

# Chapter 8

## Stormwater and Wastewater Programs

### 8.1 NPDES Wastewater Discharge Permit Summary

*The primary pollutants associated with point source discharges are:*

- \* oxygen-consuming wastes,
- \* nutrients,
- \* color, and
- \* toxic substances including chlorine, ammonia and metals.

Discharges that enter surface waters through a pipe, ditch or other well-defined point of discharge are broadly referred to as 'point sources'. Wastewater point source discharges include municipal (city and county) and industrial wastewater treatment plants and small domestic wastewater treatment systems serving schools, commercial offices, residential subdivisions and individual homes. Stormwater point source discharges include stormwater collection systems for

municipalities that serve populations greater than 100,000 and stormwater discharges associated with certain industrial activities. Point source dischargers in North Carolina must apply for and obtain a National Pollutant Discharge Elimination System (NPDES) permit. Discharge permits are issued under the NPDES program, which is delegated to DWQ by the Environmental Protection Agency.

#### *Types of Wastewater Discharges*

**Major Facilities:** Wastewater Treatment Plants with flows  $\geq 1$  MGD (million gallons per day); and some industrial facilities (depending on flow and potential impacts to public health and water quality).

**Minor Facilities:** Facilities not defined as Major.

**100% Domestic Waste:** Facilities that only treat domestic-type waste (from toilets, sinks, washers).

**Municipal Facilities:** Public facilities that serve a municipality. Can treat waste from homes and industries.

**Nonmunicipal Facilities:** Non-public facilities that provide treatment for domestic, industrial or commercial wastewater. This category includes wastewater from industrial processes such as textiles, mining, seafood processing, glass-making and power generation, and other facilities such as schools, subdivisions, nursing homes, groundwater remediation projects, water treatment plants and non-process industrial wastewater.

Currently, there are 35 permitted wastewater discharges in the Little Tennessee River basin. Table 15 provides summary information (by type and subbasin) about the discharges. Various types of dischargers listed in the table are described in the inset box. Facilities are mapped in each subbasin chapter. For a complete listing of permitted facilities in the basin, refer to Appendix V.

Roughly sixty percent of NPDES permitted wastewater flow in the Little Tennessee River basin is from major municipal wastewater treatment plants (WWTP). Nonmunicipal discharges also contribute substantial wastewater flow into the Little Tennessee River basin. Facilities, large or small, where recent data show problems with a discharge are discussed in each subbasin chapter.

Table 15 Summary of NPDES Dischargers and Permitted Flows for the Little Tennessee River Basin

Facility Categories	Little Tennessee River Subbasins				
	01	02	03	04	Total
<b>Total Facilities</b>	11	20	1	3	35
Total Permitted Flow (MGD)	3.39	3.39	0.002	0.64	7.422
<b>Facilities Grouped by Size</b>					
<b>Major Discharges</b>	1	1	0	0	2
Total Permitted Flow (MGD)	1.65	1.50	0	0	3.15
<b>Minor Discharges</b>	10	19	1	3	33
Total Permitted Flow (MGD)	1.74	1.89	0.002	0.64	4.27
<b>Facilities Grouped by Type</b>					
<b>100% Domestic Waste</b>	8	13	1	0	22
Total Permitted Flow (MGD)	0.24	0.048	0.002	0	0.29
<b>Municipal Facilities</b>	3	3	0	2	8
Total Permitted Flow (MGD)	3.15	2.6	0	0.64	6.39
<b>Nonmunicipal Facilities</b>	0	4	0	1	5
Total Permitted Flow (MGD)	0	3.08	0	--	3.08

## 8.2 DWQ Stormwater Programs

There are several different stormwater programs administered by DWQ and local jurisdictions. One or more of these programs affects many communities in the Little Tennessee River basin. The goal of the DWQ stormwater discharge programs is to prevent pollution from entering the waters of the state via stormwater runoff. These programs try to accomplish this goal by controlling the source(s) of pollutants. These programs include NPDES Phase I and II, HQW/ORW stormwater requirements, and requirements associated with the Water Supply Watershed Program. Local governments that are or may be affected by these programs are presented in Table 17.

### 8.2.1 NPDES Phase I

Phase I of the EPA stormwater program started with Amendments to the Clean Water Act (CWA) in 1990. Phase I required NPDES permit coverage to address stormwater runoff from medium and large stormwater sewer systems serving populations of 100,000 or more. There are no NPDES Phase I stormwater permits issued to communities in the basin.

