

CHAPTER 6

RESTORATION STRATEGIES IN THE LOWER TENNESSEE RIVER WATERSHED

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6.1. BACKGROUND.

The Watershed Water Quality Management Plan serves as a comprehensive inventory of resources and stressors in the watershed, a recommendation for control measures, and a guide for planning activities in the next five-year watershed cycle and beyond. Water quality improvement will be a result of implementing both regulatory and nonregulatory programs.

In addition to the NPDES program, some state and federal regulations, such as the TMDL and ARAP programs, address point and nonpoint issues. Construction and MS4 storm water rules (implemented under the NPDES program) have transitioned from Phase 1 to Phase 2. More information on storm water rules may be found at: <http://www.state.tn.us/environment/wpc/stormh2o/>.

This Chapter addresses point and nonpoint source approaches to water quality problems in the Group 4 portion of the Tennessee portion of the Lower Tennessee River Watershed.

6.2. COMMENTS FROM PUBLIC MEETINGS. Watershed meetings are open to the public, and most meetings were represented by citizens who live in the watershed, NPDES permittees, business people, farmers, and local river conservation interests. Locations for meetings were chosen after consulting with people who live and work in the watershed. Everyone with an interest in clean water is encouraged to be a part of the public meeting process. The times and locations of watershed meetings are posted at: <http://www.state.tn.us/environment/wpc/watershed/public.shtml>.

6.2.A. Year 1 Public Meeting. The first Lower Tennessee River Watershed public meeting was held March 21, 1999 at the Chattanooga Environmental Field Office in Chattanooga. The goals of the meeting were to: (1) present, and review the objectives of, the Watershed Approach, (2) introduce local, state, and federal agency and nongovernmental organization partners, (3) review water quality monitoring strategies, and (4) solicit input from the public.

Major Concerns/Comments

- Increasing amount of sediment in streams
- Impacts of urbanization
- Problems related to industrial forestry
- Loss of vegetative buffer strips as TVA opens shorelines to development
- Rate of urban sprawl in Hamilton County
- Pressures on STPs from unplanned development
- Chickamauga dam expansion and the increased extraction of natural resources that will follow
- Lack of incentive for single family residences to be good land stewards
- Nutrient loading in Nickajack Lake

6.2.B. Year 3 Public Meeting. The second Lower Tennessee River Watershed public meeting was held December 11, 2001 at the Environmental Assistance Center in Chattanooga. The goals of the meeting were to: (1) provide an overview of the watershed approach, (2) review the monitoring strategy, (3) summarize the most recent water quality assessment, (4) discuss the TMDL schedule and citizens' role in commenting on draft TMDLs, and (5) discuss BMPs and other nonpoint source tools available through the Tennessee Department of Agriculture 319 Program and NRCS conservation assistance programs.

Major Concerns/Comments

- Several comments about lack of manpower to do adequate monitoring
- Firebreaks (from bulldozers) in response to forest fires cause sediment to get into streams
- Silt from clear cuts gets to second order streams
- Not enough protection of threatened and endangered species

6.2.C. Year 5 Public Meeting. The third scheduled Lower Tennessee River Watershed public meeting was held October 9, 2007 at the Environmental Field Office in Chattanooga and featured nine educational components:

- Overview of watershed approach flash video
- Benthic macroinvertebrate specimens and interpretation
- SmartBoard™ with interactive GIS maps
- “Is Your Stream Healthy” self-guided slide show
- “Why We Do Biological Sampling” self-guided slide show
- Water supply and ground water protection educational display
- Water quality and land use maps
- South Chickamauga Creek Greenway Alliance
- Tennessee Valley Authority educational display

In addition, citizens had the opportunity to make formal comments on the draft Watershed Water Quality Management Plan.

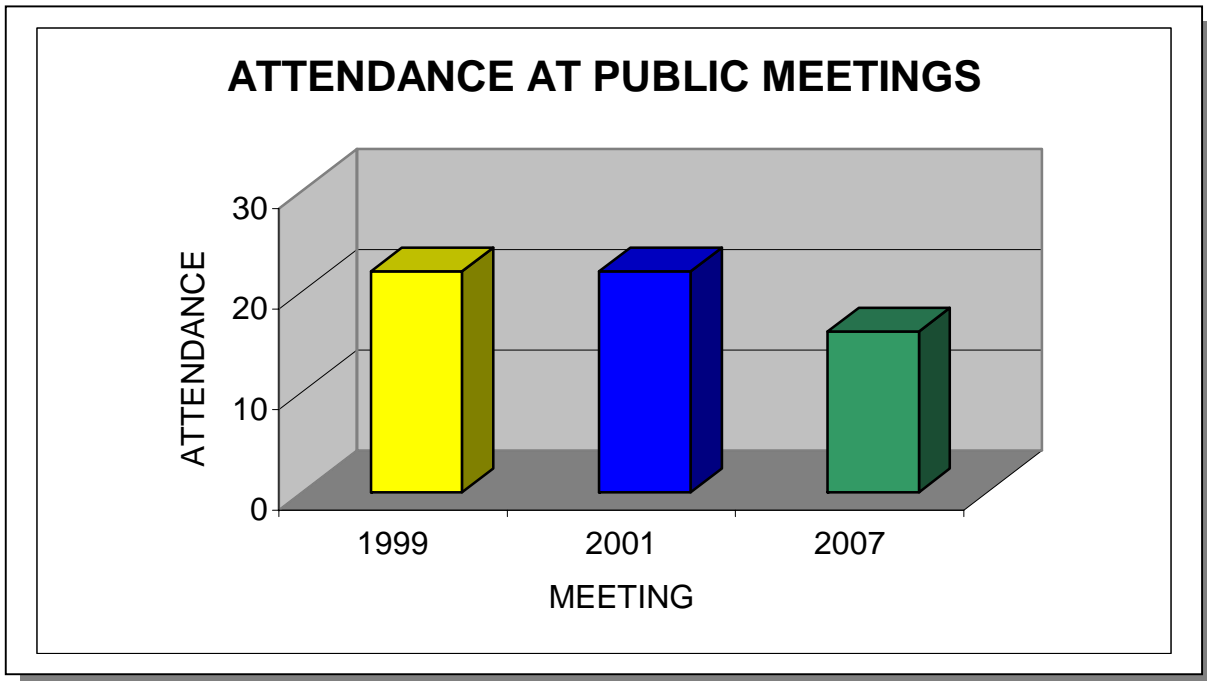


Figure 6-1. Attendance at the Lower Tennessee River Watershed Public Meetings. Attendance numbers do not include TDEC personnel.



Figure 6-2. Watershed Meetings Typically Begin with a Short Presentation by Staff.



Figure 6-3. Watershed Meetings Provide a Good Opportunity for Local Groups to Talk About Their Projects in the Watershed With Citizens in Attendance. In this case, Sandy Kurtz (North Chickamauga Creek Conservancy) describes the work her organization does in the watershed.



Figure 6-4. At Watershed Meetings, Citizens Learn About Benthic Macroinvertebrates (Small Invertebrates that Live on the Bottom of the Streams) in Their Watershed.



Figure 6-5. Scotty Sorrells (Division of Water Supply) explains the complicated issues involved with groundwater as a source of drinking water.



Figure 6-6. Watershed Meetings Provide a Good Opportunity for Citizens to Speak with Staff About Concerns and Activities in the Watershed.



Figure 6-7. Networking is a Valuable Outcome of Watershed Meetings.



Figure 6-8. The SmartBoard™ is an Effective Interactive Tool to Teach Citizens About the Power of GIS.

6.3. APPROACHES USED.

6.3.A. Point Sources. Point source contributions to stream impairment are primarily addressed by NPDES and ARAP permit requirements and compliance with the terms of the permits. Notices of NPDES and ARAP draft permits available for public comment can be viewed at <http://www.state.tn.us/environment/wpc/wpcppo/>. Discharge monitoring data submitted by NPDES-permitted facilities may be viewed at http://www.epa.gov/enviro/html/pcs/pcs_query_java.html.

The purpose of the TMDL program is to identify remaining sources of pollution and allocate pollution control needs in places where water quality goals are still not being achieved. TMDL studies are tools that allow for a better understanding of load reductions necessary for impaired streams to return to compliance with water quality standards. More information about Tennessee's TMDL program may be found at: <http://www.state.tn.us/environment/wpc/tmdl/>.

Approved TMDL:

Lower Tennessee River. A Total Maximum Daily Load for pH and Iron in North and South Suck Creek in the Lower Tennessee River Watershed in Bledsoe, Bradley, Hamilton, Loudon, Marion, McMinn, Meigs, Rhea, Roane, and Sequatchie Counties. Approved July 7, 2006.

<http://www.state.tn.us/environment/wpc/tmdl/approvedtmdl/LowerTnEcoli.pdf>

North and South Suck Creek. A Total maximum Daily Load for pH and Iron in North and South Suck Creek in the Lower Tennessee River Watershed in Hamilton, Marion, and Sequatchie Counties. Approved August 16, 2006.

<http://www.state.tn.us/environment/wpc/tmdl/approvedtmdl/SuckCreekPH&Iron.pdf>

Lower Tennessee River. Total Maximum Daily Load for Siltation and Habitat Alteration in the Lower Tennessee River Watershed in Bledsoe, Bradley, Hamilton, Loudon, Marion, McMinn, Meigs, Rhea, Roane, and Sequatchie Counties. Approved September 25, 2006.

<http://www.state.tn.us/environment/wpc/tmdl/approvedtmdl/LowerTnSed.pdf>

North Chickamauga Creek. A Total Maximum Daily Load for pH for North Chickamauga Creek in the Tennessee River Watershed. Approved March 17, 2005.

<http://www.state.tn.us/environment/wpc/tmdl/approvedtmdl/NChickFinal.pdf>

TMDLs are prioritized for development based on many factors.

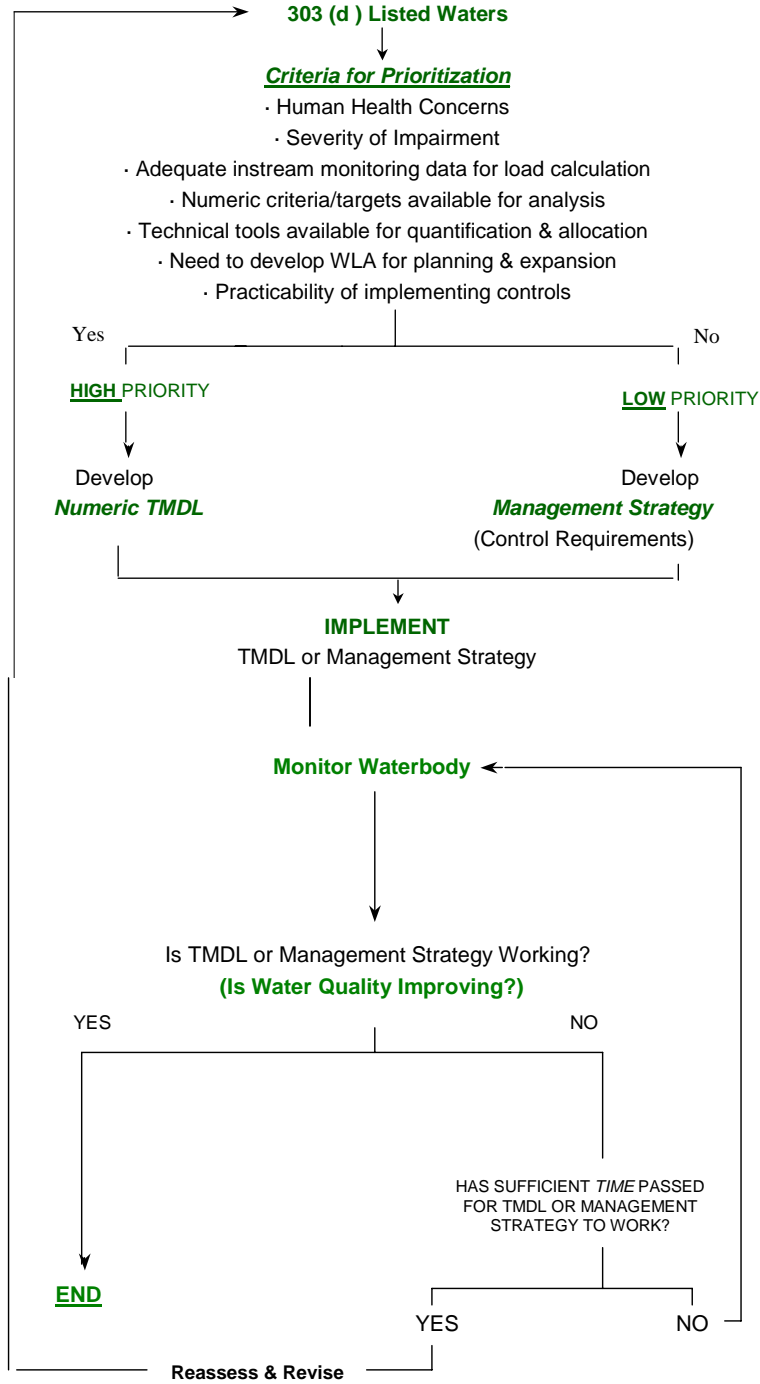


Figure 6-9. Prioritization Scheme for TMDL Development.

