



Tennessee Department of Environment and Conservation
 Division of Water Resources
 William R. Snodgrass Tennessee Tower, 312 Rosa L. Parks Avenue, 11th Floor, Nashville, Tennessee 37243
 1-888-891-8332 (TDEC)
Municipal Separate Storm Sewer System (MS4) Annual Report

1. MS4 INFORMATION

Knox County TNS075582

Name of MS4 MS4 Permit Number

Chris Granju Chris.granju@knoxcounty.org

Name of Contact Person Email Address

865-215-5840

Telephone (including area code)

205 West Baxter Avenue

Mailing Address

Knoxville TN 37917

City State ZIP code

What is the current population of your MS4? 256,168

What is the reporting period for this annual report? From July 1, 2015 to June 30, 2016

2. WATER QUALITY PRIORITIES (SECTION 3.1)

A. Does your MS4 discharge into waters listed as impaired on TN's most current 303(d) list and/or according to the on-line GIS mapping tool? Yes No

B. If yes, please attach a list all impaired waters within your jurisdictional area. *Attached*

C. Does your MS4's jurisdictional area contain any waterbodies where a TMDL has been approved for parameters other than pathogens, siltation and habitat alterations? *NO* If yes, please attached list.

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D. Does your MS4 discharge to any Exceptional TN Waters (ETWs) or Outstanding National Resource Waters (ONRWs)? If yes, please attach a list Yes No

Waterbody	Description	Basis_for_Inclusion
Flat Creek Unnamed Tributary	Portion in House Mountain State Natural Area. Tributary flows into river mile 7.9 of Flat Creek.	House Mountain State Natural Area
Brice Branch Unnamed Tributary	Portion in House Mountain State Natural Area. Tributary flows into Brice Branch at river mile 1.6.	House Mountain State Natural Area
Brice Branch Unnamed Tributary	Portion in House Mountain State Natural Area. Tributary flows into Brice Branch at river mile 1.8.	House Mountain State Natural Area
Hogskin Branch	Portion in House Mountain SNA.	House Mountain State Natural Area.
Holston River	From confluence with French Broad River to McBee Island.	Federal endangered Pink Mucket, federal threatened Snail Darter. Federally endangered Pink Mucket, federal threatened Snail Darter, state endangered Lake Sturgeon (includes frequent reported sightings from fisherman below dam) and state threatened Blue Sucker (includes TTU report at mile 22).
French Broad River	From Holston River to Douglas Dam.	State Scenic River (Class III Developed River Area).
Tuckahoe Creek	In its entirety.	State Scenic River (Class III Developed River Area)
Clinch River	From Melton Hill Dam (river mile 23.1) to Pellissippi Parkway (river mile 43.7).	State Scenic River (Class III - Developed River Area).
Clinch River - Melton Hill Reservoir	Clinch River from Melton Hill Dam to Pellissippi Parkway.	State Scenic River (Class III - Developed River Area).
Turkey Creek	From Fort Loudon Lake to Hwy 11.	State endangered Sweetscent Ladies'-Tresses

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- E. Are you implementing additional specific provisions to ensure the continued integrity of ETWs or ONRWS located within your jurisdiction? Yes No

The County considers work within the watershed of ETWs or ONRWS (if any) to be priority construction activities. The additional requirements outlined in section 5.4.1 of the TNCGP are applied within the entire watershed.

3. PROTECTION OF STATE OR FEDERALLY LISTED SPECIES (SECTION 3.2.1 General Permit for Phase II MS4s)

- A. Are there any state or federally listed species within the MS4's jurisdiction? Yes No

- B. Are any of the MS4 discharges or discharge-related activities likely to jeopardize any state or federally listed species? Yes No

- C. Please attach any authorizations or determinations by U.S. Fish & Wildlife Service on the effect of the MS4 discharges on state or federally listed species. *Attached.*

4. PUBLIC EDUCATION AND PUBLIC PARTICIPATION (SECTION 4.2.1 AND 4.2.2)

- A. Have you developed a Public Information and Education plan (PIE)? Yes No

- B. Is your public education program targeting specific pollutants and sources of those pollutants, such as Hot Spots? Yes No

C. If yes, what are the specific causes, sources and/or pollutants addressed by your public education program? See Tables below: Table 1 shows the pollutants and sources. For this Annual Report (7/1/15-6/30/16), the table below was updated using the TDEC 2014 303(d) List. The only two notable changes are the removal of Cox Creek from the Impaired Waters List due to restoration activities and the addition of Turkey Creek due to it inadvertently being left off the table in 2010. Table 2 provides details on the specifics of the education program.

Table 1. Water Body Impairment Pollutants and Sources

Waterbody Name	Cause of Impairment	Source of Impairment
TIER 1 STREAMS		
Little Turkey Creek	Loss of biological integrity due to siltation	Discharges from MS4 area
Turkey Creek	Loss of biological integrity due to siltation Escherichia coli	Discharges from MS4 area
Grandview Branch	Escherichia coli	Discharges from MS4 area
High Bluff Branch	Escherichia coli	Discharges from MS4 area
Sinking Creek	Escherichia coli	Discharges from MS4 area
Ten Mile Creek (formerly called Sinking Creek)	Habitat loss due to alteration in streamside or littoral vegetative cover Loss of biological integrity due to siltation Escherichia coli	Discharges from MS4 area
Willow Fork	Alteration in stream-side or littoral vegetative cover Loss of biological integrity due to siltation Escherichia coli	Discharges from MS4 area

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Hines Branch	Habitat loss due to other anthropogenic substrate alterations Escherichia coli	Discharges from MS4 area
Knob Fork	Loss of biological integrity due to siltation Habitat loss due to other anthropogenic substrate alterations Alteration in stream-side or littoral vegetative cover Escherichia coli	Discharges from MS4 area
Grassy Creek	Loss of biological integrity due to siltation Escherichia coli	Discharges from MS4 area
Meadow Creek	Escherichia coli	Discharges from MS4 area
Plum Creek	Escherichia coli	Discharges from MS4 area
TIER 2 STREAMS		
Grable Branch	Oil & Grease Loss of biological integrity due to siltation Physical Substrate Habitat Alterations	Minor Industrial Point Source Channelization Industrial Permitted Runoff Discharges from MS4 area
Swanpond Creek	Loss of biological integrity due to siltation Alteration in stream-side or littoral vegetative cover Escherichia coli	Channelization Discharges from MS4 Area
Casteel Branch	Loss of biological integrity due to siltation	Pasture Grazing Discharges from MS4 area
Twin Branch	Habitat loss due to alteration in streamside or littoral vegetative cover Loss of biological integrity due to siltation	Pasture Grazing Discharges from MS4 area
McCall Branch	Loss of biological integrity due to siltation	Discharges from MS4 area Streambank Modification
Whites Creek	Other Anthropogenic Habitat Alterations Escherichia coli	Discharges from MS4 area Streambank Modification
Beaver Creek (segment 1000)	Phosphate Nitrates Escherichia coli Low Dissolved Oxygen Loss of biological integrity due to siltation Physical Substrate Habitat Alterations	<u>Section 1000</u> Major Municipal Point Source Pasture Grazing Discharges from MS4 Area
Beaver Creek (segments 2000 and 3000)	Escherichia coli Loss of biological integrity due to siltation Physical Substrate Habitat Alterations	<u>Section 2000 and 3000</u> Pasture Grazing Discharges from MS4 Area
Bullrun Creek	Escherichia coli Loss of biological integrity due to siltation Physical Substrate Habitat Alterations	Discharges from MS4 Area Pasture Grazing Channelization
Love Creek	Loss of biological integrity due to siltation Other Anthropogenic Habitat Alterations	Discharges from MS4 area (multiple MS4s)
TIER 3 STREAMS		
Roseberry Creek	Escherichia coli	Pasture Grazing Septic Tanks

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Little Flat Creek	Escherichia coli	Animal Feeding Operations (NPS)
Flat Creek (segments 1000 and 2000)	Escherichia coli	Pasture Grazing Collection System Failure
Fort Loudon Reservoir (segment 1000)	PCBs	Contaminated Sediment
Fort Loudon Reservoir (segment 2000)	Mercury, PCBs	Atmospheric Deposition Contaminated Sediment
Roddy Branch	Alteration in stream-side or littoral vegetative cover Physical Substrate Habitat Alteration, Loss of biological integrity due to siltation Escherichia coli	Pasture Grazing Channelization
Stock Creek (Segments 1000 and 2000)	Escherichia coli	Pasture Grazing
Gun Hollow Branch	Escherichia coli	Pasture Grazing
East Fork Third Creek (Located within the City of Knoxville)	Loss of biological integrity due to siltation Other Anthropogenic Habitat Alterations Escherichia coli	Discharges from MS4 area Urbanized High Density Area Land Development Collection System Failure
Third Creek (Located within the City of Knoxville)	Nitrates Loss of biological integrity due to siltation Other Anthropogenic Habitat Alterations Escherichia coli	Discharges from MS4 area Urbanized High Density Area Land Development Collection System Failure
First Creek (Located within the City of Knoxville)	Nitrate + Nitrite Loss of biological integrity due to siltation Other Anthropogenic Habitat Alterations Escherichia coli	Discharges from MS4 area Urbanized High Density Area Collection System Failure
Second Creek (Located within the City of Knoxville)	Nitrate + Nitrite Loss of biological integrity due to siltation Other Anthropogenic Habitat Alterations Escherichia coli	Discharges from MS4 area Urbanized High Density Area Collection System Failure
Williams Creek (Located within the City of Knoxville)	Other Habitat Alterations Escherichia coli	Discharges from MS4 area Collection System Failure
Baker Creek (Located within the City of Knoxville)	Nitrate + Nitrite Other Habitat Alterations Escherichia coli	Discharges from MS4 area Collection System Failure
Goose Creek (Located within the City of Knoxville)	Loss of biological integrity due to siltation Other Anthropogenic Habitat Alterations PCBs Escherichia coli	Collection System Failure Discharges from MS4 area RCRA Hazardous Waste
Fourth Creek (Located within the City of Knoxville)	Physical Substrate Habitat Alterations Escherichia coli	Discharges from MS4 area Channelization
Melton Hill Reservoir	PCBs Chlordane	Contaminated Sediment
Williams Branch	Loss of biological integrity due to siltation	Industrial Permitted Runoff



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Table 2. Education Program Target Groups and Target Pollutants

Description	Goal	Type	Target Groups	Target Pollutants	2010 Permit Citation(s)
Brochure(s) Distribution	To broaden public understanding of the storm drainage system and how behaviors contribute to water quality	Publications	Homeowners, Engineers, Developers, Construction Workers, Public	All	4.2.1a,b,c,f,g&h
Website	<ul style="list-style-type: none"> ▪ To provide manuals, policies and information regarding construction-phase and long term stormwater management. ▪ To educate the public on how to prevent stormwater pollution and become involved with County programs ▪ To educate the public on illicit discharge detection and reporting 	Internet	Engineers, Developers, Construction Workers, Public	All	4.2.1a-h
Social Media	To engage the public in a discussion of water pollution prevention and raise awareness on how the public can get more involved in County programs	Internet	Homeowners, Engineers, Developers, Construction Workers, Public	All	4.2.1a,b,c,f,g&h
Interactive BMP Tour	To provide education and demonstrate green infrastructure practices	Internet/ Educational Sites	Engineers, Developers, Construction Workers, Public	All	4.2.1 and 4.2.2
Signage at select Knox County Parks	To provide education and demonstrate green infrastructure practices	Educational Site	Engineers, Developers, Construction Workers, Public	All	4.2.1 and 4.2.2
Adopt A Stream	<ul style="list-style-type: none"> ▪ To provide an opportunity for citizen involvement in visual stream assessments, cleaning streams and reporting illicit discharges. ▪ To educate the public on how to prevent stormwater pollution and become involved with County programs 	Training/ Educational Event	Public	All	4.2.1 and 4.2.2
Adopt A Watershed	To educate middle and high school students about watershed concepts and stormwater pollution prevention through service based learning projects	Training/ Educational Event	Public	All	4.2.1 and 4.2.2
Waterfest	To engage elementary students in learning about water pollution and watershed concepts	Training/ Educational Event	Public	All	4.2.1

