



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)

Phase II Small Municipal Separate Storm Sewer System (MS4) Annual Report

1. MS4 Information

Name of MS4: Murfreesboro-MTSU		MS4 Permit Number: TNS075469
Contact Person: Robert Haley (Murfreesboro)		Email Address: rhaley@murfreesborotn.gov
Telephone: (615) 848-3200/642-0783 cell		MS4 Program Web Address: http://www.murfreesborotn.gov/index.aspx?NID=288
Mailing Address: Water Resources Department/Engineering, 220 NW Broad Street, Murfreesboro, TN 37130		
City: Murfreesboro	State: TN	ZIP code: 37130
Contact Person: Shelia Huffmire (MTSU)		Email Address: shelia.huffmire@mtsu.edu
Telephone: (615) 494-8708		MS4 Program Web Address: http://www.mtsu.edu/stormwater/index.php
Mailing Address: MTSU Box 32, Murfreesboro, TN 37132		

What is the current population of your MS4? 122,904 (latest certified figure, 2018)

What is the reporting period for this annual report? July 1 2017 to June 30 2018

2. Discharges to Waterbodies with Unavailable Parameters or Exceptional Tennessee Waters (Section 3.1)

- A. Does your MS4 discharge into waters with unavailable parameters (previously referred to as impaired) for pathogens, nutrients, siltation or other parameters related to stormwater runoff from urbanized areas as listed on TN's most current 303(d) list and/or according to the on-line state GIS mapping tool (tdeconline.tn.gov/dwr/)? If yes, attach a list. See attachment 1. Yes No
- B. Are there established and approved TMDLs (<http://www.tn.gov/environment/article/wr-ws-tennessees-total-maximum-daily-load-tmdl-program>) with waste load allocations for MS4 discharges in your jurisdiction? If yes, attach a list. See attachment 1. Yes No
- C. Does your MS4 discharge to any Exceptional Tennessee Waters (ETWs - http://environment-online.tn.gov:8080/pls/enf_reports/f?p=9034:34304:4880790061142)? If yes, attach a list. See attachment 2. Yes No
- D. Are you implementing specific Best Management Practices (BMPs) to control pollutant discharges to waterbodies with unavailable parameters or ETWs? If yes, describe the specific practices: We consider the construction and post-construction minimum measures to be practices that target causes of impairment, especially sediment and habitat alterations, and to nutrients and bacteria to a lesser extent. And each year as a part of the city's PIE plan, city and MTSU stormwater staff consider and plan education and/or public participation that targets pollutants or causes of impairment in one or more watersheds. For instance, we have planted trees alongside creeks impaired for alteration of stream-side cover (Garrison Creek, Lytle Creek) over several years time. In 2017-18 year, we removed invasive plants on Lytle Creek and Sinking Creek; also picking up trash at the same time. We placed doorhangers with information on riparian buffers and nutrients at 201 homes and businesses - and talked with several owners - in the Bear Branch and Dry Branch watersheds. See attachment 3 for two examples of watershed-specific pollutant reduction plans. Yes No

3. Public Education/Outreach and Involvement/Participation (Sections 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, such as Hot Spots? If yes, describe the specific pollutants and/or sources targeted by your public education program: Annually City and MTSU plan general education (e.g., basics of water resources, water quality, and urban runoff), and plan targeted education: to specifit pollutants nutrients, sediment, trash; absence of streamside vegetation; and illicit discharges. 2017-18: Via ongoing outreach to the UT Ag Extension Office, we speak to lawncare professionals re: minimizing fertilizers, herbicides, etc. and water quality. Door hangers (Bear Br., Dry Br. watershed this year) inform homeowners & business owners about grass and brush (left on streets;source of nutrients) and riparian landowners about importance of streamside vegetation. Hot spots targeted were 21 automotive-related businesses, re: trash, oil, washwater and other potential illicit discharges. For the 10th annual tree-day event, in 2018, we mailed information encouraging better streamside vegetation to 311 riparian property owners; and 970 tree seedlings were distributed to landowners (mostly riparian) in the East Fork Stones River watershed. City's Parks and Recreation Department Greenways & Outdoor Murfreesboro programs: 72 sessions, 268 hours of contact; 2071 participants for a total of 6467 contact hours of water resource-related outdoor teaching events and stream clean-ups. During FY 2017-2018, MTSU targeted several pollutants such as illicit discharges, hydrocarbon pollutants, trash and riparian areas. Employess were targeted with online training. Events such as campus cleanups were coordinated to help remove trash from ending up in the streams. Students also volunteered for riparian tree plantings and invasive species removal throughtout the City and learned about streamside buffers and their benefits. MTSU staff assisted with Stormwater Control Measure (SCM) maintenance and targeted pollutants such as hydrocarbons, fertilizers, and other runoff pollutants. Yes No
- C. Do you have a webpage dedicated to your stormwater program? If yes, provide a link/URL: http://www.murfreesborotn.gov/288/Stormwater
www.mtsu.edu/stormwater Yes No
- D. Summarize how you advertise and publicize your public education, outreach, involvement and participation opportunities: Web site and Facebook postings. City and MTSU keep calendars on websites. Direct mail to target audiences. Communication (e-mail, meetings, web posts) with interested groups (such as Friends of the Greenway, Stones River Watershed Association), city and county staff, educators/school teachers, and e-mails to MTSU subscriber list (staff, faculty & temp employees) and volunteers (over 2800); promotion through MTSU News and Media, MyMT Portal, and posting of flyers on campus). Outreach events (Earth Day, etc.) Occasional press releases. Occasional spots on City TV: PSAs and short (<10 minutes) stories about stream restoration, etc. Stories by MTSU TV. Legal notices for changes in ordinances.
- E. Summarize the public education, outreach, involvement and participation activities you completed during this reporting period: See attachment 4.

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F. Summarize any specific successful outcome(s) (e.g., citizen involvement, pollutant reduction, water quality improvement, etc.) fully or partially attributable to your public education and participation program during this reporting period: 2705 lbs trash collected from stream or riparian areas; 970 tree seedlings distributed, for planting in riparian areas; 4,082 invasive plants (privet, Chinese honeysuckle) cut and poisoned; 317 people involved as volunteers at several events. Plus contacts via class time, field days, workshops, outreach events to over 6000 persons. EPSC controls used on construction sites. Permanent stormwater management installed in new development.

