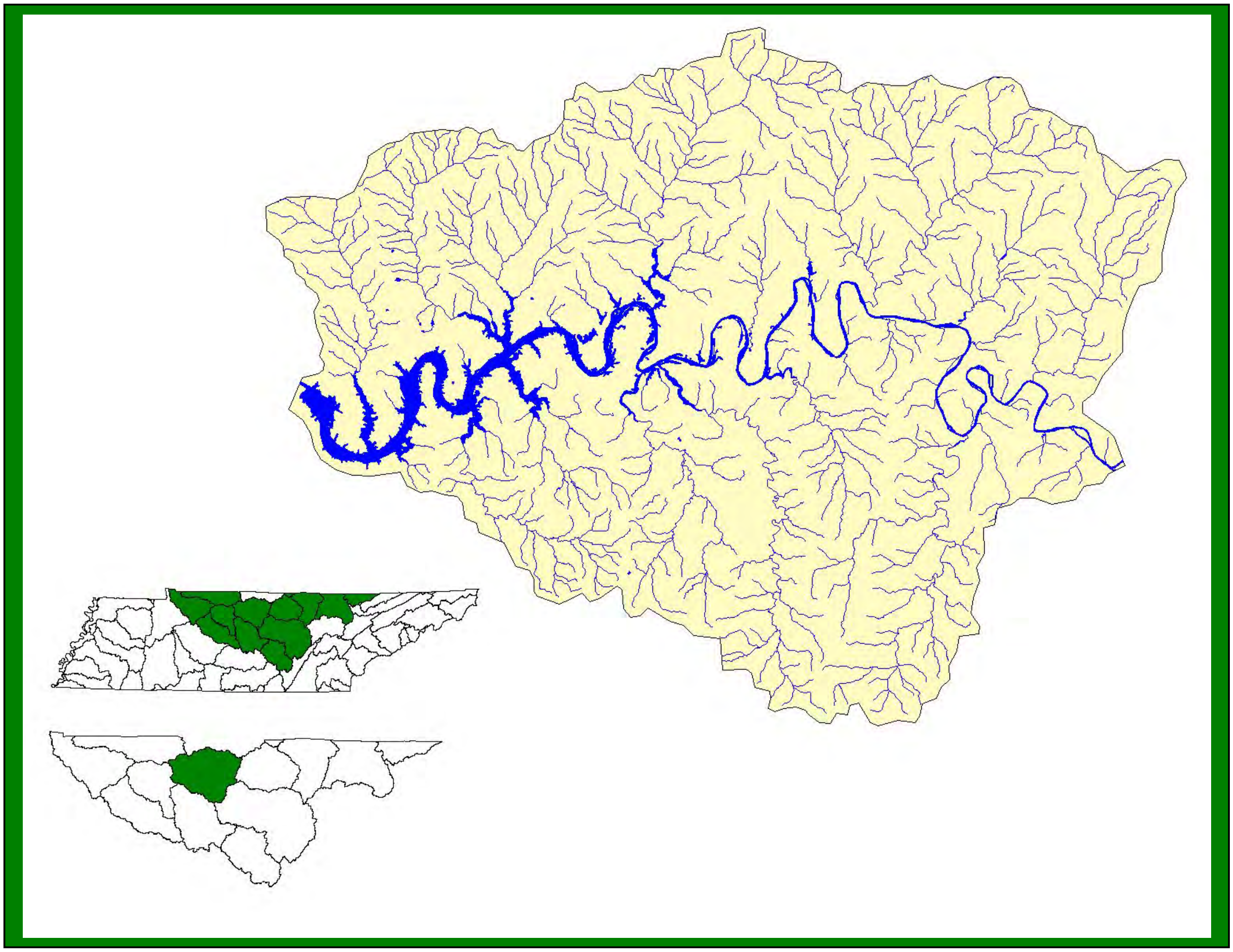
OLD HICKORY LAKE WATERSHED (05130201) OF THE CUMBERLAND RIVER BASIN

WATERSHED WATER QUALITY MANAGEMENT PLAN



TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER POLLUTION CONTROL
WATERSHED MANAGEMENT SECTION

Presented to the people of the Old Hickory Lake Watershed by the Division of Water Pollution Control October 2, 2007.

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OLD HICKORY LAKE WATERSHED
WATER QUALITY MANAGEMENT PLAN

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GLOSSARY

1Q20. The lowest average 1 consecutive days flow with average recurrence frequency of once every 20 years.

30Q2. The lowest average 3 consecutive days flow with average recurrence frequency of once every 2 years.

7Q10. The lowest average 7 consecutive days flow with average recurrence frequency of once every 10 years.

303(d). The section of the federal Clean Water Act that requires a listing by states, territories, and authorized tribes of impaired waters, which do not meet the water quality standards that states, territories, and authorized tribes have set for them, even after point sources of pollution have installed the minimum required levels of pollution control technology.

305(b). The section of the federal Clean Water Act that requires EPA to assemble and submit a report to Congress on the condition of all water bodies across the Country as determined by a biennial collection of data and other information by States and Tribes.

AFO. Animal Feeding Operation.

Ambient Sites. Those sites established for long term instream monitoring of water quality.

ARAP. Aquatic Resource Alteration Permit.

Assessment. The result of an analysis of how well streams meet the water quality criteria assigned to them.

Bankfull Discharge. The momentary maximum peak flow before a stream overflows its banks onto a floodplain.

Basin. An area that drains several smaller watersheds to a common point. Most watersheds in Tennessee are part of the Cumberland, Mississippi, or Tennessee Basin (The Conasauga River and Barren River Watersheds are the exceptions).

Benthic. Bottom dwelling.

Biorecon. A qualitative multihabitat assessment of benthic macroinvertebrates that allows rapid screening of a large number of sites. A Biorecon is one tool used to recognize stream impairment as judged by species richness measures, emphasizing the presence or absence of indicator organisms without regard to relative abundance.

BMP. An engineered structure or management activity, or combination of these, that eliminates or reduces an adverse environmental effect of a pollutant.

BOD. Biochemical Oxygen Demand. A measure of the amount of oxygen consumed in the biological processes that break down organic and inorganic matter.

CAFO. Concentrated Animal Feeding Operation.

Designated Uses. The part of Water Quality Standards that describes the uses of surface waters assigned by the Water Quality Control Board. All streams in Tennessee are designated for Recreation, Fish and Aquatic Life, Irrigation, and Livestock Watering and Wildlife. Additional designated uses for some, but not all, waters are Drinking Water Supply, Industrial Water Supply, and Navigation.

DMR. Discharge Monitoring Report. A report that must be submitted periodically to the Division of Water Pollution Control by NPDES permitees.

DO. Dissolved oxygen.

EPA. Environmental Protection Agency. The EPA Region 4 web site is http://www.epa.gov/region4/

Field Parameter. Determinations of water quality measurements and values made in the field using a kit or probe. Common field parameters include pH, DO, temperature, conductivity, and flow.

Fluvial Geomorphology. The physical characteristics of moving water and adjoining landforms, and the processes by which each affects the other.

HUC-8. The 8-digit Hydrologic Unit Code corresponding to one of 54 watersheds in Tennessee.

HUC-10. The 10-digit NRCS Hydrologic Unit Code. HUC-10 corresponds to a smaller land area than HUC-8.

HUC-12. The 12-digit NRCS Hydrologic Unit Code. HUC-12 corresponds to a smaller land area than HUC-10.

MRLC. Multi-Resolution Land Classification.

MS4. Municipal Separate Storm Sewer System.

Nonpoint Source (NPS). Sources of water pollution without a single point of origin. Nonpoint sources of pollution are generally associated with surface runoff, which may carry sediment, chemicals, nutrients, pathogens, and toxic materials into receiving waterbodies. Section 319 of the Clean Water Act of 1987 requires all states to assess the impact of nonpoint source pollution on the waters of the state and to develop a program to abate this impact.

NPDES. National Pollutant Discharge Elimination System. Section 402 of the Clean Water Act of 1987 requires dischargers to waters of the U.S. to obtain NPDES permits.

NRCS. Natural Resources Conservation Service. NRCS is part of the federal Department of Agriculture. The NRCS home page is http://www.nrcs.usda.gov

Point Source. Any discernable, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include agricultural storm water discharges and return flows from irrigated agriculture (Clean Water Act Section 502(14)).

Q Design. The average daily flow that a treatment plant or other facility is designed to accommodate.

Reference Stream (Reference Site). A stream (site) judged to be least impacted. Data from reference streams are used for comparisons with similar streams.

SBR. Sequential Batch Reactor.

Stakeholder. Any person or organization affected by the water quality or by any watershed management activity within a watershed.

STATSGO. State Soil Geographic Database. STATSGO is compiled and maintained by the Natural Resources Conservation Service.

STORET. The EPA repository for water quality data that is used by state environmental agencies, EPA and other federal agencies, universities, and private citizens. STORET (Storage and Retrieval of National Water Quality Data System) data can be accessed at http://www.epa.gov/storet/

TDA. Tennessee Department of Agriculture. The TDA web address is http://www.state.tn.us/agriculture

TDEC. Tennessee Department of Environment and Conservation. The TDEC web address is http://www.tdec.net

TMDL. Total Maximum Daily Load. A TMDL is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of the amount to the pollutant's sources. A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources. The calculation includes a margin of safety to ensure that the waterbody can be used for the purposes the State has designated. The calculation must also account for seasonal variation in water quality. A TMDL is required for each pollutant in an impaired stream as described in Section 303 of the Federal Clean Water Act of 1987. Updates and information on Tennessee's TMDLs can be found at http://www.tdec.net/wpc/tmdl/

TMSP. Tennessee Multi-Sector Permit.

USGS. United States Geological Survey. USGS is part of the federal Department of the Interior. The USGS home page is http://www.usgs.gov/.

WAS. Waste Activated Sludge.

Water Quality Standards. A triad of designated uses, water quality criteria, and antidegradation statement. Water Quality Standards are established by Tennessee and approved by EPA.

Watershed. A geographic area which drains to a common outlet, such as a point on a larger stream, lake, underlying aquifer, estuary, wetland, or ocean.

WET. Whole Effluent Toxicity.

WWTP. Waste Water Treatment Plant

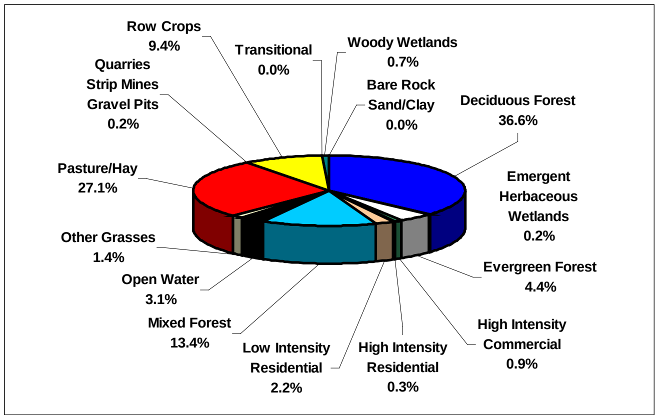
Summary – Old Hickory Lake Watershed (05130201)

In 1996, the Tennessee Department of Environment and Conservation Division of Water Pollution Control adopted a watershed approach to water quality. This approach is based on the idea that many water quality problems, like the accumulation of point and nonpoint pollutants, are best addressed at the watershed level. Focusing on the whole watershed helps reach the best balance among efforts to control point sources of pollution and polluted runoff as well as protect drinking water sources and sensitive natural resources such as wetlands. Tennessee has chosen to use the USGS 8-digit Hydrologic Unit Code (HUC-8) as the organizing unit.

The Watershed Approach recognizes awareness that restoring and maintaining our waters requires crossing traditional barriers (point *vs.* nonpoint sources of pollution) when designing solutions. These solutions increasingly rely on participation by both public and private sectors, where citizens, elected officials, and technical personnel all have opportunities to participate. The Watershed Approach provides the framework for a watershed-based and community-based approach to address water quality problems.

Chapter 1 of the Old Hickory Lake Watershed Water Quality Management Plan discusses the Watershed Approach and emphasizes that the Watershed Approach is not a regulatory program or an EPA mandate; rather it is a decision-making process that reflects a common strategy for information collection and analysis as well as a common understanding of the roles, priorities, and responsibilities of all stakeholders within a watershed. Traditional activities like permitting, planning and monitoring are also coordinated in the Watershed Approach.

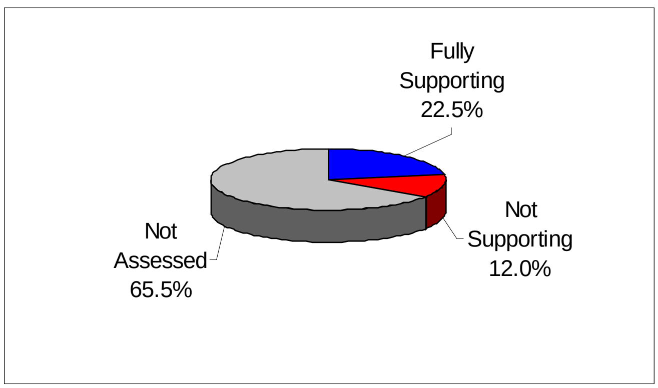
A detailed description of the watershed can be found in Chapter 2. The Old Hickory Lake Watershed is approximately 983 square miles and includes parts of six Tennessee counties. A part of the Cumberland River drainage basin, the watershed has 1,164.3 stream miles and 27,439 lake acres.



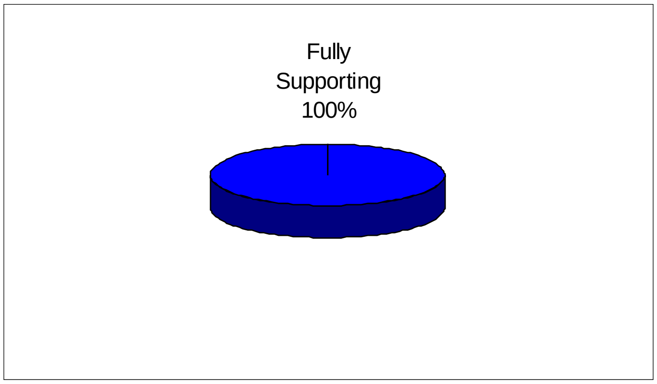
Land Use Distribution in the Old Hickory Lake Watershed.

One designated state natural area, one state historic area, one state park, and two wildlife management areas are located in the watershed. Fifty-three rare plant and animal species have been documented in the watershed, including six rare fish species, one rare amphibian species, and nine rare mussel species. Portions of two streams in the Old Hickory Lake Watershed are listed in the National Rivers Inventory as having one or more outstanding natural or cultural values.

A review of water quality sampling and assessment is presented in Chapter 3. Using the Watershed Approach to Water Quality, 361 sampling events occurred in the Old Hickory Lake Watershed in 2000-2005. These were conducted at ambient, ecoregion or watershed monitoring sites. Monitoring results support the conclusion that 70.3% of stream miles and 100% of lake acres assessed fully support one or more designated uses.



Water Quality Assessment of Streams and Rivers in the Old Hickory Lake Watershed. Assessment data are based on the 2004 Water Quality Assessment of 1,164.3 miles in the watershed.



Water Quality Assessment of Lakes in the Old Hickory Lake Watershed. Assessment data are based on the 2004 Water Quality Assessment of 27,439 lake acres in the watershed.

Also in Chapter 3, a series of maps illustrate overall use support in the watershed, as well as use support for the individual uses of Fish and Aquatic Life Support, Recreation, Irrigation, and Livestock Watering and Wildlife. Another series of maps illustrate streams that are listed for impairment by specific causes (siltation, other habitat alterations).

Point and Nonpoint Sources are addressed in Chapter 4. Chapter 4 is organized by HUC-12 subwatersheds. Maps illustrating the locations of STORET monitoring sites and stream gauging stations are also presented in each subwatershed.

HUC-10	HUC-12
0513020101	051302010101 (Cumberland River)
	051302010102 (Peyton Creek)
	051302010103 (Cumberland River)
	051302010104 (Cumberland River)
	051302010105 (Cedar Creek)
	051302010106 (Spring Creek)
	051302010107 (Bartons Creek)
0513020102	051302010201 (Round Lick Creek)
	051302010202 (Jennings Fork)
0513020103	051302010301 (Upper Goose Creek)
	051302010302 (Lower Goose Creek)

HUC-10	HUC-12
0513020104	051302010401 (Cumberland River)
	051302010402 (Spencer Creek)
	051302010403 (East Camp Creek)
	051302010404 (Station Camp Creek)
	051302010405 (Cumberland River)
	051302010406 (Cedar Creek)
	051302010407 (Drakes Creek)
0513020105	051302010501 (Upper Bledsoe Creek)
	051302010502 (Lower Bledsoe Creek)

The Old Hickory Lake Watershed is Composed of twenty USGS-Delineated Subwatersheds (12-Digit Subwatersheds).

Point source contributions to the Old Hickory Lake Watershed consist of nineteen individual NPDES-permitted facilities, two of which discharge into streams that have been listed on the 2004 303(d) list. Other point source permits in the watershed (as of October 2, 2007) are Aquatic Resource Alteration Permits (59), Tennessee Multi-Sector Permits (52), Mining Permits (6), Ready Mix Concrete Plant Permits (9), Aquatic Herbicide Application Permits (4), and Water Treatment Plant Permits (1). Agricultural operations include cattle, hog, and sheep farming. Maps illustrating the locations of permit sites and tables summarizing livestock practices are presented in each subwatershed.

Chapter 5 is entitled *Water Quality Partnerships in the Old Hickory Lake Watershed* and highlights partnerships between agencies and between agencies and landowners that are essential to success. Programs of federal agencies (Natural Resources Conservation Service, U.S. Fish and Wildlife Service, U.S. Geological Survey, and U.S. Army Corps of Engineers), and state agencies (TDEC/State Revolving Fund, TDEC Division of Water Supply and Tennessee Department of Agriculture) are summarized. Local initiatives of organizations active in the watershed (Cumberland River Compact, Central Basin RC&D Council, The Nature Conservancy, and Hull-York Lakeland RC&D Council) are also described.

Point and Nonpoint source approaches to water quality problems in the Old Hickory Lake Watershed are addressed in Chapter 6. Chapter 6 also includes comments received during public meetings, links to EPA-approved TMDLs in the watershed, and an assessment of needs for the watershed.

The full Old Hickory Lake Watershed Water Quality Management Plan can be found at: http://www.state.tn.us/environment/wpc/watershed/wsmplans/

CHAPTER 1

WATERSHED APPROACH TO WATER QUALITY

1.1 BACKGROUND. The Division of Water Pollution Control is responsible for administration of the Tennessee Water Quality Control Act of 1977 (TCA 69–3–101). Information about the Division of Water Pollution Control, updates and announcements, may be found at http://www.state.tn.us/environment/wpc/index.html, and a summary of the organization of the Division of Water Pollution Control may be found in Appendix I.

> The mission of the Division of Water Pollution Control is to abate existing pollution of the waters of Tennessee, to reclaim polluted waters, to prevent the future pollution of the waters, and to plan for the future use of the waters so that the water resources of Tennessee might be used and enjoyed to the fullest extent consistent with the maintenance of unpolluted waters.

The Division monitors, analyzes, and reports on the quality of Tennessee's water. In order to perform these tasks more effectively, the Division adopted a Watershed Approach to Water Quality in 1996.

This Chapter summarizes TDEC's Watershed Approach to Water Quality.

1.2 WATERSHED APPROACH TO WATER QUALITY. The Watershed Approach to Water Quality is a coordinating framework designed to protect and restore aquatic systems and protect human health more effectively (EPA841-R-95-003). The Approach is based on the concept that many water quality problems, like the accumulation of pollutants or nonpoint source pollution, are best addressed at the watershed level. In addition, a watershed focus helps identify the most cost-effective pollution control strategies to meet clean water goals. Tennessee's Watershed Approach, updates and public participation opportunities, may be found on the web at http://www.state.tn.us/environment/wpc/wshed1.htm.

Watersheds are appropriate as organizational units because they are readily identifiable landscape units with readily identifiable boundaries that integrate terrestrial, aquatic, and geologic processes. Focusing on the whole watershed helps reach the best balance among efforts to control point source pollution and polluted runoff as well as protect drinking water sources and sensitive natural resources such as wetlands (EPA-840-R-98-001).

Four main features are typical of the Watershed Approach: 1) Identifying and prioritizing water quality problems in the watershed, 2) Developing increased public involvement, 3) Coordinating activities with other agencies, and 4) Measuring success through increased and more efficient monitoring and other data gathering.

Typically, the Watershed Approach meets the following description (EPA841-R-95-003):

- Features watersheds or basins as the basic management units
- Targets priority subwatersheds for management action
- Addresses all significant point and nonpoint sources of pollution
- Addresses all significant pollutants
- Sets clear and achievable goals
- Involves the local citizenry in all stages of the program
- Uses the resources and expertise of multiple agencies
- Is not limited by any single agency's responsibilities
- Considers public health issues

An additional characteristic of the Watershed Approach is that it complements other environmental activities. This allows for close cooperation with other state agencies and local governments as well as with federal agencies such as the Tennessee Valley Authority and the U.S. Army Corps of Engineers, U.S. Department of Agriculture (*e.g.*, Natural Resources Conservation Service, United States Forest Service), U.S. Department of the Interior (*e.g.* United States Geological Survey, U.S. Fish and Wildlife Service, National Park Service). When all permitted dischargers are considered together, agencies are better able to focus on those controls necessary to produce measurable improvements in water quality. This also results in a more efficient process: It encourages agencies to focus staff and financial resources on prioritized geographic locations and makes it easier to coordinate between agencies and individuals with an interest in solving water quality problems (EPA841-R-003).

The Watershed Approach is not a regulatory program or a new EPA mandate; rather it is a decision making process that reflects a common strategy for information collection and analysis as well as a common understanding of the roles, priorities, and responsibilities of all stakeholders within a watershed. The Watershed Approach utilizes features already in state and federal law, including:

- Water Quality Standards
- National Pollutant Discharge Elimination System (NPDES)
- Total Maximum Daily Loads (TMDLs)
- Clean Lakes Program
- Nonpoint Source Program
- Groundwater Protection

Traditional activities like permitting, planning, and monitoring are also coordinated in the Watershed Approach. A significant change from the past, however, is that the Watershed Approach encourages integration of traditional regulatory (point source pollution) and nonregulatory (nonpoint sources of pollution) programs. There are additional changes from the past as well:

THE PAST	WATERSHED APPROACH
Focus on fixed-station ambient monitoring	Focus on comprehensive watershed monitoring
Focus on pollutant discharge sites	Focus on watershed-wide effects
Focus on WPC programs	Focus on coordination and cooperation
Focus on point sources of pollution	Focus on all sources of pollution
Focus on dischargers as the problem	Focus on dischargers as an integral part of the solution
Focus on short-term problems	Focus on long-term solutions

Table 1-1. Contrast Between the Watershed Approach and the Past.

This approach places greater emphasis on all aspects of water quality, including chemical water quality (conventional pollutants, toxic pollutants), physical water quality (temperature, flow), habitat quality (channel morphology, composition and health of benthic communities), and biodiversity (species abundance, species richness).

1.2.A. <u>Components of the Watershed Approach.</u> Tennessee is composed of fifty-five watersheds corresponding to the 8-digit USGS Hydrologic Unit Codes (HUC-8). These watersheds, which serve as geographic management units, are combined in five groups according to year of implementation.