Phase I also had requirements for eleven categories of industrial sources to be covered under stormwater permits. Industrial activities which require permitting are defined in ten categories ranging from sawmills and landfills to manufacturing plants and hazardous waste treatment, storage or disposal facilities. Construction sites disturbing greater than five acres were also required to obtain an NPDES stormwater permit under Phase I of the EPA stormwater program. Excluding construction stormwater general permits, there are 106 general stormwater permits and 6 individual stormwater permits. Refer to the subbasin chapters for more information on stormwater programs and permits and a complete listing of individual permits in Appendix V.

## 8.2.2 NPDES Phase II

The Phase II stormwater program is an extension of the Phase I program that expands permit coverage to include smaller municipalities below 100,000 populations. The local governments permitted under Phase II are required to develop and implement a comprehensive stormwater management program that includes six minimum measures.

1. Public education and outreach on stormwater impacts;
2. public involvement/participation;
3. illicit discharge detection and elimination;
4. construction site stormwater runoff control;
5. post-construction stormwater management for new development and redevelopment; and
6. pollution prevention/good housekeeping for municipal operations.

Construction sites greater than one acre will also be required to obtain an NPDES stormwater permit under Phase II of the EPA stormwater program in addition to erosion and sedimentation control approvals.

Those municipalities and counties required to obtain a NPDES stormwater permit under the Phase II rules are identified using 1990 US Census Designated Urban Areas and the results of the 2000 US Census. Based on federal census data, EPA identified 123 cities, including, and 33 counties in North Carolina that would be required to obtain permits for stormwater management.

The EPA delegated Phase II implementation to each state and then in 1999 the Division of Water Quality and the Environmental Management Commission (EMC) initiated a rulemaking process.

### Stormwater Management Rule Update:

In 2002, the EMC adopted temporary stormwater rules and by 2003 had adopted permanent rules that were to become effective August 1, 2004. In early 2004, the Rules Review Commission (RRC) objected to the rules for failure to comply with the Administrative Procedures Act and lack of statutory authority. The EMC challenged the decision of the RRC in court (EMC v. RRC 04 CVS 3157). A Wake County Superior Court ruled in the EMC's favor and the RRC subsequently approved the EMC's rules. However, while the case was pending the legislature enacted a separate set of requirements in 2004 that were designed to replace the EMC rules.

These rules include NPDES stormwater rules covering owners and operators of storm sewer systems and State stormwater rules covering activities in urbanizing areas. The EMC amended the rules at their November 10, 2005 meeting to address objections raised by the RRC at their October 2005 meeting. The inconsistency between the legislative requirements and the EMC rules necessitated consideration of Senate Bill 1566 in the 2006 short session. The legislature approved Session Law 2006-246, Senate Bill 1566 in 2006.

Senate bill 1566 provides that development projects in Phase II municipalities and counties that cumulatively disturb one acre or more of land must comply with the post-construction stormwater standards set out in the bill. The bill sets out criteria whereby unincorporated areas of counties will be subject to Phase II requirements. Under these criteria 25 counties are fully covered, while 8 counties have portions that are subject to the stormwater requirements. The bill

also provides a designation and petition process by which additional local governments and other entities may be required to obtain a stormwater management permit.

The bill sets out stormwater controls that are based on a project's level of density and its proximity to Shellfish Resource Waters. Shellfish Resource Waters are waters classified by the EMC as Class SA waters (shellfish growing waters) that contain an average concentration of 500 parts per million of natural chloride ion (saltwater).

The Water Quality Committee (WQC) met in November 2006 and directed DWQ Staff to return to the January 2007 WQC meeting with proposed amendments to the State Stormwater Rules. These rules will extend the coastal post-construction stormwater controls in Session Law 2006-246 to all 20 Coastal Counties (Table 16).

### Low Density Projects

Development projects that are located within one-half mile of and draining to Shellfish Resource Waters are considered low density if they contain no more than 12 percent built-upon area. A project that is not located within one-half mile of Shellfish Resource Waters is a low density project if it contains no more than 24 percent built-upon area or no more than two dwelling units per acre. Low density projects must use vegetated conveyances to the maximum extent practicable to transport stormwater runoff from the project.

### High Density Projects

Projects that are located within one-half mile of and draining to Shellfish Resource Waters are considered high density if they contain more than 12 percent built-upon area. A project that is not located within one-half mile of Shellfish Resource Waters is a high density project if it contains more than 24 percent built-upon area or more than two dwelling units per acre. High density projects must use structural stormwater management systems that will control and treat runoff from the first one inch of rain unless the project is in a coastal county, in which case the project must use structural stormwater management systems that will control and treat runoff from the first one and one-half inches of rain. In addition, projects that are located within one-half mile and draining to Shellfish Resource Waters must control and treat the difference in the stormwater runoff from the pre-development and post-development conditions for the one-year twenty-four hour storm as well as meet certain design standards.