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Description	Goal	Type	Target Group	Target Pollutants	2010 Permit Citation(s)
Festivals/Exhibitions/ Speaking Engagements	To provide requested stormwater pollution prevention awareness to public and private groups	Training/ Educational Event	Public	All	4.2.1
Watershed Initiatives	<ul style="list-style-type: none"> ▪ To encourage citizens to take ownership of their water resources ▪ To provide education and demonstrate stormwater pollution prevention techniques 	Training, Events, Projects	Homeowners, Engineers, Developers, Construction Workers, Public	All	4.2.1
Tennessee Smart Yards (Previously TN Yards & Neighborhoods)	To assist residents and neighborhood associations on tactics that can be employed in yards to encourage water infiltration and prevent stormwater pollution	Training/ Educational Event	Homeowners, Public	All	4.2.1a
Homeowner BMP Manual and Workshops	To broaden public understanding of stormwater best management practices and maintenance activities needed to ensure functionality of the BMP	Publication	Homeowners	Siltation	4.2.1b
Contractor Education	To make construction workers and sub-contractors aware of water quality impacts from daily operations	Training Event	Construction Workers	Siltation	4.2.1c & g
Development Workshops	To make development community aware of regulations, guidance materials and long-term water quality impacts from development activities	Training Event	Engineers, Developers, Construction Workers	All	4.2.1c & g
Pre-Construction Meetings	To make development community aware of regulations, guidance materials and long-term water quality impacts from development activities	Event	Engineers, Developers, Construction Workers	All	4.2.1c & g
Outreach to Professional Chemical Applicators	To limit the improper storage, use and disposal of items in areas which are exposed to stormwater runoff	Training Event/ Internet	Chemical applicators	Phosphate, Nitrate	4.2.1d & e
Public Notices	To comply with applicable state and local laws governing this activity	Publications, Internet	Public	All	4.2.2
Municipal Employee Training	To make municipal employees aware of water quality impacts from daily operations, and to educate staff on how to identify and report illicit discharges	Training Event/Publication	Municipal Staff	All	4.2h



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D. Note specific successful outcome(s) (NOT tasks, events, publications) fully or partially attributable to your public education program during this reporting period. Please see chart below:

Outcomes from Education/Participation Programs

Description	Adopt A Watershed Program	Environmental Stewardship Program	Grant Funded Projects	Other Knox Co. Programs
Rain gardens maintained or planted *	6 maintained: South Doyle High, West Valley Middle, Harrell Road Park, Powell Station Park, Halls High, Powell Middle	2 Rain Gardens installed		2 maintained; Lower Clinch watershed's Claxton Elementary & Powell Station Park
Storm drain inserts *	604.52 lbs. removed from area schools 16 new decals installed at Career Magnet Academy			
Upland stabilization projects *	12.66 acres improved	3 Streambank Stabilization projects completed		
Water catchment systems installed *	1 at Carter High			
Water catchment systems sold				173 rain barrels sold through workshops and truckload sale
Grassed swales installed		6 grassed swales installed		
Bioswales installed				
Citizens reached through workshops and classroom outreach *	1687 middle and high school students participated in AAW water quality educational activities. 1507 students participated in a service project to benefit their local watershed			329 citizens attended various rain barrel, enviroscape & other water quality presentations & workshops
Stream clean ups conducted				9 AAS Clean-ups and one UT class clean-up. 1875 lbs. of trash removed (also in Trash Removal section, below)
Invasive species removal *	5,160 pounds of invasive species removed.			40 lbs. of invasives removed through AAS program & 240 lbs. green waste removed from Powell Station Park
Social Media	246 Facebook fans of Water Quality Team,			711 Facebook fans of Knox County Stormwater
Tree / Riparian Buffer Plantings *	698 native plants installed			256 native trees planted as part of the 50K Tree Day. 21 volunteers participated.
Trash Removal *	648.37 lbs. of trash removed from area watersheds			1875 lbs. of trash removed from area streams (this info also in Stream Clean up section, above).

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Trail Maintenance *	2830 sq. ft. of trail maintained / improved (Halls High)			
Elementary School education *	216 elementary school students educated on watershed & water pollution concepts			2002 elementary school students educated on water quality, land use issues (mainly E-scape)

* See CAC Year End Overview 2015-2016

** See Ed/Outreach Tracking Spreadsheet FY 16

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- E. Do you have an advisory committee or other body comprised of the public and other stakeholders that provides regular input on your stormwater program? Yes No
- F. How do you facilitate, advertise, and publicize public involvement and participation opportunities? *Knox County posts information on the website (www.knoxcounty.org/stormwater), Facebook, Twitter, newspaper articles and advertisements, E-newsletters, emails to list serves and reaching out to specific organizations to post pertinent information on their social media and web pages.*
- G. Do you have a webpage dedicated to your stormwater program? Yes No
If so, what is the link/URL: *www.knoxcounty.org/stormwater*
- H. Are you tracking and maintaining records of public education, outreach, involvement and participation activities? Please attach a summary of these activities. -- 2 documents attached (*Year End Overview 2015-2016 & Ed/Outreach Tracking Spreadsheet FY 16*) Yes No

5. ILLICIT DISCHARGE DETECTION AND ELIMINATION (SECTION 4.2.3)

- A. Have you completed a map of all outfalls and receiving waters of your storm sewer system? Yes No
- B. Have you completed a map of all storm drain pipes of storm sewer system? Urban Areas Yes No
- C. How many outfalls have you identified in your system? *All unincorporated areas 3985 outfalls: 1534 pipes, 2266 ditches, 185 springs*
- D. Have any of these outfalls been screened for dry weather discharges? Yes No
- E. What is your frequency for screening outfalls for illicit discharges? *Weekly, if weather permits and when an illicit discharge is reported to us.*
- F. Do you have an ordinance that effectively prohibits illicit discharges? Yes No
- G. During this reporting period, how many illicit discharges/illegal connections have you discovered (or been reported to you)? *124 total – Health Department – 92; Stormwater – 32*
- H. Of those illicit discharges/illegal connections that have been discovered or reported, how many have been eliminated? *89 of 124 total have been eliminated. Out of the 124 total complaints or illicit discharges discovered:*
- Many were not found or not found to be legitimate complaints.*
 - Many were dumping complaints where we could see staining or it was brush or trash being dumped in or near a drainageway/stream, so we are monitoring and educating the surrounding businesses or residents on the issue.*
 - For a couple, a source could not be found and we are monitoring.*
 - And one was Ag related, so we have been talking to the Soil Conservation District, when appropriate, and monitoring.*

6. CONSTRUCTION SITE STORMWATER RUNOFF (SECTION 4.2.4)

- A. Do you have an ordinance or adopted policies stipulating:
Erosion and sediment control requirements? Yes No

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- Other construction waste control requirements? Yes No
- Requirement to submit construction plans for review? Yes No
- MS4 enforcement authority? Yes No

- B. How many active construction sites disturbing at least one acre were there in your jurisdiction this reporting period? *143 sites*
- C. How many of these active sites did you inspect this reporting period? *143 sites*
- D. On average, how many times each, or with what frequency, were these sites inspected *monthly* (e.g., weekly, monthly, etc.)?
- E. Do you prioritize certain construction sites for more frequent inspections? Yes No
- If Yes, based on what criteria? *All sites are considered priority sites in Knox County. Additional inspections are done for active construction and installation of infrastructure (e.g., road and pipe installation), NOV (notice of violation) follow up and work orders.*

7. PERMANENT STORMWATER CONTROLS (SECTION 4.2.5)

- A. Do you have an ordinance or other mechanism to require:
- Site plan reviews of all new and re-development projects? Yes No
- Maintenance of stormwater management controls? Yes No
- Retrofitting of existing BMPs with green infrastructure BMPs? Yes No
- B. What is the threshold for new/redevelopment stormwater plan review? (e.g., all projects, projects disturbing greater than one acre, etc.) *One acre of disturbance or 10,000 square feet of imperviousness added*
- C. Have you implemented and enforced performance standards for permanent stormwater controls? Yes No
- D. Do these performance standards go beyond the requirements found in Section 4.2.5.2 and require that pre-development hydrology be met for:
- Flow volumes Yes No
- Peak discharge rates Yes No
- Discharge frequency Yes No
- Flow duration Yes No
- E. Please provide the URL/reference where all permanent stormwater management standards can be found.
<http://www.knoxcounty.org/stormwater/dev-manual-ordinance.php>
- F. How many development and redevelopment project plans were reviewed for this reporting period? *57*
- G. How many development and redevelopment project plans were approved? *56*
- H. How many permanent stormwater management practices/facilities were inspected? *155*
- I. How many were found to have inadequate maintenance? *29*
- J. Of those, how many were notified and remedied within 30 days? (If window is different than 30 days, please specify) *3 within 30 days, 1 within 60 days, 3 within 300 days*
- K. How many enforcement actions were taken that address inadequate maintenance? *0*

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- L. Do you use an electronic tool (e.g., GIS, database, spreadsheet) to track post-construction BMPs, inspections and maintenance? Yes No
- M. Do all municipal departments and/or staff (as relevant) have access to this tracking system? Yes No
- N. Has the MS4 developed a program to allow for incentive standards for redeveloped sites? Yes No
- O. How many maintenance agreements has the MS4 approved during the reporting period? 54

8. CODES AND ORDINANCES REVIEW AND UPDATE (SECTION 4.2.5.3)

- A. Is a completed copy of the EPA Water Quality Scorecard submitted with this report? Yes No
This report was required with submission of the 2011-2012 Annual Report and is on file
- B. Include status of implementation of code, ordinance and/or policy revisions associated with permanent stormwater management.
Knox County Staff is currently developing revisions of the Stormwater Management Ordinance as well as the referenced technical design manual for land development.