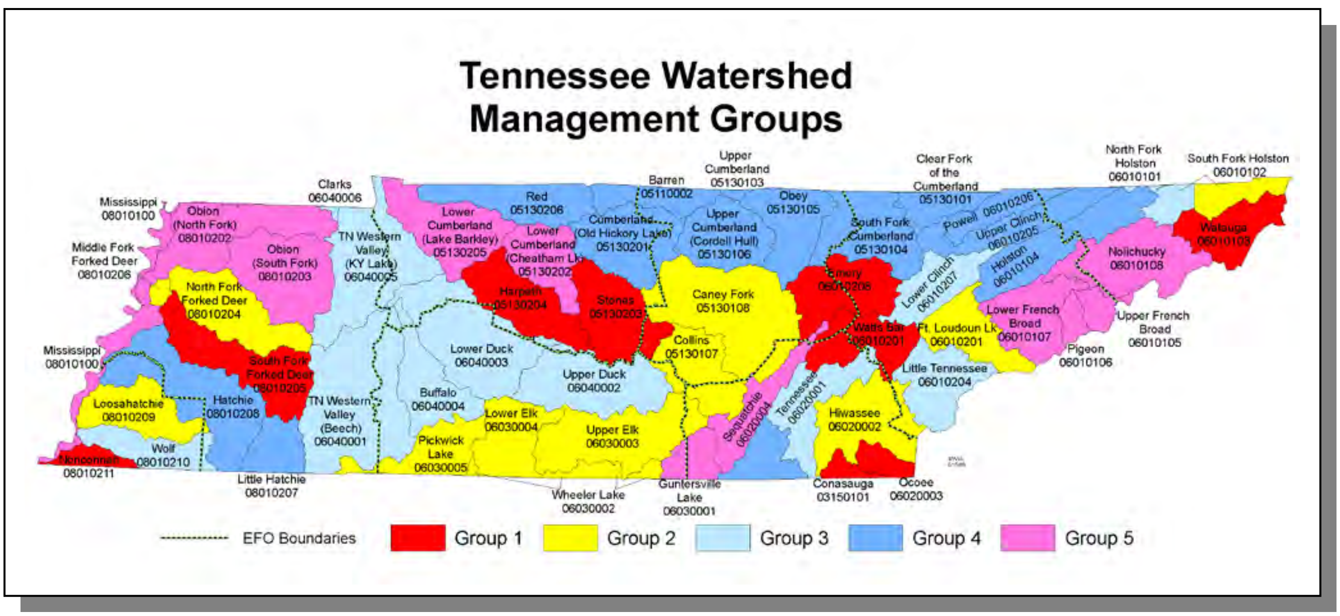


Figure 1-1. Watershed Groups in Tennessee's Watershed Approach to Water Quality.

Each year, TDEC conducts monitoring in one-fifth of Tennessee's watersheds; assessment, priority setting and follow-up monitoring are conducted in another one fifth of watersheds; modeling and TMDL studies in another one fifth; developing management plans in another one fifth; and implementing management plans in another one fifth of watersheds.

GROUP	WEST TENNESSEE	MIDDLE TENNESSEE	EAST TENNESSEE
1	Nonconnah South Fork Forked Deer	Harpeth Stones	Conasauga Emory Ocoee Watauga Watts Bar
2	Loosahatchie Middle Fork Forked Deer North Fork Forked Deer	Caney Fork Collins Lower Elk Pickwick Lake Upper Elk Wheeler Lake	Fort Loudoun Hiwassee South Fork Holston (Upper) Wheeler Lake
3	Tennessee Western Valley (Beech River) Tennessee Western Valley (KY Lake) Wolf River	Buffalo Lower Duck Upper Duck	Little Tennessee Lower Clinch North Fork Holston South Fork Holston (Lower) Tennessee (Upper)
4	Lower Hatchie Upper Hatchie	Barren Obey Red Upper Cumberland (Cordell Hull Lake) Upper Cumberland (Old Hickory Lake) Upper Cumberland (Cumberland Lake)	Holston Powell South Fork Cumberland Tennessee (Lower) Upper Clinch Upper Cumberland (Clear Fork)
5	Mississippi North Fork Obion South Fork Obion	Guntersville Lake Lower Cumberland (Cheatham Lake) Lower Cumberland (Lake Barkley)	Lower French Broad Nolichucky Pigeon Upper French Broad

Table 1-2. Watershed Groups in Tennessee's Watershed Approach.

In succeeding years of the cycle, efforts rotate among the watershed groups. The activities in the five year cycle provide a reference for all stakeholders.

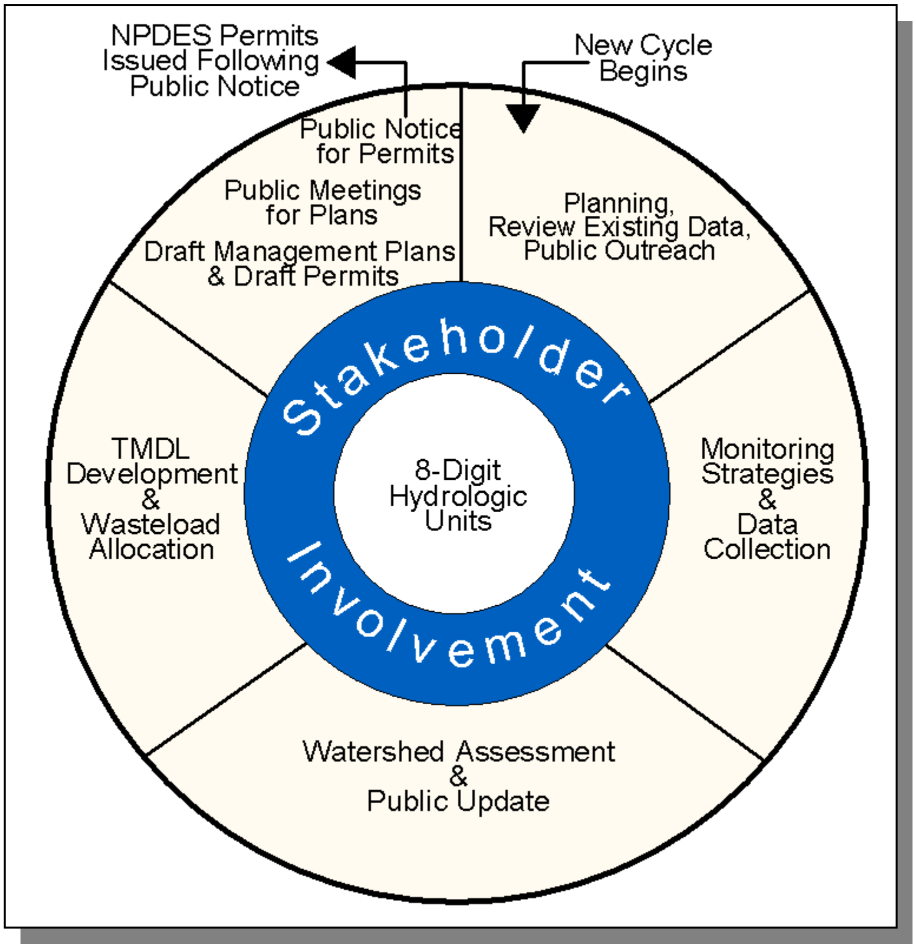


Figure 1-2. The Watershed Approach Cycle.

The six key activities that take place during the cycle are:

1. Planning and Existing Data Review. Existing data and reports from appropriate agencies and organizations are compiled and used to describe the current conditions and status of rivers and streams. Reviewing all existing data and comparing agencies' work plans guide the development of an effective monitoring strategy.

2. Monitoring. Field data is collected for streams in the watershed. These data supplement existing data and are used for the water quality assessment.

3. Assessment. Monitoring data are used to determine the status of the stream's designated use supports.

4. Wasteload Allocation/TMDL Development. Monitoring data are used to determine nonpoint source contributions and pollutant loads for permitted dischargers releasing wastewater to the watershed. Limits are set to assure that water quality is protected.

5. Permits. Issuance and expiration of all discharge permits are synchronized based on watersheds. Currently, 1700 permits have been issued in Tennessee under the federally delegated National Pollutant Discharge Elimination System (NPDES).

6. Watershed Management Plans. These plans include information for each watershed including general watershed description, water quality goals, major water quality concerns and issues, and management strategies.

Public participation opportunities occur throughout the entire five year cycle. Participation in Years 1, 3 and 5 is emphasized, although additional meetings are held at stakeholder's request. People tend to participate more readily and actively in protecting the quality of waters in areas where they live and work, and have some roles and responsibilities:

- Data sharing
- Identification of water quality stressors
- Participation in public meetings
- Commenting on management plans
- Shared commitment for plan implementation

1.2.B. Benefits of the Watershed Approach. The Watershed Approach fosters a better understanding of the physical, chemical and biological effects on a watershed, thereby allowing agencies and citizens to focus on those solutions most likely to be effective. The Approach recognizes the need for a comprehensive, ecosystem-based approach that depends on local governments and local citizens for success (EPA841-R-95-004). On a larger scale, many lessons integrating public participation with aquatic ecosystem-based programs have been learned in the successful Chesapeake Bay, Great Lakes, Clean Lakes, and National Estuary Programs.

Benefits of the Watershed Approach include (EPA841-R-95-004):

- Focus on water quality goals and ecological integrity rather than on program activities such as number of permits issued.

- Improve basis for management decisions through consideration of both point and nonpoint source stressors. A watershed strategy improves the scientific basis for decision making and focuses management efforts on basins and watersheds where they are most needed. Both point and nonpoint control strategies are more effective under a watershed approach because the Approach promotes timely and focused development of TMDLs.

- Enhance program efficiency, as the focus becomes watershed. A watershed focus can improve the efficiency of water management programs by facilitating consolidation of programs within each watershed. For example, handling all point source dischargers in a watershed at the same time reduces administrative costs due to the potential to combine hearings and notices as well as allowing staff to focus on more limited areas in a sequential fashion.

- Improve coordination between federal, state and local agencies including data sharing and pooling of resources. As the focus shifts to watersheds, agencies are better able to participate in data sharing and coordinated assessment and control strategies.

- Increase public involvement. The Watershed Approach provides opportunities for stakeholders to increase their awareness of water-related issues and inform staff about their knowledge of the watershed. Participation is via three public meetings over the five-year watershed management cycle as well as meetings at stakeholder’s request. Additional opportunities are provided through the Department of Environment and Conservation homepage and direct contact with local Environmental Assistance Centers.

- Greater consistency and responsiveness. Developing goals and management plans for a basin or watershed with stakeholder involvement results in increased responsiveness to the public and consistency in determining management actions. In return, stakeholders can expect improved consistency and continuity in decisions when management actions follow a watershed plan.

Additional benefits of working at the watershed level are described in the Clean Water Action Plan (EPA-840-R-98-001), and can be viewed at http://www.cleanwater.gov/action/toc.html.

The Watershed Approach represents awareness that restoring and maintaining our waters requires crossing traditional barriers (point *vs.* nonpoint sources of pollution) when designing solutions. These solutions increasingly rely on participation by both public and private sectors, where citizens, elected officials and technical personnel all have opportunity to participate. This integrated approach mirrors the complicated relationships in which people live, work and recreate in the watershed, and suggests a comprehensive, watershed-based and community-based approach is needed to address these (EPA841-R-97-005).

CHAPTER 2

DESCRIPTION OF THE OLD HICKORY LAKE WATERSHED

2.1. BACKGROUND. Old Hickory Dam, Lake, and Watershed are named after President Andrew Jackson (nicknamed "Old Hickory"). The lock, dam (completed in 1954), powerhouse and lake are operated and supervised by the U.S. Army Corps of Engineers' personnel under the direction of the District Engineer at Nashville.

This Chapter describes the location and characteristics of the Old Hickory Lake Watershed.

2.2. DESCRIPTION OF THE WATERSHED.

2.2.A. General Location. The Old Hickory Lake Watershed is located in Middle Tennessee and includes parts of Davidson, Macon, Robertson, Smith, Sumner, Trousdale, and Wilson Counties.

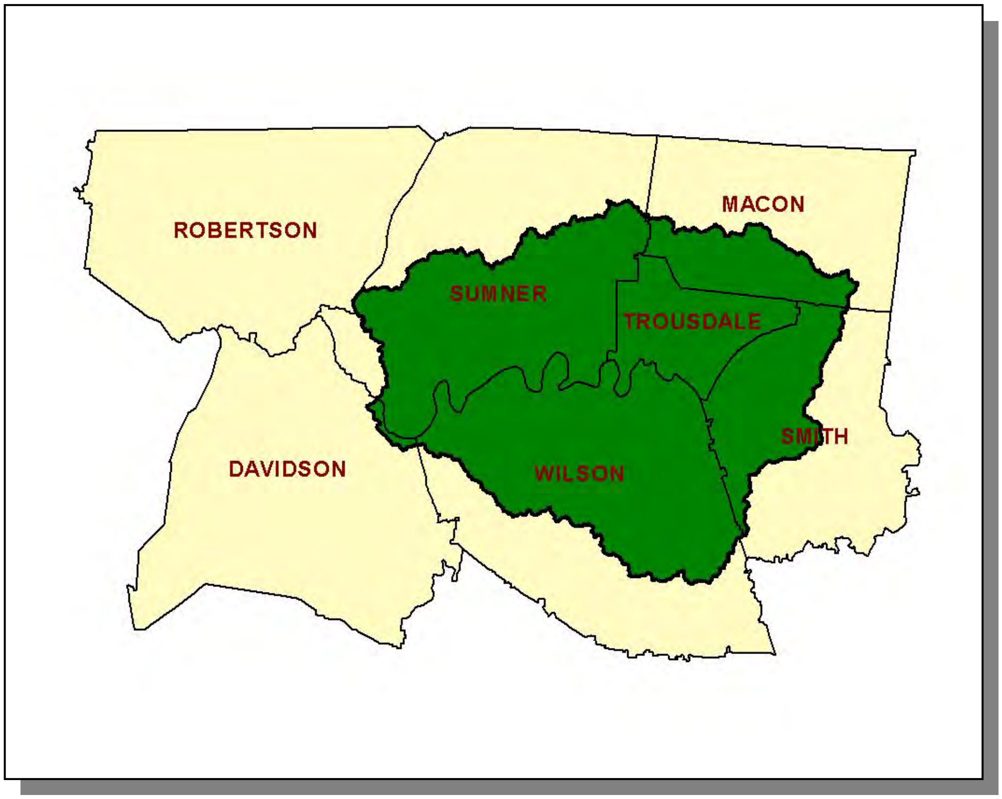


Figure 2-1. General Location of the Old Hickory Lake Watershed.

COUNTY	% OF WATERSHED IN EACH COUNTY
Wilson	36.2
Sumner	29.6
Smith	13.4
Trousdale	11.8
Macon	8.5
Davidson	0.5
Robertson*	<0.1

Table 2-1. The Old Hickory Lake Watershed Includes Parts of Six Middle Tennessee Counties. **0.01 square miles in Robertson County are also in the watershed.*

2.2.B. Population Density Centers. Twenty-six highways serve the major communities in the Old Hickory Lake Watershed.

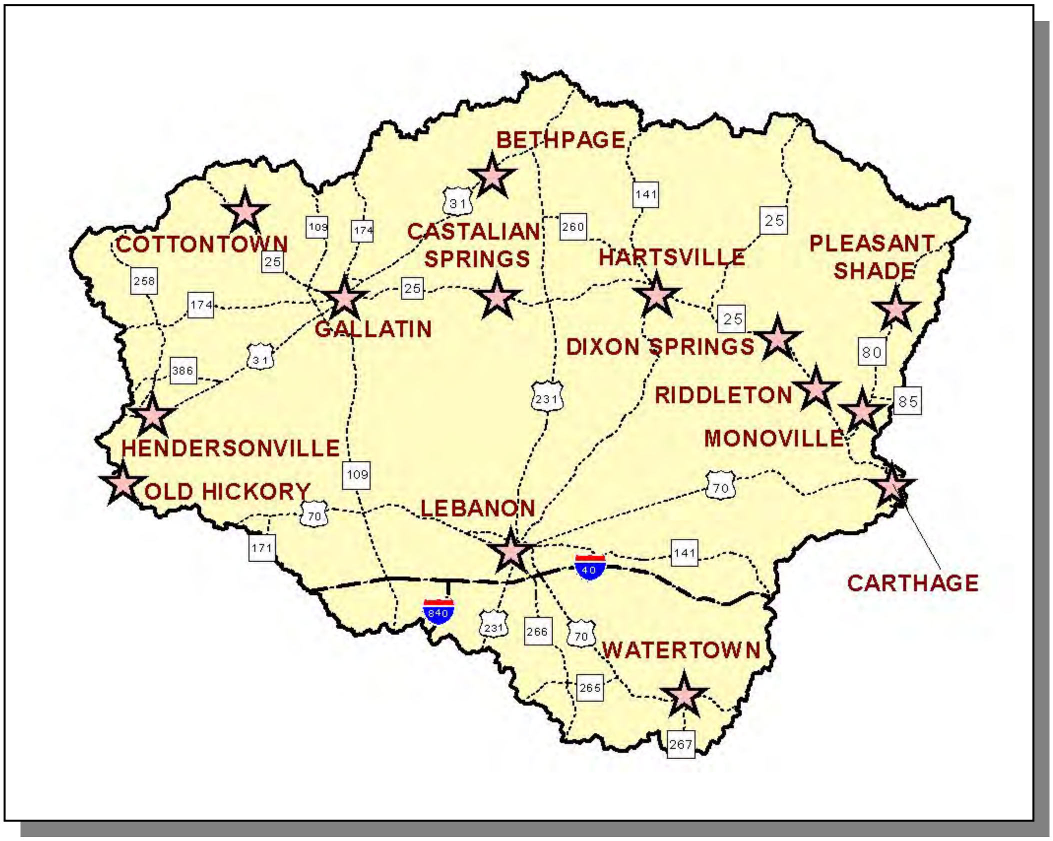


Figure 2-2. Communities and Roads in the Old Hickory Lake Watershed.

MUNICIPALITY	POPULATION	COUNTY
Hendersonville	40,849	Sumner
Gallatin*	23,230	Sumner
Lebanon*	20,284	Wilson
Hartsville*	2,395	Trousdale
Carthage*	2,251	Smith
Watertown	1,358	Wilson

Table 2-2. Municipalities in the Old Hickory Lake Watershed. *Population based on 2000 census (Tennessee Blue Book) or http://www.hometownlocator.com. Asterisk (*) indicates county seat.*

2.3. GENERAL HYDROLOGIC DESCRIPTION.

2.3.A. Hydrology. The Collins River Watershed, designated 05130201 by the USGS, is approximately 983 square miles and drains to the Cumberland River.

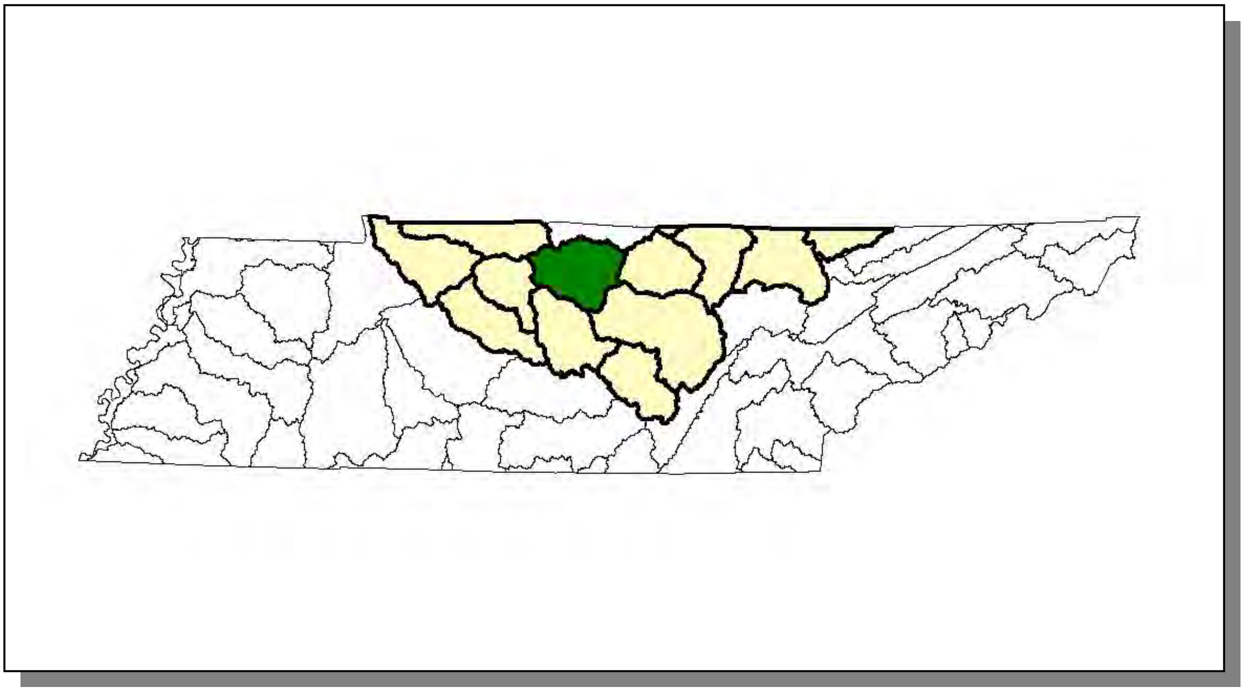


Figure 2-3. The Old Hickory Lake Watershed is Part of the Cumberland River Basin.