4. Illicit Discharge Detection and Elimination (Section 4.2.3)

- A. Have you developed and do you continue to update a storm sewer system map that shows the location of system outfalls where the municipal storm sewer system discharges into waters of the state or conveyances owned or operated by another MS4? Yes No
- B. If yes, does the map include inputs into the storm sewer collection system, such as the inlets, catch basins, drop structures or other defined contributing points to the sewershed of that outfall, and general direction of stormwater flow? Yes No
- C. How many outfalls have you identified in your storm sewer system? 647 (City) and 12 (MTSU)
- D. Do you have an ordinance, or other regulatory mechanism, that prohibits non-stormwater discharges into your storm sewer system? Yes No
- E. Have you implemented a plan to detect, identify and eliminate non-stormwater discharges, including illegal disposal, throughout the storm sewer system? If yes, provide a summary: Annually we screen outfalls on at least one of the major stream segments that passes through Murfreesboro; and we perform screening within the system (junction boxes) in a commercial or industrial area where we think illicit are more likely to exist. Most of the illicit we find are identified by call-in complaints. Yes No
- F. How many illicit discharge related complaints were received this reporting period? 3 (Dumping of concrete, Vintage Grove; possible discharge of sewage from camper at Automasters; grease cart drainage at The Gavel)
- G. How many illicit discharge investigations were performed this reporting period? 3(City) + 5(MTSU)
- H. Of those investigations performed, how many resulted in valid illicit discharges that were addressed and/or eliminated? 3(City) and 5(MTSU)

5. Construction Site Stormwater Runoff Pollutant Control (Section 4.2.4)

- A. Do you have an ordinance or other regulatory mechanism requiring:
- Construction site operators to implement appropriate erosion prevention and sediment control BMPs consistent with those described in the TDEC EPSC Handbook? (n.b. expressed in context of EPSC Plan requirements) Yes No
- Construction site operators to control wastes such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste? [27 ½ (E) (21)] Yes No
- Design storm and special conditions for unavailable parameters waters or Exceptional Tennessee Waters consistent with those of the current Tennessee Construction General Permit (TNR100000)? (*consistent, not exactly same; need updating*) Yes No
- B. Do you have specific procedures for construction site plan (including erosion prevention and sediment BMPs) review and approval? Yes No

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- C. Do you have sanctions to enforce compliance? Yes No
- D. Do you hold pre-construction meetings with operators of priority construction activities and inspect priority construction sites at least monthly? Yes No
- E. How many construction sites disturbing at least one acre or greater were active in your jurisdiction this reporting period? 98 issued FY 17-18; plus 96 active from previous years = 194 total
- F. How many active priority and non-priority construction sites were inspected this reporting period? 194
- G. How many construction related complaints were received this reporting period? 14 jh+15 et + 26 bh + 5 je= 60
6. Permanent Stormwater Management at New Development and Redevelopment Projects (Section 4.2.5)
- A. Do you have a regulatory mechanism (e.g. ordinance) requiring permanent stormwater pollutant removal for development and redevelopment projects? If no, have you submitted an Implementation Plan to the Division? Yes No
 Yes No
- B. Do you have an ordinance or other regulatory mechanism requiring:
- Site plan review and approval of new and re-development projects? Yes No
- A process to ensure stormwater control measures (SCMs) are properly installed and maintained? Yes No
- Permanent water quality riparian buffers? If yes, specify requirements: 50 feet on larger streams; 35 feet on smaller streams; a two-zone buffer in which the outer/upland 15 feet may be managed (cutting, mowing) but no grading or construction Yes No
- C. What is the threshold for development and redevelopment project plans plan review (e.g., all projects, projects disturbing greater than one acre, etc.)? a lot of one acre or more (or smaller lots that are a part of a larger common plan of development) and an increase in impervious area of 10,000 square feet or more
- D. How many development and redevelopment project plans were reviewed for this reporting period? 213 (44 preliminary plats/subdivisions + 169 site plans) of which 122 are regulated for permanent s/w mgt per thresholds noted in C. above
- E. How many development and redevelopment project plans were approved? 82
82 permitted for construction (ref. PRC/building permits and pre-construction mtgs.). 29 subdivision developments; 53 site developments.
- F. How many permanent stormwater related complaints were received this reporting period? 2. (Stratford Hall V, related to biocell and detention pond; and Puckett Station re: WQPA)
- G. How many enforcement actions were taken to address improper installation or maintenance? Installation: Approvals (C/Os and approvals of final plats) are withheld if construction/installation is too deficient; these number in the dozens for the year. Maintenance: 1 (S. Hall V.)
- H. Do you have a system to inventory and track the status of all public and private SCMs installed on development and redevelopment projects? Yes No
- I. Does your program include an off-site stormwater mitigation or payment into public stormwater fund? If yes, specify. _____ Yes No

7. Stormwater Management for Municipal Operations (Section 4.2.6)

MTSU

A. As applicable, have stormwater related operation and maintenance plans that include information related to maintenance activities, schedules and the proper disposal of waste from structural and non-structural stormwater controls been developed and implemented at the following municipal operations:

Streets, roads, highways?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Municipal parking lots?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Maintenance and storage yards?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Fleet or maintenance shops with outdoor storage areas?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Salt and storage locations?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Snow disposal areas?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Waste disposal, storage, and transfer stations?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

B. Do you have a training program for employees responsible for municipal operations at facilities within the jurisdiction that handle, generate and/or store materials which constitute a potential pollutant of concern for MS4s? Yes No

If yes, are new applicable employees trained within six months, and existing applicable employees trained and/or retrained within the permit term? Yes No

City of Murfreesboro

A. As applicable, have stormwater related operation and maintenance plans that include information related to maintenance activities, schedules and the proper disposal of waste from structural and non-structural stormwater controls been developed and implemented at the following municipal operations:

Streets, roads, highways?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Municipal parking lots?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Maintenance and storage yards?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Fleet or maintenance shops with outdoor storage areas?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Salt and storage locations?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Snow disposal areas?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Waste disposal, storage, and transfer stations?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