9. STORMWATER MANAGEMENT FOR MUNICIPAL OPERATIONS (SECTION 4.2.6)

- A. Have stormwater pollution prevention plans (or an equivalent plan) been developed for:
- All parks, ball fields and other recreational facilities Yes No
Current SWPPP development in progress for Parks & Rec Dept. & facilities
- All municipal turf grass/landscape management activities Yes No
Current SWPPP development in progress for Parks & Rec Dept. & facilities
- All municipal vehicle fueling, operation and maintenance activities Yes No
SWPPPs have been developed for the EPW Department, Sheriff's Detention Facility, Solid Waste convenience centers; still in development for Parks & Recreation Department
- All municipal maintenance yards Yes No
SWPPPs have been developed for the EPW Department, Sheriff's Detention Facility, Solid Waste convenience centers; still in development for Parks & Recreation Department
- All municipal waste handling and disposal areas Yes No
- B. Are stormwater inspections conducted at these facilities? Yes No
1. If Yes, at what frequency are inspections conducted? Once every two weeks for the Engineering and Public Works facility & monthly inspections for the Sheriff's Detention Facility & Solid Waste convenience centers
- C. Have standard operating procedures or BMPs been developed for all MS4 field activities? (e.g., road repairs, catch basin cleaning, landscape management, etc.)—They have been for Engineering and Public Works only. Yes No
- D. Do you have a prioritization system for storm sewer system and permanent BMP inspections? Yes No

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- E. On average, how frequently are catch basins and other inline treatment systems inspected? *Once every two weeks at the Engineering and Public Works facility & monthly at the Sheriff's Detention Facility & Solid waste convenience centers*
- F. On average, how frequently are catch basins and other inline treatment systems cleaned out/maintained? *As needed*
- G. Do municipal employees in all relevant positions and departments receive comprehensive training on stormwater management? *Training records available upon request* Yes No
- H. If yes, do you also provide regular updates and refreshers? Yes No
- If so, how frequently and/or under what circumstances? *All field staff are required to take an online Stormwater test annually; we also offer job-specific training for all departments with established SWPPPs (currently Engineering & Public Works, Sheriff's Detention Facility & Solid Waste Dept.)*

10. STORMWATER MANAGEMENT PROGRAM UPDATE (SECTION 4.4)

- A. Describe any changes to the MS4 program during the reporting period including but not limited to:
 Changes adding (but not subtracting or replacing) components, controls or other requirements (Section 4.4.2.a).
 Changes to replace an ineffective or unfeasible BMP (Section 4.4.2.b).
BMP 3 – Changes to the Construction Program – see letters in attachment pgs. 42-44

BMP 4 – Post Construction Goal: Knox County will develop, implement, and enforce a program to address permanent stormwater management from new development and re-development projects that disturb one or more acres, or add more than 10,000 sq. feet of imperviousness. That may include, but are not limited to LID and green infrastructure. The program will be designed to fulfill "Performance Standards" and "Runoff Reduction" requirements as set forth in the NPDES permit.

- o *Changes to BMP4B – Milestone Year 5 of the Post Construction section should be changed from Evaluate program and determine needed updates to **Release findings of off-site mitigation/in-lieu of programs, and implement revisions to ordinances, and develop a program to ensure that all Stormwater BMPs are operating correctly and are properly maintained.***

This change is due to a 12 month extension by TDEC on having ordinance changes complete by the end of year 4 to having them complete by the end of year 5 for all post construction requirements.

Information (e.g. additional acreage, outfalls, BMPs) on program area expansion based on annexation or newly urbanized areas. N.A.

Changes to the program as required by the division (Section 4.4.3). N.A.

11. 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.

Indicator	Began Tracking (year)	Frequency	Number of Locations
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<i>Example: E. coli</i>	2003	<i>Weekly April–September</i>	20
E. Coli	2003	Varies	30
Benthics	1998	Varies	14
Tree Cover	2001	10 Years	All of Knox County
Stream Inventory	2008	5 Years	Listed Streams

- 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.

Knox County has taken a watershed approach to improve water quality. Knox County has created several watershed initiatives which encompass the Lower Clinch, Fort Loudon, Little River, and Holston watersheds. Within these watersheds stormwater staff has developed the Beaver Creek, Bullrun Creek, and Stock Creek watershed initiatives and are currently developing the Roseberry, Whites and Flat Creek initiatives. The task forces meet regularly to discuss ways to target problems based upon existing data and to target data collection based upon strategies implemented. Knox County coordinates monitoring efforts based upon our partners' required monitoring and what stormwater staff believes are useful data sets. Some data is generated based upon grants received from partnership efforts.

Knox County used Integrated Pollution Source Index (IPSI) data from TVA to help guide efforts in Stock Creek and Bullrun Creek which primarily focused on bacteria sources. Knox County continues monitoring both streams for bacteria with the help of partners Knox Chapman Utility, Halls-Dale Powell Utility, First Utility District, UT, and TVA. Knox County plans to continue monitoring these streams to evaluate any improvements that may result from Ag improvements and sewer and septic rehabilitations. Knox County plans to determine bacteroides when it will help guide strategy.

There have been numerous studies done on Beaver Creek over the last fifteen years. Knox County has used these studies to help develop watershed management plans. The watershed plan is the guiding document for grants received to improve Beaver Creek. Knox County is focusing on retrofits in Beaver Creek to improve water quality in different land uses such as Ag, parks, and residential areas.

The Stormwater department in partnership with UTK installed a large bioinfiltration cell in the Cedar Crossing subdivision. Currently with our partnership with UT we are monitoring inflow and pollutants coming into the system and measuring infiltration rates within the cell to determine its effectiveness in reducing pollutants as well as volume reduction.

The Roseberry Creek and Flat Creek task forces have received 319 grants. Projects are currently scheduled to go in the ground this fall. We plan to collect bacteria samples before and after project implementation. The focus is on septic rehabilitation, Ag BMP installations, and green infrastructure opportunities such as bioinfiltration.

The Whites Creek watershed initiative is focusing on riparian buffer improvement. We are currently analyzing our stream inventory data to identify sites for improvement. An outreach survey is being sent to about 500 residents in August 2016 to identify barriers to riparian buffer establishment and maintenance.

Prior to 2005, when most of the built environment occurred, Knox County stormwater requirements focused on peak flow mitigation. Knox County updated its stormwater ordinance to include a "first flush" requirement and buffer regulation in

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2005. In 2008 Knox County updated its ordinance to include water quality volume requirements that include an 80% TSS removal component and a buffer requirement. Since 2008 Knox County has created 193 maintenance agreements for permanent stormwater controls related to new developments. We have cost shared through our Environmental Stewardship Program to install 11 Green Infrastructure type BMP's with landowners this past year which will reduce sediment, flow, pollution and increase habitat.

12. ENFORCEMENT (SECTION 4.5)

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:

Action	Construction	Permanent Stormwater Controls	Illicit Discharge	Authority?	
Notice of violation	#47	#12	#24	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Administrative fines	N/A	#N/A	#0	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Stop Work Orders	#16	#N/A	#0	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Civil penalties	#25	#N/A	#0	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Criminal actions	N/A	#N/A	#0	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Administrative orders	N/A	#N/A	#N/A	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Other	N/A	#N/A	#N/A		

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? Yes No

C. What are the 3 most common types of violations documented during this reporting period?

Construction:

1. Failure to obtain necessary permits.
2. Temporary erosion prevention/sediment controls are not properly installed, functional and maintained.
3. Sediment controls are failing to retain sediment onsite.

Illicit Discharges:

1. Failing or leaking sewer and septic systems and grey water discharges.
2. Dumping of oils/solvents/chemicals in storm sewer system or stream - Residential
3. Dumping of yard waste in drainageway or storm sewer system.

Permanent Construction:

1. Water Vaults not being inspected and maintained
2. Catch Basin inserts not being inspected and maintained
3. Headwalls separated from pipes

Municipal Separate Storm Sewer System (MS4) Annual Report

13. PROGRAM RESOURCES (OPTIONAL)

- A. What was your annual expenditure to implement the requirements of your MS4 NPDES permit and SWMP this past reporting period? \$4,577,675
- B. What is next year's budget for implementing the requirements of your MS4 NPDES permit and SWMP? \$2,949,687
- C. Do you have an independent financing mechanism for your stormwater program? 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: N.A. Amount \$N.A.
Source: N.A. Amount \$N.A.
- 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)? 12
- F. Do you share program implementation responsibilities with any other entities? Yes No

Entity	Activity/Task/Responsibility	Your Oversight/Accountability Mechanism

G. Please attach a copy of your Organizational Chart: Attached

Municipal Separate Storm Sewer System (MS4) Annual Report

14. CERTIFICATION

This report must be signed by a ranking elected official or by a duly authorized representative of that person. See signatory requirements in sub-part 6.7.2 of the permit.

"I certify under penalty of law that this document and all attachments were prepared by me, or under my direction or supervision. The submitted information 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. As specified in Tennessee Code Annotated Section 39-16-702(a)(4), this declaration is made under penalty of perjury."

Tim Burchett, Mayor
Printed Name and Title


Signature

9/20/16
Date

Annual reports must be submitted in accordance with the requirements of Section 5.4. (Reporting) of the permit. Annual reports must be submitted to the appropriate Environmental Field Office (EFO) by September 30 of each calendar year, as shown in the table below:

EFO	Street Address	City	Zip Code	Telephone
Chattanooga	540 McCallie Avenue STE 550	Chattanooga	37402	(423) 634-5745
Columbia	1421 Hampshire Pike	Columbia	38401	(931) 380-3371
Cookeville	1221 South Willow Ave.	Cookeville	38506	(931) 432-4015
Jackson	1625 Hollywood Drive	Jackson	38305	(731) 512-1300
Johnson City	2305 Silverdale Road	Johnson City	37601	(423) 854-5400
Knoxville	3711 Middlebrook Pike	Knoxville	37921	(865) 594-6035
Memphis	8383 Wolf Lake Drive	Bartlett	38133	(901) 371-3000
Nashville	711 R S Gass Boulevard	Nashville	37216	(615) 687-7000

List of Attachments

- 1. List of Impaired Waters within the Jurisdictional Area.....Page 19**

- 2. Determination Letter from U.S. Fish and Wildlife Service.....Page 22**
Determination Letter from TN Wildlife Resources Agency.....Page 23
Determination Letter from TDEC Natural Heritage Program.....Page 25

- 3. Tracking Documents for Education/Outreach Activities:**
 - a. CAC Year End Overview 2015 -16.....Page 31**
 - b. Education / Outreach Tracking Spreadsheet FY16.....Page 37**

- 4. Amendments to Personnel Responsibilities and Construction Dept.....Page 42**

- 5. Knox County Stormwater Management Organizational Chart.....Page 45**

Municipal Separate Storm Sewer System (MS4) Annual Report

Impaired Waters

1.1.1. 3.2.1 Discharges to Water Quality Impaired Waters

Under section 303(d) of the Clean Water Act, states are required to develop lists of impaired waters. A waterbody (i.e., stream reaches, lakes, waterbody segments) is considered “impaired” when the results of monitoring by TDEC indicate chronic or recurring violations of the applicable numeric and/or narrative water quality criteria. The list, commonly called “the 303(d) list” also provides information on the pollutant(s) for which the stream is not meeting criteria and the source(s) of those pollutants. The 303(d) list is typically updated every other year.

In the State of Tennessee, the NPDES Phase II permit requires that each MS4 maintain awareness of the streams and other waterbodies in their jurisdictions that are on the 303(d) list. More importantly, the permit includes a provision for monitoring the streams on the 303(d) list for which “Discharges from the MS4” is designated as a pollutant source. Additionally, some streams on the 303(d) list have sources that have a direct relation to requirements of the NPDES Phase II permit. For example, a stream that is included on the 303(d) list for the pollutant “sediment” and the source of the sediment is “land development” would be a stream of special interest to a permitted MS4 due to the permit’s focus on management of pollutants at land development (i.e. construction) sites. MS4s are required to implement best management practices to control pollutants, including sediment, from land developments.