6.3.B. Nonpoint Sources

Common nonpoint sources of pollution in the Lower Tennessee River Watershed include urban storm water runoff, riparian vegetation removal and other habitat alterations, inappropriate land development, off road vehicles, poor road construction practices, acid mine drainage from historical mine and rock harvesting sites, as well as inappropriate agricultural practices. Since nonpoint pollution exists essentially everywhere rain falls, existing point source regulations can have only a limited effect. Other measures are, therefore, necessary.

There are several state and federal regulations that address contaminants impacting waters in the Lower Tennessee River Watershed, specifically the tributaries flowing into Nickajack Lake as well as Nickajack Lake itself. Most of these are limited to point sources: a pipe or ditch. Often, controls of point sources are not sufficient to protect waters, so other measures are necessary. Some measures include efforts by landowners and volunteer groups and the possible implementation of new regulations. Many agencies, such as the Tennessee Department of Agriculture (TDA) and the Natural Resources Conservation Service (NRCS), offer financial assistance to landowners for corrective actions (like Best Management Practices) that may be sufficient for recovery of impacted streams. Many nonpoint problems will require an active civic involvement at the local level geared towards establishment of improved zoning guidelines, building codes, streamside buffer zones and greenways, and general landowner education. Other problem sources, such as acid mine drainage, require assistance from the Office of Surface Mining and Remediation in order for the streams affected by acid mine drainage to meet water quality standards.

The following text describes types of impairments, possible causes, and suggested improvement measures. Restoration efforts should not be limited to only those streams and measures suggested below.

6.3.B.i. Sedimentation.

6.3.B.i.a. From Construction Sites. Construction activities have historically been considered “nonpoint sources.” In the late 1980’s, EPA designated them as being subject to NPDES regulation if more than 5 acres were being disturbed. In the spring of 2003, that threshold became 1 acre. The general permit issued for such construction sites establishes conditions for maintenance of the sites to minimize pollution from storm water runoff, including requirements for installation and inspection of erosion prevention and sediment controls. Also, the general permit imposes more stringent inspection, design criteria, sediment control measures, and self-monitoring requirements on sites in the watershed of streams that are already impaired due to sedimentation or are considered high quality. Regardless of the size, no construction site is allowed to cause a condition of pollution. Examples of streams impaired by sediment and land development in the Lower Tennessee River Watershed are Friar Branch, South Chickamauga Creek, and Mountain Creek.

Beginning in 2003, the state began requiring some municipalities to obtain coverage under a permit designed to address nonpoint runoff issues: the General NPDES Municipal Separate Storm Sewer System Permit, commonly known as MS4. This permit requires the holder to develop a comprehensive storm water management program,

including the adoption of local regulatory ordinances, regular inspection of construction sites and other discharges into their storm sewers, and a variety of educational, mapping, and monitoring activities. The state audits and oversees these local MS4 programs.

Construction sites within a sediment-impaired watershed may also have higher priority for inspections by WPC and MS4 personnel, and are likely to have enforcement actions for failure to control erosion.

6.3.B.i.b. From Channel and/or Bank Erosion. Many streams within the Lower Tennessee River Watershed suffer from varying degrees of streambank erosion. When stream channels are altered, banks can become unstable and highly erodible. Heavy livestock traffic can also severely disturb banks. When large tracts of land are cleared of vegetation (especially trees) and replaced with impermeable surfaces like asphalt and rooftops, the large increases in the velocities and volumes of storm water runoff can also overwhelm channel and bank integrity because destabilized banks contribute to sediment loadings and to the loss of beneficial riparian vegetation. Some inappropriate agricultural practices and overzealous land development have impacted the hydrology and morphology of stream channels in this watershed.

Unpermitted rock harvesting can also severely disturb stream banks. Destabilized banks contribute to sediment load and to the loss of beneficial riparian vegetation to the stream. The historical removal of cobble and rock from stream channels has resulted in destabilization of stream channels and aggressive erosion of stream banks.

Several agencies such as the NRCS, TVA, and TDA, as well as citizen watershed groups, are working to stabilize portions of stream banks using bioengineering and other techniques. Many of the affected streams could benefit from these types of projects.

Some methods or controls that might be necessary to address common problems are:

Voluntary Activities

- Re-establish bank vegetation (Citico Creek, Friar Branch, Rogers Branch, Dobbs Branch, Gillespie Springs Branch, Chattanooga Creek, Stringers Branch, Mountain Creek, and unnamed tributaries to South Chickamauga Creek, North Chickamauga Creek, Citico Creek, and Chattanooga Creek).
- Increase efforts in the Master Logger Program to recognize impaired streams and require more effective management practices.
- Better community planning for the impacts of development on small streams, especially development in growing areas (Friar Branch, Hurricane Creek, Lick Branch, Mountain Creek).
- Establish off-channel watering areas for livestock by moving watering troughs and feeders back from stream banks, or at least limit cattle access to restricted areas with armored bank entry.
- Limit cattle access to streams and bank vegetation.

Regulatory Strategies

- Restrict rock harvesting to permitted sites.
- Require post-construction run-off rates to be no greater than pre-construction rates in order to avoid in-channel erosion (all MS4 areas should establish these ordinances).
- Limit clearing of stream and ditch banks or other alterations. *Note: Permits may be required for any work along streams.*
- Implement additional restrictions on logging in streamside management zones (North Chickamauga Creek).
- Restrict the use of off-highway vehicles on stream banks and in stream channels (upper portions of the North Chickamauga Creek Watershed, North Suck Creek Watershed, Mullens Creek Watershed, Conner Creek Watershed).

Additional Strategies

- Better community planning and MS4 oversight for the impacts of development on small streams, especially development in growing areas.
- Encourage or require strong local buffer ordinances.
- Restrict the use of off-highway vehicles on stream banks and in stream channels.
- Limit road and utility crossings of streams through better site design.

6.3.B.i.c. From Agriculture and Silviculture. The Water Quality Control Act exempts normal agricultural and silvicultural practices that do not result in a point source discharge. Nevertheless, efforts are being made to address impacts due to these exempted practices.

The Master Logger Program has been in place for several years to train loggers how to install Best Management Practices that lessen the impact of logging activities on streams. Recently, laws and regulations established the authority for the Commissioners of the Departments of Environment and Conservation and of Agriculture to stop the logging operation that, upon failing to install these BMPs, is causing impacts to streams.

Since the Dust Bowl era, the agriculture community has strived to protect the soil from wind and water erosion. Agencies such as the Natural resources Conservation Service (NRCS), the University of Tennessee Agricultural Extension Service, and the Tennessee Department of Agriculture are striving to identify better ways of farming, to educate the farmers, and to install the methods that address the sources of some of the impacts due to agriculture. Cost sharing is available for many of these measures.

Many sediment problems traceable to agricultural practices also involve riparian loss due to close row cropping or pasture clearing for grazing. Lack of vegetated buffers along stream corridors is a problem in some areas of the Lower Tennessee River Watershed, due both to agricultural and residential/commercial land uses. Many streams could benefit from the establishment of more extensive riparian buffer zones.

6.3.B.ii. Pathogen Contamination.

Possible sources of pathogens in streams are inadequate or failing septic tank systems, overflows or breaks in public sewer collection systems, poorly disinfected discharges from sewage treatment plants, and fecal matter from pets, livestock and wildlife washed into streams and storm drains. When fecal bacterial levels are shown to be consistently elevated to dangerously high levels, especially in streams with high potential for recreational uses, the division must post signage along the creek warning the public to avoid contact. Once pathogen sources have been identified and corrected, and pathogen level reductions are documented, the posting is lifted.

Permits issued by the Division of Water Pollution Control regulate discharges from point sources and require adequate control for these sources. Individual homes are required to have subsurface, on-site treatment (i.e., septic tank and field lines) if public sewers are not available. The Division of Ground Water Protection within the Chattanooga Environmental Field Office and delegated county health departments regulate septic tanks and field lines. In addition to discharges to surface waters, businesses may employ subsurface treatment for domestic wastewater or surface discharge of treated process wastewater. The Division of Water Pollution Control regulates surface water discharges and near-surface land application of treated wastewater.

Currently, seventeen streams in the Group 4 portion of the Tennessee portion of the Lower Tennessee River Watershed are known to have excessive pathogen contamination. North Market Street Branch, Friar Branch, Spring Creek, West Chickamauga Creek, South Chickamauga Creek, Citico Creek, Dobbs Branch, Chattanooga Creek, Stringers Branch, Gillespie Springs Branch, and unnamed tributaries to South Chickamauga Creek, Citico Creek, and Chattanooga Creek are impacted by urban areas, with contributions of bacterial contamination coming from storm water runoff, sewage collection system leaks, and treatment plant operation failures originating from the Chattanooga area. In the Signal Mountain area, numerous failing septic tank systems affect Shoal Creek, Short Creek, and Bee Creek. McFarland Springs Branch and a portion of South Chickamauga Creek are impacted Georgia before they flow into Tennessee. Therefore, it is necessary to involve the Georgia Environmental Protection Division in order for these streams to reach attainment status.

Some measures that may be necessary to control pathogens are:

Voluntary Activities

- Clean up pet waste.
- Repair failed septic systems.
- Establish off-channel watering of livestock.
- Limit livestock access to streams and restrict stream crossings.
- Improve and educate on the proper management of animal waste from confined feeding operations.

Regulatory Strategies

- Strengthen enforcement of regulations governing on-site wastewater treatment.
- Determine timely and appropriate enforcement for non-complying sewage treatment plants, large and small, and their collection systems.
- Identify Concentrated Animal Feeding Operations not currently permitted.
- Develop and enforce leash laws and controls on pet fecal material.
- Review the pathogen limits in discharge permits to determine the need for further restriction.

Additional Strategies

- Develop intensive planning in areas where sewer is not available and treatment by subsurface disposal is not an option due to poor soils, floodplains, or high water tables.
- Greater efforts by sewer utilities to identify leaking lines or overflowing manholes.

6.3.B.iii. Excessive Nutrients and/or Dissolved Oxygen Depletion.

These two impacts are usually listed together because high nutrients often contribute to low dissolved oxygen within a stream. Since nutrients often have the same source as pathogens, the measures previously listed can also address many of these problems. Elevated nutrient loadings are also often associated with urban runoff from impervious surfaces, from fertilized lawns and croplands, and faulty sewage disposal processes. Nutrients are often transported with sediment, so many of the measures designed to reduce sediment runoff will also aid in preventing organic enrichment of streams and lakes.

Dissolved oxygen depletion can also be due to the discharge of other biodegradable materials. These are limited in NPDES permits as ammonia and as either Biological Oxygen Demand (BOD) or Carbonaceous Oxygen Demand (CBOD).

Some sources of nutrients can be addressed by:

Voluntary Activities

- Educate homeowners and lawn care companies in the proper application of fertilizers.
- Encourage landowners, developers, and builders to leave stream buffer zones. Streamside vegetation can filter out many nutrients and other pollutants before they reach the stream. These riparian buffers are also vital along livestock pastures. Examples of streams that can benefit are Citico Creek, South Chickamauga Creek, Lick Branch, Friar Branch, and Rogers Branch.
- Use grassed drainage ways that can remove fertilizer before it enters streams.
- Use native plants for landscaping since they don't require as much fertilizer and water.
- Develop better overall storm water management in urban and residential areas, including retrofitting existing commercial lots, homes, and roadways with storm water quality and quantity BMPs. This would especially improve the urban streams and lakes currently polluted by excessive nutrient inputs.

