life for Nashvillians and our Visitors

Public Works 5th Street Maintenance Facility

750 South 5th Street
Nashville, TN 37209
615-862-8776

Prepared By:

METRO WATER SERVICES
STORM WATER

Metro Water Services
Stormwater, NPDES Section
1607 County Hospital Road
Nashville, TN 37218

May, 2013

1.0 OVERVIEW

1.1 INTRODUCTION

This Runoff Management Plan (RMP) covers all maintenance operations at the Public Works 5th Street Facility' located at 750 South 5th Street. It has been developed as required under Metropolitan Nashville Davidson County's (Metro's) Municipal Separate Storm Sewer System (MS4) NPDES permit issued to Metro by the Tennessee Department of Environment and Conservation. This RMP identifies potential sources of storm water pollution at the facility and recommends appropriate best management practices (BMPs) or pollution control measures to reduce the discharge of pollutants in storm water runoff from the facility. The RMP shall be reviewed annually by maintenance personnel to determine the effectiveness of the plan and if any changes are necessary. It is the Public Works 5th Street Facility's personnel's responsibility to follow the procedures outlined in the plan and maintain appropriate documentation. If situations develop that require the plan to be altered, please contact the Metro Water Services, Stormwater NPDES Section at 615-880-2420 to update the plan.

1.2 OBJECTIVES

The goal of the RMP is to prevent impacts to surface waters from the stormwater runoff or illicit discharges from the Public Works 5th Street Facility. The goal of only clean stormwater discharging from the facility will be accomplished by eliminating the exposure of pollutants during maintenance procedures and overall materials storage.

2.0 STORM WATER POLLUTION PREVENTION TEAM

The storm water pollution prevention team is responsible for developing, implementing, maintaining, and revising this RMP. Table 1 provides a list of team member(s) and their primary responsibilities of the SWPPP.

Table 1 – Storm Water Pollution Prevention Team

Name & Title	Phone	Responsibility
Mike Ryman Street Services Division- Technical Specialist 2	**615-862-8765**	**Making sure all Public Works Maintenance Facilities are following RMPs**
Ernie Kurgan Public Works South 5th Street Part Supervisor	**615-862-8776**	**Making sure the site-specific RMP is followed and the appropriate documentation is in place at the Public Works South 5th Street Location**

3.0 POTENTIAL SOURCES OF POLLUTANTS

Pollutants from Metro maintenance activities/facilities can include the following:

- Sand and/or soil flowing off-site from stockpile areas;
- Fertilizer, pesticides, fungicides, and herbicides;
- Detergents and other cleaning agents;
- Petroleum products or asphalt products from spills, leaking equipment, and/or washing equipment;
- Salt stockpiling area and salt brine tanks;
- Other general maintenance products such as paint, solvents, etc.

3.1 GENERAL MAINTENANCE ACTIVITIES

Maintenance activities, if not performed properly, can lead to significant impacts to stormwater runoff. The following maintenance activities have been identified as having the potential for impacting stormwater runoff and Standard Operating Procedures (SOPs) have been developed for each. In general, maintenance activities at all Metro facilities shall follow the below-listed SOPs, which are located in Appendix A of this document.

- Pesticide, Herbicide, Fertilizer Application, Storage, and Disposal.
- Petroleum Product (including asphalt) Storage & Spill Clean-up
- Equipment Washing/General Maintenance Activities;
- Sand/Soil Stockpiling Activities; and
- Salt Storage and Brine Mixing Operations

3.2 SITE-SPECIFIC MANAGEMENT PRACTICES

Each Metro facility that houses operations and maintenance activities is different. Some Metro facilities have many sensitive areas such as streams, storm drains, or ditches, while others have very few. The Public Works South 5th Street Facility has drainage features which are in close proximity to key maintenance operations. Figure 1 depicts general stormwater drainage throughout the facility. All stormwater drainage features, including inlets, ditches, and streams shall be protected from pollutant runoff that could result from maintenance activities such as chemical spraying and general material storage.

The area within the Public Works South that poses the most threat of pollutant runoff is the area located near the salt bin storage building. Much of the back part of the property drains to the inlets located by the Public Works West Center as depicted on Figure 1. Potential materials exposed to stormwater runoff in this area consists of granular salt, salt brine solution tanks, oil containers, sand stockpiling, and heavy equipment storage. In addition to the back part of the property, the fueling station also poses a risk to stormwater runoff. The fuelling station should be routinely check for leaks or spills. Any issues observed with the tanks shall be reported to the Office of Fleet Management at 862-5078. Any residue found on the ground should be cleaned up with absorbent material promptly. The critical sensitive areas are depicted on Figure 2.

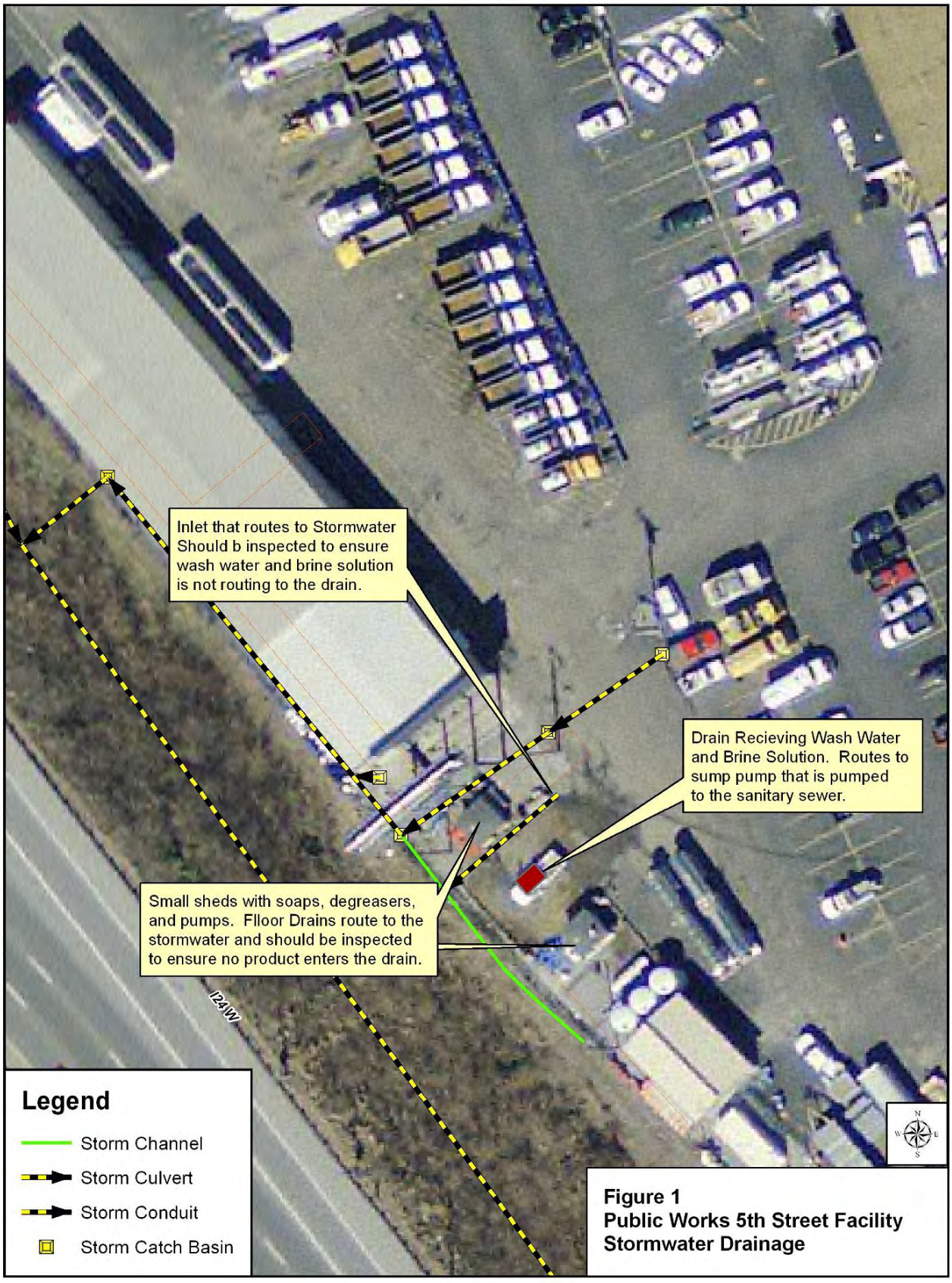

Inlet that routes to Stormwater Should b inspected to ensure wash water and brine solution is not routing to the drain.
Drain Recieving Wash Water and Brine Solution. Routes to sump pump that is pumped to the sanitary sewer.
Small sheds with soaps, degreasers, and pumps. FIloor Drains route to the stormwater and should be inspected to ensure no product enters the drain.
I24W
Legend
Storm Channel
Storm Culvert
Storm Conduit
Storm Catch Basin
Figure 1
Public Works 5th Street Facility
Stormwater Drainage

Figure 2 – Stormwater Sensitive Areas

Areas to be inspected weekly

4.0 SITE SPECIFIC BMP PLAN

In general, following the SOPs outlined in Appendix A shall prevent pollutants from entering the storm drain. Specific BMPs, however, shall be deployed, if persistent pollution problems are noted at any of the sensitive area inspections.

4.1 Weekly Inspections

The stormwater outfall points and sensitive areas identified on Figures 1 and 2 above should be inspected at least once per week (preferably prior to any large rain events). The inspections shall be documented on the template inspection forms within Appendix B and completed inspection forms shall be stored within Appendix C of this document for a period of at least 3 years. The weekly inspections shall pay specific attention to the following areas:

- Salt Brine Tanks: The salt brine tanks should be inspected once a week during the active winter months.
- Equipment Storage/Maintenance: Any place in which equipment is stored and/or maintained shall be inspected for oily residue on the ground or dripping fluids. Any observed product on the ground shall be cleaned up appropriately. Any active leaks in any equipment stored outside need to be immediately contained with catchment pans until the leak can be repaired.
- Fueling/Oil Storage Areas: Any fleet fueling areas or oil storage tanks/containers should be inspected for leaks or drips. Any oil product found exposed to stormwater contact shall be cleaned up immediately with proper absorbent materials. (Note: Sand is not an effective absorbent product). Absorbent material shall be swept up and properly disposed of.
- Chemical Storage (i.e..): Any maintenance chemicals such as fertilizers, paints, pesticides, cleaners, etc shall be stored indoors or under cover in a contained area. These areas should be inspected to ensure no materials are leaking out. Any leaks/spills shall be cleaned-up immediately.
- Dumpster/Disposal Areas: Any dumpsters shall be inspected to ensure no contents are leaking out onto the ground that can contact stormwater. Most dumpsters have plugs and lids. The lids should stay closed and the plugs should remain in.

4.2 Employee Training

It is imperative that all maintenance employees are properly trained on the SOPs located within Appendix A. Each year, management shall go over the SOPS with each employee and document the training with employee signatures on the form located within Appendix B.

Metro Maintenance Facility
Site Runoff Management Plan

Metro Nashville Public Schools-School Bus Terminal

336 Woodycrest Avenue
Nashville, TN 37219
615-456-1719

Prepared By:

Metro Water Services
Stormwater, NPDES Section
1607 County Hospital Road
Nashville, TN 37218
615-880-2420

May, 2013

1.0 OVERVIEW

1.1 INTRODUCTION

This Runoff Management Plan (RMP) covers all maintenance operations at the Metro Nashville Public Schools (MNPS) Bus Maintenance Terminal located at 336 Woodycrest Avenue. It has been developed as required under Metropolitan Nashville Davidson County's (Metro's) Municipal Separate Storm Sewer System (MS4) NPDES permit issued to Metro by the Tennessee Department of Environment and Conservation. This RMP identifies potential sources of storm water pollution at the facility and recommends appropriate best management practices (BMPs) or pollution control measures to reduce the discharge of pollutants in storm water runoff from the facility. The RMP shall be reviewed annually by maintenance personnel to determine the effectiveness of the plan and if any changes are necessary. It is the MNPS personnel's responsibility to follow the procedures outlined in the plan and maintain appropriate documentation. If situations develop that require the plan to be altered, please contact the Metro Water Services, Stormwater NPDES Section at 615-880-2420 to update the plan.

1.2 OBJECTIVES

The goal of the RMP is to prevent impacts to surface waters from the stormwater runoff or illicit discharges from the MNPS Bus Maintenance Terminal. The goal of only clean stormwater discharging from the facility will be accomplished by eliminating the exposure of pollutants during maintenance procedures and overall materials storage.

2.0 STORM WATER POLLUTION PREVENTION TEAM

The storm water pollution prevention team is responsible for developing, implementing, maintaining, and revising this RMP. Table 1 provides a list of team member(s) and their primary responsibilities of the SWPPP.

Table 1 – Storm Water Pollution Prevention Team

Name & Title	Phone	Responsibility
Chris Anderson Supervisor of Maintenance and Operations	**615-862-4300**	**Making sure all MNPS maintenance activities are not impacting stormwater runoff.**
Dewayne Ferrell Department of Transportation Shop Foreman	**615-405-1436**	**Making sure the site-specific RMP is followed and the appropriate documentation is in place at the MNPS Bus Maintenance Terminal**

3.0 POTENTIAL SOURCES OF POLLUTANTS

Pollutants from Metro maintenance activities/facilities can include the following:

- Detergents and other cleaning agents;
- Petroleum products or asphalt products from spills, leaking equipment, and/or washing equipment;
- Salt stockpiling area and salt brine tanks;
- Other general maintenance products such as paint, solvents, etc.

3.1 GENERAL MAINTENANCE ACTIVITIES

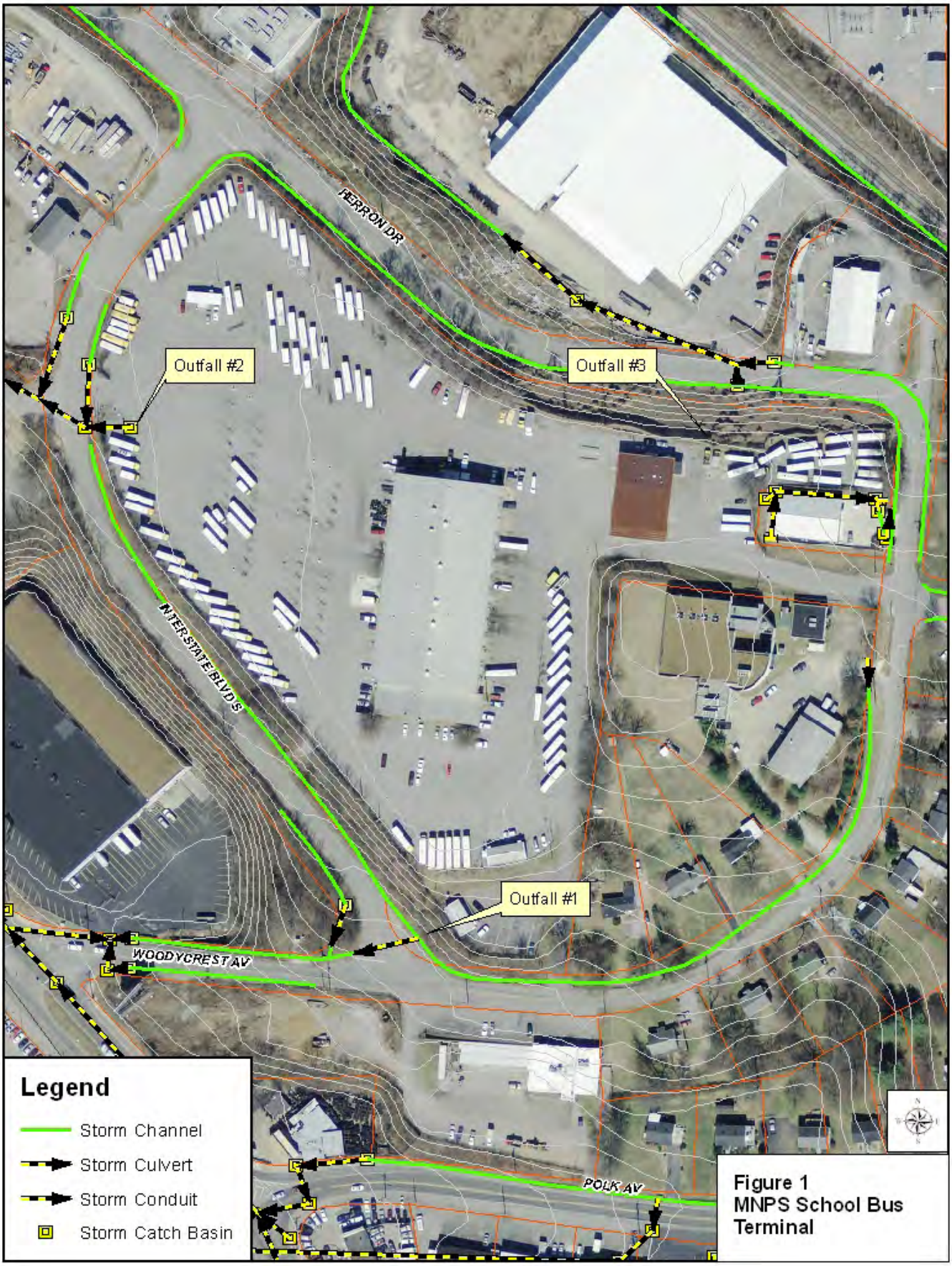
Maintenance activities, if not performed properly, can lead to significant impacts to stormwater runoff. The following maintenance activities have been identified as having the potential for impacting stormwater runoff and Standard Operating Procedures (SOPs) have been developed for each. In general, maintenance activities at all Metro facilities shall follow the below-listed SOPs, which are located in Appendix A of this document.

- Pesticide, Herbicide, Fertilizer Application, Storage, and Disposal.
- Petroleum Product (including asphalt) Storage & Spill Clean-up
- Equipment Washing/General Maintenance Activities;

3.2 SITE-SPECIFIC MANAGEMENT PRACTICES

Each Metro facility that houses operations and maintenance activities is different. Some Metro facilities have many sensitive areas such as streams, storm drains, or ditches, while others have very few. The MNPS Bus Maintenance Terminal does not have drainage features such as streams on the property, as most of the drainage from the property sheet flows off the parking lot. Figure 1 depicts general stormwater drainage throughout the facility. The parking lot generally acts as the stormwater drainage and, therefore, should be protected from pollutant runoff that could result from maintenance activities or leaking fluids from parked buses.

The area within the MNPS School Bus Terminal that poses the most threat of pollutant runoff is the areas just north of the maintenance building and bus wash bay. Large containers of automotive fluids, detergents, etc. were stored outside in these areas. Any containers stored outside should be should be capped and inspected regularly for spills, leaks, or product residue on the outside of the containers or on the ground. If product is found exposed to stormwater runoff, then the proper clean-up procedures should be implemented immediately. Absorbent materials should always be used for automotive fluids. Any fueling stations located on the grounds should also be inspected routinely for leaks or spills. Oil absorbent material needs to be kept in close proximity to any fueling or oil storage containers. The critical sensitive areas are depicted on Figure 2.


FERRON DR
Outfall #2
Outfall #3
INTERSTATE BLVD S
Outfall #1
WOODYCREST AV
POLK AV
Legend
Storm Channel
Storm Culvert
Storm Conduit
Storm Catch Basin
Figure 1
MNPS School Bus
Terminal

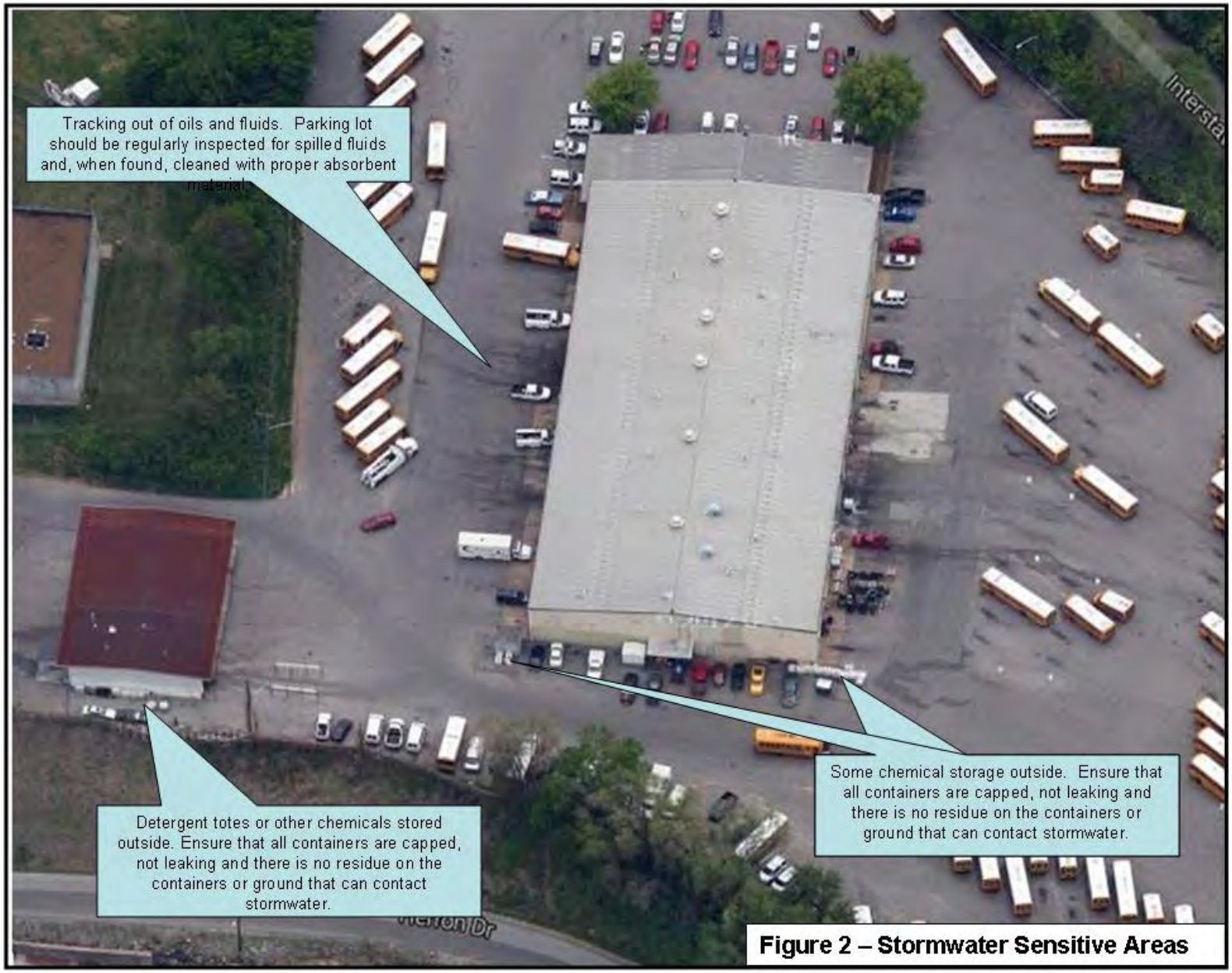


Figure 2 – Stormwater Sensitive Areas

4.0 SITE SPECIFIC BMP PLAN

In general, following the SOPs outlined in Appendix A shall prevent pollutants from entering the storm drain. Specific BMPs, however, shall be deployed, if persistent pollution problems are noted at any of the sensitive area inspections.

4.1 Weekly Inspections

The stormwater outfall points and sensitive areas identified on Figures 1 and 2 above should be inspected at least once per week (preferably prior to any large rain events). The inspections shall be documented on the template inspection forms within Appendix B and completed inspection forms shall be stored within Appendix C of this document for a period of at least 3 years. The weekly inspections shall pay specific attention to the following areas:

- Equipment Storage/Maintenance: Any place in which equipment is stored and/or maintained shall be inspected for oily residue on the ground or dripping fluids. Any observed product on the ground shall be cleaned up appropriately. Any active leaks in any equipment stored outside need to be immediately contained with catchment pans until the leak can be repaired.
- Fueling/Oil Storage Areas: Any fleet fueling areas or oil storage tanks/containers should be inspected for leaks or drips. Any oil product found exposed to stormwater contact shall be cleaned up immediately with proper absorbent materials. (Note: Sand is not an effective absorbent product). Absorbent material shall be swept up and properly disposed of.
- Chemical Storage (i.e..): Any maintenance chemicals such as fertilizers, paints, pesticides, cleaners, etc shall be stored indoors or under cover in a contained area. These areas should be inspected to ensure no materials are leaking out. Any leaks/spills shall be cleaned-up immediately.
- Dumpster/Disposal Areas: Any dumpsters shall be inspected to ensure no contents are leaking out onto the ground that can contact stormwater. Most dumpsters have plugs and lids. The lids should stay closed and the plugs should remain in.

4.2 Employee Training

It is imperative that all maintenance employees are properly trained on the SOPs located within Appendix A. Each year, management shall go over the SOPS with each employee and document the training with employee signatures on the form located within Appendix B.

Metro Maintenance Facility
Site Runoff Management Plan

Warner Parks Maintenance Facility

50 Vaughn Road
Nashville, TN 37221
615-862-8415

Prepared By:

Metro Water Services
Stormwater, NPDES Section
1607 County Hospital Road
Nashville, TN 37218

March, 2013

1.0 OVERVIEW

1.1 INTRODUCTION

This Runoff Management Plan (RMP) covers all maintenance operations at the Warner Parks Maintenance Facility. It has been developed as required under Metropolitan Nashville Davidson County's (Metro's) Municipal Separate Storm Sewer System (MS4) NPDES permit issued to Metro by the Tennessee Department of Environment and Conservation. This RMP identifies potential sources of storm water pollution at the facility and recommends appropriate best management practices (BMPs) or pollution control measures to reduce the discharge of pollutants in storm water runoff from the facility. The RMP shall be reviewed annually by maintenance personnel to determine the effectiveness of the plan and if any changes are necessary. It is the Warner Parks Maintenance Facility personnel's responsibility to follow the procedures outlined in the plan and maintain appropriate documentation. If situations develop that require the plan to be altered, please contact the Metro Water Services, Stormwater NPDES Section at 615-880-2420 to update the plan.

1.2 OBJECTIVES

The goal of the RMP is to prevent impacts to surface waters from the stormwater runoff or illicit discharges from the Warner Parks Maintenance Facility. The goal of only clean stormwater discharging from the facility will be accomplished by eliminating the exposure of pollutants during maintenance procedures and overall materials storage.

2.0 STORM WATER POLLUTION PREVENTION TEAM

The storm water pollution prevention team is responsible for developing, implementing, maintaining, and revising this RMP. Table 1 provides a list of team member(s) and their primary responsibilities of the SWPPP.

Table 1 – Storm Water Pollution Prevention Team

Name & Title	Phone	Responsibility
Mike Bays/Overall Metro Parks Maintenance Operations Supervisor	**615-862-8400**	**Making sure all Parks maintenance operations are compliant with RMPs**
Billy Powell/Warner Parks Maintenance Facility Supervisor	**615-862-8415**	**Making sure the site-specific RMP is followed and the appropriate documentation is in place at the Warner Parks Maintenance Facility**

3.0 POTENTIAL SOURCES OF POLLUTANTS

Pollutants from Metro operations and maintenance activities can include the following:

- Sand and/or soil flowing off-site from stockpile areas;
- Fertilizer, pesticides, fungicides, and herbicides;
- Detergents and other cleaning agents;
- Concentrated portions of grass clippings/leaves;
- Petroleum products from spills, leaking equipment, and/or washing equipment; and
- Other general maintenance products such as paint, solvents, etc.

3.1 GENERAL MAINTENANCE ACTIVITIES

Maintenance activities, if not performed properly, can lead to significant impacts to stormwater runoff. The following maintenance activities have been identified as having the potential for impacting stormwater runoff and Standard Operating Procedures (SOPs) have been developed for each. In general, maintenance activities at all Metro facilities shall follow the below-listed SOPs, which are located in Appendix A of this document.

- Pesticide, Herbicide, Fertilizer Application, Storage, and Disposal.
- Petroleum Product Storage & Spill Clean-up
- Grass Clipping Disposal
- Equipment Washing/General Maintenance Activities
- Bare Soil/Sand Management

3.2 SITE-SPECIFIC MANAGEMENT PRACTICES

Each Metro facility that houses operations and maintenance activities is different. Some Metro facilities have many sensitive areas such as streams, storm drains, or ditches, while others have very few. The Warner Parks Maintenance Facility has drainage features which are in close proximity to key maintenance operations. Figure 1 depicts general stormwater drainage throughout the golf course. All stormwater drainage features, including inlets, ditches, and streams shall be protected from pollutant runoff that could result from maintenance activities such as chemical spraying and general material storage.

The area within the Warner Parks Maintenance Facility that poses the most threat of pollutant runoff is the maintenance shop where materials and equipment are stored and maintained. The maintence shop and the critical sensitive areas are depicted within Figure 2. The following sensitive areas have been identified at the maintenance shop.

1. Above-Ground Fuel Tank - located near the maintenance shop. Any leaks/spills from the tank could lead to significant downstream pollution.

2. Oil Container/Drums – Located next to the shed which is near the maintenance shop. This container is not sheltered which can lead to an increased propensity to leak or spill.


Maintenance Shop
OLD HICKORY BLVD
WESTMINSTER DR
WORCHESTER DR
RADCLIFF DR
Legend
Assumed Waters of State
Storm Channel
Figure 1. Warner Park Maintenance Shop Sensitive Aquatic Areas

Figure 2. Warner Park Maintenance Shop Sensitive Areas

4.0 SITE SPECIFIC BMP PLAN

In general, following the SOPs outlined in Appendix A shall prevent pollutants from entering the storm drain. Specific BMPs, however, shall be deployed, at the sensitive areas identified within Figure 2.

4.1 Above-Ground Fuel Tank/Other Outside Equipment/Tanks

The large above-ground fuel tank and oil drum shall be inspected weekly to determine if there are any leaks or spills. The person performing the inspection shall look for wet oily substances on the ground or on the hose of the tank. Any discovered leaks or drips shall be repaired immediately. Any lost oil product shall be cleaned up promptly and properly with absorbent materials. A spill response kit shall be kept in close proximity to the tank area. In addition, the weekly inspection shall include looking at any equipment stored outside to determine if any oils are leaking.

4.2 Employee Training

It is imperative that all maintenance employees are properly trained on the SOPs located within Appendix A. Each year, management shall go over the SOPS with each employee and document the training with employee signatures on the form located within Appendix B.

Metro Maintenance Facility
Site Runoff Management Plan

Two Rivers Golf Course

2235 Two Rivers Parkway
Nashville, TN 37214
615-889-5953

Prepared By:

Metro Water Services
Stormwater, NPDES Section
1607 County Hospital Road
Nashville, TN 37218

February, 2013

1.0 OVERVIEW

1.1 INTRODUCTION

This Runoff Management Plan (RMP) covers all maintenance operations at Two Rivers Golf Course. It has been developed as required under Metropolitan Nashville Davidson County's (Metro's) Municipal Separate Storm Sewer System (MS4) NPDES permit issued to Metro by the Tennessee Department of Environment and Conservation. This RMP identifies potential sources of storm water pollution at the facility and recommends appropriate best management practices (BMPs) or pollution control measures to reduce the discharge of pollutants in storm water runoff from the facility. The RMP shall be reviewed annually by maintenance personnel to determine the effectiveness of the plan and if any changes are necessary. It is the Two Rivers Golf Course maintenance personnel's responsibility to follow the procedures outlined in the plan and maintain appropriate documentation. If situations develop that require the plan to be altered, please contact the Metro Water Services, Stormwater NPDES Section at 615-880-2420 to update the plan.

=1.2 OBJECTIVES

The goal of the RMP is to prevent impacts to surface waters from the stormwater runoff or illicit discharges from the Two Rivers Golf Course and maintenance facility. The goal of only clean stormwater discharging from the facility will be accomplished by eliminating the exposure of pollutants during maintenance procedures and overall materials storage.

2.0 STORM WATER POLLUTION PREVENTION TEAM

The storm water pollution prevention team is responsible for developing, implementing, maintaining, and revising this RMP. Table 1 provides a list of team member(s) and their primary responsibilities of the SWPPP.

Table 1 – Storm Water Pollution Prevention Team

Name & Title	Phone	Responsibility
Mike Bays/Overall Metro Parks Maintenance Operations Supervisor	**615-862-8400**	**Making sure all Parks maintenance operations are compliant with RMPs**
Phil Luckett/Metro Golf Course Maintenance Supervisor	**615-862-8400**	**Making sure the site-specific RMP is followed and the appropriate documentation is in place at all Golf Courses**
Brandon Denton/Two Rivers Golf Course Maintenance Supervisor	**615-889-5953**	**Making sure the site-specific RMP is followed and the appropriate documentation is in place at the Two**

		Rivers Golf Course

3.0 POTENTIAL SOURCES OF POLLUTANTS

Pollutants from Metro operations and maintenance activities can include the following:

- Sand and/or soil flowing off-site from stockpile areas;
- Fertilizer, pesticides, fungicides, and herbicides;
- Detergents and other cleaning agents;
- Concentrated portions of grass clippings/leaves;
- Petroleum products from spills, leaking equipment, and/or washing equipment; and
- Other general maintenance products such as paint, solvents, etc.

3.1 GENERAL MAINTENANCE ACTIVITIES

Maintenance activities, if not performed properly, can lead to significant impacts to stormwater runoff. The following maintenance activities have been identified as having the potential for impacting stormwater runoff and Standard Operating Procedures (SOPs) have been developed for each. In general, maintenance activities at all Metro facilities shall follow the below-listed SOPs, which are located in Appendix A of this document.

- Pesticide, Herbicide, Fertilizer Application, Storage, and Disposal.
- Petroleum Product Storage & Spill Clean-up
- Grass Clipping Disposal
- Equipment Washing/General Maintenance Activities
- Bare Soil/Sand Management

3.2 SITE-SPECIFIC MANAGEMENT PRACTICES

Each Metro facility that houses operations and maintenance activities is different. Some Metro facilities have many sensitive areas such as streams, storm drains, or ditches, while others have very few. The Two Rivers Golf Course and maintenance shop happens to have numerous drainage features, some of which are in close proximity to key maintenance operations. Figure 1 depicts general stormwater drainage throughout the golf course. All stormwater drainage features, including inlets, ditches, and streams shall be protected from pollutant runoff that could result from maintenance activities such as chemical spraying and general material storage.

The area within the Two Rivers Golf Course that poses the most threat of pollutant runoff is the maintenance shop where materials and equipment are stored and maintained. The maintence shop and the critical sensitive areas are depicted within Figure 2. The following sensitive areas have been identified at the maintenance shop.

1. Storm Inlet - located a few feet from stored equipment and other products such as used oil. Any leaks in equipment or spills of material such as used oil or other chemicals would route to this drain quickly.

2. Soil/Sand Stockpiles - sand stockpiling on the paved surface in front of the maintenance shop can easily flow off-site into a storm ditch.

3. Above-Ground Fuel Tank – located behind the maintenance shop. Any leaks/spills from the tank could lead to significant downstream pollution.

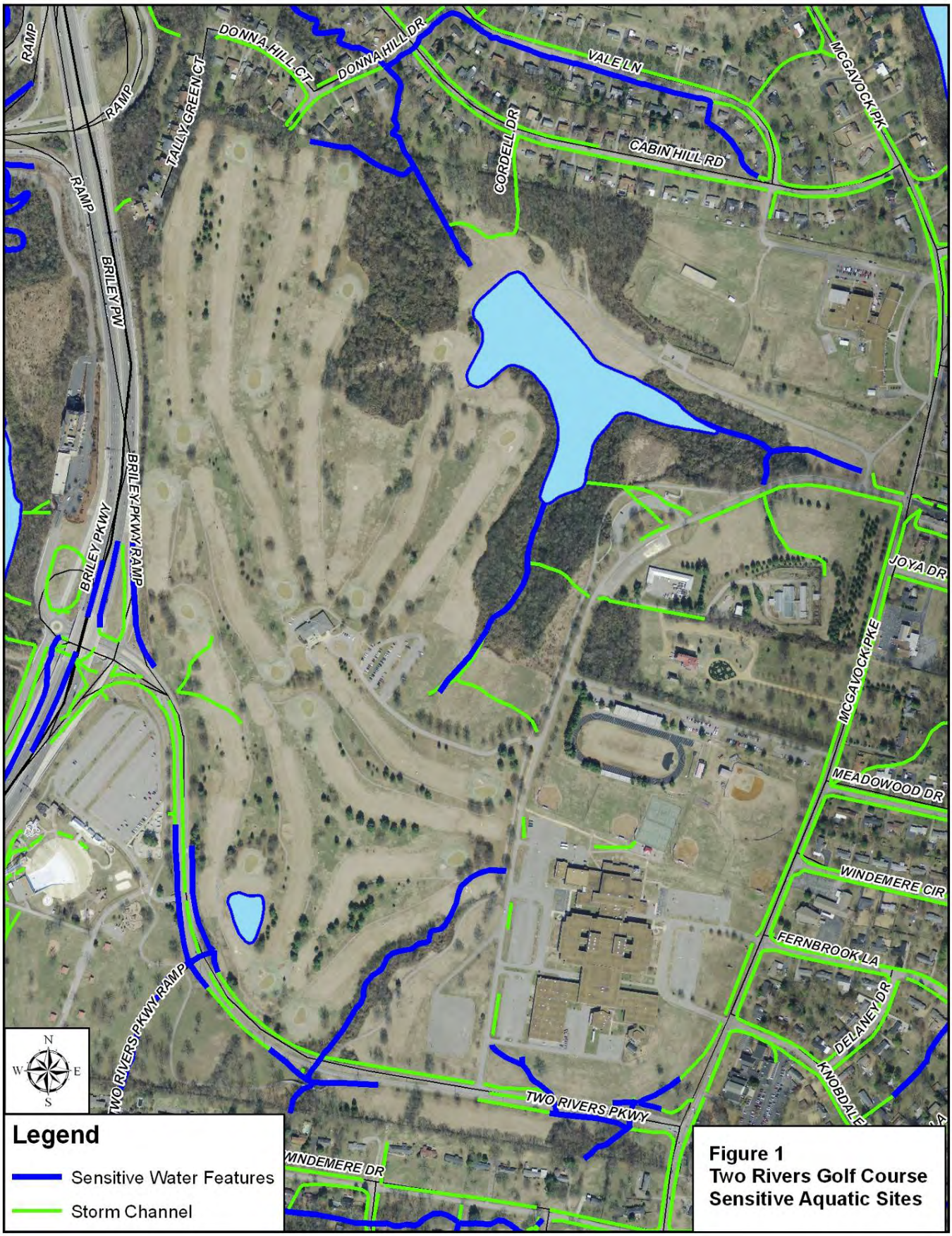


Figure 1
Two Rivers Golf Course
Sensitive Aquatic Sites

Figure 2
Two Rivers Maintenance Shop
Sensitive Areas

4.0 SITE SPECIFIC BMP PLAN

In general, following the SOPs outlined in Appendix A shall prevent pollutants from entering the storm drain. Specific BMPs, however, shall be deployed, at the sensitive areas identified within Figure 2.

4.1 Stormwater Inlet at the Maintenance Shop

Given the close proximity of this drain to equipment and maintenance fluids, extra protection shall be deployed at the inlet. The inlet shall be marked with a "no dumping" label so that all employees are aware that nothing besides clean stormwater can route to this drain. In addition, the site shall have a readily available supply of spill response supplies such as a cover to put over the drain in the event of a spill and oil absorbent material that can be used to clean up any spilled petroleum products.

The stormwater inlet, as well as the general maintenance grounds shall be inspected once per week by the designated personnel. The person performing the inspection shall look for oily residue, unusual staining or odor within the drain, and general exposed products kept outside that may need to be moved under cover. All inspections shall be logged on the inspection form contained in Appendix B of this document. All documented inspection forms shall be retained on-site in the maintenance office for a period of at least 3 years.

4.2 Stockpiled Soil and Sand

Any area where sand or soil is stockpiled in a manner that can mix with stormwater and drain off-site into an inlet, storm ditch, or stream shall be protected with perimeter controls. Perimeter controls can be trenched in silt fence, staked down weighted sediment tubes, or other suitable materials that allow stormwater to drain away while filtering out the sand and soil. Perimeter controls are not needed if the materials are stored in areas surrounded by established, thick vegetation, as the vegetation such as thick tall grass can act as a filter from stormwater runoff. Stockpiled areas shall also be inspected once per week using the same inspection form located in Appendix B. Some of the weekly inspections should occur during rain events to determine if materials are draining off the site.