### Implementation

The bill provides an implementation schedule that requires regulated entities to apply for an NPDES stormwater management permit within 18 months of being notified that it is a regulated entity subject to the requirements of this act. A regulated entity must implement its post-construction program no later than 24 months from the date the permit is issued and fully implement its permitted program within five years of permit issuance. City of Jacksonville and Onslow County have both submitted applications for Phase II.

The bill authorizes the EMC to adopt Phase II stormwater management rules. If the EMC does adopt rules, the rules must be substantially identical to the provisions of this act and will be automatically subject to review by the General Assembly and not subject to review by the RRC. The bill became effective retroactively to July 1, 2006.

Table 16 Major Post-Construction Stormwater Controls in SL 2006-246

	Shellfish Resource Waters* (SA Waters w/ > 500 ppm chlorides)	SA Designated Waters – Not Shellfish Resource Waters*	Coastal County – Not SA Designated Waters	Non – Coastal County
Low Density Threshold	12%	24%	24%	24%
Storm Design for High Density	Difference in pre and post-development for 1-yr, 24-hour storm**	Runoff from first 1.5 inches of rain	Runoff from first 1.5 inches of rain	Runoff from first 1 inch of rain
Setback	30 feet	30 feet	30 feet	30 feet
Other Controls	No new points of s/w discharge No increase in rate, volume, or capacity in existing conveyances Infiltration up to 1-yr, 24-hr storm Diffuse flow in excess of 1-yr, 24-hr storm	No new points of s/w discharge No increase in rate, volume, or capacity in existing conveyances Infiltration up to 1-yr, 24-hr storm Diffuse flow in excess of 1-yr, 24-hr storm		

\*These controls apply within ½ mile and draining to these waters.

\*\*Amount of Runoff that would need to be controlled in inches for the difference in pre- and post-development conditions for the 1-year, 24-hour storm.

For additional information on stormwater programs please go to <http://h2o.enr.state.nc.us/su/>

### 2007 Recommendations

DWQ recommends that the local governments develop programs that can go beyond the Phase II six minimum measures. Implementation of Phase II, as well as the other stormwater programs, should help to reduce future impacts to streams in the basin. Local governments, to the extent possible, should identify sites for preservation or restoration. DWQ and other NCDENR agencies will continue to provide information on funding sources and technical assistance to support local government stormwater programs.

### **8.2.3 State Stormwater Program**

The State Stormwater Management Program was established in the late 1980s under the authority of the North Carolina Environmental Management Commission (EMC) and North Carolina General Statute 143-214.7. This program, codified in 15A NCAC 2H .1000, affects development activities that require either an Erosion and Sediment Control Plan (for disturbances of one or more acres) or a CAMA major permit within one of the 20 coastal counties and/or development draining to Outstanding Resource Waters (ORW) or High Quality Waters (HQW).

The State Stormwater Management Program requires new developments to protect these sensitive waters by maintaining a low density of impervious surfaces, maintaining vegetative setbacks, and transporting runoff through vegetative conveyances. Low density development thresholds vary from 12-30 percent built-upon area (impervious surface) depending on the classification of the receiving stream. If low density design criteria cannot be met, then high density development requires the installation of structural best management practices (BMPs) to collect and treat stormwater runoff from the project. High density BMPs must control the runoff

from the 1 or 1.5-inch storm event (depending on the receiving stream classification) and remove 85 percent or 90 percent of the total suspended solids.

#### Current Status

Table 17 shows the 5 counties in the Little Tennessee River basin where permits may be required under the state stormwater management program.

#### 2007 Recommendations

DWQ will continue implementing the state stormwater program with the other NCDENR agencies and local governments. Local governments should develop local land use plans that minimize impervious surfaces in sensitive areas. Communities should integrate state stormwater program requirements, to the extent possible, with other stormwater programs in order to be more efficient and gain the most water quality benefits for protection of public health and aquatic life.

### **8.3 Water Supply Watershed Stormwater Rules**

#### Current Status

The purpose of the Water Supply Watershed Protection Program is to provide a proactive drinking water supply protection program for communities. Local governments administer the program based on state minimum requirements. There are restrictions on wastewater discharges, development, landfills and residual application sites to control the impacts of point and nonpoint sources of pollution. The program attempts to minimize the impacts of stormwater runoff by utilizing low-density development or stormwater treatment in high-density areas.