Physical changes to streams can prevent them from providing enough oxygen to biodegrade the materials that are naturally present. A few additional actions can address this problem:

- Maintain shade over a stream. Cooler water can hold more oxygen and retard the growth of algae. As a general rule, all stream channels suffer from some canopy removal. An intact riparian zone also acts as a buffer to filter out nutrient loads before they enter the water.
- Discourage impoundments. Ponds and lakes do not aerate water. *Note: Permits may be required for any work on a stream, including impoundments.*

Regulatory Strategies

- Strengthen enforcement of regulations governing on-site wastewater treatment.
- Impose more stringent permit limits for nutrients discharged from sewage treatment plants.
- Impose timely and appropriate enforcement for noncomplying sewage treatment plants, large and small, and their collection systems.
- Identify Concentrated Animal Feeding Operations (CAFO) not currently permitted.
- Identify any Animal Feeding Operations (AFO) that contribute to stream impacts and declare them as a CAFO requiring a permit.
- Support and train local MS4 programs within municipalities to deal with storm water pollution issues and require additional storm runoff quality control measures.
- Require nutrient management plans for all golf courses.

Additional Strategies

- Encourage TDA- and NRCS-sponsored educational programs targeted to agricultural landowners and aimed at better nutrient management, as well as information on technology-based application tools.

6.3.B.iv. Toxins and Other Materials.

Although some toxic substances are discharged directly into waters of the state from a point source, much of these materials are washed in during rainfalls from an upland location, or via improper waste disposal that contaminates groundwater. In the Group 4 portion of the Tennessee portion of the Lower Tennessee River Watershed, a relatively small number of streams are damaged by storm water runoff from industrial facilities or urban areas. More stringent inspection and regulation of permitted industrial facilities, and local storm water quality initiatives and regulations, could help reduce the amount of contaminated runoff reaching state waters.

Individuals may also cause contaminants to enter streams by activities that may be attributed to apathy or the lack of knowledge or civility. Litter in roadside ditches, garbage bags tossed over bridge railings, paint brushes washed off over storm drains, and oil drained into ditches are all blatant examples of pollution in streams. To lessen the future impact to the waters of the state, each community can strive to raise its awareness for better conservation practices and prosecution of violators.

Some of these problems can be addressed by:

Voluntary Activities

- Provide public education.
- Paint warnings on storm drains that connect to a stream.
- Sponsor community clean-up days.
- Landscape public areas.
- Encourage public surveillance of their streams and reporting of dumping activities to their local authorities.

Regulatory Strategies

- Continue to prohibit illicit discharges to storm drains and to search them out.
- Strengthen litter law enforcement at the local level.
- Increase the restrictions on storm water runoff from industrial facilities.

6.3.B.v. Habitat Alteration.

The alteration of the habitat within a stream can have severe consequences. Whether it is the removal of the vegetation providing a root system network for holding soil particles together, the release of sediment, which increases the bed load and covers benthic life and fish eggs, the removal of gravel bars, “cleaning out” creeks with heavy equipment, or the impounding of the water in ponds and lakes, many alterations impair the use of the stream for designated uses. Habitat alteration also includes the draining or filling of wetlands.

Although large-scale public projects such as highway construction can alter significant portions of streams, individual landowners and developers are responsible for the vast majority of stream alterations.

Some measures that can help address these problems are:

Voluntary Activities

- Sponsor litter pickup days to remove litter that might enter streams
- Organize stream cleanups removing trash, limbs and debris before they cause blockage.
- Avoid use of heavy equipment to “clean out” streams. Instream work other than debris removal will require an Aquatic Resource Alteration Permit (ARAP).
- Plant native vegetation along streams to stabilize banks and provide habitat (Citico Creek).
- Encourage developers to avoid extensive use of culverts in streams.

Regulatory Strategies

- Restrict modification of streams by means such as culverting, lining, or impounding (Gillespie Springs Branch, McFarland Springs Branch, Citico Creek, Friar Branch, Mackey Branch).
- Require mitigation for impacts to streams and wetlands when modifications are allowed.
- Require permitting of all rock harvesting operations.
- Increased enforcement may be needed when violations of current regulations occur, especially for illicit gravel dredging.

6.3.B.vi. Acid Rock Drainage (ARD).

Another source of pollution comes from abandoned and active mines as well as the disturbance of strata containing certain sulphide minerals such as those containing pyrite. For example, roads cut through certain types of rock layers can also contribute to the pollution of waters of the state. These streams are impacted by ARD, which causes the pH to drop to below 6.0.

Streams may be impacted by chemical reactions that result in orange flocculant material in the water and on the bottom of streams. Seeps may develop an oily film on the surface of the water. The orange color comes from the iron in the water precipitating out when the water reaches the surface and starts to oxidize. Once the iron has precipitated out, other metals will start to precipitate, like manganese and aluminum (manganese forms a hard black coating on the substrate and aluminum a fine white chalky layer). Examples of streams affected by ARD in the Group 4 Portion of the Lower Tennessee River Watershed are North and South Suck Creeks, North Chickamauga Creek, and a number of its tributaries.

The means necessary to remove ARD from these streams is complicated and expensive. There are two types of treatment systems, Passive Treatment and Active Treatment. Two examples of Passive Treatment facilities are anoxic limestone drains and constructed wetlands (alone or in some combination lined with limestone rock). These systems are used to precipitate the flocculants and stabilize the pH. Active Treatment systems collect the water at the source and actively drop neutralizing chemicals into the water in order to stabilize the pH and precipitate iron prior to discharging to a stream. Since these treatment systems will have to go on for many years, the most cost effective means to treat these streams is by Passive Treatment. In order to install these systems the landowners, stakeholders and Office of Surface Mining all have to work together. Most of the streams in the North Chickamauga Creek watershed have passive treatment systems. Hogskin Branch is the one exception, due to its location.

Some of these problems can be addressed by:

Voluntary Activities

- Provide public education.
- Get stakeholders involved in the construction and maintenance of the wetlands.

Regulatory Strategies

- Mining (and some TDOT) activities covered by an NPDES or ARAP permit should have a longer period of post-termination monitoring and remediation as a requirement of permit issuance.

Abandoned Coal Mines pose serious threats to public health, safety, and welfare as well as degrade the environment. The programs of Tennessee Land reclamation Section accomplish three important things: (1) They remove dangerous health and safety hazards that threaten the citizens of Tennessee, (2) They improve the environment, and (3) They restore resources to make them available for economic development, recreation, and other uses. Problems typically addressed by the Land reclamation Section include open or improperly filled mine shafts, dilapidated mine buildings and equipment, toxic mine refuse and drainage, landslides, mine fires, highwalls, and subsidence.

Projects on the ground:

- Standifer 3 and 6. A project to construct an acid mine drainage treatment system by Nickajack Lake.

6.3.B.vii. Storm Water.

MS4 discharges are regulated through the Phase I or II NPDES-MS4 permits. These permits require the development and implementation of a Storm Water Management Program (SWMP) that will reduce the discharge of pollutants to the maximum extent practicable and not cause or contribute to violations of state water quality standards. The NPDES General Permit for Discharges from Phase I and II MSF facilities can be found at:

<http://www.state.tn.us/environment/wpc/stormh2o/>.

For discharges into impaired waters, the MS4 General Permit requires that SWMPs include a section describing how discharges of pollutants of concern will be controlled to ensure that they do not cause or contribute to instream exceedances of water quality standards. Specific measurements and BMPs to control pollutants of concern must also be identified. In addition, MS4s must implement the proposed waste load allocation provisions of an applicable TMDL (i.e., siltation/habitat alteration, pathogens) and describe methods to evaluate whether storm water controls are adequate to meet the waste load allocation. In order to evaluate SWMP effectiveness and demonstrate compliance with specified waste load allocations, MS4s must develop and implement appropriate monitoring programs.

Some storm sewer discharges are not regulated through the NPDES MS4 program. Strategies to address runoff from in these urban areas include adapting Tennessee Growth Readiness Program (TGRP) educational materials to the watershed. TGRP is a statewide program built on existing best management practices from the Nonpoint Education for Municipal Officials program and the Center for Watershed Protection. TGRP developed the program to provide communities and counties with tools to design economically viable and watershed friendly developments. The program assists community leaders in reviewing current land use practices, determining impacts of

imperviousness on watershed functions, and allowing them to understand the economics of good watershed management and site design.

6.4. PERMIT REISSUANCE PLANNING

Under the *Tennessee Water Quality Control Act*, municipal, industrial and other dischargers of wastewater must obtain a permit from the Division. Approximately 1,700 permits have been issued in Tennessee under the federally delegated National Pollutant Discharge Elimination System (NPDES). These permits establish pollution control and monitoring requirements based on protection of designated uses through implementation of water quality standards and other applicable state and federal rules.

The following three sections provide specific information on municipal, industrial, and water treatment plant active permit holders in the Lower Tennessee River Watershed. Compliance information was obtained from EPA's Permit Compliance System (PCS). All data was queried for a five-year period between August 1, 2002 and July 31, 2007. PCS can be accessed publicly through EPA's Envirofacts website. This website provides access to several EPA databases to provide the public with information about environmental activities that may affect air, water, and land anywhere in the United States:

http://www.epa.gov/enviro/html/ef_overview.html

Stream Segment information, including designated uses and impairments, are described in detail in Chapter 3, *Water Quality Assessment of the Lower Tennessee River Watershed*.

6.4.A. Municipal Permits

**TN0021211 Hamilton County Wastewater Treatment Authority,
 Signal Mountain STP**

Discharger rating: Minor
City: Signal Mountain
County: Hamilton
EFO Name: Chattanooga
Issuance Date: 10/1/07
Expiration Date: 8/31/09
Receiving Stream(s): Tennessee River at mile 453.7
HUC-12: 060200010502
Effluent Summary: Treated municipal wastewater from Outfall 001
Treatment system: Contact stabilization and chlorination

Segment	TN06020001001_1000
Name	Nickajack Reservoir
Size	10370
Unit	Acres
First Year on 303(d) List	-
Designated Uses	Recreation (Non-Supporting), Irrigation (Supporting), Fish and Aquatic Life (Supporting), Industrial Water Supply (Supporting), Domestic Water Supply (Supporting), Livestock Watering and Wildlife (Supporting)
Causes	Dioxin (including 2,3,7,8-TCDD), Polychlorinated biphenyls
Sources	Contaminated Sediments

Table 6-1. Stream Segment Information for Hamilton County Wastewater Treatment Authority, Signal Mountain STP.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
BOD % removal	All Year	40	Percent	DMin % Removal	3/Week	Calculated	% Removal
BOD % removal	All Year	85	Percent	MAvg % Removal	3/Week	Calculated	% Removal
BOD5	All Year	45	mg/L	DMax Conc	3/Week	Composite	Effluent
BOD5	All Year	133	lb/day	DMax Load	3/Week	Composite	Effluent
BOD5	All Year	30	mg/L	WAvg Conc	3/Week	Composite	Effluent
BOD5	All Year	100	lb/day	MAvg Load	3/Week	Composite	Effluent
BOD5	All Year	40	mg/L	MAvg Conc	3/Week	Composite	Effluent
D.O.	All Year	1	mg/L	DMin Conc	Weekdays	Grab	Effluent
E. coli	All Year	126	#/100mL	MAvg Geo Mean	3/Week	Grab	Effluent
E. coli	All Year	487	#/100mL	MAvg Ari Mean	3/Week	Grab	Effluent
Settleable Solids	All Year	1	mL/L	DMax Conc	3/Week	Composite	Effluent
TRC	All Year	2	mg/L	DMax Conc	Weekdays	Grab	Effluent
TSS	All Year	45	mg/L	DMax Conc	3/Week	Composite	Effluent
TSS	All Year	100	lb/day	MAvg Load	3/Week	Composite	Effluent
TSS	All Year	133	lb/day	DMax Load	3/Week	Composite	Effluent
TSS	All Year	30	mg/L	WAvg Conc	3/Week	Composite	Effluent
TSS	All Year	40	mg/L	MAvg Conc	3/Week	Composite	Effluent
TSS % Removal	All Year	40	Percent	DMin % Removal	3/Week	Calculated	% Removal
TSS % Removal	All Year	85	Percent	MAvg % Removal	3/Week	Calculated	% Removal
pH	All Year	9	SU	DMax Conc	Weekdays	Grab	Effluent
pH	All Year	6	SU	DMin Conc	Weekdays	Grab	Effluent

Table 6-2. Permit Limits for Hamilton County Wastewater Treatment Authority, Signal Mountain STP.

Compliance History:

The following numbers of exceedences were noted in PCS:

- 7 Biological Oxygen Demand
- 2 Total Suspended Solids
- 2 Settleable Solids
- 1 Total Chlorine
- 1 Suspended Solids % Removal

Comments:

Contact stabilization and chlorination; Modification imposes limits on new sewer connections until collection system overflows are remedied and aligns pathogen monitoring and limits with current water quality standards for recreation.