4.3 Above-Ground Fuel Tank/Other Outside Equipment/Tanks

The large above-ground fuel tank shall be inspected weekly to determine if there are any leaks or spills. The person performing the inspection shall look for wet oily substances on the ground or on the hose of the tank. Any discovered leaks or drips shall be repaired immediately. Any lost oil product shall be cleaned up promptly and properly with absorbent materials. A spill response kit shall be kept in close proximity to the tank area. In addition, the weekly inspection shall include looking at any equipment stored outside to determine if any oils are leaking.

4.4 Employee Training

It is imperative that all maintenance employees are properly trained on the SOPs located within Appendix A. Each year, management shall go over the SOPS with each employee and document the training with employee signatures on the form located within Appendix B.

Metro Maintenance Facility
Site Runoff Management Plan

Ted Rhodes Golf Course

1901 Ed Temple Blvd.
Nashville, TN 37208
615-862-8473

Prepared By:

Metro Water Services
Stormwater, NPDES Section
1607 County Hospital Road
Nashville, TN 37218

March, 2013

1.0 OVERVIEW

1.1 INTRODUCTION

This Runoff Management Plan (RMP) covers all maintenance operations at Ted Rhodes Golf Course. It has been developed as required under Metropolitan Nashville Davidson County's (Metro's) Municipal Separate Storm Sewer System (MS4) NPDES permit issued to Metro by the Tennessee Department of Environment and Conservation. This RMP identifies potential sources of storm water pollution at the facility and recommends appropriate best management practices (BMPs) or pollution control measures to reduce the discharge of pollutants in storm water runoff from the facility. The RMP shall be reviewed annually by maintenance personnel to determine the effectiveness of the plan and if any changes are necessary. It is the Ted Rhodes Golf Course maintenance personnel's responsibility to follow the procedures outlined in the plan and maintain appropriate documentation. If situations develop that require the plan to be altered, please contact the Metro Water Services, Stormwater NPDES Section at 615-880-2420 to update the plan.

1.2 OBJECTIVES

The goal of the RMP is to prevent impacts to surface waters from the stormwater runoff or illicit discharges from the Ted Rhodes Golf Course and maintenance facility. The goal of only clean stormwater discharging from the facility will be accomplished by eliminating the exposure of pollutants during maintenance procedures and overall materials storage.

2.0 STORM WATER POLLUTION PREVENTION TEAM

The storm water pollution prevention team is responsible for developing, implementing, maintaining, and revising this RMP. Table 1 provides a list of team member(s) and their primary responsibilities of the SWPPP.

Table 1 – Storm Water Pollution Prevention Team

Name & Title	Phone	Responsibility
Mike Bays/Overall Metro Parks Maintenance Operations Supervisor	**615-862-8400**	**Making sure all Parks maintenance operations are compliant with RMPs**
Phil Luckett/Metro Golf Course Maintenance Supervisor	**615-862-8400**	**Making sure the site-specific RMP is followed and the appropriate documentation is in place at all Golf Courses**
Jerry Cook/Ted Rhodes Golf Course Maintenance Supervisor	**615-862-8473**	**Making sure the site-specific RMP is followed and the appropriate documentation is in place at the Ted**

		Rhodes

3.0 POTENTIAL SOURCES OF POLLUTANTS

Pollutants from Metro operations and maintenance activities can include the following:

- Sand and/or soil flowing off-site from stockpile areas;
- Fertilizer, pesticides, fungicides, and herbicides;
- Detergents and other cleaning agents;
- Concentrated portions of grass clippings/leaves;
- Petroleum products from spills, leaking equipment, and/or washing equipment; and
- Other general maintenance products such as paint, solvents, etc.

3.1 GENERAL MAINTENANCE ACTIVITIES

Maintenance activities, if not performed properly, can lead to significant impacts to stormwater runoff. The following maintenance activities have been identified as having the potential for impacting stormwater runoff and Standard Operating Procedures (SOPs) have been developed for each. In general, maintenance activities at all Metro facilities shall follow the below-listed SOPs, which are located in Appendix A of this document.

- Pesticide, Herbicide, Fertilizer Application, Storage, and Disposal.
- Petroleum Product Storage & Spill Clean-up
- Grass Clipping Disposal
- Equipment Washing/General Maintenance Activities
- Bare Soil/Sand Management

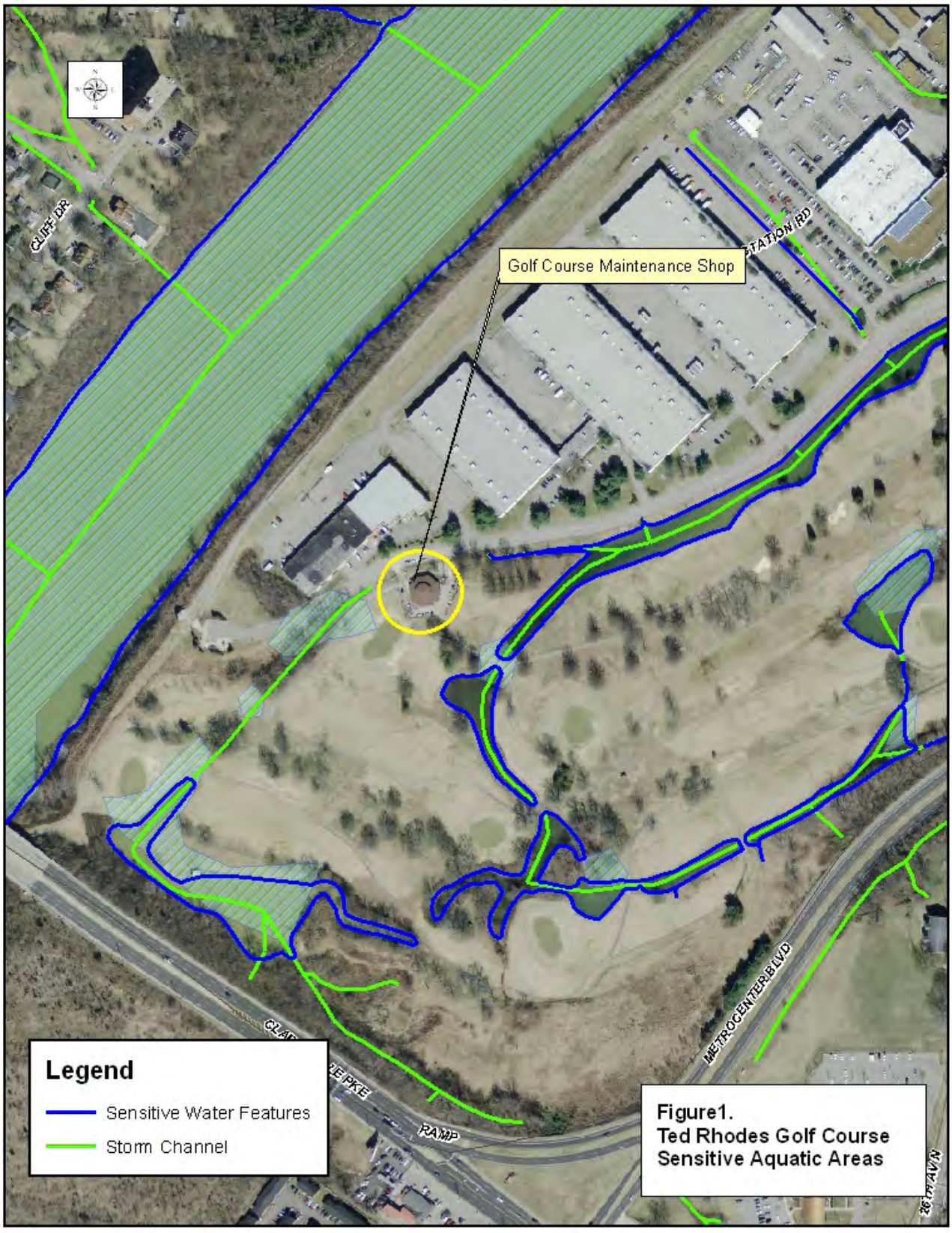
3.2 SITE-SPECIFIC MANAGEMENT PRACTICES

Each Metro facility that houses operations and maintenance activities is different. Some Metro facilities have many sensitive areas such as streams, storm drains, or ditches, while others have very few. The Ted Rhodes Golf Course and maintenance shop drains to the ponds at Metro Center and the Cumberland River. Any pollutants that wash off of the site could be potentially harmful to the receiving waters. Figure 1 depicts general stormwater drainage throughout the golf course. All stormwater drainage features, including inlets, ditches, and streams shall be protected from pollutant runoff that could result from maintenance activities such as chemical spraying and general material storage.

The area within the Ted Rhodes Golf Course that poses the most threat of pollutant runoff is the maintenance shop where materials and equipment are stored and maintained. The maintence shop and the critical sensitive areas are depicted within Figure 2. The following sensitive areas have been identified at the maintenance shop.

1. Soil/Sand Stockpiles - sand stockpiling on the paved surface in front of the maintenance shop can easily flow off-site into a storm ditch. .

2. Fuel Tanks and Equipment Storage – located in and around the maintenance shop. Any leaks/spills from the tank could lead to significant pollution to nearby bodies of water.


Golf Course Maintenance Shop
CLIFF DR
STATION RD
METROCENTER BLVD
RAMP
Legend
Sensitive Water Features
Storm Channel
Figure1.
Ted Rhodes Golf Course
Sensitive Aquatic Areas


N
W
E
S
Sand Piles
and Equipment
Figure 2.
Ted Rhodes Golf Course
Maintenance Shop
Sensitive Areas
Copyright ©2011 Pictometry International Corp.

4.0 SITE SPECIFIC BMP PLAN

In general, following the SOPs outlined in Appendix A shall prevent pollutants from entering the storm drain. Specific BMPs, however, shall be deployed, at the sensitive areas identified within Figure 2.

4.1 Stockpiled Soil and Sand

Any area where sand or soil is stockpiled in a manner that can mix with stormwater and drain off-site into an inlet, storm ditch, or stream shall be protected with perimeter controls. Perimeter controls can be trenched in silt fence, staked down weighted sediment tubes, or other suitable materials that allow stormwater to drain away while filtering out the sand and soil. Perimeter controls are not needed if the materials are stored in areas surrounded by established, thick vegetation, as the vegetation such as thick tall grass can act as a filter from stormwater runoff. Stockpiled areas shall also be inspected once per week using the same inspection form located in Appendix B. Some of the weekly inspections should occur during rain events to determine if materials are draining off the site.

4.2 Above-Ground Fuel Tank/Other Outside Equipment/Tanks

The large above-ground fuel tank shall be inspected weekly to determine if there are any leaks or spills. The person performing the inspection shall look for wet oily substances on the ground or on the hose of the tank. Any discovered leaks or drips shall be repaired immediately. Any lost oil product shall be cleaned up promptly and properly with absorbent materials. A spill response kit shall be kept in close proximity to the tank area. In addition, the weekly inspection shall include looking at any equipment stored outside to determine if any oils are leaking.

4.3 Employee Training

It is imperative that all maintenance employees are properly trained on the SOPs located within Appendix A. Each year, management shall go over the SOPS with each employee and document the training with employee signatures on the form located within Appendix B.

Metro Maintenance Facility
Site Runoff Management Plan

Shelby Golf Course

2021 Fatherland Street
Nashville TN 37206
615-862-8475

Prepared By:

Metro Water Services
Stormwater, NPDES Section
1607 County Hospital Road
Nashville, TN 37218

March, 2013

1.0 OVERVIEW

1.1 INTRODUCTION

This Runoff Management Plan (RMP) covers all maintenance operations at Shelby Golf Course. It has been developed as required under Metropolitan Nashville Davidson County's (Metro's) Municipal Separate Storm Sewer System (MS4) NPDES permit issued to Metro by the Tennessee Department of Environment and Conservation. This RMP identifies potential sources of storm water pollution at the facility and recommends appropriate best management practices (BMPs) or pollution control measures to reduce the discharge of pollutants in storm water runoff from the facility. The RMP shall be reviewed annually by maintenance personnel to determine the effectiveness of the plan and if any changes are necessary. It is the Shelby Golf Course maintenance personnel's responsibility to follow the procedures outlined in the plan and maintain appropriate documentation. If situations develop that require the plan to be altered, please contact the Metro Water Services, Stormwater NPDES Section at 615-880-2420 to update the plan.

1.2 OBJECTIVES

The goal of the RMP is to prevent impacts to surface waters from the stormwater runoff or illicit discharges from the Shelby Golf Course and maintenance facility. The goal of only clean stormwater discharging from the facility will be accomplished by eliminating the exposure of pollutants during maintenance procedures and overall materials storage.

2.0 STORM WATER POLLUTION PREVENTION TEAM

The storm water pollution prevention team is responsible for developing, implementing, maintaining, and revising this RMP. Table 1 provides a list of team member(s) and their primary responsibilities of the SWPPP.

Table 1 – Storm Water Pollution Prevention Team

Name & Title	Phone	Responsibility
Mike Bays/Overall Metro Parks Maintenance Operations Supervisor	**615-862-8400**	**Making sure all Parks maintenance operations are compliant with RMPs**
Phil Luckett/Metro Golf Course Maintenance Supervisor	**615-862-8400**	**Making sure the site-specific RMP is followed and the appropriate documentation is in place at all Golf Courses**
Scott Merritt/Shelby Golf Course Maintenance Supervisor	**615-862-8475**	**Making sure the site-specific RMP is followed and the appropriate documentation is in place at the Shelby**

3.0 POTENTIAL SOURCES OF POLLUTANTS

Pollutants from Metro operations and maintenance activities can include the following:

- Sand and/or soil flowing off-site from stockpile areas;
- Fertilizer, pesticides, fungicides, and herbicides;
- Detergents and other cleaning agents;
- Concentrated portions of grass clippings/leaves;
- Petroleum products from spills, leaking equipment, and/or washing equipment; and
- Other general maintenance products such as paint, solvents, etc.

3.1 GENERAL MAINTENANCE ACTIVITIES

Maintenance activities, if not performed properly, can lead to significant impacts to stormwater runoff. The following maintenance activities have been identified as having the potential for impacting stormwater runoff and Standard Operating Procedures (SOPs) have been developed for each. In general, maintenance activities at all Metro facilities shall follow the below-listed SOPs, which are located in Appendix A of this document.

- Pesticide, Herbicide, Fertilizer Application, Storage, and Disposal.
- Petroleum Product Storage & Spill Clean-up
- Grass Clipping Disposal
- Equipment Washing/General Maintenance Activities
- Bare Soil/Sand Management

3.2 SITE-SPECIFIC MANAGEMENT PRACTICES

Each Metro facility that houses operations and maintenance activities is different. Some Metro facilities have many sensitive areas such as streams, storm drains, or ditches, while others have very few. The Shelby Golf Course and maintenance shop is drains to a nearby water body. Any pollutants that wash off of the site could be potentially harmful to the receiving waters. Figure 1 depicts general stormwater drainage throughout the golf course. All stormwater drainage features, including inlets, ditches, and streams shall be protected from pollutant runoff that could result from maintenance activities such as chemical spraying and general material storage.

The area within the Shelby Golf Course that poses the most threat of pollutant runoff is the maintenance shop where materials and equipment are stored and maintained. The maintence shop and the critical sensitive areas are depicted within Figure 2. The following sensitive areas have been identified at the maintenance shop.

3. Soil/Sand Stockpiles - sand stockpiling on the paved surface in front of the maintenance shop can easily flow off-site into a storm ditch. .

4. Above-Ground Fuel Tank – located in front of the maintenance shop. Any leaks/spills from the tank could lead to significant downstream pollution.

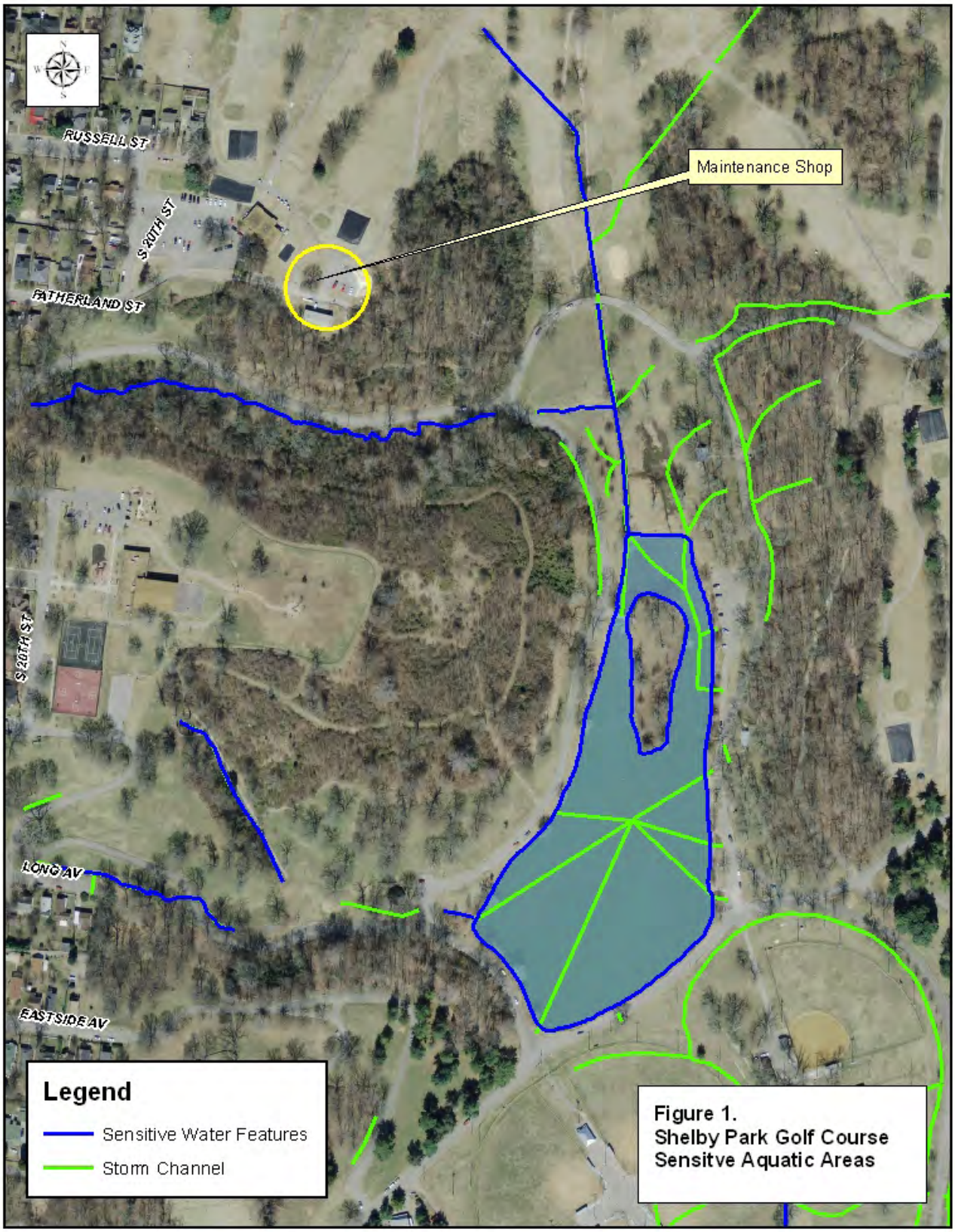

RUSSELL ST
S 20TH ST
FATHERLAND ST
Maintenance Shop
S 20TH ST
LONG AV
EASTSIDE AV
Legend
Sensitive Water Features
Storm Channel
Figure 1.
Shelby Park Golf Course
Sensitve Aquatic Areas

Figure 2.
Shelby Golf Course
Maintenance Shop
Sensitive Areas

4.0 SITE SPECIFIC BMP PLAN

In general, following the SOPs outlined in Appendix A shall prevent pollutants from entering the storm drain. Specific BMPs, however, shall be deployed, at the sensitive areas identified within Figure 2.

4.1 Stockpiled Soil and Sand

Any area where sand or soil is stockpiled in a manner that can mix with stormwater and drain off-site into an inlet, storm ditch, or stream shall be protected with perimeter controls. Perimeter controls can be trenched in silt fence, staked down weighted sediment tubes, or other suitable materials that allow stormwater to drain away while filtering out the sand and soil. Perimeter controls are not needed if the materials are stored in areas surrounded by established, thick vegetation, as the vegetation such as thick tall grass can act as a filter from stormwater runoff. Stockpiled areas shall also be inspected once per week using the same inspection form located in Appendix B. Some of the weekly inspections should occur during rain events to determine if materials are draining off the site.

4.2 Above-Ground Fuel Tank/Other Outside Equipment/Tanks

The large above-ground fuel tank shall be inspected weekly to determine if there are any leaks or spills. The person performing the inspection shall look for wet oily substances on the ground or on the hose of the tank. Any discovered leaks or drips shall be repaired immediately. Any lost oil product shall be cleaned up promptly and properly with absorbent materials. A spill response kit shall be kept in close proximity to the tank area. In addition, the weekly inspection shall include looking at any equipment stored outside to determine if any oils are leaking.

4.3 Employee Training

It is imperative that all maintenance employees are properly trained on the SOPs located within Appendix A. Each year, management shall go over the SOPS with each employee and document the training with employee signatures on the form located within Appendix B.

Metro Maintenance Facility
Site Runoff Management Plan

Percy Warner Golf Course

1221 Forest Park Drive
Nashville, TN 37205
615-352-3677

Prepared By:

Metro Water Services
Stormwater, NPDES Section
1607 County Hospital Road
Nashville, TN 37218

March, 2013

1.0 OVERVIEW

1.1 INTRODUCTION

This Runoff Management Plan (RMP) covers all maintenance operations at Percy Warner Golf Course. It has been developed as required under Metropolitan Nashville Davidson County's (Metro's) Municipal Separate Storm Sewer System (MS4) NPDES permit issued to Metro by the Tennessee Department of Environment and Conservation. This RMP identifies potential sources of storm water pollution at the facility and recommends appropriate best management practices (BMPs) or pollution control measures to reduce the discharge of pollutants in storm water runoff from the facility. The RMP shall be reviewed annually by maintenance personnel to determine the effectiveness of the plan and if any changes are necessary. It is the Percy Warner Golf Course maintenance personnel's responsibility to follow the procedures outlined in the plan and maintain appropriate documentation. If situations develop that require the plan to be altered, please contact the Metro Water Services, Stormwater NPDES Section at 615-880-2420 to update the plan.

1.2 OBJECTIVES

The goal of the RMP is to prevent impacts to surface waters from the stormwater runoff or illicit discharges from the Percy Warner Golf Course and maintenance facility. The goal of only clean stormwater discharging from the facility will be accomplished by eliminating the exposure of pollutants during maintenance procedures and overall materials storage.

2.0 STORM WATER POLLUTION PREVENTION TEAM

The storm water pollution prevention team is responsible for developing, implementing, maintaining, and revising this RMP. Table 1 provides a list of team member(s) and their primary responsibilities of the SWPPP.

Table 1 – Storm Water Pollution Prevention Team

Name & Title	Phone	Responsibility
Mike Bays/Overall Metro Parks Maintenance Operations Supervisor	**615-862-8400**	**Making sure all Parks maintenance operations are compliant with RMPs**
Phil Luckett/Metro Golf Course Maintenance Supervisor	**615-862-8400**	**Making sure the site-specific RMP is followed and the appropriate documentation is in place at all Golf Courses**
Darryl Lewis/Percy Warner Golf Course Maintenance Supervisor	**615-352-3677**	**Making sure the site-specific RMP is followed and the appropriate documentation is in place at the Percy Warner**

3.0 POTENTIAL SOURCES OF POLLUTANTS

Pollutants from Metro operations and maintenance activities can include the following:

- Sand and/or soil flowing off-site from stockpile areas;
- Fertilizer, pesticides, fungicides, and herbicides;
- Detergents and other cleaning agents;
- Concentrated portions of grass clippings/leaves;
- Petroleum products from spills, leaking equipment, and/or washing equipment; and
- Other general maintenance products such as paint, solvents, etc.

3.1 GENERAL MAINTENANCE ACTIVITIES

Maintenance activities, if not performed properly, can lead to significant impacts to stormwater runoff. The following maintenance activities have been identified as having the potential for impacting stormwater runoff and Standard Operating Procedures (SOPs) have been developed for each. In general, maintenance activities at all Metro facilities shall follow the below-listed SOPs, which are located in Appendix A of this document.

- Pesticide, Herbicide, Fertilizer Application, Storage, and Disposal.
- Petroleum Product Storage & Spill Clean-up
- Grass Clipping Disposal
- Equipment Washing/General Maintenance Activities
- Bare Soil/Sand Management

3.2 SITE-SPECIFIC MANAGEMENT PRACTICES

Each Metro facility that houses operations and maintenance activities is different. Some Metro facilities have many sensitive areas such as streams, storm drains, or ditches, while others have very few. The Percy Warner Golf Course and maintenance shop is not directly near a water body; however, any pollutants that wash off of the site could be potentially harmful downstream or to the groundwater. Figure 1 depicts general stormwater drainage throughout the golf course. All stormwater drainage features, including inlets, ditches, and streams shall be protected from pollutant runoff that could result from maintenance activities such as chemical spraying and general material storage.

The area within the Percy Warner Golf Course that poses the most threat of pollutant runoff is the maintenance shop where materials and equipment are stored and maintained. The maintence shop and the critical sensitive areas are depicted within Figure 2. The following sensitive areas have been identified at the maintenance shop.

5. Soil/Sand Stockpiles - sand stockpiling on the paved surface in front of the maintenance shop can easily flow off-site into a storm ditch. .

6. Above-Ground Fuel Tank – located behind the maintenance shop. Any leaks/spills from the tank could lead to significant downstream pollution.

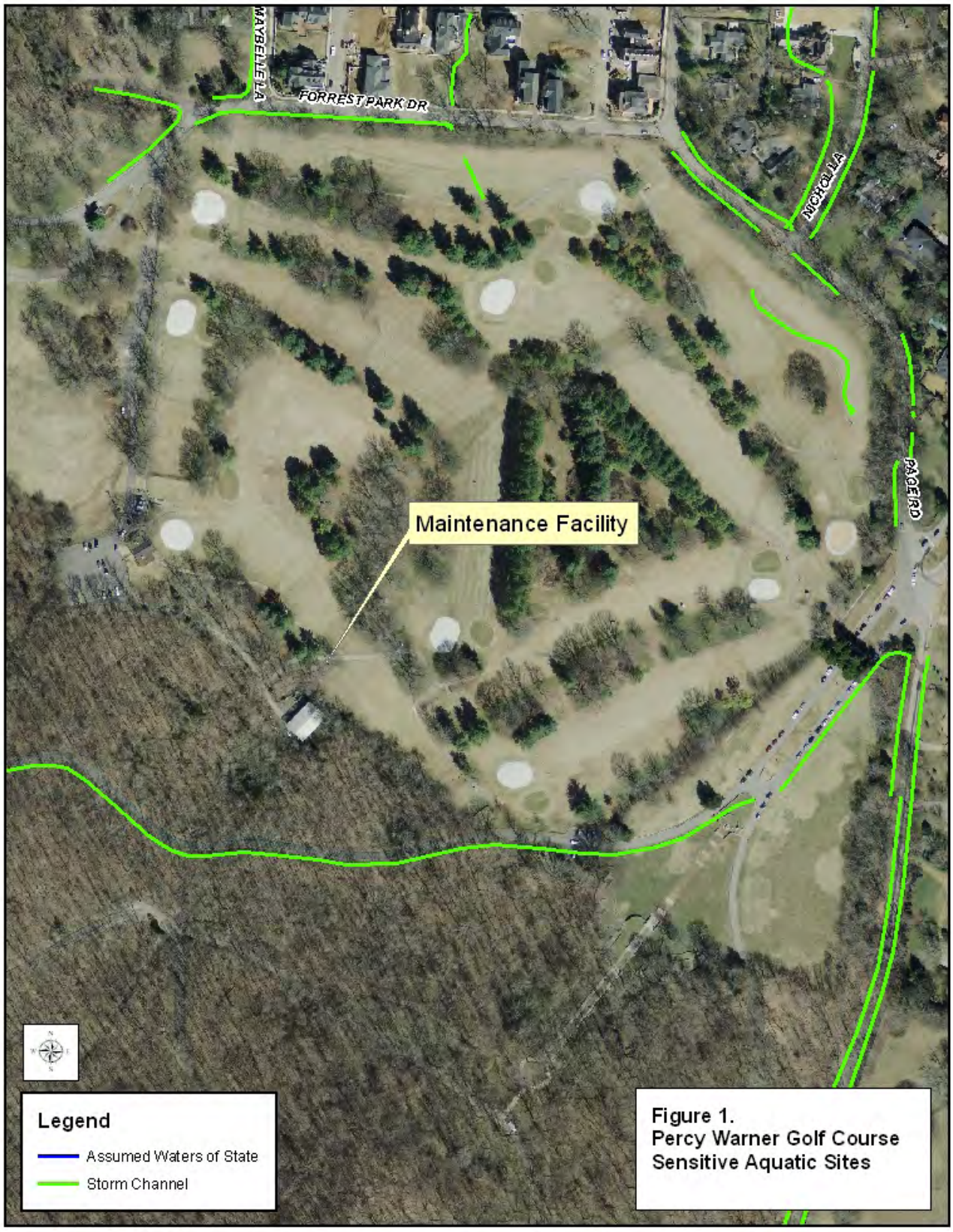

WAYBELL LA
FORREST PARK DR
NICHOLLA
PAGE RD
Maintenance Facility
Legend
Assumed Waters of State
Storm Channel
Figure 1.
Percy Warner Golf Course
Sensitive Aquatic Sites

Figure 2.
Percy Warner Golf

4.0 SITE SPECIFIC BMP PLAN

In general, following the SOPs outlined in Appendix A shall prevent pollutants from entering the storm drain. Specific BMPs, however, shall be deployed, at the sensitive areas identified within Figure 2.

4.1 Stockpiled Soil and Sand

Any area where sand or soil is stockpiled in a manner that can mix with stormwater and drain off-site into an inlet, storm ditch, or stream shall be protected with perimeter controls. Perimeter controls can be trenched in silt fence, staked down weighted sediment tubes, or other suitable materials that allow stormwater to drain away while filtering out the sand and soil. Perimeter controls are not needed if the materials are stored in areas surrounded by established, thick vegetation, as the vegetation such as thick tall grass can act as a filter from stormwater runoff. Stockpiled areas shall also be inspected once per week using the same inspection form located in Appendix B. Some of the weekly inspections should occur during rain events to determine if materials are draining off the site.

4.2 Above-Ground Fuel Tank/Other Outside Equipment/Tanks

The large above-ground fuel tank shall be inspected weekly to determine if there are any leaks or spills. The person performing the inspection shall look for wet oily substances on the ground or on the hose of the tank. Any discovered leaks or drips shall be repaired immediately. Any lost oil product shall be cleaned up promptly and properly with absorbent materials. A spill response kit shall be kept in close proximity to the tank area. In addition, the weekly inspection shall include looking at any equipment stored outside to determine if any oils are leaking.

4.3 Employee Training

It is imperative that all maintenance employees are properly trained on the SOPs located within Appendix A. Each year, management shall go over the SOPS with each employee and document the training with employee signatures on the form located within Appendix B.

Metro Maintenance Facility
Site Runoff Management Plan

McCabe Golf Course

4601 Murphy Rd
Nashville, TN 37209
615-383-8262

Prepared By:

Metro Water Services
Stormwater, NPDES Section
1607 County Hospital Road
Nashville, TN 37218

March, 2013

1.0 OVERVIEW

1.1 INTRODUCTION

This Runoff Management Plan (RMP) covers all maintenance operations at McCabe Golf Course. It has been developed as required under Metropolitan Nashville Davidson County's (Metro's) Municipal Separate Storm Sewer System (MS4) NPDES permit issued to Metro by the Tennessee Department of Environment and Conservation. This RMP identifies potential sources of storm water pollution at the facility and recommends appropriate best management practices (BMPs) or pollution control measures to reduce the discharge of pollutants in storm water runoff from the facility. The RMP shall be reviewed annually by maintenance personnel to determine the effectiveness of the plan and if any changes are necessary. It is the McCabe Golf Course maintenance personnel's responsibility to follow the procedures outlined in the plan and maintain appropriate documentation. If situations develop that require the plan to be altered, please contact the Metro Water Services, Stormwater NPDES Section at 615-880-2420 to update the plan.

1.2 OBJECTIVES

The goal of the RMP is to prevent impacts to surface waters from the stormwater runoff or illicit discharges from the McCabe Golf Course and maintenance facility. The goal of only clean stormwater discharging from the facility will be accomplished by eliminating the exposure of pollutants during maintenance procedures and overall materials storage.

2.0 STORM WATER POLLUTION PREVENTION TEAM

The storm water pollution prevention team is responsible for developing, implementing, maintaining, and revising this RMP. Table 1 provides a list of team member(s) and their primary responsibilities of the SWPPP.

Table 1 – Storm Water Pollution Prevention Team

Name & Title	Phone	Responsibility
Mike Bays/Overall Metro Parks Maintenance Operations Supervisor	**615-862-8400**	**Making sure all Parks maintenance operations are compliant with RMPs**
Phil Luckett/Metro Golf Course Maintenance Supervisor	**615-862-8400**	**Making sure the site-specific RMP is followed and the appropriate documentation is in place at all Golf Courses**
Bill Richardson/McCabe Golf Course Maintenance Supervisor	**615-383-8262**	**Making sure the site-specific RMP is followed and the appropriate documentation is in place at the McCabe**

		Golf Course

3.0 POTENTIAL SOURCES OF POLLUTANTS

Pollutants from Metro operations and maintenance activities can include the following:

- Sand and/or soil flowing off-site from stockpile areas;
- Fertilizer, pesticides, fungicides, and herbicides;
- Detergents and other cleaning agents;
- Concentrated portions of grass clippings/leaves;
- Petroleum products from spills, leaking equipment, and/or washing equipment; and
- Other general maintenance products such as paint, solvents, etc.

3.1 GENERAL MAINTENANCE ACTIVITIES

Maintenance activities, if not performed properly, can lead to significant impacts to stormwater runoff. The following maintenance activities have been identified as having the potential for impacting stormwater runoff and Standard Operating Procedures (SOPs) have been developed for each. In general, maintenance activities at all Metro facilities shall follow the below-listed SOPs, which are located in Appendix A of this document.

- Pesticide, Herbicide, Fertilizer Application, Storage, and Disposal.
- Petroleum Product Storage & Spill Clean-up
- Grass Clipping Disposal
- Equipment Washing/General Maintenance Activities
- Bare Soil/Sand Management

3.2 SITE-SPECIFIC MANAGEMENT PRACTICES

Each Metro facility that houses operations and maintenance activities is different. Some Metro facilities have many sensitive areas such as streams, storm drains, or ditches, while others have very few. The McCabe Golf Course and maintenance shop happens to be in close proximity to Murphy Branch. Any pollutants that leave the site will drain to this water body. Figure 1 depicts general stormwater drainage throughout the golf course. All stormwater drainage features, including inlets, ditches, and streams shall be protected from pollutant runoff that could result from maintenance activities such as chemical spraying and general material storage.

The area within the McCabe Golf Course that poses the most threat of pollutant runoff is the maintenance shop where materials and equipment are stored and maintained. The maintence shop and the critical sensitive areas are depicted within Figure 2. The following sensitive areas have been identified at the maintenance shop.

1. Soil/Sand Stockpiles - sand stockpiling on the paved surface in front of the maintenance shop can easily flow off-site into a storm ditch.

2. Above-Ground Fuel Tank – located behind the maintenance shop. Any leaks/spills from the tank could run off-site and end up in a Murphy Branch or Richland Creek.
3. Stormwater Conduit - located next to maintenance parking lot and drive. Materials leaving parking lot enter this drainage and will impact creek.

4.

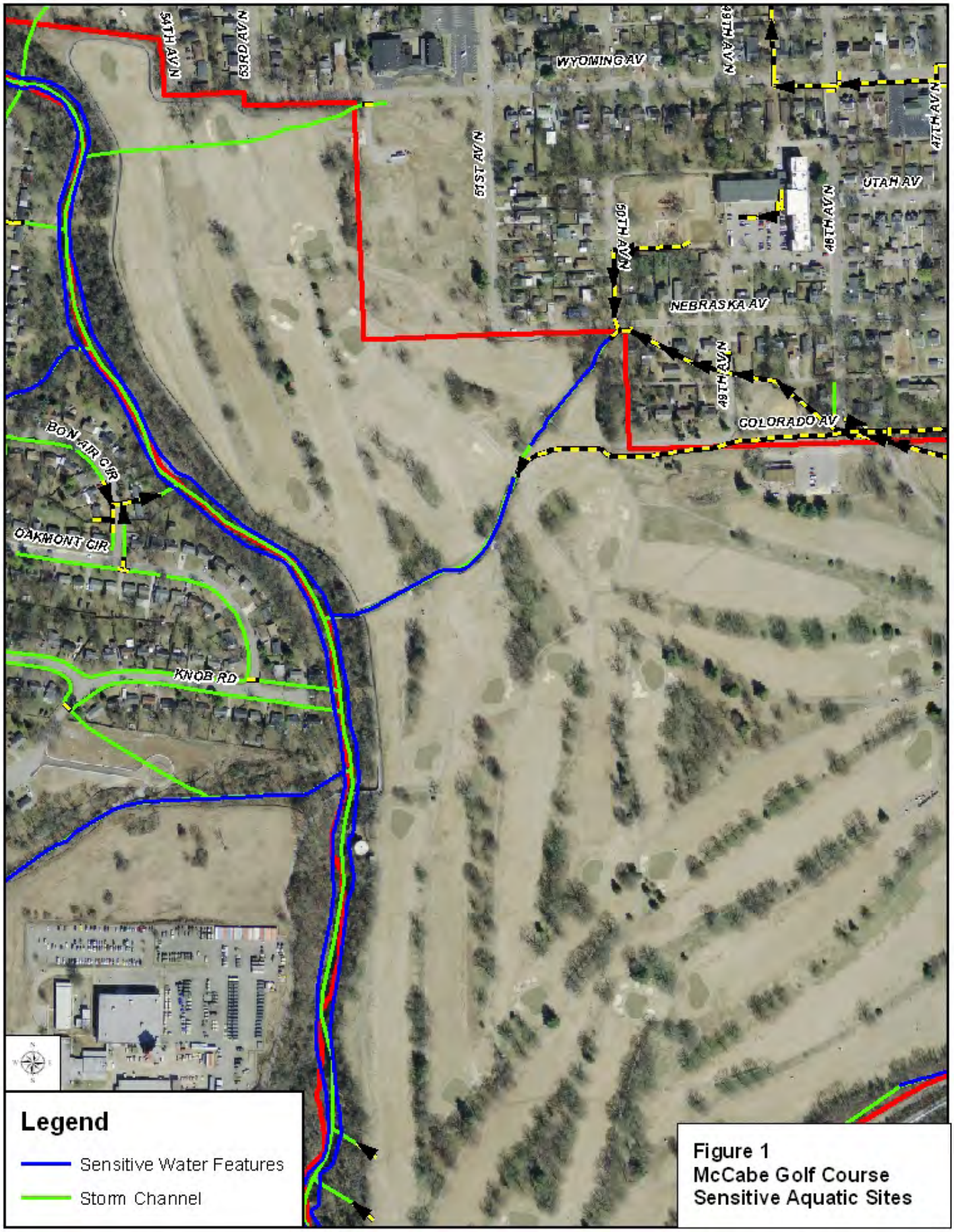


Figure 1
McCabe Golf Course
Sensitive Aquatic Sites

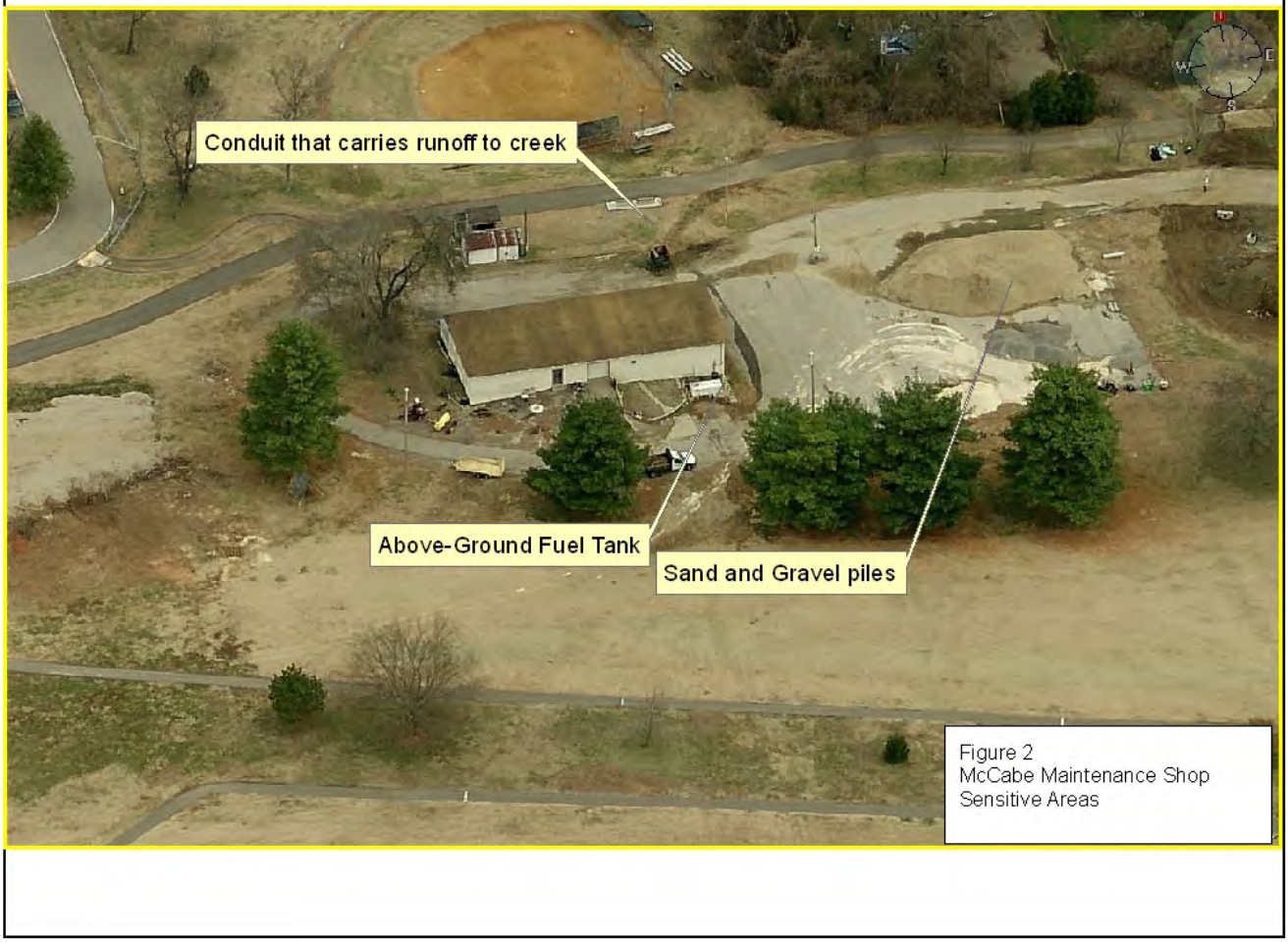


Figure 2
McCabe Maintenance Shop
Sensitive Areas

4.0 SITE SPECIFIC BMP PLAN

In general, following the SOPs outlined in Appendix A shall prevent pollutants from entering the storm drain. Specific BMPs, however, shall be deployed, at the sensitive areas identified within Figure 2.