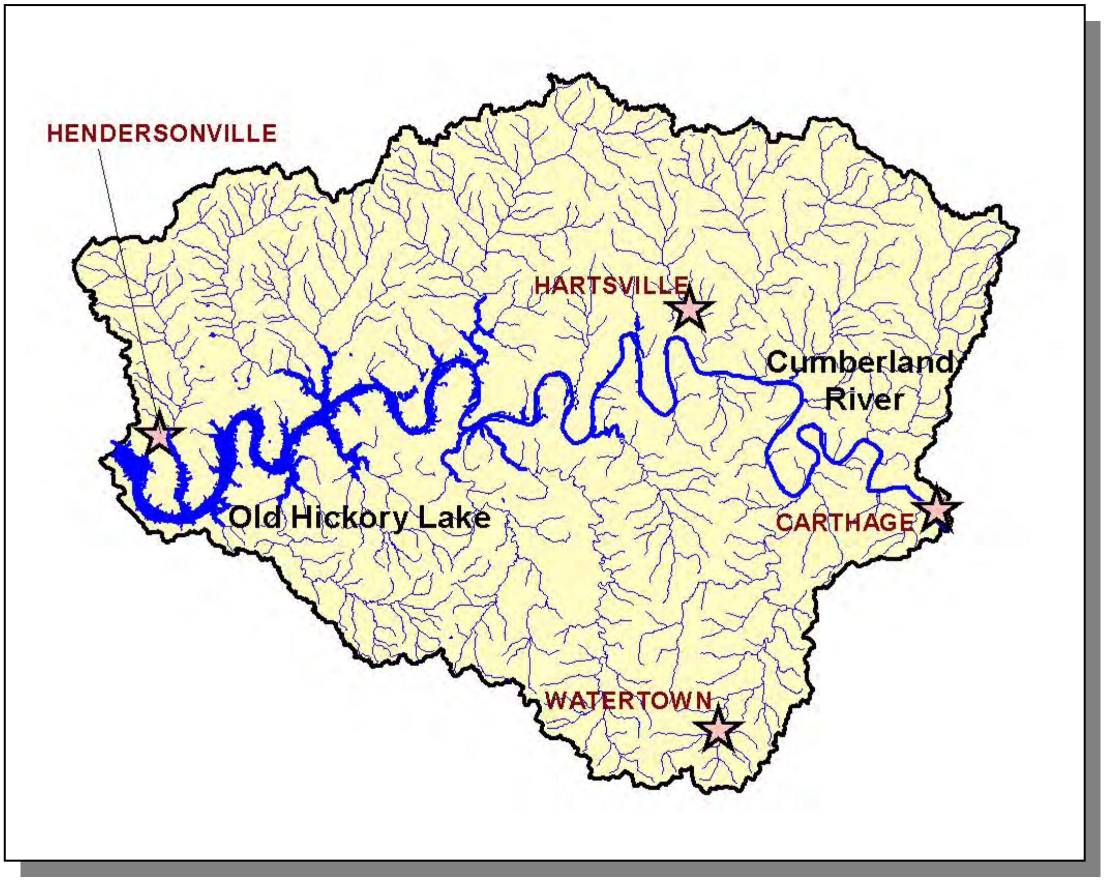


Figure 2-4. Hydrology in the Old Hickory Lake Watershed. *There are 1,164.3 stream miles and 27,439 lake acres recorded in River Reach File 3 in the Old Hickory Lake Watershed. Location of the Cumberland River including Old Hickory Lake, and the cities of Carthage, Hartsville, Hendersonville, and Watertown are shown for reference.*

2.3.B. Dams. There are 12 dams inventoried by TDEC Division of Water Supply in the Old Hickory Lake Watershed. These dams either retain 30 acre-feet of water or have structures at least 20 feet high.

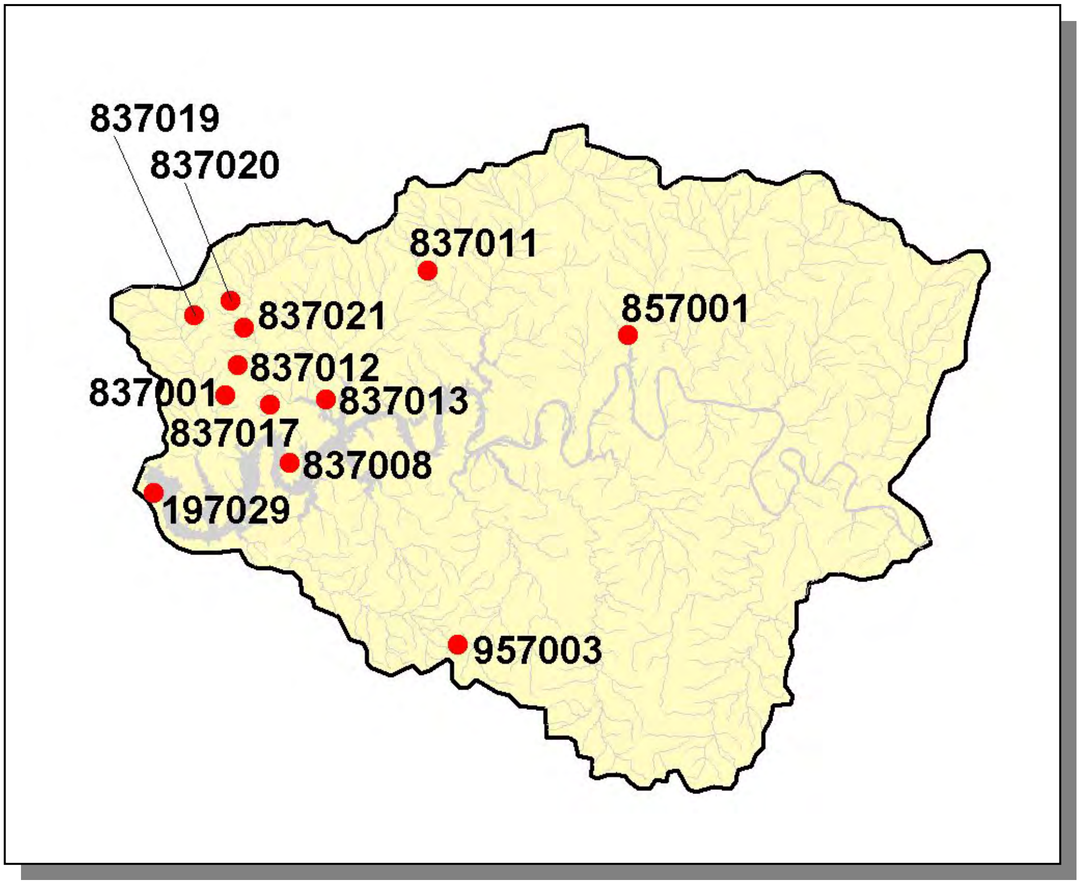


Figure 2-5. Location of Inventoried Dams in the Old Hickory Lake Watershed. *More information, including identification of inventoried dams labeled, is provided in Appendix II and at http://gwidc.memphis.edu/website/dams/viewer.htm.*

2.4. LAND USE. Land Use/Land Cover information was provided by EPA Region 4 and was interpreted from 1992 Multi-Resolution Land Cover (MRLC) satellite imagery.

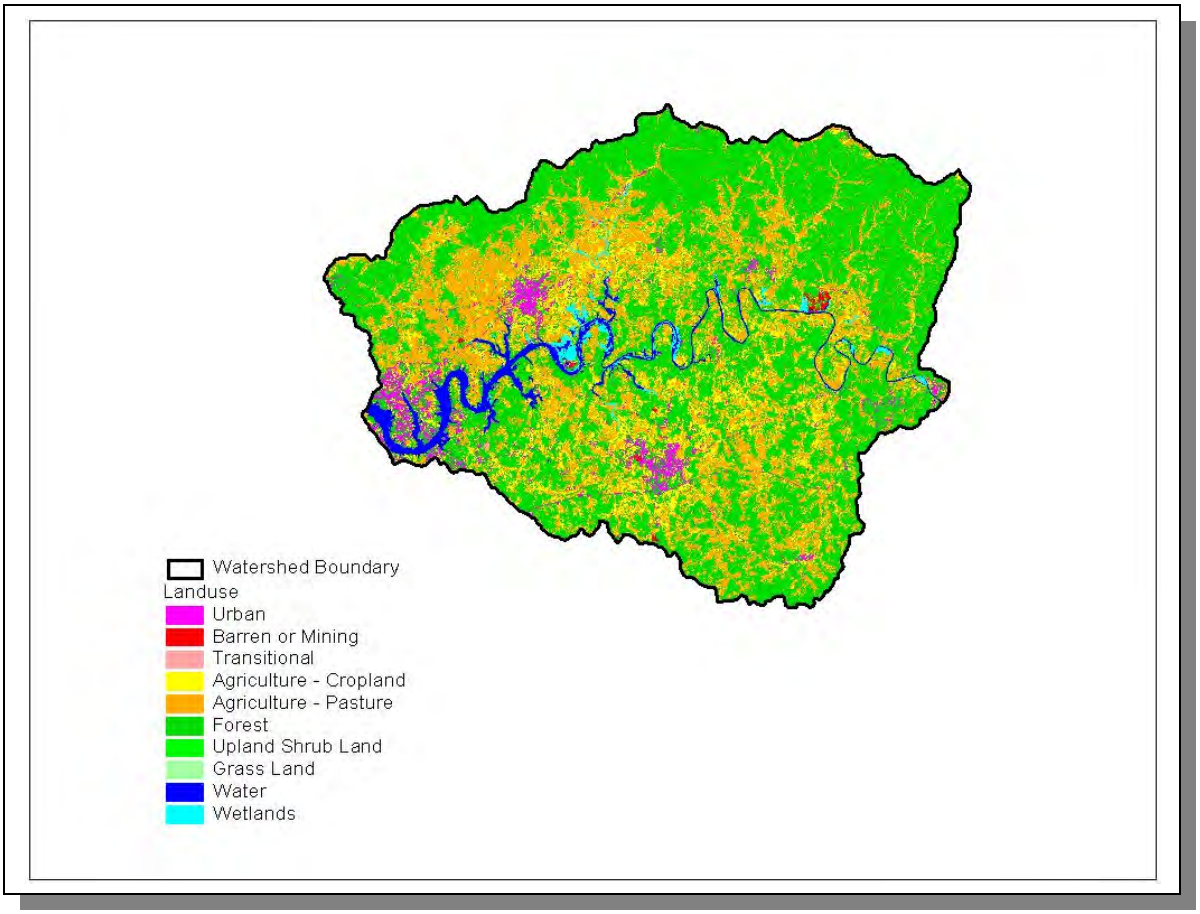


Figure 2-6. Illustration of Select Land Cover/Land Use Data from MRLC Satellite Imagery.

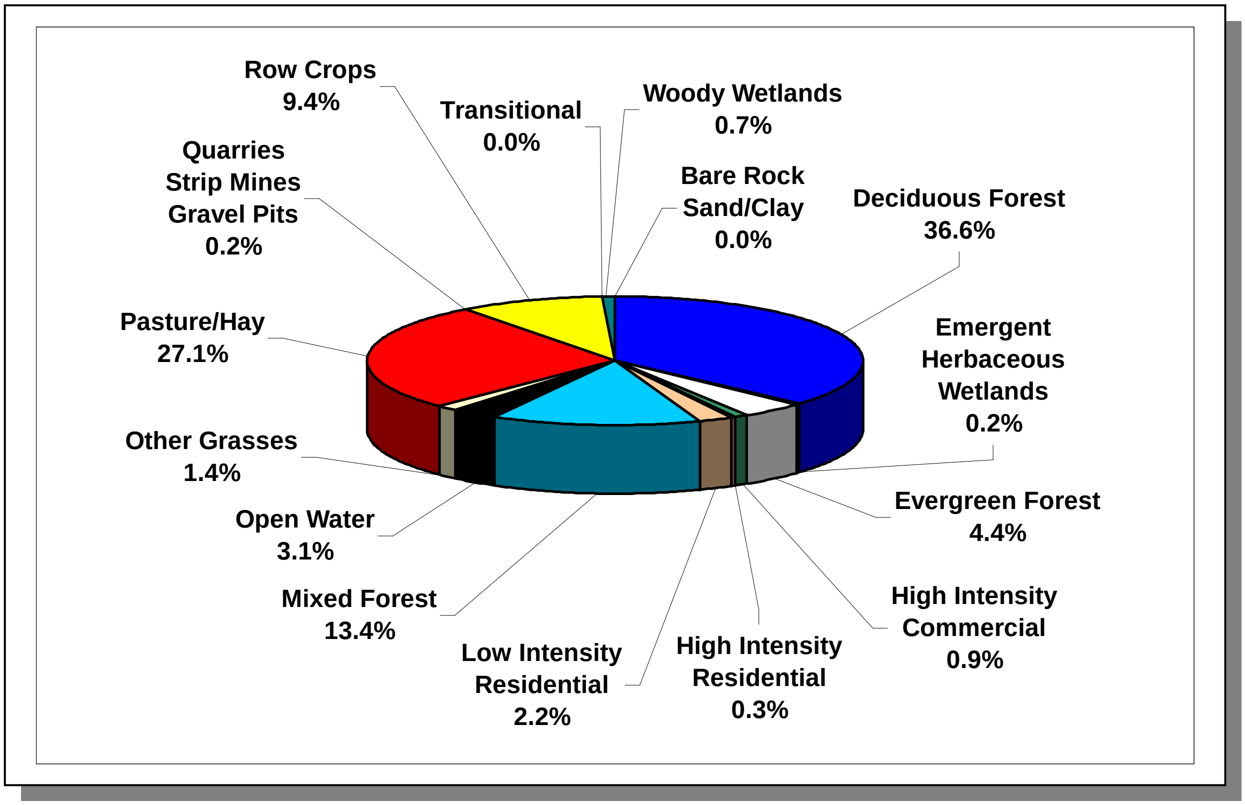


Figure 2-7. Land Use Distribution in the Old Hickory Lake Watershed. *More information is provided in Appendix II.*

Sinkholes, springs, disappearing streams and caves characterize karst topography. The term "karst" describes a distinctive landform that indicates dissolution of underlying soluble rocks by surface water or ground water. Although commonly associated with limestone and dolomite (carbonate rocks), other highly soluble rocks such as gypsum and rock salt can be sculpted into karst terrain. In karst areas, the ground water flows through solution-enlarged channels, bedding planes and microfractures within the rock. The characteristic landforms of karst regions are: closed depressions of various size and arrangement; disrupted surface drainage; and caves and underground drainage systems. The term "karst" is named after a famous region in the former country of Yugoslavia.

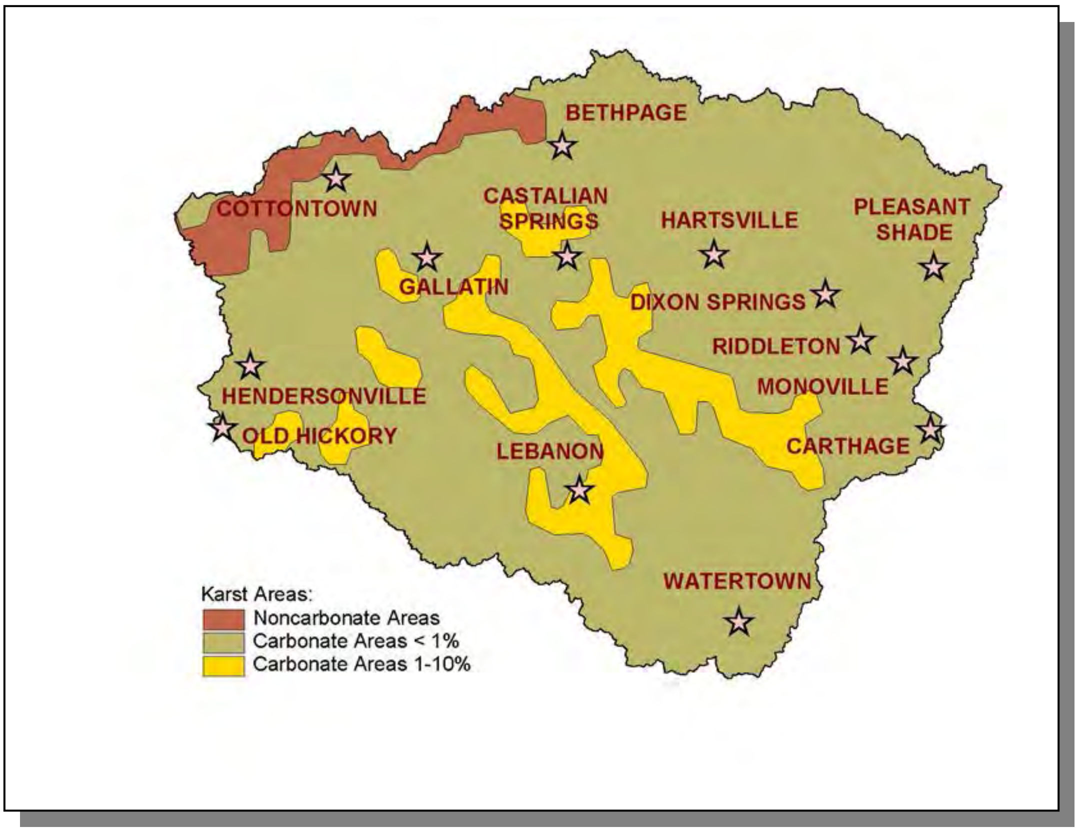


Figure 2-8. Illustration of Karst Areas in the Old Hickory Lake Watershed. *Locations of communities in the watershed are shown for reference.*

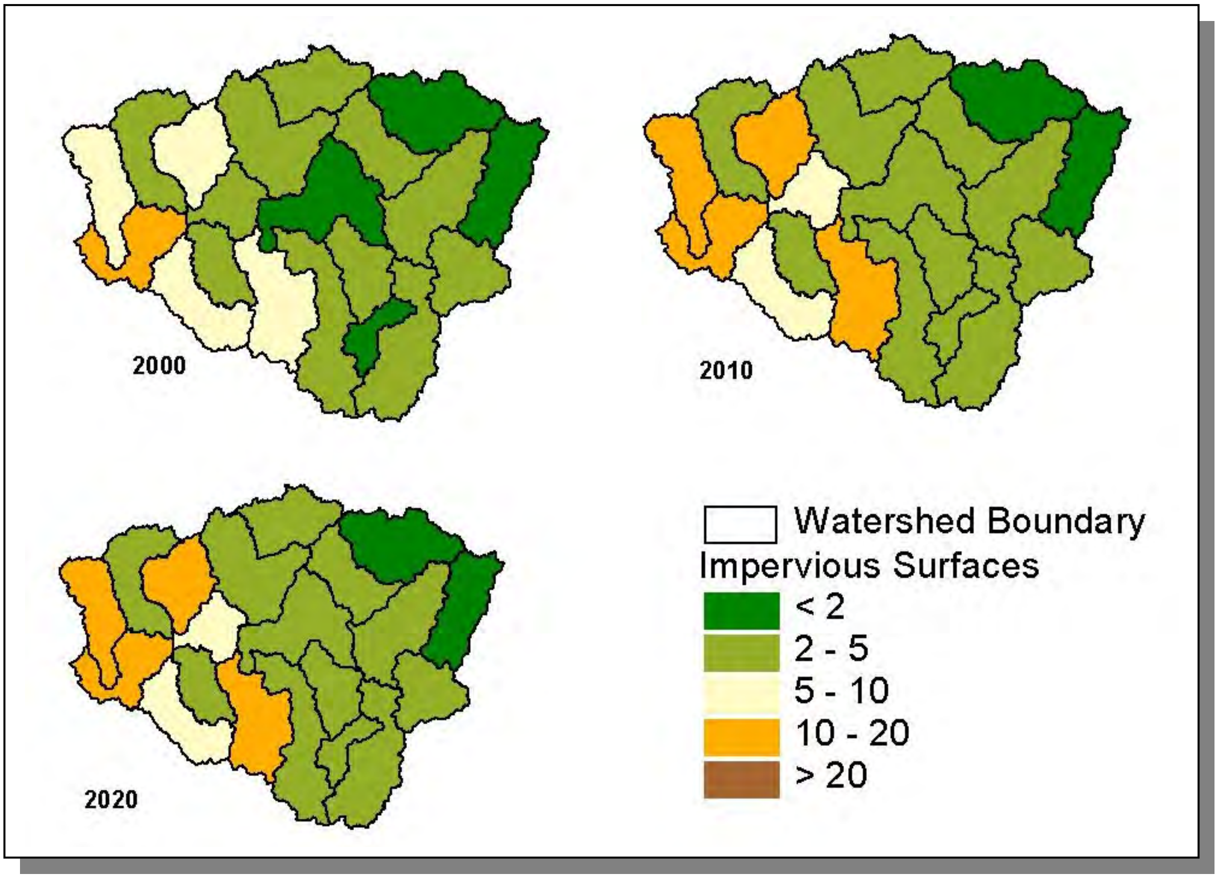


Figure 2-9. Illustration of Total Impervious Area in the Old Hickory Lake Watershed. *All HUC-12 subwatersheds are shown. Current and projected total impervious cover (percent of total area) is provided by EPA Region 4. More information can be found at: http://www.epa.gov/ATHENS/research/impervious/*

2.5. ECOREGIONS AND REFERENCE STREAMS. Ecoregions are relatively homogeneous areas of similar geography, topography, climate and soils that support similar plant and animal life. Ecoregions serve as a spatial framework for the assessment, management, and monitoring of ecosystems and ecosystem components. Ecoregion studies can aid the selection of regional stream reference sites, identifying high quality waters, and developing ecoregion-specific chemical and biological water quality criteria.

There are eight Level III Ecoregions and twenty-five Level IV subecoregions in Tennessee. The Old Hickory Lake Watershed lies within 1 Level III ecoregion (Interior Plateau) and contains 4 Level IV subecoregions:

- The **Western Pennyroyal Karst (71e)** is a flatter area of irregular plains, with fewer perennial streams, compared to the open hills of the Western Highland Rim (71f). Small sinkholes and depressions are common. The productive soils of this notable agricultural area are formed mostly from a thin loess mantle over residuum of Mississippian-age limestones. Most of the region is cultivated or in pasture; tobacco and livestock are the principal agricultural products, with some corn, soybeans, and small grains. The natural vegetation consisted of oak-hickory forest with mosaics of bluestem prairie. The barrens of Kentucky that extended south into Stewart, Montgomery, and Robertson counties, were once some of the largest natural grasslands in Tennessee.

- The **Eastern Highland Rim (71g)** has level terrain, with landforms characterized as tablelands of moderate relief and irregular plains. Mississippian-age limestone, chert, shale, and dolomite predominate, and karst terrain sinkholes and depressions are especially noticeable between Sparta and McMinnville. Numerous springs and spring-associated fish fauna also typify the region. Natural vegetation for the region is transitional between the oak-hickory type to the west and the mixed mesophytic forests of the Appalachian ecoregions (68, 69) to the east. Bottomland hardwood forest has been inundated by several large impoundments. Barrens and former prairie areas are now mostly oak thickets or pasture and cropland.

- **Outer Nashville Basin (71h)** is a more heterogeneous region than the Inner Nashville Basin, with more rolling and hilly topography and slightly higher elevations. The region encompasses most all of the outer areas of the generally non-cherty Ordovician limestone bedrock. The higher hills and knobs are capped by the more cherty Mississippian-age formations, and some Devonian-age Chattanooga shale, remnants of the Highland Rim. The region's limestone rocks and soils are high in phosphorus, and commercial phosphate is mined. Deciduous forests with pasture and cropland are the dominant land covers. Streams are low to moderate gradient, with productive nutrient-rich waters, resulting in algae, rooted vegetation, and occasionally high densities of fish. The Nashville Basin as a whole has a distinctive fish fauna, notable for fish that avoid the region, as well as those that are present.

- The **Inner Nashville Basin (71i)** is less hilly and lower than the Outer Nashville Basin (71h), outcrops of the Ordovician-age limestone are common, and the generally shallow soils are redder and lower in phosphorus than those of the outer basin. Streams are lower gradient than surrounding regions, often flowing over large expanses of limestone bedrock. The most characteristic hardwoods within the inner basin are a maple-oak-hickory-ash association. The limestone cedar glades of Tennessee, a unique mixed grassland / forest cedar glades vegetation type with many endemic species, are located primarily on the limestones of the Inner Nashville Basin. The more xeric, open characteristics and shallow soils of the cedar glades also result in a distinct distribution of amphibian and reptile species. Urban suburban, and industrial land use in the region is increasing.