**TN0024210 Chattanooga - Moccasin Bend WWTP
 and Combined Sewer System**

Discharger rating: Major
City: Chattanooga
County: Hamilton
EFO Name: Chattanooga
Issuance Date: 4/1/07
Expiration Date: 12/30/09
Receiving Stream(s): Tennessee River (Nickajack Reservoir) miles 457.8 (001-WWTP), 465.2 (004-Citico), 463.3 (005-Tremont, 007-M.L. King Blvd.), 464 (006-Ross's Landing), 462.5 (008-19th St.), 461.6 (009-Carter St.), and Chattanooga Creek miles 2.0 (002-Central Ave.) and 1.4 (003-Williams St.).

HUC-12: 060200010502
Effluent Summary: Biological treatment of municipal wastewater and primary treatment of combined sewer wastewater including chlorine disinfecting from Outfall 001 (WWTP); Primary treated combined sewer wastewater from Outfalls 002 through 009 for designed releases with partial treatment of combined sewer wastewater for only a limited number of discharge events.

Treatment system: Municipal Wastewater: High purity oxygen activated sludge treatment with chlorine disinfection; Combined wastewater: Screening or floatable removal, grit removal and primary clarification for designed releases; other releases are limited.

Segment	TN06020001001_1000
Name	Nickajack Reservoir
Size	10370
Unit	Acres
First Year on 303(d) List	-
Designated Uses	Recreation (Non-Supporting), Irrigation (Supporting), Fish and Aquatic Life (Supporting), Industrial Water Supply (Supporting), Domestic Water Supply (Supporting), Livestock Watering and Wildlife (Supporting)
Causes	Dioxin (including 2,3,7,8-TCDD), Polychlorinated biphenyls
Sources	Contaminated Sediments

Table 6-3. Stream Segment Information for Moccasin Bend WWTP and Combined Sewer System.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
Ammonia as N (Total)	All Year	30	mg/L	DMax Conc	Daily	Composite	Effluent
Ammonia as N (Total)	All Year	24853	lb/day	DMax Load	Daily	Composite	Effluent
Ammonia as N (Total)	All Year	15	mg/L	WAvg Conc	Daily	Composite	Effluent
Ammonia as N (Total)	All Year	18640	lb/day	MAvg Load	Daily	Composite	Effluent
Ammonia as N (Total)	All Year	20	mg/L	MAvg Conc	Daily	Composite	Effluent
Ammonia as N (Total)	May and Sep	30	mg/L	DMax Conc	Daily	Composite	Effluent
Ammonia as N (Total)	May and Sep	16263	lb/day	MAvg Load	Daily	Composite	Effluent
Ammonia as N (Total)	May and Sep	20	mg/L	MAvg Conc	Daily	Composite	Effluent
Ammonia as N (Total)	May and Sep	21684	lb/day	DMax Load	Daily	Composite	Effluent
Ammonia as N (Total)	May and Sep	15	mg/L	WAvg Conc	Daily	Composite	Effluent
Ammonia as N (Total)	Oct	30	mg/L	DMax Conc	Daily	Composite	Effluent
Ammonia as N (Total)	Oct	19015	lb/day	DMax Load	Daily	Composite	Effluent
Ammonia as N (Total)	Oct	20	mg/L	MAvg Conc	Daily	Composite	Effluent
Ammonia as N (Total)	Oct	14261	lb/day	MAvg Load	Daily	Composite	Effluent
Ammonia as N (Total)	Oct	15	mg/L	WAvg Conc	Daily	Composite	Effluent
Ammonia as N (Total)	Summer	30	mg/L	DMax Conc	Daily	Composite	Effluent
Ammonia as N (Total)	Summer	16680	lb/day	DMax Load	Daily	Composite	Effluent
Ammonia as N (Total)	Summer	15	mg/L	WAvg Conc	Daily	Composite	Effluent
Ammonia as N (Total)	Summer	20	mg/L	MAvg Conc	Daily	Composite	Effluent
Ammonia as N (Total)	Summer	12510	lb/day	MAvg Load	Daily	Composite	Effluent
Bypass of Treatment (occurrences)	All Year		Occurrences/ Month	MAvg Load	Continuous	Visual	Wet Weather
CBOD % Removal	All Year	40	Percent	DMin % Removal	Daily	Calculated	Percent Removal
CBOD % Removal	All Year	79	Percent	MAvg % Removal	Daily	Calculated	Percent Removal
CBOD % Removal	All Year	65	Percent	MAvg % Removal	Daily	Calculated	Effluent net value
CBOD5	All Year	40	mg/L	DMax Conc	Daily	Composite	Effluent
CBOD5	All Year		mg/L	MAvg Conc	Daily	Composite	Intake
CBOD5	All Year		mg/L	DMax Conc	Daily	Composite	Intake
CBOD5	All Year	65	Percent	MAvg Conc	Daily	Composite	Effluent net value
CBOD5	All Year	31066	lb/day	MAvg Load	Daily	Composite	Effluent
CBOD5	All Year	35	mg/L	MAvg Conc	Daily	Composite	Effluent
CBOD5	All Year	25	mg/L	DMin Conc	Daily	Composite	Effluent
CBOD5	May and Sep	40	mg/L	DMax Conc	Daily	Composite	Effluent
CBOD5	May and Sep	35	mg/L	MAvg Conc	Daily	Composite	Effluent
CBOD5	May and Sep	27105	lb/day	MAvg Load	Daily	Composite	Effluent
CBOD5	May and Sep	25	mg/L	DMin Conc	Daily	Composite	Effluent
CBOD5	Oct	40	mg/L	DMax Conc	Daily	Composite	Effluent
CBOD5	Oct	35	mg/L	MAvg Conc	Daily	Composite	Effluent
CBOD5	Oct	23769	lb/day	MAvg Load	Daily	Composite	Effluent
CBOD5	Oct	25	mg/L	DMin Conc	Daily	Composite	Effluent

Table 6-4a.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
CBOD5	Summer	40	mg/L	DMax Conc	Daily	Composite	Effluent
CBOD5	Summer	35	mg/L	MAvg Conc	Daily	Composite	Effluent
CBOD5	Summer	20850	lb/day	MAvg Load	Daily	Composite	Effluent
CBOD5	Summer	25	mg/L	DMin Conc	Daily	Composite	Effluent
D.O.	All Year	4	mg/L	DMin Conc	Daily	Grab	Effluent
Discharge Event Observation	All Year		Occurrences/ Month	MAvg Load	Monthly	Visual	Effluent
E. coli	All Year	487	#/100mL	DMax Conc	Daily	Grab	Effluent
E. coli	All Year	126	#/100mL	MAvg Geo Mean	Daily	Grab	Effluent
Flow	All Year		MGD	DMax Load	Daily	Continuous	Effluent
Flow	All Year		MGD	MAvg Load	Daily	Continuous	Effluent
Flow, Totalizer	All Year		MGD	DMax Load	Daily	Continuous	Effluent
Flow, Totalizer	All Year		MGD	MAvg Load	Daily	Continuous	Effluent
IC25 7day Ceriodaphnia dubia	May and Sep	2.8	Percent	DMin Conc	Annually	Composite	Effluent
IC25 7day Ceriodaphnia dubia	Oct	5.5	Percent	DMin Conc	Annually	Composite	Effluent
IC25 7day Ceriodaphnia Dubia	Summer	1.2	Percent	DMin Conc	Annually	Composite	Effluent
IC25 7day Ceriodaphnia Dubia	Winter	6.7	Percent	DMin Conc	Annually	Composite	Effluent
IC25 7day Fathead Minnows	May and Sep	2.8	Percent	DMin Conc	Annually	Composite	Effluent
IC25 7day Fathead Minnows	Oct	5.5	Percent	DMin Conc	Annually	Composite	Effluent
IC25 7day Fathead Minnows	Summer	1.2	Percent	DMin Conc	Annually	Composite	Effluent
IC25 7day Fathead Minnows	Winter	6.7	Percent	DMin Conc	Annually	Composite	Effluent
Nitrogen Total (as N)	All Year		mg/L	MAvg Conc	Monthly	Composite	Effluent
Nitrogen Total (as N)	All Year		mg/L	DMax Conc	Monthly	Composite	Effluent
Overflow Use Occurrences	All Year		Occurrences Month	MAvg Load	Continuous	Visual	Wet Weather
Overflow Use Occurrences	All Year		Occurrences/ Month	MAvg Load	Continuous	Visual	Non Wet Weather
Phosphorus Total	All Year		mg/L	DMax Conc	Monthly	Composite	Effluent
Phosphorus Total	All Year		mg/L	MAvg Conc	Monthly	Composite	Effluent
Rainfall	All Year		Inches	MAvg Load	Monthly	Visual	Effluent
Rainfall Duration	All Year		Hours	MAvg Load	Monthly	Visual	Effluent
Rainfall Events	All Year		Occurrences/ Month	MAvg Load	Monthly	Visual	Effluent
Settleable Solids	All Year	1	mL/L	DMax Conc	Daily	Composite	Effluent
TRC	All Year	0.28	mg/L	DMax Conc	Daily	Grab	Effluent
TRC	May and Sep	0.68	mg/L	DMax Conc	Daily	Grab	Effluent
TRC	Oct	0.34	mg/L	DMax Conc	Daily	Grab	Effluent
TRC	Summer	1.61	mg/L	MAvg Conc	Daily	Grab	Effluent
TSS	All Year	45	mg/L	DMax Conc	Daily	Composite	Effluent
TSS	All Year		mg/L	MAvg Conc	Daily	Composite	Intake
TSS	All Year		mg/L	DMax Conc	Daily	Composite	Intake
TSS	All Year	37280	lb/day	MAvg Load	Daily	Composite	Effluent
TSS	All Year	40	mg/L	MAvg Conc	Daily	Composite	Effluent
TSS	All Year	30	mg/L	WAvg Conc	Daily	Composite	Effluent
TSS	May and Sep	45	mg/L	DMax Conc	Daily	Composite	Effluent
TSS	May and Sep	32526	lb/day	MAvg Load	Daily	Composite	Effluent
TSS	May and Sep	40	mg/L	MAvg Conc	Daily	Composite	Effluent
TSS	May and Sep	30	mg/L	WAvg Conc	Daily	Composite	Effluent
TSS	Oct	45	mg/L	DMax Conc	Daily	Composite	Effluent
TSS	Oct	30	mg/L	WAvg Conc	Daily	Composite	Effluent

Table 6-4b.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
TSS	Oct	40	mg/L	MAvg Conc	Daily	Composite	Effluent
TSS	Oct	28523	lb/day	MAvg Load	Daily	Composite	Effluent
TSS	Summer	45	mg/L	DMax Conc	Daily	Composite	Effluent
TSS	Summer	30	mg/L	WAvg Conc	Daily	Composite	Effluent
TSS	Summer	40	mg/L	MAvg Conc	Daily	Composite	Effluent
TSS	Summer	25020	lb/day	MAvg Load	Daily	Composite	Effluent
TSS % Removal	All Year	40	Percent	DMin % Removal	Daily	Calculated	Percent Removal
TSS % Removal	All Year	80	Percent	MAvg % Removal	Daily	Calculated	Percent Removal
TSS % Removal	All Year	65	Percent	MAvg % Removal	Daily	Calculated	Effluent net value
pH	All Year	9	SU	DMax Conc	Daily	Grab	Effluent
pH	All Year	6	SU	DMin Conc	Daily	Grab	Effluent

Table 6-4c.