4.1 Stockpiled Soil and Sand

Any area where sand or soil is stockpiled in a manner that can mix with stormwater and drain off-site into an inlet, storm ditch, or stream shall be protected with perimeter controls. Perimeter controls can be trenched in silt fence, staked down weighted sediment tubes, or other suitable materials that allow stormwater to drain away while filtering out the sand and soil. Perimeter controls are not needed if the materials are stored in areas surrounded by established, thick vegetation, as the vegetation such as thick tall grass can act as a filter from stormwater runoff. Stockpiled areas shall also be inspected once per week using the same inspection form located in Appendix B. Some of the weekly inspections should occur during rain events to determine if materials are draining off the site.

4.2 Above-Ground Fuel Tank/Other Outside Equipment/Tanks

The large above-ground fuel tank shall be inspected weekly to determine if there are any leaks or spills. The person performing the inspection shall look for wet oily substances on the ground or on the hose of the tank. Any discovered leaks or drips shall be repaired immediately. Any lost oil product shall be cleaned up promptly and properly with absorbent materials. A spill response kit shall be kept in close proximity to the tank area. In addition, the weekly inspection shall include looking at any equipment stored outside to determine if any oils are leaking.

4.3 Employee Training

It is imperative that all maintenance employees are properly trained on the SOPs located within Appendix A. Each year, management shall go over the SOPS with each employee and document the training with employee signatures on the form located within Appendix B.

Metro Maintenance Facility
Site Runoff Management Plan

Harpeth Hills Golf Course

2424 Old Hickory Blvd
Nashville, TN 37221
615-373-8855

Prepared By:

Metro Water Services
Stormwater, NPDES Section
1607 County Hospital Road
Nashville, TN 37218

March, 2013

1.0 OVERVIEW

1.1 INTRODUCTION

This Runoff Management Plan (RMP) covers all maintenance operations at Harpeth Hills Golf Course. It has been developed as required under Metropolitan Nashville Davidson County's (Metro's) Municipal Separate Storm Sewer System (MS4) NPDES permit issued to Metro by the Tennessee Department of Environment and Conservation. This RMP identifies potential sources of storm water pollution at the facility and recommends appropriate best management practices (BMPs) or pollution control measures to reduce the discharge of pollutants in storm water runoff from the facility. The RMP shall be reviewed annually by maintenance personnel to determine the effectiveness of the plan and if any changes are necessary. It is the Harpeth Hills Golf Course maintenance personnel's responsibility to follow the procedures outlined in the plan and maintain appropriate documentation. If situations develop that require the plan to be altered, please contact the Metro Water Services, Stormwater NPDES Section at 615-880-2420 to update the plan.

1.2 OBJECTIVES

The goal of the RMP is to prevent impacts to surface waters from the stormwater runoff or illicit discharges from the Harpeth Hills Golf Course and maintenance facility. The goal of only clean stormwater discharging from the facility will be accomplished by eliminating the exposure of pollutants during maintenance procedures and overall materials storage.

2.0 STORM WATER POLLUTION PREVENTION TEAM

The storm water pollution prevention team is responsible for developing, implementing, maintaining, and revising this RMP. Table 1 provides a list of team member(s) and their primary responsibilities of the SWPPP.

Table 1 – Storm Water Pollution Prevention Team

Name & Title	Phone	Responsibility
Mike Bays/Overall Metro Parks Maintenance Operations Supervisor	**615-862-8400**	**Making sure all Parks maintenance operations are compliant with RMPs**
Phil Luckett/Metro Golf Course Maintenance Supervisor	**615-862-8400**	**Making sure the site-specific RMP is followed and the appropriate documentation is in place at all Golf Courses**
Mark Littlejohn/Harpeth Hills Golf Course Maintenance Supervisor	**615-373-8855**	**Making sure the site-specific RMP is followed and the appropriate documentation is in place at the Harpeth Hills**

3.0 POTENTIAL SOURCES OF POLLUTANTS

Pollutants from Metro operations and maintenance activities can include the following:

- Sand and/or soil flowing off-site from stockpile areas;
- Fertilizer, pesticides, fungicides, and herbicides;
- Detergents and other cleaning agents;
- Concentrated portions of grass clippings/leaves;
- Petroleum products from spills, leaking equipment, and/or washing equipment; and
- Other general maintenance products such as paint, solvents, etc.

3.1 GENERAL MAINTENANCE ACTIVITIES

Maintenance activities, if not performed properly, can lead to significant impacts to stormwater runoff. The following maintenance activities have been identified as having the potential for impacting stormwater runoff and Standard Operating Procedures (SOPs) have been developed for each. In general, maintenance activities at all Metro facilities shall follow the below-listed SOPs, which are located in Appendix A of this document.

- Pesticide, Herbicide, Fertilizer Application, Storage, and Disposal.
- Petroleum Product Storage & Spill Clean-up
- Grass Clipping Disposal
- Equipment Washing/General Maintenance Activities
- Bare Soil/Sand Management

3.2 SITE-SPECIFIC MANAGEMENT PRACTICES

Each Metro facility that houses operations and maintenance activities is different. Some Metro facilities have many sensitive areas such as streams, storm drains, or ditches, while others have very few. The Harpeth Hills Golf Course and maintenance shop is not directly near a water body, however any pollutants that wash off of the site could be potentially harmful downstream or to the groundwater. Figure 1 depicts general stormwater drainage throughout the golf course. All stormwater drainage features, including inlets, ditches, and streams shall be protected from pollutant runoff that could result from maintenance activities such as chemical spraying and general material storage.

The area within the Harpeth Hills Golf Course that poses the most threat of pollutant runoff is the maintenance shop where materials and equipment are stored and maintained. The maintence shop and the critical sensitive areas are depicted within Figure 2. The following sensitive areas have been identified at the maintenance shop.

1. Soil/Sand Stockpiles - sand stockpiling on the paved surface in front of the maintenance shop can easily flow off-site into a storm ditch.

Figure 1.
Harpeth Hills Golf Course
Sensitive Aquatic Sites

Figure 2.
Harpeth Hills Golf Course
Maintenance Shop
Sensitive Areas

4.0 SITE SPECIFIC BMP PLAN

In general, following the SOPs outlined in Appendix A shall prevent pollutants from entering the storm drain. Specific BMPs, however, shall be deployed, at the sensitive areas identified within Figure 2.

4.1 Stockpiled Soil and Sand

Any area where sand or soil is stockpiled in a manner that can mix with stormwater and drain off-site into an inlet, storm ditch, or stream shall be protected with perimeter controls. Perimeter controls can be trenched in silt fence, staked down weighted sediment tubes, or other suitable materials that allow stormwater to drain away while filtering out the sand and soil. Perimeter controls are not needed if the materials are stored in areas surrounded by established, thick vegetation, as the vegetation such as thick tall grass can act as a filter from stormwater runoff. Stockpiled areas shall also be inspected once per week using the same inspection form located in Appendix B. Some of the weekly inspections should occur during rain events to determine if materials are draining off the site.

4.2 Employee Training

It is imperative that all maintenance employees are properly trained on the SOPs located within Appendix A. Each year, management shall go over the SOPS with each employee and document the training with employee signatures on the form located within Appendix B.

Metro Maintenance Facility
Site Runoff Management Plan

Cedar Hill Park

860 West Old Hickory Blvd
Madison, TN 37115
615-865-1853

Prepared By:

Metro Water Services
Stormwater, NPDES Section
1607 County Hospital Road
Nashville, TN 37218

May, 2013

1.0 OVERVIEW

1.1 INTRODUCTION

This Runoff Management Plan (RMP) covers all maintenance operations at Cedar Hill Park. It has been developed as required under Metropolitan Nashville Davidson County's (Metro's) Municipal Separate Storm Sewer System (MS4) NPDES permit issued to Metro by the Tennessee Department of Environment and Conservation. This RMP identifies potential sources of storm water pollution at the facility and recommends appropriate best management practices (BMPs) or pollution control measures to reduce the discharge of pollutants in storm water runoff from the facility. The RMP shall be reviewed annually by maintenance personnel to determine the effectiveness of the plan and if any changes are necessary. It is the Cedar Hill Park's maintenance personnel's responsibility to follow the procedures outlined in the plan and maintain appropriate documentation. If situations develop that require the plan to be altered, please contact the Metro Water Services, Stormwater NPDES Section at 615-880-2420 to update the plan.

1.2 OBJECTIVES

The goal of the RMP is to prevent impacts to surface waters from the stormwater runoff or illicit discharges from the Cedar Hill Park and maintenance facility. The goal of only clean stormwater discharging from the facility will be accomplished by eliminating the exposure of pollutants during maintenance procedures and overall materials storage.

2.0 STORM WATER POLLUTION PREVENTION TEAM

The storm water pollution prevention team is responsible for developing, implementing, maintaining, and revising this RMP. Table 1 provides a list of team member(s) and their primary responsibilities of the SWPPP.

Table 1 – Storm Water Pollution Prevention Team

Name & Title	Phone	Responsibility
Mike Bays/Overall Metro Parks Maintenance Operations Supervisor	**615-862-8400**	**Making sure all Parks maintenance operations are compliant with RMPs**
Tommy Boner/Cedar Hill Park Maintenance Supervisor	**615-865-1853**	**Making sure the site-specific RMP is followed and the appropriate documentation is in place at the Two Rivers Golf Course**

3.0 POTENTIAL SOURCES OF POLLUTANTS

Pollutants from Metro operations and maintenance activities can include the following:

- Sand and/or soil flowing off-site from stockpile areas;
- Fertilizer, pesticides, fungicides, and herbicides;
- Detergents and other cleaning agents;
- Concentrated portions of grass clippings/leaves;
- Petroleum products from spills, leaking equipment, and/or washing equipment; and
- Other general maintenance products such as paint, solvents, etc.

3.1 GENERAL MAINTENANCE ACTIVITIES

Maintenance activities, if not performed properly, can lead to significant impacts to stormwater runoff. The following maintenance activities have been identified as having the potential for impacting stormwater runoff and Standard Operating Procedures (SOPs) have been developed for each. In general, maintenance activities at all Metro facilities shall follow the below-listed SOPs, which are located in Appendix A of this document.

- Pesticide, Herbicide, Fertilizer Application, Storage, and Disposal.
- Petroleum Product Storage & Spill Clean-up
- Grass Clipping Disposal
- Equipment Washing/General Maintenance Activities
- Bare Soil/Sand Management

3.2 SITE-SPECIFIC MANAGEMENT PRACTICES

Each Metro facility that houses operations and maintenance activities is different. Some Metro facilities have many sensitive areas such as streams, storm drains, or ditches, while others have very few. Cedar Hill Park happens to have one major drainage feature which could be impacted by runoff of pollutants from the maintenance shop due to the nature of the materials stored at the facility. Figure 1 depicts general stormwater drainage throughout the park. All stormwater drainage features, including inlets, ditches, and streams shall be protected from pollutant runoff that could result from maintenance activities such as chemical spraying and general material storage.

The area within the Cedar Hill Park that poses the most threat of pollutant runoff is the maintenance shop where materials and equipment are stored and maintained. The maintence shop and the critical sensitive areas are depicted within Figure 2. The following sensitive areas have been identified at the maintenance shop.

1. Soil/Sand Stockpiles - sand stockpiling on the paved surface in front of the maintenance shop can easily flow off-site into a storm ditch.

2. Oil Drums/containers – located in front of the maintenance shop. Lids were either not present or not secured properly. It is advisable that the oil drums are moved under shelter and oil absorbent kits are on-site for any accidental spills.


HUNTERS LA
HUNTERS LN
NESBITT DR
CURTIS DR
FONNIC DR
YOEST DR
DICKERSON PK
NESBITT CT
SYLVANIA DR
DICKERSON PIKE
OLD HICKORY BLVD
OLD HICKORY BY
NESBITT LN
KEMPER DR N
ARTA DR
WESTCHESTER
TUCKAHOE DR
Legend
Sensitive Water Features
Storm Channel
Figure 1
Cedar Hill Park
Sensitive Aquatic Sites

Figure 2. Cedar Hill Park Maintenance Shop
Sensitive Areas

4.0 SITE SPECIFIC BMP PLAN

In general, following the SOPs outlined in Appendix A shall prevent pollutants from entering the storm drain. Specific BMPs, however, shall be deployed, at the sensitive areas identified within Figure 2.

4.1 Stockpiled Soil and Sand

Any area where sand or soil is stockpiled in a manner that can mix with stormwater and drain off-site into an inlet, storm ditch, or stream shall be protected with perimeter controls. Perimeter controls can be trenched in silt fence, staked down weighted sediment tubes, or other suitable materials that allow stormwater to drain away while filtering out the sand and soil. Perimeter controls are not needed if the materials are stored in areas surrounded by established, thick vegetation, as the vegetation such as thick tall grass can act as a filter from stormwater runoff. Stockpiled areas shall also be inspected once per week using the same inspection form located in Appendix B. Some of the weekly inspections should occur during rain events to determine if materials are draining off the site.

4.2 Oil Drums and Containers

The oil drums and containers should be moved to an area with a roof. They should have secured lids that are in place when the drum is not being used. Weekly inspections should be done to ensure that there are no leaks or spills. The person performing the inspection shall look for wet oily substances on the ground. Any discovered leaks or drips shall be repaired immediately. Any lost oil product shall be cleaned up promptly and properly with absorbent materials. A spill response kit shall be kept in close proximity to the storage area. In addition, the weekly inspection shall include looking at any equipment stored outside to determine if any oils are leaking.

4.3 Employee Training

It is imperative that all maintenance employees are properly trained on the SOPs located within Appendix A. Each year, management shall go over the SOPs with each employee and document the training with employee signatures on the form located within Appendix B.

Metro Maintenance Facility
Site Runoff Management Plan

Metro Transit Authority – Bus Maintenance Shop

Nashville, TN 37209
615-862-6126

Prepared By:

Metro Water Services
Stormwater, NPDES Section
1607 County Hospital Road
Nashville, TN 37218

May, 2013

1.0 OVERVIEW

1.1 INTRODUCTION

This Runoff Management Plan (RMP) covers all maintenance operations at the Metro Transit Authority (MTA) Bus Maintenance Facility located at 130 Nestor Street. It has been developed as required under Metropolitan Nashville Davidson County's (Metro's) Municipal Separate Storm Sewer System (MS4) NPDES permit issued to Metro by the Tennessee Department of Environment and Conservation. This RMP identifies potential sources of storm water pollution at the facility and recommends appropriate best management practices (BMPs) or pollution control measures to reduce the discharge of pollutants in storm water runoff from the facility. The RMP shall be reviewed annually by maintenance personnel to determine the effectiveness of the plan and if any changes are necessary. It is the MTA maintenance personnel's responsibility to follow the procedures outlined in the plan and maintain appropriate documentation. If situations develop that require the plan to be altered, please contact the Metro Water Services, Stormwater NPDES Section at 615-880-2420 to update the plan.

1.2 OBJECTIVES

The goal of the RMP is to prevent impacts to surface waters from the stormwater runoff or illicit discharges from the MTA Bus Maintenance Facility. The goal of only clean stormwater discharging from the facility will be accomplished by eliminating the exposure of pollutants during maintenance procedures and overall materials storage.

2.0 STORM WATER POLLUTION PREVENTION TEAM

The storm water pollution prevention team is responsible for developing, implementing, maintaining, and revising this RMP. Table 1 provides a list of team member(s) and their primary responsibilities of the SWPPP.

Table 1 – Storm Water Pollution Prevention Team

Name & Title	Phone	Responsibility
Bruce Buck MTA Maintenance Manager	**615-862-6126**	**Making sure the site-specific RMP is followed and the appropriate documentation is in place at the MTA Bus Terminal**

3.0 POTENTIAL SOURCES OF POLLUTANTS

Pollutants from Metro maintenance activities/facilities can include the following:

- Detergents and other cleaning agents;
- Petroleum products or asphalt products from spills, leaking equipment, and/or washing equipment;
- Other general maintenance products such as paint, solvents, etc.
-

3.1 GENERAL MAINTENANCE ACTIVITIES

Maintenance activities, if not performed properly, can lead to significant impacts to stormwater runoff. The following maintenance activities have been identified as having the potential for impacting stormwater runoff and Standard Operating Procedures (SOPs) have been developed for each. In general, maintenance activities at all Metro facilities shall follow the below-listed SOPs, which are located in Appendix A of this document.

- Petroleum Product Storage & Spill Clean-up
- Equipment Washing/General Maintenance Activities;

3.2 SITE-SPECIFIC MANAGEMENT PRACTICES

Each Metro facility that houses operations and maintenance activities is different. Some Metro facilities have many sensitive areas such as streams, storm drains, or ditches, while others have very few. The MTA Bus Maintenance Facility has drainage features which are in close proximity to key maintenance operations. Figure 1 depicts general stormwater drainage throughout the facility. All stormwater drainage features, including inlets, ditches, and streams shall be protected from pollutant runoff that could result from maintenance activities such as chemical spraying and general material storage.

The area within the MTA Bus Maintenance Facility that poses the most threat of pollutant runoff is the area located near the bus wash bay. There exists the potential fro tracking out or leaking of cleaning agents as well as petroleum product. This area should be inspected all around the structure and any such product noted on the ground outside (exposed to stormwater) should be cleaned up properly. Simply washing down product on the parking lot is not an approved method of clean-up. Any lost product should be collected and properly disposed of. In addition to the wash bays, there is the potential for automotive fluids being tracked outside or leaks from buses parked in the parking lot. These areas should also be inspected routinely so any product on the ground, exposed to stormwater runoff could be properly cleaned. For any major spills, the Stormwater NPDES
Section should be contacted at 615-880-2420.

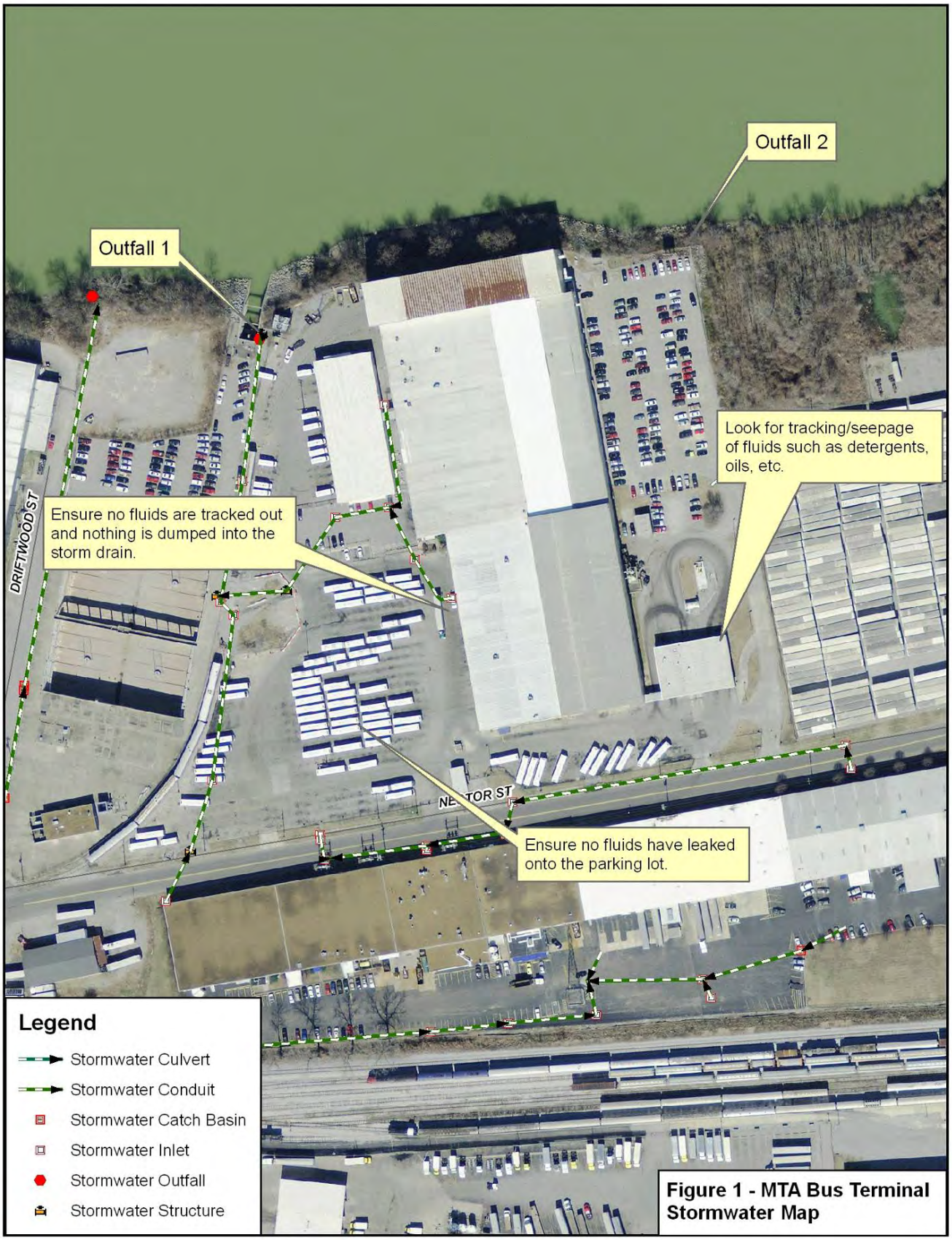


Figure 1 - MTA Bus Terminal Stormwater Map

4.0 SITE SPECIFIC BMP PLAN

In general, following the SOPs outlined in Appendix A shall prevent pollutants from entering the storm drain. Specific BMPs, however, shall be deployed, if persistent pollution problems are noted at any of the sensitive area inspections.

4.1 Weekly Inspections

The stormwater outfall points and sensitive areas identified on Figure 1 above should be inspected at least once per week (preferably prior to any large rain events). The inspections shall be documented on the template inspection forms within Appendix B and completed inspection forms shall be stored within Appendix C of this document for a period of at least 3 years. The weekly inspections shall pay specific attention to the following areas:

- Equipment Storage/Maintenance: Any place in which equipment is stored and/or maintained shall be inspected for oily residue on the ground or dripping fluids. Any observed product on the ground shall be cleaned up appropriately. Any active leaks in any equipment stored outside need to be immediately contained with catchment pans until the leak can be repaired.
- Fueling/Oil Storage Areas: Any fleet fueling areas or oil storage tanks/containers should be inspected for leaks or drips. Any oil product found exposed to stormwater contact shall be cleaned up immediately with proper absorbent materials. (Note: Sand is not an effective absorbent product). Absorbent material shall be swept up and properly disposed of.
- Chemical Storage (i.e..): Any maintenance chemicals such as fertilizers, paints, pesticides, cleaners, etc shall be stored indoors or under cover in a contained area. These areas should be inspected to ensure no materials are leaking out. Any leaks/spills shall be cleaned-up immediately.
- Dumpster/Disposal Areas: Any dumpsters shall be inspected to ensure no contents are leaking out onto the ground that can contact stormwater. Most dumpsters have plugs and lids. The lids should stay closed and the plugs should remain in.

4.2 Employee Training

It is imperative that all maintenance employees are properly trained on the SOPs located within Appendix A. Each year, management shall go over the SOPS with each employee and document the training with employee signatures on the form located within Appendix B.

Metro Maintenance Facility
Site Runoff Management Plan

Tennessee State Fairgrounds
625 Smith Ave.
Nashville, Tennessee

Prepared By:

Metro Water Services
Stormwater, NPDES Section
1607 County Hospital Road
Nashville, TN 37218

2013

1.0 OVERVIEW

1.1 INTRODUCTION

This Runoff Management Plan (RMP) covers all maintenance operations at the Tennessee State Fairgrounds and was developed as required under Metropolitan Nashville Davidson County's (Metro's) Municipal Separate Storm Sewer System (MS4) NPDES permit issued to Metro by the Tennessee Department of Environment and Conservation. This RMP identifies potential sources of storm water pollution at the facility and recommends appropriate best management practices (BMPs) or pollution control measures to reduce the discharge of pollutants in storm water runoff from the facility. The RMP shall be reviewed annually by maintenance personnel to determine the effectiveness of the plan and if any changes are necessary. It is the Tennessee State Fairgrounds maintenance personnel's responsibility to follow the procedures outlined in the plan and maintain appropriate documentation. If situations develop that require the plan to be altered, please contact the Metro Water Services, Stormwater NPDES Section at 615-880-2420 to update the plan.

1.2 OBJECTIVES

The goal of the RMP is to prevent impacts to surface waters from the stormwater runoff or illicit discharges from the Tennessee State Fairgrounds from. The goal of only clean stormwater discharging from the facility will be accomplished by eliminating the exposure of pollutants during maintenance procedures, special events, and overall materials storage.

2.0 STORM WATER POLLUTION PREVENTION TEAM

The storm water pollution prevention team is responsible for developing, implementing, maintaining, and revising this RMP. Table 1 provides a list of team member(s) and their primary responsibilities of the SWPPP.

Table 1 – Storm Water Pollution Prevention Team

Name & Title	Phone	Responsibility
David Lewis Maintenance Manager	**615.880.3715**	**Making sure all Fairgrounds maintenance operations are compliant with RMPs**

3.0 POTENTIAL SOURCES OF POLLUTANTS

Pollutants from Metro operations and maintenance activities can include the following:

- Sand and/or soil flowing off-site from stockpile areas;
- Fertilizer, pesticides, fungicides, and herbicides;
- Detergents and other cleaning agents;
- Animal wastes during the State Fair;
- Petroleum products from spills, leaking equipment, and/or washing equipment; and

- Other general areas such as dumpsters, special events, etc. .

3.1 GENERAL MAINTENANCE ACTIVITIES

Maintenance activities, if not performed properly, can lead to significant impacts to stormwater runoff. The following maintenance activities have been identified as having the potential for impacting stormwater runoff and Standard Operating Procedures (SOPs) have been developed for each. In general, maintenance activities at all Metro facilities shall follow the below-listed SOPs, which are located in Appendix A of this document.

- Pesticide, Herbicide, Fertilizer Application, Storage, and Disposal.
- Petroleum Product Storage & Spill Clean-up
- Equipment Washing/General Maintenance Activities
- Bare Soil/Sand Management

3.2 SITE-SPECIFIC MANAGEMENT PRACTICES

Each Metro facility that houses operations and maintenance activities is different. Some Metro facilities have many sensitive areas such as streams, storm drains, or ditches, while others have very few. The Tennessee State Fairgrounds has one major drainage feature (Browns Creek), which flows through the middle of the property and receives all of the facility's stormwater runoff. Figure 1 depicts general stormwater drainage throughout the park. All stormwater drainage features, including inlets, ditches, and streams shall be protected from pollutant runoff that could result from maintenance activities such as chemical spraying and general material storage.

The area within the Tennessee State Fairgrounds that poses the most threat of pollutant runoff is the livestock washing bays. In previous years, the drains within the indoor livestock washing bays were found to route to the outside stormwater drains. These drains are now temporarily plugged during events, so that the wash water can be pumped back to the sanitary sewer. Some of the other areas of potential concern for stormwater runoff are listed below and are depicted on the Figure 1.

1. Dumpster Areas located in front of the maintenance shop. Lids were either not present or not secured properly. It is advisable that the oil drums are moved under shelter and oil absorbent kits are on-site for any accidental spills.

2. Animal Staging Area: Animal staging areas should be cleaned regularly and inspected to ensure no waste product is draining to outside storm drains. If an outside storm drain is located directly near an animal staging area, then a temporary cover should be placed over the drain until the event is done and all adjacent animal waste is cleaned up.

3. Animal Waste Dumpsters: During livestock events, animal waste dumpsters are temporarily staged on-site. These dumpsters should be placed so that stormwater does not cause any of the waste within the dumpster to leach out onto the ground.

4. Impervious Parking Lots: Parking lots should be routinely inspected to ensure no automotive fluids have dripped onto the parking areas that could wash off into storm drains.

5. Race Track: All drains within the race track shall be inspected to ensure that no automotive fluids, grit, or debris reaches the drains. Oil absorbent material shall be kept on-hand.

6. Soil/Sand Stockpiles: Any areas where soil or sand stockpiling occurs should be protected from discharging to a creek;.

7. Vendor Area: All vendor areas should be inspected during and immediately after events. Inspections shall focus on proper waste disposal and general area upkeep.

8. Animal Washing Bay: The interior animal washing bays shall be inspected prior to any events that involve washing in the bays. The inspections shall include determining if the temporary plug is in the pipe and the pump is in place to pump wash water back to the sanitary sewer.


Legend
Inlet
Outfall
Conduit
Channel
Figure 1 - Tennessee State Fairgrounds
Areas Of Concern
1 Main Dumpster Aea
2 Animal Staging Area
3 Animal Waste Dumpsters
4 Impervious Parking Lots
5 Race Track
6 Soil Stockpile Area
7 Vendor Area
8 Animal Washing Bay
Fairgrounds Property
N
W
E
S
Feet
0 250 500 1,000

4.0 SITE SPECIFIC BMP PLAN

In general, following the SOPs outlined in Appendix A shall prevent pollutants from entering the storm drain. Specific BMPs, however, shall be deployed, at the sensitive areas identified within Figure 1. The fairgrounds staff shall institute a weekly inspection routine in which the critical areas listed below and on Figure 1 are inspected and maintained, if necessary. All weekly inspections shall be documented on the form in

4.1 Livestock Waste and Wash Water Areas

As mentioned in Section 3, any livestock staging area, waste disposal area, and washing areas should not route contaminated discharges to the storm sewer. BMPs in the form of continual cleaning of livestock areas or covering drains located directly near livestock staging areas should be deployed. In addition, the drains within the internal wash bay, should be blocked and re-routed to a sanitary sewer drain during any event that involves washing activities.

4.2 Dumpsters, Grease Recycle Bins, etc…

During some of the large events at the fairgrounds, many vendors are on-site at any given time. Vendor areas should be routinely inspected to ensure all proper disposal methods are being followed. In addition, the dumpster storage areas, as depicted on Figure 1, should be inspected frequently, preferably before rain events to ensure that no spilled materials or leaking dumpsters have resulted in contaminants being left exposed to stormwater runoff on the pavement.

4.3 Parking areas/Race track

These areas shall be inspected frequently and automotive fluids exposed on impervious areas can wash off quickly into Browns Creek. Maintenance personnel shall have access to oil absorbent material in the event of a spill or leak anywhere on the fairgrounds property. Proper clean-up of automotive fluids involves placing absorbent on the spilled fluids and collecting the absorbent material for proper disposal. Simply placing down absorbent material and leaving it is not an acceptable clean-up option.

4.4 Employee Training

It is imperative that all maintenance employees are properly trained on the SOPs located within Appendix A and the required weekly inspections. Each year, management shall go over the SOPs with each employee and document the training with employee signatures on the form located within Appendix B.

Central Wastewater Treatment Plant
Storm Water Pollution Prevention Plan

Updated
2013

TABLE OF CONTENTS

GENERAL FACILITY INFORMATION

Name of Facility: Central Waste Water Treatment Plant

Facility Address: 1600 Second Ave North

Nashville, TN 37208

Facility Contact:

Name: Darryl Schutt

Title: Treatment Plant Manager

Telephone: 862-4900

Mailing Address: 1600 Second Ave North

Nashville, TN 37208

Owner: Metropolitan Government, Metro Water Services

Operator: Darryl Schutt

Standard Industrial classification (SIC) Code: 4952

Permit Information:

Type: (X) General ( ) Individual

Designated Name: David Tucker

Permit Number: TNR053258

Effective Date of Coverage: 03/1/02

Number of Storm Water Outfalls: 3

Receiving Waters: Cumberland River

Emergency Contact:

Name: Darryl Schutt, Claude Grant Jr., Carl Marsh

Telephone: 862-4900

1.0 OVERVIEW

1.1 INTRODUCTION

This storm water pollution prevention plan (SWPPP) covers the operations at Central Wastewater Treatment Plant. It has been developed as required under Tennessee's National Pollutant Discharge Elimination System (NPDES) general permit for storm water discharges. This SWPPP identifies potential sources of storm water pollution at the facility, recommends appropriate best management practices (BMPs) or pollution control measures to reduce the discharge of pollutants in storm water runoff, and provides for periodic review of this SWPPP. The SWPPP will be reviewed annually by plant personnel to determine the effectiveness and to determine if any changes are warranted.

1.2 OBJECTIVES

The goal of the SWPPP is to improve the quality of surface waters by reducing the amount of pollutants potentially contained in the storm water runoff being discharged from the Central Wastewater facility. The SWPPP will be a written document that will be followed by plant personnel to prevent stormwater contamination.

2.0 STORM WATER POLLUTION PREVENTION TEAM

The storm water pollution prevention team is responsible for developing, implementing, maintaining, and revising this SWPPP. The members of the team are familiar with the management and operations of the Central Wastewater Treatment Plant.

Table 1 provides a list of team member(s) of and their primary responsibilities of the SWPPP.

Table 1 – Storm Water Pollution Prevention Team

Name & Title	Responsibility
David Tucker, Assistant Director Darryl W. Schutt, Treatment Plant Manager	Implementation and execution
Claude Grant Jr.- Assistant Plant Manager Carl Marsh – Assistant Plant Manger	• Plan Implementation, • SWPPP training for other employees. • Quarterly inspections of outfalls during rain events, • Semi-Annual Comprehensive Site Evaluation, Annual Report
Josh Hayes - Metro Stormwater Division –NPDES Office rep	Plan Updates, resource assistance

3.0 OVERALL SITE DRAINAGE

3.1 SITE MAP

Figure 1 presents an aerial-based site map of the existing conditions, which includes storm drains and areas of potential pollutants to stormwater. Figure 2 depicts the drainage area of the plant differentiating the areas that drain to the sewer treatment plant verses the areas that drain to the river.

As depicted in the site maps, stormwater drainage, that eventually routes to the river, is discharged from for the Central Wastewater Treatment Plant property at five separate points. MWS will perform the required quarterly sampling/monitoring from these five points. Please note, that Outfall #3 receives very little runoff from the Central WWTP property and actually receives more roadway runoff than plant runoff. Also please note that Outfall #2 receives runoff from a neighboring industry. MWS will monitor the stormwater discharge from this industry during various rain events.


Outfall 1
Material Stockpile
Equipment Storage Area
Rubble Stockpile
Commercial Wash-out Pits
Vac Truck De-watering
Sludge Drying Area
Outfall 2
Sludge Drying Area
Outfall 5
Original Plant Effluent Line
Outfall 3
Outfall 4
FIGURE 1
Drainage to the Plant
Conduits
Inlets
Drainage to the River
Culvert
Conduit
Channel
Manhole/BMP
Outfall
Inlet
0 100 200 400 600 800
Feet
N
W
E
S


FIGURE 2
Legend
Drainage Delineation
Both
Plant
River
0 100 200 400 600 800
Feet

3.2 INVENTORY OF EXPOSED MATERIALS

During the initial site review, the following areas have been identified as potential sources of pollutants to stormwater runoff and should be managed appropriately to prevent the potential for contaminated stormwater runoff:

Chemical Storage/Unloading: All chemicals used in the treatment process, except large chlorine rail cars are stored indoors or in areas that drain to the treatment plant. Polymer Sodium Hypochlorite, Sodium Hydroxide, Petroleum Products (lubricants, oils, greases, kerosene) are delivered to the site by truck. Chlorine and sulfur dioxide are delivered by rail.

Material Storage: The System Services Division uses and stockpiles various materials such as gravel, soil, and asphalt milling. The location of the material storage areas is depicted on Figure 1. Since the soil stockpiling area poses a potential runoff threat to water quality, it is covered with plastic during periods it is not in use. There is one area where sludge from vacuum trucks is composted outside, however, the drainage in that area routes to a pit which is pumped back into the treatment works.

Equipment Storage: There are two main areas where equipment is stored on the facility. System Services stores equipment, pumps, trucks, backhoes, parts, etc. in their upper parking lot. This area has been identified as draining to the treatment works. Only minor maintenance of equipment is performed on the facility. Maintenance for the vehicle fleet is performed in the main Metro maintenance garage.

Dumpsters: There is one large roll-off dumpster used to dispose of scrap metal, etc. The only other dumpsters on the property receive mostly general office waste.

Wash-out Bays: There are two washout pits into which commercial waste haulers empty their waste and wash off their trucks. The drains associated with this wash-out pit have been verified as routing to the treatment works. Due to the nature of the wash-out pits being located near stormwater inlets, a risk of pollutant runoff exists.

Vactor Truck De-Watering Area: Stormwater and System Services vactor truck operators de-water the trucks in the designated area on the northeast of the plant. The area is designated with signage and the drainage for this area routes to the sanitary sewer (See Figure 1).

Sludge Drying Area: Wet sludge gathered in cleaning out both sanitary and storm sewer lines is mixed with wood chips for drying before being hauled to the landfill. The designated sludge drying areas are marked with signage and are depicted on Figure 1.