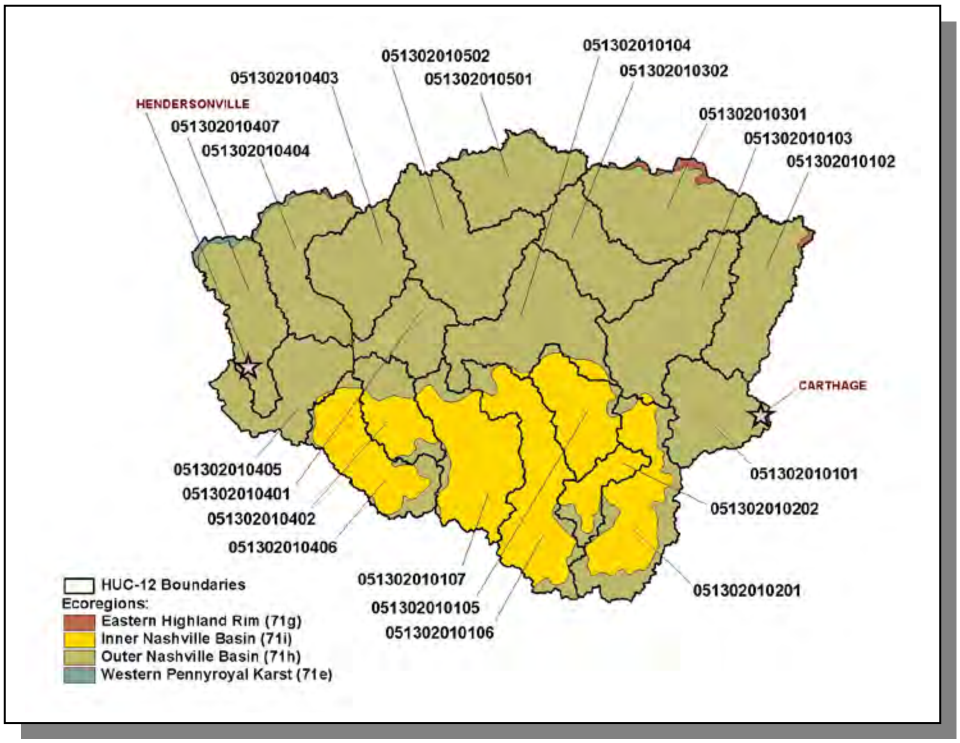


Figure 2-10. Level IV Ecoregions in the Old Hickory Lake Watershed. *HUC-12 subwatershed boundaries and locations of Carthage and Hendersonville are shown for reference.*

Each Level IV Ecoregion has at least one reference stream associated with it. A reference stream represents a least impacted condition and may not be representative of a pristine condition.

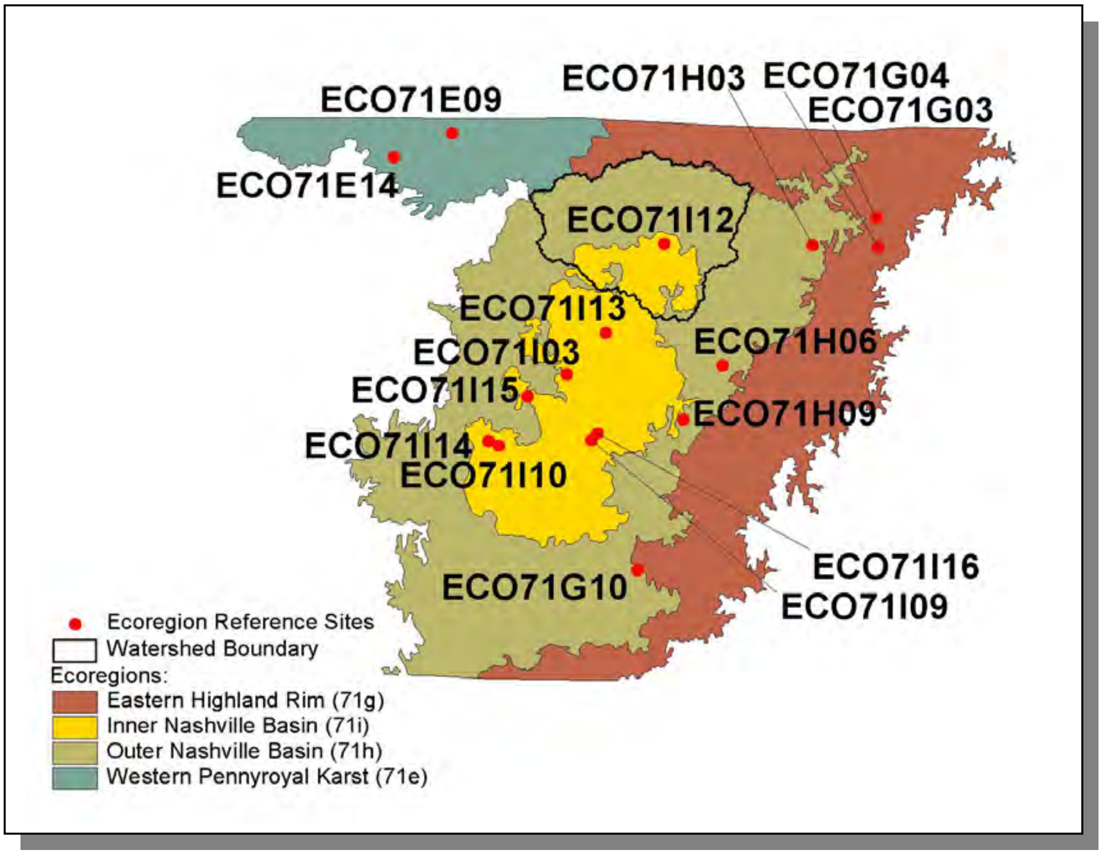


Figure 2-11. Ecoregion Monitoring Sites in Level IV Ecoregions 71e, 71g, 71h, and 71i. *The Old Hickory Lake Watershed is shown for reference. More information, including which ecoregion reference sites were inactive or dropped prior to 01/01/2006, is provided in Appendix II.*

2.6. NATURAL RESOURCES.

2.6.A. Designated State Natural Area. The Natural Areas Program was established in 1971 with the passage of the Natural Areas Preservation Act. TDEC/Division of Natural Heritage administers the State Natural Areas program. Further information may be found at http://www.state.tn.us/environment/na/.

The Old Hickory Lake Watershed has one Designated State Natural Area:

> **Taylor Hollow Class II Natural-Scientific State Natural Area** is a 173-acre natural area located in Sumner County on the Western Highland Rim and is owned by The Nature Conservancy. It is a botanically rich and a biologically diverse area and is one of only a very few areas remaining like this in Middle Tennessee that has been minimally impacted by human activity.

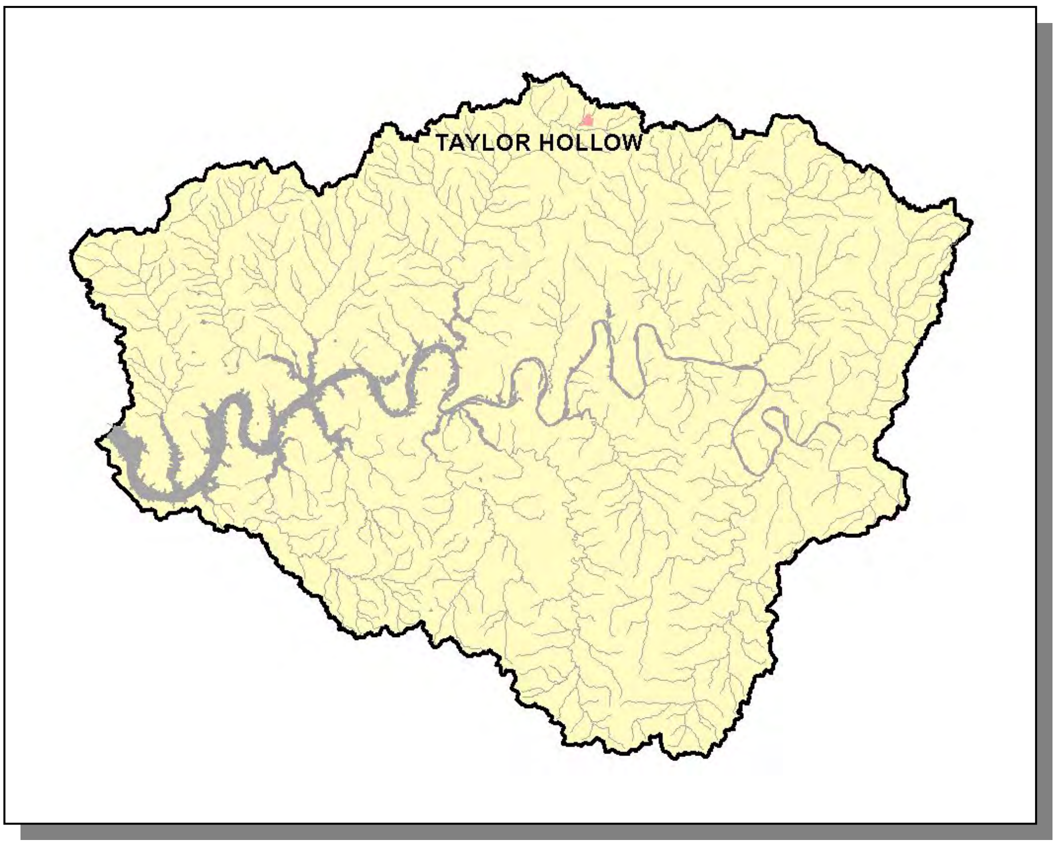


Figure 2-12. There is One Designated State Natural Area in the Old Hickory Lake Watershed.

2.6.B. Rare Plants and Animals. The Heritage Program in the TDEC Division of Natural Heritage maintains a database of rare species that is shared by partners at The Nature Conservancy, Tennessee Wildlife Resources Agency, the US Fish and Wildlife Service, and the Tennessee Valley Authority. The information is used to: 1) track the occurrence of rare species in order to accomplish the goals of site conservation planning and protection of biological diversity, 2) identify the need for, and status of, recovery plans, and 3) conduct environmental reviews in compliance with the federal Endangered Species Act.

GROUPING	NUMBER OF RARE SPECIES
Insects	1
Mussels	9
Snails	3
Amphibians	1
Birds	4
Fish	6
Mammals	4
Reptiles	3
Plants	25
Total	**56**

Table 2-3. There are 56 Known Rare Plant and Animal Species in the Old Hickory Lake Watershed.

In the Old Hickory lake Watershed, there are six known rare fish species, nine known rare mussel species, one known rare amphibian species, and three known rare snail species.

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS
Etheostoma olivaceum	Sooty darter		D
Hemitremia flammea	Flame chub		D
Moxostoma atripinne	Blackfin sucker		D
Notropis rupestris	Bedrock shiner		D
Percina phoxocephala	Slenderhead darter		D
Typhlichthys subterraneus	Southern cavefish		D
Dromus dromas	Dromedary pearlymussel	LE	E
Epioblasma brevidens	Cumberlandian combshell	LE	E
Epioblasma obliquata obliquata	Catspaw pearlymussel	LE	E
Lampsilis abrupta	Pink mucket	LE	E
Obovaria retusa	Ring pink	LE	E
Plethobasus cicatricosus	White wartyback	LE	E
Plethobasus cooperianus	Orange-foot pimpleback	LE	E
Pleurobema plenum	Rough pigtoe	LE	E
Quadrula sparsa	Appalachian monkeyface	LE	E
Cryptobranchus alleganiensis	Hellbender	D	
Leptoxis subglobosa umbilicata	Umbilicate rocksnail		
Lithasia geniculata fuliginosa	Geniculate riversnail		
Lithasia geniculata pinguis	Small geniculate riversnail		

Table 2-4. Rare Aquatic Species in the Old Hickory Lake Watershed. *Federal Status: LE, Listed Endangered by the U.S. Fish and Wildlife Service. State Status: E, Listed Endangered by the Tennessee Wildlife Resources Agency; D, Deemed in Need of Management by the Tennessee Wildlife Resources Agency. More information may be found at http://www.state.tn.us/environment/na/.*

2.6.C. Wetlands. The Division of Natural Areas maintains a database of wetland records in Tennessee. These records are a compilation of field data from wetland sites inventoried by various state and federal agencies. Maintaining this database is part of Tennessee's Wetland Strategy, which is described at:

http://www.state.tn.us/environment/na/wetlands/

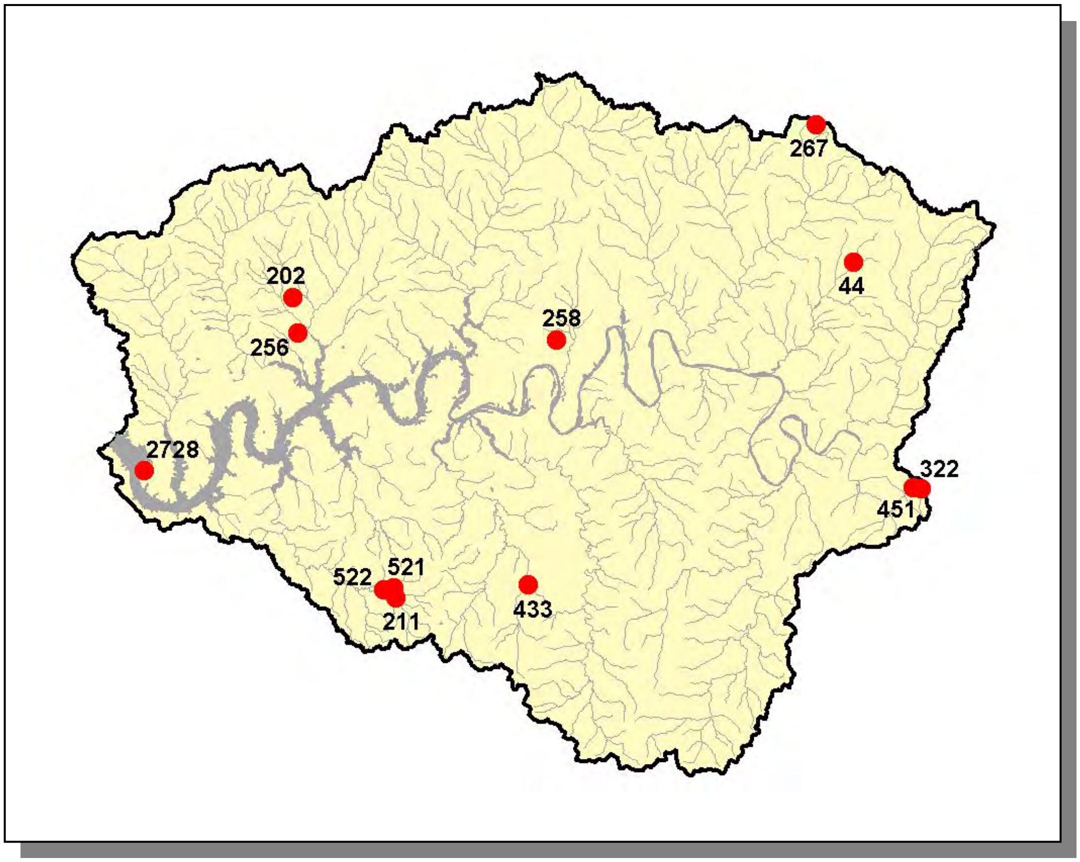


Figure 2-13. Location of Wetland Sites in TDEC Division of Natural Heritage Database in Old Hickory Lake Watershed. This map represents an incomplete inventory and should not be considered a dependable indicator of the presence of wetlands. *There may be additional wetland sites in the watershed. More information, including identification of wetland sites labeled, is provided in Appendix II.*

2.7. CULTURAL RESOURCES.

2.7.A. Nationwide Rivers Inventory. The Nationwide Rivers Inventory, required under the Federal Wild and Scenic Rivers Act of 1968, is a listing of free-flowing rivers that are believed to possess one or more outstanding natural or cultural values. Exceptional scenery, fishing or boating, unusual geologic formations, rare plant and animal life, cultural or historic artifacts that are judged to be of more than local or regional significance are the values that qualify a river segment for listing. The Tennessee Department of Environment and Conservation and the Rivers and Trails Conservation Assistance branch of the National Park Service jointly compile the Nationwide Rivers Inventory from time to time (most recently in 1997). Under a 1980 directive from the President's Council on Environmental Quality, all Federal agencies must seek to avoid or mitigate actions that would have an adverse effect on Nationwide Rivers Inventory segments.

The most recent version of the Nationwide Rivers Inventory lists portions of two streams in the Old Hickory Lake Watershed:

Bledsoe Creek (RM 0 to RM 14) is an historic, very scenic float stream.

Goose Creek (RM 0 to RM 15) is a small, scenic mountain stream that supports a game fishery.

RIVER	SCENIC	RECREATION	GEOLOGIC	FISH	WILDLIFE	HISTORIC	CULTURAL
Bledsoe Creek	X	X	X	X	X	X	X
Goose Creek	X	X		X	X		

Table 2-5. Attributes of Streams Listed in the Nationwide Rivers Inventory.

Additional information may be found online at http://www.ncrc.nps.gov/rtca/nri/

2.7.B. Public Lands. Some sites representative of the cultural heritage are under state or federal protection:

- Bledsoe Creek State Recreation Area is a 164-acre state park located on an embayment of Old Hickory Lake. More information may be found at http://www.state.tn.us/environment/parks/parks/BledsoeCreek/.

- Camp Boxwell is a 1273-acre Boy Scout Reservation located on Old Hickory Lake. More information may be found at http://www.mtcbsa.org/html/boxwell.htm.

- Castle Heights Military Academy, also known as Castle Heights Academy Historic District, is located in Lebanon.

- Gallatin Steam Plant Wildlife Management Area is a 1,500-acre area managed by TWRA in Sumner County.

- Hunters Point Golf Course is located in Lebanon. More information may be found at http://www.tnvacation.com/vendors/hunters_point_golf_course/.

- James E. Ward Agricultural and Community Center is located in Lebanon. More information may be found at: http://www.tnvacation.com/vendors/james_e_ward_agricultural_center/.

- Hermitage Lands State Historic Area, located mainly in the Stones River Watershed, is the home of President Andrew Jackson. More information may be found at http://www.thehermitage.com/.

- Lock 5 Wildlife Refuge is a 900-acre area managed by TWRA in Trousdale and Wilson Counties.

- Old Hickory Wildlife Management Area is a 6,000-acre area managed by TWRA in Sumner, Trousdale, and Wilson Counties.

- Rockland Recreation Area is located on Old Hickory Lake and operated by the U.S. Army Corps of Engineers. More information may be found at http://nashville.citysearch.com/profile/11340248/.

- Saunders Ferry Park is located on an embayment of Old Hickory Lake in Hendersonville.

- Sellars Farm State Historic Area is a study site for a Native American mound village located in the southeastern portion of Lebanon. More information may be found at http://webwhisper.com/Sellars_Farm_SAA/fsfindex.html.

- Sumner County Park is located in Laguardo.

- Volunteer State Community College is a two-year community college located in Gallatin. More information may be found at http://www.vscc.cc.tn.us/.

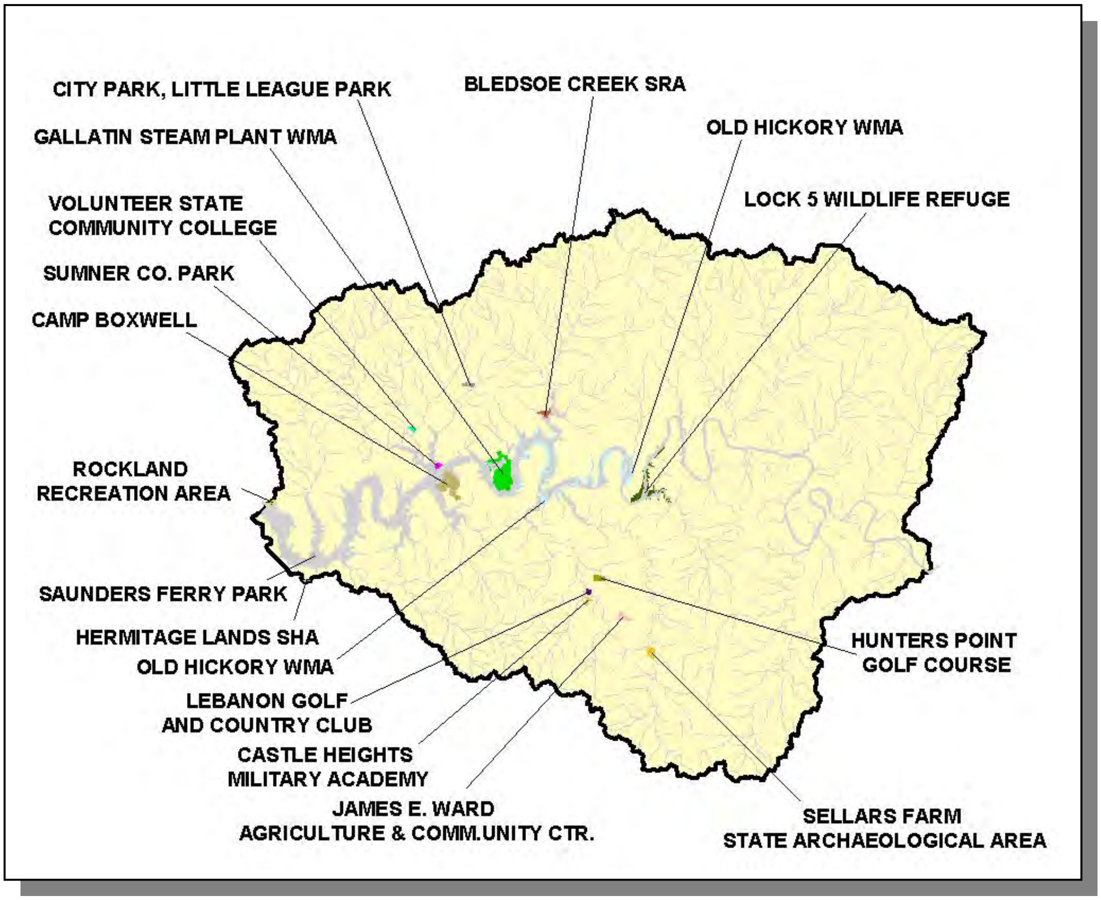


Figure 2-14. Public Lands in the Old Hickory Lake Watershed. *Data are from Tennessee Wildlife Resources Agency. SRA, State Recreation Area; WMA, Wildlife Management Area.*

2.8. TENNESSEE RIVERS ASSESSMENT PROJECT. The Tennessee Rivers Assessment is part of a national program operating under the guidance of the National Park Service's Rivers and Trails Conservation Assistance Program. The Assessment is an inventory of river resources, and should not be confused with "Assessment" as defined by the Environmental Protection Agency. A more complete description can be found in the Tennessee Rivers Assessment Summary Report, which is available from the Department of Environment and Conservation and on the web at:

http://www.state.tn.us/environment/wpc/publications/riv/

STREAM	NSQ	RB	RF	STREAM	NSQ	RB	RF
Bartons Creek	3	3		Hawkins Branch	3		
Big Goose Creek	2	2	1	Jennings Fork Creek	3		
Bledsoe Creek	3	2	1	Liberty Creek	3		
Cedar Creek (eastern)	2	2	1	Little Goose Creek	3		
Cedar Creek (Western)	3	2		Middle Fork Goose Creek	3		
Cumberland River	2			Peyton Creek	3		
Deshea Creek	3			Rocky Creek	3		
Dixon Creek	3			Round Lick Creek	2		
Drakes Creek	2	3		Spencer Creek	3		
Dry Fork Creek	2			Spring Creek	2	2	1
East Camp Creek	3			Station camp Creek	3	2	1
East Fork Bledsoe Creek	2			Town Creek	4		

Table 2-6. Tennessee Rivers Assessment Project Stream Scoring in the Old Hickory Lake Watershed.