Tables 6-4a-c. Permit Limits for Outfall 001 at Moccasin bend WWTP and Combined Sewer System.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
BOD5	All Year		mg/L	DMax Conc	1/Discharge	Composite	Effluent
BOD5	All Year		mg/L	MAvg Conc	1/Discharge	Composite	Effluent
D.O.	All Year		mg/L	DMin Conc	1/Discharge	Grab	Effluent
Discharge Event Observation	All Year		Occurences/Month	MAvg Load	Monthly	Visual	Effluent
E. coli	All Year		#/100mL	DMax Conc	1/Discharge	Grab	Effluent
E. coli	All Year		#/100mL	MAvg Geo Mean	1/Discharge	Grab	Effluent
Flow	All Year		MGD	DMax Load	Monthly	Continuous	Effluent
Flow	All Year		MGD	MAvg Load	Monthly	Continuous	Effluent
Nitrite + Nitrate Total (as N)	All Year		mg/L	DMax Conc	1/Discharge	Composite	Effluent
Oil and Grease (Freon EM)	All Year		mg/L	DMax Conc	1/Discharge	Grab	Effluent
Phosphorus, Total	All Year		mg/L	DMax Conc	1/Discharge	Composite	Effluent
Settleable Solids	All Year		mL/L	DMax Conc	1/Discharge	Grab	Effluent
TKN - Total Kjeldahl Nitrogen	All Year		mg/L	DMax Conc	1/Discharge	Composite	Effluent
TSS	All Year		mg/L	DMax Conc	1/Discharge	Composite	Effluent
TSS	All Year		lb/day	MAvg Load	1/Discharge	Composite	Effluent
TSS	All Year		mg/L	MAvg Conc	1/Discharge	Composite	Effluent
pH	All Year	9	SU	DMax Conc	1/Discharge	Grab	Effluent
pH	All Year	6	SU	DMin Conc	1/Discharge	Grab	Effluent

Table 6-5. Permit Limits for Outfall 002 at Moccasin Bend WWTP and Combined Sewer System.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
BOD5	All Year		mg/L	DMax Conc	1/Discharge	Composite	Effluent
BOD5	All Year		mg/L	MAvg Conc	1/Discharge	Composite	Effluent
BOD5	All Year		lb/day	MAvg Load	1/Discharge	Composite	Effluent
D.O.	All Year		mg/L	DMin Conc	1/Discharge	Grab	Effluent
Discharge Event Observation	All Year		Occurrences/Month	MAvg Load	Monthly	Visual	Effluent
Discharge Event Observation	All Year	3	Occurrences/Year	MAvg Conc	Annually	Visual	Annual Avg
E. coli	All Year		#/100mL	MAvg Geo Mean	1/Discharge	Grab	Effluent
Fecal Coliform	All Year		#/100mL	DMax Conc	1/Discharge	Grab	Effluent
Flow	All Year		MGD	DMax Load	Monthly	Continuous	Effluent
Flow	All Year		MGD	MAvg Load	Monthly	Continuous	Effluent
Nitrite + Nitrate Total (as N)	All Year		mg/L	DMax Conc	1/Discharge	Composite	Effluent
Oil and Grease (Freon EM)	All Year		mg/L	DMax Conc	1/Discharge	Grab	Effluent
Phosphorus, Total	All Year		mg/L	DMax Conc	1/Discharge	Composite	Effluent
Settleable Solids	All Year		mL/L	DMax Conc	1/Discharge	Grab	Effluent
TKN - Total Kjeldahl Nitrogen	All Year		mg/L	DMax Conc	1/Discharge	Composite	Effluent
TSS	All Year		mg/L	DMax Conc	1/Discharge	Composite	Effluent
TSS	All Year		lb/day	MAvg Load	1/Discharge	Composite	Effluent
TSS	All Year		mg/L	MAvg Conc	1/Discharge	Composite	Effluent
pH	All Year	9	SU	DMax Conc	1/Discharge	Grab	Effluent
pH	All Year	6	SU	DMin Conc	1/Discharge	Grab	Effluent

Table 6-6. Permit Limits for Outfall 003 at Moccasin Bend WWTP and Combined Sewer System.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
BOD5	All Year		mg/L	DMax Conc	1/Discharge	Composite	Effluent
BOD5	All Year		mg/L	MAvg Conc	1/Discharge	Composite	Effluent
BOD5	All Year		lb/day	MAvg Load	1/Discharge	Composite	Effluent
D.O.	All Year		mg/L	DMin Conc	1/Discharge	Grab	Effluent
Discharge Event Observation	All Year		Occurrences/Month	MAvg Load	Monthly	Visual	Effluent
E. coli	All Year		#/100mL	MAvg Geo Mean	1/Discharge	Grab	Effluent
Fecal Coliform	All Year		#/100mL	DMax Conc	1/Discharge	Grab	Effluent
Fecal Coliform	All Year		#/100mL	MAvg Geo Mean	1/Discharge	Grab	Effluent
Flow	All Year		MGD	DMax Load	Monthly	Continuous	Effluent
Flow	All Year		MGD	MAvg Load	Monthly	Continuous	Effluent
Settleable Solids	All Year		mL/L	DMax Conc	1/Discharge	Grab	Effluent
TSS	All Year		mg/L	DMax Conc	1/Discharge	Composite	Effluent
TSS	All Year		lb/day	MAvg Load	1/Discharge	Composite	Effluent
TSS	All Year		mg/L	MAvg Conc	1/Discharge	Composite	Effluent
pH	All Year	9	SU	DMax Conc	1/Discharge	Grab	Effluent
pH	All Year	6	SU	DMin Conc	1/Discharge	Grab	Effluent

Table 6-7. Permit Limits for Outfall 004, 005, & 008 at Moccasin Bend WWTP and Combined Sewer System.

Parameter	Season	Limit	Units	Designator	Frequency	Sample Type	Monitoring Location
BOD5	All Year		mg/L	DMax Conc	1/Discharge	Composite	Effluent
BOD5	All Year		mg/L	MAvg Conc	1/Discharge	Composite	Effluent
BOD5	All Year		lb/day	MAvg Load	1/Discharge	Composite	Effluent
D.O.	All Year		mg/L	DMin Conc	1/Discharge	Grab	Effluent
Discharge Event Observation	All Year		Occurrences/Month	MAvg Load	Monthly	Visual	Effluent
Discharge Event Observation	All Year	12	Occurrences/Year	MAvg Conc	Annually	Visual	Annual Avg
E. coli	All Year		#/100mL	MAvg Geo Mean	1/Discharge	Grab	Effluent
Fecal Coliform	All Year		#/100mL	DMax Conc	1/Discharge	Grab	Effluent
Fecal Coliform	All Year		#/100mL	MAvg Geo Mean	1/Discharge	Grab	Effluent
Flow	All Year		MGD	DMax Load	Monthly	Continuous	Effluent
Flow	All Year		MGD	MAvg Load	Monthly	Continuous	Effluent
Settleable Solids	All Year		mL/L	DMax Conc	1/Discharge	Grab	Effluent
TSS	All Year		mg/L	DMax Conc	1/Discharge	Composite	Effluent
TSS	All Year		lb/day	MAvg Load	1/Discharge	Composite	Effluent
TSS	All Year		mg/L	MAvg Conc	1/Discharge	Composite	Effluent
pH	All Year	9	SU	DMax Conc	1/Discharge	Grab	Effluent
pH	All Year	6	SU	DMin Conc	1/Discharge	Grab	Effluent

Table 6-8. Permit Limits for Outfall 007& 009 at Moccasin Bend WWTP and Combined Sewer System.

Compliance History:

The following numbers of exceedences were noted in PCS:

7 Total Suspended Solids
2 Total Silver
8 Fecal Coliform
7 Total Chlorine
6 Carbonaceous Biological Oxygen Demand
Suspended Solids % Removal
1 pH
2 Carbonaceous Oxygen Demand

Enforcement:

8/23/07 Notice of Violation:

It has been brought to the attention of the Chattanooga EFO-WPC that several farm sites in the Sequatchie Valley have received Biosolids without state approval.

Based on the permittee's Annual Sludge Report (2006) received by the Chattanooga EFO office on February 15, 2007, 30 sites received biosolids in 2006 and were not approved by the field office.

The purpose of a land application site approval is to ensure that proper application locations are used and that procedures for biosolids applications are being followed; it is also a method to track the locations used for biosolids application throughout the state. By not following proper sludge management practices, The City of Chattanooga has violated Part 3.3 d. NPDES Permit Number TN0024210.

Comments:

5/7/07 Technical Assistance Visit and file review. In compliance

12/14/06 Pretreatment Compliance Inspection. In compliance

Comments: In-house Lab needs better turnaround time on analytical results.

TN0064947 River Landing Condo Owners Association

Discharger rating: Minor
City: Chattanooga
County: Marion
EFO Name: Chattanooga
Issuance Date: 2/1/06
Expiration Date: 12/30/09
Receiving Stream(s): Tennessee River at mile 451.7
HUC-12: 060200010506
Effluent Summary: Treated domestic wastewater from Outfall 001
Treatment system: Septic tanks and recirculating sand filter

Segment	TN06020001001_1000
Name	Nickajack Reservoir
Size	10370
Unit	Acres
First Year on 303(d) List	-
Designated Uses	Recreation (Non-Supporting), Irrigation (Supporting), Fish and Aquatic Life (Supporting), Industrial Water Supply (Supporting), Domestic Water Supply (Supporting), Livestock Watering and Wildlife (Supporting)
Causes	Dioxin (including 2,3,7,8-TCDD), Polychlorinated biphenyls
Sources	Contaminated Sediments

Table 6-9. Stream Segment Information for River Landing Condo Owners Association.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
BOD5	All Year	45	mg/L	DMax Conc	2/Month	Grab	Effluent
BOD5	All Year	30	mg/L	MAvg Conc	2/Month	Grab	Effluent
D.O.	All Year	1	mg/L	DMin Conc	Weekdays	Grab	Effluent
E. coli	All Year	941	#/100mL	DMax Conc	2/Month	Grab	Effluent
E. coli	All Year	126	#/100mL	MAvg Geo Mean	2/Month	Grab	Effluent
Flow	All Year		MGD	MAvg Load	Weekdays	Estimate	Effluent
Flow	All Year		MGD	DMax Load	Weekdays	Estimate	Effluent
Settleable Solids	All Year	1	mL/L	DMax Conc	2/Week	Grab	Effluent
TRC	All Year	2	mg/L	DMax Conc	Weekdays	Grab	Effluent
TSS	All Year	45	mg/L	DMax Conc	2/Month	Grab	Effluent
TSS	All Year	30	mg/L	MAvg Conc	2/Month	Grab	Effluent
pH	All Year	9	SU	DMax Conc	2/Week	Grab	Effluent
pH	All Year	6	SU	DMin Conc	2/Week	Grab	Effluent

Table 6-10. Permit Limits for River Landing Condo Owners Association.

Comments:

9/6/06 Compliance Evaluation Inspection, resulted in an NOV.

Comments: Recirculating sand filter in unsatisfactory condition. Excessive chlorine residual violations.

TN0027626 TN DOT I-24 R.A. Marion

Discharger rating: Minor
City: Jasper
County: Marion
EFO Name: Chattanooga
Issuance Date: 10/1/05
Expiration Date: 8/31/09
Receiving Stream(s): Tennessee River at mile 429.1 (Nickajack Reservoir)
HUC-12: 060200010507
Effluent Summary: Treated domestic wastewater from Outfall 001
Treatment system: Septic tank followed by recirculating tank, followed by recirculating sand filter, followed by disinfection by ultraviolet light

Segment	TN06020001001_1000
Name	Nickajack Reservoir
Size	10370
Unit	Acres
First Year on 303(d) List	-
Designated Uses	Recreation (Non-Supporting), Irrigation (Supporting), Fish and Aquatic Life (Supporting), Industrial Water Supply (Supporting), Domestic Water Supply (Supporting), Livestock Watering and Wildlife (Supporting)
Causes	Dioxin (including 2,3,7,8-TCDD), Polychlorinated biphenyls
Sources	Contaminated Sediments

Table 6-11. Stream Segment Information for TN DOT I-24 R.A. Marion.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
BOD5	All Year	45	mg/L	DMax Conc	2/Month	Grab	Effluent
BOD5	All Year	30	mg/L	WAvg Conc	2/Month	Grab	Effluent
D.O.	All Year	1	mg/L	DMin Conc	Weekdays	Grab	Effluent
E. coli	All Year	487	#/100mL	DMax Conc	2/Month	Grab	Effluent
E. coli	All Year	126	#/100mL	MAvg Geo Mean	2/Month	Grab	Effluent
Flow	All Year		MGD	MAvg Load	Weekdays	Continuous	Effluent
Flow	All Year		mg/L	DMax Load	Weekdays	Continuous	Effluent
Settleable Solids	All Year	1	mL/L	DMax Conc	2/Week	Grab	Effluent
TRC	All Year	2	mg/L	DMax Conc	Weekdays	Grab	Effluent
TSS	All Year	45	mg/L	DMax Conc	2/Month	Grab	Effluent
TSS	All Year	30	mg/L	WAvg Conc	2/Month	Grab	Effluent
pH	All Year	9	SU	DMax Conc	2/Week	Grab	Effluent
pH	All Year	6	SU	DMin Conc	2/Week	Grab	Effluent

Table 6-12. Permit Limits for TN DOT I-24 R.A. Marion.