3.3 LIST OF PAST SPILLS AND LEAKS

The permit requires a listing of oil and other polluting materials that have been spilled or leaked over the three years prior to the completion of the plan be included in the plan. Also include the date, volume of materials, the exact location of each release, and the actions taken to clean up the materials and/or prevent exposure of the materials to storm water runoff or contamination of surface waters of the state. (If there have been no spills of polluting materials, state that in this section). Table 2 gives a listing of any spills and leaks.

Table 2 – Listing of Spills and Leaks reported within the last three years

DATE	MATERIAL	VOLUME	LOCATION	ACTIONS TAKEN

3.4 SUMMARY OF SAMPLING DATA

The permit does not require analytical sampling of stormwater discharges. The permit does, however, required quarterly visual examination of stormwater discharge quality. Examinations shall be made from both outfalls during daylight hours within the first 30 minutes (or as soon thereafter as practical, but not to exceed 1 hour) of when the runoff begins to discharge. The observations shall document color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water pollution. All samples examined shall be taken for rain events of at least 72 hours from a previous rain event and that are greater than 0.1 inch of total rainfall. All visual examination forms are attached in Appendix A.

4.0 BEST MANAGEMENT PRACTICES

The permit requires the Central Wastewater Treatment Plant to manage the stormwater runoff through a combination of structural and non-structural BMPs.

4.1 Measures and Controls

- **Structural Controls**
  The new Biosolids Facility has an underground "post development" water quality vault through which stormwater routes before discharging from the site. Since the remainder of the plant was constructed prior to stormwater regulations being in place, there are no structural controls located on other areas of the plant. The potential retrofit of BMPs at the facility is considered as observed issues, site situations and circumstances warrant.

- **Non-structural Controls**
  The new Biosolids Facility has several stormwater runoff infiltration basins on that area of the property. No such non-structural controls exist on the older portions of the facility.

- **Good Housekeeping Practices**
  Good housekeeping practices are designed to maintain a clean and orderly work environment. This will reduce the potential for significant pollutants/materials to come contact with stormwater.

  The Central Wastewater Treatment Plant performs routine cleaning on all facility grounds to prevent trash and pollutants from draining off the site.

- **Preventative Maintenance**
  Preventive Maintenance involves the regular inspection, testing, and cleaning of facility equipment and operational systems to insure there are no leaks or spills. These inspections will help to uncover conditions which might lead to a release of pollutants or materials, thus allowing for maintenance to prevent such a release. The Central Wastewater Treatment Plant routinely inspects the potential pollutant source areas mentioned above. . Preventative maintenance inspection forms are included in Appendix C.

- **Spill Prevention and Response Procedures**
  The Central Wastewater Treatment Plant has trained personnel on proper clean-up of spills and leaks. Spills of oils and motor fluids are cleaned up with oil dry (absorbent) material. All oil absorbent material shall be swept up and disposed of in a trash receptacle. If sludge material is spilled, employees should immediately clean the material up and put back into the treatment system.

- **Semi-annual Comprehensive Inspections**
  Comprehensive inspections of the facility (equipment, plant areas, and structural controls) are required by the permit. These inspections must occur at least once every six months. Records of the inspections must be kept on file with the SWPPP. Inspection forms are attached in Appendix B.

- **Sedimentation Control Measures**
  Occasionally, soil disturbing activities or circumstances may present themselves. Whenever soil disturbing activities are undertaken, proper erosion prevention and sediment control BMPs will be installed prior to the work. The BMPs include the use of silt fence, check dams, erosion control matting and sediment traps as deemed necessary. All disturbed areas will be stabilized immediately following the completion of work.

- **Employee Training**
  Employee training will be a major component in ensuring the success of the facilities SWPPP. The more knowledgeable all employees are about the facility's SWPPP and what is expected of them, the greater the chance that the plan will be successful.

  The following is a description of the employee training programs that will be implemented. Employee sign-in sheets in Appendix C.

Topic	Employees Included	Frequency
Preventive Maintenance Inspections	All employees that are designated to perform the site inspections`	Once/Year
Spill Response – Notification	All maintenance employees	Once/2 Years
Good Housekeeping	All maintenance employees	Once/2 Years

5.0 NON-STORM WATER DISCHARGES

The permit requires that all discharge locations be evaluated for the presence of non-storm water discharges. Any unauthorized storm water dischargers must be eliminated, or covered under another National Pollutant Discharge Elimination System (NPDES) permit.

CERTIFICATION OF EVALUATION OF NON-STORM WATER DISCHARGES

I certify under penalty of law that the storm water drainage system in this SWPPP has been tested or evaluated for the presence of non-storm water discharges either by me, or under my direction and supervision. To the best of my knowledge and belief, the information submitted is true, accurate, and complete. And at the time this plan was completed no unauthorized discharges were present. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations.

_____ _____

(Signature) (Date)

_____ _____

(Printed Name) (Title)

6.0 RECORD KEEPING AND REPORTING

The permit requires that records of all preventive maintenance inspections, the semi-annual comprehensive site inspections, records of employee training sessions, and the annual report are to be retained at the Central Treatment Plant for at least three years after the permit coverage expires.

These records must be made available, upon request, to a representative of the Tennessee Department of Environment and Conservation (TDEC)

6.1 ANNUAL REPORT

The permit requires that the Central Wastewater Treatment Plant prepare an annual report discussing the effectiveness of the site's SWPPP. This report should include any changes that have been made, the reason for the changes, any spills that occurred, what actions were taken as result of the spill, inspection results, and any other information relevant to the SWPPP. The annual report is to be retained on site.

APPENDIX A
Quarterly Inspection Forms
(Kept On-site)

APPENDIX B
Semi-Annual Comprehensive Site Compliance Evaluation Forms
(Kept On-site)

APPENDIX C
Preventative Maintenance Inspection Forms
(Kept On-site)

APPENDIX D
Employee Training Records

(Kept On-site)

Dry Creek Wastewater Treatment Plant
Storm Water Pollution Prevention Plan

Revised:
November 2011

TABLE OF CONTENTS

GENERAL FACILITY INFORMATION

Name of Facility: Dry Creek Waste Water Treatment Plant

Facility Address: 61 Edenwold Road

Madison, TN 37115

Facility Contact:

Name: James Kenner

Title: Plant Manager

Telephone: 862-8577

Mailing Address: 61 Edenwold Road

Madison, TN 37115

Owner: Metropolitan Government, Metro Water Services

Operator: James Kenner

Standard Industrial classification (SIC) Code: 4952

Permit Information:

Type: (X) General ( ) Individual

Designated Name: James M. Tarpy

Permit Number: TNR053255

Effective Date of Coverage: 03/1/02

Number of Storm Water Outfalls: 1

Receiving Waters: Dry Creek

Emergency Contact:

Name: James Kenner

Telephone: 862-8577

1.0 OVERVIEW

1.1 INTRODUCTION

This storm water pollution prevention plan (SWPPP) covers the operations at Dry Creek Wastewater Treatment Plant. It has been developed as required under Tennessee's National Pollutant Discharge Elimination System (NPDES) general permit for storm water discharges. This SWPPP identifies potential sources of storm water pollution at the facility, recommends appropriate best management practices (BMPs) or pollution control measures to reduce the discharge of pollutants in storm water runoff, and provides for periodic review of this SWPPP. The SWPPP will be reviewed annually by plant personnel to determine the effectiveness and to determine if any changes are warranted.

1.2 OBJECTIVES

The goal of the SWPPP is to improve the quality of surface waters by reducing the amount of pollutants potentially contained in the storm water runoff being discharged from the Dry Creek Wastewater facility. The SWPPP will be a written document that will be followed by plant personnel to prevent stormwater contamination.

2.0 STORM WATER POLLUTION PREVENTION TEAM

The storm water pollution prevention team is responsible for developing, implementing, maintaining, and revising this SWPPP. The members of the team are familiar with the management and operations of the Dry Creek Wastewater Treatment Plant.

Table 1 provides a list of team member(s) of and their primary responsibilities of the SWPPP.

Table 1 – Storm Water Pollution Prevention Team

Name & Title	Responsibility
James Kenner	**Plant Manager**

3.0 POTENTIAL SOURCES OF POLLUTANTS

3.1 SITE MAP

Figure 1is an aerial-based site map depicting the existing conditions. . The map depicts the following features (as required by the permit).

- property boundaries;
- buildings and other permanent structures;
- storage or disposal areas for significant materials;
- storm water discharge outfalls;
- location of storm water inlets contributing to each outfall;
- outlines of drainage areas contributing to each outfall;
- location of NPDES permitted discharges other than storm water;
- structural runoff controls and storm water treatment facilities;
- areas of vegetation;
- areas of exposed and/or erodible soils;
- impervious surfaces (roof tops, asphalt, concrete);
- names and locations of receiving waters;
- locations where the following activities are exposed to storm water:
  - fixed fueling operations
  - vehicle and equipment maintenance and/or cleaning areas
  - loading/unloading areas
  - waste storage or disposal areas
  - liquid storage tanks
  - equipment operating areas
  - storage areas; and
- any other areas deemed appropriate.

As depicted in the site maps, stormwater drainage for the Dry Creek Wastewater Treatment Plant mostly routes to one primary outfall to Dry Creek (outfall 1). There is a small portion of the property (office building and parking lot), however, that routes to Gizzard Branch (outfall 2). Gizzard Branch is piped through the treatment plant property and the small amount of stormwater that does drain from the plant enters though inlets on the east side of the property.


Piped Gizzard Br.
Outfall 2
Dry Creek
Outfall 1
Plant Effluent Outfall
Cumberland River
Dry Creek Wastewater Treatment Plant
Figure 2 - Aerial Site Map
Figur
Feet
0 50 100 200
Approximate Inlet Locations
Approximate Drainage Boundary
Stormwater Outfall
Stormwater Sump/Pump

3.2 INVENTORY OF EXPOSED MATERIALS

The permit requires a general inventory of significant materials on site. For each significant material on site an evaluation is to be conducted to determine the potential for these materials to be contributed to the runoff being discharged from the facility. Areas to focus on may include:

- loading and unloading areas
- other material handling operations (fuel pumps, etc.)
- outdoor storage areas
- processes which generate dust or particulate matter
- roof vents, stacks, and blowers
- waste generating areas
- waste disposal practices
- maintenance and cleaning practices for vehicles and equipment
- any other areas deemed appropriate

There are very few materials at the Dry Creek Wastewater Treatment Plant that are exposed to stormwater. Most of the plant's chemicals and materials are stored indoors behind containment. Stormwater runoff from the plant's main industrial processes also (filter building, settling tanks, etc.) mostly drain to tank drainage rather than stormwater. Table 2 lists all areas were industrial materials may be exposed to the storm water runoff at any given time.

Table 2 – List of Exposed Industrial Materials

Type	Material	Method of Exposure	Outfall
Empty Drum Storage	Oil, fluids for pumps	Drums are mostly stored inside. Any drums or containers stored outside on a temporary basis are always capped and plugged and no exposed material are present.	1
Tank Storage	Nitrazyme for odor control	Large tank temporarily stored outside during renovations	1
Loading Area	Treatment Solids	Loading area is covered and contained by concrete curb	1

3.3 LIST OF PAST SPILLS AND LEAKS

The permit requires a listing of oil and other polluting materials that have been spilled or leaked over th completion of the plan be included in the plan. Also include the date, volume of materials, the exact lo and the actions taken to clean up the materials and/or prevent exposure of the materials to storm wate of surface waters of the state. (If there have been no spills of polluting materials, state that in this sect listing of any spills and leaks.

Table 3 – Listing of Spills and Leaks reported within the last three years

DATE	MATERIAL	VOLUME	LOCATION	ACTIONS TAKEN

3.4 SUMMARY OF SAMPLING DATA

The permit does not require analytical sampling of stormwater discharges. The permit does, however, required quarterly visual examination of stormwater discharge quality. Examinations shall be made from both outfalls during daylight hours within the first 30 minutes (or as soon thereafter as practical, but not to exceed 1 hour) of when the runoff begins to discharge. The observations shall document observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water pollution. All samples examined shall be taken for rain events of at least 72 hours from a previous rain event and that are greater than 0.1 inch of total rainfall. All visual examination forms are attached in Appendix A.

4.0 BEST MANAGEMENT PRACTICES

The permit requires the Dry Creek Wastewater Treatment Plant to manage the stormwater runoff through a combination of structural and non-structural BMPs.

4.1 Measures and Controls

- **Structural Controls**
  Most of the stormwater runoff from the treatment plant drains through a sump/pump station BMP located on Outfall 1. The stormwater collects in the sump area until water levels automatically activate a pump that pumps the water to Dry Creek. The pump siphons the water off from approximately 2 to 3 feet from the bottom, therefore, not discharging settled solids and floatable oils and materials. Plant personnel routinely clean out the collected solids in the bottom of the sump. Prior to discharging into the sump area, an underground water quality unit has been installed to treat stormwater runoff from the new digester complex and equalization basin area. This water quality unit allows sediment to settle out prior to draining to the sump area. The underground water quality unit is cleaned out when sediment levels accumulate to certain levels.

- **Non-structural Controls**
  The Dry Creek Wastewater Treatment Plant also utilizes non-structural controls as BMPs to reduce the amount of pollution contaminating surface waters. Non-structural controls focus on prevention to eliminate the problem at the source. The following controls for the site include structural controls, good housekeeping procedures, preventative maintenance, spill prevention and response procedures, erosion prevention and sediment control practices, semi-annual compliance inspections and routine inspections of designated areas, and employee training.

- **Good Housekeeping Practices**
  Good housekeeping practices are designed to maintain a clean and orderly work environment. This will reduce the potential for significant materials to come contact with storm water.

  The Dry Creek Wastewater Treatment Plant performs routine cleaning on all of the sites grounds to prevent trash and pollutants from draining off the site.

- **Spill Prevention and Response Procedures**
  The Dry Creek Wastewater Treatment Plant has trained personnel on proper clean-up of spills and leaks. Spills of oils and motor fluids are cleaned up with oil dry (absorbent) material and properly disposed of. If sludge material is spilled during the loading process, employees immediately clean the material up with shovels and properly dispose of it.

- **Semi-annual Comprehensive Inspections**
  Comprehensive inspections of the facility (equipment, plant areas, and structural controls) are required by the permit. These inspections should occur at least once every six months. Records of the inspections should be kept on file with the SWPPP. Inspection forms are attached in Appendix B.

- **Sedimentation Control Measures**
  Occasionally, soil disturbing activities or circumstances may present themselves. Whenever soil disturbing activities are undertaken, proper erosion prevention and sediment control BMPs will be installed prior to the work. The BMPs include the use of silt fence, straw bales, check dams, erosion control matting and sediment traps as deemed necessary. All disturbed areas will be stabilized immediately following the completion of work.

- **Employee Training**
  Employee training will be a major component in ensuring the success of the facilities SWPPP. The more knowledgeable all employees are about the facility's SWPPP and what is expected of them, the greater the chance that the plan will be successful.

  The following is a description of the employee training programs that will be implemented. Training records are attached in Appendix C.

Topic	Employees Included	Frequency

5.0 NON-STORM WATER DISCHARGES

The permit requires that all discharge locations be evaluated for the presence of non-storm water discharges. Any unauthorized storm water dischargers must be

eliminated, or covered under another National Pollutant Discharge Elimination System (NPDES) permit.

CERTIFICATION OF EVALUATION OF NON-STORM WATER DISCHARGES

I certify under penalty of law that the storm water drainage system in this SWPPP has been tested or evaluated for the presence of non-storm water discharges either by me, or under my direction and supervision. To the best of my knowledge and belief, the information submitted is true, accurate, and complete. And at the time this plan was completed no unauthorized discharges were present. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations.

_____ _____

(Signature) (Date)

_____ _____

(Printed Name) (Title)

6.0 RECORD KEEPING AND REPORTING

The permit requires that records of all preventive maintenance inspections, the semi-annual comprehensive site inspections, records of employee training sessions, and the annual report to be retained at the Dry Creek Treatment Plant for at least three years after the permit coverage expires.

These records must be made available, upon request, to a representative of the Tennessee Department of Environment and Conservation (TDEC

6.1 ANNUAL REPORT

The permit requires that the Dry Creek Wastewater Treatment Plant prepare an annual report discussing the effectiveness of the SWPPP. This report should include any changes that have been made, the reason for the changes, any spills that occurred, what actions were taken as result of the spill, inspection results, and any other information relevant to the SWPPP. The annual report is to be retained on site.

APPENDIX A
Quarterly Inspection Forms

DRY CREEK WWTP QUARTERLY OUTFALL INSPECTION

Date: _____ Time: _____

Inspected by (printed): _____

Outfall 1:	Either Before Entering The Wet Weather Well Or Discharge From The Well If Pump Is Activated.
Odor:	
Clarity:	
Oily Sheen:	
Notes:	
Outfall 2:	At The Point Where Runoff Enters The Catch Basins On The Northeast Portion Of The Property
Odor:	
Clarity:	
Oily Sheen:	
Notes:	

APPENDIX B
Semi-Annual Comprehensive Site Compliance Evaluation Forms

COMPREHENSIVE INSPECTION

Date: _____ Time: _____

Inspected by (printed): _____

Signature: _____

Areas Inspected	Observations	Actions Taken
storm water outfalls		
property boundaries		
grounds (in general)		
parking lots		
storage areas		
dumpsters		
waste storage areas		
equipment		

APPENDIX C
Employee Training Records

EMPLOYEE TRAINING

Date of Session: _____ Time: _____

Trainer : _____ _____
(printed) (Signature)

Attendees (names, printed): Signature:

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

Topics Covered: _____

_____

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SWMP APPENDIX B

SOPS FOR METRO O&M FACILITIES/ACTIVITIES

Metro Nashville Municipal Separate Storm Sewer System Permit
Municipal Standard Operating Procedures:

Policy No.:	MS4 - 01	**Metro Department:**	MWS Stormwater Routine Maintenance
Effective Date:	9/1/12	**Municipal Procedure:**	Open Channel Maintenance

SOP Purpose: To establish guidelines for performing maintenance on open-channel drainage ditches that prevent impacts to stormwater runoff during and after maintenance is complete.

Policy:

Control Measures During Maintenance:

1) Crew leader to assess whether or not erosion or sediment control measures are needed.

2) If "yes" is answered to the below questions, then erosion control measures should be deployed.
   A) Is substantial rain in the forecast prior to final stabilization?
   B) Will bare ground be left without stabilization (matting/seed and straw) for more than 15 days?

3) Erosion control measures should consist of a filter devices installed downstream of the project. The below devices are examples of what could be installed to direct all runoff through to filter out sediment. Any of the following filtering devices can be used:
   A) Weighted sediment tubes staked in ditch downstream of work.
   B) Gravel check dam with filter fabric in ditch downstream of work. (typically for larger projects)
   C) Straw bales staked in ditch downstream of work. (should only be used as a last resort if above two materials are not available)

Final Stabilization

1) After ditches are cleaned and graded to the final contours, permanent stabilization should occur as soon as possible, but no later than 15 days after work is completed. In most cases, stabilization of ditches should occur within a few days of the actual grade work. As stated above, ditches left bare longer than 15 days or during timeframe with forecasted rain, should have erosion controls installed downstream.

2) Appropriate material should be used for final stabilization. Stabilization techniques should be tailored to each circumstance. In most cases straw matting staked down with grass seed will be all that is required. However, in some cases where ditches have steep slopes and high velocity flows, other stabilization materials can be used in lieu of or in conjunction with straw matting.
   A) Appropriate-sized rock (rip rap).
   B) Geotextile matting.
   C) Concrete channel lining (only to be used in extreme circumstances where flow velocities or other factors warrant such an application.)

Note: All downstream erosion control devices should be removed once the ditch is stabilized.

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Metro Nashville Municipal Separate Storm Sewer System Permit
Municipal Standard Operating Procedures:

Policy No.:	MS4 - 02	**Metro Department:**	MWS Stormwater Routine Maintenance
Effective Date:	9/1/12	**Municipal Procedure:**	Inlet Maintenance
SOP Purpose:	To establish guidelines for performing maintenance on street inlets/catch basins that prevent impacts to stormwater runoff during and after maintenance is complete.		

Policy:

General MS4 Permit Requirements:

- Per the MS4 Permit, inlet/catch basin cleaning shall be performed in a manner that prevents sediment and other pollutants from washing downstream.
- All material cleaned out of the drain shall be collected and disposed of in proper locations.
- Estimates of material amounts removed from inlets/catch basins should be tracked and documented in the appropriate databases.

Inlet Cleaning Procedures:

1. Jetting of the inlets and pipes should be performed in a manner that allows the vacuuming of a majority of the liquids and/or solids. For example the high-pressure jet hose can be directed upstream toward the blockage or material to be cleaned, while simultaneously vacuuming up liquids and solids that drain back down to the inlet.
2. All collected material (including muddy rinse water) shall be taken to proper disposal facility. Since the collected material likely contains trash, sediment, oils, and other potential pollutants, all solid waste should be taken to the nearest landfill. De-watering of the Vactor trucks should occur at the Central Wastewater Treatment Plant to the designated drain that routes to the plant.
3. Upon completion of the inlet cleaning for each Work Order, the crew leader shall document on the form the number of loads taken to the landfill/treatment plant.
4. If unusual odors or stains are present within the inlets that would indicate potential illegal dumping, notify the MWS Stormwater NPDES Office at 880-2420 with specific information.

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Metro Nashville Municipal Separate Storm Sewer System Permit
Municipal Standard Operating Procedures:

Policy No.:	MS4 - 03	**Metro Department:**	MWS Stormwater Routine Maintenance
Effective Date:	9/1/12	**Municipal Procedure:**	Culvert/Bridge Maintenance
SOP Purpose:	To establish guidelines for performing maintenance on culverts or bridges that prevent impacts to stormwater runoff during and after maintenance is complete.		

Policy:

General MS4 Permit Requirements:

- Per the MS4 Permit, culvert/bridge cleaning shall be performed in a manner that prevents sediment and other pollutants from washing downstream.
- All material cleaned out of culverts or bridges should be collected and disposed of in proper locations.

Culvert Cleaning Procedures:

1. Crew leader to determine if excavation of gravel/sediment will occur within a potential State-regulated stream. If there is flowing water and it has been more than 7 days since the last rainfall event, and/or fish are present, then chances are that it is a State-regulated stream. The NPDES Office can be contacted to determine if the ditch is a stream (880-2420). If work is to be performed within a State-regulated stream, the following activity can be performed without seeking a permit.
   A. Removal of unconsolidated sediment (loose gravel, mud/sand) or dead limbs/trash. Flowing water should be temporarily damned or pumped/piped around during excavation activities. Please Note: Gravel/silt bars with trees and shrubs can not be removed without first seeking a permit from the State. (If the stream is located within the Mill Creek basin, then no excavation (even removing loose gravel with a shovel) can be performed without first contacting the NPDES office (615-880-2420).
2. Jetting of culverts shall only be performed when the resulting muddy rinse water is either captured (via vactor truck) or filtered with sediment control devices. Simply washing sediment, gravel, trash downstream could cause blockage at the next structure or could lead to a sudden influx of pollutants into a receiving water body.
   Sediment Capturing Technique
   Impacts downstream can be avoided by capturing as much material as possible using with a Vactor truck. All captured material shall be disposed of in the appropriate designated places.
   Sediment Filtering Technique
   Filtering the wash water downstream would be the easiest method of preventing impacts. In order to filter the flush water the following controls could be strategically placed within the ditch downstream of the culvert:
   A. Staked-in Reusable Weighted Sediment Tubes
   B. Gravel Check Dams
   C. Staked-in Straw Bales (if other materials aren't available)
3. After cleaning is complete, all sediment controls should be removed. Any sediment that settled out in front of the controls shall also be removed.

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Metro Nashville Municipal Separate Storm Sewer System Permit
Municipal Standard Operating Procedures:

Policy No.:	MS4 -04	**Metro Department:**	MWS Routine Maintenance Section
Effective Date:	4/1/12	**Municipal Procedure:**	Bridge Cleaning
SOP Purpose:	To establish guidelines for performing maintenance on bridges.		

Policy:

General MS4 Permit Requirements:

- Sediment or other pollutants can not be discharged into the storm sewer or streams as a result of a maintenance activity.

Culvert Cleaning Procedures:

1. Crew leader to determine if excavation of gravel/sediment will occur within a State-regulated stream. If there is flowing water and it has been more than 7 days since the recent rainfall or there is aquatic life in the water, then chances are that it is a State-regulated stream. The Stormwater NPDES office 615-880-2420 can be contacted to determine if the drainage structure in question is a state-regulated stream.
2. If the drainage structure is determined to be a stream, then the following restrictions would apply:
   - Mill Creek Basin: No sediment/gravel can be excavated in the Mill Creek drainage basin without a proper permit from the Tennessee Department of Environment and Conservation (TDEC) or the U.S. Army Corps of Engineers. (The dispatcher should be able to tell via GIS/CityWorks if the project is located within the Mill Creek watershed). Dead limbs/trash can be removed as long as the stream bed is not disturbed.
   - All Other Drainage Basins: Loose sediment/gravel can only be removed within 100 feet upstream and downstream of the bridge. Removing sediment/gravel must be performed in a manner that separates flowing water from the excavated area.
     - For example: Sandbags wrapped in plastic can be place along side the flow line and the gravel bar to be removed during the excavation. Or, the stream can be temporarily dammed and piped around during the sediment/gravel excavation.
3. If the drainage structure is dry and not a stream, then procedures identified in the MS4-01 Open Channel Maintenance SOP should be followed for erosion controls/stabilization measures.

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Metro Nashville Municipal Separate Storm Sewer System Permit
Municipal Standard Operating Procedures:

Policy No.:	MS4 - 05	**Metro Department:**	Various Metro Departments Operations and Maintenance Divisions
Effective Date:	02/01/13	**Municipal Procedure:**	Pesticide, Herbicide, Fertilizer Application, Storage, and Disposal

SOP Purpose: To establish guidelines that prevent impacts to surface water quality during the application, storage, and disposal of chemicals such as pesticides, herbicide, fungicides, and fertilizers.

Policy:

1) Determine if chemical treatments are absolutely necessary or if other Integrated Pest Management (IPM) practices can be utilized in place of chemical treatments. Refer to the EPA website for IPM facts: (http://www.epa.gov/pesp/htmlpublications/ipm_fact_sheet.html)

2) Make sure proper licenses/certifications are secured from the Tennessee Department of Agriculture (http://www.tn.gov/agriculture/regulatory/licenses.shtml). Depending on the types of applications, certain certifications may be required.

3) Be sure to follow strict protocols during mixing and storing of chemicals such as:
   A. Mix chemicals in designated areas away from streams, ponds, wetlands, ditches, or storm drains.
   B. Never leave containers unattended during the filling process.
   C. Never rinse out equipment or dump out unused product to an outside drain. ditch, or pavement that could easily wash into storm drains or ditches.
   D. Always store chemical containers indoors in a contained environment.

4) Always follow the label instructions for proper mixing ratios, application methods, and disposal techniques. Mixing stronger ratios doesn't necessary improve product effectiveness, but can lead to damaging water quality impacts.

5) Always monitor the weather for outside applications. Applying various products prior to rain events will just waste the product and could lead to significant water quality impacts.

6) Maintain "do not spray" buffer zones around sensitive aquatic sites such as streams, ponds, wetlands and storm ditches, unless said chemicals are designed for the aquatic environment. (Refer to the Site's Specific Runoff Management Plan for locations of all storm drains, channels, and sensitive aquatic sites>)

7) Have a plan in place, in which all employees are trained, that detail prompt response/clean-up procedures, and agency notifications in the event of an accidental spill. The MWS Stormwater NPDES Office (615)-880-2420 can be contacted for guidance in determining proper clean-up procedures and agency notification.

8) Consider alternative approaches to fertilization such as mulching grass clippings to provide organic materials for soil enhancement.

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Metro Nashville Municipal Separate Storm Sewer System Permit
Municipal Standard Operating Procedures:

Policy No.:	MS4 - 06	**Metro Department:**	Various Metro Departments Operations and Maintenance Divisions
Effective Date:	02/01/13	**Municipal Procedure:**	Petroleum Product Storage & Spill Clean-up

SOP Purpose: To establish guidelines preventing impacts to surface water quality during the use and storage of petroleum products and other automotive fluids.

Policy:

Note: For purposes of this document, oil includes products are considered to be any of the following products:

- Motor Oil;
- Diesel Fuel;
- Gasoline/Ethanol;
- Transmission/Brake Fluid;
- Hydraulic Fluid; and
- Gear Oil, etc.

1) Management to determine if oil storage on the property is in such quantities that warrant a Spill Prevention Control & Countermeasure (SPCC) Plan. In general, above ground tanks with more than 1,320 gallons or underground tanks with over 42,000 gallons of storage capacity. For more information on SPCC plan requirements refer to the EPA's website: (http://www.epa.gov/osweroe1/docs/oil/spcc/spccbluebroch.pdf)

2) Maintain Spill Response Kits on site and readily available in the event of an accidental spill or leak from tanks or equipment. A proper Spill Response Kit should contain oil absorbent material, a tool to apply the absorbent, containment devices (i.e. drain covers, rubber dikes, oil absorbent booms) and tools such as brooms/shovels to clean up absorbent product after the oils have been absorbed. Please note that all absorbent materials and containment devices shall be retrieved and properly disposed of after the spill/leak is remediated.

3) Key maintenance staff shall perform routine weekly inspections of all equipment parked outside and any outside storage containers and tanks. Inspections shall be documented and kept on-site in the maintenance office. During the inspection, personnel shall look for fresh staining or wet oily sheens on pavement near equipment, distressed or dying vegetation underneath equipment, drips from hoses and fuel lines. If drips are observed from equipment, drip pans should be deployed under the equipment until the repair can be made. All wet oily sheens should be cleaned/remediated with absorbent material.

4) Notify appropriate state and local agencies when any large oil spills, especially when spilled material reach ditches, drains, and/or waterways. The Stormwater NPDES Office can provide guidance in proper agency notification and can be reached at 615-880-2420.

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Metro Nashville Municipal Separate Storm Sewer System Permit
Municipal Standard Operating Procedures:

Policy No.:	MS4 - 07	**Metro Department:**	Various Metro Departments Operations and Maintenance Divisions
Effective Date:	02/01/13	**Municipal Procedure:**	Grass Clipping/Leaf Disposal
SOP Purpose:	To establish guidelines preventing impacts to surface water quality from the disposal of grass clippings, leaves, limbs, or other organic materials		

Policy:

1) Grass clippings, leaves, limbs, and other organic materials shall not be disposed of in storm ditches, streams, or in areas where such materials are at risk to be washed by stormwater runoff into stormwater conveyances or into waterways. Concentrated organic materials can cause clogging issues in downstream infrastructure as well as significant water quality impacts. Concentrated decaying organic matter can deplete streams and ponds of much needed dissolved oxygen levels and grass clippings/vegetation may still have attached chemicals that can leach into the water.

2) Organic materials shall be disposed of in the proper locations such as landfills, mulch facilities, or composting areas. For more information on setting up a compost visit the following website: (http://www.nashville.gov/Public-Works/Neighborhood-Services/Yard-Waste-Composting/Backyard-Composting.aspx)

3) When at all possible, grass clippings shall not be collected and should be mulched and discharged during the mowing process. The dead grass clippings spread over the mowed area will actually add nutrients back into the soil.

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Metro Nashville Municipal Separate Storm Sewer System Permit
Municipal Standard Operating Procedures:

Policy No.:	MS4 - 08	**Metro Department:**	Various Metro Departments Operations and Maintenance Divisions
Effective Date:	02/01/13	**Municipal Procedure:**	Equipment Washing/General Maintenance Activities

SOP Pur

To establish guidelines that prevent impacts to surface water quality during the washing or general maintenance of equipment.

Policy:

1) Maintenance equipment such as mowers, tractors, trucks, golf carts, etc. shall not be washed in areas in which the wash water would discharge to a storm drain, ditch, pond, wetland, and/or stream. In most cases, equipment washing shall be performed in areas that that drain to the sanitary sewer system. These areas should be covered to prevent rain water from draining to the sanitary sewer. For general guidance on pressure washing visit the following website: (http://www.nashville.gov/Portals/0/SiteContent/WaterServices/Stormwater/docs/educational/Pressure%20Washing%20Guidance.pdf)
2) If proper wash areas with a sanitary drain are not available at the site, other methods can be deployed to prevent impacts to water quality such as installing containment dikes and collecting the wash water with pumps and containers. Collected wash water can be transported and discharged into an available sanitary sewer manhole/drain.
3) In some instances, wash water can be allowed to discharge into a dense stand of vegetation. In order to pursue discharge wash water to vegetative areas, the maintenance should request the MWS Stormwater NPDES Department at (615) 880-2420 to review the area and determine whether discharges to the areas will be acceptable. Several factors would need to be considered before wash water can be allowed to discharge to vegetated areas. Some factors include the proximity of the vegetated area to aquatic resources, the anticipated discharge volume, and the nature of the discharge. For instance wash water from equipment such as mowers and tractors would contain much higher levels of pollutants such as oils, mud, and detergents than simply rinsing off golf carts.
4) Maintenance of all small equipment such as mowers and golf carts shall be performed indoors. Maintenance of large equipment such as tractors if performed outside shall have all measures necessary deployed to contain any dripping fluids preventing them from contacting the ground and washing off site.
5) All collected/used motor oil or other fluids shall be stored indoors and in a manner that cannot leak or migrate to areas exposed to stormwater runoff. If necessary, secondary containment around oil/fluid drums such as containment pallets, shall be deployed if spillage and leaks are observed around such containers.
6) Used and damaged equipment such as gas tanks, engine blocks, batteries, radiators shall not be stored outside where they will be exposed to stormwater runoff. If there is no room to store such equipment indoors, such items should only be stored outside if they are covered/not contacting stormwater after all the equipment fluids have been drained.

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Metro Nashville Municipal Separate Storm Sewer System Permit
Municipal Standard Operating Procedures:

Policy No.:	MS4 - 09	**Metro Department:**	Various Metro Departments Operations and Maintenance Divisions
Effective Date:	02/01/13	**Municipal Procedure:**	Bare Soil//Sand /Stockpile Management
SOP Pur	To establish guidelines that prevent impacts to surface water quality from bare soils or stockpile areas of soil, sand, and other maintenance materials.		

Policy:

1) All stockpile areas should be protected in order to prevent materials from draining off-site into storm drains, ditches, wetlands, ponds, and/or streams. The types of controls needed may vary depending on a variety of factors, such as proximity to storm drains, channels, or other aquatic sites, types of materials stockpiled, and whether or not the materials are covered or exposed to stormwater. The MWS Stormwater NPDES Office can be contacted for guidance regarding stockpile controls.
2) Stockpiled soil areas that are not being used routinely should be temporarily stabilized with seed and straw.
3) All highly eroded areas on the property shall be protected with appropriate materials such as erosion control matting. This includes areas along ditches and streams.
4) Any re-graded relatively flat areas should be stabilized with seed and straw or sod covering immediately after achieving final grade.
5) Refer to the MWS' Stormwater Management Manual Specifications for the following stabilization techniques:
   - Temporary seeding re-graded/topsoil areas: http://www.nashville.gov/Portals/0/SiteContent/WaterServices/Stormwater/docs/SWMM/2009/4/swmanual30_vol4_tcp05.pdf
   - Erosion control matting applications on concentrated flow channels: http://www.nashville.gov/Portals/0/SiteContent/WaterServices/Stormwater/docs/SWMM/2009/4/swmanual35_vol4_tcp10.pdf
   - Silt fence perimeter controls around stockpiles: http://www.nashville.gov/Portals/0/SiteContent/WaterServices/Stormwater/docs/SWMM/2009/4/swmanual38_vol4_tcp13.pdf
   - Weighted sediment tube perimeter controls around stockpiles: http://www.nashville.gov/Portals/0/SiteContent/WaterServices/Stormwater/docs/SWMM/2009/4/swmanual39_vol4_tcp14.pdf

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Metro Nashville Municipal Separate Storm Sewer System Permit
Municipal Standard Operating Procedures:

Policy No.:	MS4 - 10	**Metro Department:**	MWS System Services Division
Effective Date:	4/1/12	**Municipal Procedure:**	Pit Pumping/Dewatering

SOP Purpose:

- To establish guidelines for performing de-watering of groundwater in pits without impacting water quality. Sediment or other pollutants can not be discharged into the storm sewer or streams as a result of a maintenance activity. (Note: These procedures are to be followed in normal/routine circumstances. There may be extreme events that warrant abandoning these procedures to maintain public safety.)

Policy:

Pit Pumping Procedures:

When water is encountered in an excavation pit and needs to be pumped out, the muddy water should be filtered by one of the following techniques: (Note, these methods do not apply to water contaminated with sewage material. Water contaminated with sewage can never be pumped to the storm drain of stream even if a filtering device is deployed).

Filter Bag: (Can be used when pumping is performed in an urban setting within paved streets, sidewalks, and/or parking lots) and there are no other ways to filter the pumped water)

1. Ensure all trucks dispatched with pumps have empty filter bags present. Empty bags can be obtained from MWS Stores.
2. Before starting pump, ensure the hose from the pump is connected to the filter bag. (If possible, the filter bag shall be placed on vegetation.)
3. Turn on pump and monitor flow trickling through the filter bag. If flow is clear, continue until flow starts to slow.
4. Once the flow starts to slow or the water discharging from the bag becomes murky, turn off the pump and start with a new bag.
5. You may dispose of the bag by either dumping it back into the trench for backfill material or hauling it to one of the permitted Metro fill sites.

Check Dams:: (Can be used when enough room is available on open ground or ditch that will allow controls to be installed to settle out sediment before draining to the stream.)

1. Build a crescent-shaped structure out of either staked-in sediment tubes. (There are various forms of sediment tubes (filled, recycled rubber tire chunks, recycled carpet fibers, etc.)
2. Place pump outlet hose so that water from the pit routes through the structure.
3. Turn on pump and monitor flow to ensure water draining through the structure is clear and is not bypassing around the structure. If not, turn off pump and install additional controls.
4. When finished, remove controls. Any settled-out sediment can be placed back into the pit/trench as backfill.

Inlet Protection:: (Can be used in urban area such as paved streets when a sediment filter bag is not available)

1. Locate the downstream inlet(s) on the street in which pump water would drain to.
2. Install either sandbags, or weighted sediment tubes around the inlet so that the muddy water has to drain through the devices prior to draining into the grate.
3. Turn on the pump and monitor the flow into the inlet to ensure it is clear.
4. Remove the inlet protection and collected sediment when finished.

Vegetation: (Can be used when pumping is performed in areas where dense vegetation (Grasses) are present and there is a distance of at least 100 feet from a stream or storm ditch.)

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Filter Bag Use

Sediment Tube used in a Ditch Setting

Sediment Tube used as Inlet Protection

Sediment Tube used on Open Ground

Sediment Tube used as Inlet Protection

Metro Nashville Municipal Separate Storm Sewer System Permit
Municipal Standard Operating Procedures:

Policy No.:	MS4 - 11	**Metro Department:**	MWS System Services Division
Effective Date:	4/1/12	**Municipal Procedure:**	Material Collection/Disposal

SOP Purpose:
- To establish guidelines for collecting and disposing of material during maintenance projects.

Policy:

Disposal of Sewage Contaminated Material: (Note: if sewage contacts any portion of water or soil to be disposed of, then the entire amount of material shall be treated as being contaminated and in need of special disposal conditions.

5. All collected sewage material shall be disposed of in locations that route to the treatment plants. Under no circumstances can sewage contaminated material be discharged to the storm sewer system, open ground, or streams.
6. The designated disposal area for sewage contaminated material is located in the parking lot across from the Administration Building in the back corner of the lot. This area drains to sump pit that is pumped back to the treatment plant.
7. All rinsing of trucks/equipment shall occur in design areas that drain to the treatment plant. If a drain is labeled with a sign stating "No Dumping, Drains to River", then no material or wash material can be discharged to the drain. "Designated De-Watering Area" signs are posted in the area where vactor trucks should be emptied. Wet sludge material shall be placed in the designated areas with "Solids Drying Area" signs posted.

Disposal of Material (not contaminated by sewage): Material such as soil and rock does not have to be treated as contaminated material and can be disposed of at several locations.