Table 7 provides a listing of impaired streams in Knox County, as identified in the EPA Approved Final Year 2014 303(d) List for the State of Tennessee. The table is divided in three priority tiers depending upon the source(s) of the stream’s pollutant and the relevance of that source to the requirements of the NPDES Phase II permit, as explained below.

- **Tier 1** includes those streams where discharges from the County’s public stormwater conveyance system (i.e., the MS4) are considered as the *sole* source of pollutant(s). *Tier 1 streams are of primary focus in the County’s water quality program, therefore permit compliance activities target the impairments in these waterbodies.* The County’s stormwater management program includes activities that target the pollutant(s) causing the impairment(s).
- **Tier 2** includes those streams where discharges from the County’s public stormwater conveyance system are one of several sources of pollutant(s). *Tier 2 streams are also a strong focus of the County’s water quality program; therefore permit compliance activities target the impairments in these waterbodies.* However, water quality improvements in these waterbodies likely cannot be achieved by the County’s efforts alone.
- **Tier 3** includes those streams where discharges from Knox County’s public stormwater conveyance system are NOT considered a source of pollutant(s). Water quality in these waterbodies are addressed by the County’s stormwater management ordinance, general public education/outreach efforts and by other County stormwater program activities (e.g., illicit discharge enforcement), but the County’s stormwater management resources are typically not highly focused on these streams.

Table 7. Impaired Waters in Knox County		
Waterbody Name	Cause of Impairment	Source of Impairment
TIER 1 STREAMS		
Little Turkey Creek	Loss of biological integrity due to siltation	Discharges from MS4 area
Turkey Creek	Loss of biological integrity due to siltation Escherichia coli	Discharges from MS4 area
Grandview Branch	Escherichia coli	Discharges from MS4 area
High Bluff Branch	Escherichia coli	Discharges from MS4 area
Sinking Creek	Escherichia coli	Discharges from MS4 area

Municipal Separate Storm Sewer System (MS4) Annual Report

Table 7. Impaired Waters in Knox County

Waterbody Name	Cause of Impairment	Source of Impairment
Ten Mile Creek (formerly called Sinking Creek)	Habitat loss due to alteration in streamside or littoral vegetative cover Loss of biological integrity due to siltation Escherichia coli	Discharges from MS4 area
Willow Fork	Alteration in stream-side or littoral vegetative cover Loss of biological integrity due to siltation Escherichia coli	Discharges from MS4 area
Hines Branch	Habitat loss due to other anthropogenic substrate alterations Escherichia coli	Discharges from MS4 area
Knob Fork	Loss of biological integrity due to siltation Habitat loss due to other anthropogenic substrate alterations Alteration in stream-side or littoral vegetative cover Escherichia coli	Discharges from MS4 area
Grassy Creek	Loss of biological integrity due to siltation Escherichia coli	Discharges from MS4 area
Meadow Creek	Escherichia coli	Discharges from MS4 area
Plum Creek	Escherichia coli	Discharges from MS4 area
TIER 2 STREAMS		
Grable Branch	Oil & Grease Loss of biological integrity due to siltation Physical Substrate Habitat Alterations	Minor Industrial Point Source Channelization Industrial Permitted Runoff Discharges from MS4 area
Swanpond Creek	Loss of biological integrity due to siltation Alteration in stream-side or littoral vegetative cover Escherichia coli	Channelization Discharges from MS4 Area
Casteel Branch	Loss of biological integrity due to siltation	Pasture Grazing Discharges from MS4 area
Twin Branch	Habitat loss due to alteration in streamside or littoral vegetative cover Loss of biological integrity due to siltation	Pasture Grazing Discharges from MS4 area
McCall Branch	Loss of biological integrity due to siltation	Discharges from MS4 area Streambank Modification
Whites Creek	Other Anthropogenic Habitat Alterations Escherichia coli	Discharges from MS4 area Streambank Modification
Beaver Creek (segment 1000)	Phosphate Nitrates Escherichia coli Low Dissolved Oxygen Loss of biological integrity due to siltation Physical Substrate Habitat Alterations	Major Municipal Point Source Pasture Grazing Discharges from MS4 Area
Beaver Creek (segments 2000 and 3000)	Escherichia coli Loss of biological integrity due to siltation Physical Substrate Habitat Alterations	Pasture Grazing Discharges from MS4 Area
Bullrun Creek	Escherichia coli Loss of biological integrity due to siltation Physical Substrate Habitat Alterations	Discharges from MS4 Area Pasture Grazing Channelization
Love Creek	Loss of biological integrity due to siltation Other Anthropogenic Habitat Alterations	Discharges from MS4 area (multiple MS4s)

Municipal Separate Storm Sewer System (MS4) Annual Report

Table 7. Impaired Waters in Knox County

Waterbody Name	Cause of Impairment	Source of Impairment
TIER 3 STREAMS		
Roseberry Creek	Escherichia coli	Pasture Grazing Septic Tanks
Little Flat Creek (segments 1000 and 2000)	Escherichia coli	Animal Feeding Operations (NPS)
Flat Creek	Escherichia coli	Pasture Grazing Collection System Failure
Fort Loudon Reservoir (segment 1000)	PCBs	Contaminated Sediment
Fort Loudon Reservoir (segment 2000)	Mercury, PCBs	Atmospheric Deposition Contaminated Sediment
Roddy Branch	Alteration in stream-side or littoral vegetative cover Physical Substrate Habitat Alteration, Loss of biological integrity due to siltation Escherichia coli	Pasture Grazing Channelization
Stock Creek (Segments 1000 and 2000)	Escherichia coli	Pasture Grazing
Gun Hollow Branch	Escherichia coli	Pasture Grazing
East Fork Third Creek (Located within the City of Knoxville)	Loss of biological integrity due to siltation Other Anthropogenic Habitat Alterations Escherichia coli	Discharges from MS4 area Urbanized High Density Area Land Development Collection System Failure
Third Creek (Located within the City of Knoxville)	Nitrates Loss of biological integrity due to siltation Other Anthropogenic Habitat Alterations Escherichia coli	Discharges from MS4 area Urbanized High Density Area Land Development Collection System Failure
First Creek (Located within the City of Knoxville)	Nitrate + Nitrite Loss of biological integrity due to siltation Other Anthropogenic Habitat Alterations Escherichia coli	Discharges from MS4 area Urbanized High Density Area Collection System Failure
Second Creek (Located within the City of Knoxville)	Nitrate + Nitrite Loss of biological integrity due to siltation Other Anthropogenic Habitat Alterations Escherichia coli	Discharges from MS4 area Urbanized High Density Area Collection System Failure
Williams Creek (Located within the City of Knoxville)	Other Habitat Alterations Escherichia coli	Discharges from MS4 area Collection System Failure
Baker Creek (Located within the City of Knoxville)	Nitrate + Nitrite Other Habitat Alterations Escherichia coli	Discharges from MS4 area Collection System Failure
Goose Creek (Located within the City of Knoxville)	Loss of biological integrity due to siltation Other Anthropogenic Habitat Alterations PCBs Escherichia coli	Collection System Failure Discharges from MS4 area RCRA Hazardous Waste
Fourth Creek (Located within the City of Knoxville)	Physical Substrate Habitat Alterations Escherichia coli	Discharges from MS4 area Channelization
Melton Hill Reservoir	PCBs Chlordane	Contaminated Sediment
Williams Branch	Loss of biological integrity due to siltation	Industrial Permitted Runoff

Municipal Separate Storm Sewer System (MS4) Annual Report

Determination Letter from U.S. Fish and Wildlife Service



United States Department of the Interior

FISH AND WILDLIFE SERVICE
446 Neal Street
Cookeville, TN 38501

August 19, 2013

Ms. Parci Gibson
Knox County Stormwater Management
205 West Baxter Avenue
Knoxville, Tennessee 37917

Re: FWS #13-CPA-0635

Dear Ms. Gibson:

Thank you for your e-mail received July 8, 2013, regarding compliance with the Tennessee Department of Environment and Conservation (TDEC) Notice of Coverage annual reporting requirements for Knox County's MS4 permit (TNS075582) and stormwater management program in Knox County, Tennessee. U.S. Fish and Wildlife Service (Service) personnel have reviewed the 2012 Knox County Stormwater Management Plan, pertinent stormwater regulations, and the spatial data provided by your office.

Historic records for large-river federally endangered Unionid mussel species exist in Knox County. Most of these species have been extirpated from Knox County; however, the federally endangered pink mucket (*Lampsilis abrupta*), spectaclecase (*Cumberlandia monodonta*), and sheepnose (*Plethobasus cyphus*) may occur in suitable habitats within the jurisdictional boundaries of Knox County's stormwater management program. The federally threatened snail darter (*Percina tanasi*) may also occur in these medium to large river habitats. In 2007, the Service finalized regulations authorizing the establishment of non-essential experimental populations of 15 federally listed mussel, snail, and fish species in suitable habitats in the Douglas Dam tailwaters of the French Broad River (72 FR 52433-52461). The Service and its conservation partners also have an active reintroduction program for the lake sturgeon (*Acipenser fulvescens*) in the Lower French Broad River.

We appreciate the efforts of the Knox County's Stormwater Management Program in helping to ensure that the quantity and quality of stormwater discharges from development activities in upland areas protect water quality in the tributaries to the larger rivers which support these species. In view of this, we believe that adverse effects to federally listed species from activities carried out under that program are not anticipated.

Thank you for the opportunity to comment. If you have any questions, please contact Steve Alexander of my staff at 931/528-6481, ext. 210, or via e-mail at steven_alexander@fws.gov.

Sincerely,

Acting for Mary E. Jennings
Field Supervisor

xc: Robert Karesh, TDEC, Nashville
Karina Bynum, TDEC, Cookeville
Jonathan Burr, TDEC, Knoxville

Municipal Separate Storm Sewer System (MS4) Annual Report



TENNESSEE WILDLIFE RESOURCES AGENCY

ELLINGTON AGRICULTURAL CENTER
P. O. BOX 40747
NASHVILLE, TENNESSEE 37204

September 23, 2013

Parci Gibson
Knox County Stormwater Management
205 West Baxter Avenue
Knoxville, TN 37917

Re: Knox County MS4 Determination Review

Dear Ms. Gibson:

The Tennessee Wildlife Resources Agency has reviewed the information that you provided regarding your MS4 permit. Data available to us indicates that numerous aquatic state listed species under our authority have been documented in streams within your jurisdictional area. Many of the state listed freshwater mollusks have been extirpated due to the impoundment of the Tennessee River within your jurisdiction but several state listed aquatic species continue to persist within your county's jurisdiction. It is our opinion that current code, city ordinances and policies, and other efforts to protect water quality are sufficient to minimize potential impacts to listed species under our authority in order to not jeopardize the continued existence of these species; and we agree with your determination that the MS4 discharges or discharge-related activities within the Knox County area are not likely to jeopardize any state or federally listed species.

If you have questions regarding this matter or if I may be of further assistance, please contact me at 615-781-6572.

Sincerely,

A handwritten signature in cursive script that reads "Robert M. Todd".

Robert M. Todd
Fish and Wildlife Environmentalist

cc: Rob Lindbom

Municipal Separate Storm Sewer System (MS4) Annual Report

Amy Mann

From: Scott Dykes <Scott.Dykes@tn.gov>
Sent: Tuesday, August 18, 2015 12:35 PM
To: Amy Mann
Cc: Bill Reeves
Subject: Knox County Species

Amy,

We have been reviewing the species list and have found 2 that need to be added. Those species include the Lake Sturgeon (*Acipenser fulvescens*) (State Endangered) and ~~Northern Spinefin Shiner (*Notropis heterodon*)~~ ~~(Federally threatened)~~. The Yellowfin Madtom (*Noturus flavipinnis*) (Federally threatened) should be removed from your list, as it does not occur in Knox county. Please let me know if you have any questions.