B. Do you have a training program for employees responsible for municipal operations at facilities within the jurisdiction that handle, generate and/or store materials which constitute a potential pollutant of concern for MS4s? Yes No

If yes, are new applicable employees trained within six months, and existing applicable employees trained and/or retrained within the permit term? Yes No

8. Reviewing and Updating Stormwater Management Programs (Section 4.4)

- A. Describe any revisions to your program implemented during this reporting period including but not limited to:
 Modifications or replacement of an ineffective activity/control measure. ---
 Changes to the program as required by the division to satisfy permit requirements. ---
 Information (e.g. additional acreage, outfalls, BMPs) on newly annexed areas and any resulting updates to your program. Additional outfalls, +6 (River Downs, Stovers Glen, Kingdom Ridge (2), Manson Crossing, Enclave at Liberty Valley)
- B. In preparation for this annual report, have you performed an overall assessment of your stormwater management program effectiveness? If yes, summarize the assessment results, and any modifications and improvements scheduled to be implemented in the next reporting period. Overall effectiveness, 2.79 of 4.0. Improvements needed in procedures for construction-phase inspections, including standards, and enforcement of standards; updates to ordinance needed re: CSR and PSM programs; and updates to written policies, procedures and plans for various pollution prevention/good housekeeping operations, incl. employee training. Yes No

9. Enforcement Response Plan (Section 4.5)

- A. Have you implemented an enforcement response plan that includes progressive enforcement actions to address non-compliance, and allows the maximum penalties specified in TCA 68-221-1106? If no, explain. Ordinance is in place, and we take enforcement action on occasion, but we do not have a final, written ERP. Yes No
- B. As applicable, identify which of the following types of enforcement actions (or their equivalent) were used during this reporting period; indicate the number of actions, the minimum measure (e.g., construction, illicit discharge, permanent stormwater management), and note those for which you do not have authority:

<u>Action</u>	<u>Construction</u>	<u>Permanent Stormwater</u>	<u>Illicit Discharge</u>	<u>In Your ERP?</u>	
Verbal warnings	<u>#-60 (cf. complaints)</u>	<u>#--</u>	<u>#--</u>	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Written notices	<u>#--</u>	<u>#1</u>	<u>#--</u>	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Citations with administrative penalties	<u>#0</u>	<u>#0</u>	<u>#--</u>	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Stop work orders	<u>#1</u>	<u>#0</u>	<u>#--</u>	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Withholding of plan approvals or other authorizations	<u>#yes</u>	<u>#yes</u>	<u>#--</u>	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Additional Measures	<u>#numerous</u>	<u>#--</u>	<u>#--</u>	Describe: oral <u>advisories</u>	

- C. Do you track instances of non-compliance and related enforcement documentation? Yes No
- D. What were the most common types of non-compliance instances documented during this reporting period? cars leaking fluids (MTSU); construction record-keeping; mud & water in streets at construction sites(City)

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10. Monitoring, Recordkeeping and reporting (Section 5)

- A. Summarize any analytical monitoring activities (e.g., planning, collection, evaluation of results) performed during this reporting period. See attachment 5.
- B. Summarize any non-analytical monitoring activities (e.g., planning, collection, evaluation of results) performed during this reporting period. See attachment 5.
- C. If applicable, are monitoring records for activities performed during this reporting period submitted with this report. Yes No

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

Craig Tindall, City Manager
City of Murfreesboro

Printed Name and Title

Signature

Date

Alan Thomas, Vice President
MTSU

Printed Name and Title

Signature

Date

Annual reports must be submitted by September 30 of each calendar year (Section 5.4) to the appropriate Environmental Field Office (EFO), identified in the table below:

EFO	Street Address	City	Zip Code	Telephone
Chattanooga	1301 Riverfront Pkwy, Suite 206	Chattanooga	37402	(423) 634-5745
Columbia	1421 Hampshire Pike	Columbia	38401	(931) 380-3371
Cookeville	1221 South Willow Ave.	Cookeville	38506	(931) 520-6688
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

Small MS4 Annual Report (2018), Question no. 2., Waterbodies with Unavailable Parameters and TMDLs

A. If MS4 discharges into waters listed with unavailable parameters on most current 303(d) list and/or according to on-line GIS mapping tool, attach a list of those waters within your jurisdiction. B. If there are approved TMDLs with waste load allocations for MS4 discharges, attach a list. Water quality status from TDEC’s [approved final 2018 303\(d\) list](#) posted on w.w.web.