1. In most cases, clean dirt and rock can be backfilled within the trenches/pits that were dug for the maintenance work. Excess, clean dirt /rock material can be disposed at one of the approved Metro Fill site located at the main Nashville Airport off of Elm Hill Pike. A small amount of asphalt millings can also be dumped at the Metro-approved fill site, but shall not exceed 15% of the load. Old pipes, trash, and other materials can not be dumped at the approved fill sites.
2. Pipes, trash, or excess asphalt millings shall be taken to the appropriate landfills approved by each division.

Revision No.:	1	Issued By:	MWS Stormwater NPDES Office 615-880-2420
Next Revision Date:	9/1/2017		

Metro Nashville Municipal Separate Storm Sewer System Permit
Municipal Standard Operating Procedures:

Policy No.:	MS4 - 12	**Metro Department:**	MWS System Services Division
Effective Date:	4/1/12	**Municipal Procedure:**	Work In and Around Creeks and Drainage Ditches

SOP Purpose:
- To establish guidelines for performing maintenance activities in and around creeks.

Policy:

If maintenance of a water and/or sewer line involves work within drainage channels then the following restrictions shall be considered.

State-regulated Stream:

Crew leader to determine if excavation of gravel/sediment will occur within a State-regulated stream. If there is flowing water and it has been more than 7 days since the recent rainfall or there is aquatic life in the water, then chances are that it is a State-regulated stream. The Stormwater NPDES office 615-880-2420 can be contacted to determine if the drainage structure in question is a state-regulated stream.

- Mill Creek Basin: No sediment/gravel can be excavated in the Mill Creek drainage basin without a proper permit from the Tennessee Department of Environment and Conservation (TDEC) or the U.S. Army Corps of Engineers. A map on the back page of this SOP depicts the Mill Creek Drainage basin. Managers also have access to the Mill Creek Watershed file through GIS if questions arise. Dead limbs/trash can be removed from aerial sewer crossings without seeking state and federal approval so long as the stream bed is not disturbed and no heavy equipment is driven through the stream channel.
- All Other Drainage Basins: Loose sediment/gravel can only be removed within 100 feet upstream and downstream of any aerial stream crossings without seeking permit approvals. Removing sediment/gravel, however, must be performed in a manner that separates flowing water from the excavated area.
  - For example: Sandbags wrapped in plastic can be place along side the flow line and the gravel bar to be removed during the excavation. Or, the stream can be temporarily dammed and piped around during the sediment/gravel excavation.

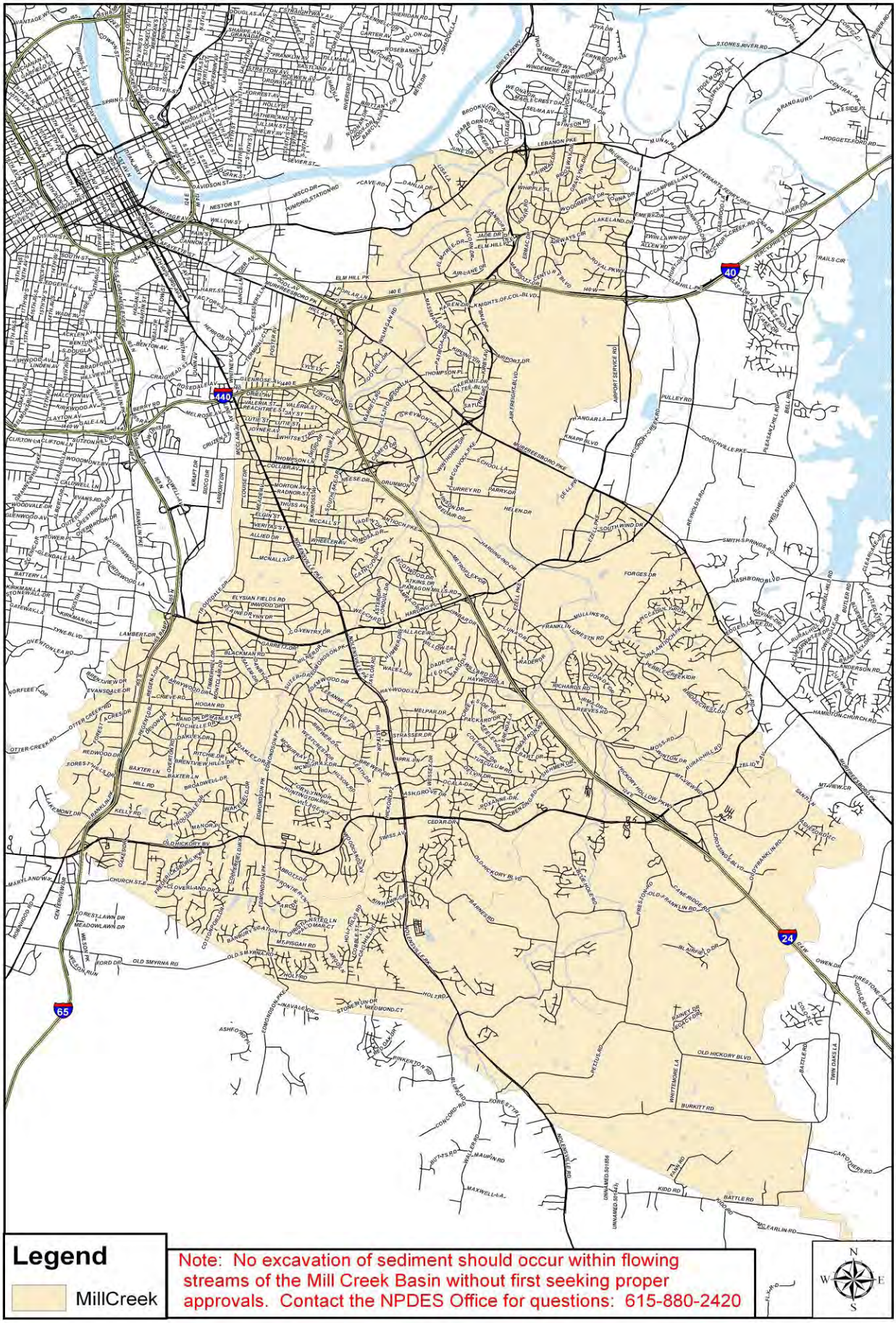
  All other larger-scale work such as replacing existing sewer/water lines requires both federal and state permits. The section manager shall be notified when large excavation work is to be performed within a state-regulated stream.

Storm Ditches

Proper downstream Erosion and Sediment control structures shall be deployed prior to any excavation in and around storm ditches. Erosion control measures should consist of a filter devices filter out sediment while letting clean water flow through the other side. Any of the following filtering devices can be used:

A) Weighted sediment tubes staked in ditch downstream of work.
B) Gravel check dam with filter fabric in ditch downstream of work. (typically for larger projects)
C) Straw bales staked in ditch downstream of work. (should only be used as a last resort if above two materials are not available)

Revision No.:	1	Issued By:	MWS Stormwater NPDES Office 615-880-2420
Next Revision Date:	9/1/2017		


Legend
MillCreek
Note: No excavation of sediment should occur within flowing streams of the Mill Creek Basin without first seeking proper approvals. Contact the NPDES Office for questions: 615-880-2420
N
W
E
S

SWMP APPENDIX C

PUBLIC INFORMATION/EDUCATION PLAN

Metro Nashville Municipal Separate Storm Sewer System Permit
Public Information & Education Plan
August 2012

1.0 INTRODUCTION:

With issuance of the third cycle of Metro Nashville's Municipal Separate Storm Sewer System (MS4) permit, there is an increased emphasis on the amount of public education and outreach Metro Water Services (MWS) will be responsible for overseeing. The first major undertaking will involve developing a detailed public information and education (PIE) plan. The PIE plan will outline the stormwater educational strategies, identify targeted educational approaches, and list specific yearly goals and accomplishments. A majority of MS4 permit items are coordinated and overseen by the MWS Stormwater NPDES Department, however, development and implementation of the PIE plan will be a joint effort between the NPDES Department and MWS Public Information Department.

In the new permit, Stormwater is required to target specific "hot areas", which are defined in the permit as: "*an area where land use or activities generate highly contaminated runoff, with concentrations of pollutants in excess of those typically found in stormwater. Examples might include operations producing concrete or asphalt, auto repair shops, auto supply shops, large commercial parking areas and restaurants.*" The main goals of stormwater education activities will be to increase public awareness for purposes of eliminating illicit discharges and improper disposals, reducing nonpoint source pollutants through better land management practices (i.e. fertilizer, sediment, oil, etc), reducing overall runoff quantities through innovative development strategies, and ultimately improving water quality of receiving streams. In some of Nashville's sub-watersheds, public education will be the primary Best Management Practice (BMP) implemented for improving stormwater runoff quality, therefore, improving receiving water quality. For example, watersheds that are specifically listed as being impaired for nutrients (i.e. phosphorus and nitrogen) will be targeted for public education campaigns aimed at reducing non-point source runoff from fertilizer, pet waste, etc.

1.1 RESPONSIBLE PERSONNEL:

While the entire NPDES Department and MWS Public Relations Department will be contributing to implementing PIE plan objectives, specific personnel within each department have been identified to oversee certain aspects of the plan. Table 1 depicts general PIE plan objectives and responsible personnel.

Table 1 – PIE Plan Responsible Party

Personnel	PIE Plan Responsibility	Contact Information
Michael Hunt	Reviews/Oversees PIE Plan objectives to be consistent MS4 permit requirements.	615-880-2420 michael.hunt@nasville.gov
Sonia Harvat	Reviews/Approves all distribution of public information/education materials. Coordinates targeted mail-outs and outbound calling public education activities.	615-862-4494 sonia.harvat@nasvhille.gov
Julie Berbiglia	Oversees school-specific education programs. Oversees/coordinates all major public education events. Oversees development of public educational materials	615-862-4506 julie.berbiglia@nashville.gov
Josh Hayes	Coordinates MS4 permit specific educational activities (industrial, commercial, construction education) Assists with coordinating and participating in major public education events. Documents public education events and activities for Annual Report submittals. Assists in development of public education materials. Assists in performing targeted mail-outs and outbound calling public education activities	615-880-2420 josh.hayes@nashville.gov

1.2 PIE PLAN GOALS AND TIMEFRAMES:

Goals for the PIE plan will be broken up into the following three main categories:

- Goal 1: Meet and/or exceed MS4 permit requirements
- Goal 2: Increase the fundamental understanding of water pollution for Nashville students, residents, businesses and municipal employees.
- Goal 3: Encourage use of better management practices that result in improved water quality of runoff from MS4 and private facilities within Metro's MS4 jurisdiction.

Measuring the success of each goal will involve different evaluation procedures. Goal 1 will be, perhaps, the easiest objective to measure. While some of the MS4 permit language is vague, there are some identified milestones and deadlines that can be assessed in each MS4 annual report for completeness. Table 2 depicts some of the major permit requirements and their desired timeframes. Assessing the effectiveness of the PIE plan in accomplishing Goals 2 and 3 will be more difficult and are discussed in greater detail in Section 5 of this document.

Table 2 – Goal 1 (MS4 Permit Required Education) Objectives and Timeframes.

MS4 Permit Objectives	Completion Deadlines
Develop PIE Plan as part of overall Stormwater Management Plan	**December, 2012**
Perform adequate stormwater training for all pertinent Metro maintenance staff.	**July, 2013**
Implement educational programs at a minimum of 6 large public events per calendar year	**Annually 2012 - 2017**
Track and maintain records of public education and outreach activities	**Annually 2012 - 2017**
Assess the change in public awareness	**January, 2017**
Implement public notice programs for volunteer programs (i.e. tree plantings, stream clean-ups, illicit discharge detection identification & elimination, etc.)	**Annually 2012 - 2017**
Implement public notices for large Metro projects	**July, 2013**
Provide specific maintenance education to stormwater BMP owners	**February, 2017**
Hold a public meeting to go over each Annual Report	**Annually 2012 - 2017**

Note: Some of the deadlines are internal to NPDES Department, as actual MS4 permit deadlines are vague.

2.0 Targeted Audience Groups:

In order to accomplish the PIE plan objectives, the first step is to identify targeted audiences for which education delivery methods will be tailored towards. The targeted audience will be determined based on a variety of factors, some of which will include general land use, business/community types, geographical areas, previous complaints, and perceived educational needs.

2.1 School Groups/Youth Camps

School children and youth are perhaps one of the most important demographics to target for stormwater education, as they will shape the future of water quality within the county. In order to convey one consistent water quality message, the MWS Public Relations Department will lead all academic based education efforts. MWS will target 4th grade for primary distribution of stormwater educational activities.

2.2 Geographical "Hot Areas" within the County

As discussed in Section 1, the new MS4 permit requires Metro to target "hot areas" as we designate. MWS NPDES will utilize its vast monitoring data, general knowledge from field

investigations, and TDEC-designated watershed impairment status to aid in determining geographic "hot areas". Geographic "hot areas" will be delineated into three main categories based on overall land use associated pollutants of concern. Table 3 refers to the typical pollutants expected in runoff from each major urban land use category. For purposes of public education, the three major urban land use categories have been identified to target specific messages: Residential, Commercial, and Industrial.

Table 3 – Typical Pollutant Runoff form Major Land Use Categories

Major Land Use	Typical Pollutants	Typical Source	Resulting Water Quality Degradation to Target in Educational Messages
Residential	1. Nutrients 2. Sediment 3. Pathogens 4. Organics	1. Over-fertilization, Pet Waste, Human Waste and Detergents from failing septic systems. 2. Grading areas without controls. Removing stream bank vegetation. 3. Failing septic systems, illegal cross-connections of sanitary and stormwater, and pet waste. 4. Dumping of leaves/grass clippings in conveyances	1. Increased algal blooms, depleted dissolved oxygen levels from decaying algae. 2. Reduced water clarity for aquatic plants, smothers aquatic life, transports other pollutants. 3. Potentially harmful to human health. 4. Decomposition depletes dissolved oxygen levels within streams.
Light Commercial	1. Hydrocarbons (Oil & Grease) 2. Trash 3. Nutrients 4. Sediment	1. High-traffic parking lot areas, leaking storage tanks, etc. 2. Poor grounds upkeep, especially in parking areas and around dumpsters. 3. Landscaping/golf courses. 4. Grading/developing without controls. Removing stream bank vegetation.	1. Toxic to aquatic life and impact drinking water supplies. 2. Aesthetically displeasing, can block drainage pipes causing erosion, can be harmful to wildlife. 3. Increased algal blooms, depleted dissolved oxygen levels from decaying algae. 4. Reduced water clarity for aquatic plants, smothers aquatic life, transports other pollutants.
Industrial/ Heavy Commercial	1. Metals 2. Sediment 3. Hydrocarbons (Oil & Grease)	1. Exposed industrial processes/improper disposal. 2. Exposed industrial processes/improper disposal. Gravel parking lots with heavy truck traffic. 3. Equipment leakage, leaking storage containers, high-traffic pervious areas.	1. Acute or chronic toxic impacts to aquatic wildlife. 2. Reduced water clarity for aquatic plants, smothers aquatic life, transports other pollutants. 3. Toxic to aquatic life and impact drinking water supplies.

Table 4, below, provides a description of the designated geographic "hot areas" that have been identified thus far. The geographic "hot areas" will receive an increased amount of location/pollutant of concern-specific education. Figure 1 depicts the overall locations of the geographical-designated "Hot Areas". Individual maps of each geographic "hot area" can be found in Appendix A.

Table 4 – Geographical-Designated Hot Areas for Targeted Education

Area Name	Watershed	Land Use	Size (Acres)
Area 1	Browns Creek	Industrial/Heavy Commercial	2290
Area 2	Browns Creek	Residential	2294
Area 3	McCrory Creek	Residential	2068
Area 4	Harpeth River	Residential	497
Area 5	Harpeth River	Residential	4059
Area 6	Sugartree Creek	Residential	1486
Area 7	Bosley Springs Branch	Residential	1170
Area 8	Richland Creek	Industrial/Heavy Commercial	926
Area 9	Richland Creek	Light Commercial	731
Area 10	Mill Creek	Industrial/Heavy Commercial	1986
Area 11	Mill Creek	Industrial/Heavy Commercial	1460
Area 12	Sevenmile	Industrial/Heavy Commercial	207
Area 14	Hurricane Creek	Industrial/Heavy Commercial	1859
Area 15	W. Branch Hurricane Creek	Residential	717
Area 13	Mill Creek Upper	Light Commercial	810
Area 16	Whites Creek	Residential	1843
Area 17	Manskers Creek	Residential	2289
Area 18	Gibson and Dry Creek	Light Commercial	1211

2.3 Business Type/Community "Hot Areas"

There are certain types of businesses scattered throughout the county (not bound by geographic boundaries) in which MWS NPDES have found to have a high potential for polluted runoff. While some of the business-designated "hot areas" may overlap with the geographically-designated "hot areas", MWS will conduct additional targeted educational campaigns towards theses respective businesses. Business types that will be recipients of targeted education will include:

- Ready Mix Concrete Plants – focus on sediment runoff;
- Asphalt Mixing Plants – focus on sediment and oil & grease runoff;
- Recycling Centers – focus on sediment, metals, and trash runoff;
- Automotive Salvage Yards – focus on sediment and automotive fluid runoff;
- Large Automotive Repair Shops – focus on automotive fluid runoff; and
- Landscaping companies – focus on sediment runoff and application of pesticides, herbicides, fertilizers, and fungicides.

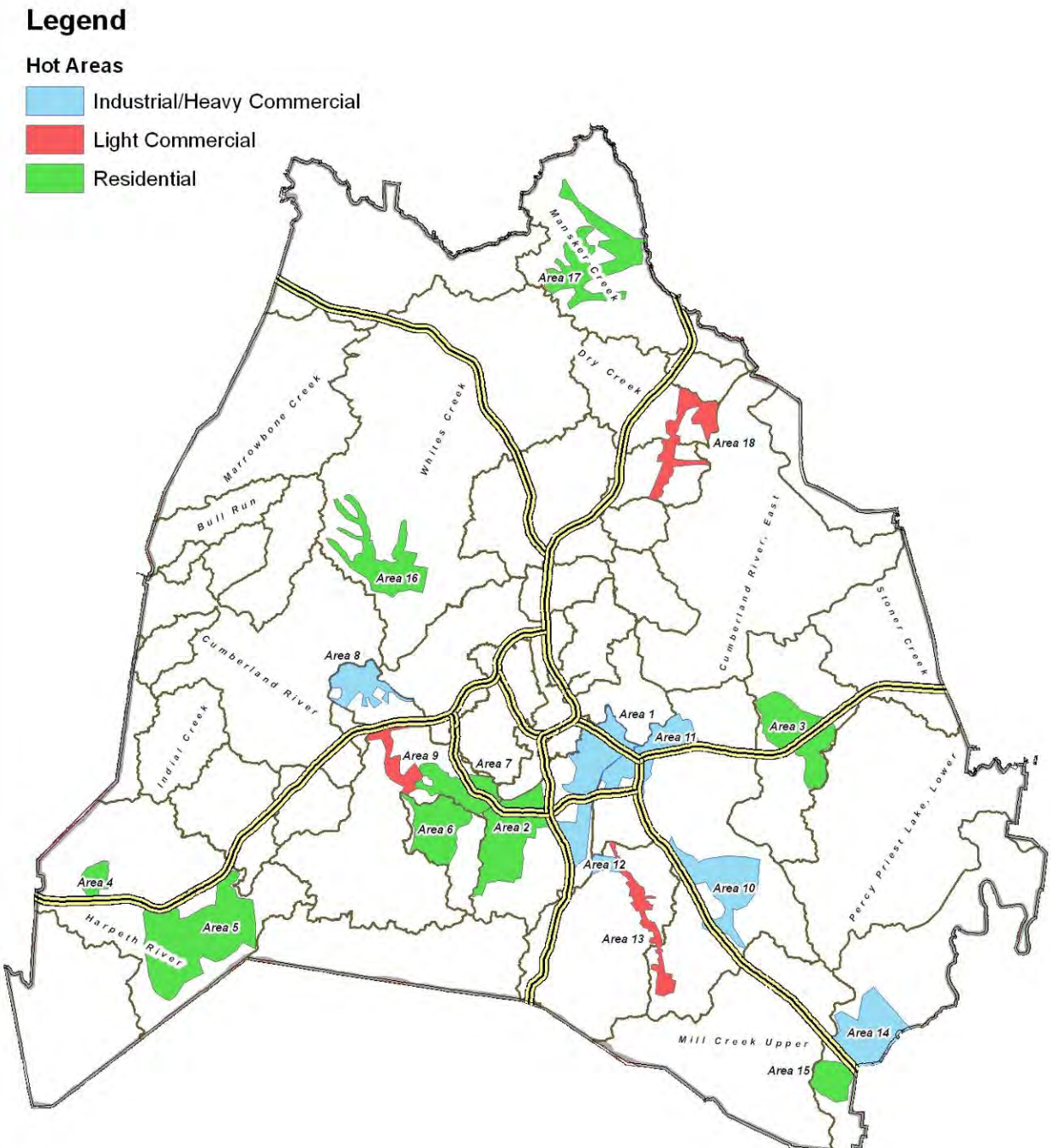


Figure 1 – Geographic-designated Hot Areas to Receive Extra Targeted Education

2.4 High Citizen Complaint Zones

MWS receives numerous complaints about a variety of issues throughout the county. Complaints range from people dumping materials in storm ditches (leaves, limbs, trash, etc.) to people discharging illegal substances to the storm system. Upon analysis of complaints, MWS may choose to target certain areas that may not be part of the above-defined geographic "hot areas" for problem-specific, localized education. This type of education will performed on a case by case basis.

2.5 Large Civic Educational Events

As prescribed in the MS4 permit, Metro is required to perform stormwater education at a minimum of six large public events per calendar year. MWS Stormwater will satisfy this requirement by participating in large community events that relate to environmental awareness. The following large civic events have been preliminarily identified for Metro to participate with a stormwater education component:

1. Lawn and Garden Show
2. Earth Day
3. Catfish Rodeo
4. Adventure Science Center CHOMP event
5. Dragon Boat Races
6. Zoo Docents Meeting or Master Gardener Class

2.6 Post Construction Treatment Devices (BMP) Owners

Developing sites that meet certain thresholds within the county are required to install permanent stormwater treatment devices, otherwise referred to as Best Management Practices (BMPs), that are usually designed to treat stormwater runoff for water quality and quantity purposes. Once the site is completely developed, the property owner becomes responsible for permanent maintenance of BMPs . Metro will specifically target owners of BMPs to achieve proper maintenance.

2.7 Grading Contractors/Development Community

The development community, including land developers and grading contractors, will be the target of specific educational outreach. Education geared toward the development community will be focused on the impacts of sediment runoff during construction and general pollutant runoff from pervious surfaces after construction is completed.

2.8 Municipal Maintenance Employees

All Metro departments with field maintenance staff will be a key target audience for distributing stormwater education materials. As prescribed in the MS4 permit, municipal maintenance employees shall be trained on potential stormwater impacts that could result from maintenance activities. In addition, municipal field staff shall be trained on identifying and reporting occurrences of illicit discharges.

2.9 General Metro Residency

Perhaps the most important constituency within Metro to educate for stormwater quality purposes is the general residents within the county. While there may exist overlap within the above-described target areas, Metro will also implement techniques to try to reach the masses on more general terms.

3.0 Education Techniques for Targeted Audiences:

MWS will utilize a variety of tools to perform stormwater education. Education delivery methods will be designed to achieve maximum distribution to the targeted audiences. For example, educational efforts for the above-described "hot areas" will include mail-outs, outbound calling, coordinating with local non-profit watershed groups, and possibly holding community meetings. Table 5 matches the potential educational technique to the specific targeted audiences. As the MS4 public information plan proceeds, new techniques may be utilized for specific targeted audiences and the PIE Plan will be updated accordingly.

Table 5 – Educational Delivery Methods For Each Targeted Audience Group

Targeted Audience Group	Public Education/Outreach Technique
School Groups /Youth Camps	In-person presentations/demonstrations Distribution of educational materials designed for youth. (i.e. games, puzzles, tests, etc.)
Geographic-Designated "Hot Areas"`	Mail-outs (area-specific) Outbound calling (area-specific) Soliciting help from local non-profit watershed groups in distributing educational materials Co-host community meetings with local non-profit watershed groups
Community/Business Type "Hot Areas"	Mail-outs (business-specific) Handing out materials Hosting workshops
High Citizen Complaint Zones	Mail-outs (problem/complaint-specific) Outbound calling (problem/complaint specific)
Large Community Events	Manning stormwater educational booths Performing stormwater demonstrations Handing out educational materials
Post Construction BMP Owners	Mail-outs Handing out materials/Drop in visits by NPDES
Grading Contractors/Development Community	Face to face during Grading Permit process Participate in TDEC's Level 1 EPSC Workshop
Municipal Maintenance Employees	In-person presentations Handing out materials
General Metro Residency (General Stormwater Education)	Channel 3 Public Service Announcements (PSAs) Public signage (vehicle decals, billboards, etc.)

4.0 Education Implementation Timeframe:

PIE Plan implementation will be based, first and foremost, on MS4 Permit deadlines. In order to keep track of stormwater education deadlines and responsibilities, a Public Education Matrix Table has been developed that will be the blueprint for yearly public education activities. The Matrix Table incorporates at least one type of education activity geared toward each Targeted Audience Group.

Table 6 – Public Education Individual Task Matrix

Task	Public Education Activity	Education Deadline	Lead Staff
1	Complete PIE Plan	December 2012	Josh Hayes Julie Berbiglia
2	Give presentations at least 150 schools	Annually by June 31st (Starting in Permit Year 2)	Julie Berbiglia
3	Send mail-outs , perform outbound calling, work with local non-profit watershed groups to distribute educational materials, or host community meetings for at least 4 geographic "hot areas" focused on the issues important to those areas. (i.e. pet waste, fertilizer application education to residential areas)	Annually by June 31st (Starting in Permit Year 2)	Josh Hayes Julie Berbiglia
4	Send Mail-outs to or personally visit to drop off educational materials to at least 25 designated Business Type/Community designated "hot areas". At least one of the years shall be directed towards applicators/distributors of pesticides, fertilizers, etc.	Annually by June 31st (Starting in Permit Year 2)	NPDES Staff
5	Co-host an industrial stormwater workshop with TDEC for all current TMSP sites.	By June 31, 2013	Josh Hayes
6	Send Mail-outs or perform outbound calling to high complaint zones as determined necessary	As Deemed Necessary	Sonia Harvat Josh Hayes
7	Participate in or host at least 6 large community/civic events	Annually by June 31st (Starting in Permit Year 2)	Julie Berbiglia Mary Bruce
8	Send Mail-outs to all known post-construction BMP owners that were installed as per Metro's grading permit requirements to treat water quality and water quantity runoff.	February 2017	Josh Hayes Rebecca Dohn
9	Give out stormwater educational materials at every pre-construction meeting for Grading Permits.	Annually by June 31st (Starting in Permit Year 1)	Dale Binder
10	Distribute stormwater educational materials to building permit applicants for single family homes	Annually by June 31st (Starting in Permit Year 1)	Kimberly Hayes
11	Present at all TDEC Level 1 EPSC workshops in Nashville.	As scheduled by TDEC	Dale Binder
12	Perform in-person training or provide maintenance personnel with stormwater educational materials	At least one Metro maintenance department per day. All Metro maintenance departments by February 2017.	Josh Hayes Michael Hunt
13	Air at least 6 PSAs on Metro's Channel 3	Annually by June 31st (Starting in Permit Year 2)	Josh Hayes Julie Berbiglia
14	Air at least 2 pollutant specific slideshows	Annually by June 31st (Starting in Permit Year 2)	Josh Hayes Julie Berbiglia
15	Provide opportunity for public participation/involvement for stormwater awareness projects (i.e. stream clean-ups, tree plantings, etc.)	Annually by June 31st (Starting in Permit Year 2)	Sonia Harvat

16	Provide public notice for all large Metro construction projects (possibly web-site postings)	Annually by June 31st (Starting in Permit Year 2)	Michael Hunt Anna Kuoppamaki
17	Make updates to the stormwater website to reflect latest regulations, technology, etc.	Annually by June 31st (Starting in Permit Year 1)	Michael Hunt Anna Kuoppamaki
18	Present each Annual Report to a public forum (i.e. Stormwater Management Committee or Stormwater Advisory Committee may suffice.	Annually by December 31st (Starting in Permit Year 1)	Michael Hunt Josh Hayes

PIE Task	06/31/12	12/31/12	06/31/13	12/31/13	06/31/14	12/31/14	06/31/15	12/31/15	06/31/16	12/31/16
1. Complete PIE Plan										
2. Give presentations at least 150 schools classes PY 1&2										
PY3										
PY4										
PY5										
3. Distribute educational materials to at least 4 geographic "hot areas" PY1&2										
PY3										
PY4										
PY5										
4. Send Mail-outs or personally visit at least 25 business "hot areas" PY1&2										
PY3										
PY4										
PY5										
5. Co-host an industrial stormwater workshop with TDEC for all current TMSP sites.										
6. Send Mail-outs or perform outbound calling to high complaint zones as determined necessary										
7. Participate in or host at least 6 large community/civic events PY1&2										
PY3										
PY4										
PY5										
8. Send Mail-outs to all known post-construction BMP owners										
9. Give out stormwater educational materials at every pre-construction meeting for Grading Permits.										
10 Distribute stormwater educational materials to building permit applicants for single family homes										
11. Present at all TDEC Level 1 EPSC workshops in Nashville.										
12. Perform stormwater training or provide maintenance personnel										
13. Air at least 6 PSAs on Metro's Channel 3 PY1 &2										
PY3										
PY4										
PY5										
14. Air at least 2 pollutant specific slideshows PY1&2										
PY3										
PY4										
PY5										
15. Provide opportunity for public participation/involvement for stormwater awareness projects										
16. Provide public notice for all large Metro construction projects (possibly web-site postings)										
17. Make updates to the stormwater website to reflect latest regulations, technology, etc.										
18. Present each Annual Report to a public forum PY1&2										
PY3										
PY4										
PY5										

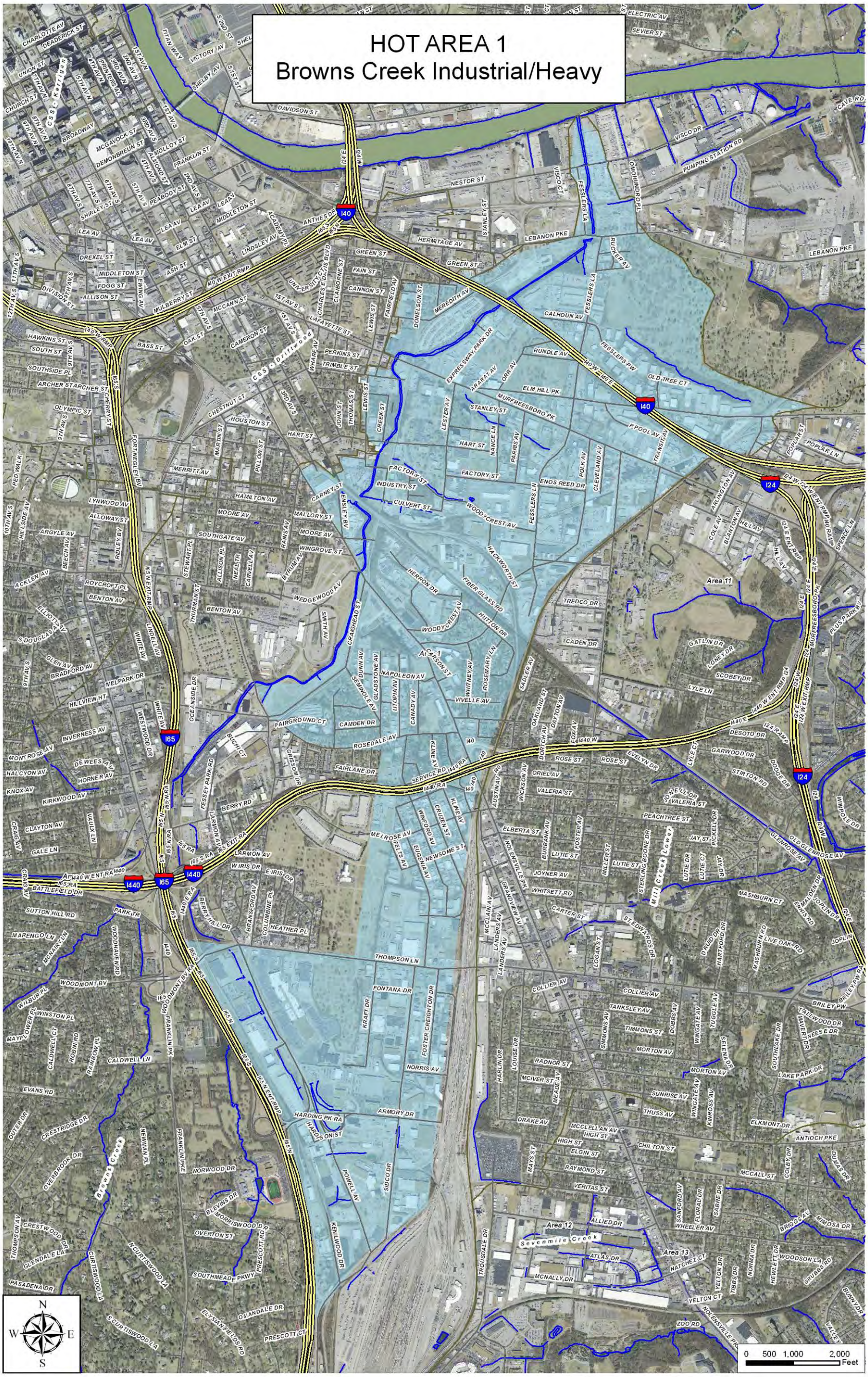
Note: PY = Permit Year

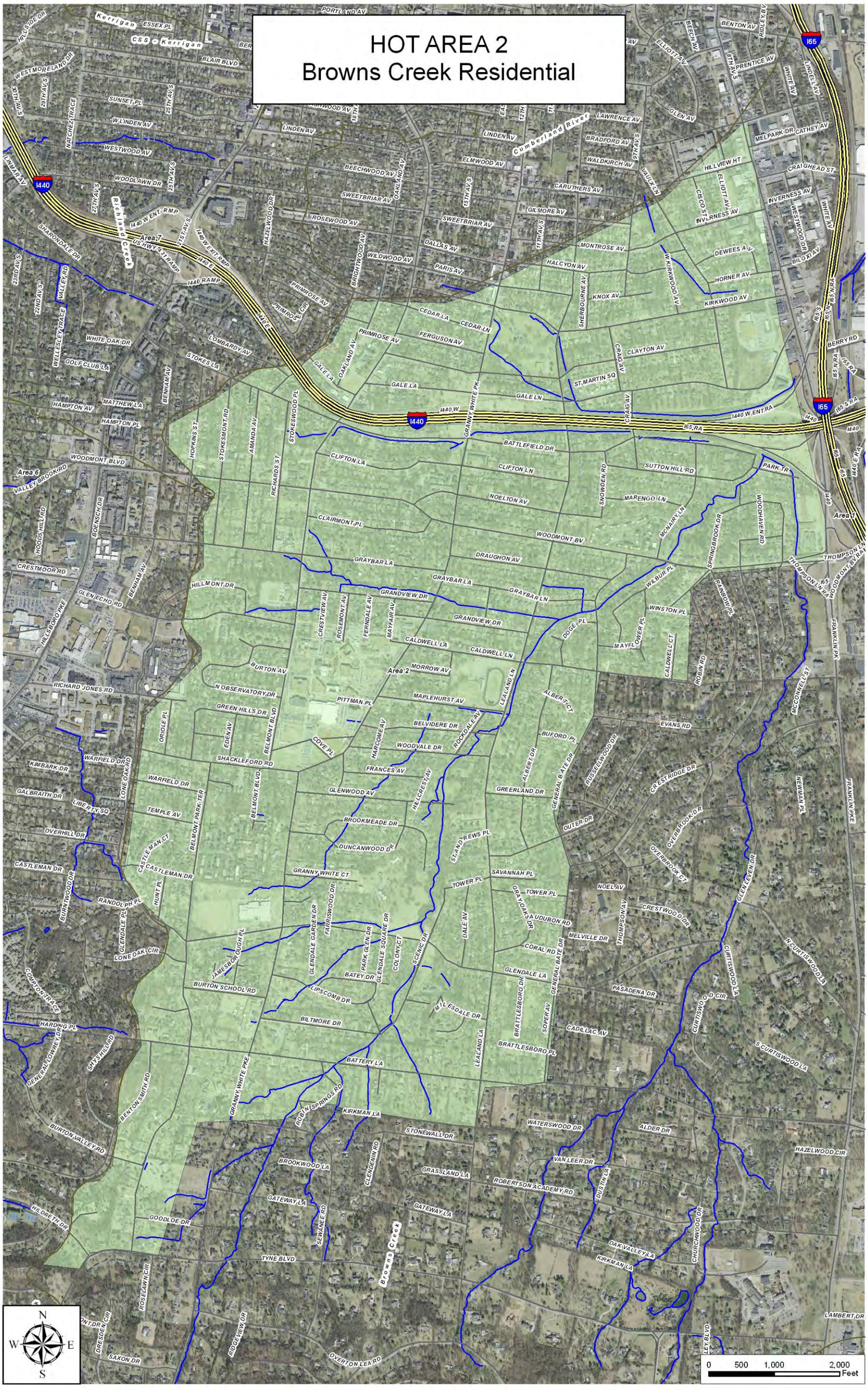
	Sonia Harvat	Julie Berbiglia	Michal Hunt	Josh Hayes	Dale Binder	NPDES Staff	Kimberly Hayes
Color Key							

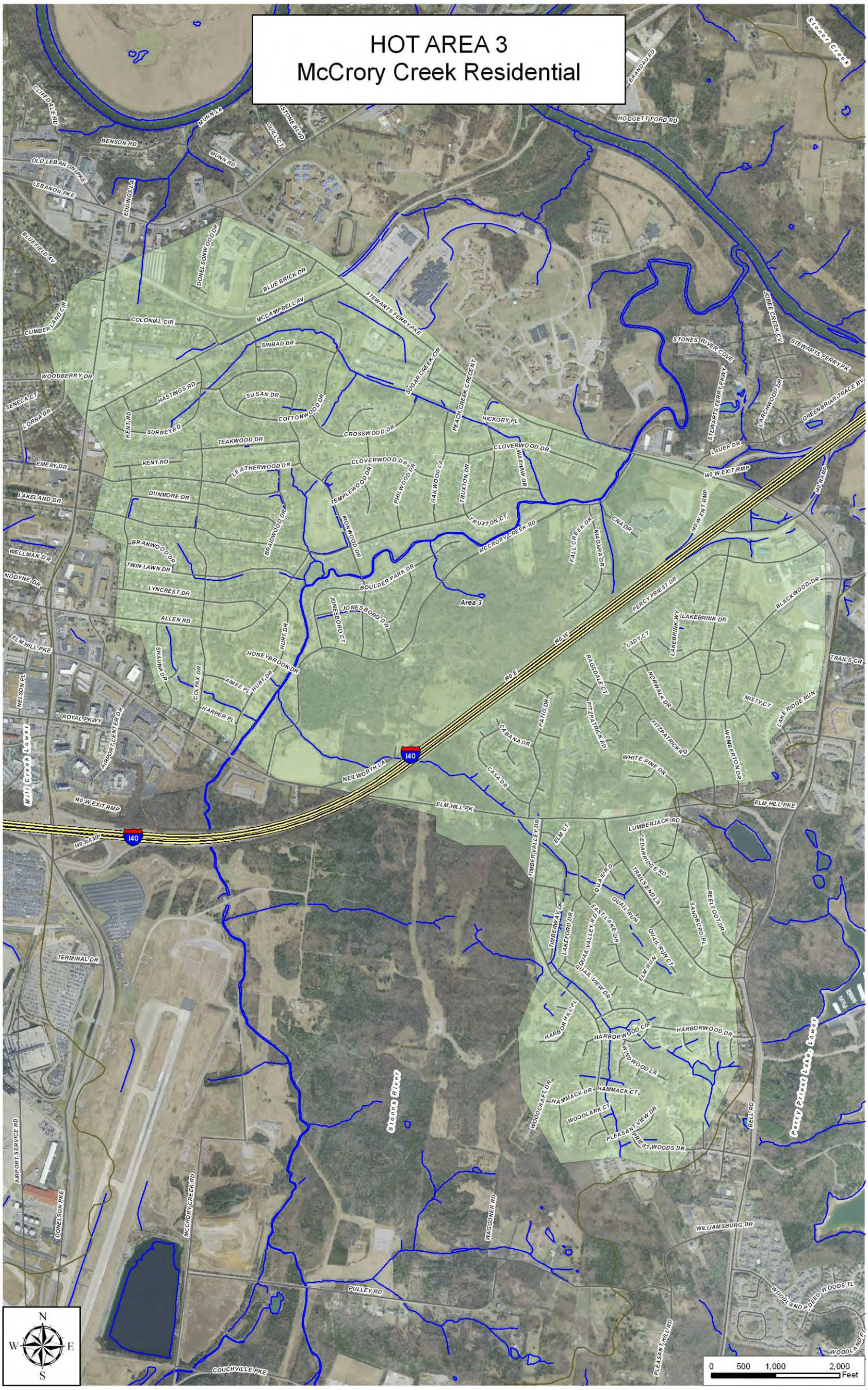
5.0 PIE Plan Effectiveness Assessment:

Throughout implementation of the PIE Plan, MWS will attempt to assess the effectiveness of the educational messages. Some potential assessment methods may include performing surveys to certain target audiences during presentations and analyzing monitoring data before and after targeted education has been performed.