All communities in the Little Tennessee River basin in water supply watersheds have EMC approved water supply watershed protection ordinances.

#### 2007 Recommendations

DWQ recommends continued implementation of local water supply protection ordinances to ensure safe and economical treatment of drinking water. Communities should also integrate water supply protection ordinances with other stormwater programs, to the extent possible, in order to be more efficient and gain the most water quality benefits for both drinking water and aquatic life.

Table 17 Communities in the Little Tennessee River Basin Subject to Stormwater Requirements

Local Government	NPDES Phase I and Phase II	State Stormwater Program	Water Supply Watershed Stormwater Requirements
<b>Municipalities</b>			
Bryson City			
Dillsboro			
Forest Hill			
Franklin			
Highlands			X
Robbinsville			X
Santeetlah			
Sylva			
Webster			
<b>Counties</b>			
Cherokee			X
Clay		X	X
Graham		X	X
Jackson		X	X
Macon		X	X
Swain		X	X

### 8.3.1 Septic Systems and Straight Piping

In the Little Tennessee River basin, wastewater from many households is not treated at wastewater treatment plants associated with NPDES discharge permits. Instead, it is treated on-site through the use of permitted septic systems. Wastewater from some of these homes illegally discharges directly to streams through what is known as a "straight pipe". In other cases, wastewater from failing septic systems makes its way to streams or contaminates groundwater. Straight piping and failing septic systems are illegal discharges of wastewater into waters of the State.

With on-site septic systems, the septic tank unit treats some wastes, and the drainfield associated with the septic tank provides further treatment and filtration of the pollutants and pathogens found in wastewater. A septic system that is operating properly does not discharge untreated wastewater to streams and lakes or to the ground's surface where it can run into nearby surface waters. Septic systems are a safe and effective long-term method for treating wastewater if they are sited, sized and maintained properly. If the tank or drainfield are improperly located or constructed, or the systems are not maintained, nearby wells and surface waters may become contaminated, causing potential risks to human health. Septic tanks must be properly installed and maintained to ensure they function properly over the life of the system. Information about the proper installation and maintenance of septic tanks can be obtained by calling the

environmental health sections of the local county health departments. See Appendix VII for contact information.

The discharge of untreated or partially treated sewage can be extremely harmful to humans and the aquatic environment. Pollutants from illegally discharged household wastewater contain chemical nutrients, disease pathogens and endocrine disrupting chemicals. Although DWQ ambient monitoring of the waters in the Little Tennessee basin show a relatively small percentage of fecal coliform bacteria samples exceeding state standards for primary recreation, volunteer monitoring in smaller streams shows a higher concentration of bacteria and other pollutants. The economies of the counties in this basin are highly dependent upon river recreation, especially for tourists and seasonal residents. Reducing bacterial contamination is crucial for supporting a tourist economy.

In order to protect human health and maintain water quality, straight pipes must be eliminated and failing septic systems should be repaired. The NC Wastewater Discharge Elimination (WaDE) Program is actively helping to identify and remove straight pipes (and failing septic systems) in the western portion of North Carolina. This program uses door-to-door surveys to locate straight pipes and failing septic systems, and offers deferred loans or grants to homeowners who have to eliminate the straight pipes by installing a septic system.

#### 2007 Recommendations

The WaDE Program in collaboration with the Local Health Departments should request additional funding from the CWMTF and Section 319 Program to continue the straight pipe elimination program for the Little Tennessee basin. Additional monitoring of fecal coliform throughout tributary watersheds where straight pipes and failing septic systems are a potential problem should be conducted in order to narrow the focus of the surveys. For more information on the WaDE Program, contact the DENR On-Site Wastewater Section (OSWW), NC Division of Environmental Health, toll free at 1-866-223-5718 or visit their website at <http://www.deh.enr.state.nc.us/oww/Wade/wade.htm>.

Additionally, precautions should be taken by local septic system permitting authorities to ensure that new systems are sited and constructed properly and that an adequate repair area is also available. Educational information should also be provided to new septic system owners regarding the maintenance of these systems over time. DWQ has developed a booklet that discusses actions individuals can take to reduce stormwater runoff and improve stormwater quality entitled *Improving Water Quality In Your Own Backyard*. The publication includes a discussion about septic system maintenance and offers other sources of information. To obtain a free copy, call (919) 733-5083. The following website also offers good information in three easy to follow steps: [http://www.wsg.washington.edu/outreach/mas/water\\_quality/septicsense/septicmain.html](http://www.wsg.washington.edu/outreach/mas/water_quality/septicsense/septicmain.html).