Categories: NSQ, Natural and Scenic Qualities
RB, Recreational Boating
RF, Recreational Fishing

Scores: 1. Statewide or greater Significance; Excellent Fishery
2. Regional Significance; Good Fishery
3. Local Significance; Fair Fishery
4. Not a significant Resource; Not Assessed

CHAPTER 3

WATER QUALITY ASSESSMENT OF THE OLD HICKORY LAKE WATERSHED.

3.1. BACKGROUND. Section 305(b) of The Clean Water Act requires states to report the status of water quality every two years. Historically, Tennessee's methodologies, protocols, frequencies and locations of monitoring varied depending upon whether sites were ambient, ecoregion, or intensive survey. Alternatively, in areas where no direct sampling data existed, water quality may have been assessed by evaluation or by the knowledge and experience of the area by professional staff.

In 1996, Tennessee began the watershed approach to water quality protection. In the Watershed Approach, resources—both human and fiscal—are better used by assessing water quality more intensively on a watershed-by-watershed basis. In this approach, water quality is assessed in year three of the watershed cycle, following one to two years of data collection. More information about the Watershed Approach may be found in Chapter 1 and at http://www.state.tn.us/environment/wpc/watershed/

The assessment information is used in the 305(b) Report (The Status of Water Quality in Tennessee) and the 303(d) list as required by the Clean Water Act.

The 305(b) Report documents the condition of the State's waters. Its function is to provide information used for water quality based decisions, evaluate progress, and measure success.

Tennessee uses the 305(b) Report to meet four goals (from 2006 305(b) Report):

1. Describe the water quality assessment process

2. Categorize waters in the State by placing them in the assessment categories suggested by federal guidance

3. Identify waterbodies that pose imminent human health risks due to elevated bacteria levels or contamination of fish

4. Provide detailed information on each watershed

EPA aggregates the state use support information into a national assessment of the nation's water quality. This aggregated use support information can be viewed at EPA's "Surf Your Watershed" site at http://cfpub.epa.gov/surf/locate/index.cfm.

The 303(d) list is a compilation of the waters of Tennessee that fail to support some or all of their classified uses. The 303(d) list does not include streams determined to be fully supporting designated uses nor streams the Division of Water Pollution Control cannot assess due to lack of water quality information. Also absent are streams where a control strategy is already in the process of being implemented.

Once a stream is placed on the 303(d) list, it is considered a priority for water quality improvement efforts. These efforts not only include traditional regulatory approaches such as permit issuance, but also include efforts to control pollution sources that have historically been exempted from regulations, such as certain agricultural and forestry activities. If a stream is on the 303(d) list, the Division of Water Pollution Control cannot use its regulatory authority to allow additional sources of the same pollutant(s) for which it is listed.

States are required to develop Total Maximum Daily Loads (TMDLs) for 303(d)-listed waterbodies. The TMDL process establishes the maximum amount of a pollutant that a waterbody can assimilate without exceeding water quality standards and allocates this load among all contributing pollutant sources. The purpose of the TMDL is to establish water quality objectives required to reduce pollution from both point and nonpoint sources and to restore and maintain the quality of water resources.

The current 303(d) List is available on the TDEC homepage at:
http://tennessee.gov/environment/wpc/publications/303d2006.pdf

and information about Tennessee's TMDL program may be found at:
http://www.state.tn.us/environment/wpc/tmdl/.

This chapter provides a summary of water quality in the Old Hickory Lake Watershed, summarizes data collection and assessment results, and describes impaired waters.

3.2. DATA COLLECTION. The figures and table below represent data collected in the last 5-year cycle (July 1, 2000 through June 30, 2005). Water quality data are from one of four site types: (1) Ambient sites, (2) Ecoregion sites, (3) Watershed Screening sites, or (4) Tier Evaluation sites.

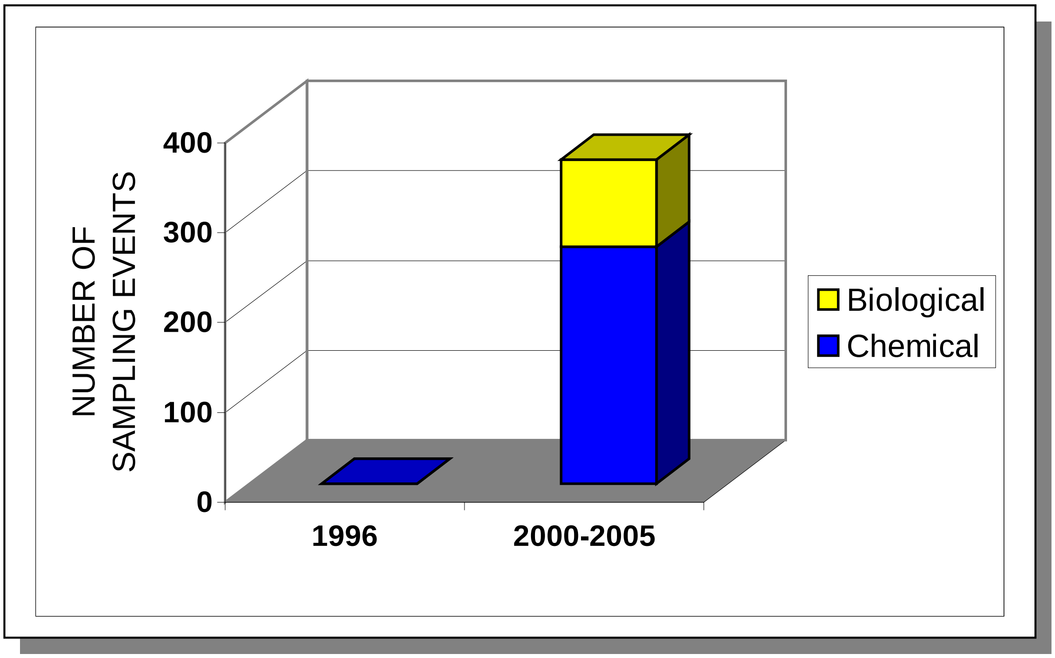


Figure 3-1. Number of Sampling Events Using the Traditional Approach (1996) and Watershed Approach (July 1, 2000 through June 30, 2005) in the Old Hickory Lake Watershed.

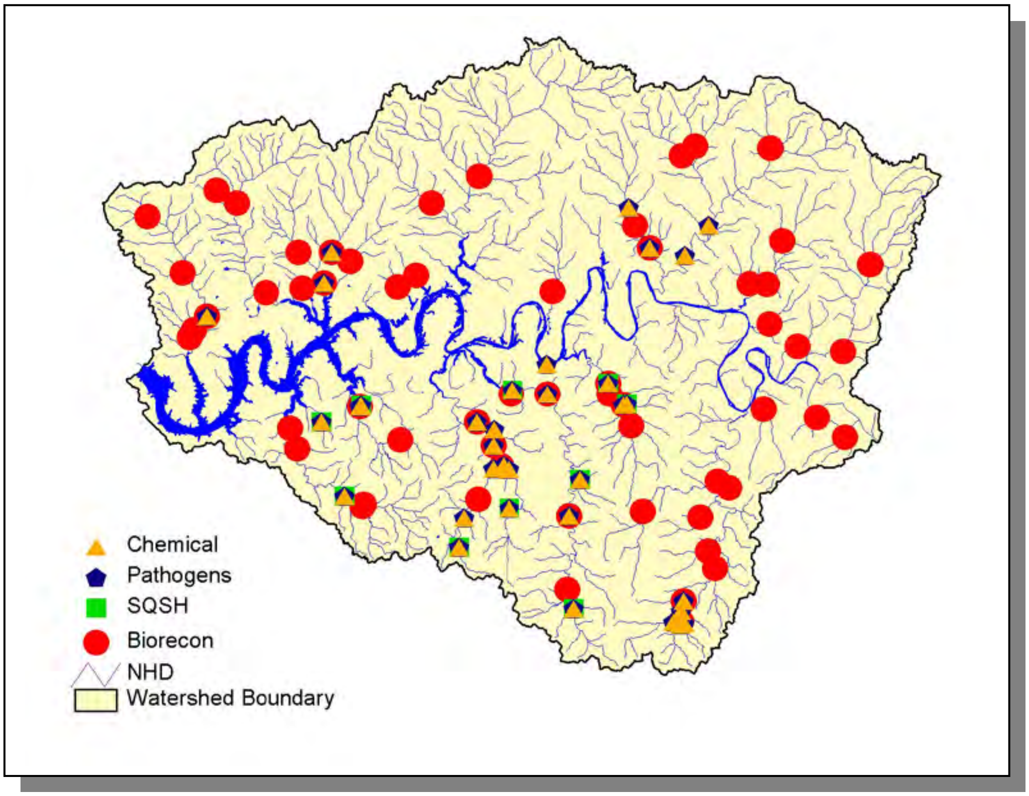


Figure 3-2. Location of Monitoring Sites in the Old Hickory Lake Watershed (July 1, 2000 through June 30, 2005). *Pathogens include E. coli and fecal coliform; NHD, National Hydrography Dataset of Streams; SQSH, Semi-Quantitative Single Habitat Assessment.*

	1996	2000-2005
Biological	0	97
Chemical	0	264
Total	**0**	**361**

Table 3-1. Number of Sampling Events in the Old Hickory Lake Watershed in the last 5-Year Cycle (July 1, 2000 through June 30, 2005).

3.2.A. Ambient Monitoring Sites. These fixed-station chemical monitoring sites are sampled quarterly or monthly by the Environmental Field Office-Nashville and Environmental Field Office-Cookeville staff (this is in addition to samples collected by water and wastewater treatment plant operators). Samples are analyzed by the Tennessee Department of Health, Division of Environmental Laboratory Services. Ambient monitoring data are used to assess water quality in major bodies of water where there are NPDES facilities and to identify trends in water quality. Water quality parameters traditionally measured at ambient sites in the Old Hickory Lake Watershed are provided in Appendix IV.

Data from ambient monitoring stations are entered into the STORET (Storage and Retrieval) system administered by EPA.

3.2.B. Ecoregion Sites. Ecoregions are relatively homogeneous areas of similar geography, topography, climate and soils that support similar plants and animals. The delineation phase of the Tennessee Ecoregion Project was completed in 1997 when the ecoregions and subecoregions were mapped and summarized (EPA/600/R-97/022). There are eight Level III Ecoregions and twenty-five Level IV subecoregions in Tennessee (see Chapter 2 for more details). The Old Hickory Lake Watershed lies within 1 Level III ecoregion (Interior Plateau) and contains 4 subecoregions (Level IV):

- Western Pennyroyal Karst (71e)
- Eastern Highland Rim (71g)
- Outer Nashville Basin (71h)
- Inner Nashville Basin (71i)

Ecoregion reference sites are chemically monitored using methodology outlined in the Division's Chemical Standard Operating Procedure (Standard Operating Procedure for Modified Clean Technique Sampling Protocol). Macroinvertebrate samples are collected in spring and fall. These biological sample collections follow methodology outlined in the Tennessee Biological Standard Operating Procedures Manual. Volume 1: Macroinvertebrates and EPA's Revision to Rapid Bioassessment Protocols for use in Streams and Rivers.

Ecoregion stations are scheduled to be monitored during the watershed sampling time period.

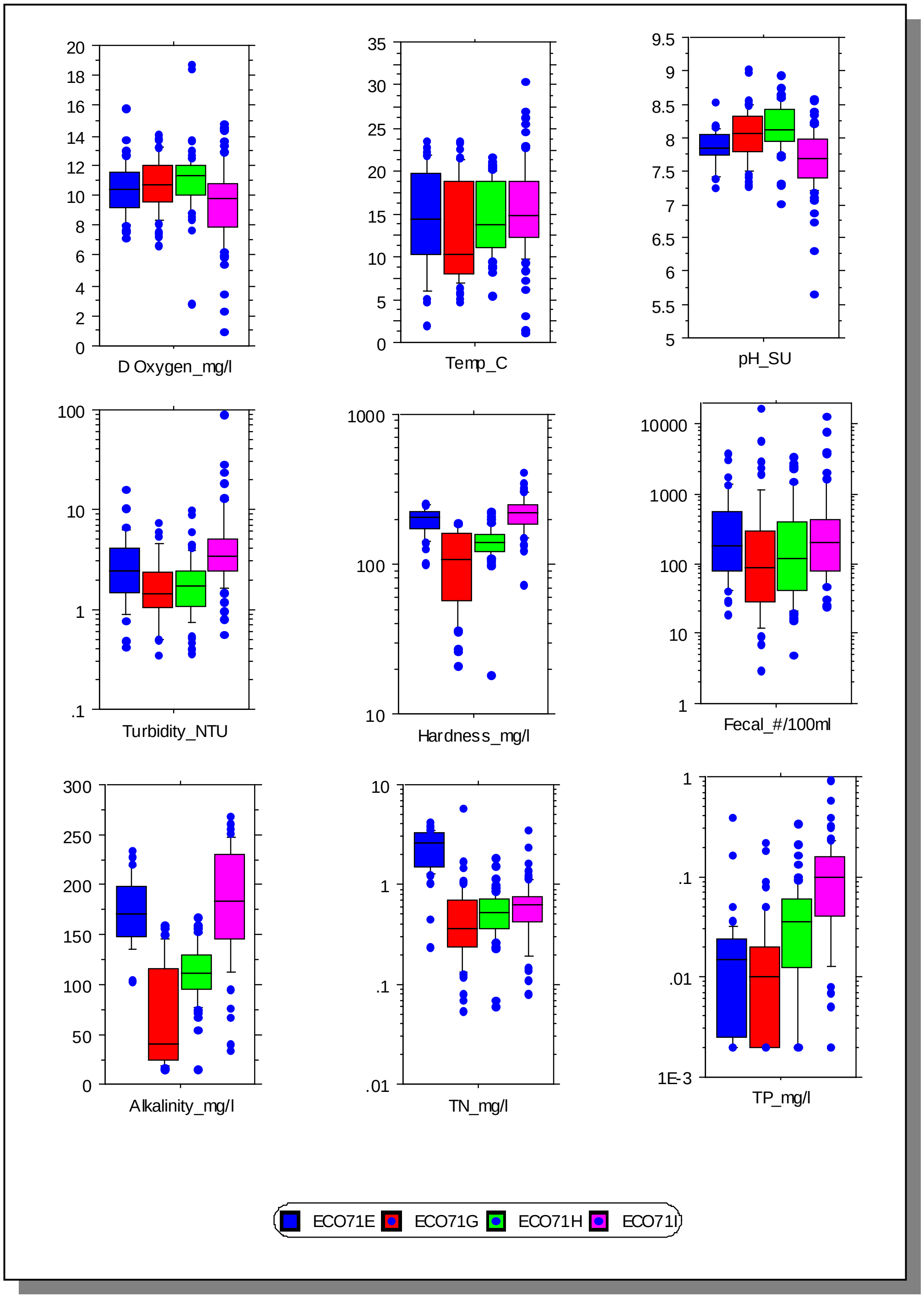


Figure 3-3. Select Chemical Data Collected in Old Hickory Lake Watershed Ecoregion Sites. *Boxes and bars illustrate 10th, 25th, median, 75th, and 90th percentiles. Extreme values are also shown as dots. Fecal, fecal coliform bacteria; TN, Total Nitrogen; TP, Total Phosphorus.*

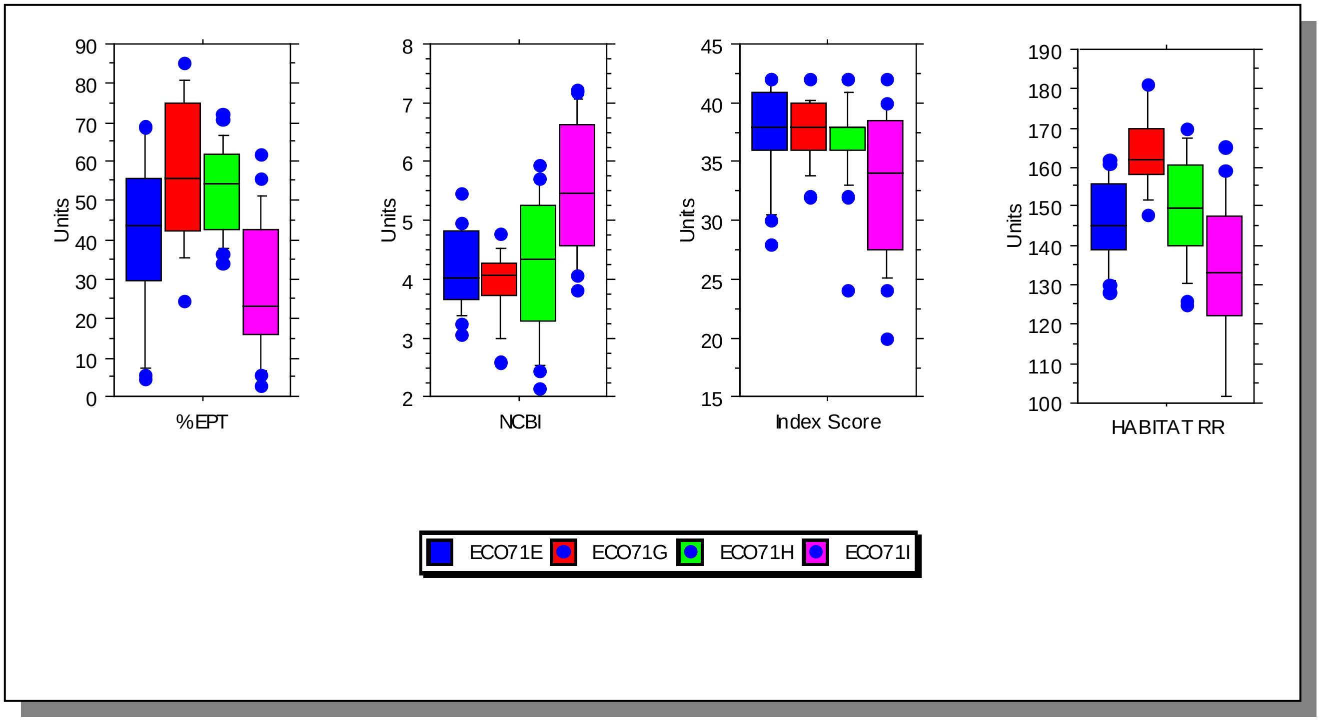


Figure 3-4. Benthic Macroinvertebrate and Habitat Scores for Old Hickory Lake Watershed Ecoregion Sites. *Boxes and bars illustrate 10th, 25th, median, 75th, and 90th percentiles. Extreme values are also shown as dots. NCBI, North Carolina Biotic Index. Index Score and Habitat Riffle/Run scoring system are described in TDEC's Quality System Standard Operating Procedure for Macroinvertebrate Stream Surveys (2006).*

3.2.C. Watershed Screening Sites. Activities that take place at watershed sites are benthic macroinvertebrate stream surveys, physical habitat determinations and/or chemical monitoring. Following review of existing data, watershed sites are selected in Year 1 of the watershed approach when preliminary monitoring strategies are developed. Additional sites may be added in Year 2 when additional monitoring strategies are implemented.

A Biological Reconnaissance (BioRecon) is used as a screening tool to describe the condition of water quality, in general, by determining the absence or presence of clean water indicator organisms, such as EPT (Ephemeroptera [mayfly], Plecoptera [stonefly], Trichoptera [caddisfly]). Factors and resources used for selecting BioRecon sites are:

- The current 303(d) list,
- HUC-10 maps (every HUC-10 is scheduled for a BioRecon)
- Land Use/Land Cover maps
- Topographic maps
- Locations of NPDES facilities
- Sites of recent ARAP activities.

An intensive multiple or single habitat assessment involves the regular monitoring of a station over a fixed period of time. Intensive surveys (Rapid Bioassessment Protocols) are performed when BioRecon results warrant it.

3.2.D. Special Surveys. These investigations are performed when needed and include:

- ARAP in-stream investigation
- Time-of-travel dye study
- Sediment oxygen demand study
- Lake eutrophication study

3.3. STATUS OF WATER QUALITY. Overall use support is a general description of water quality conditions in a water body based on determination of individual use supports. Use support determinations, which can be classified as monitored or evaluated, are based on:

- Data less than 5 years old (monitored)
- Data more than 5 years old (evaluated)
- Knowledge and experience of the area by technical staff (evaluated)
- Complaint investigation (monitored, if samples are collected)
- Other readily available Agencies' data (monitored)
- Readily available Volunteer Monitoring data (monitored, if certain quality assurance standards are met)

All readily available data are considered, including data from TDEC Environmental Field Offices, Tennessee Department of Health (Aquatic Biology Section of Laboratory Services), Tennessee Wildlife Resources Agency, National Park Service, Tennessee Valley Authority, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Geological Survey, U.S. Forest Service, universities and colleges, the regulated community, and the private sector.

The assessment is based on the degree of support of designated uses as measured by compliance with Tennessee's water quality standards.