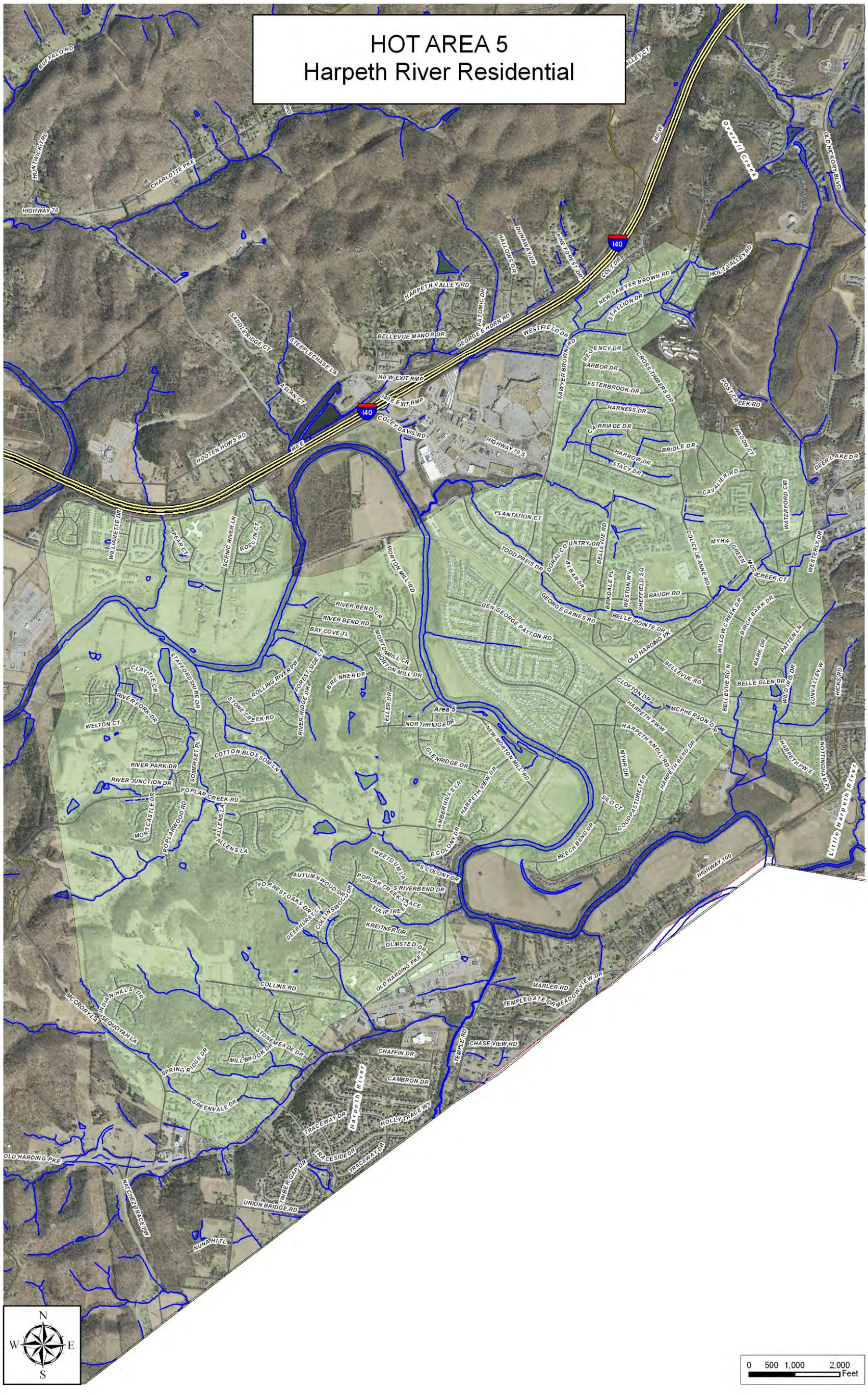
PIE Plan
Attachment A
Individual Geographic "Hot Areas" Maps


HOT AREA 1
Browns Creek Industrial/Heavy
Area 11
Area 12
Area 13
Mill Creek Lower
Sevenmile Creek
Browns Creek
0 500 1,000 2,000
Feet


HOT AREA 2
Browns Creek Residential
Area 1
Area 2
Area 6
Cumberland River
Richland Creek
Browns Creek
I440
I65
0 500 1,000 2,000
Feet
N
W
E
S


HOT AREA 3
McCrory Creek Residential
Area 3
I40
I40 W
I40 E
I40 RAMP
I40 W EXIT RMP
I40 W ENT RMP
I40 CAMP
Stones River
Mill Creek Lower
Percy Priest Lake Lower
Stoner Creek
CLIFFDALE RD
MUNN LA
BENSON RD
MUNN RD
GUILL CT
STONE BLVD
BRANDAU RD
HOGGETT FORD RD
OLD LEBANON PKE
LEBANON PKE
EDDINGS LA
BLUEFIELD AV
DONELSONWOOD DR
BLUE BRICK DR
MCCAMPBELL AV
STEWARTS FERRY PKE
CUMBERLAND CIR
COLONIAL CIR
SINBAD DR
JOBEE CREEK CV
STONES RIVER COVE
STEWARTS FERRY PK
WOODBERRY DR
HASTINGS RD
SUSAN DR
COTTONWOOD DR
SUGAR CREEK CIR
PEACH CREEK CRESCENT
HICKORY PL
SENECA CT
LORNA DR
KENT RD
SURREY RD
CROSSWOOD DR
STEWARTS FERRY PKWY
LARCHWOOD DR
GREENBRIAR TRACE BV
TEAKWOOD DR
CLOVERWOOD DR
LAUER DR
EMERY DR
KENT RD
LEATHERWOOD DR
CLOVERWOOD DR
WAXHAW DR
LAKELAND DR
DUNMORE DR
TEMPLEWOOD DR
PHILWOOD DR
GAILWOOD LA
TRUXTON DR
TRUXTON CT
BRAIDWOOD DR
IRONWOOD DR
CNA DR
FALL CREEK DR
NIAGARA DR
WELLMAN DR
BRANWOOD DR
MCCRORY CREEK RD
TWIN LAWN DR
NODYNE DR
LYNCREST DR
BOULDER PARK DR
PERCY PRIEST DR
BLACKWOOD DR
JONESBORO CT
JONESBORO DR
ALLEN RD
LAKEBRINK WY
LAKEBRINK DR
LADY CT
ELM HILL PKE
HURT DR
SHAUNA DR
COLFAX DR
HONEYBROOK DR
AIMEE PL
HURT DR
TRAILS CR
RAGSDALE CT
NORWALK DR
NELSON PL
HARPER PL
ROYAL PKWY
AIRPORT CENTER DR
PATIO DR
FITZPATRICK RD
FITZPATRICK PO
MISTY CT
LAKE RIDGE RUN
CABANA DR
WEMBERTON DR
WHITE PINE DR
CASA DR
NEILWORTH LA
ELM HILL PK
LUMBERJACK RD
TIMBERVALLEY DR
ELM CT
CEDARRIDGE RD
QUAIL RD
TRAILS END LA
QUAIL RUN
REELFOOT DR
TIMBERWAY DR
LAKEFORD DR
EAST LAKE DR
QUAIL VALLEY RD
QUAIL RUN CT
ELM RUN
QUAIL VIEW DR
HARBOR HILL PL
HARBORWOOD CIR
HARBORWOOD DR
WINDWOOD LA
WOODCRAFT DR
HAMMACK DR
HAMMACK CT
WOODLARK CT
PLEASANT VIEW DR
PRIEST WOODS DR
BELL RD
TERMINAL DR
AIRPORT SERVICE RD
DONELSON PKE
MCCRORY CREEK RD
WAGGONER RD
PULLEY RD
COUCHVILLE PKE
WILLIAMSBURG DR
WOODLAND DEED WOODS TL
PLEASANT HILL RD
N
W
E
S
0 500 1,000 2,000
Feet


HOT AREA 4
Harpeth River Residential
HEATH RD
HIGHWAY 70 S
CANOE CT
BOUNDRY,RN
BOUNDARY,RN
RIVERVALLEY,DR
VALLEYPARK,DR
WESTFALL,DR
TRADING POST,CT
Area 4
SETTLERS CT
BOONE,T C
AIMES,CT
BUCKSKIN CT
MIDDLEBROOK CR
TRACE CT
BRIDGEWATER DR
RIVERPLACE DR
SPRINGHAVEN,CT
BLUESTEM,CT
SETTLERS WY
DANIEL TC
SOMERHILL CT
LEXINGTON POINT,DR
EXPLORER TL
CANYON CT
FARMINGTON PL
NEWSOM STATION RD
I40 W EXIT RMP
I40 E
I40 RA
I40 W
I40
Harpeth River
MCCRORY LN
N
W
E
S
0
500
1,000
2,000
Feet


HOT AREA 5
Harpeth River Residential
I40
I40 W EXIT RMP
I40 E EXIT RMP
I40 E
Area 5
Little Harpeth River
N
W
E
S
0 500 1,000 2,000
Feet


HOT AREA 6
Sugartree Creek Residential
Area 6
Area 7
Area 9
Sugartree Creek
Richland Creek
I440
WOODMONT BLVD
HAMPTON AV
ABBOTT MARTIN RD
HILLSBORO PKE
HARDING PL
TRIMBLE RD
CASTLEMAN DR
COLEWOOD DR
VALLEY BROOK RD
CROSS CREEK RD
SUGARTREE RD
WALLACE LA
HOBBS RD
WHITE BRIDGE PKE
HARDING PKE
BURTON HILLS BLVD
N
S
E
W
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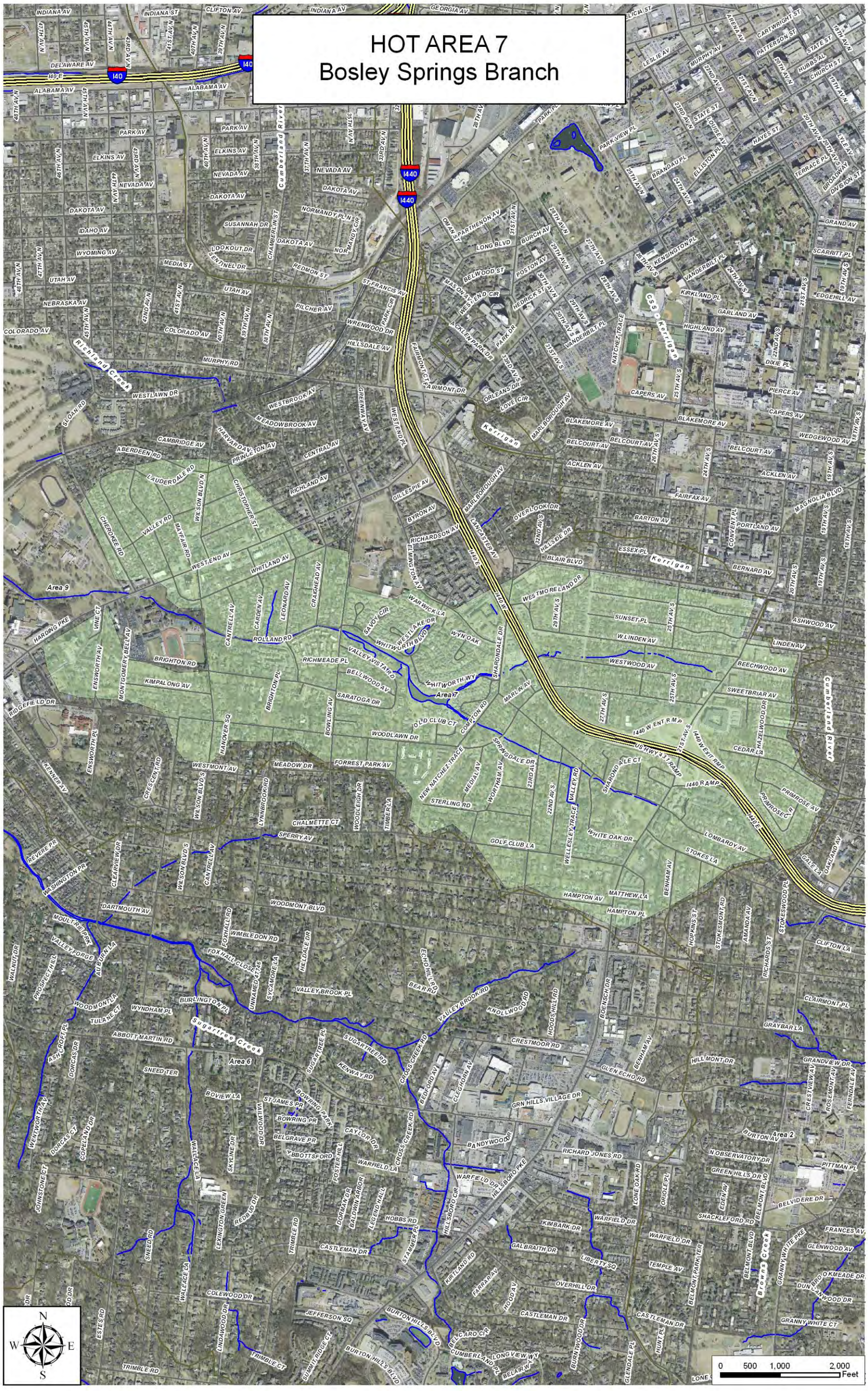
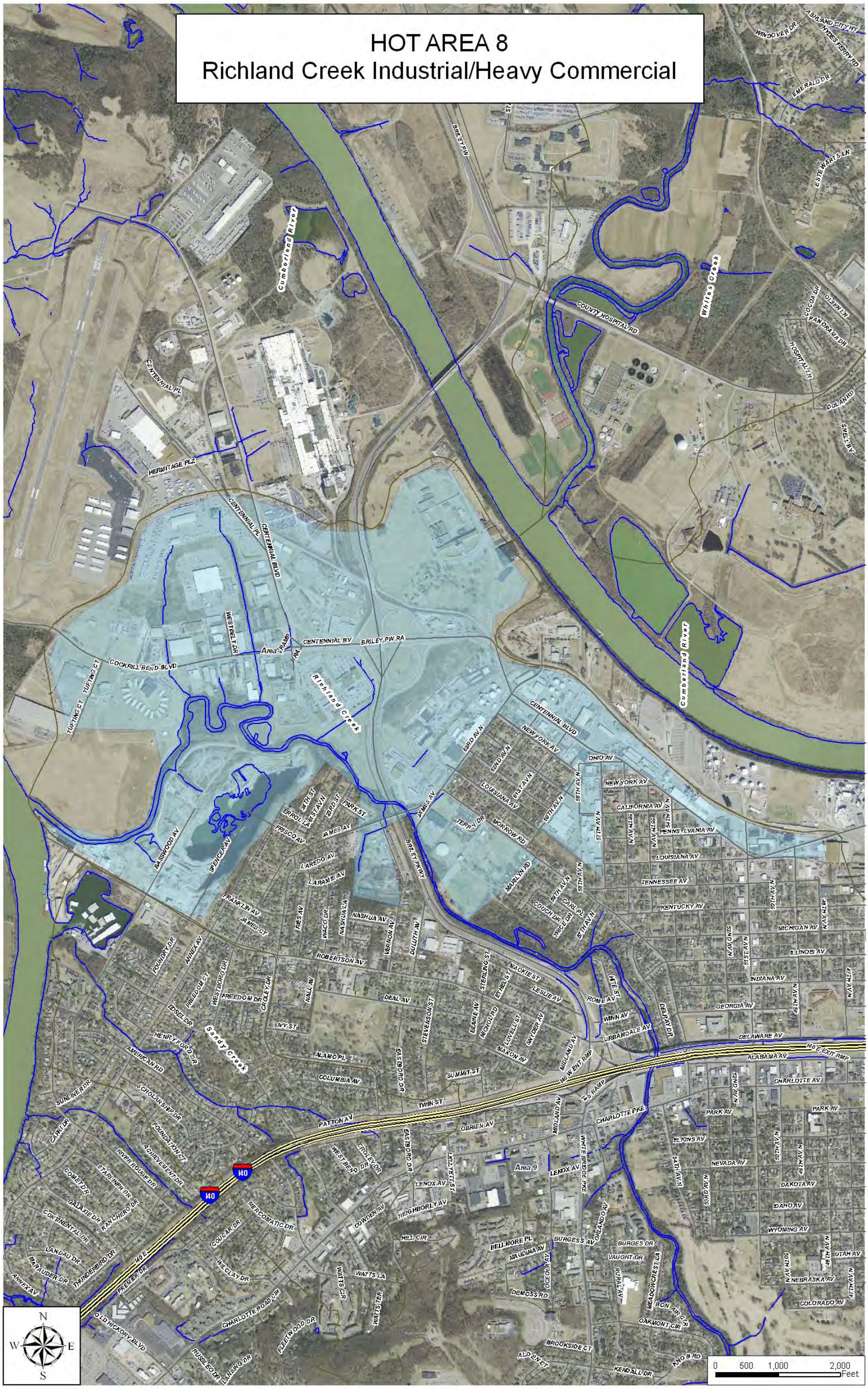
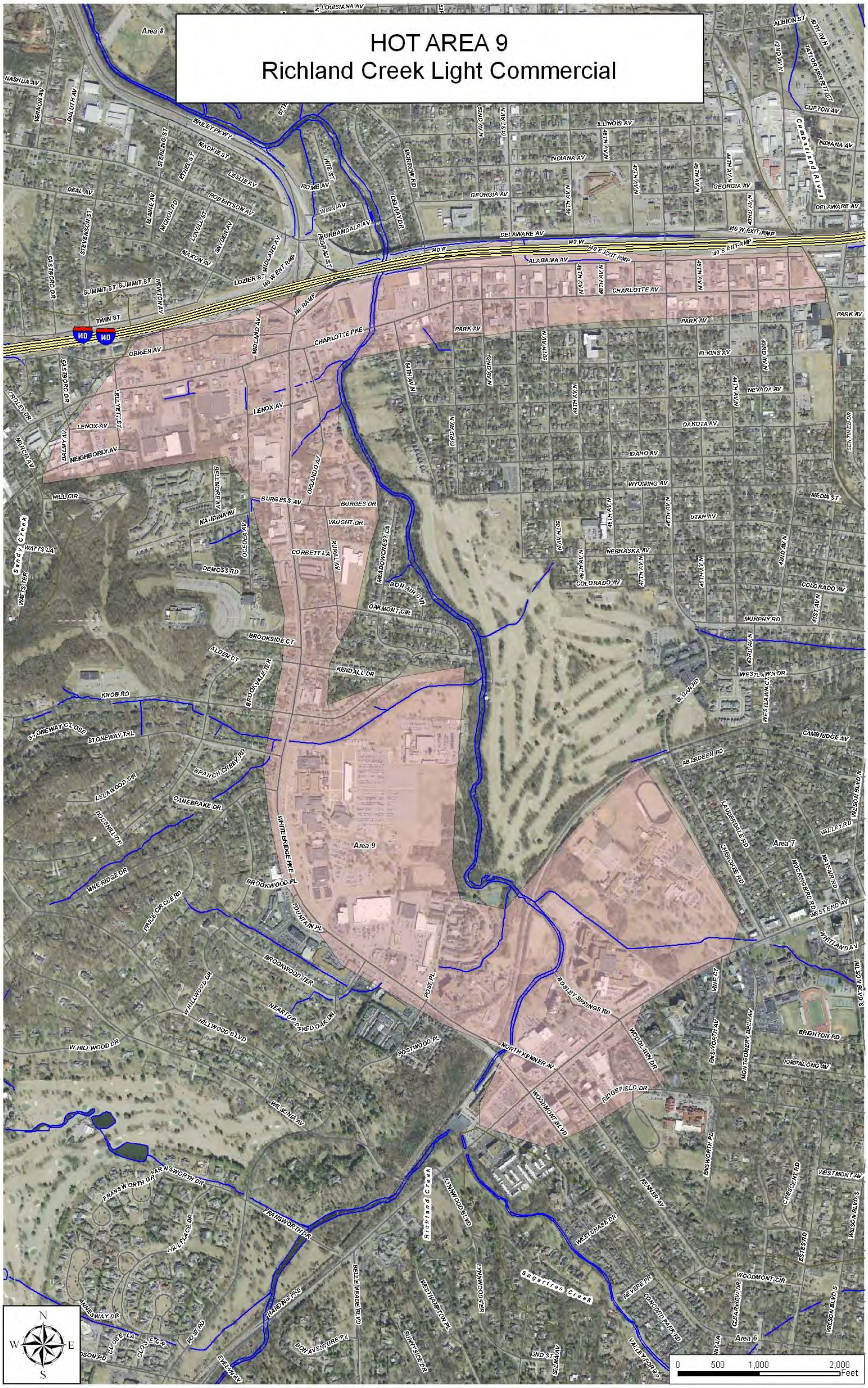
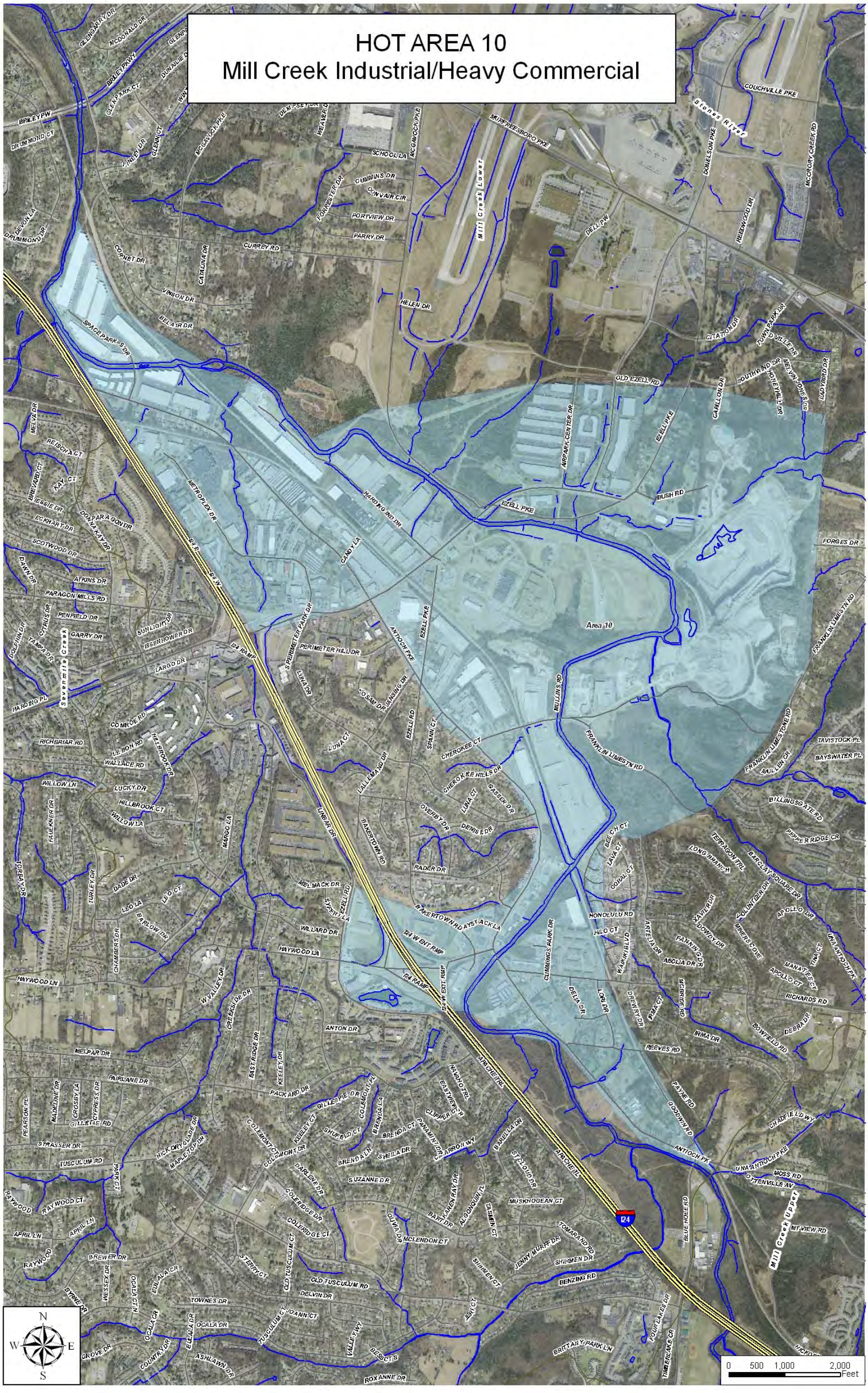
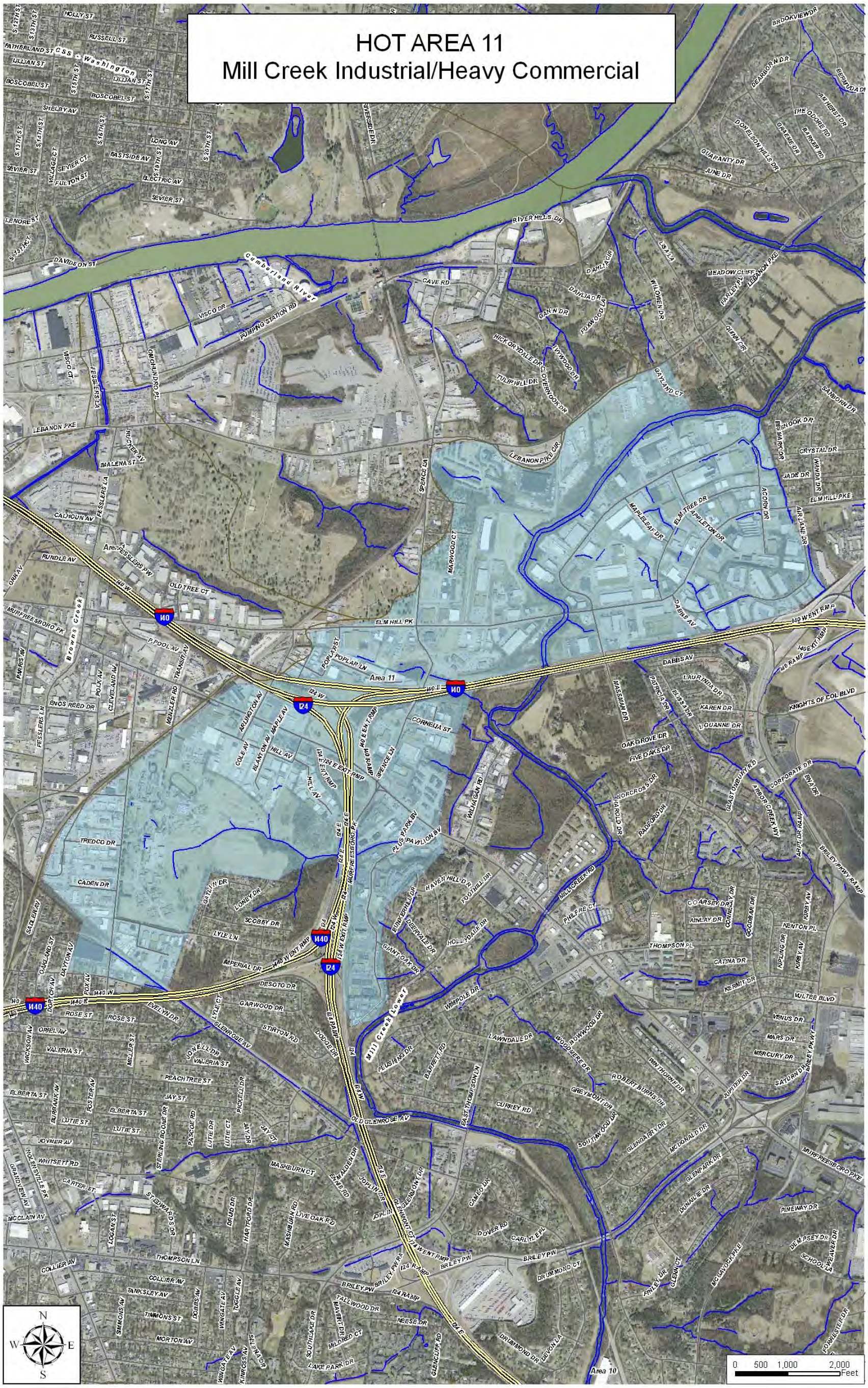
1,000
2,000
Feet

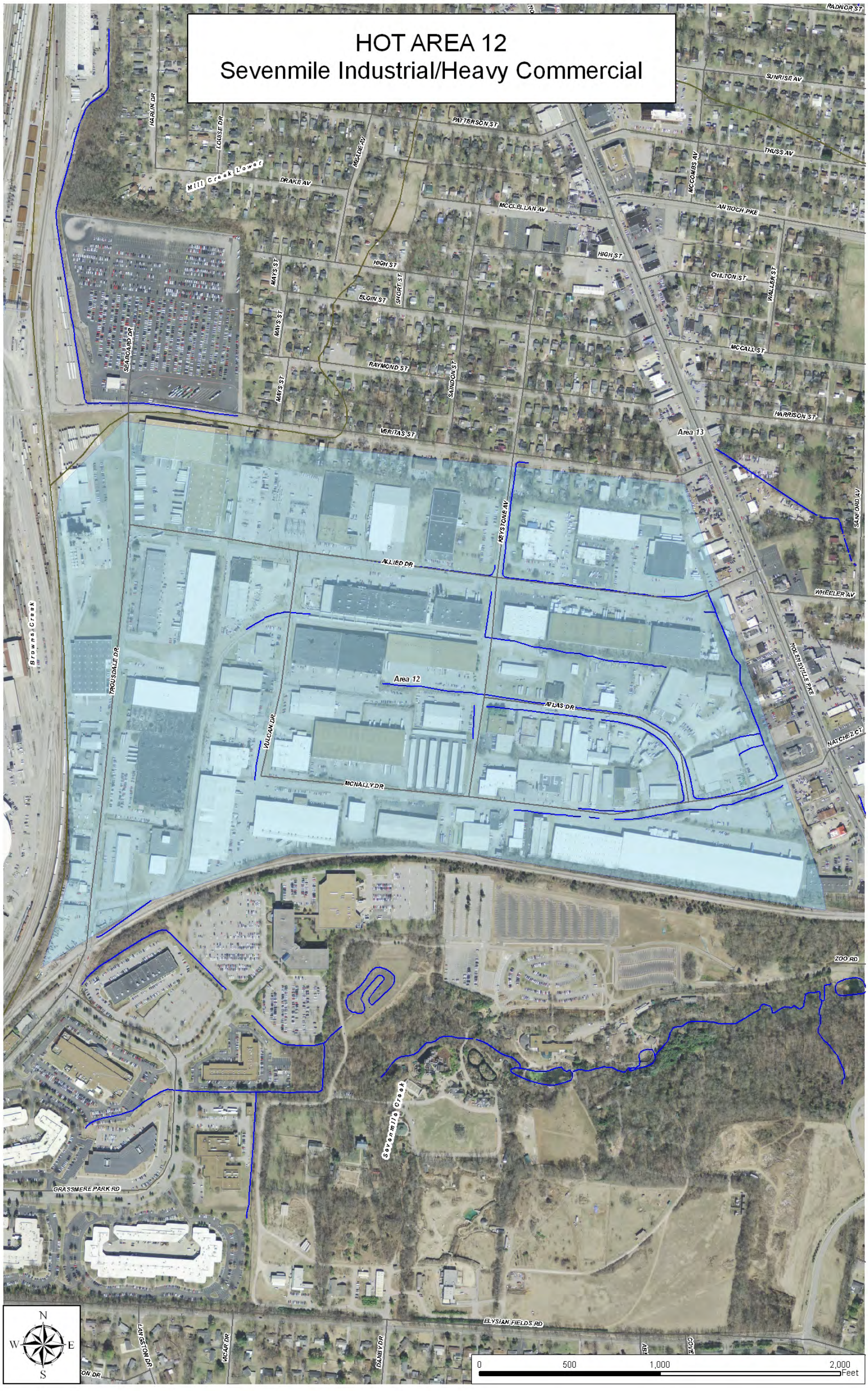

HOT AREA 7
Bosley Springs Branch
Area 9
Area 6
Area 7
Area 2
Cumberland River
Richland Creek
Sugartree Creek
Browns Creek
Kerrigan
I-40
I-440
0 500 1,000 2,000 Feet
N
W
E
S

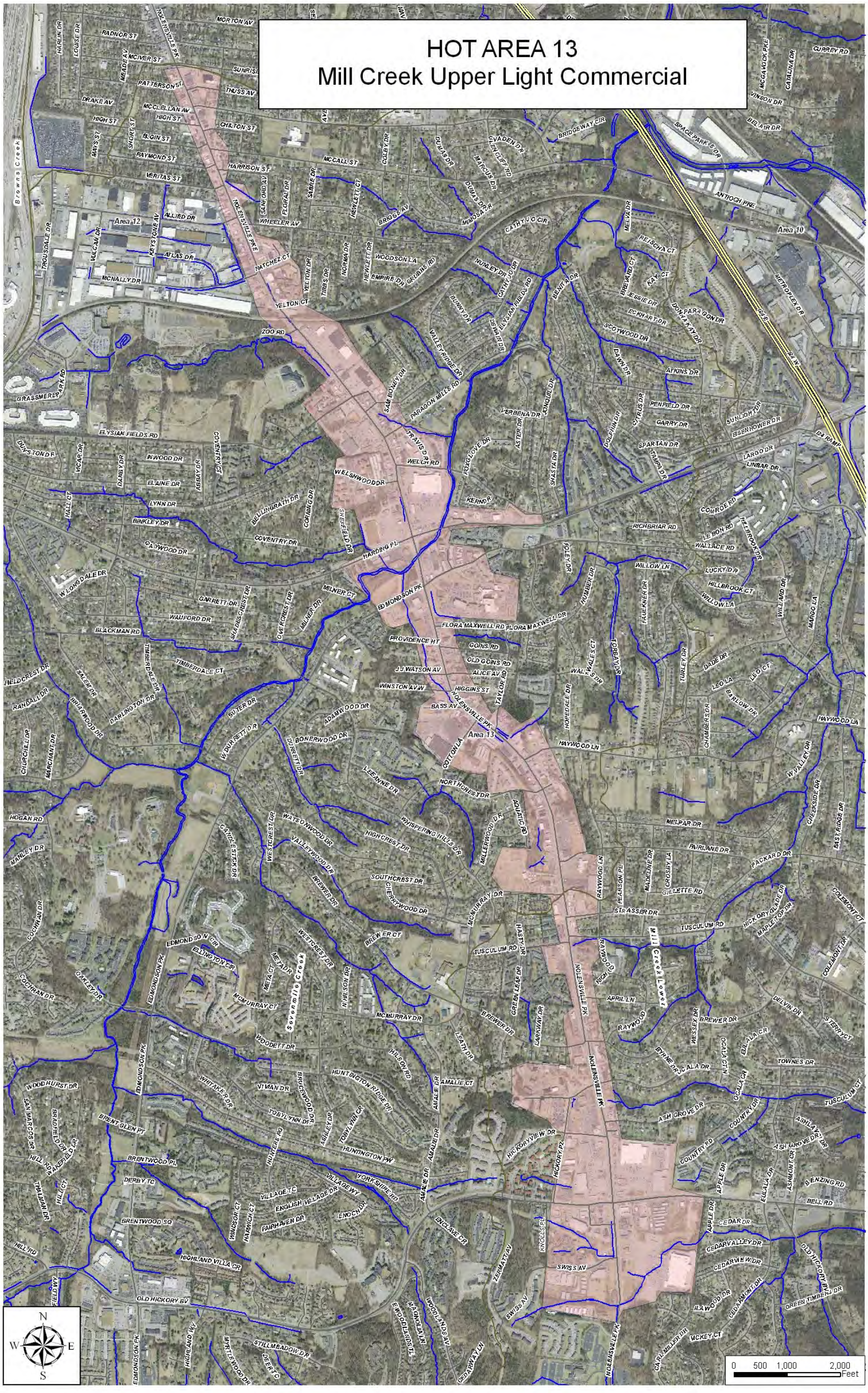

HOT AREA 8
Richland Creek Industrial/Heavy Commercial
Cumberland River
Whites Creek
Richland Creek
Area 9
Area 8
CENTENNIAL BLVD
COCKRILL BEND BLVD
CENTENNIAL PL
CENTENNIAL BV
B.RILEY PW RA
COUNTY HOSPITAL RD
JAMES AV
TERRY DR
MORROW RD
BRILEY PKWY
CHARLOTTE PKE
TWIN ST
I40 E
I40
0 500 1,000 2,000
Feet
N
W
E
S