Waterbody I.D. #	Impaired waters acc. to 2018 Final 303(d) list	Cause/TMDL Priority	Is MS4 a source per 303(d) list?	Approved TMDL Yes/No	MS4 Assigned to WLA	
					Yes/No	Amount (reductions)
TN05130203015_0100	Puckett Creek, 6.7 miles	Alteration in stream-side or littoral vegetative cover/L (Land devlpmnt.)	No	No	--	--
TN05130203018_0100	Sinking Creek, 5.5 miles	Nitrate+Nitrite/L (Municipal: urbanized area)	Yes	No	No	--
“	“	Alteration in stream-side or littoral vegetative cover/L	No	No	No	--
“	“	Escherichia coli/na (Municipal: urbanized area; SSOs)	Yes	Yes	Yes	75%
TN05130203018_0600	Unnamed tributary to WF Stones River, 5.87 miles (Spence Cr)	Alteration in stream-side or littoral vegetative cover/L (Land devlpmnt.)	No	No	No	--
“	“	Sedimentation/siltation/L (Land development.)	No	No	No	--
TN05130203018_1000	WF Stones River, 6.3 miles (from u/s of I-840 downstream)	Escherichia coli/L (Municipal: urbanized area)	Yes	No	No	--
TN05130203018_2000	WF Stones River, 1.3 miles (u/s of I-840 to Sinking Creek)	Nitrate+Nitrite/L (Municipal: point source)	No	No	No	--
TN05130203018_2000	WF Stones River, 1.3 miles (u/s of I-840 to Sinking Creek)	Total phosphorus/L (Municipal: point source)	No	No	No	--
“	“	Sedimentation/siltation/L (Site clearance/land dvlpmnt)	No	No	No	--
TN05130203022_1000	Lytle Creek, 8.9 miles (mouth to Lees Spring Branch)	Alteration in stream-side or littoral vegetative cover/na (Municipal: urbanized area)	Yes	Yes	No	--
“	“	Sedimentation/siltation/na (Municipal: urbanized area)	Yes	Yes	Yes	38%
“	“	Escherichia coli/na (Municipal: urbanized area)	Yes	Yes	Yes	23%, lower 49%, mid 10%, upper
TN05130203022 – 0200	Lees Spring Branch, 1.1 miles (mouth to headwaters)	Alteration in stream-side or littoral vegetative cover/L (Land dvlp.)	No	Yes	No	--
“	(A short section of stream is within Murfreesboro city limits.)	Sedimentation/siltation/L (Land dvlp.)	No	Yes	No	--
TN05130203022 – 0100	Town Creek, 0.13 miles (unnamed trib to Lytle Creek)	Low dissolved oxygen/na	Undetermined source	Yes	--	--
“	“	CBOD5	--	Yes	Yes	1061 lbs/yr
“	“	Nitrogen	--	Yes	Yes	534 lbs/yr
“	“	Total Phosphorous	--	Yes	Yes	113 lbs/yr
“	“	Escherichia coli/na	Undetermined source	Yes	Yes	81.8%
TN05130203023_0310	Bear Branch, 3.5 miles (Dry Branch to headwaters)	Alteration in stream-side or littoral vegetative cover/na (Grazing)	No	Yes	No	--
“	“	Loss of biological integrity due to siltation/na (Site clearing/land dvlp.)	No	Yes	Yes	58%
“	“	Nutrients/na (Grazing)	No	Yes	--	--
“	“	Nitrogen/na	No	Yes	Yes	8019 lb/yr
“	“	Total Phosphorous/na	No	Yes	Yes	1699 lb/yr
TN05130203023 – 0210	Garrison Creek, 0.37 miles (mouth to Lascassas Hwy bridge)	Alteration in stream-side or littoral vegetative cover/L (Municipal: urbanized area)	Yes	Yes	No	--
“	(also referred to as unnamed trib to Bushman Creek)	Physical Substrate Habitat Alteration/L (Channelization)	Yes	Yes	No	--
“	“	Sedimentation/siltation/L (Municipal: urbanized area)	Yes	Yes	Yes	57%

Final TMDLs for Stones River Watershed include: a.) siltation and habitat alteration, 10/31/2002; b.) low dissolved oxygen and nutrients, 5/16/2008; and c.) E-coli, 6/19/2012.

The Known Exceptional Tennessee Waters and Outstanding National Resource Waters Streams within Urban Growth Boundary of Murfreesboro

<http://www.tn.gov/environment/article/wr-water-resources-data-viewer>

TDEC/Water Resource has compiled the list of waters that follows based on the characteristics of Exceptional Tennessee Waters and Outstanding National Resource Waters set forth in the regulation by the Tennessee Water Quality Control Board. In general, these are waterbodies with good water quality, important ecological values, valuable recreational uses, and outstanding scenery. Wherever possible, the Division has utilized objective measures to apply these characteristics and the basis for each listing is provided.

The following factors should be considered:

1. The list will be updated regularly and does not include waterbodies that the division has not evaluated. The fact that a waterbody does not appear on this list by name does not preclude the possibility that it may be high quality.
2. In some cases, only a portion of a waterbody is considered high quality. The extent of each listing is provided.
3. This compilation of waterbodies is based on the most recent information obtained by the division and may be reconsidered upon submittal of further information.

Receives M'boro MS4 Dschg.	Watershed Name	Waterbody	County	Description	Basis for Inclusion	From Lat	To Lat	From Long	To Long	Inclusion Date
No	Stones	Bryant Branch (Rural Hill, Percy Priest Res.)	Rutherford	Portion in Long Hunter SP.	Long Hunter State Park	36.0813	36.0894	-86.5196	-86.5144	
No	Stones	Dry Branch	Rutherford	Portion in Overbridge SNA.	Overbridge SNA	35.8482	35.844	-86.2781	-86.2897	
No	Stones	West Fork Stones River (Crescent Road, Crescent Lane)	Rutherford	From Panther Creek to headwaters.	Exceptional biological diversity. WPC ecoregion reference stream for 71i.	35.7444	35.647	-86.4335	-86.438	APR-10-2003
Yes	Stones	Hoover Swamp Black Fox Wetland	Rutherford	Hoover Swamp area of Black Fox Wetland.	Scored 80 (exceptional category) on TN Rapid Assessment for Wetlands.	35.8139		-86.3603		
Yes	Stones	Bear Branch	Rutherford	From Dry Branch to origin.	State endangered Blackfoot Quillwort.	35.9153	35.8735	-86.3671	-86.3667	NOV-01-2007
Yes	Stones	Sinking Creek	Rutherford	From unnamed tributary at Sulphur Springs Road to origin.	State endangered Sessile Water- Speedwell.	35.883	35.846	-86.3989	-86.372	NOV-07-2007
No	Stones	East Fork Stones River	Rutherford	From Cripple Creek to unnamed tributary near Halls Hill.	State threatened Water Stitchwort.	35.8807	35.8746	-86.2644	-86.2366	NOV-09-2007
Yes	Stones	West Fork Stones River	Rutherford	From Sinking Creek to Lytle Creek.	State threatened Water Stitchwort.	35.9013	35.855	-86.4237	-86.4139	NOV-09-2007
No	Stones	West Fork Stones River Unnamed Tributary (Smyrna)	Rutherford	From West Fork Stones River to Origin	State threatened Yellow Sunnybell	35.9546	35.9515	-86.4557	-86.4468	NOV-13-2007
No	Stones	West Fork Stones River Unnamed Tributary (Smyrna)	Rutherford	From West Fork Stones River to origin.	State threatened Yellow Sunnybell, Sunnybell Cedar Glade State Natural Area.	35.9671	35.9681	-86.4563	-86.4422	NOV-13-2007
No	Harpeth	Puckett Branch (County)	Rutherford	From Concord Creek to State Highway 99.	State endangered Willow Aster	35.7441	35.7337	-86.595	-86.5876	APR-23-2009

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Lytle Creek (within Murfreesboro)