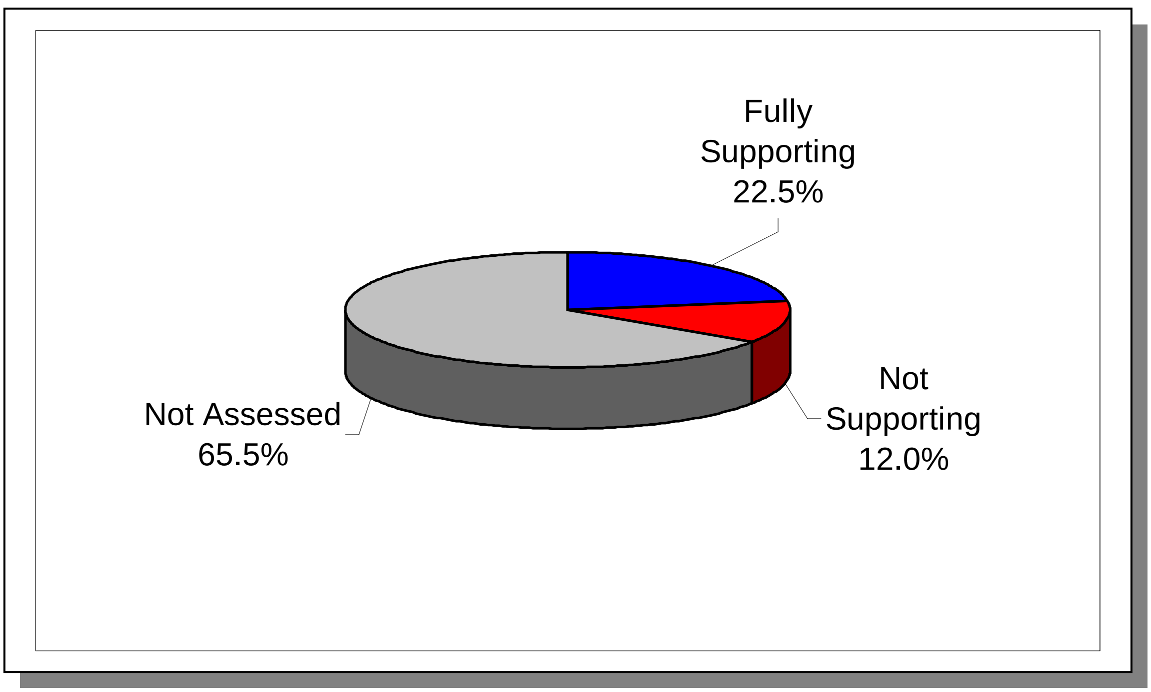


Figure 3-5. Water Quality Assessment of Streams in the Old Hickory Lake Watershed. *Assessment data are based on the 2004 Water Quality Assessment of 1,164.3 stream miles in the watershed. More information is provided in Appendix III.*

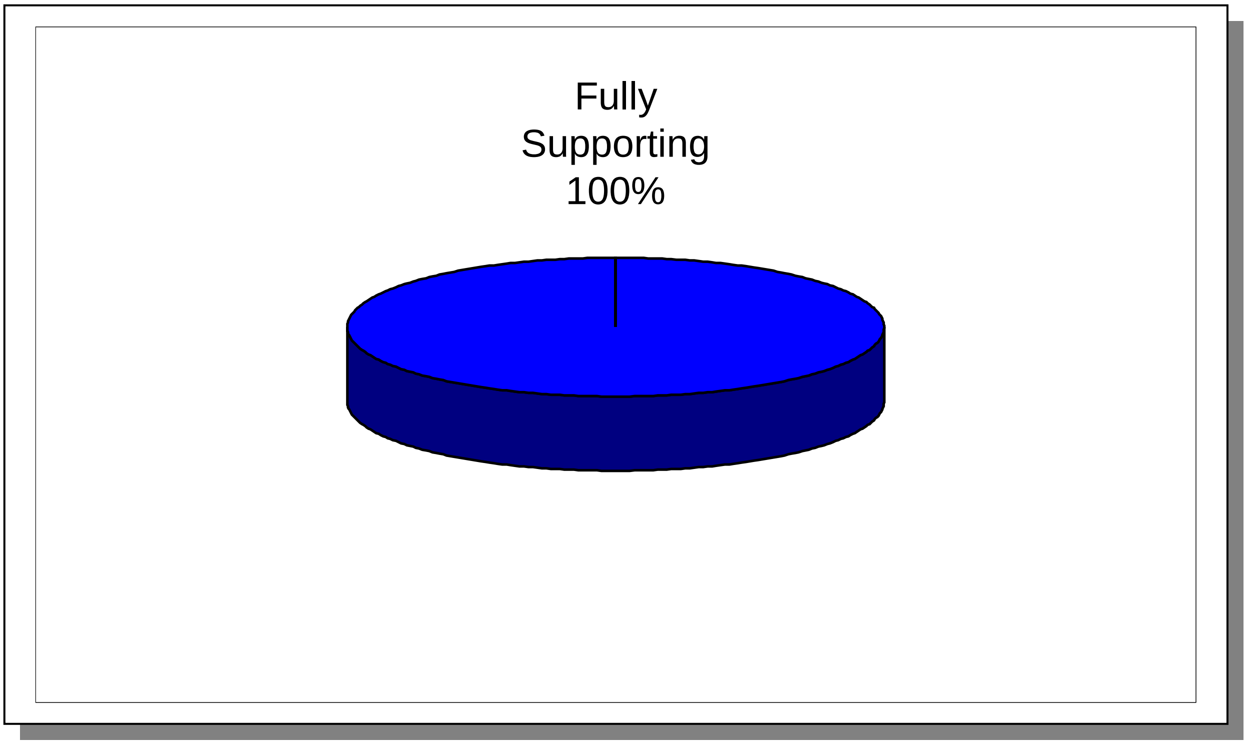


Figure 3-6. Water Quality Assessment of Lakes in the Old Hickory Lake Watershed. *Assessment data are based on the 2004 Water Quality Assessment of 27,439 lake acres in the watershed. More information is provided in Appendix III.*

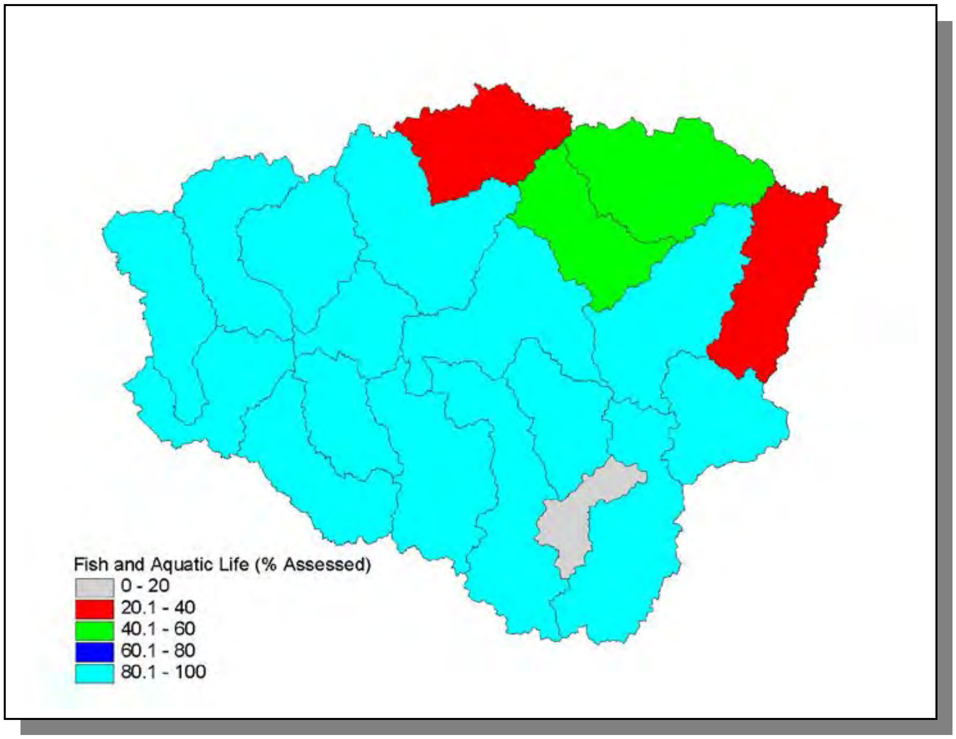


Figure 3-7. Percentage of Stream Miles Assessed for Support of Fish and Aquatic Life Designated Use in HUC-12 Subwatersheds.

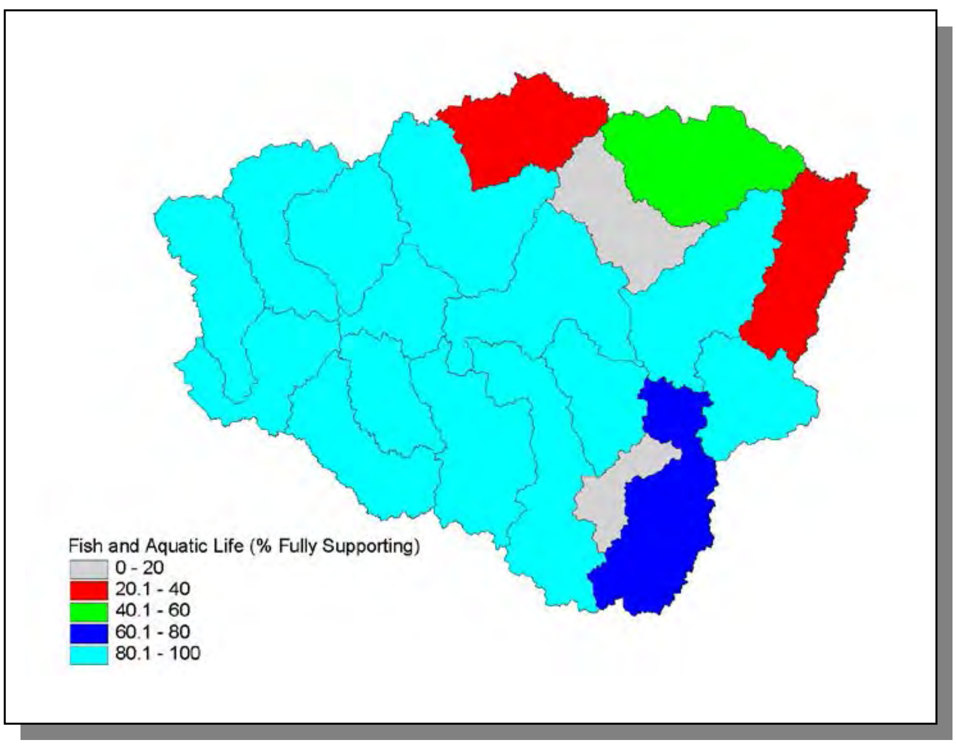


Figure 3-8. Percentage of Stream Miles Fully Supporting for Fish and Aquatic Life Designated Use in HUC-12 Subwatersheds.

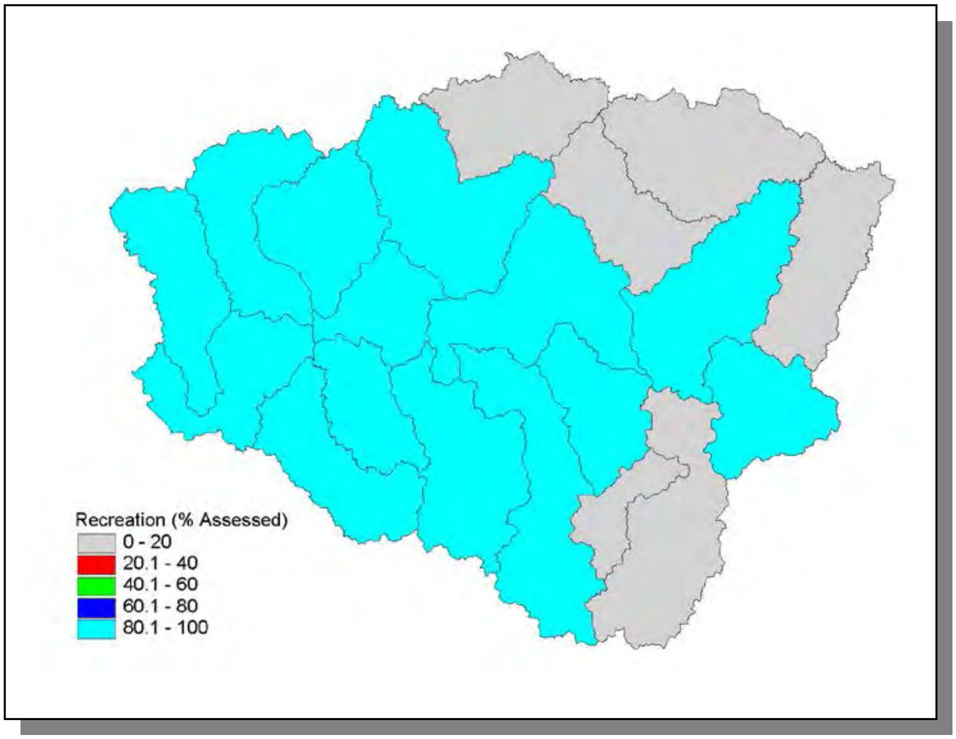


Figure 3-9. Percentage of Stream Miles Assessed for Support of Recreation Designated Use in HUC-12 Subwatersheds.

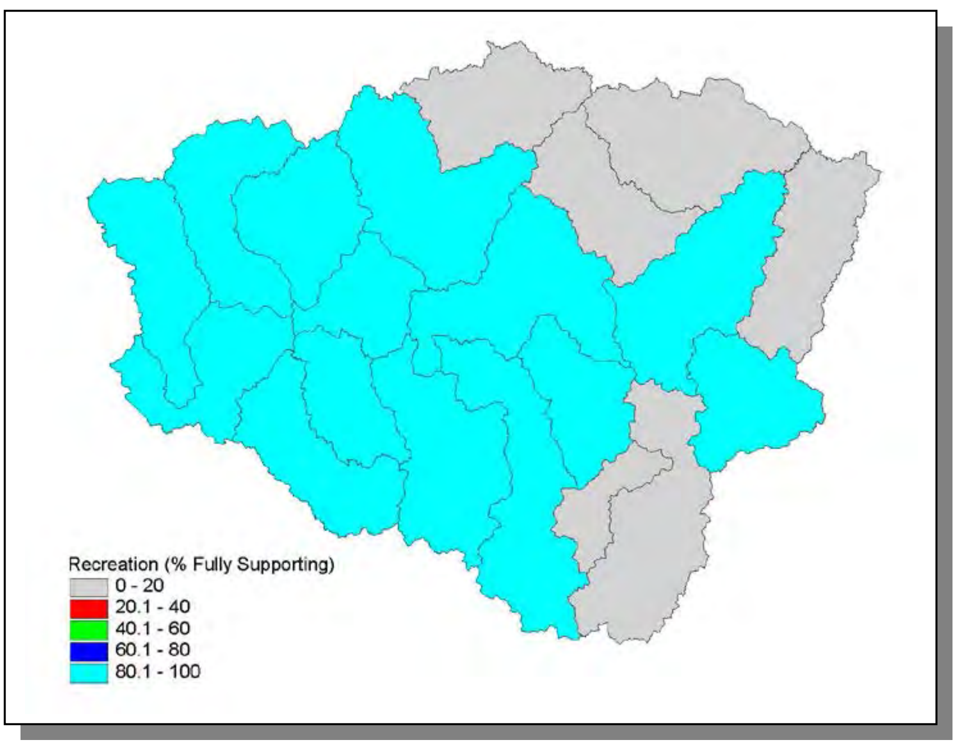


Figure 3-10. Percentage of Stream Miles Fully Supporting for Recreation Designated Use in HUC-12 Subwatersheds.

3.3.A. Assessment Summary.

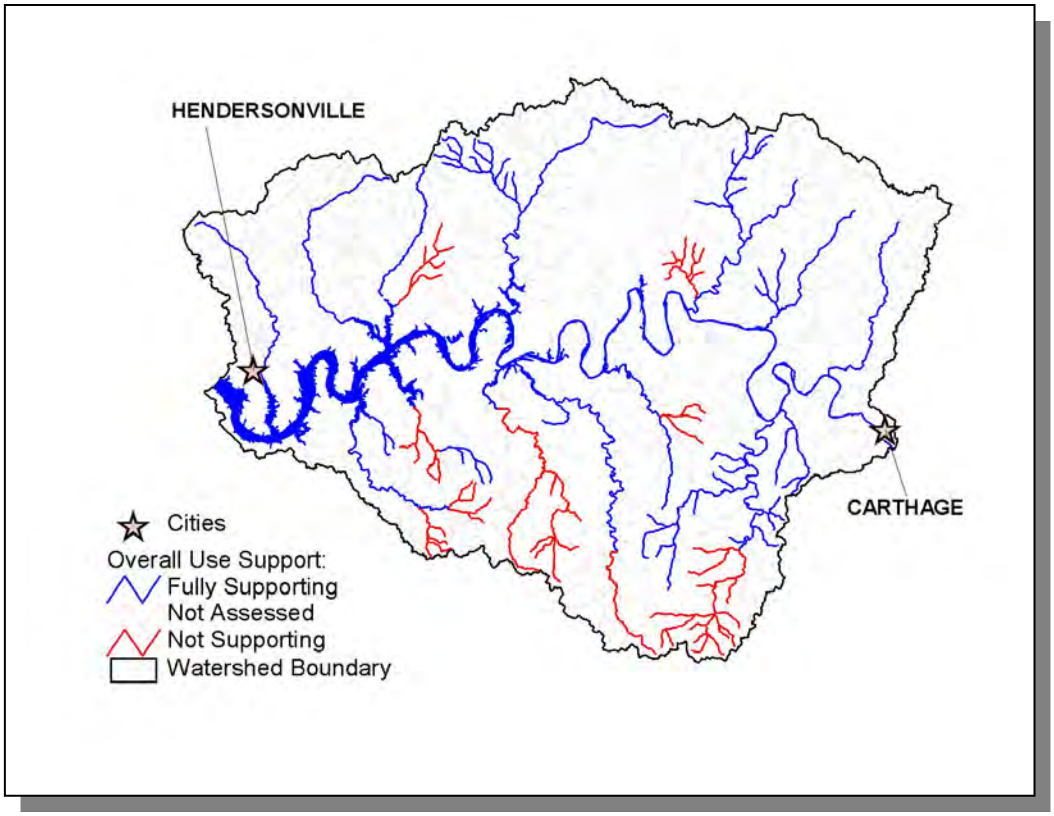


Figure 3-11. Overall Use Support Attainment in the Old Hickory Lake Watershed. *Assessment data are based on the 2004 Water Quality Assessment. Water Quality Standards are described at http://www.state.tn.us/sos/rules/1200/1200-04/1200-04.htm. Locations of Carthage and Hendersonville are shown for reference. More information is provided in Appendix III.*

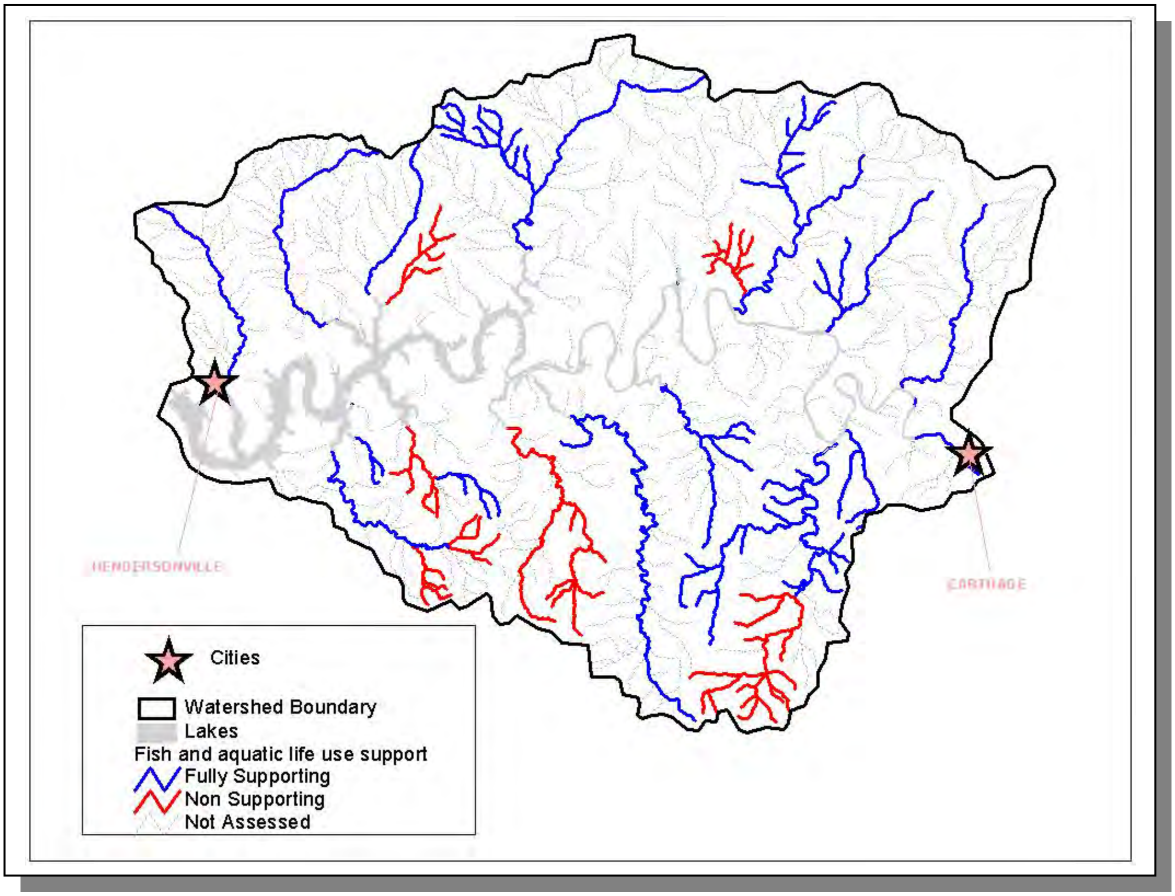


Figure 3-12. Fish and Aquatic Life Use Support Attainment in the Old Hickory Lake Watershed. *Assessment data are based on the 2004 Water Quality Assessment. Water Quality Standards are described at http://www.state.tn.us/sos/rules/1200/1200-04/1200-04.htm. Locations of Carthage and Hendersonville are shown for reference. More information is provided in Appendix III.*

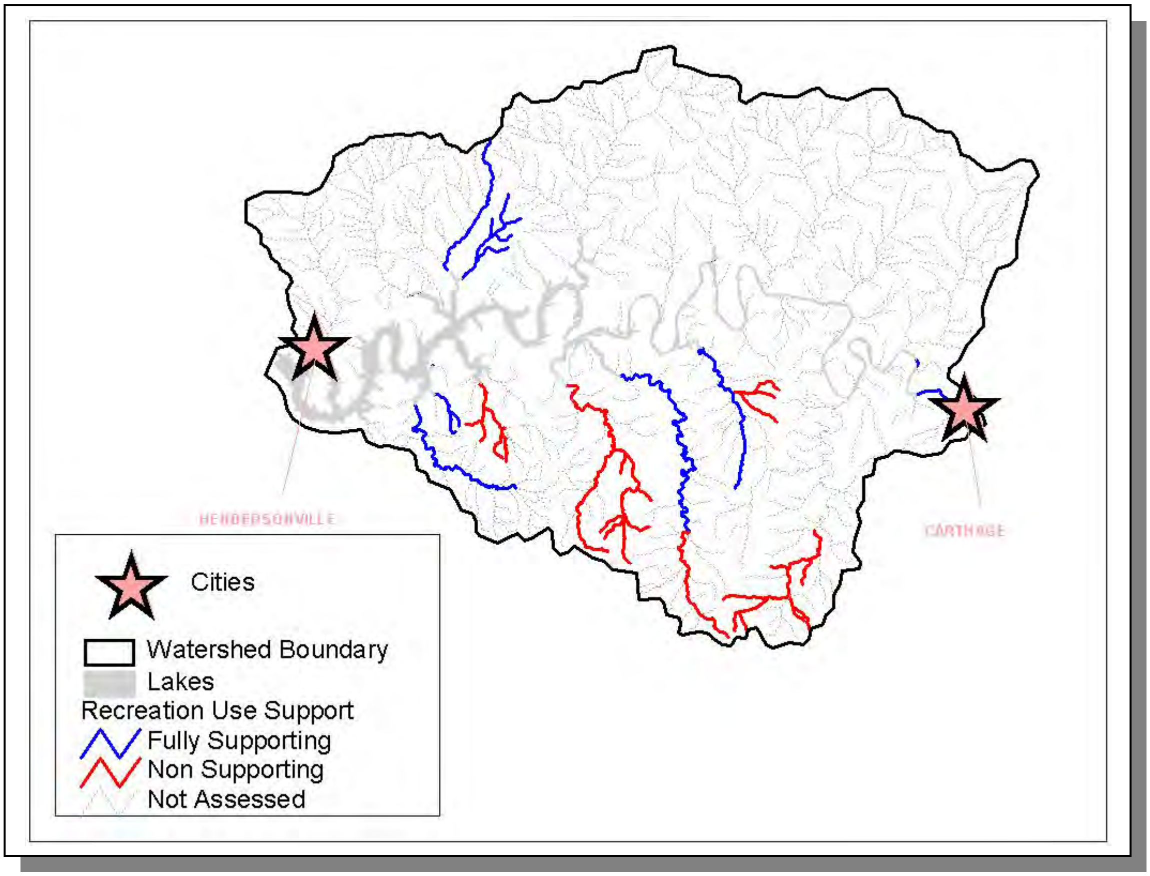


Figure 3-13. Recreation Use Support Attainment in the Old Hickory Lake Watershed. *Assessment data are based on the 2004 Water Quality Assessment. Water Quality Standards are described at http://www.state.tn.us/sos/rules/1200/1200-04/1200-04.htm. Locations of Carthage and Hendersonville are shown for reference. More information is provided in Appendix III.*