6.4.B. Industrial Permits

TN0057312 Chattanooga Gas Company Liquefied Natural Gas Plant

Discharger rating: Minor
City: Chattanooga
County: Hamilton
EFO Name: Chattanooga
Issuance Date: 4/1/05
Expiration Date: 8/31/09
Receiving Stream(s): Wet weather conveyance at approximate mile 0.4 into Citico Creek at approximate mile 3.2, Outfall 001 discharges into South Chickamauga Creek at approximate mile 2
HUC-12: 060200010804
Effluent Summary: Cooling tower blowdown and storm water runoff through Outfall 001
Treatment system: None

Segment	TN06020001007_1000
Name	South Chickamauga Creek
Size	17.6
Unit	Miles
First Year on 303(d) List	2004
Designated Uses	Livestock Watering and Wildlife (Supporting), Irrigation (Supporting), Recreation (Non-Supporting), Industrial Water Supply (Supporting), Fish and Aquatic Life (Non-Supporting)
Causes	Physical substrate habitat alterations, Sedimentation/Siltation, Phosphate, Escherichia coli
Sources	Discharges from Municipal Separate Storm Sewer Systems (MS4), Site Clearance (Land Development or Redevelopment), Channelization, Sources Outside State Jurisdiction or Borders, Sanitary Sewer Overflows (Collection System Failures)

Table 6-13. Stream Segment Information for Chattanooga Gas Company Liquefied Natural Gas Plant.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
Flow	All Year		MGD	DMax Load	Weekly	Instantaneous	Effluent
Flow	All Year		MGD	MAvg Load	Weekly	Instantaneous	Effluent
IC25 7day Ceriodaphnia dubia	All Year	0.77	Percent	MAvg Min	Quarterly	Composite	Effluent
IC25 7day Fathead Minnows	All Year	0.77	Percent	MAvg Min	Quarterly	Composite	Effluent
pH	All Year	9	SU	DMax Conc	Weekly	Grab	Effluent
pH	All Year	6	SU	DMin Conc	Weekly	Grab	Effluent

Table 6-14. Permit Limits for Chattanooga Gas Company Liquefied Natural Gas Plant.

Comments:

None

TN0002844 Invista S.à.r.l.

Discharger rating: Major
City: Chattanooga
County: Hamilton
EFO Name: Chattanooga
Issuance Date: 3/1/05
Expiration Date: 7/30/09
Receiving Stream(s): Tennessee River at mile 469.9 (Outfall 001), a wet weather conveyance to Tennessee River at mile 469.7 (Outfalls 003 and S01-S04), a wetland on Invista property (S5A and S5B) and an unnamed tributary to North Chickamauga Creek (Outfalls S06-S12)
HUC-12: 060200010502
Effluent Summary: Process wastewater, non-contact cooling water, boiler ash sluice wastewater, water treatment filter backwash, and storm water runoff from Outfall 001, cooling tower blowdown and reverse osmosis "reject" water from Outfall 003 and storm water runoff from Outfalls S01-S12
Treatment system: Screening, sedimentation

Segment	TN06020001001_1000
Name	Nickajack Reservoir
Size	10370
Unit	Acres
First Year on 303(d) List	-
Designated Uses	Recreation (Non-Supporting), Irrigation (Supporting), Fish and Aquatic Life (Supporting), Industrial Water Supply (Supporting), Domestic Water Supply (Supporting), Livestock Watering and Wildlife (Supporting)
Causes	Dioxin (including 2,3,7,8-TCDD), Polychlorinated biphenyls
Sources	Contaminated Sediments

Table 6-15. Stream Segment Information for Invista S.à.r.l..

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
48hr LC50: Ceriodaphnia dubia	All Year	1	Percent	DMin Conc	Annually	Grab	Effluent
48hr LC50: Fathead Minnows	All Year	1	Percent	DMin Conc	Annually	Grab	Effluent
Ammonia as N (Total)	Summer	280	lb/day	DMax Load	Weekly	Composite	Effluent
Ammonia as N (Total)	Summer	95	lb/day	MAvg Load	Weekly	Composite	Effluent
Ammonia as N (Total)	Winter	306	lb/day	DMax Load	Weekly	Composite	Effluent
Ammonia as N (Total)	Winter	200	lb/day	MAvg Load	Weekly	Composite	Effluent
Flow	All Year		MGD	DMax Load	Continuous	Recorder	Effluent
Flow	All Year		MGD	MAvg Load	Continuous	Recorder	Effluent
TSS	All Year	55	mg/L	DMax Conc	Daily	Composite	Effluent
TSS	All Year	32	mg/L	MAvg Conc	Daily	Composite	Effluent
Temperature (°C)	All Year		Deg. C	DMax Conc	Daily	Grab	Effluent
pH	All Year	9	SU	DMax Conc	Daily	Grab	Effluent
pH	All Year	6	SU	DMin Conc	Daily	Grab	Effluent

Table 6-16. Permit Limits for outfall 001 Invista S.à.r.l.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
Flow	All Year		MGD	DMax Load	Weekly	Instantaneous	Effluent
Flow	All Year		MGD	MAvg Load	Weekly	Instantaneous	Effluent
TSS	All Year		mg/L	DMax Conc	Weekly	Grab	Effluent
TSS	All Year		mg/L	MAvg Conc	Weekly	Grab	Effluent
pH	All Year		SU	DMax Conc	Weekly	Grab	Effluent
pH	All Year		SU	DMin Conc	Weekly	Grab	Effluent

Table 6-17. Permit Limits for outfall 003 Invista S.à.r.l.

Compliance History:

The following numbers of exceedences were noted in PCS:

- 3 pH
- 7 Total Suspended Solids
- 1 Ammonia

Comments:

10/20/06 Compliance Evaluation Inspection: In compliance

**TN0002798 Alco Chemical, Division of National Starch
 and Chemical Company**

Discharger rating: Minor
City: Chattanooga
County: Hamilton
EFO Name: Chattanooga
Issuance Date: 12/30/04
Expiration Date: 11/30/09
Receiving Stream(s): South Chickamauga Creek at mile 0.6
HUC-12: 060200010804
Effluent Summary: Non contact cooling water from Outfall 001 and storm water runoff from Outfall SW1
Treatment system: None

Segment	TN06020001007_1000
Name	South Chickamauga Creek
Size	17.6
Unit	Miles
First Year on 303(d) List	2004
Designated Uses	Livestock Watering and Wildlife (Supporting), Irrigation (Supporting), Recreation (Non-Supporting), Industrial Water Supply (Supporting), Fish and Aquatic Life (Non-Supporting)
Causes	Physical substrate habitat alterations, Sedimentation/Siltation, Phosphate, Escherichia coli
Sources	Discharges from Municipal Separate Storm Sewer Systems (MS4), Site Clearance (Land Development or Redevelopment), Channelization, Sources Outside State Jurisdiction or Borders, Sanitary Sewer Overflows (Collection System Failures)

Table 6-18. Stream Segment Information for Alco Chemical.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
Flow	All Year		MGD	DMax Load	Monthly	Instantaneous	Effluent
Flow	All Year		MGD	MAvg Load	Monthly	Instantaneous	Effluent
IC25 7day Ceriodaphnia dubia	All Year	3.8	Percent	DMin Conc	Annually	Composite	Effluent
IC25 7day Fathead Minnows	All Year	3.8	Percent	DMin Conc	Annually	Composite	Effluent
Temperature (°C)	All Year		°C	DMax Load	Monthly	Grab	Effluent
Temperature (°C)	All Year		°C	MAvg Load	Monthly	Grab	Effluent
pH	All Year	9	SU	DMax Conc	Monthly	Grab	Effluent
pH	All Year	6	SU	DMin Conc	Monthly	Grab	Effluent

Table 6-19. Permit Limits for Alco Chemical.

Comments:

None

TN0002861 BASF Corporation

Discharger rating: Minor
City: Chattanooga
County: Hamilton
EFO Name: Chattanooga
Issuance Date: 11/1/04
Expiration Date: 9/29/09
Receiving Stream(s): Tennessee River at mile 469
HUC-12: 060200010502
Effluent Summary: Noncontact cooling water from Outfall 002
Treatment system: None

Segment	TN06020001001_1000
Name	Nickajack Reservoir
Size	10370
Unit	Acres
First Year on 303(d) List	-
Designated Uses	Recreation (Non-Supporting), Irrigation (Supporting), Fish and Aquatic Life (Supporting), Industrial Water Supply (Supporting), Domestic Water Supply (Supporting), Livestock Watering and Wildlife (Supporting)
Causes	Dioxin (including 2,3,7,8-TCDD), Polychlorinated biphenyls
Sources	Contaminated Sediments

Table 6-20. Stream Segment Information for BASF Corporation.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
COD	All Year		mg/L	DMin Conc	Quarterly	Grab	Effluent
Flow	All Year		MGD	DMax Load	2/Month	Instantaneous	Effluent
Flow	All Year		MGD	MAvg Load	2/Month	Instantaneous	Effluent
Temperature (°C)	All Year		°F	MAvg Min	2/Month	Grab	Effluent
pH	All Year	9	SU	DMax Conc	2/Month	Grab	Effluent
pH	All Year	6	SU	DMin Conc	2/Month	Grab	Effluent

Table 6-21. Permit Limits for BASF Corporation.

Comments:

None

TN0002780 Chattem Chemicals, Inc.

Discharger rating: Minor
City: Chattanooga
County: Hamilton
EFO Name: Chattanooga
Issuance Date: 8/30/04
Expiration Date: 9/29/09
Receiving Stream(s): Chattanooga Creek at mile 0.3 via storm sewer system
HUC-12: 60200010502
Effluent Summary: Noncontact cooling water and storm water from Outfall 001
Treatment system: None

Segment	TN060200011244_1000
Name	Chattanooga Creek
Size	8.4
Unit	Miles
First Year on 303(d) List	1990
Designated Uses	Industrial Water Supply (Supporting), Fish and Aquatic Life (Non-Supporting), Recreation (Non-Supporting), Irrigation (Supporting), Livestock Watering and Wildlife (Supporting)
Causes	Other anthropogenic substrate alterations, Polychlorinated biphenyls, Escherichia coli, Dissolved Oxygen, Oil and Grease, Dioxin (including 2,3,7,8-TCDD)
Sources	Discharges from Municipal Separate Storm Sewer Systems (MS4), Other Spill Related Impacts, Municipal (Urbanized High Density Area), Combined Sewer Overflows, Contaminated Sediments

Table 6-22. Stream Segment Information for Chattem Chemicals, Inc.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
Al (T)	All Year	0.359	mg/L	MAvg Conc	Quarterly	Composite	Effluent
Al (T)	All Year	2	mg/L	DMax Conc	Monthly	Composite	Effluent
Ammonia as N (Total)	All Year	2.4	mg/L	DMax Conc	3/Week	Composite	Effluent
Ammonia as N (Total)	All Year	1.6	mg/L	MAvg Conc	3/Week	Composite	Effluent
BOD5	All Year	20	mg/L	DMax Conc	Weekly	Composite	Effluent
BOD5	All Year	10	mg/L	MAvg Conc	Weekly	Composite	Effluent
D.O.	All Year	5	mg/L	DMin Conc	3/Week	Composite	Effluent
Flow	All Year		MGD	DMax Load	Continuous	Recorder	Effluent
Flow	All Year		MGD	MAvg Load	Continuous	Recorder	Effluent
Hg (T)	All Year	2E-04	mg/L	DMax Conc	Quarterly	Composite	Effluent
Hg (T)	All Year	1E-04	mg/L	MAvg Conc	Quarterly	Composite	Effluent
Oil and Grease (Freon EM)	All Year	15	mg/L	DMax Conc	Quarterly	Grab	Effluent
Oil and Grease (Freon EM)	All Year	10	mg/L	MAvg Conc	Quarterly	Grab	Effluent
TSS	All Year	25	mg/L	DMax Conc	Weekly	Grab	Effluent
TSS	All Year	15	mg/L	MAvg Conc	Weekly	Grab	Effluent
Zn (T)	All Year	0.3	mg/L	DMax Conc	Monthly	Composite	Effluent
Zn (T)	All Year	0.05	mg/L	MAvg Conc	Monthly	Composite	Effluent
pH	All Year	9	SU	DMax Conc	Weekdays	Grab	Effluent
pH	All Year	6	SU	DMin Conc	Weekdays	Grab	Effluent

Table 6-23. Permit Limits for Chattem Chemicals.