Pollutant Reduction Summary, 2018

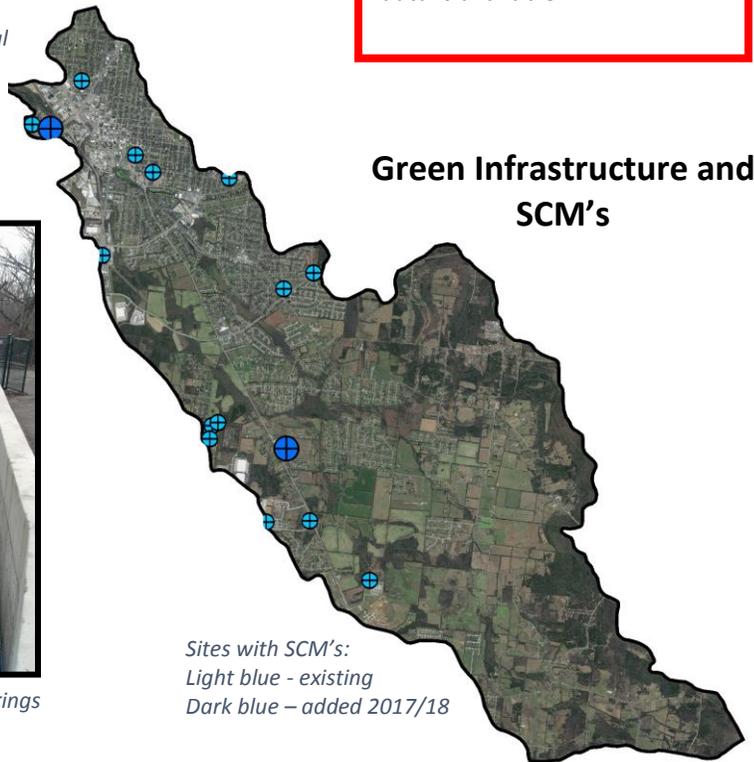
303(d)	TMDL
Littoral vegetative cover	No
Siltation	Yes
E.coli	Yes

Date	LC	SB
2013		16
2014	16	
2016	24	32
2018	22	16

TMI Scores - SQSH biological sampling. LC – Lytle Creek, SB – Spring Branch

Watershed Characteristics

13.7% Imperviousness watershed- wide,
31% Imperviousness within city limits
** Imperviousness from 2017 recalculated in 2019 when new data is available.*



Green Infrastructure and SCM's

Sites with SCM's:
 Light blue - existing
 Dark blue – added 2017/18



Detention: 18 ponds or 711, 144 square feet

Pavers/ porous concrete: 3.8 acres

Bioretention: 2



Trash rack in the Murfree Springs Wetlands



Urban Environmental, Parks, Water Resources planting seedlings in Murfree Springs Wetland, trib. to Lytle Creek.

Retrofits:

- **Spring Branch/Old Fort Park** – bioretention areas, pervious parking, enhanced swale
- **Murfree Springs Wetland** – trash racks, wetland tree planting – Murfreesboro Urban Environmental
- **Maney Ave** – Pavers: 12,209 square feet
- **Swanson Park Avenue Redevelopment** – pavers: 41,320 square feet
- **Hobgood School Pavers** – Pavers: 95,674 square feet

Sinking Creek

Pollutant Reduction Summary, 2018

303(d)	TMDL
Nitrate + Nitrite	No
e-coli	Yes
Vegetative cover	No

Riparian Conservation



Sampling to gage effectiveness of BMP's

Site	TMI/ Date	MMI
At Northfield Blvd	28 – 5/2016 24 – 4/18	9 – 8/2015 8 – 5/2017
At Thompson Ln	38 – 6/2016 18 – 5/2018	NA



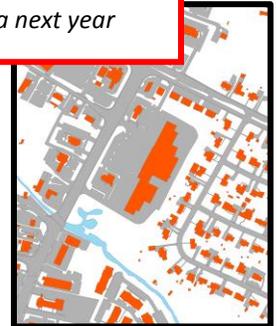
Know your watershed PSA: Sinking Creek

Watershed Characteristics

35%
Imperviousness

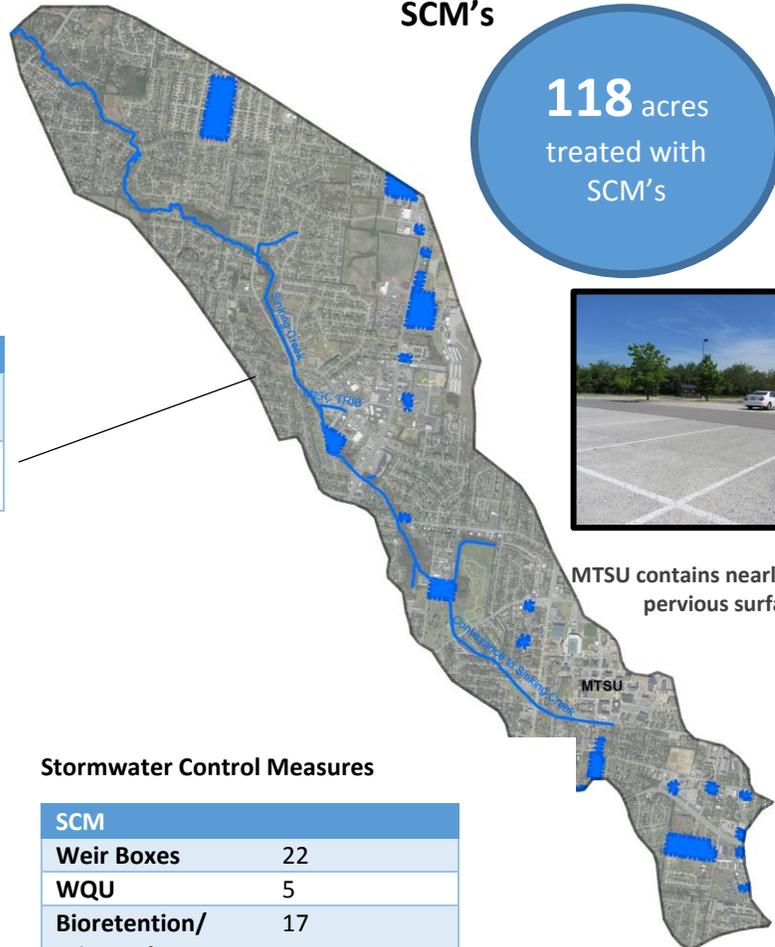
Will update with new data next year

- Larger residential lots with aging infrastructure
- Minor bank erosion throughout
- Slow moving wetlands near headwaters which transitions to riffle/ run