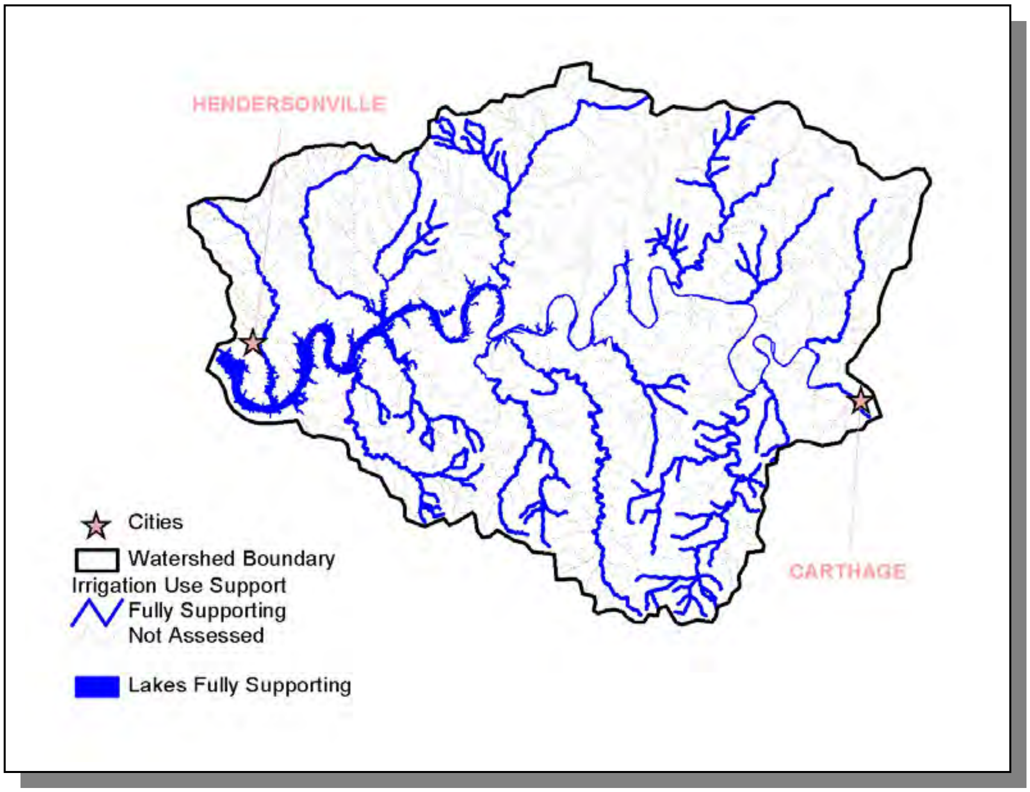


Figure 3-14. Irrigation Use Support Attainment in the Old Hickory lake Watershed. *Assessment data are based on the 2004 Water Quality Assessment. Water Quality Standards are described at http://www.state.tn.us/sos/rules/1200/1200-04/1200-04.htm. Locations of carthage and Hendersonville are shown for reference. More information is provided in Appendix III.*

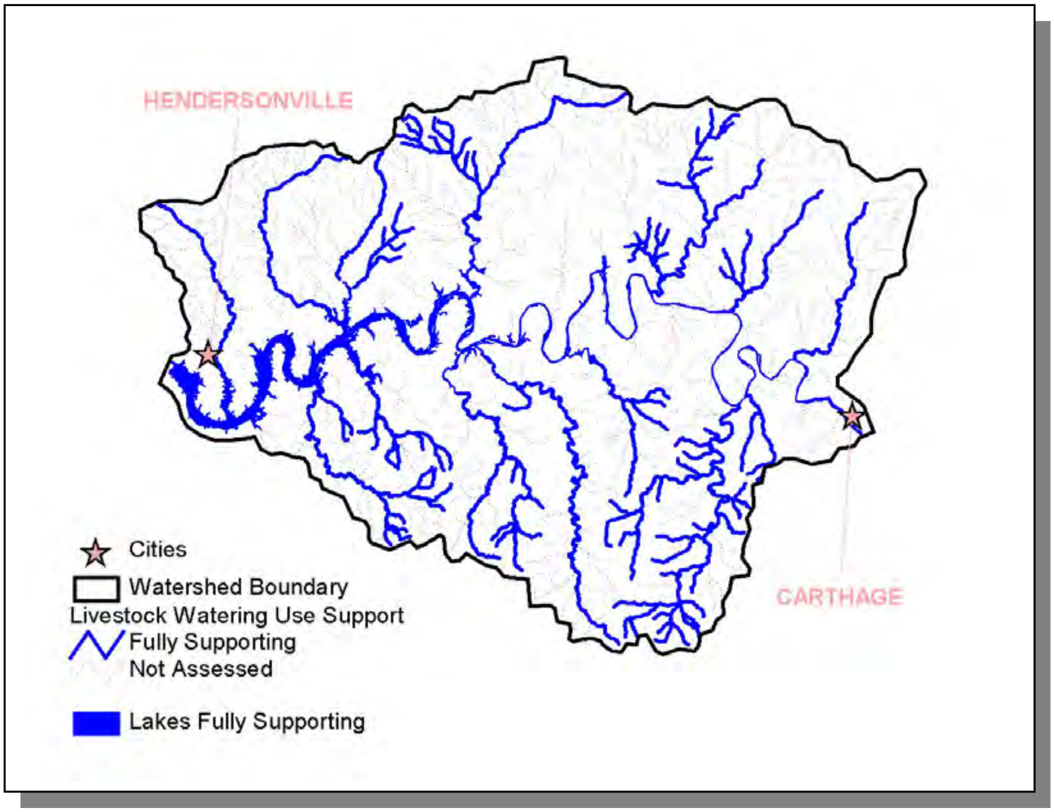


Figure 3-15. Livestock Watering and Wildlife Use Support Attainment in the Old Hickory Lake Watershed. *Assessment data are based on the 2004 Water Quality Assessment. Water Quality Standards are described at http://www.state.tn.us/sos/rules/1200/1200-04/1200-04.htm. Locations of Carthage and Hendersonville are shown for reference. More information is provided in Appendix III.*

3.3.B. Use Impairment Summary.

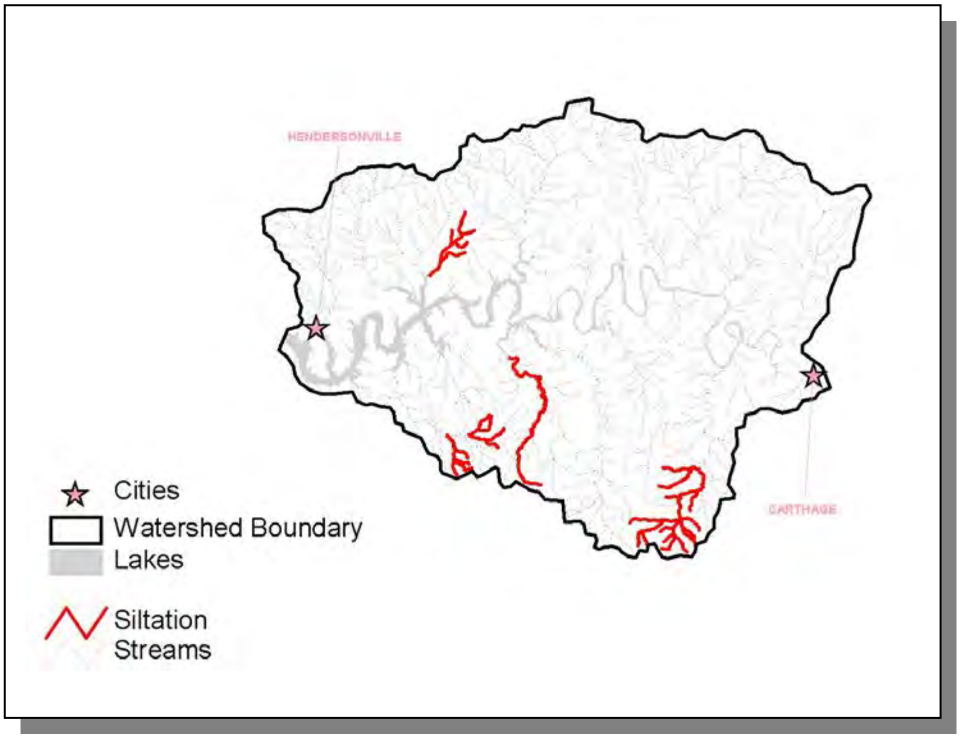


Figure 3-16. Impaired Streams Due to Siltation in the Old Hickory Lake Watershed. *Assessment data are based on the 2004 Water Quality Assessment. Locations of Carthage and Hendersonville are shown for reference. More information is provided in Appendix III.*

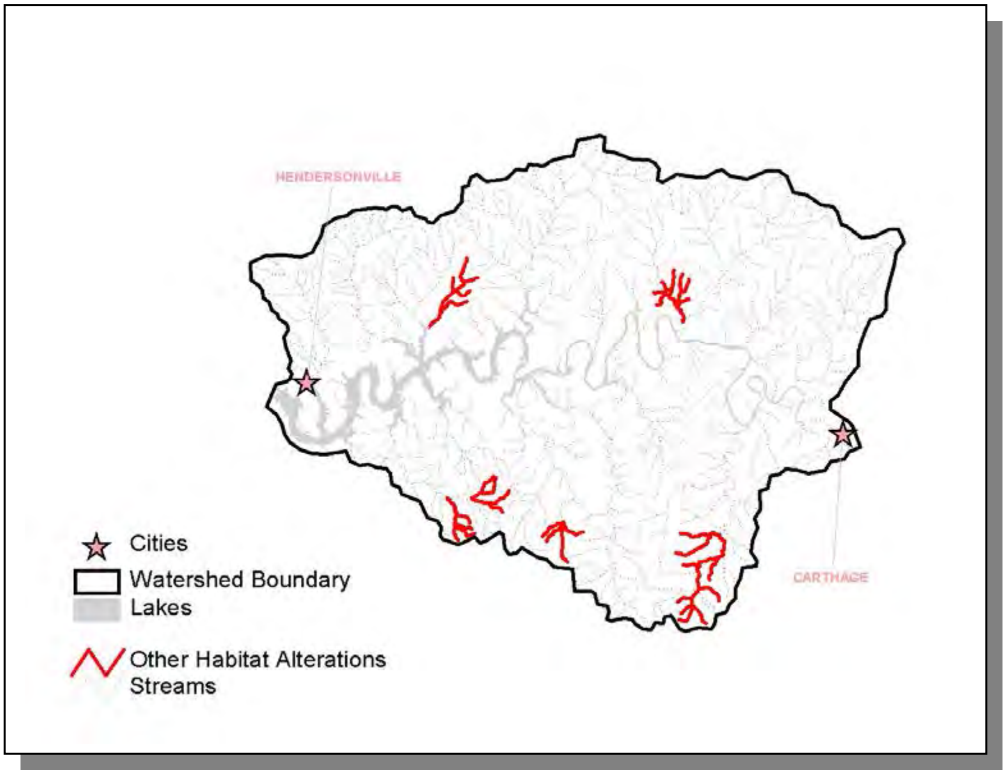


Figure 3-17. Impaired Streams Due to Other Habitat Alterations in the Old Hickory Lake Watershed. *Assessment data are based on the 2004 Water Quality Assessment. Locations of Carthage and Hendersonville are shown for reference. More information is provided in Appendix III.*

The listing of impaired waters that do not support designated uses (the 303(d) list) is traditionally submitted to EPA every two years. A copy of the most recent 303(d) list may be downloaded from:
http://tennessee.gov/environment/wpc/publications/303d2006.pdf

Since the year 2002, the 303(d) list has been compiled by using EPA's ADB (Assessment Database) software developed by RTI (Research Triangle Institute). The ADB allows for a more detailed segmentation of waterbodies. While this results in a more accurate description of the status of water quality, it makes it difficult when comparing water quality assessments with and without using this tool. A more meaningful comparison will be between assessments completed in Year 3 of each succeeding five-year cycle.

The ADB was used to create maps that illustrate water quality. These maps may be viewed on TDEC's homepage at http://gis2.memphis.edu/wpc.

CHAPTER 4

POINT AND NONPOINT SOURCE CHARACTERIZATION OF THE OLD HICKORY LAKE WATERSHED

4.1. BACKGROUND. This chapter is organized by HUC-12 subwatershed, and the description of each subwatershed is divided into four parts:

- i. General description of the subwatershed
- ii. Description of point source contributions
- ii.a. Description of facilities discharging to water bodies listed on the 2004 303(d) list
- iii. Description of nonpoint source contributions

The Old Hickory Lake Watershed (HUC 05130201) has been delineated into five HUC 10 (10-digit) subwatersheds, each of which is composed of two or more HUC-12 subwatersheds.

Information for this chapter was obtained from databases maintained by the Division of Water Pollution Control or provided in the WCS (Watershed Characterization System) data set. The WCS used was version 2.0 (developed by Tetra Tech, Inc for EPA Region 4) released in 2003.

WCS integrates with ArcView® v3.x and Spatial Analyst® v1.1 to analyze user-delineated (sub)watersheds based on hydrologically connected water bodies. Reports are generated by integrating WCS with Microsoft® Word. Land Use/Land Cover information from 1992 MRLC (Multi-Resolution Land Cover) data are calculated based on the proportion of county-based land use/land cover in user-delineated (sub)watersheds. Nonpoint source data in WCS are based on agricultural census data collected 1992–1998; nonpoint source data were reviewed by Tennessee NRCS staff.

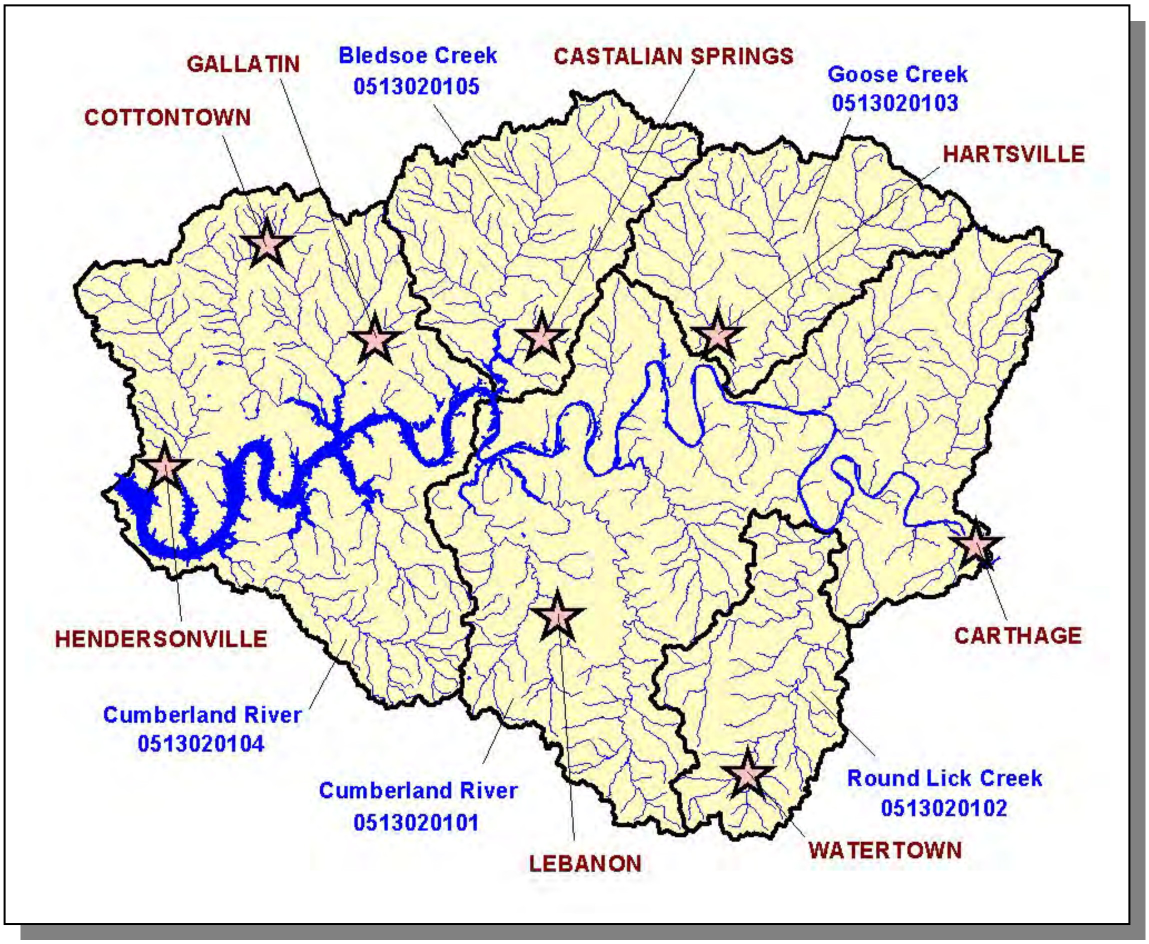


Figure 4-1. The Old Hickory Lake Watershed is Composed of Five USGS-Delineated Subwatersheds (10-Digit Subwatersheds). *Locations of Carthage, Castalian Springs, Cottontown, Gallatin, Hartsville, Hendersonville, Lebanon, and Watertown, are shown for reference.*

4.2. CHARACTERIZATION OF HUC-10 SUBWATERSHEDS. The Watershed Characterization System (WCS) software and data sets provided by EPA Region IV were used to characterize each subwatershed in the Old Hickory Lake Watershed.

HUC-10	HUC-12
0513020101	051302010101 (Cumberland River)
	051302010102 (Peyton Creek)
	051302010103 (Cumberland River)
	051302010104 (Cumberland River)
	051302010105 (Cedar Creek)
	051302010106 (Spring Creek)
	051302010107 (Bartons Creek)
0513020102	051302010201 (Round Lick Creek)
	051302010202 (Jennings Fork)
0513020103	051302010301 (Upper Goose Creek)
	051302010302 (Lower Goose Creek)
0513020104	051302010401 (Cumberland River)
	051302010402 (Spencer Creek)
	051302010403 (East Camp Creek)
	051302010404 (Station Camp Creek)
	051302010405 (Cumberland River)
	051302010406 (Cedar Creek)
	051302010407 (Drakes Creek)
0513020105	051302010501 (Upper Bledsoe Creek)
	051302010502 (Lower Bledsoe Creek)

Table 4-1. HUC-12 Drainage Areas are Nested Within HUC-10 Drainages. *NRCS worked with USGS to delineate the HUC-10 and HUC-12 drainage boundaries.*

4.2.A. 0513020101.

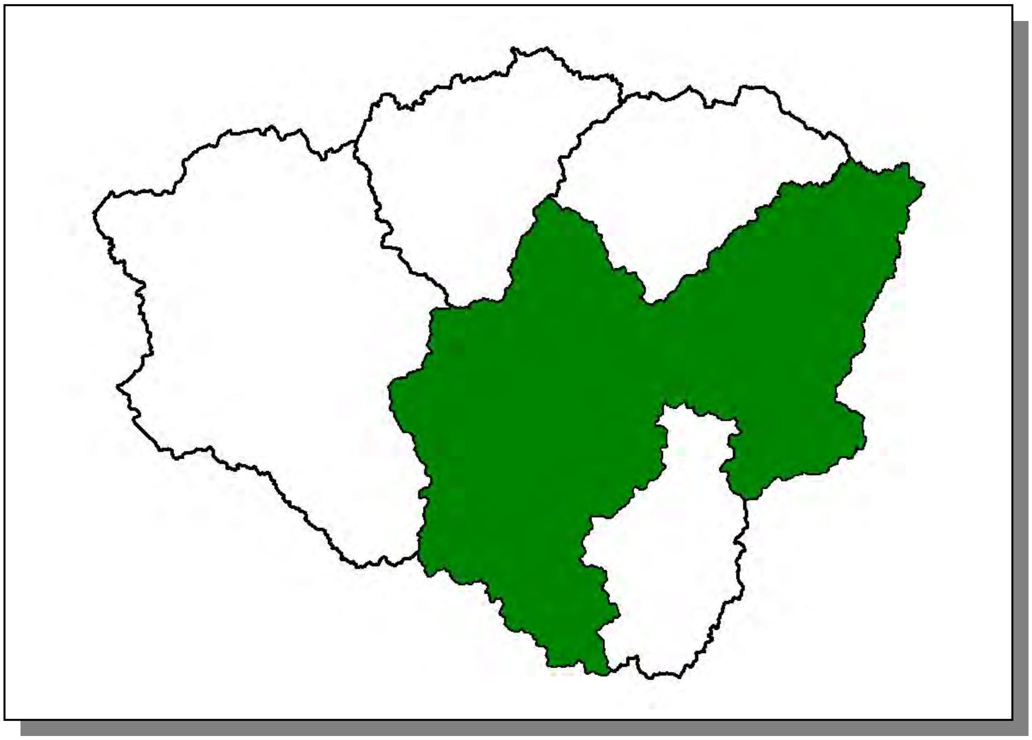


Figure 4-2. Location of Subwatershed 0513020101. *All Old Hickory Lake HUC-10 subwatershed boundaries are shown for reference.*

4.2.A.i. 051302010101 (Cumberland River).