Comments:

None

TN0077682 Hidden Harbor Swimming Pool

Discharger rating: Minor
City: Hixson
County: Hamilton
EFO Name: Chattanooga
Issuance Date: 11/1/02
Expiration Date: 9/29/07
Receiving Stream(s): Unnamed tributary at river mile 0.5 to the Tennessee River
 at river mile 476
HUC-12: 060200010501
Effluent Summary: Swimming pool filter backwash
Treatment system: Sand Filter

Segment	TN06020001020_1000
Name	Chickamauga Reservoir
Size	35400
Unit	Acres
First Year on 303(d) List	-
Designated Uses	Livestock Watering and Wildlife (Supporting), Domestic Water Supply (Supporting), Industrial Water Supply (Supporting), Fish and Aquatic Life (Supporting), Recreation (Supporting), Irrigation (Supporting)
Causes	N/A
Sources	N/A

Table 6-24. Stream Segment Information for Hidden Harbor Swimming Pool.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
Flow	All Year		MGD	DMax Load	Monthly	Instantaneous	Effluent
Flow	All Year		MGD	MAvg Load	Monthly	Instantaneous	Effluent
Settleable Solids	All Year	0.5	mL/L	DMax Conc	Monthly	Grab	Effluent
TRC	All Year	0.019	mg/L	DMax Conc	Monthly	Grab	Effluent
TSS	All Year	40	mg/L	DMax Conc	Monthly	Grab	Effluent
pH	All Year	9	SU	DMax Conc	Monthly	Grab	Effluent
pH	All Year	6	SU	DMin Conc	Monthly	Grab	Effluent

Table 6-25. Permit Limits for Hidden Harbor Swimming Pool.

Comments:

None.

TN0073041 Chevron Products Co.

Discharger rating: Minor
City: Chattanooga
County: Hamilton
EFO Name: Chattanooga
Issuance Date: 6/1/04
Expiration Date: 5/30/09
Receiving Stream(s): Unnamed tributary to Friar Branch at mile 2.3,
 at river mile 476
HUC-12: 060200010804
Effluent Summary: Storm water run-off associated with industrial activities
 through Outfall 01A, (dike area discharge under wet
 weather conditions), Outfall 01B (discharge through the
 oil/water separator, under dry weather conditions), and
 Outfall 01C (discharge through the oil/water separator)
Treatment system: Oil/water separator

Segment	TN06020001007_0100
Name	Friar Branch
Size	18.94
Unit	Miles
First Year on 303(d) List	2004
Designated Uses	Fish and Aquatic Life (Non-Supporting), Recreation (Non-Supporting), Irrigation (Supporting), Livestock Watering and Wildlife (Supporting)
Causes	Escherichia coli, Physical substrate habitat alterations, Sedimentation/Siltation, Nutrient/Eutrophication Biological Indicators
Sources	Discharges from Municipal Separate Storm Sewer Systems (MS4), Site Clearance (Land Development or Redevelopment), Sanitary Sewer Overflows (Collection System Failures)

Table 6-26. Stream Segment Information for Chevron Products, Inc.

No Limits

Comments:
 None

TN0022438 Citgo Petroleum Corporation

Discharger rating: Minor
City: Chattanooga
County: Hamilton
EFO Name: Chattanooga
Issuance Date: 6/1/04
Expiration Date: 5/30/09
Receiving Stream(s): Unnamed tributary at mile 0.6 to Friar Branch at mile 2.3, at river mile 476
HUC-12: 060200010804
Effluent Summary: Storm water runoff, loading rack wastewater, and hydrostatic tank test water from Outfall 001
Treatment system: Sand Filter

Segment	TN06020001007_0100
Name	Friar Branch
Size	18.94
Unit	Miles
First Year on 303(d) List	2004
Designated Uses	Fish and Aquatic Life (Non-Supporting), Recreation (Non-Supporting), Irrigation (Supporting), Livestock Watering and Wildlife (Supporting)
Causes	Escherichia coli, Physical substrate habitat alterations, Sedimentation/Siltation, Nutrient/Eutrophication Biological Indicators
Sources	Discharges from Municipal Separate Storm Sewer Systems (MS4), Site Clearance (Land Development or Redevelopment), Sanitary Sewer Overflows (Collection System Failures)

Table 6-27. Stream Segment Information for Citgo Petroleum Corporation.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
Benzene	All Year	0.5	mg/L	DMax Conc	Quarterly	Grab	Effluent
Ethylbenzene	All Year	0.2	mg/L	DMax Conc	Quarterly	Grab	Effluent
Oil and Grease (Freon EM)	All Year	15	mg/L	DMax Conc	Quarterly	Grab	Effluent
Settleable Solids	All Year	0.5	mL/L	DMax Conc	Quarterly	Grab	Effluent
TSS	All Year	40	mg/L	DMax Conc	Quarterly	Composite	Effluent
Toluene	All Year	1	mg/L	DMax Conc	Quarterly	Grab	Effluent
Xylene	All Year	0.5	mg/L	DMax Conc	Quarterly	Grab	Effluent
pH	All Year	9	SU	DMax Conc	Quarterly	Grab	Effluent
pH	All Year	6	SU	DMin Conc	Quarterly	Grab	Effluent

Table 6-28. Permit Limits for Citgo Petroleum Corporation.

Comments:

None

TN0041866 Ergon Terminaling Inc-Chattanooga

Discharger rating: Minor
City: Chattanooga
County: Hamilton
EFO Name: Chattanooga
Issuance Date: 10/31/04
Expiration Date: 10/30/09
Receiving Stream(s): Tennessee River at mile 456.4 (Outfall 001) and
 Tennessee River at mile 456.0 (Outfall 002)
HUC-12: 060200010502
Effluent Summary: Boiler blowdown, hydrostatic test water, loading rack
 washwater and storm water runoff from Outfall 001 and
 styrene loading rack washwater and storm water runoff
 from Outfall 002
Treatment system: None

Segment	TN06020001001_1000
Name	Nickajack Reservoir
Size	10370
Unit	Acres
First Year on 303(d) List	-
Uses	Recreation (Non-Supporting), Irrigation (Supporting), Fish and Aquatic Life (Supporting), Industrial Water Supply (Supporting), Domestic Water Supply (Supporting), Livestock Watering and Wildlife (Supporting)
Causes	Dioxin (including 2,3,7,8-TCDD), Polychlorinated biphenyls
Sources	Contaminated Sediments

Table 6-29. Stream Segment Information for Ergon Terminaling, Inc.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
Benzene	All Year	0.5	mg/L	DMax Conc	Monthly	Grab	Effluent
Ethylbenzene	All Year	0.2	mg/L	DMax Conc	Monthly	Grab	Effluent
Flow	All Year		MGD	MAvg Conc	Monthly	Instantaneous	Effluent
Flow	All Year		MGD	DMax Conc	Monthly	Instantaneous	Effluent
Oil and Grease (Freon EM)	All Year	10	mg/L	MAvg Conc	Monthly	Grab	Effluent
Oil and Grease (Freon EM)	All Year	15	mg/L	DMax Conc	Monthly	Grab	Effluent
pH	All Year	9	SU	DMax Conc	Monthly	Grab	Effluent
pH	All Year	6	SU	DMin Conc	Monthly	Grab	Effluent
Settleable Solids	All Year	0.5	mL/L	DMax Conc	Monthly	Grab	Effluent
Styrene	All Year		mg/L	DMax Conc	Semi-annually	Grab	Effluent
Toluene	All Year	1	mg/L	DMax Conc	Monthly	Grab	Effluent
TSS	All Year	40	mg/L	DMax Conc	Monthly	Composite	Effluent
Xylene	All Year	0.5	mg/L	DMax Conc	Monthly	Grab	Effluent

Table 6-30. Permit Limits for Ergon Terminaling, Inc.

Comments:
 None

TN0067598 Hunter Oil Company

Discharger rating: Minor
City: Chattanooga
County: Hamilton
EFO Name: Chattanooga
Issuance Date: 2/1/05
Expiration Date: 12/30/09
Receiving Stream(s): Unnamed tributary at mile 0.4 to Dobbs Branch
HUC-12: 060200010503
Effluent Summary: Storm water runoff, truck wash water and pressure wash water though outfall 001
Treatment system: None

Segment	TN060200011244_0100
Name	Dobbs Branch
Size	5.3
Unit	Miles
First Year on 303(d) List	2006
Designated Uses	Fish and Aquatic Life (Non-Supporting), Livestock Watering and Wildlife (Supporting), Recreation (Non-Supporting), Irrigation (Supporting)
Causes	Other anthropogenic substrate alterations, Ammonia (Un-ionized), Oxygen, Dissolved, Escherichia coli
Sources	Sanitary Sewer Overflows (Collection System Failures), Municipal (Urbanized High Density Area)

Table 6-31. Stream Segment Information for Hunter Oil Company.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
Floating Solids Or Visible Foam-Visual	All Year		YES=1 NO=0	DMax Load	Quarterly	Visual	Effluent
Floating Solids Or Visible Foam-Visual	All Year		YES=1 NO=0	MAvg Load	Quarterly	Visual	Effluent
Flow	All Year		MGD	DMax Load	Quarterly	Instantaneous	Effluent
Flow	All Year		MGD	MAvg Load	Quarterly	Instantaneous	Effluent
Oil and Grease (Freon EM)	All Year	15	mg/L	DMax Conc	Quarterly	Grab	Effluent
TSS	All Year	40	mg/L	DMax Conc	Quarterly	Grab	Effluent
pH	All Year	9	SU	DMax Conc	Quarterly	Grab	Effluent
pH	All Year	6.5	SU	DMin Conc	Quarterly	Grab	Effluent

Table 6-32. Permit Limits for Hunter Oil Company.

Comments:

None

TN0064581 NA Industries, Inc.

Discharger rating: Minor
City: Chattanooga
County: Hamilton
EFO Name: Chattanooga
Issuance Date: 5/1/05
Expiration Date: 4/30/09
Receiving Stream(s): Tennessee River at mile 467.2
HUC-12: 060200010502
Effluent Summary: Non-contact cooling water from Outfall 001
Treatment system: None

Segment	TN06020001001_1000
Name	Nickajack Reservoir
Size	10370
Unit	Acres
First Year on 303(d) List	-
Designated Uses	Recreation (Non-Supporting), Irrigation (Supporting), Fish and Aquatic Life (Supporting), Industrial Water Supply (Supporting), Domestic Water Supply (Supporting), Livestock Watering and Wildlife (Supporting)
Causes	Dioxin (including 2,3,7,8-TCDD), Polychlorinated biphenyls
Sources	Contaminated Sediments

Table 6-33. Stream Segment Information for NA Industries, Inc.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
Flow	All Year		MGD	DMax Conc	Continuous	Recorder	Effluent
Flow	All Year		MGD	MAvg Load	Continuous	Recorder	Effluent
Temperature (°C)	All Year		°C	DMax Conc	Weekly	Grab	Effluent
pH	All Year	9	SU	DMax Conc	Continuous	Recorder	Effluent
pH	All Year	6	SU	DMin Conc	Continuous	Recorder	Effluent

Table 6-34. Permit Limits for NA Industries, Inc.

Comments:

None

TN0073491 Norfolk Southern Railway Company - DeButts Yard

Discharger rating: Minor
City: Chattanooga
County: Hamilton
EFO Name: Chattanooga
Issuance Date: 5/1/05
Expiration Date: 3/31/09
Receiving Stream(s): Citico Creek for Outfalls C01, F01, L01, and R07 and unnamed tributary to Citico Creek for Outfalls R01, R02, R03, R04, R05 and R06 at river mile 476
HUC-12: 060200010502
Effluent Summary: Storm water runoff from Outfalls C01, F01, L01, R01, R02, R03, R04, R05, R06 and R07
Treatment system: Sand Filter

Segment	TN060200011240_1000
Name	Citico Creek
Size	6.1
Unit	Miles
First Year on 303(d) List	2004
Designated Uses	Fish and Aquatic Life (Non-Supporting), Recreation (Non-Supporting), Irrigation (Supporting), Livestock Watering and Wildlife (Supporting)
Causes	Nitrates, Other anthropogenic substrate alterations, Oxygen, Dissolved, Escherichia coli
Sources	Discharges from Municipal Separate Storm Sewer Systems (MS4), Sanitary Sewer Overflows (Collection System Failures), Municipal (Urbanized High Density Area)

Table 6-35. Stream Segment Information for Norfolk Southern Railway Company-DeButts Yard.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
COD	All Year		mg/L	DMax Conc	Quarterly	Grab	Effluent
Flow	All Year		MGD	DMax Load	Quarterly	Instantaneous	Effluent
Flow	All Year		MGD	MAvg Load	Quarterly	Instantaneous	Effluent
Oil and Grease (Freon EM)	All Year		mg/L	DMax Conc	Quarterly	Grab	Effluent
TSS	All Year		mg/L	DMax Conc	Quarterly	Grab	Effluent
pH	All Year		SU	MAvg Ari Mean	Quarterly	Grab	Effluent

Table 6-36. Permit Limits for Norfolk Southern Railway Company - DeButts Yard.