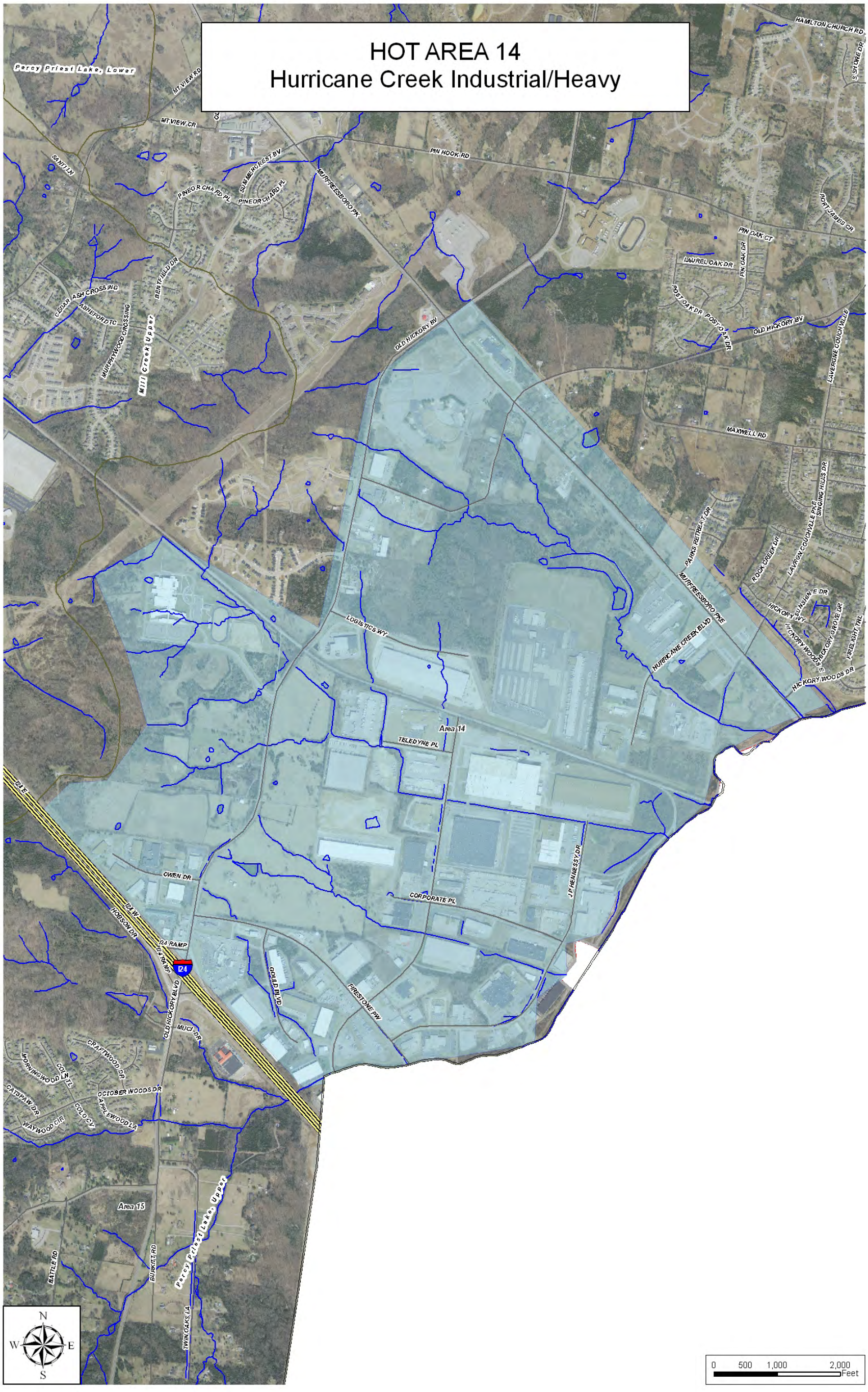

HOT AREA 9
Richland Creek Light Commercial
Area 8
Area 9
Area 7
Area 6
I40
I40 W
I40 E
I40 W ENT RMP
I40 W EXIT RMP
I40 E ENT RMP
I40 E EXIT RMP
I40 RAMP
LOUISIANA AV
NASHUA AV
VERNON AV
DULUTH AV
BRILEY PKWY
STERLING ST
MACKIE ST
ETHEL ST
LESLIE AV
DEAL AV
ROBERTSON AV
BLAINE AV
NICHOLAS RD
LOVELL ST
SAWYER AV
MAXON AV
STEVENSON ST
EASTSIDE DR
SUMMIT ST
NEWTON AV
LOZIER ST
MIDLAND AV
TWIN ST
OBRIEN AV
CHARLOTTE PKE
PEGRAM ST
ROME AV
WINN AV
PURDANDALE AV
DELRAY DR
MORROW RD
ILLINOIS AV
INDIANA AV
GEORGIA AV
DELAWARE AV
ALABAMA AV
CHARLOTTE AV
PARK AV
ELKINS AV
NEVADA AV
DAKOTA AV
IDAHO AV
WYOMING AV
UTAH AV
NEBRASKA AV
COLORADO AV
MURPHY RD
ALBION ST
TAYLOR MERRITT CT
CLIFTON AV
Cumberland River
DELAWARE AV
GRIDLEY DR
MARCIA AV
BALMY AV
NEIGHBORLY AV
LENOX AV
LELIA YETT ST
BELLMORE AV
HILL CIR
MAUDINA AV
OCEOLA AV
BURGESS AV
BURGES DR
VAUGHT DR
CORBETT LA
RURAL AV
ORLANDO AV
MEADOWCREST LA
BONAIR CIR
OAKMONT CIR
Sandy Creek
WATTS LA
WATTS TER
DEMOSS RD
BROOKSIDE CT
ALDEN CT
KENDALL DR
BROOKVALLEY TER
KNOB RD
STONEWAY CLOSE
STONEWAY TRL
BRANCH CREEK RD
LELIAWOOD CIR
CANEBRAKE DR
DOGWILL DR
WHITE BRIDGE PKE
BROOKWOOD PL
FOUNTAIN PL
BROOKWOOD TER
PRIDE CIR
OLEO DR
WHITE RIDGE DR
W HILLWOOD DR
HILLWOOD BLVD
NEARTOP OAK LA
RED OAK LA
POSTWOOD PL
POST PL
BOSLEY SPRINGS RD
NORTH KENNER AV
WILSONIA AV
FRANSWORTH DR
FARNSWORTH DR
HILL PLACE DR
HARDING PKE
BELLEMEADE BLVD
BONAVENTURE PL
SUNNYSIDE DR
EVELYN AV
Richland Creek
LYNWOOD BLVD
LYNWOOD TER
WESTHAMPTON PL
Sugartree Creek
WESTCHASE DR
KENNER AV
WOODLAWN DR
WOODMONT BLVD
RIDGEFIELD DR
ENSWORTH AV
ENSWORTH PL
MONTGOMERY BELL AV
BRIGHTON RD
KIMPALONG AV
WESTMONT AV
CRESCENT RD
ESTES RD
WILSON BLVD S
WOODMONT CIR
CLEARVIEW DR
REVERE PR
CONCORD PARK RD
VALLEY FORGE
2ND ST
SELMA AV
VINE CT
SLOAN RD
WESTLAWN CT
WESTLAWN DR
CAMBRIDGE AV
ABERDEEN RD
LAUDERDALE RD
CHEROKEE RD
MOCKINGBIRD RD
MAYFAIR RD
WESTEND AV
WHITLAND AV
VALLEY RD
WILSON BLVD N
MEDIA ST
SENTINEL DR
N
S
E
W
0
500
1,000
2,000
Feet


HOT AREA 10
Mill Creek Industrial/Heavy Commercial
Area 10
Mill Creek Lower
Mill Creek Upper
Sevenmile Creek
I24
N
W
E
S
0 500 1,000 2,000
Feet

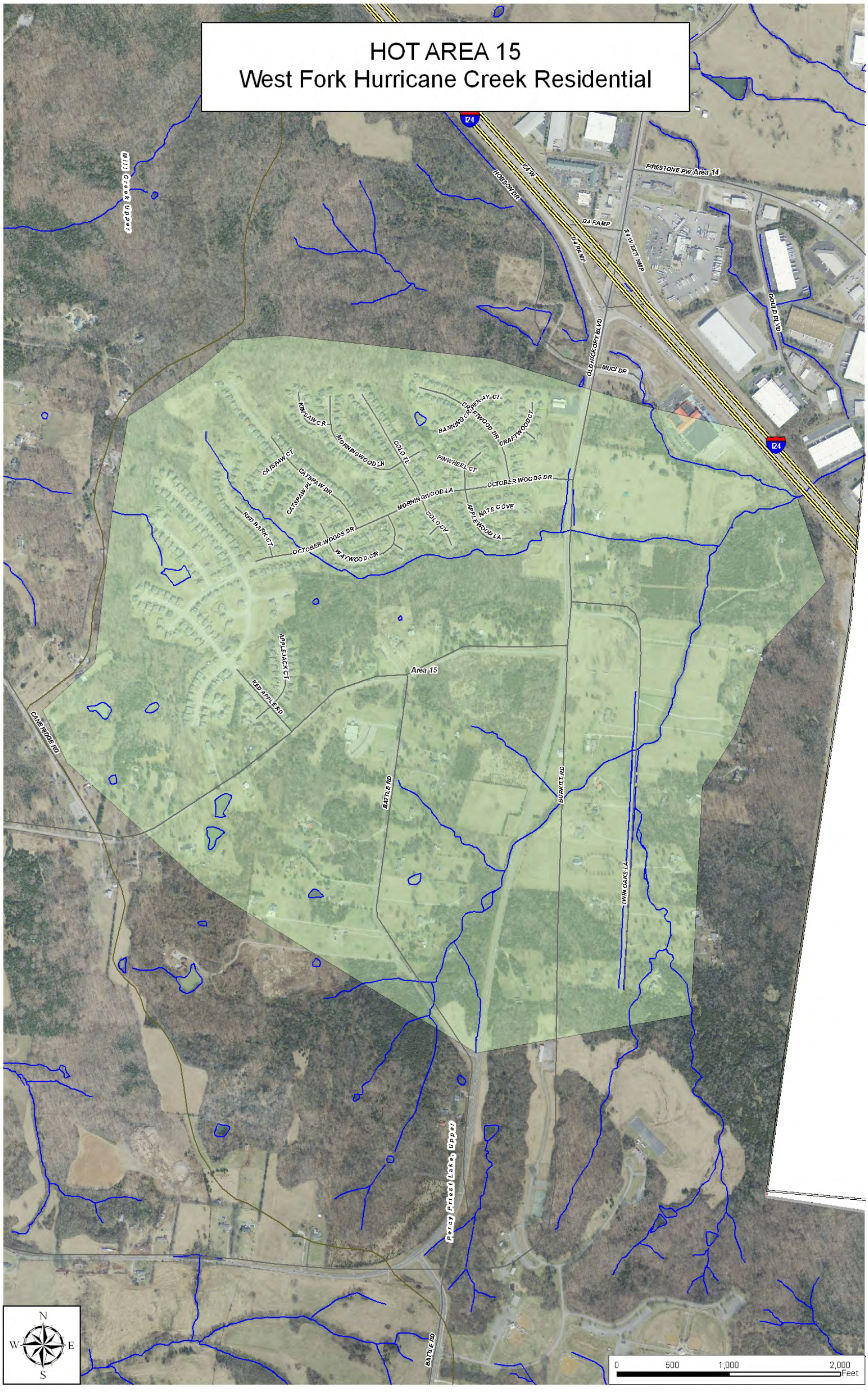

HOT AREA 11
Mill Creek Industrial/Heavy Commercial
Area 11
Area 10
I40
I24
N
S
E
W
0 500 1,000 2,000
Feet

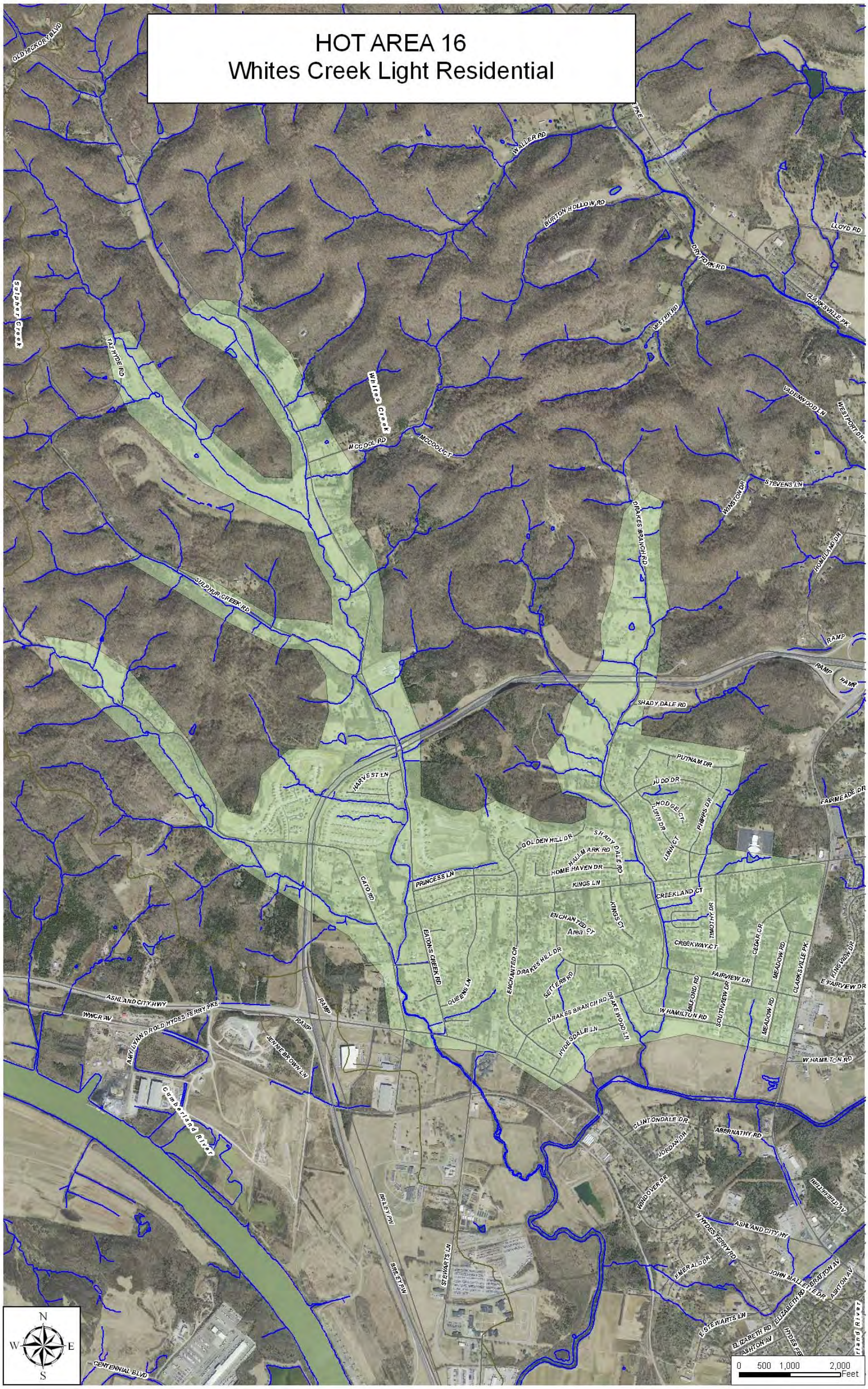

HOT AREA 12
Sevenmile Industrial/Heavy Commercial
RADNOR ST
SUNRISE AV
PATTERSON ST
THUSS AV
HARLIN DR
LOUISE DR
MEADE AV
Mill Creek Lower
DRAKE AV
MCCOMBS AV
ANTIOCH PIKE
MCCLELLAN AV
HIGH ST
MAYS ST
SHORT ST
ELGIN ST
CHILTON ST
WALLER ST
SEABOARD DR
RAYMOND ST
SANDON ST
MCCALL ST
HARRISON ST
VERITAS ST
Area 13
KEYSTONE AV
SANFORD AV
ALLIED DR
WHEELER AV
Browns Creek
TROUSDALE DR
Area 12
VULCAN DR
ATLAS DR
NOLENSVILLE PKE
NATCHEZ CT
MCNALLY DR
ZOO RD
Sevenmile Creek
GRASSMERE PARK RD
ELYSIAN FIELDS RD
LAYGSTON DR
MCAR DR
DANEY DR
N
W
E
S
0
500
1,000
2,000
Feet

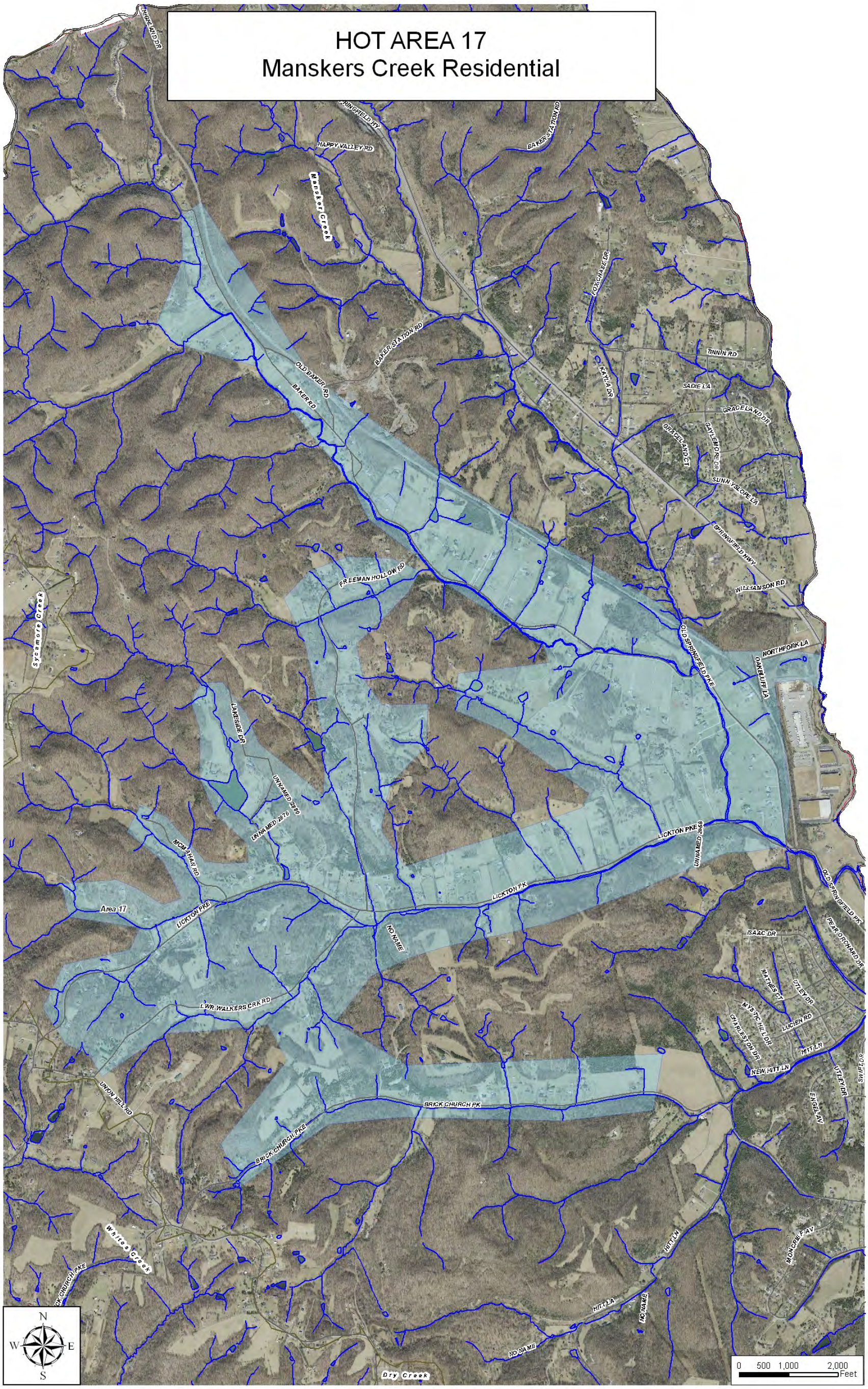

HOT AREA 13
Mill Creek Upper Light Commercial
Area 10
Area 12
Area 13
Browns Creek
Nolensville Pike
Mill Creek
Seven Mile Creek
MORTON AV
RADNOR ST
MCIVER ST
PATTERSON ST
THUSS AV
DRAKE AV
MCCLELLAN AV
HIGH ST
CHILTON ST
BLIGIN ST
RAYMOND ST
HARRISON ST
VERITAS ST
ALLIED DR
WHEELER AV
MCCALL ST
BRIDGEWAY CIR
GLYADEN DR
GLEN CLIFF RD
DUMAS DR
MARCUS DR
DUMAS DR R
MIMOSA DR
CATHY JO CIR
MELVA DR
REISCHA CT
KAY CT
BREVARD CT
JESSIE DR
ECKHART DR
SCOTWOOD DR
DONPARAGON DR
DONKAYDR
METROPLEX DR
ANTIOCH PIKE
I24 RAMP
I24 W
VINSON DR
BELAIR DR
SPACE PARK S DR
CURREY RD
CATALINA DR
MCGAVOCK PIKE
KEYSTONE AV
ATLAS DR
MCNALLY DR
VULCAN DR
TROUSDALE DR
NATCHEZ CT
YELTON CT
YELTON DR
TIBBS DR
NORMA DR
MEWLETT DR
EMPIRE DR
GRUBBS RD
WOODSON LA
NUMLEY DR
CATHY JO DR
ELYSIAN FIELDS RD
BUNNY DR
DENNA DR
VALLEY RIDGE DR
BENITA DR
ZOO RD
GRASSMERE PARK RD
SAM BONEY DR
PARAGON MILLS RD
TRAVIS DR
WELCH RD
WELSHWOOD DR
FOXGLOVE DR
ASTER DR
SHASTA DR
DOLPHIN DR
CITRUS DR
PENFIELD DR
GARRY DR
SUNLIGHT DR
EISENHOWER DR
SPARTAN DR
TAMPA DR
ATKINS DR
DAWN DR
VERBENA DR
ONQUIL DR
LARGO DR
LINBAR DR
COMROE RD
RICHBRIAR RD
LE BON RD
WALLACE RD
HILLBROOK DR
HILLBROOK CT
WILLOW LN
LUCKY DR
WILLOW LA
WILLARD DR
MARGO LA
FOLEY DR
RUMBER DR
FAULKNER DR
TURLEY DR
DADE DR
LEO LA
LEO CT
BARLOW DR
CHAMBERS DR
HOPEDALE DR
WALLACE CT
WALLACE DR
TAYLOR RD
HIGGINS ST
WOLENSVILLE PK
BASS AV
WINSTON AV W
JJ WATSON AV
ALICE AV
OLD GOINS RD
GOINS RD
PROVIDENCE HT
FLORA MAXWELL RD
EDMONDSON PK
MILNER CT
MILNER DR
OVERCREST DR
SHADECREST DR
GARRETT DR
WAUFORD DR
BLACKMAN RD
TIMBERDALE CT
TIMBERDALE DR
SUTER DR
W DURRETT DR
DURRETT DR
BONNERWOOD DR
ADAMWOOD DR
COTTON LA
HAYWOOD LN
HAYWOOD LA
W VALLEY DR
CREEKSIDE DR
EASTRIDGE DR
LEEANNE DR
NORTHCREST DR
WHISPERING HILLS DR
HIGHCREST DR
MILLERWOOD DR
AQUATIC RD
MELPAR DR
FAIRLANE DR
PACKARD DR
GILLETTE RD
CROSBY LA
MADELINE DR
PEARSON PL
RAYWOOD LN
SIR ASSER DR
TUSCULUM RD
HICKORY GLADE DR
MAPLETOP DR
COLEMONT CT
COLEMONT DR
WATSONWOOD DR
VALLEYWOOD DR
SOUTHCREST DR
CHERRYWOOD DR
MCMURRAY DR
BREWER DR
BREWER CT
WESTCREST DR
EASTCREST DR
BRIARWOOD DR
SALEM DR
DARLINGTON DR
RANDALL DR
FIELDCREST DR
CHURCHILL DR
MARCHANT DR
HOGAN RD
MANLEY DR
COCHRAN DR
OAKLEY DR
EDMONDSON CIR
ELLINGTON CIR
MCMURRAY CT
MCMURRAY DR
META CT
META DR
N NELSON DR
GREEN LEAF DR
LARKWAY DR
LEATH DR
HILSON RD
APRIL LN
RAYWOOD
WESSEX DR
DELVIN DR
STERRY CT
TOWNES DR
BYRNE DR
CALA DR
CALA CIR
ASH GROVE DR
COUNTRY DR
COUNTRY RD
APPLE DR
ASHLA DR
ASHMONT CIR
ASH GROVE DR
BENZING RD
BELL RD
CEDAR DR
CEDAR VALLEY DR
CEDARVIEW DR
CEDARMONT DR
ILAWOOD DR
GREEN TIMBER DR
OLD HICKORY BV
HICKORY VIEW DR
HICKORY PL
KNOLLS PL
SWISS AV
ZERMATT AV
ENCLAVE CR
HUNTINGTON RIDGE DR
HUNTINGTON PW
YORKSHIRE RD
AMALIE DR
AMALIE CT
TOBYLYNN DR
TOBYLYNN CR
ASHLEY DR
BRIDGEWOOD DR
VIVIAN DR
WHITAKER DR
HUMPHRIES RD
BRENT GLEN PT
BRENTWOOD PL
BRENTWOOD SQ
DERBY TC
VILLAGE TC
VILLAGE WY
ENGLISH VILLAGE DR
ENOCH DR
FAIRHAVEN DR
FARWICH CT
WINDSOR CT
HIGHLAND VILLA CR
HILL RD
HILL CT
THELMAN DR
WOODHURST DR
SAN MARCOS DR
BRADFIELD DR
LAKEFIELD DR
HILL RD
WOODETT DR
STILLMEADOW DR
DEER TC
MYRTLEWOOD DR
HIGHLAND WY
EDMONDSON PK
WOODLANDS AV
MAGNOLIA LN
EWOODLANDS TL
CEDARWAY LN
CARL MILLER DR
MCKEY CT
HOLLENSVILLE PK
SHEFFIELD DR
COVENTRY CT
COVENTRY DR
HALL CT
DUNSTON DR
VICAR DR
DANBY DR
INWOOD DR
ELAINE DR
ABBAY DR
LYNN DR
BINKLEY DR
GAYWOOD DR
BELLINGRATH DR
COPAMING DR
W LONGDALE DR
HARDING PL
FOLEY DR
WILLOW LN
LUCKY DR
HILLBROOK CT
WILLOW LA
WILLARD DR
MARGO LA
FLORA MAXWELL RD
PROVIDENCE HT
COINS RD
OLD GOINS RD
ALICE AV
WALLACE DR
TAYLOR RD
HIGGINS ST
WOLENSVILLE PK
BASS AV
WINSTON AV W
JJ WATSON AV
HOPEDALE DR
TURLEY DR
DADE DR
LEO LA
LEO CT
BARLOW DR
CHAMBERS DR
HAYWOOD LN
HAYWOOD LA
W VALLEY DR
CREEKSIDE DR
EASTRIDGE DR
COTTON LA
ADAMWOOD DR
BONNERWOOD DR
W DURRETT DR
DURRETT DR
SUTER DR
TIMBERDALE CT
TIMBERDALE DR
BLACKMAN RD
WAUFORD DR
GARRETT DR
SHADECREST DR
OVERCREST DR
MILNER DR
MILNER CT
EDMONDSON PK
HARDING PL
SHEFFIELD DR
WELSHWOOD DR
WELCH RD
TRAVIS DR
SAM BONEY DR
PARAGON MILLS RD
ELYSIAN FIELDS RD
COVENTRY CT
COVENTRY DR
HALL CT
DUNSTON DR
VICAR DR
DANBY DR
INWOOD DR
ELAINE DR
ABBAY DR
LYNN DR
BINKLEY DR
GAYWOOD DR
BELLINGRATH DR
COPAMING DR
W LONGDALE DR
GRASSMERE PARK RD
ZOO RD
ALLIED DR
KEYSTONE AV
ATLAS DR
MCNALLY DR
VULCAN DR
TROUSDALE DR
NATCHEZ CT
YELTON CT
YELTON DR
TIBBS DR
NORMA DR
MEWLETT DR
EMPIRE DR
GRUBBS RD
WOODSON LA
NUMLEY DR
CATHY JO DR
ELYSIAN FIELDS RD
BUNNY DR
DENNA DR
VALLEY RIDGE DR
BENITA DR
WHEELER AV
MCCALL ST
BRIDGEWAY CIR
GLYADEN DR
GLEN CLIFF RD
DUMAS DR
MARCUS DR
DUMAS DR R
MIMOSA DR
CATHY JO CIR
MELVA DR
REISCHA CT
KAY CT
BREVARD CT
JESSIE DR
ECKHART DR
SCOTWOOD DR
DONPARAGON DR
DONKAYDR
METROPLEX DR
ANTIOCH PIKE
I24 RAMP
I24 W
VINSON DR
BELAIR DR
SPACE PARK S DR
CURREY RD
CATALINA DR
MCGAVOCK PIKE
CHILTON ST
HIGH ST
MAYS ST
SHORT ST
MEADE AV
LOUISE DR
HARLIN DR
SUNRISE
SABRE DR
COLBY DR
SANFORD AV
FLORAL DR
N
S
E
W
0 500 1,000 2,000
Feet

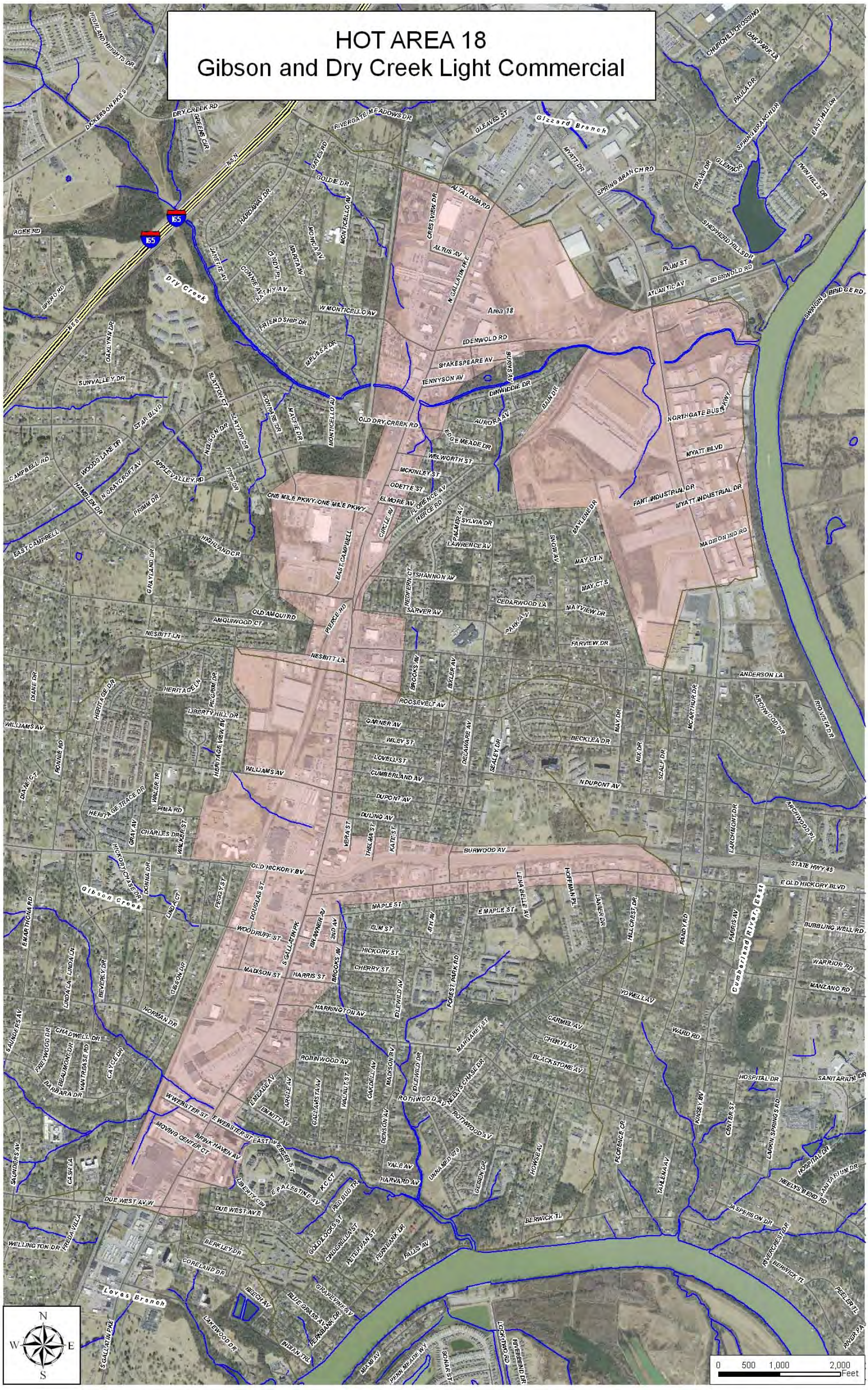

HOT AREA 14
Hurricane Creek Industrial/Heavy
Percy Priest Lake, Lower
MT VIEW RD
MT VIEW CR
SANTI LN
PINEORCHARD PL
SUMMERCREST BV
MURFREESBORO PK
PIN HOOK RD
HAMILTON CHURCH RD
PORT JAMES CR
PIN OAK CT
LAUREL OAK DR
POST OAK DR
OLD HICKORY BV
LAVERGNE COUCHVILLE
MAXWELL RD
CEDAR ASH CROSSING
ASHEFORD TC
MURPHYWOOD CROSSING
BENTFIELD DR
Mill Creek Upper
LOGISTICS WY
HURRICANE CREEK BLVD
PARKS RETREAT DR
ROCK CREEK DR
SINGING HILLS DR
HICKORY SUNSHINE DR
HICKORY GROVE DR
FREIGHT TRL
HICKORY WOODS DR
Area 14
TELEDYNE PL
OWEN DR
CORPORATE PL
J P HENNESSY DR
GOULD BLVD
FIRESTONE PW
I24 E
I24 W
I24 RAMP
HOBSON DR
OLD HICKORY BLVD
MUCI DR
CRAFTWOOD DR
MORNINGWOOD LN
COLT CT
CATSPAW DR
OCTOBER WOODS DR
APPLEWOOD LA
COLONY
WAYWOOD CIR
Area 15
BATTLE RD
BURKITT RD
Percy Priest Lake, Upper
TWIN OAKS LA
N
W
E
S
0 500 1,000 2,000
Feet

HOT AREA 15
West Fork Hurricane Creek Residential




HOT AREA 16
Whites Creek Light Residential
OLD HICKORY BLVD
WALLER RD
BURTON HOLLOW RD
DRY FORK RD
LLOYD RD
CLARKSVILLE PK
WESTER RD
Sulphur Creek
TAZ HYDE RD
Whites Creek
MCCOOL RD
MCCOOL CT
VADIENNWOOD LN
WESTPORT DR
STEVENS LN
WINSTON DR
DRAKES BRANCH RD
HOMELAND DR
SULPHUR CREEK RD
RAMP
SHADY DALE RD
PUTNAM DR
JUDD DR
HODGE CT
LINN DR
PHIPPS DR
LINN CT
FAIRMEADE DR
HARVEST LN
GOLDEN HILL DR
SHADY DALE RD
HALLMARK RD
HOME HAVEN DR
PRINCESS LN
KINGS LN
CREEKLAND CT
CATO RD
KINGS CT
ENCHANTED CT
Area C
TIMOTHY DR
CREEKWAY CT
CEDAR CR
MEADOW RD
CLARKSVILLE PK
KING VIEW DR
E FAIRVIEW DR
EATONS CREEK RD
DRAKES HILL DR
ENCHANTED CR
SETTERS RD
QUEENS LN
FAIRVIEW DR
MILFORD RD
SOUTHVIEW DR
DRAKES BRANCH RD
DRAKEWOOD LN
HYDESDALE LN
W HAMILTON RD
ASHLAND CITY HWY
WMCR AV
AMY LYNN DR
OLD HYDES FERRY PKE
JEWNE BROWN LN
Cumberland River
CLINTONDALE DR
JORDAN DR
ABERNATHY RD
WINDOVER DR
BRILEY PW
STEWARTS LN
HYDES FERRY RD
EMERALD DR
JOHN MALLETT BRAXTON AV
ASHTON AV
E STEWARTS LN
ELIZABETH RD
CENTENNIAL BLVD
N
W
E
S
0 500 1,000 2,000
Feet


HOT AREA 17
Manskers Creek Residential
HIGHLAND DR
SPRINGFIELD HY
HAPPY VALLEY RD
BAKER STATION RD
Manskers Creek
FOXCHASE DR
BAKER STATION RD
TINNIN RD
KAYLA DR
SADIE LA
GRACELAND DR
GRACELAND CT
GAYLEMORE DR
SUNNYSLOPE LA
SPRINGFIELD HWY
WILLIAMSON RD
OLD BAKER RD
BAKER RD
Sycamore Creek
FREEMAN HOLLOW RD
OLD SPRINGFIELD PKE
NORTH FORK LA
OAKBLUFF LA
LAKESIDE DR
UNNAMED 2880
UNNAMED 2876
MCMAHAN RD
LICKTON PKE
UNNAMED 2868
LICKTON PK
OLD SPRINGFIELD PK
Area 17
LICKTON PKE
NO NAME
FERRORCHARD DR
ISAAC DR
MATHES CT
UTLEY DR
LWR WALKERS CRK RD
MYSTIC HL DR
CHARLESTON DR
LUCIEN RD
HITT LN
NEW HITT LN
UTLEY DR
SWIFT DR
ENGEL AV
UNION MILL RD
BRICK CHURCH PK
BRICK CHURCH PKE
Whites Creek
CK CHURCH PKE
MONCREIF AV
HITT LN
HITT LA
NO NAME
NO NAME
Dry Creek
N
W
E
S
0 500 1,000 2,000
Feet


HOT AREA 18
Gibson and Dry Creek Light Commercial
Area 18
Dry Creek
Gibson Creek
Loves Branch
Gizzard Branch
Cumberland River, East
I65
0 500 1,000 2,000 Feet
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SWMP APPENDIX D

ENFORCEMENT RESPONSE PLAN

Metro Nashville/Davidson County
Municipal Separate Storm Sewer System Permit
Enforcement Response Plan

Finalized:
August, 2012

Implemented by the:
MWS, Stormwater NPDES Office
1607 County Hospital Road
Nashville, TN 37218

Introduction:

The Stormwater National Pollutant Discharge Elimination System (NPDES) office is responsible for enforcing stormwater code. There are three distinct types of enforcement within the NPDES office. The first section of the Enforcement Response Plan (ERP) covers construction and development stormwater code violations. The second section of ERP covers stormwater code violation specific to illicit discharges regardless of whether they are from development properties or other sources. The final section explains the NPDES office enforcement measures for Post Construction Best Management Practice (BMP).

Section 1: Construction Related Violations:

1.1 NPDES Office EPSC Summary:

Adequate EPSC shall be required on Grading Permit erosion control plans prior to them being approved. Initial EPSC must be installed, inspected and approved prior to the grading permit being issued. Controls shall be proactively maintained (including required inspections by the permittee's EPSC Professional) during the project and until the site achieves final stabilization. EPSC that is found to be inadequate shall be upgraded by the permittee. EPSC inadequacies represent violations to Metro Code. Additionally, Metro NPDES permit obligations (per State and Federal statutes) require an effective Metro EPSC enforcement program to promote compliance.

1.2 General:

EPSC controls are expected to be installed and maintained per approved plans and associated specifications. Therefore, it is important that EPSC on approved plans be adequate. All site discharges are to be controlled in a manner that does not result in pollution.

If approved EPSC is found by NPDES staff to be inadequate once land disturbance activities commence, the permittee will be notified that enhanced BMPs are required.

Any infraction to Metro Code or the Metro Stormwater Management Manual (SWMM) is considered a separate violation that may be enforced upon.

1.3 Enforcement:

EPSC and maintenance of EPSC is the responsibility of the permittee per their Grading Permit requirements. EPSC maintenance records for a site should used if possible by NPDES staff to determine if enforcement is warranted (to delineate negligence vs. adequate controls that failed during latest rain event).

While weather (ongoing rain) is understood to impact some types of EPSC maintenance activities (i.e. heavy equipment use), it should not be considered to preclude all/interim smaller scale EPSC maintenance efforts (such as using manpower to improve controls etc.).

Lack of EPSC BMP maintenance is a violation (per Metro SWMM). Illicit discharge of sediment due to inadequate EPSC is a violation.

1.4 Enforcement Tools:

Metro Code 15.64.020 grants the regulatory authority for the establishment of the SWMM. Under Metro Code 15.64.220(A), any violation of Chapter 15.64 regarding Stormwater Management, including a violation of the SWMM, is punishable by a civil penalty not to exceed $500.00 dollars. Each day of violation may constitute a separate violation (such as failure to maintain EPSC, illicit discharge and grading without a permit). In certain instances, where construction site activities lead to a significant discharge of sediment to a stream, the illicit discharge penalty formula in Section 2 of the ERP can be used to calculate penalties up to $5,000.

All compliance deadlines and requirements shall be clearly noted on all NOVs/SWOs. Deadlines should be set with the mentality that they will be enforced expeditiously.

Administrative penalty calculation should be based on the NPDES itemized penalty worksheet. A copy of this completed worksheet should be saved in the appropriate file.

The processing of stormwater bonds and grading U&O signoffs will be held until the site is in compliance. Additional grading permits will not be issued for other phases of the project if a portion of the site is in non-compliance.

All NOV/SWO's may be appealed by the person or entity in which it was served to. A hearing must be requested in writing to the issuing Director within ten (10) days of service of the NOV.

If conditions under which a Stormwater Management Committee (SWMC) variance was approved are not met, a SWO may be issued. The SWO shall have a compliance deadline. If compliance is not achieved by the deadline, the matter will be taken to the SWMC for discussion. The committee may rehear the variance with the possibility of revocation.

1.5 Documentation:
All inspections and associated contacts must be documented within the appropriate database (Cityworks or Kiva).