Green Infrastructure and SCM's

118 acres treated with SCM's



MTSU contains nearly 5 acres of pervious surfaces

Stormwater Control Measures

SCM	
Weir Boxes	22
WQU	5
Bioretention/ rain gardens	17
Ponds	40

Murfreesboro - MTSU Stormwater General Education Activities for FY 2017-18

Date	Event	# Participants	# Education Materials Distributed	# signed up for mailing list for volunteer opportunities	# Promotional Items
FY 2017-18	Numerous events (72 sessions counted; 268 hours) of Murfreesboro Parks and Recreation Department / Greenway System & Outdoor Murfreesboro	2071 (6467.5 units of service)	Kayaking; Reptile and Amphibians classes; Exploring the River; clean-up events on the rivers and greenways; turtle searches; adult and family kayaking	--	--
8/22/2017	Rutherford County Farmers Market Class - Water: Our Most Threatened Resource	11 attendees		9	2 rain gauges, 3 cell phone pockets, 3 cell phone stands, 2 water bottles, 3 seed bookmarks, 5 pens, 5 WET promos
8/26/2017	Urban Runoff 5K	270 racers & attendees			
9/8/2017	Rutherford County Farmers Market Class - Dive In: How to Support Clean Water in our Community	5 attendees	2 "Homeowner" brochures, 2 "Rain Barrel DIY" brochures, 1 "Old Fort Park" brochures, 2 "Backyard Conservation", 1 Native Plants flyers; 1 "Farmers" brochure; 1 "Construction" brochure; 1 NRCS brochure; 2 "SRWA" maps; 1 "Be Aware" fact card; 1 "Waterfront Property" brochure; 2 "yard waste" doorhangers; 1 "landowners guide"; 1 "TWRA fish book"; 5 "HH Waste" flyers	5	4 yard waste bags, 1 cell phone pocket, 1 rain gauge, 2 WET promos, 4 native grass & wildflower seed bombs, 1 cell phone stand, 1 pen, 3 seed bookmarks
9/15/2017	Stones River Waterfest	1113 students/teachers/parents, 92 Stormwater Partners	980 "Discover the Waters of TN" Booklets		49 partner promo items
9/21/2017	Oaklands Outreach	550 children & adults, volunteers			
2/2/2018	Overall Creek Elementary Outreach	161 students, 7 teachers, 4 volunteers			
4/21/2018	Murfreesboro Earth Day Celebration	1500 citizens attended	3 "Waterfront Property" brochures, 28 "Rain Barrel" brochures, 3 "Be Aware" fact cards, 3 "Homeowners" brochures, 1 "CRC Stones River Watershed" map, 3 "Old Fort Park" maps, 1 "Landowners Guide"; 15 "TN Watershed" brochures	48	211 Earth Day t-shirts, 199 Stormwater water bottles, 17 Stormwater stickers, 53 pens, 75 Cell phone waterproof bags, 100 lip balms
5/11/2018	Oaklands Outreach	600 children, adults & volunteers	12 "Waterfront Property" brochures, 1 "Be Aware" fact cards	4	
06/06-07/17	Globe - Creeks to Classrooms (Northfield Elementary)	17 students/teachers/presenters	17 "Discover the Waters of TN" booklets, 1 "Waterfront Property" brochures, 1 WET book, 1 TWRA stream poster		
6/30/2018	Boat Day	144 citizens attended			
July 2017-June 2018	Public Service Announcements				Total PSAs (74 TV Channel 3 & 1 Radio)
TOTALS		5845 (duplicates not counted)	1094	66	744 (not including PSAs)
Breakdown:		2448 Elementary Students, Teachers & Parents	17 "Waterfront Property" brochures	66 pledges	59 Stormwater pens
		4 Volunteers	30 "Rain Barrel" brochures		201 Reusable water bottles
		92 Stormwater Professionals	5 "Be Aware" fact cards		211 Earth Day t-shirts
		1930 Citizens	5 "Homeowners" brochures		4 Yard waste bags
			997 "Discover the Waters of TN" booklets		17 MWSD stickers
			1 "Farmers" brochures		6 Seed bookmarks
			1 "Construction" brochures		56 Partner promo items
			1 Project WET books		4 native prass & wildflower seed bombs
			1 TWRA Stream Posters		3 rain gauges
			1 Native Plants		4 cell phone stands
			4 "Old Fort Park" Brochures		4 cell phone pockets
			1 NRCS Conservation Guide		75 cell phone waterproof bags
			3 CRC SRWA Map		100 promo lip balm
			2 Landowners Guides		TV PSAs
			2 "Backyard Conservation" guide		Radio PSA
			15 "TN Watershed" brochures		
			2 "Yard Waste" door hangers		
			1 "TWRA" fish guide		
			5 Household Hazardous waste flyers		