Thank you,

Scott

Scott A. Dykes
Wildlife Manager III

Region IV Coordinator for:
Wildlife Diversity
Wild Hog Program
Buffalo Springs WMA

TWRA
3030 Wildlife Way
Morristown, TN 37814

1-800-332-0900 Ext. 112
Fax (423) 587-7057
scott.dykes@tn.gov

"You can't manage what you don't measure"

Municipal Separate Storm Sewer System (MS4) Annual Report

Amy Mann

From: Stephanie.Ann Williams <Stephanie.Ann.Williams@tn.gov>
Sent: Monday, August 24, 2015 11:19 AM
To: Amy Mann
Subject: RE: Endangered Species In Knox County
Attachments: TN Natural Heritage Program Rare Species Data July 2015 Knox County, TN.doc

Sorry for the delay! I have been out in the field most of the month.

Please find attached our list of tracked rare species within Knox County, Tennessee. The data was last updated in July 2015 and the next release will be January 2016. I can add you the contact list of people that receive the bi-annual data export, just let me know if you would like to be added.

Regards-



Stephanie Williams | Data Manager
Division of Natural Areas – Natural Heritage Program
Tennessee Tower, 2nd Floor
312 Ross L. Parks Avenue, Nashville, TN 37243 MAP
p. 615-532-4799 o. 256-337-3858
stephanie.ann.williams@tn.gov
tn.gov/environment
[Natural Areas Facebook](#)

From: Amy Mann [mailto:Amy.Mann@knoxcounty.org]
Sent: 14 August, 2015 12:41 PM
To: Stephanie.Ann Williams
Subject: Endangered Species in Knox County

*** This is an EXTERNAL email. Please exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email - OIR-Security. ***

Hi Ms. Williams,
Knox County Stormwater obtained the attached list of endangered species in Knox County in October of 2013 (attached). Has the list been updated since then? If so, Knox County will likely request a copy. Can you tell me how often this list is updated?

Thank you in advance for your assistance!

Amy Mann
NPDES Project Manager
Knox County Stormwater
205 W. Baxter Ave.
Knoxville, TN 37917
O: 865-215-5283

Municipal Separate Storm Sewer System (MS4) Annual Report

TN Natural Heritage Program

Rare Species Data July 2015

Knox County, TN

Type	Scientific Name	Common Name	Global Rank	St. Rank	Fed. Prot.	St. Prot.	Habitat
Vertebrate Animal	<i>Accipiter striatus</i>	Sharp-shinned Hawk	G5	S3B,S4N	No Status	D	Forests and open woodlands.
Vertebrate Animal	<i>Acipenser fulvescens</i>	Lake Sturgeon	G3G4	S1	--	E	Bottoms of large, clean rivers and lakes.
Nonvascular Plant	<i>Archidium alternifolium</i>	A Moss	G4G5	S1	--	T	Limestone Barrens
Invertebrate Animal	<i>Atheamnia anthoni</i>	Anthony Riversnail	G1	S1	LE,XN	E	Larger rivers and downstream stretches of lg creeks, on cobble/boulder substrates adj. riffles; portions of upper TN River basin.
Vascular Plant	<i>Aureolaria patula</i>	Spreading False-foxglove	G3	S3	--	S	Oak Woods And Edges
Vascular Plant	<i>Boechera patens</i>	Spreading Rockcress	G3	S1	--	E	Moist Rocky Woods
Vascular Plant	<i>Cardamine flagellifera</i>	Running Bittercress	G3	S2	--	T	Mountain Stream Banks
Vertebrate Animal	<i>Carpiodes vellifer</i>	Highfin Carpsucker	G4G5	S2S3	--	D	Large rivers, mostly in Tennessee River drainage.
Vertebrate Animal	<i>Chrosomus tennesseensis</i>	Tennessee Dace	G3	S3	--	D	First order spring-fed streams of woodlands in Ridge and Valley limestone region; Tennessee River watershed.
Vertebrate Animal	<i>Cryptobranchus alleganiensis</i>	Hellbender	G3G4	S3	No Status	D	Rocky, clear creeks and rivers with large shelter rocks.
Vertebrate Animal	<i>Cyprinella elongatus</i>	Blue Sucker	G3G4	S2	--	T	Swift waters over firm substrates in big rivers.
Vascular Plant	<i>Delphinium exaltatum</i>	Tall Larkspur	G3	S2	--	E	Glades And Barrens
Invertebrate Animal	<i>Dromus dromas</i>	Dromedary Pearlmussel	G1	S1	LE	E	Medium-large rivers with riffles and shoals w/ relatively firm rubble, gravel, and stable substrates; Tennessee & Cumberland systems.

Municipal Separate Storm Sewer System (MS4) Annual Report

Type	Scientific Name	Common Name	Global Rank	St. Rank	Fed. Prot.	St. Prot.	Habitat
Vertebrate Animal	Falco peregrinus	Peregrine Falcon	G4	S1B	No Status	E	Varied habitats including farmlands, marshes, river mouths, and cities; often nests on ledges.
Nonvascular Plant	Funaria americana	A Moss	G37	S17	--	T	Limestone Bluffs And Barrens
Invertebrate Animal	Fusconala cor	Shiny Pigtoe	G1	S1	LE	F	Shoals and riffles of small-medium sized rivers with mod-fast current over sand-cobble substrates; upper Tennessee River watershed.
Invertebrate Animal	Fusconala cuneolus	Finerayed Pigtoe	G1	S1	LE	E	Riffles of fords and shoals of mod gradient streams in firm cobble and gravel substrates; middle & upper Tennessee River watershed.
Vertebrate Animal	Gallinula galeata	Common Moorhen	G5	S1B	No Status	D	Marshes, quiet rivers, lakes and ponds; nests among marsh plants over water; infrequently flies.
Vertebrate Animal	Gyrinophilus gulolineatus	Berry Cave Salamander	G1Q	S1	C	T	Aquatic cave obligate; Ridge & Valley; formerly included with G. palleucus.
Vertebrate Animal	Haliaeetus leucocephalus	Bald Eagle	G5	S3	--	D	Areas close to large bodies of water; roosts in sheltered sites in winter; communal roost sites common.
Vascular Plant	Helianthus occidentalis	Naked-stem Sunflower	G5	S2	--	S	Limestone Glades And Barrens
Vertebrate Animal	Hemidactylium scutatum	Four-toed Salamander	G5	S3	--	D	Woodland swamps, shallow depressions, & sphagnum mats on acidic soils; middle & east Tennessee.
Vertebrate Animal	Hemistremia flamma	Flame Chub	G3	S3	--	D	Springs and spring-fed streams with lush aquatic vegetation; Tennessee & middle Cumberland river watersheds.

Municipal Separate Storm Sewer System (MS4) Annual Report

Type	Scientific Name	Common Name	Global Rank	St. Rank	Fed. Prot.	St. Prot.	Habitat
Other (Ecological)	Heron rookery	Heron Rookery	GNR	SNR	--	Rare, Not State Listed	
Nonvascular Plant	Homalidadelphus sharpii	Sharp's Homalidadelphus	G3?	S1	--	E	Calcareous Or Dolomite Bluffs
Vascular Plant	Hydrophyllum virginianum	Appalachian Waterleaf	G5	S3	--	T	Alluvial Woods
Invertebrate Animal	Io fluviatilis	Spiny Riversnail	G2	S2	--	Rare, Not State Listed	Shallow waters of shoals that are rapid to moderate and well-oxygenated; Tennessee River & main tributaries; E Tennessee.
Vertebrate Animal	Ixobrychus exilis	Least Bittern	G5	S28	--	D	Marshes with scattered bushes or other woody growth; readily uses artificial wetland habitats.
Vascular Plant	Juglans cinerea	Butternut	G4	S3	--	T	Rich Woods And Hollows
Invertebrate Animal	Lampsilis abrupta	Pink Mucket	G2	S2	LE	E	Generally a large river species, preferring sand-gravel or rocky substrates with mod-strong currents; Tennessee & Cumberland river systems.
Invertebrate Animal	Lasmigona holstonia	Tennessee Heelsplitter	G3	S2	--	Rare, Not State Listed	Spring runs, creeks, & small rivers, in subst of sand & mud; upper Tenn & Conasauga river watersheds; Blue Ridge & Ridge & Valley.
Vascular Plant	Lathyrus palustris	Marsh Pea	G5	S1	--	S	Wet Woods & Marshes
Invertebrate Animal	Lemlox rimosus	Birdwing Pearlymussel	G1	S1	LE	E	Small-medium size rivers in riffle areas with sand and gravel substrates in mod-fast currents; Tennessee River system.
Vascular Plant	Lonicera dioica	Mountain Honeysuckle	G5	S2	--	S	Mountain Woods And Thickets

Municipal Separate Storm Sewer System (MS4) Annual Report

Type	Scientific Name	Common Name	Global Rank	St. Rank	Fed. Prot.	St. Prot.	Habitat
Vascular Plant	<i>Monotropsis odorata</i>	Sweet Pinesap	G3	S2	--	T	Piney Woods
Vertebrate Animal	<i>Myotis grisescens</i>	Gray Myotis	G3	S2	LE	E	Cave obligate year-round; frequents forested areas; migratory.
Invertebrate Animal	<i>Nesticus paynel</i>	A Cave Spider	G3G4	S3	--	Rare, Not State Listed	Terrestrial cave associate; also may be found on surface; northern Ridge & Valley.
Vertebrate Animal	<i>Noturus flavipinnis</i>	Yellowfin Madtom	G1	S1	LT, XN	E	Medium size to large creeks and small rivers that are unpolluted & relatively unslilted; upper Tennessee River watershed.
Invertebrate Animal	<i>Obovaria subrotunda</i>	Round Hickorynut	G4	S2S3	--	Rare, Not State Listed	Medium-large rivers in sand and gravel subst with moderate flow; TN & Cumb rivers; also Red River in Robertson Co., W Highland Rim.
Vascular Plant	<i>Onosmodium hispidissimum</i>	Shaggy False Gromwell	G4	S1	--	E	Dry Woods
Vascular Plant	<i>Onosmodium molle</i> ssp. <i>occidentale</i>	Western False Gromwell	G4G5T4?	S1S2	--	T	Glades
Vascular Plant	<i>Panax quinquefolius</i>	American Ginseng	G3G4	S3S4	--	S-CE	Rich Woods
Vertebrate Animal	<i>Percina tanasi</i>	Snail Darter	G2G3	S2S3	LT	T	Sand and gravel shoals of moderately flowing, vegetated, large creeks; upper Tennessee River watershed.
Vertebrate Animal	<i>Pituophis melanoleucus melanoleucus</i>	Northern Pinesnake	G4T4	S3	--	T	Well-drained sandy soils in pine/pine-oak woods; dry mountain ridges; E portions of west TN, E to lower elev of the Appalachians.
Invertebrate Animal	<i>Plethobasus cooperianus</i>	Orangefoot Pimpleback	G1	S1	LE, XN	E	Large rivers sand-cobble substrates in riffles and shoals in deep flowing water; Cumberland & TN river systems.