Comments:

None

TN0002429 U.S. Pipe and Foundry Company

Discharger rating: Minor
City: Chattanooga
County: Hamilton
EFO Name: Chattanooga
Issuance Date: 11/1/04
Expiration Date: 10/10/09
Receiving Stream(s): Tennessee River at mile 461.3 (Outfalls 001 and SW1) and mile 461.2 (Outfalls 002 and SW2)
HUC-12: 060200010502
Effluent Summary: Cooling tower blowdown and storm water runoff from Outfalls 001 and SW1 and air dryer cooling water and storm water runoff from Outfalls 002 and SW2
Treatment system: None

Segment	TN06020001001_1000
Name	Nickajack Reservoir
Size	10370
Unit	Acres
First Year on 303(d) List	-
Designated Uses	Recreation (Non-Supporting), Irrigation (Supporting), Fish and Aquatic Life (Supporting), Industrial Water Supply (Supporting), Domestic Water Supply (Supporting), Livestock Watering and Wildlife (Supporting)
Causes	Dioxin (including 2,3,7,8-TCDD), Polychlorinated biphenyls
Sources	Contaminated Sediments

Table 6-37. Stream Segment Information for U.S. Pipe and Foundry Company.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
BOD5	All Year	40	mg/L	DMax Conc	2/Month	Composite	Effluent
BOD5	All Year	30	mg/L	MAvg Conc	2/Month	Composite	Effluent
Fe (T)	All Year	10	mg/L	DMax Conc	2/Month	Composite	Effluent
Fe (T)	All Year	5	mg/L	MAvg Conc	2/Month	Composite	Effluent
Flow	All Year		MGD	DMax Load	Daily	Composite	Effluent
Flow	All Year		MGD	MAvg Load	Daily	Composite	Effluent
Oil and Grease (Freon EM)	All Year	30	mg/L	DMax Conc	2/Month	Grab	Effluent
Oil and Grease (Freon EM)	All Year	20	mg/L	MAvg Conc	2/Month	Grab	Effluent
Settleable Solids	All Year	0.5	mL/L	DMax Conc	Weekly	Grab	Effluent
TSS	All Year	40	mg/L	DMax Conc	Weekly	Composite	Effluent
TSS	All Year	30	mg/L	MAvg Conc	Weekly	Composite	Effluent
Temperature (°C)	All Year		°C	DMax Conc	Weekly	Grab	Effluent
pH	All Year	9	SU	DMax Conc	2/Month	Grab	Effluent
pH	All Year	6	SU	DMin Conc	2/Month	Grab	Effluent

Table 6-38. Permit Limits for U.S. Pipe and Foundry Company.

Comments:

None

TN0002453 R.L. Stowe Mills, Inc. - Lupton Plant

Discharger rating: Minor
City: Lupton City
County: Hamilton
EFO Name: Chattanooga
Issuance Date: 2/1/05
Expiration Date: 12/30/09
Receiving Stream(s): Tennessee River (Nickajack Lake) at mile 469.3
HUC-12: 060200010502
Effluent Summary: Non-contact cooling water and autoclave discharges from Outfall 001 and storm water runoff from Outfall SW1
Treatment system: None

Segment	TN06020001001_1000
Name	Nickajack Reservoir
Size	10370
Unit	Acres
First Year on 303(d) List	-
Uses	Recreation (Non-Supporting), Irrigation (Supporting), Fish and Aquatic Life (Supporting), Industrial Water Supply (Supporting), Domestic Water Supply (Supporting), Livestock Watering and Wildlife (Supporting)
Causes	Dioxin (including 2,3,7,8-TCDD), Polychlorinated biphenyls
Sources	Contaminated Sediments

Table 6-39. Stream Segment Information for R.L. Stowe Mills, Inc. - Lupton Plant.

Parameter	Season	Limit	Units	Designator	Frequency	Sample Type	Monitoring Location
Flow	All Year		MGD	DMax Load	Monthly	Instantaneous	Effluent
Flow	All Year		MGD	MAvg Load	Monthly	Instantaneous	Effluent
Temperature (°C)	All Year		°C	DMax Conc	Monthly	Grab	Effluent
pH	All Year	9	SU	DMax Conc	Monthly	Grab	Effluent
pH	All Year	6	SU	DMin Conc	Monthly	Grab	Effluent

Table 6-40. Permit Limits for R.L. Stowe Mills, Inc. - Lupton Plant.

Comments:

None

TN0001830 Signal Mountain Cement Company d/b/a Buzzi Unicem USA

Discharger rating: Minor
City: Chattanooga
County: Hamilton
EFO Name: Chattanooga
Issuance Date: 12/30/04
Expiration Date: 11/30/09
Receiving Stream(s): Unnamed tributary to Tennessee River (Outfall SW2) and Tennessee River at mile 454.5 (Outfalls 001 and SW3)
HUC-12: 060200010502
Effluent Summary: Non-contact cooling water, rainwater runoff, and non-contaminated storm water through Outfall 001, and storm water runoff through Outfalls SW2 and SW3
Treatment system: None

Segment	TN06020001001_1000
Name	Nickajack Reservoir
Size	10370
Unit	Acres
First Year on 303(d) List	-
Designated Uses	Recreation (Non-Supporting), Irrigation (Supporting), Fish and Aquatic Life (Supporting), Industrial Water Supply (Supporting), Domestic Water Supply (Supporting), Livestock Watering and Wildlife (Supporting)
Causes	Dioxin (including 2,3,7,8-TCDD), Polychlorinated biphenyls
Sources	Contaminated Sediments

Table 6-41. Stream Segment Information for Signal Mountain Cement Company d/b/a Buzzi Unicem USA.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
Flow	All Year		MGD	DMax Load	Continuous	Recorder	Effluent
Flow	All Year		MGD	MAvg Load	Continuous	Recorder	Effluent
TSS	All Year	50	mg/L	DMax Conc	Weekly	Composite	Effluent
pH	All Year	9	SU	DMax Conc	Weekly	Grab	Effluent
pH	All Year	6	SU	DMin Conc	Weekly	Grab	Effluent

Table 6-42. Permit Limits for Signal Mountain Cement Company d/b/a Buzzi Unicem USA.

Compliance History:

The following numbers of exceedences were noted in PCS:

- 1 pH
- 3 Total Suspended Solids

Comments:

None

TN0067491 Stationery, Tablets, and Related Products

Discharger rating: Minor
City: Chattanooga
County: Hamilton
EFO Name: Chattanooga
Issuance Date: 5/1/04
Expiration Date: 3/31/09
Receiving Stream(s): Dobbs Branch at approximate mile 0.3 via Chattanooga Storm Sewer system
HUC-12: 060200010502
Effluent Summary: Vacuum pump sealant water through Outfall 001
Treatment system: None

Segment	TN060200011244_0100
Name	Dobbs Branch
Size	5.3
Unit	Miles
First Year on 303(d) List	2006
Designated Uses	Fish and Aquatic Life (Non-Supporting), Livestock Watering and Wildlife (Supporting), Recreation (Non-Supporting), Irrigation (Supporting)
Causes	Other anthropogenic substrate alterations, Ammonia (Un-ionized), Oxygen, Dissolved, Escherichia coli
Sources	Sanitary Sewer Overflows (Collection System Failures), Municipal (Urbanized High Density Area)

Table 6-43. Stream Segment Information for Stationery, Tablets, and Related Products.

Parameter	Season	Limit	Units	Designator	Frequency	Sample Type	Monitoring Location
Flow	All Year		MGD	DMax Load	Monthly	Instantaneous	Effluent
Flow	All Year		MGD	MAvg Load	Monthly	Instantaneous	Effluent
Oil and Grease (Freon EM)	All Year	15	mg/L	DMax Conc	Monthly	Grab	Effluent
pH	All Year	9	SU	DMax Conc	Monthly	Grab	Effluent
pH	All Year	6	SU	DMin Conc	Monthly	Grab	Effluent

Table 6-44. Permit Limits for Stationery, Tablets, and Related Products.

Comments:

None.

TN0027413 TVA Chickamauga Hydro Plant

Discharger rating: Minor
City: Chattanooga
County: Hamilton
EFO Name: Chattanooga
Issuance Date: 2/1/05
Expiration Date: 12/29/09
Receiving Stream(s): Tennessee River (Nickajack Reservoir) at mile 471
HUC-12: 060200010502
Effluent Summary: Non-contact cooling water, station sump wastewater (which includes waters such as cooling water, river water that that has leaked into the plant at various points; river water from un-watering of penstock, scroll case, and draft tube; air compressor blowdown.
Treatment system: None

Segment	TN06020001001_1000
Name	Nickajack Reservoir
Size	10370
Unit	Acres
First Year on 303(d) List	-
Designated Uses	Recreation (Non-Supporting), Irrigation (Supporting), Fish and Aquatic Life (Supporting), Industrial Water Supply (Supporting), Domestic Water Supply (Supporting), Livestock Watering and Wildlife (Supporting)
Causes	Dioxin (including 2,3,7,8-TCDD), Polychlorinated biphenyls
Sources	Contaminated Sediments

Table 6-45. Stream Segment Information for TVA Chickamauga Hydro Plant.

No Limits

Comments:

6/14/07 Compliance Evaluation Inspection. In compliance

TN0073237 W. R. Grace & Company

Discharger rating: Minor
City: Chattanooga
County: Hamilton
EFO Name: Chattanooga
Issuance Date: 12/1/05
Expiration Date: 10/30/09
Receiving Stream(s): South Chickamauga Creek at mile 1.2
HUC-12: 060200010804
Effluent Summary: Storm water runoff through Outfalls SWA, SWD and SWE
Treatment system: None

Segment	TN06020001007_1000
Name	South Chickamauga Creek
Size	17.6
Unit	Miles
First Year on 303(d) List	2004
Designated Uses	Livestock Watering and Wildlife (Supporting), Irrigation (Supporting), Recreation (Non-Supporting), Industrial Water Supply (Supporting), Fish and Aquatic Life (Non-Supporting)
Causes	Physical substrate habitat alterations, Sedimentation/Siltation, Phosphate, Escherichia coli
Sources	Discharges from Municipal Separate Storm Sewer Systems (MS4), Site Clearance (Land Development or Redevelopment), Channelization, Sources Outside State Jurisdiction or Borders, Sanitary Sewer Overflows (Collection System Failures)

Table 6-46. Stream Segment Information for W. R. Grace & Company.

No Limits

Comments:

None.

TN0027472 TVA Nickajack Hydro Plant

Discharger rating: Minor
City: Jasper
County: Marion
EFO Name: Chattanooga
Issuance Date: 10/1/06
Expiration Date: 10/31/09
Receiving Stream(s): Tennessee River
HUC-12: 060300010101
Effluent Summary: Cooling water, miscellaneous drainage from internal operations of dam, river water evacuated during unwatering operations
Treatment system: None

Segment	TN06020001001_1000
Name	Nickajack Reservoir
Size	10370
Unit	Acres
First Year on 303(d) List	-
Designated Uses	Recreation (Non-Supporting), Irrigation (Supporting), Fish and Aquatic Life (Supporting), Industrial Water Supply (Supporting), Domestic Water Supply (Supporting), Livestock Watering and Wildlife (Supporting)
Causes	Dioxin (including 2,3,7,8-TCDD), Polychlorinated biphenyls
Sources	Contaminated Sediments

Table 6-47. Stream Segment Information for TN DOT I-24 R.A. Marion.

No Limits

Comments:
 None

TN0031631 TVA Raccoon Mountain Hydro Power plant

Discharger rating: Minor
City: Chattanooga
County: Marion
EFO Name: Chattanooga
Issuance Date: 12/1/05
Expiration Date: 10/31/09
Receiving Stream(s): Tennessee River
HUC-12: 060200010506
Effluent Summary: Cooling water, miscellaneous drainage from internal operations of dam, river water evacuated during unwatering operations from Outfall 001
Treatment system: None

Segment	TN06020001020_1000
Name	Chickamauga Reservoir
Size	35400
Unit	Acres
First Year on 303(d) List	-
Designated Uses	Livestock Watering and Wildlife (Supporting), Domestic Water Supply (Supporting), Industrial Water Supply (Supporting), Fish and Aquatic Life (Supporting), Recreation (Supporting), Irrigation (Supporting)
Causes	N/A
Sources	N/A

Table 6-48. Stream Segment Information for TVA Raccoon Mountain Hydro Power plant.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
Flow	All Year		MGD	MAvg Load	Daily	Estimate	Effluent
Settleable Solids	All Year	0.5	mL/L	DMax Conc	Daily	Grab	Effluent

Table 6-49. Permit Limits for TVA Raccoon Mountain Hydro Power plant.

Comments:
 None