Targeted Education and Participation at MTSU - FY 2017-18

Date	Event	# Participants	# Brochures & Promo Items	# signed up for mailing list for volunteer opportunities	#s of Trash Removed	Outcome(s)
July 2017- June 2018	MTSU Customs (10 events)	250 MTSU students	28 "Be Aware" fact cards, 37 "Waterfront Property" brochures, 83 bags, 122 pens, 146 water bottles, 104 wheel reflectors, 71 seed bookmarks, 70 safety flashers, 107 cell phone pockets, 180 cell phone stands	250		MTSU Students educated
8/18/2017	MTSU Housing Dept RA Volunteer Event	34 MTSU volunteers	27 storm drain placards; 34 volunteer buttons, 34 cell phone pockets, 34 cell phone stands/cleaners			Maintenance on 2 campus rain gardens
9/6/2017	MTSU Volunteer Fair	64 MTSU students	30 water bottles, 30 cell phone stands/cleaners, 30 cell phone pockets, 30 bags & 30 stormwater pens			MTSU Students educated
9/27/2017	Facilities Svcs MT Engage Day	26 MTSU students	26 Stormwater bottles, 7 Stormwater bags, 19 cell phone pockets, 29 pens, 21 cell phone stands/cleaners	8 students signed up for MTSU work opportunities		MTSU Students educated
10/26/2017	MTSU Prescription Drug Takeback				77 lbs of medicines	
10/26/17, 11/02/17	MTSU Campus Cleanup - Abolins Geol1030 class	36 MTSU students			20 lbs.	trash removed
11/7/2017	Campus Outreach - Class Presentation - Dr. Mathis & Dr. Boles/Engineering Tech Class	15 MTSU Students	3 MT Engage promo items, 3 stormwater buttons, 1 water bottle, 14 cell phone stands, 7 pens, 8 SRWA maps, 3 "Waterfront Property" brochure; 6 "Guide to TN Watersheds" brochure			trash removed
3/19/2018	MTSU Campus Cleanup - Abolins Geol1030 class	57 MTSU students	20 stormwater cell phone holders; 10 cell phone pockets		25 lbs.	trash removed
3/21/2018	MTSU Campus Cleanup - Abolins Geol1030 class	22 MTSU students	10 cell phone holders; 5 cell phone pockets		10 lbs.	trash removed
4/24/2018	MTSU Prescription Drug Takeback				106.8 lbs of medicines	
	MTSU Online Training					
TOTALS		504	1,337 Promotional Items, 82 Print Media	258	55 lbs. of trash; 183.8 lbs of medicines	
	Breakdown:		203 Stormwater Reusable Water bottles			
		504 MTSU students	120 Stormwater reusable bags			
			188 Stormwater pens			
customs			40 "Waterfront Property" brochures			
			28 "Be Aware" fact cards			
			104 Wheel Reflectors			
			71 Seed Bookmarks			
			70 Safety Flashers			
			205 Cell Phone Pockets			
			309 Cell Phone Stands			
			37 Stormwater buttons			
			8 "SRWA" maps			
			6 "Guide to TN Watersheds" brochures			
			27 storm drain placards			
			3 MT Engage promo items			

Targeted Education and Participation, City of Murfreesboro, FY 2017-18

Date	Event	# of Participants	# of People signed up for mailing list for volunteer opportunities	# of Brochures/Print Media	#s of Trash Removed	Trees Given Out or Planted	Pollutants Targeted
9/30/2017	National Public Lands Day	124 volunteers, 16 partners			60 lbs. of trash, 3,452 invasive plants removed, 320 linear ft of fence constructed, 730 linear feet of fence removed		riparian restoration / nutrients / trash
Fall 2017	WQPA door hangers	201 parcels		201 door hangers; 10 yard waste bags			riparian restoration / nutrients
10/26/2017	Oaklands Invasive Plant & Trash Removal - Maney Spring	22 volunteers, 15 local staff & partners			40lbs trash, 630 invasive plants removed, 11 River Oats & Horse Tail planted		riparian restoration
2/15/2018	UT Chemical Applicator	75 attendees	5 signed up for information				nutrients
3/10/2018	Annual Tree Day	7 volunteers, 5 staff	55 residents	309 letters mailed out to homeowners, 50 "species info" sheets, 50 planting guides, 3 "Waterfront Property" brochures, 16 "Be Aware" brochures, 2 "Rain Barrel" brochures, 2 "Landowner Guides", 3 "SRWA" map, 47 yard waste bags		970 tree seedlings given out	riparian restoration / nutrients
Spring 2018	Automotive outreach	21		21 "Be Aware" brochures; 21 "Automotive" brochures; 21 "Pressure Washing" brochures			hot spot
TOTALS		486 volunteers/citizens/partners		189 educational materials, 201 door hangers, 309 letters to residents, 57 promo materials	4,082 invasive plants removed; 100 lbs. of trash,	970 tree seedlings given out	
	<i>Breakdown:</i>	153 Volunteers	60 signed up for information	309 letters to citizens for Tree Day	320 linear ft of fence constructed		
		36 Staff/Partners		201 door hangers	730 linear feet of fence removed		
		75 Local Citizens		21 "Surface Cleaning" brochures			
		21 Automotive Establishments		21 "Automotive" brochures			
		201 local WQPA parcels		50 Tree Species handouts			
				50 "How to Plant" handouts			
				37 "Be Aware" fact card			
				57 yard waste bags			
				3 "Waterfront Property" brochures			
				2 "Rain Barrel" brochures			
				2 "Landowner Guides"			
				3 "SRWA" maps			