Municipal Separate Storm Sewer System (MS4) Annual Report

Type	Scientific Name	Common Name	Global Rank	St. Rank	Fed. Prot.	St. Prot.	Habitat
Invertebrate Animal	<i>Plethobasus cyphus</i>	Sheepnose	G3	S2S3	LE	Rare, Not State Listed	Large to medium-sized rivers, in riffles and coarse sand/gravel subst; TN & Cumb river systems Incl KY Reservoir; W Uplands & Rim.
Invertebrate Animal	<i>Quadrula intermedia</i>	Cumberland Monkeyface	G1	S1	LE, XN	E	Shallow riffle and shoal areas of headwater streams and bigger rivers, in coarse sand/gravel substrates; Tennessee River system.
Nonvascular Plant	<i>Radula voluta</i>	A Liverwort	G3	S2	--	S	Shady Moist Boulders By Waterfalls Or Streams
Vascular Plant	<i>Ranunculus flabellaris</i>	Yellow Water-crowfoot	G5	S2	--	T	Ponds And Marshes
Nonvascular Plant	<i>Rhachithecium perpusillum</i>	Budding Tortula	G4G5	S1	--	S	Bark Of Hardwoods
Vertebrate Animal	<i>Sorex longirostris</i>	Southeastern Shrew	G5	S4	--	D	Various habitats including wet meadows, damp woods, and uplands; statewide.
Vascular Plant	<i>Spiranthes odorata</i>	Sweetscent Ladies'-tresses	G5	S1	--	E	Swamps, Pond Margins
Vertebrate Animal	<i>Synaptomys cooperi</i>	Southern Bog Lemming	G5	S4	--	D	Marshy meadows, wet balds, & rich upland forests.
Vertebrate Animal	<i>Tyto alba</i>	Barn Owl	G5	S3	--	D	Open and partly open country, often around human habitation; farms.

Municipal Separate Storm Sewer System (MS4) Annual Report

**Community Action Committee Water Quality AmeriCorps Team
2015-2016 Year-End Overview (7/1/15 – 6/30/16)
Adopt-A-Watershed Program**

<p>Adopt-A-Watershed Hands-on Learning</p>	<ul style="list-style-type: none"> • 1687 middle and high school students participated in Adopt-A-Watershed (AAW) water quality educational activities, each activity lasting between 60 – 90 minutes. In total, there were 10,415 educational contacts. Approximately two-thirds of the students participated in five or more hands-on sessions focused on stormwater-related topics.
<p>Adopt-A-Watershed Service Projects</p>	<ul style="list-style-type: none"> • 1507 middle and high school students (89% of all AAW-participating students) who participated in AAW learning activities also participated in a culminating service project to benefit their school’s watershed. <p>Watershed improvement projects included:</p> <p><u>Baker Creek Watershed</u> South Doyle Middle</p> <ul style="list-style-type: none"> • Mr. Gorman’s Outdoor Classroom Club and Focus Class planted 110 native plants in the stormwater conveyance. • The Focus Class added 30 herbaceous plants along car rider line. • Mr. Gorman’s classes and UT volunteers planted 275 seedlings along riparian zone with 50 non-AAW volunteers. • The Focus Class and Outdoor Classroom Club created a raised bed in the school courtyard for a demonstration garden. • The Focus Class and Outdoor Classroom Club started a butterfly garden next to the school. • The Focus Class stabilized exposed soil next to stormwater conveyance with seed and straw. • The Focus Class created “No Mow” signs that are now installed along the fence protecting the seedlings in the riparian zone. <p><u>BEAVER CREEK WATERSHED</u> Grace Christian Academy</p> <ul style="list-style-type: none"> • Mrs. Walker’s fall and spring Environmental Science classes removed 780 lbs of weeds and grass from around the kiosk at Harrell Road Stormwater Park. Mrs. Walker’s classes also mulched trees at the park, improving 11 acres of public lands. <p>Karns High</p> <ul style="list-style-type: none"> • Mr. Lakin’s classes installed two raised garden beds, one bed with milkweed, and another with daffodils. Mr. Lakin’s students also removed about 22 lbs. of sediment from storm drain inserts and led a campus wide litter clean up, removing approximately 138 lbs of trash. • Mrs. Longmire’s Fall and Spring Marine Ecology classes mulched the trees in the arboretum, totaling 1.7 acres of public lands improved. The spring class conducted two litter clean ups, diverting approximately 60 lbs. of waste. • Mr. Brem’s fall and spring Ecology classes mulched trees in the outdoor classroom, improving 0.85 acres of public lands. Mr. Brem’s classes also removed 203 lbs. of sediment from storm drain inserts and 129.74 lbs. of trash removed from campus.
<p>Adopt-A-Watershed</p>	

Municipal Separate Storm Sewer System (MS4) Annual Report

Service Projects,
continued

Halls High

- Ms. Keep's three Freshmen Academy AgriScience classes and her Spring AgriScience took a lead role in maintaining the HOC this year. In the fall, the three classes stabilized 85 sq. ft. of exposed soil by laying seed and straw. They maintained the rain garden, removed 280 lbs. of invasive plants and collected 10 lbs. of trash. In the spring, all four classes worked to prepare the site for the HOC Spring Celebration. Over the course of three weeks all four classes spread wood chips along the entire path (2830 sq ft), weeded and mulched the flower beds
- Ms. Higgins' LRE class planted red and white (school colors) annuals in the quilt garden for the HOC Spring Celebration.

Powell Middle

- Mr. Davis' Watershed club (17 students) participated in hands-on learning activities and in two sessions weeded and mulched their rain garden, culminating in the removal of 120 lbs. of weeds and invasive species.

Conner Creek Watershed

Hardin Valley Academy

- In the Spring, Mr. Paquette's Zoology/ Botany class and Mr. Knapp's AP Environmental Science classes removed 920 lbs. of invasive plants in their outdoor classroom.

First Creek Watershed

Fulton High

- Ms. Kennard's Ecology class removed 40 lbs. of invasive plants along First Creek.

Central High

- Mr. Alexander's Wildlife Principles class removed 278 lbs of sediment and debris from 6 storm drain inserts on campus. They also built a model floating island habitat for future projects at the Fountain City Lake.
- Ms. Neff's AP Biology class removed 70 lbs. of sediment and debris from an additional 3 storm drain inserts on campus.

Love Creek Watershed

Holston Middle

- Mr. McMillan's 6th grade Science class planted 6 native trees along the greenway next to Loves Creek.
- Mr. McMillan's 7th grade Honors Science class brainstormed, wrote, and filmed a PSA.

Lyon Creek Watershed

Carter High

- Mrs. Chollman's class installed a raised garden bed with approximately 50 milkweed plants. Students also painted and installed a rain barrel to provide an ongoing water source for the raised bed.
- Mrs. Rolen's students installed gutters on a shed adjacent to the raised garden bed to route stormwater into the rain barrel.

Stock Creek Watershed

South Doyle High

- Coach Davis's Fall Ecology class maintained the rain garden in front of Young Campus.
- Coach Abbott's Spring Ecology class removed 700 lbs. of invasive plants at Marble Springs Historical Site.

Adopt-A-Watershed
Service Projects,
continued

Municipal Separate Storm Sewer System (MS4) Annual Report

	<p><u>Swan Pond Creek Watershed</u> Career Magnet Academy</p> <ul style="list-style-type: none"> • Mr. Blankenship’s Outdoor Club spent 8 Friday afternoons picking up litter and removing sediment from the parking lot of the PSCC Strawberry Plains campus. His class also built a 3-D model of the school, including stormwater features, that will serve as a sustainable campus concept plan. • Mrs. Brown’s Chemistry classes removed 56 trash bags full of sediment from the parking lot and placed decals on 16 storm drains. • Mrs. Shinlever’s Biology classes removed 90 trash bags full of sediment from the parking lot. <p><u>Ten Mile Creek Watershed</u> West Valley Middle Fall</p> <ul style="list-style-type: none"> • Mrs. Hayes’ and Mrs. Dietz’s classes removed 520 lbs of green waste from the rain garden. • Mrs. Lyttle’s classes re-identified 20 trees with the goal of their campus becoming a certified arboretum.\ <p>Spring</p> <ul style="list-style-type: none"> • Mrs. Hayes’ and Mrs. Dietz’s classes removed 920 lbs of green waste from the outdoor classroom, mulched trees around their campus, and planted 72 herbaceous plants around a new walkway. • Mrs. Lyttle’s classes constructed 3 benches for the outdoor classroom. • Mr. Cataldi’s classes removed 150 lbs. of green waste and 30 lbs. of trash. • Mrs. Lewis’ classes installed erosion control matting on a hillside adjacent to the school and maintained established trees surrounding the rain garden, removing 170 lbs of invasive plants. • Mrs. Crowley’s and Mrs. Whitmire’s classes planted 105 herbaceous plants in the new garden in the back of the school and around the sign at the entrance of the school. • The Environmental Club seeded exposed soil adjacent to the rain garden and created “No Mow” signs for the rain garden fence to prevent mowing around the rain garden perimeter. <p><u>Third Creek Watershed</u> West High</p> <ul style="list-style-type: none"> • Mrs. Nanney’s and Mr. Reed’s classes participated in an invasive plant species removal along the third creek greenway, removing approximately 560 lbs. of invasive plants. • Mrs. Nanney’s students drafted pages for a stormwater features handbook that outlined different stormwater features. This project tested the process for a future class to develop one that could potentially be used by Knox Co. Stormwater. • Mr. Gohn’s two Ecology classes had a contest to see which class could pick up the most litter around campus by weight, collecting a total of 193 lbs.
<p>Elementary Student Outreach & Service</p>	<ul style="list-style-type: none"> • Assisted Dr. Joanne Logan/UT BESS outreach effort, engaging Lenoir City Middle School students in hands-on water quality activities. • Conducted educational activities and removed 40 lbs of invasive plants with a Brownie Troop at Third Creek on 10/30/15.
<p>Development of School/ Community Outdoor Classrooms</p>	<p>Halls Outdoor Classroom (HOC)</p> <ul style="list-style-type: none"> • Worked with HPUD, HHS Construction Trades, Knox County Stormwater, Alan Sparkman of the TN Concrete Association, Harrison APAC, USA Concrete and