Photographs should be date stamped and/or noted in the inspector's field log and saved in the appropriate network file folder. Enough photographs should be taken to document the violation and the result of the violation. Photographs should be named by year-month-date-photo #. For July 10, 2012 photo 1 would be: 120710-1

1.6 Enforcement Categories:

Official Warnings (verbal or written): should be issued to EPSC professionals, Owners, Contractors, and Developers verbally, via e-mail, phone, and/or fax and should include the compliance deadline (that should take into consideration the next predicted rain event if the matter relates to possible sediment loss). These can be irrespective of when the last rain event occurred at the site. Official warnings are given for issues not rising to the level of enforcements outlined below. All warnings must stipulate the nature of the violation / potential violation and the required corrective action to include any deadlines. All correspondence should be documented in the appropriate database and any written document saved in the appropriate network file. It is not mandatory to give official warnings in advance of other categories of enforcements below. It is however suggested that the site be given as much notice as possible of any potential future site issues.

Notice of Violation (NOV) (no penalty): issued to sites where EPSC is inadequate or in need of significant maintenance, but excessive sediment loss has not been documented/observed at the site (but maintenance or upgrading is needed to prevent sediment loss during future rain events). If improvement is not made within 7 days or before the next rainfall the site may be subject to NOV with penalty. They may also be issued to smaller non-permitted sites such as single family residences in which there are no runoff issues.

NOV (with penalty): issued to sites where EPSC is inadequate or in need of significant maintenance, and sediment loss has been documented/observed at the site. They are issued to sites in which they have not met the specified deadlines and are still in non-compliance from the warnings or NOV listed above. They are also issued to sites found having general SWMM / grading permit violations as found under the itemized penalty worksheet.

To promote compliance, a penalty may be reduced in some instances, but no lower than 50 dollars, if it is documented that the site came into compliance prior to the deadline as stipulated in the NOV. A typical reduction will be 50 percent of the original penalty. An example may be that the unpermitted fill was removed and the site was stabilized as required prior to the deadline. Any penalty reduction options will be clearly written on the NOV that is issued.

Stop Work Order (SWO) (no penalty): issued to all sites found to be grading without a permit and to sites not adhering to the NOV with penalty deadlines (past due). A SWO may also be issued to a site if the conditions of a SWMC variance are not met.

SWO (with penalty): same conditions as NOV penalty in addition to; previously issued NOV compliance conditions have not been met within the stipulated deadline or site noncompliance issues necessitate immediate mitigation (items that must be corrected prior to other work proceeding at the site as the site is losing significant amounts of sediment as evidenced by downstream structures or conveyances). A SWO should be issued to all sites found to be grading without a permit.

Environmental Court: If an offender refuses to accept a certified NOV/SWO letter or enforcement and/or is generally unresponsive to our requirements and deadlines despite our best efforts, the matter should be taken to Metro Environmental Court.

Enforcement Assistance Request to TDEC: TDEC receives an email notification of all Metro-issued construction site-related enforcements, however in addition, there may be occasions given the circumstances where TDEC needs to be notified for enforcement assistance. For violations relating directly to streams or the construction general permit TDEC should be immediately contacted. When a request for assistance is made, proper documentation must accompany the request. This documentation would include: photographs, copies of inspections, copies of correspondence, copies of enforcements taken, and a summary report.

Revocation: Upon notice and opportunity for a hearing, the Director of MWS may revoke any approval or permit issued under the provisions of the SWMM for any of the following reasons:
1. A false statement or misrepresentation of facts was made in the application or plans on which the permit or approval was based;
2. The developer or EPSC professional changes on a project without notifying MWS NPDES department; or,
3. A permitted site has unpaid civil penalties that are delinquent by 60 days or more.

Penalty Multipliers: To promote compliance and to protect water quality, habitat, and floodplain storage penalty multipliers are incorporated within the itemized penalty worksheet.

Table 1 – Grading Permit Violation Itemized Penalty Worksheet

Itemized Penalty Worksheet

Violation	Code / SWMM		Multiplier	Penalty	Total
Grading without a permit,	15.64.140	yes = 1	0	$300.00	$0.00
development related	3.3, 5.5.6	# of acres graded	0	$100.00	$0.00
(large quantity)	15.64.180	in 100 yr floodplain - yes = 1	0	$200.00	$0.00
					$0.00
Grading without a permit, non development related (small quantity)(SFR)	15.64.140, 3.3	yes = 1	0	$50.00	$0.00
					$0.00
Failure to follow plan	4	yes = 1	0	$200.00	$0.00
					$0.00
Transporting fill to a non permitted site	6.10.8	yes = 1	0	$100.00	$0.00
					$0.00
Construction that may increase flooding	15.64.120	yes = 1	0	$200.00	$0.00
					$0.00
Water Quality Buffer	6.9	yes = 1	0	$200.00	$0.00
disturbance		stream listed for habitat impairment - yes = 1	0	$300.00	$0.00
		buffer disturbance >5,000 sqft - yes = 1	0	$200.00	$0.00
					$0.00
Failure to install	2.7, 6.10	yes = 1	0	$100.00	$0.00
/ maintain epsc		# of separate failure locations (list on NOV)	0	$50.00	$0.00
		# of acres with exposed soils	0	$50.00	$0.00
					$0.00
Illicit discharge of	15.64.205	yes = 1	0	$100.00	$0.00
sediment	6.10.3	# of separate discharge points	0	$50.00	$0.00
		in watershed of sediment impaired stream yes = 1	0	$200.00	$0.00
		directly in sediment impaired stream yes = 1	0	$300.00	$0.00
					$0.00
Failure to have epsc professional for gp site	4.3.3	yes = 1	0	$200.00	$0.00
					$0.00
Failure to provide copies of inspection reports	4.3.3, 4.4.3	yes = 1	0	$200.00	$0.00
					$0.00
Failure to post permit	4.4.1	yes = 1	0	$50.00	$0.00
					$0.00
Failure to control construction waste	6.10.8	yes = 1	0	$100.00	$0.00
					$0.00
Areas not stabilized	6.10.1	yes = 1	0	$50.00	$0.00
within 15 days	6.10.4	#of acres not stabilized	0	$50.00	$0.00
					$0.00
Occupying bldg without sw certifications	15.64.110, 3.9	yes = 1	0	$100.00	$0.00
					$0.00
# of previous violations		List dates of previous NOVs issued	0	$200.00	$0.00
for same issues		**			
					$0.00
				PENALTY TOTAL:	**$0.00**

Section 2 : Illicit Discharge Violations:

2.1 NPDES Office Illicit Discharge Summary:

Metro's Non-Stormwater Discharge Code (15.64.205) specifically prohibits all non-stormwater discharges (except those exempted in the code) into community waters, into the waters of the state, or into the municipal separate storm sewer system of the metropolitan government are prohibited and are declared to be unlawful. Additionally, the MS4 permit obligates Metro (per State and Federal statutes) to implement programs, including enforcement, that eliminate such discharges to streams and rivers. This section of the ERP details standard protocol to be followed for enforcement for violations to Metro's Non-Stormwater Discharge Code.

2.2 General:

The NPDES Office discovers illicit discharges to the MS4 system utilizing a variety of methods such as routine inspections, citizen complaints, proactive reconnaissance, etc. Some of the more typical illicit discharges include: wash water, sewage, industrial process discharges and contaminated runoff, paint, sediment, etc. Once discovered, the NPDES Office implements the below enforcement measures in order to gain compliance. The below enforcement steps do not have to be used in sequence, rather the mode of enforcement shall be chosen based on the type of violation.

2.3 Enforcement Proceedings:

Calculation of the monetary penalties associated with illicit discharges can be assessed up to $5,000 per day, per Metro code. For the most part construction site violations are to be calculated using the penalty calculation in Table 1; however, in significant sediment loss situations, the penalty calculation found in Table 2 below can be used. Enforcement can range from simple verbal warnings to environmental court proceedings.

2.4 Enforcement Categories/Steps

Official Warnings (verbal or written): to be issued in the event of minor/negligible discharges to the MS4/community waters especially when the discharge is unintentional (i.e. spill, sewer line break, etc.). In some instances, NPDES staff will observe a non-stormwater discharge on private property in which either no amount or small amounts of the discharge has reached the MS4 or community waters. In this case, the biggest threat to water quality is the potential for contaminated runoff during rain events, which makes it extremely important to issue immediate warnings to the site to expedite compliance. The warning can be either verbal or written and should include specific deadlines and compliance measures to be performed by the responsible party. Some examples of illicit discharge violations subject to official warnings include:

- Pressure washing with small amounts of wash water discharges;
- Private sewer service line break or missing clean-out cap;
- Accidental spills with minor amounts of material reaching the MS4 or community waters;
- Materials exposed to stormwater runoff (messy dumpster pads, fats or grease on ground, open containers of oil, etc.).

Notice of Violation (NOV) (with penalty): to be issued in the event that a more than minor/negligible amount of non-stormwater is discharged to the MS4 or community waters. Every NOV issued will be accompanied with a completed penalty assessment worksheet. All intentional discharges that are more than minor/negligible will result in monetary penalties based on various factors delineated in Table 2. For purposes of this document, "intentional" is defined as an act that was deliberately carried out that led to the discharge of non-stormwater material. A written violation shall clearly state the required remediation for the violation and timeframe for compliance. In most

cases, the carbon copy NOV ticket shall be utilized; however, in some cases a formal letter can serve as the NOV. Some examples of illicit discharges that will be subject to a formal NOV include the following:
;

- Dumping of motor oil or other hazardous chemicals in an MS4 drain or stream;
- Washing out paint brushes or other construction materials in an MS4 drain or stream;
- Discharge of pit pump water or wet saw slurry to the MS4 or stream;
- Washing out concrete truck trays in an MS4 drain or stream;
- Discharge of dumpster leachate to the MS4 or a stream;
- Discharge of industrial process water (without an NPDES permit) to the MS4 or stream;
- Significant amount of contaminated stormwater runoff from private property to the MS4 or stream.

Notice of Violation (NOV) (with daily penalties): to be issued only in rare cases when, for whatever the reason, the site refuses to comply with the first NOV and as a result, a substantial amount of non-stormwater material is being lost to the MS4 or community waters everyday or every time it rains. In the cases where pollution only occurs every time it rains, the daily penalties shall only apply to the days rain occur. Daily penalty amounts are to be calculated using Table 2.

Environmental Court: If an offender refuses to accept a certified NOV/SWO letter or enforcement and/or is generally unresponsive to our requirements and deadlines despite our best efforts, the matter should be taken to Metro Environmental Court. **Injunction**

Enforcement Assistance Request to TDEC: TDEC receives an email notification of all Metro-issued construction site-related enforcements, however in addition, there may be occasions given the circumstances where TDEC needs to be notified for enforcement assistance. For violations involving significant discharges to streams, TDEC should be immediately contacted. When a request for assistance is made, proper documentation must accompany the request. This documentation would include: photographs, copies of inspections, copies of correspondence, copies of enforcements taken, and a summary report.

2.5 Documentation:

All correspondence should be documented in the appropriate database (i.e.Cityworks) and any photographs, scanned in field investigation notes etc. should be stored within the appropriate project folder. For illicit discharge documentation not related to industrial inspections or grading permit sites, all project folders should be stored within the following directory: S:\Cityworks\NPDES\SR Project folder names within the directory shall follow the below example:

County Hospital Road, 1607 (paint dumping)

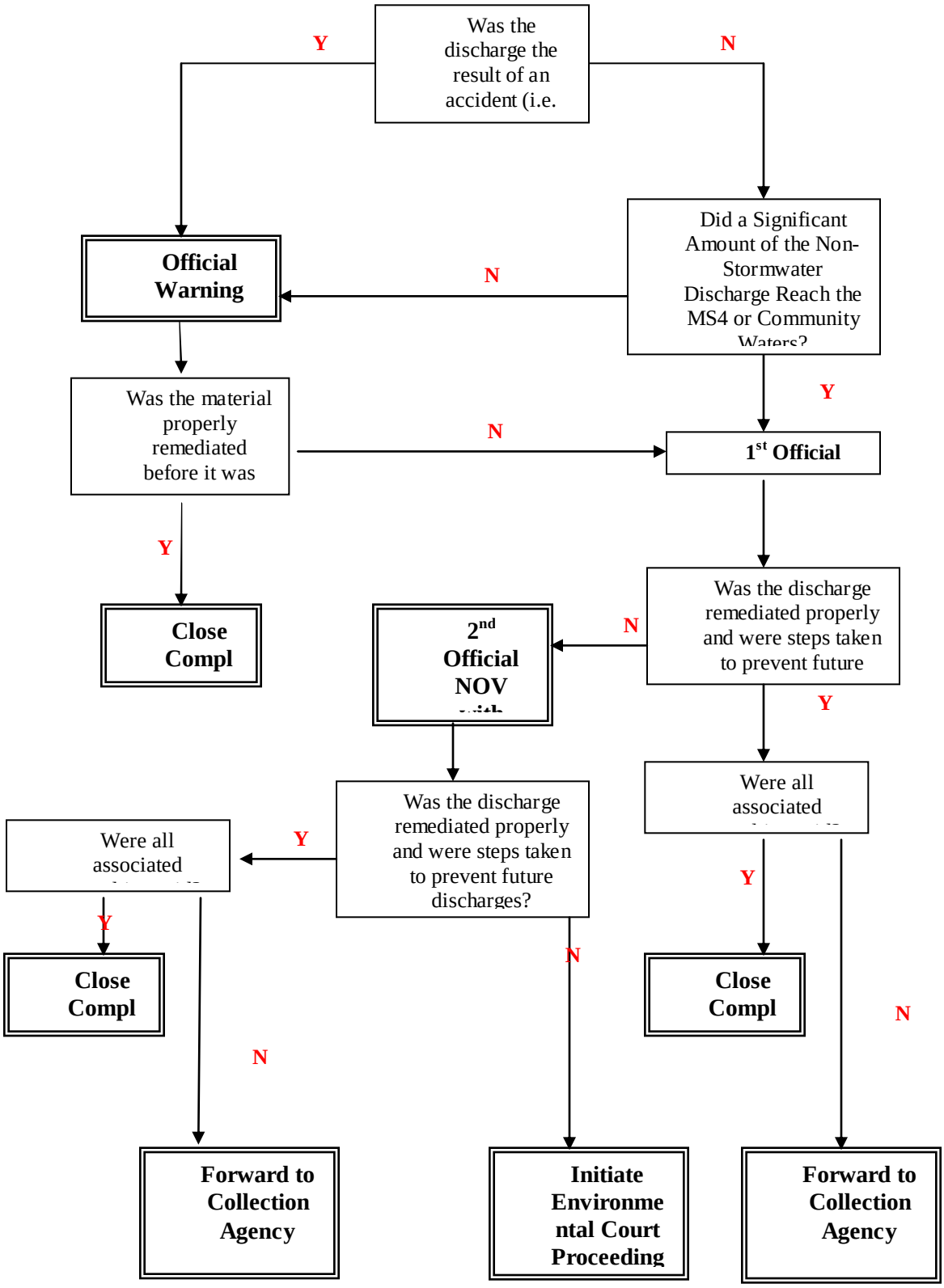
There should always be a database entry of any official notification given to a site. In the event that the official notification is in the form of a verbal warning, the NPDES inspector shall note the verbal warning on the complaint investigation form and within the respective database.

Table 2 – Illicit Discharge Penalty Calculation Worksheet

Offender Category	Discharge Type	Penalty	Estimated Volume Multiplier <10 gallons = 1 10 to 100 gallons = 2 100 to 1,000 gallons = 3 > 1000 gallons = 5	Biological Health Hazard Multiplier Minor = 0 Major = 3	Prior Notice Multiplier No Prior Notice = 0 Prior Notice = 2	Penalty	Total
Accidental Spill/Discharge	Clean-up prolonged	$50.00				$50.00	$0.00
	Clean-up prolonged and material lost to MS4 or Creek	$100.00				$100.00	$0.00
Private Residence	Household Chemicals (Paint, cleaners, oils, batteries, pesticides)	$100.00				$100.00	$0.00
	Food Waste/Grease	$50.00				$50.00	$0.00
	Grass Clipings/Organics	$50.00				$50.00	$0.00
	Sewage/Wash Water with Detergents	$50.00				$50.00	$0.00
	Sediment	$50.00				$50.00	$0.00
	Chlorinated Pool Water	$50.00				$50.00	$0.00
Commercial/Industrial	Industrial Waste	$500.00				$500.00	$0.00
	Hazardous Chemicals (Paint, cleaners, oils, batteries, pesticides, floor wax, etc.)	$250.00				$250.00	$0.00
	FOG material	$50.00				$50.00	$0.00
	Mop water/Parking lot wash water with detergents	$50.00				$50.00	$0.00
	Contaminated Stormwater Runoff	$50.00				$50.00	$0.00
	Sewage	$50.00				$50.00	$0.00
	Dumpster leakage	$50.00				$50.00	$0.00
Construction Site Illicit	Concrete Washout	$250.00				$250.00	$0.00
	Pumped Sediment Water	$500.00				$500.00	$0.00
	Sediment Contaminated Runoff	$500.00				$500.00	$0.00
Typical Contractor-Related Discharges	Parking lot/building Wash Water with Detergents	$50.00				$50.00	$0.00
	Wastewater Discharges (Carpet cleaning, floor waxes, etc.)	$250.00				$250.00	$0.00
	Wet Saw Slurry Discharges	$50.00				$50.00	$0.00
	Concrete Washout	$50.00				$50.00	$0.00
	Other (paint, motor oil, etc.)	$250.00				$250.00	$0.00
					Total Penalty (Not to Exceed $5,000)		$0.00

Note: Biological health hazard is based on the potential damage the discharge can do to aquatic live in the stream.

Illicit Discharge Enforcement Flow Chart



Section 3 : NPDES Office Post Construction BMP Maintenance Enforcement Response Plan

NPDES Office Post Construction BMP Maintenance Enforcement Response Plan

General Considerations

Maintenance is required to ensure that post construction stormwater BMPs continue to function as designed. The cleaning and/or repair of a BMP are the ultimate responsibility of the property owner. In some cases, management companies and HOAs perform the work or contract it out.

Enforcement Tools:
Metro Code 15.64.020 grants the regulatory authority for the establishment of the SWMM. Under Metro Code 15.64.220(A), any violation of Chapter 15.64 regarding Stormwater Management, including a violation of the SWMM, is punishable by a civil penalty not to exceed $500.00 dollars. Each day of violation may constitute a separate violation.

A Maintenance Document (MD) signed by the property owner must be submitted with the Grading Permit application. The MD includes either an Inspection and Maintenance (I&M) Agreement or a Declaration of Restrictions and Covenants. Both of these documents require that the property owner maintains their BMP(s), submits annual reports, and grants Metro the ability to perform the BMP maintenance and collect reimbursement. Sites approved prior to the 2006 revision of the SWMM do not have the annual reporting requirement.

Enforcement Categories

Enforcements for post construction BMP maintenance will fall into two general categories:
1. Enforcements for BMPs that were inspected by NPDES staff and a deficiency was noted
2. Enforcements for sites that have not submitted their annual inspection and maintenance reports

BMP Deficiency Enforcement:
Notice of Violation (NOV, no penalty) – issued to sites where a BMP needs repair or cleaning. The NOV will list the deficiency and give a timeline for compliance. If a site cannot meet their compliance deadline for a legitimate reason (e.g. weather, hardship), they may request an extension.

Notice of Violation (NOV, penalty) – issued to sites that are not in compliance with the timeline on their NOV. The penalty will typically be $100 unless continued non-compliance is creating a water quality problem (e.g. sediment discharge) or a public health nuisance (e.g. mosquitoes). In these cases, the penalty can be increased.

If an offender refuses to accept a certified NOV letter or is generally unresponsive to the requirements and deadlines stipulated in their NOV, the following options can be pursued:

- Environmental Court
- Maintenance/repair of the BMP by Metro or a Metro contractor and cost recovery by Metro from the property owner/responsible party.

Failure to Submit Annual Report:

Notice of Violation (NOV, no penalty) – will be issued to sites that do not submit their annual report by July 1st. The NOV will be accompanied by a letter that explains the annual reporting requirement and lists the recording number of the site's Maintenance Document. The deadline for the report submittal is one month, unless an extension is requested for a legitimate reason. Failure to submit the report may result in penalties or environmental court. MWS may inspect the site to determine if the BMP(s) requires maintenance or repair. If deficiencies are noted, another NOV may be issued (see BMP Deficiency Enforcement above). If a site fails to submit their annual report in two different years while under the same ownership and receives a NOV without penalty each year, the third failure will result in an immediate penalty.

SWMP APPENDIX E

SUPPORTING PROGRAM INFORMATION

Stormwater Management Project - Water Quality Impact Evaluation Worksheet

See reference list (on page 2 of this form) to assist considering "question #2".
Please include an explanation for a "no" response on "question 2".

Project Name: _____

Project Address or Stanpar: _____

Short Project Description (including Duration): _____

Is the Project within a 303(d) listed stream's drainage area? yes / no If yes-stream name? _____

Is the Project within designated Nashville Crayfish habitate? yes / no Watershed name? _____

1. Does/will the project or project area discharge to or involve the Metro MS4? yes / no
2. Will the project create any negative water quality/hydrological impacts? yes / no

If "yes"...What are potential negative project impacts to water quality/hydrology (i.e. encapsulating streams, altering stream banks, adding impervious drainage features, etc.)?

1 _____
2 _____
3 _____
4 _____
5 _____
6 _____
7 _____

For each respective impact, list details of project controls to be used to mitigate negative impacts.

1 _____
2 _____
3 _____
4 _____
5 _____
6 _____
7 _____

If "no"...explain how/why the project has no potential to create negative impacts. _____

3. Will the project involve land disturbance over an acre in size? yes / no
4. Has an analysis been performed to determine if the TDEC and/or US Army Corps of Engineers permits are required for potential direct impacts to streams and wetlands? yes / no
   If "yes", which?
5. Has the use of green infrastructure design techniques been considered (i.e. bioswales vs. concrete ditches, 3-sided bottomless bridges vs. culverts, natural bank stabilization vs. hard amoring, regional detention vs. infrastructure capacity upgrades, etc.)? yes / no
   If "yes", how so?

Stormwater Remedial Maintenance Flood Control Project – Water Quality Impact Analysis Worksheet

If "no", why not? _____

General notes: _____

General Project Summary Statistics:			
Ditch work (linear ft):		Trees/shrubs (# & dia)	
redefined		Grass seed (type of seed)	
new		(sq ft of area seeded)	
matting installed		(lb of seed applied)	
concrete ditch removed			
Sediment in conveyance removed/disposed of (cu yds)			
Stream work:			
Streambank stabilization (linear ft installed & overall stabilized area in sq ft)			
Conveyance meanders created (yes/no)			

Note: A copy of this signed Water Quality Impact Evaluation Form shall be submitted to the Stormwater NPDES Office for MS4 permit document purposes. Scan/email form to StormWaterQuality@nashville.gov

Professional Engineer Reviewer: _____ _____
(signature) **(date)**

Reference list of example "impact" determinations and possible controls
Will the project avoid disturbance of sensitive lands such as wetlands, floodplains, & water quality buffers
Will the project avoid crossing streams and/or disturbing their banks
Will the project avoid disturbance of undeveloped lands when previously developed sites can be used
Will the project conserve land
Will the project serve to stabilize currently unstabilized conveyances
Will the project eliminate current stormwater flows from contacting exposed pollutants
Will the project restore disturbed habitats to their initial condition
Will the project replace all trees removed with the equivalent TDU
Will the project avoid development on steep slopes
Will the project install EPSC
Will the project incorporate BMPs to improve water quality (if so, list BMPs)
Will the project utilize green infrastructure over gray
Will the project reduce stormwater runoff rate to pre-development conditions
Will the project reduce stormwater runoff volume to pre-development conditions
Will the project avoid impacts to groundwater resources
Will the project decrease the impact/frequency/severity of flooding
Will the project minimize the use of pesticides and fertilizers
Will a SWPPP be developed
Will the project remediate any contaminated soils or otherwise polluted sites
Will the project use native vegetation
Will the project protect native vegetation in the construction envelope
Will the project remove invasive vegetation
Will the project restore the function of the soils

Stormwater Remedial Maintenance Flood Control Project – Water Quality Impact Analysis Worksheet

Grading Permit Inspections (SOP)

This process shall be followed once a project has passed the initial EPSC inspection and the grading permit has been issued.

Materials

- Grading and drainage plans and details
- Erosion control plans
- EPSC inspection checklist
- Grading and drainage checklist
- Site contact information
- KIVA access
-

Procedure

- Construction Site Inspector (CSI) schedules and prioritizes site inspections based on the status of the site, current conditions at the site, and for any complaints or formal requests.
- Priority construction sites are inspected at a minimum of every month. All others (routine, final) except as noted below are inspected at a minimum of every 3 months.
- Sites that are deemed inactive / complete, on hold, or waiting for final U&O approvals may be assigned to the construction inspector supervisor and may be inspected less frequent and on an as needed basis.
- A permitted construction site will be considered a "Priority Construction Site (PCS)" if at any time there is active land disturbances or there is a stormwater pollution discharge potential. It will remain a PCS until the MWS inspector determines that the site is stable and there are no discharge concerns. The location of these sites includes all active sites within Metro's MS4 jurisdiction which includes sites discharging directly into, or immediately upstream of, waters the state recognizes as impaired (for siltation or habitat alteration) or Exceptional Tennessee Waters.
- Priority sites should be inspected and documented in greater detail than those designated to be routine or final.
- During the site inspection the inspector will reference the EPSC and grading and drainage checklists and make note of any deficiencies, concerns or violations.
- If there are any deficiencies, concerns or violations the inspector will immediately notify the proper site contact. Photos should be taken.
- Inspector will document the inspection in Kiva and make proper comments to include:
    - any deficiencies concerns or violations (reference checklists)
    - items that have previously been noted and are now corrected
    - site status and or activity
    - nature of inspection (routine, final, bond….)
    - conditions of epsc and outfalls
    - disturbed areas
    - any correspondence
    - other items of note
- Any photographs taken at the site will be saved in the network project file folder.
- Inspector will either continue the Kiva minimum schedule inspections for that site or reschedule the next appropriate one sooner.

MWS NPDES Office Construction Site Inspection SOP

KARL F. DEAN
MAYOR

METROPOLITAN GOVERNMENT OF NASHVILLE AND DAVIDSON COUNTY

DEPARTMENT OF WATER AND SEWERAGE SERVICES
STORMWATER DIVISION
NPDES OFFICE
1417 DR. C.V. KISER JR. ROAD
NASHVILLE, TENNESSEE 37215

July 27, 2012

Mr. Bill Duffel
Tennessee Department of Environment and Conservation
Division of Water Pollution Control
Nashville Environmental Field Office
711 R.S. Gass Blvd.,
Nashville, TN 37216

Subject: NPDES Permit No. TNS068047
Nashville/Davidson County MS4
Nashville, Davidson County, Tennessee

Dear Mr. Duffel:

The Metropolitan Government of Nashville and Davidson County's (Metro's) new Municipal Separate Storm Sewer System (MS4) permit requires the MWS Stormwater NPDES office to submit a plan detailing the activities they will perform to verify post construction stormwater quality best management practices (BMP) maintenance. This plan is included below for your review.

Post Construction BMP Inspection and Maintenance Plan

Metro's plan to ensure inspection and maintenance of post construction stormwater quality BMPs is described below. It will apply to all sites that receive final approval of their stormwater BMP construction after TDEC has approved the plan or 30 days has transpired since the plan's submittal on July 30th, 2012.

BMP Tracking:

New development and significant redevelopment projects require a Metro Grading Permit (GP). The Grading Permit process is tracked and documented in a metro-wide database called KIVA. This database includes owner, developer, designer, and site information. It records the plan review and approval

MWS NPDES Office BMP Inspection and Maintenance Plan (Page 1)

process, and also serves to track the issuance of Grading Permits and all of the GP-related compliance inspections. KIVA will eventually transition into a new database named Accela that will track the same information.

After the post construction stormwater BMP as-built is approved by staff, its information is recorded in a Metro Water Services (Stormwater Division)-maintained GIS feature class called STOBMP. STOBMP includes the following information about the BMP:

- GIS_X – longitude coordinate value
- GIS_Y – latitude coordinate value
- OUTFALLTO- the FACILITYID of the closest outfall this BMP drains to
- DRAINAREA – the calculated drainage area for this BMP
- TYPE – the type of BMP based on identification from our BMP Manual

Completed projects are also entered into an Access database maintained by NPDES. This database includes fields to track basic information including Grading Permit number, BMP type, Maintenance Document recording number, Permit issuance and completion dates, and occupancy type. There are also fields to track all post construction related inspections, correspondence, and Notices of Violation. This additional database allows for easier querying and tracking of BMP information than is afforded by the KIVA database.

Private Inspection and Maintenance:

BMP Maintenance Document

A Maintenance Document must be submitted with the Grading Permit application and must include the following:

1. Either an Inspection and Maintenance (I&M) Agreement, which includes an easement requirement, or a Declaration of Restrictions and Covenants, whichever is appropriate as determined by Stormwater staff
2. A long-term maintenance plan prepared by the design engineer. The maintenance plan must include a description of the stormwater system and its components, inspection priorities and inspection schedule for each component, and BMP schematics for each BMP, signed by the current owner.
3. A system location map to enable MWS to locate BMPs.

The Maintenance Document must be recorded with the Register of Deeds prior to final Grading Permit approval. This attaches the Maintenance Document to the parcel and will transfer it to subsequent owners. The Recording Number for the Maintenance Document is tracked both in KIVA and the NPDES BMP Database. The Please see Appendix C of Metro's Stormwater Management Manual (http://www.nashville.gov/stormwater/docs/SWMM/2012/Volume1.pdf) for copies of the documents and inspection checklists.

MWS NPDES Office BMP Inspection and Maintenance Plan (Page 2)

Inspection and Maintenance Responsibilities

The long term maintenance plan within the Maintenance Document contains the inspection priorities and schedule for the stormwater system components and BMPs. The BMP owner is responsible for inspecting the stormwater system, including BMPs, according to the schedule and annually submitting completed inspection reports to MWS to document that inspections have been completed and necessary maintenance has been performed. Failure to file annual inspection reports and perform required BMP maintenance could result in enforcement action as outlined in the Enforcement Response Plan.

Once every five years, an owner/operator is required to have their stormwater BMPs inspected by a professional engineer, a landscape architect, or a qualified professional approved by Metro. This condition will apply to all sites that submit Grading Permit applications after the 2013 revisions to the Stormwater Management Manual (SWMM) become effective. The 2013 revision is needed to add this particular stipulation to our SWMM.

Metro Inspection and Maintenance:

Metro Owned BMPs

BMPs located on properties owned by Metro Departments must be inspected and maintained. These sites will also be tracked in KIVA and in the NPDES BMP Database. The Metro Department responsible for each BMP will submit reports annually to NPDES.

Additionally, Metro will randomly inspect 30 BMP sites per year to verify compliance with maintenance requirements. This number equates to over 25% of the Grading Permit sites that were signed off in the previous year. These sites will be prioritized based on receiving stream's 303(d) status.

We appreciate your consideration of this matter. If you have any questions, please feel free to contact myself or Michael Hunt at (615) 880-2420.

Sincerely,

Rebecca Dohn

Rebecca Dohn

cc: Wade Murphy - TDEC, Division of Water Pollution Control
Vojin Janjic - TDEC, Division of Water Pollution Control
Joey Holland -TDEC, Division of Water Pollution Control-Environmental Field Office
Ann Morbitt - TDEC, Division of Water Pollution Control-Environmental Field Office

MWS NPDES Office BMP Inspection and Maintenance Plan (Page 3)

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
NASHVILLE ENVIRONMENTAL FIELD OFFICE
711 R. S. GASS BOULEVARD
NASHVILLE, TENNESSEE 37243
PHONE (615) 687-7000 STATEWIDE 1-888-891-8332 FAX (615) 687-7078

April 19, 2012

Mr. Michael Hunt
Metro Nashville Department of Water and Sewerage Services
Stormwater Division NPDES Office
1607 County Hospital Road
Nashville, TN 37218

Re: NPDES Permit No. TNS068047
Stormwater Management Program Update
Approval of Proposed Monitoring Changes

Dear Mr. Hunt:

On February 23, 2012, I received your letter requesting changes to the sample locations and schedules for Wet Weather and In-Stream Ambient Monitoring required by Metro Nashville's Municipal Separate Storm Sewer System (MS4) Permit TNS068047. After reviewing this information and subsequent discussions with your office, a set of revised tables listing the proposed monitoring changes was submitted on March 29, 2012.

Enclosed with this letter is a copy of the two tables submitted on March 29, 2012, showing the second set of changes in the wet weather sampling locations for each land use type (Table 1) and the schedule for in-stream Ambient monitoring (Table 3) which will replace Table 1 Section 3.3.1 and Table 3 Section 3.3.3.2 in your permit.

TDEC's Response to the first request to change monitoring locations (Page 1)

Mr. Michael Hunt
April 19, 2012
Page 2 of 4

We appreciate Metro Nashville MS4 Program's attention to this issue and believe the MS4 program does make a contribution toward improving the quality of state waters. If you have any questions, please contact me at 615 687-7106 or email at Bill.Duffel@tn.gov .

Sincerely,

Bill Duffel

Bill Duffel
Division of Water Pollution Control

enclosure

Cc: Mr. Vojin Janjic, WPC, Permit Section
Mr. Wade Murphy, WPC, Permit Section
Mr. Josh Hayes, Metro Water Services Stormwater Division

TDEC's Response to the first request to change monitoring locations (Page 2)

Mr. Michael Hunt
April 19, 2012
Page 3 of 4

Table 1 Wet Weather Monitoring

Type	Location	Coordinates	Waterbody	Frequency
Residential	Downstream of a culverted crossdrain under Drakes Branch Road	-86.8509808 36.21100166	Whites Creek	3 storm events occurring at different seasons during each permit year
Commercial	Behind the Bellemeade Kroger Shopping Plaza	-86.85033132 36.12449873	Richland Creek	3 storm events occurring at different seasons during each permit year
Industrial	Intersection of Cockrill Bend Bvld. and West Belt Drive.	-86.87703781 36.17095549	Richland Creek	3 storm events occurring at different seasons during each permit year
Transportation	On the north side of Ashland City Highway near the address of 4882 Ashland City Highway	-86.9069884 36.21046404	Cumberland River	3 storm events occurring at different seasons during each permit year
Open/Undeveloped	On the west side of Eaton's Creek Road near the address of 5111 Eaton's Creek Road	-86.88221501 36.25191644	Whites Creek	3 storm events occurring at different seasons during each permit year

TDEC's Response to the first request to change monitoring locations (Page 3)

Mr. Michael Hunt
April 19, 2012
Page 4 of 4

Table 3. Watersheds and respective sampling years.

Year	Waterbody	Location	Frequency
1	Browns Creek Richland Creek Davidson	At least one sampling point within the main stem of the Creek.	4 dry weather sampling events per year
2	Whites Creek Mansker's Creek	At least one sampling point within the main stem of each Creek.	4 dry weather sampling events per year
3	Gibson Neeley's Dry Creek	At least one sampling point within the main stem of the Creek.	4 dry weather sampling events per year
4	Pages Branch Cooper Creek Harpeth River	At least one sampling point within the main stem of each river.	4 dry weather sampling events per year
5	Mill Creek Stones River	At least one sampling point within the main stem of each Creek.	4 dry weather sampling events per year

TDEC's Response to the first request to change monitoring locations (Page 4)

KARL F. DEAN
MAYOR

METROPOLITAN GOVERNMENT OF NASHVILLE AND DAVIDSON COUNTY

DEPARTMENT OF WATER AND SEWERAGE SERVICES
STORMWATER DIVISION
NPDES OFFICE
1607 COUNTY HOSPITAL ROAD
NASHVILLE, TENNESSEE 37218

January 4, 2013

Mr. Bill Duffel
Tennessee Department of Environment and Conservation
Division of Water Pollution Control
Nashville Environmental Field Office
711 R.S. Gass Blvd.,
Nashville, TN 37216

Subject: **NPDES Permit No. TNS068047**
Nashville/Davidson County MS4
Nashville, Davidson County, Tennessee

Dear Mr. Duffel:

As you are aware, Metro Nashville's new Municipal Separate Storm Sewer System (MS4) permit requires the MWS Stormwater, NPDES Program to conduct wet weather monitoring of outfalls located within five homogenous land uses (i.e. commercial, transportation, industrial, open/undeveloped, and residential). The goal of the wet weather monitoring component within the MS4 permit is to characterize chemical make-up of stormwater runoff from varying land use types.

In April 2012, Nashville's NPDES Program received approval (enclosed within this letter) from your division to change locations of some of the outfalls specifically mentioned to be monitored within the permit. After nearly a year of monitoring, it has become evident that the locations of two outfalls (residential and open/undeveloped land uses) approved in the April 2012 change do not convey adequate stormwater flows to conduct the permit-prescribed monitoring. As such, the NPDES Program is proposing to change these two locations to outfalls with adequate stormwater flows.

NPDES proposes changing the sampling locations depicted in Table 1 of Section 3.3.1 of the MS4 permit to locations depicted in the revised table below: The red text represents the proposed changes to Table 1.

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Metro's 2nd request to change monitoring locations (Page 1)

We appreciate your consideration of this matter. If you have any questions, please feel free to contact myself or Mary Bruce at (615) 880-2420.

Sincerely,

Joshua Hayes

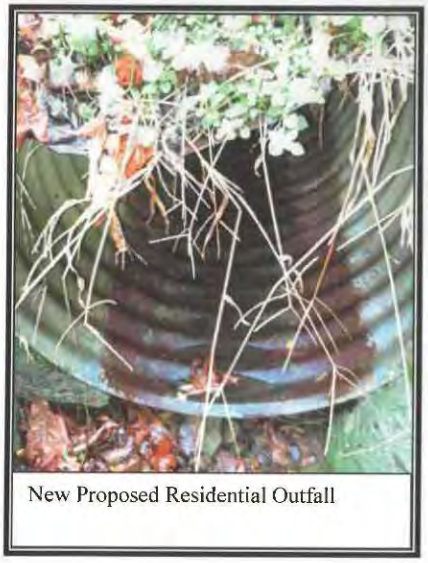
cc: Wade Murphy - TDEC, Division of Water Pollution Control
Vojin Janjic - TDEC, Division of Water Pollution Control
Ann Morbitt - TDEC, Division of Water Pollution Control-Environmental Field Office
Michael Hunt – MWS NPDES Program
Steve Winesett – MWS NPDES Program
Mary Bruce – MWS NPDES Program

encl.
TDEC's April 19, 2012 letter approving the first proposed change to Wet Weather Monitoring.

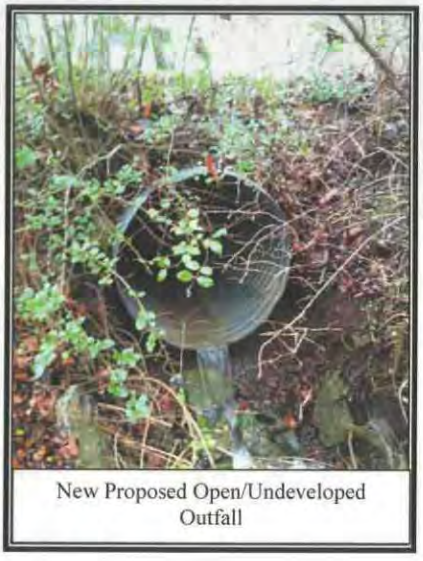
Metro's 2nd request to change monitoring locations (Page 2)

Revised Table 1 – Wet Weather Sampling Locations per Each Land Use Type

Type	Location	Coordinates	Waterbody	Frequency
Residential	Culverted street drain near the address of 841 Russleo Drive	-86.877607 36.138553	Cumberland River	3 storm events occurring at different seasons during each permit year
Commercial	Behind the Bellemeade Kroger Shopping Plaza	-86.85033132 36.12449873	Sugartree Creek	3 storm events occurring at different seasons during each permit year
Industrial	Intersection of Cockrill Bend Bvld. and West Belt Drive.	-86.87703781 36.17095549	Richland Creek	3 storm events occurring at different seasons during each permit year
Transportation	On the north side of Ashland City Highway near the address of 4882 Ashland City Highway	-86.9069884 36.21046404	Cumberland River	3 storm events occurring at different seasons during each permit year
Open/ Undeveloped	Entrance road to the trail head parking area of Bells Bend Park located off Old Hickory Boulevard.	-86.925799 36.156167	Cumberland River	3 storm events occurring at different seasons during each permit year



New Proposed Residential Outfall



New Proposed Open/Undeveloped Outfall

Metro's 2nd request to change monitoring locations (Page 3)