	A	B	C	D	E	F	G	H	I	J	K
1	Project WET (Water Education for Teachers) Summary, July 1, 2017 - June 30, 2018										
2	Rutherford County, Murfreesboro, Lavergne, Smyrna										
3	4.b.i. Significant contacts with professionals in the teaching communities		Contact Time (hr)	#Participants LaVergne	# Participants Murfreesboro	# Participants Smyrna	# Participants Rutherford Co	Other			
4	1st Quarter (September 30, 2017)		6	0	2		2	6			
5	2nd Quarter (December 31, 2017)		25	0	0	0	0	128			
6	3rd Quarter (March 31, 2018)		0	0	0	0	0	0			
7	4th Quarter (June 30, 2018)										
8	TOTAL		31	0	2	0	2	134			
9											
10	4.b.ii. Contact hours with teachers		Contact Time (hr)	#Participants LaVergne	# Participants Murfreesboro	# Participants Smyrna	# Participants Rutherford Co	Other			
11	1st Quarter (September 30, 2017)		10	51	38	64	88				
12	2nd Quarter (December 31, 2017)		0	0	0	0	0				
13	3rd Quarter (March 31, 2018)		0	0	0	0	0				
14	4th Quarter (June 30, 2018)		2	2	4	0	6				
15	TOTAL		12.00	53	42	64	94	0			
16											
17											
18	4.b.iii. Class/course registration lists when presentations are conducted		Contact Time (hr)	#Participants LaVergne	# Participants Murfreesboro	# Participants Smyrna	# Participants Rutherford Co	Other			
19	1st Quarter (September 30, 2017)		0	0	0	0	0	0			
20	2nd Quarter (December 31, 2017)		0	0	0	0	0	0			
21	3rd Quarter (March 31, 2018)		0	0	0	0	0	0			
22	4th Quarter (June 30, 2018)		0	0	0	0	0	0			
23	TOTAL							Note: It is not possible for me to gather lists of students.			
24											
25											
26	4.b.iv. Number of students and contact hours with students		Contact Time (hr)	#Participants LaVergne	# Participants Murfreesboro	# Participants Smyrna	# Participants Rutherford Co	Other			
27	1st Quarter (September 30, 2017)		17	0	237	282	29	226			
28	2nd Quarter (December 31, 2017)		9	0	105	125	0	0			
29	3rd Quarter (March 31, 2018)		8	5	357	52	15	0			
30	4th Quarter (June 30, 2018)		9.5	0	356	141	9	0			
31	TOTAL		43.50	5	1055	600	53	226			
32											
33											
34	4.b.v. Number of facilitators in Rutherford County		Cindi Smith-Walters (MTSU), Kim Sadler (MTSU), Courtney Morgan, Karen Hargrove								
35											
36											
37	4.b.vi. Number of Project WET-certified teachers trained		TOTAL Number	#Participants LaVergne	# Participants Murfreesboro	# Participants Smyrna	# Participants Rutherford Co	Other			
38	1st Quarter (September 30, 2017)		28		2		21	5			
39	2nd Quarter (December 31, 2017)		6					6			
40	3rd Quarter (March 31, 2018)		29								
41	4th Quarter (June 30, 2018)		12								
42	TOTAL			0	2	0	21	11			
43											
44											
45	Existing school gardens/Outdoor Classrooms		School District	Schools							
46			County Schools	McFadden (Outdoor Classroom)							
47			Murfreesboro Schools (G=Greenhouse)	Cason Lane(G), Black Fox (gardens), Mitchell-Neilson Primary (OC), Mitchell-Neilson Elem (OC), Bradley (gardens, not in use), Northfield (G), Erma Siegel (G), Hobgood (G), Overall Creek (G), Reeves-Rogers (G), Scales (G), Discovery School (G)							
48											
49											
50	Educational Materials		TOTAL # Participants	# Participants LaVergne	# Participants Murfreesboro	# Participants Smyrna	# Participants Rutherford Co	Other			
51			713	234	180	133	32	134			
52											
53											
54	Stones River Watershed Maps		TN Watershed Maps	Project WET activity booklets	other printed materials	Pencils	Chip Clips	magnifying glasses	rain gauges	bandaid boxes	mugs
55	1st Quarter (September 30, 2017)		156	149	299	44	345	102	65	9	0
56	2nd Quarter (December 31, 2017)		0	0	5	2	196	19	0	1	18
57	3rd Quarter (June 30, 2018)		0	0	9	25	468	0	0	7	9
58	4th Quarter (June 30, 2018)		159	60	296	294	693	112	72	10	45
59											
60	TOTAL		315	209	609	365	1702	233	137	27	72
61											
62											
63	Public Festivals/Exhibitions			# Participants LaVergne	# Participants Murfreesboro	# Participants Smyrna	# Participants Rutherford Co	Other		TOTAL	
64	1st Quarter (September 30, 2017)			202	30	10	15	13		270	
65	2nd Quarter (December 31, 2017)			0	0	0	0	0		0	
66	3rd Quarter (March 31, 2018)			0	0	0	0	0		0	
67	4th Quarter (June 30, 2018)			20	388	23	1	324		756	
68				222	418	33	16	337		1026	
69											
70											
71	Stephanie Henry with the Tennessee Department of Military on Sidco Drive in Nashville, oversees all military properties, which include the TN National Guard at Smyrna's airbase.										
72	She is out of TDEC.										
73	EPAS Manager & Compliance Coordinator										
74	Tennessee Military Department										
75	Stephanie.henry@tn.gov		615/313-0761								

**Stormwater Performance Metrics
Annual Report – FY 2017-18**

Indicator	Began Tracking (year)	Frequency (data is tabulated)	Measure, Units Total (T) or Annual (A)
Street sweeper debris (Street Dept.)	2006	Monthly	City wide, 1720 tons (A)
Regulatory buffer along streams	2007	Annually	8.6 miles; 163 parcels; 93.7 acres (T)
Storm sewer cleaning (MWSD)	2008	Weekly	City wide by watershed and hot spots 34.8 cubic yds; 54,727 linear feet (A)
Visual stream assessments	2008	Annually	21 SQSH samples collected; see below.
Project plans reviewed (q.6.D)	~2009	Monthly	Reviewed/regulated: 213/122 Prelim. plats: 44/41 Sites: 169/81
Projects approved (q.6.E.)	~2009	Weekly	82 (Pre-con or PRC rev. FY17-18) S/divisions: 29 Sites: 53
Annexation;City Limits	~2009	Varies	258 acres (A); 61.5 sq. mi. (T, 6/30/2018)
Operating expenses	2009	Daily	\$2,119,716 (A)
Capital project expenses	2009	Monthly	\$ 411,775 (A)
DRIP program (drainage improvement/rehab)	2012	Weekly	95 logged; all resolved (based on Street Div. nos.) (A)
Maint. Agreements	~2012	Weekly	60 (A)
E.coli	2010	Varies	2 samples (response to illicit dschg report) (A)
Capital projects	2012	Annually	Spence Creek w/shed study; West Fork S.R. bank repair; stormwater repair and rehab projects; Town Creek daylighting design & land purchase
SCM sites mapped	~2012	Monthly	202 (T) (9/24/18)
Construction-phase SCM sites	2015	Weekly (PB)	316 in admin. process; 98 in construction-phase, actively inspected (from June stormwater dashboard) (A)
Macroinvertebrate, sites sampled (cursory/SQSH)	2015	Varies	21 SQSH samples on each stream segment within City (A)
Storm sewer cleaning (Streets)	2016	Weekly	95 cubic yds (A)
LID installations	2017	Annually	36 acres of porous concrete/pavers 117 rain gardens, bioretention, infiltration sites (T)
C/Os on LDP sites (Codes Dept.)	2017	Annually	97, based on Codes Dept. (S. Qualls) query
Sewerage rehab in Sinking Creek watershed	2018	Annually	13.06 mi. of pipe (A); based on GIS-based rehab info