Municipal Separate Storm Sewer System (MS4) Annual Report

	<p>Tindell's Lumber on the excavation and installation of a pervious concrete walkway (infiltration rate tested – 500-800 in/hr). This ADA compatible walkway will increase the usage of the HOC by wheelchair bound students and classes-at-large as well as community members.</p> <ul style="list-style-type: none"> • Worked to redesign and grade the bio-swale entering the rain garden and laid erosion control matting, seed and straw to stabilize the area • Edged the new pervious walkway and laid seed and straw on the sides in order to stabilize loose soil • Expanded involvement on HOC Steering Committee, adding a student representative and one new teacher • Expanded teacher, student and community involvement in Spring HOC celebration; featured HHS Jazz Band and Madrigal Singers • Supported the installation of a 2nd amphitheater by Eagle Scout Cameron Greer • Worked with HHS Art Classes to create an HOC entrance art piece <p>West Valley Middle Outdoor Classroom</p> <ul style="list-style-type: none"> • See West Valley Middle AAW service learning projects <p>Hardin Valley High Outdoor Classroom</p> <ul style="list-style-type: none"> • See Hardin Valley AAW service learning projects
<p>Water Quality Forum Event Support</p>	<p>House and Garden Show, <i>Feb. 12th through 14th</i></p> <ul style="list-style-type: none"> • Assisted with marketing, set up, and management of the Knoxville House and Garden booth, making approximately 513 contacts. Promoted upcoming rain barrel workshops, rain barrel sale, and Families in the Creek event <p>River Rescue, <i>April 2nd</i></p> <ul style="list-style-type: none"> • Evaluated creek sites and identified those appropriate for River Rescue • Assisted in organizing River Rescue site supplies • Captained and coordinated volunteers at 10 creek sites • Approximately 10.3 tons of trash was collected and 634 volunteers participated. <p>WaterFest, <i>May 5th</i></p> <ul style="list-style-type: none"> • Coordinated the Poetry and Art contest with 300 entries submitted • Conducted a WaterFest Poetry and Art contest “primer” with approximately 440 of Bonny Kate Elementary school students • Assisted with planning and conducting WaterFest, with approximately 700 elementary school students participating from 5 different schools • Coordinated 30 volunteers for each of the 10 stations <p>Rain Barrel Workshops & Sale</p> <ul style="list-style-type: none"> • Hosted a workshop for UT Extension 4-H, and prepared 15 barrels for them • Prepared 65 barrels for the WQF’s “Make it, Take it” Rain Barrel Workshops and assisted with three workshops on April 9th, May 21st and June 18th. In total, 103 community members participated in the workshops. • Promoted and assisted with the WQF Rain Barrel Truckload Sale on June 4th, selling a total of 93 barrels <p>Families in the Creek, <i>June 11th</i></p> <ul style="list-style-type: none"> • Marketed for the event, planned event activities, and coordinated logistics • Assisted with implementing the event, with a total of 24 adults and children participating. <p>Executive Committee:</p> <ul style="list-style-type: none"> • Assisted with agendas and minutes

Municipal Separate Storm Sewer System (MS4) Annual Report

EarthFest	<ul style="list-style-type: none"> • Attended <i>EarthFest</i> Planning Committee meetings and served on the <i>EarthFest</i> Education Committee • Assisted in planning and conducting the <i>EarthFest</i> Scavenger Hunt including coordinating this activity with 53 organizations • Assisted with the Scavenger Hunt prize acquisition, collecting prizes from 57 local/regional businesses • A total of 520 attendees completing the Scavenger Hunt • Assisted with the development of the <i>EarthFest</i> Enviro-characters
50K Tree Day	<ul style="list-style-type: none"> • As a part of the Tennessee Environmental Council's statewide tree planting initiative on February 27th, 21 volunteers contributed to planting 256 trees at the following locations: <ul style="list-style-type: none"> ○ Near Swan Pond Creek at the Knox County Forks of the River Park ○ Along Conner Creek in the Hardin Valley Academy Outdoor Classroom
Other Community Engagement	<ul style="list-style-type: none"> • Organized and managed a booth at SturgeonFest, promoting Knox County Stormwater and WQF programs and upcoming events • Organized and managed a table at Knoxville Zoo Employee Environmental Day, promoting Knox County Stormwater and WQF programs and upcoming events
Knox County Adopt-A-Stream	<ul style="list-style-type: none"> • Trained three new Knox County AAS Stream groups (Walker Springs Brownie Troop, Elavon, Inc. and Cub Pack #236) • Assisted with nine AAS group clean-ups and one with UT Class (Dr. Roxanne Hovland) that was doing an AAS-related project • Since September 2015, AAS groups have collected approximately 1875 lbs. of trash
Watershed Initiatives	<p>Beaver Creek</p> <ul style="list-style-type: none"> • Maintained Harrell Road rain garden • Maintained Powell Station Park rain garden and removed 240 lbs. of green waste <p>Stock Creek</p> <ul style="list-style-type: none"> • Attended Stock Creek Education Committee meetings • Coordinated water quality youth and adult outreach activities at the John Sevier Days event on September 19th • Coordinated with the John Sevier Homestead staff on conducting community service-learning activities at their Arbor Day event on March 19th including arboretum tours and children's activities <p>Other County Watershed Initiatives</p> <ul style="list-style-type: none"> • Analyzed and compiled 34 hours' worth of social infrastructure data for the Roseberry Creek Watershed • Analyzed and compiled 9 hours' worth of social infrastructure data for the Whites Creek Watershed <p>Assisted in creation of marketing survey for Whites Creek residents to gauge their perception of having and maintaining the creek's riparian buffer in neighborhood</p>
Environmental Stewardship Program Support	<ul style="list-style-type: none"> • Assisted in the design of 9 grass swales and 1 green retaining wall • Conducted design specifications and research on 10 projects • Total of 20 design hours for all projects
Knox County Construction Site	<ul style="list-style-type: none"> • Conducted one education event on October 16th with 26 contacts

Municipal Separate Storm Sewer System (MS4) Annual Report

Education	
Knox Co. Dry Weather Screening & TDEC Monitoring	<ul style="list-style-type: none"> • Dedicated about 40 hours to dry weather screening assessments • Assisted TDEC in benthic and IBI assessments on reference waterbodies
Permanent Stormwater Management Program	<ul style="list-style-type: none"> • Members spent collectively 60 hours digitizing construction plans in support of the Permanent Stormwater Management Program
Knox Co. SWPPP	<ul style="list-style-type: none"> • Assisted with the Knox Co. EPW's Stormwater Pollution Prevention Plan's quarterly inspections. • Mapped approximately four convenience centers for their SWPPP documents
East Tennessee Development Symposium	<ul style="list-style-type: none"> • Assisted in planning and management of registration for the E. TN Development Symposium on Nov. 18th and 19th • Registered 389 participants
Other	<ul style="list-style-type: none"> • Maintained Lower Clinch Watershed Council rain garden at Claxton Elementary school in Clinton, TN • Maintained stormwater brochures at seven Knox County libraries, tracking monthly removal. 633 brochures were taken this year • Assisted with registration at the Knox Co. Soil Conservation District's Farmer's Banquet • Coordinated and conducted stream trash clean-up along First Creek as a part of the Fulton Contribution Day involving 31 students removing 183 lbs. of trash
Summary	<ul style="list-style-type: none"> • 6,310 sq ft of soil stabilized • 5,440 lbs of invasive plants removed • 9,735 lbs of trash and litter picked up • 1,446 lbs of debris removed from storm drains • 976 native plants installed • 441 volunteers engaged in watershed improvement activities

Municipal Separate Storm Sewer System (MS4) Annual Report

Education / Outreach Tracking Spreadsheet FY 16

Tracking of Knox County's stormwater education, outreach, involvement and participation activities

July 1, 2015-June 30,2016

7/15/2015	Speaking Engagement: 20-minute presentation on Runoff Reduction Requirements & future relationship with Utilities	8 local utility representatives from the Utilities Management Federation attended this presentation at First Utility District in Farragut. Meeting lasted about 1.5 hours
7/25/2015	Rain Barrel "Make-It, Take-It" Workshop: 45 minute presentation on water quality, watersheds, water conservation	31 people attended the workshop; we sold 27 Barrels. This is one of the WQF workshops. 10am - 12pm at Ijams Nature Center.
8/18/2015	PPGH: EPW SWPPP Facility Training	59 Engineering & Public Works employees were trained on Stormwater Pollution Prevention related to the EPW SWPPP and related Spill Prevention & Response Plan; ~45 min. training included the Weather Channel's 20 minute "After the Storm" video and a 25 minute "Twenty Questions about Stormwater" game show
8/19/2015	PPGH: EPW SWPPP Facility Training	54 Engineering & Public Works employees were trained on Stormwater Pollution Prevention related to the EPW SWPPP and related Spill Prevention & Response Plan; ~45 min. training included the Weather Channel's 20 minute "After the Storm" video and a 25 minute "Twenty Questions about Stormwater" game show
8/20/2015	Watershed / Enviroscape Lesson: Tate's School of Discovery - 4th Grade	22 students (4th graders) attended an Enviroscape / Watershed / Water Pollution / Sediment Survival lesson for ~1 hr.
9/19/2015	Ed / Outreach: John Sevier Days (Marble Springs Historic Site)	45 educational contacts made with public citizens in the Stock Creek watershed
9/28/2015	AAS Clean-Up: Trinity Chapel 4-H	31 volunteers removed 200 pounds of trash from their section of Beaver Creek
10/6/2015	TDEC Public Meeting / Fort Loudoun Lake Watershed Event	5 people stopped by Knox County booth to learn about citizen opportunities in Knox County
10/14/2015	Illicit Discharge letter regarding dumping of petroleum products in cul-de-sac (on the road). Discussed Knox County code violations and water quality impacts of dumping organic material.	Sent to 6 residents on Glenshannon Lane in Barrington subdivision.
10/16/2015	Watershed / Enviroscape Lesson: Kate Orthofer's 3rd Grade Brownie Troop	14 students (3rd graders) attended an Enviroscape / Watershed / Water Pollution / Sediment Survival lesson for ~1 hr.
10/16/2015	Workshop: Sub-Contractor Education	25 sub contractors attended a 30-minute Construction Site Subcontractor EPSC Awareness Training educational session at 1159 Front Royal Lane

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10/30/2016	Creek Clean-Up: Brownie Troop	40 lbs. of invasives removed from 3rd Creek
11/4/2015	Roundtable Discussion: Final Meeting to review Draft Policies & Knox Manual regarding the new Runoff Reduction Requirement (combined development community, agency & special interest GROUPS)	50 people attended from 10am - 2pm at the Knoxville Civic Coliseum's 3rd Floor Ballroom
11/10/2015	Speaking Engagement: 35-minute presentation on Runoff Reduction Requirements	25 people, including MPC Commissioners, attended from 12pm - 1:15pm at the Small Assembly Room at the CC building
11/12/2015	Rain Barrel "Make-It, Take-It" Workshop: 45 minute presentation on water quality, watersheds, water conservation	25 people attended the workshop; we sold 15 Barrels. This is a Knox County (not a WQF) workshop
11/16/2015	PPGH: Sheriff's Office-Detention Facility Personnel training	2 Sheriff's Office Employees trained on illicit discharge detection and stormwater pollution prevention.
11/18/2015	PPGH: Sheriff's Office-Detention Facility Personnel training	9 Sheriff's Office Employees trained on illicit discharge detection and stormwater pollution prevention.
11/18 - 11/19/15	East TN Development Symposium	391 water quality professionals, surveyors, engineers, developers, etc. attended this Development Conference at the Knoxville Convention Center
11/21/2015	AAS Clean-up	7 people from the Goodwill Good Guides Youth program attended this 2 hour clean-up on Burnett creek. 380 pounds of trash were removed from Burnett Creek.
12/1/2015	Speaking Engagement: 50-minute presentation on Runoff Reduction Requirements	16 people, including City of Oak Ridge MPC Commissioners and BZA reps, attended from 5:30 - 7:00pm at the Municipal Building in Oak Ridge
12/8/2015	Amy Random addition	40 lbs. of sediment removed from storm drain SD2C on EPW lot
Calendar Year 2015	PPGH: Knox County Municipal Employees	199 Knox County employees took the online WebNet Safety Stormwater Safety Training, which focuses on Stormwater Pollution Prevention and Clean Water Act information
1/11/2016	PPGH: Sheriff's Office-Detention Facility Personnel training	47 Sheriff's Office Employees trained on illicit discharge detection and stormwater pollution prevention.
1/13/2016	PPGH: Sheriff's Office-Detention Facility Personnel training	27 Sheriff's Office Employees trained on illicit discharge detection and stormwater pollution prevention.
1/18/2016	PPGH: Sheriff's Office-Detention Facility Personnel training	31 Sheriff's Office Employees trained on illicit discharge detection and stormwater pollution prevention.

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1/25/2016	Speaking Engagement: Master Gardeners' training	35 Master Gardeners attended a training on the Land-Water Connection (12:30pm - 3pm, UT Ag Extension office, Downtown West)
1/28/2016	Speaking Engagement: West Hills Elementary	150 2nd grade students & 8 teachers: Enviroscape & Sediment Survival
2/1/2016	PPGH: Sheriff's Office-Detention Facility Personnel training	49 Sheriff's Office Employees trained on illicit discharge detection and stormwater pollution prevention.
2/3/2016	PPGH: Sheriff's Office-Detention Facility Personnel training	32 Sheriff's Office Employees trained on illicit discharge detection and stormwater pollution prevention.
2/8/2016	PPGH: Sheriff's Office-Detention Facility Personnel training	25 Sheriff's Office Employees trained on illicit discharge detection and stormwater pollution prevention.
2/10/2016	PPGH: Sheriff's Office-Detention Facility Personnel training	43 Sheriff's Office Employees trained on illicit discharge detection and stormwater pollution prevention.
2/12/16 - 2/14/16	Exhibit: Dogwood Arts House and Garden Show	513 people stopped by the booth to learn about infiltration techniques & homeowner stormwater pollution prevention.
2/15/2016	PPGH: Sheriff's Office-Detention Facility Personnel training	19 Sheriff's Office Employees trained on illicit discharge detection and stormwater pollution prevention.
2/17/2016	PPGH: Sheriff's Office-Detention Facility Personnel training	32 Sheriff's Office Employees trained on illicit discharge detection and stormwater pollution prevention.
2/22/2016	PPGH: Sheriff's Office-Detention Facility Personnel training	26 Sheriff's Office Employees trained on illicit discharge detection and stormwater pollution prevention.
2/24/2016	PPGH: Sheriff's Office-Detention Facility Personnel training	40 Sheriff's Office Employees trained on illicit discharge detection and stormwater pollution prevention.
2/27/2016	50K Tree Planting Day	21 volunteers planted ~256 trees at Forks of the River Park (Swan Pond Creek) and along Conner Creek at Harden Valley Academy HOC
2/29/2016	PPGH: Sheriff's Office-Detention Facility Personnel training	33 Sheriff's Office Employees trained on illicit discharge detection and stormwater pollution

Municipal Separate Storm Sewer System (MS4) Annual Report

		prevention.
3/9/2016	PPGH: EPW Lot Cleaning	100 lbs. of sediment swept up and disposed of by Tony Norman, EPW SWPPP Coordinator, at the request of TDEC during February's audit
Feb-16	AAS Clean-Up: Elavon	7 AAS team members picked up 763 pounds of trash on the McCall Branch
2/27/2016	PSWM Letters: Letter sent to owners of Permanent Stormwater Management devices that need maintenance	5 letters sent in the month of February
3/1/2016	50K Tree Planting Day	21 volunteers planted 256 seedlings along Conner Creek at Hardin Valley High and along Swan Creek at the Forks of the River park
3/7/2016	Speaking Engagement: CAC Leadership Class 2016	40 people attended this panel discussion on Knoxville / Knox County community resources
Mar-16	Speaking Engagement: Chemical Applicators	Chemical Applicator Presentation: Neal Denton presentation to 101 landscapers and chemical applicators about Knox County rules/regulations and stormwater pollution prevention at the Grounds Management Short Course titled "Getting it Right from the Beginning". Hosted by UT Extension at the UT Conference Center
4/4/2016	PSWM Letters: Letter sent to owners of Permanent Stormwater Management devices that need maintenance	2 letters sent in the month of March
4/8/2016	Tree Planting Day	57 South Doyle Middle school students and UT students installed 200 seedlings along Baker Creek on Knox County school property
4/16/2016	E-Newsletter (first one!)	E-newsletter sent to 359 subscribers. Feature article on riparian buffers
4/14/2016	EarthFest	520 completed a water quality-related scavenger hunt. Knox County Stormwater partnered with the WQF to have materials at the WQF booth
4/21/2016	Soil Health Workshop: Hosted by Knox County NRCS / Soil Conservation District	~70 people attended workshop at Knoxville Botanical Garden / Arboretum. 9am - 2pm; Intro. To Soil Health, Soil Health Mgmt., Soil Health from a Farmer's Perspective; High Tunnel Installation & Use
4/21/2016	Illicit Discharge letter regarding dumping of yard waste in drainageway. Letters + Homeowner's Guide to Drainageway maintenance brochures	Sent to 11 residents in Whittington Creek subdivision and 12 residents in Cottington Court subdivision.
4/26/2016	Outdoor Classroom Celebration	Halls Outdoor Classroom 8th annual celebration; 350 participants came out to see all of the new and recently maintained components of the Halls High Outdoor Classroom
6/2/2016	Festival: Farm City Day	1,800 elementary students were introduced to non-point source pollution through the enviroscape. They learned about typical pollutants that come off of the following

Municipal Separate Storm Sewer System (MS4) Annual Report

		landuses: farm, neighborhood, construction and commercial. They also learned about actions they can take at home to reduce pollution contribution.
6/11/2016	Illicit Discharge letter regarding dumping of cat litter into ROWs.	Sent to 10 residents on Warlex Road and a few on Velma Drive.
6/11/2016	Families in the Creek	24 children and adults attended an all day event at Toll Creek near Ijams Nature Center. The group was divided into four rotating teams that completed a fish assessment, benthic assessment, stream walk and a Who Dirtied the TN activity.
6/12/2016	Speaking Engagement: DIY Rain Barrel Workshop	25 people attended a 45 minute presentation / workshop on Rain Barrels. Bonnaroo, Planet Roo Academy (Stephanie Carlson)
6/14/2016	Speaking Engagement: Green Up for Clean Water	5 people attended a 60-minute presentation / workshop on green infrastructure, how Knox County encourages GI, and how to make rain chains! Bonnaroo, Planet Roo Academy (Stephanie Carlson)
6/21/2016	Speaking Engagement: American Society of Civil Engineers	50 engineers attended a presentation about Runoff Reduction / current legislation on post-construction stormwater control at a monthly chapter meeting at Buddy's Banquet Hall (45 min presentation)
6/23/2016	E-Newsletter	E-newsletter sent to 365 subscribers. Feature article on HOC pervious walkway installation
6/30/2016	Enviroscape Demonstration: Westminster Presbyterian	30 students, aged 3-12, and 10 adults attended a 30-minute presentation about land use and water pollution. Westminster Presbyterian (Northshore & Lyons Bend)
6/30/2016	FINAL FY16 AAS Numbers	Total of 3 newly-trained groups; 8 AAS clean-ups; 1875 lbs. of trash collected (see WQT end-of-year overview FY16)
6/30/2016	FINAL FY16 Brochures Taken Overview	Total of 633 water-quality related brochures (Drainageway Maintenance; Solution to Stormwater Pollution; Guider to Cleaner Water; Clean Water Bookmark) were taken from all 8 County libraries
6/30/2016	FINAL FY16 AAW Numbers	1687 middle & high school students participated in AAW projects; 6,310 sq. feet of soil stabilized; 5,160 lbs. of invasive plants removed; 648.37 lbs. of litter picked up; 604.52 lbs. of debris removed from storm drains; 698 native plants installed; 441 volunteers engaged in watershed improvement activities

Municipal Separate Storm Sewer System (MS4) Annual Report




OFFICE OF COUNTY MAYOR TIM BURCHETT

Knox County Engineering & Public Works • 205 West Baxter Avenue, Knoxville, TN 37917

TO: Chris Granju, P.E.

CC: Brad Warren, P.E.
Heath Haun
Steve Elliott
Mark Jones
Richard Jullan

FROM: Dwight Van de Vate 

DATE: December 10, 2015

RE: Reorganization of Construction Inspection

Please be advised that effective 12/21/15, the following staff changes will be made:

Heath Haun, Supervising Construction Inspector, and Steve Elliott, Assistant Supervising Construction Inspector, will be reassigned from Stormwater Management to Engineering & Public Works Administration, reporting to Brad Warren.

The following members of the inspection staff will also be reassigned effective 12/21/15: Bill Blackman, Brad Hall, Greg Harris, Frankie Castillo Ramos, & Shannon Sayne. Mr. Hall will continue his duties in Municipal Good Housekeeping as required by our NPDES Phase 2 permit. All will continue to report to Mr. Haun and Mr. Elliott.

Mr. Granju, Mr. Warren and Mr. Haun are to begin meeting on Monday, 12/14/15, to begin developing a transition plan for physical relocation of offices the following week. Staff from the Solid Waste Department will be concurrently relocated to the Stormwater Management building. Mr. Warren will report to me until further notice.

I recognize that changes of this nature are always an adjustment. I appreciate your support of a smooth and orderly transition, and your continued commitment to the overall success of Engineering & Public Works.

phone 865.215.5600 • fax 865.215.5610

Municipal Separate Storm Sewer System (MS4) Annual Report

December 21, 2015

Michael Atchley
Valerie McFall
TDEC Knoxville Field Office
3711 Middlebrook Pike
Knoxville, TN 37921

Subject: Knox County Stormwater Management Amendment to NOI

To Whom It May Concern,

We are writing to inform you of several changes to our most recent (2010) Notice of Intent for coverage under the NPDES General Permit for Discharges from Small Municipal Separate Storm Sewer Systems.

First, as of December 21, the Construction Site Stormwater Runoff Control Minimum Control Measure will be managed by the Knox County Engineering & Public Works, under the authority of Brad Warren, the Knox County Staff Transportation Engineer (see enclosed Memo dated Thursday, December 10, 2015 from Dwight Van de Vate, Senior Director of Knox County Engineering & Public Works). All aspects of the Knox County Construction Site Stormwater Runoff Control program, including the Qualified Local Program (QLP) deliverables, will be managed by the Staff Transportation Engineer at the Knox County Highway Department.

In addition to the changes to the Construction Site Stormwater Runoff Control program, the following changes should also be noted in the 2010 NOI:

- Part V, Section 1, D) Administrative Information (p. 13)
 - Change to Amy Mann, Knox County Stormwater NPDES Project Manager
- Part V, Section 3, D) Administrative Information (p. 21)
 - Change to Brad Warren, Knox County Staff Transportation Engineer
- Part V, Section 4, D) Administrative Information (p. 24)
 - Add Tracy Jones, Knox County Stormwater NPDES Project Manager
- Part V, Section 5, D) Administrative Information (p. 26)
 - Change to Amy Mann, Knox County Stormwater NPDES Project Manager

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- Organizational Chart
 - Revisions reflect new management structure of Stormwater / Engineering & Public Works with regards to the NPDES Permit

Please let myself or Brad Warren know if you have any questions regarding this memo.

Sincerely,

Chris Granju,
Director, Knox County Stormwater Management

CC: Dwight Van de Vate, Knox County Engineering & Public Works,
Brad Warren, Knox County Engineering & Public Works



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