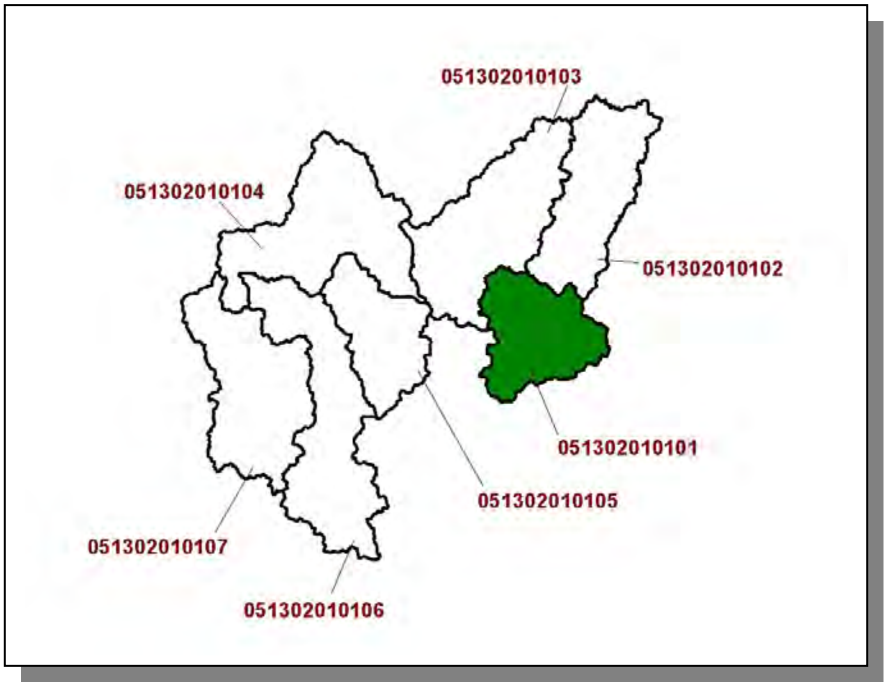


Figure 4-3. Location of Subwatershed 051302010101. *HUC-12 subwatershed boundaries are shown for reference.*

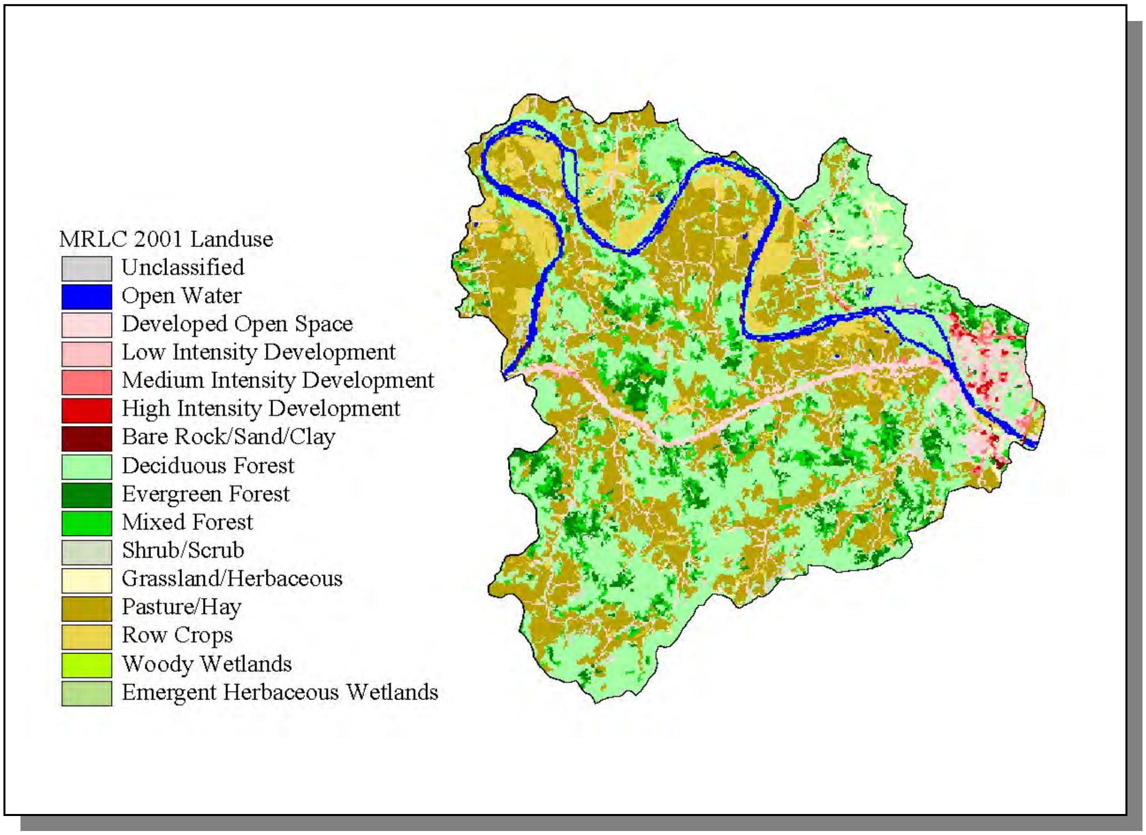


Figure 4-4. Illustration of Land Use Distribution in Subwatershed 051302010101.

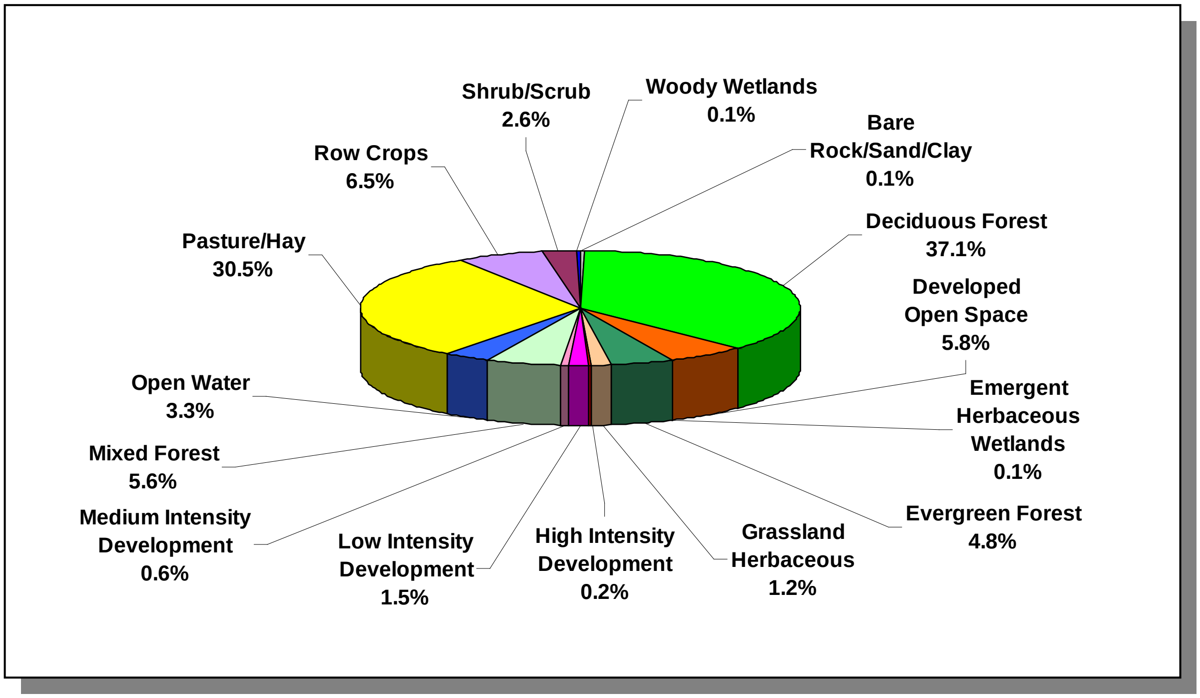


Figure 4-5. Land Use Distribution in Subwatershed 051302010101. *More information is provided in Appendix IV.*

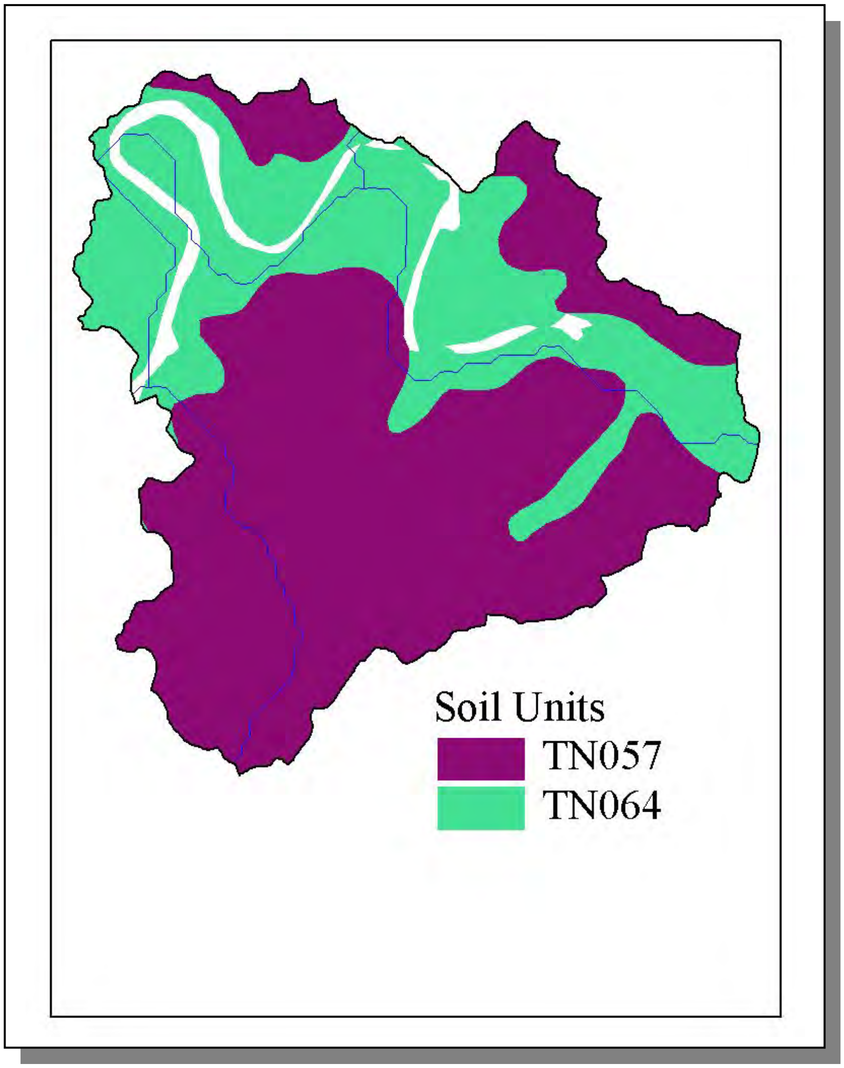


Figure 4-6. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010101.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN057	0.00	C	1.14	5.01	Clayey Loam	0.33
TN064	7.00	C	1.19	5.82	Silty Loam	0.37

Table 4-2. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010101. *The definition of "Hydrologic Group" is provided in Appendix IV.*

	COUNTY POPULATION				ESTIMATED POPULATION IN WATERSHED			
County	1990	1997	2000	Portion of Watershed (%)	1990	1997	2000	% Change (1990-2000)
Smith	14,143	16,047	17,712	13.13	1,857	2,107	2,325	25.2

Table 4-3. Population Estimates in Subwatershed 051302010101.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Carthage	Smith	2,368	1,080	1,054	23	3
South Carthage	Smith	851	376	295	81	0
Total		**3,219**	**1,456**	**1,349**	**104**	**3**

Table 4-4. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 051302010101.

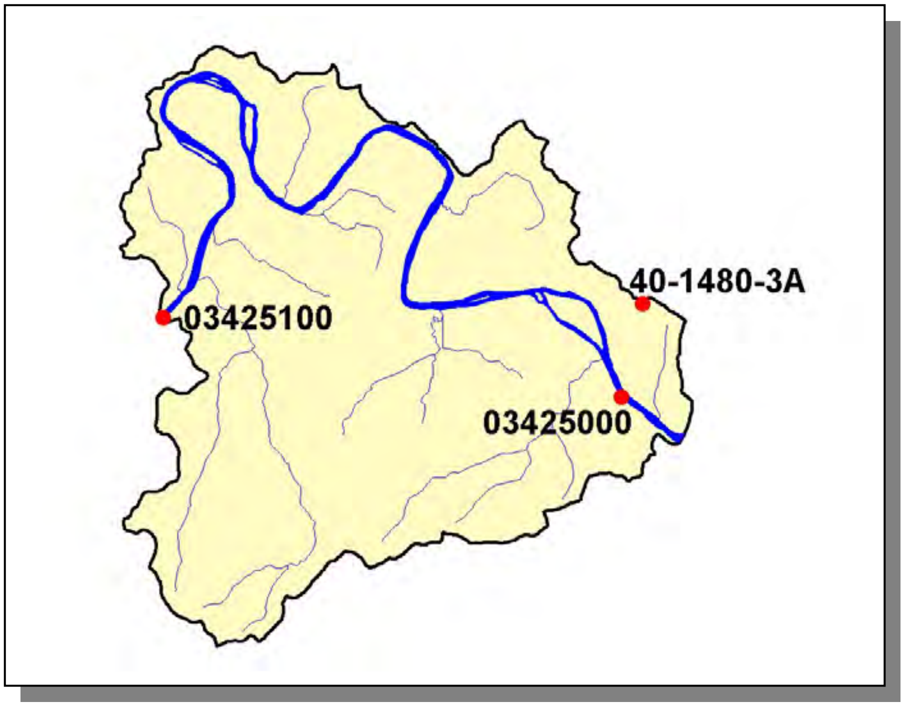


Figure 4-7. Location of Historical Streamflow Data Collection Sites in Subwatershed 051302010101. *More information is provided in Appendix IV.*

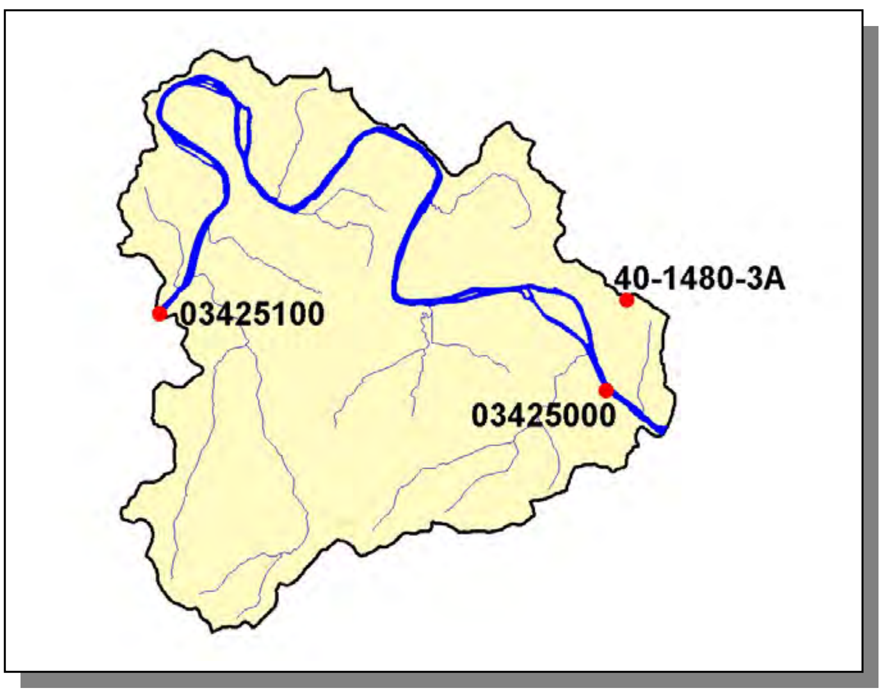


Figure 4-8. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 051302010101. *More information, including site names and locations, is provided in Appendix IV.*

4.2.A.i.a. Point Source Contributions.

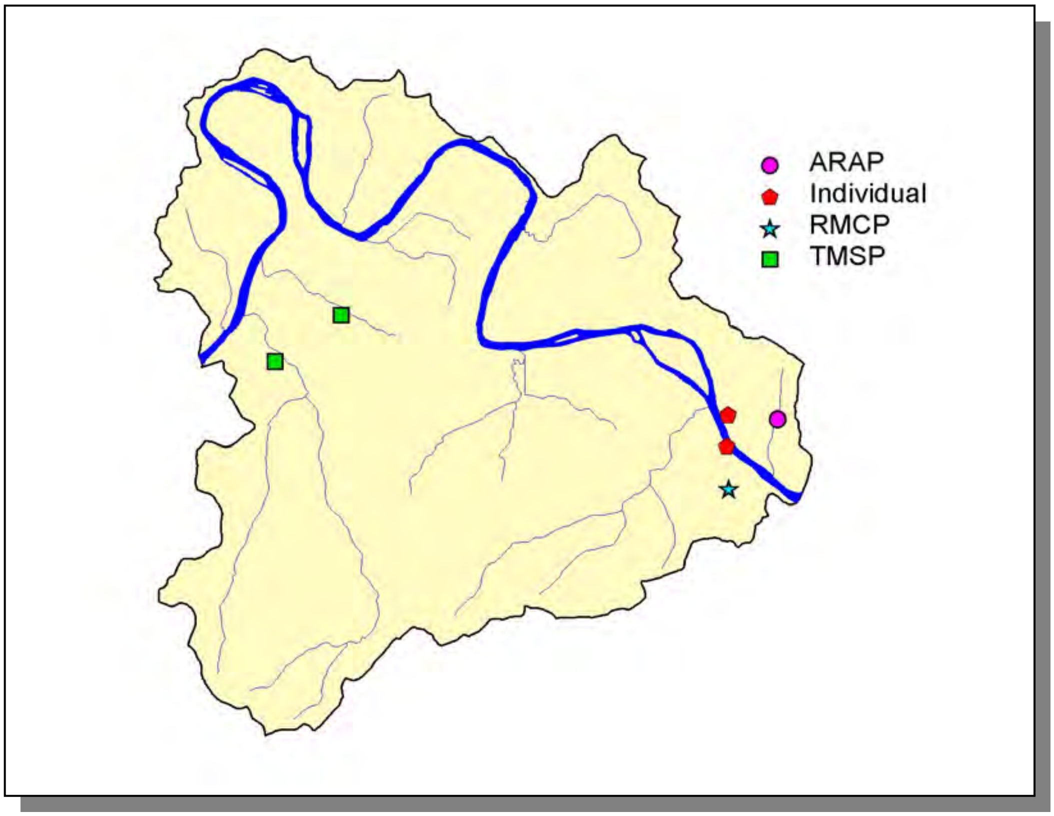


Figure 4-9. Location of Permits Issued in Subwatershed 051302010101. *More information, including the names of facilities, is provided in Appendix IV.*

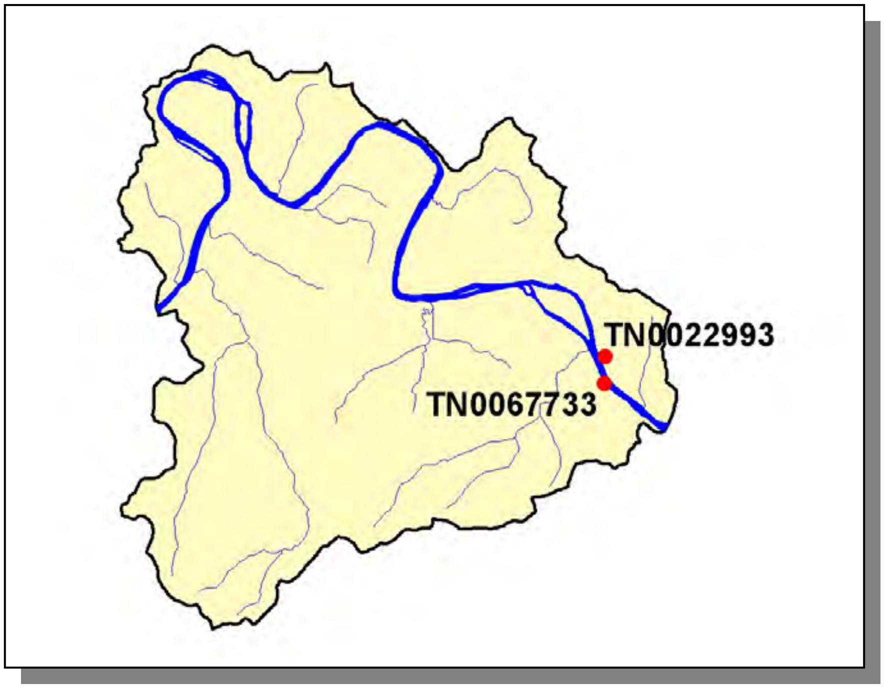


Figure 4-10. Location of Active NPDES Sites in Subwatershed 051302010101. *More information, including the names of facilities, is provided in Appendix IV.*

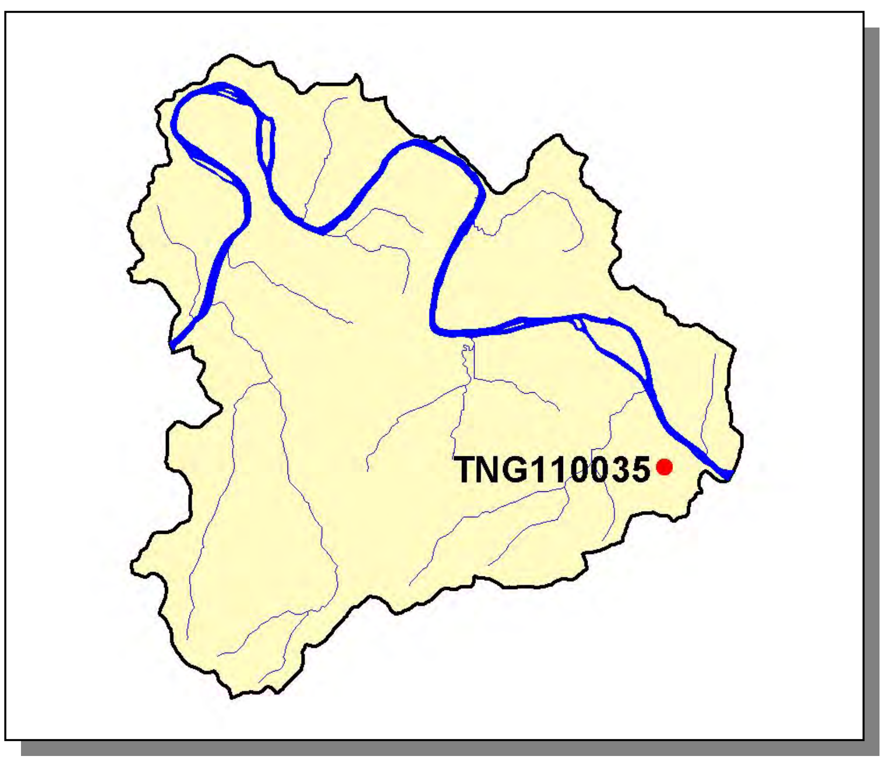


Figure 4-11. Location of Ready Mix Concrete Plants (RMCP) in Subwatershed 051302010101. *More information is provided in Appendix IV.*

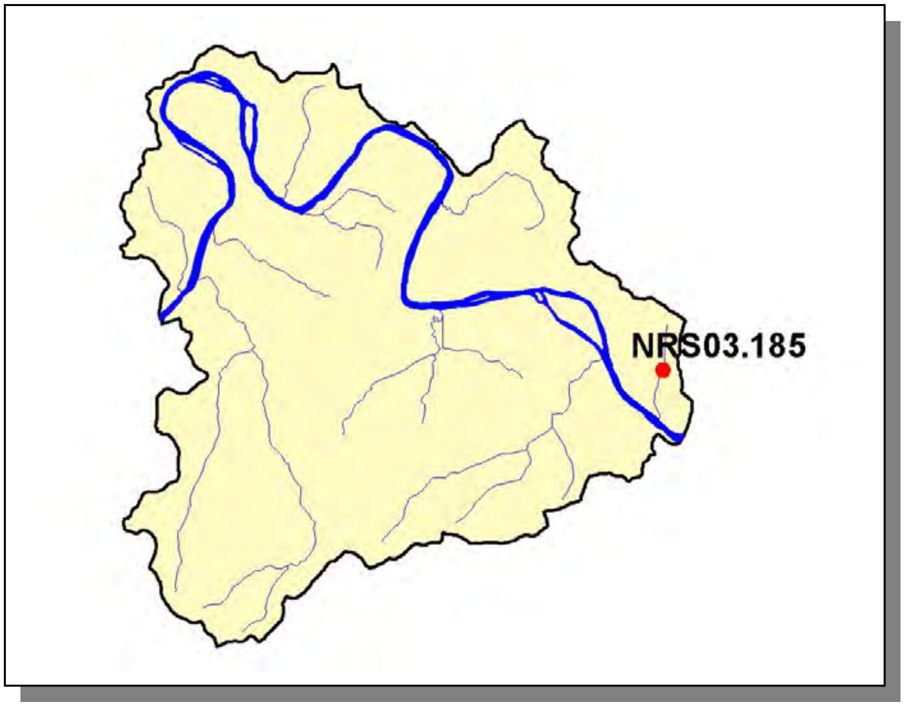


Figure 4-12. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 051302010101. *More information is provided in Appendix IV.*

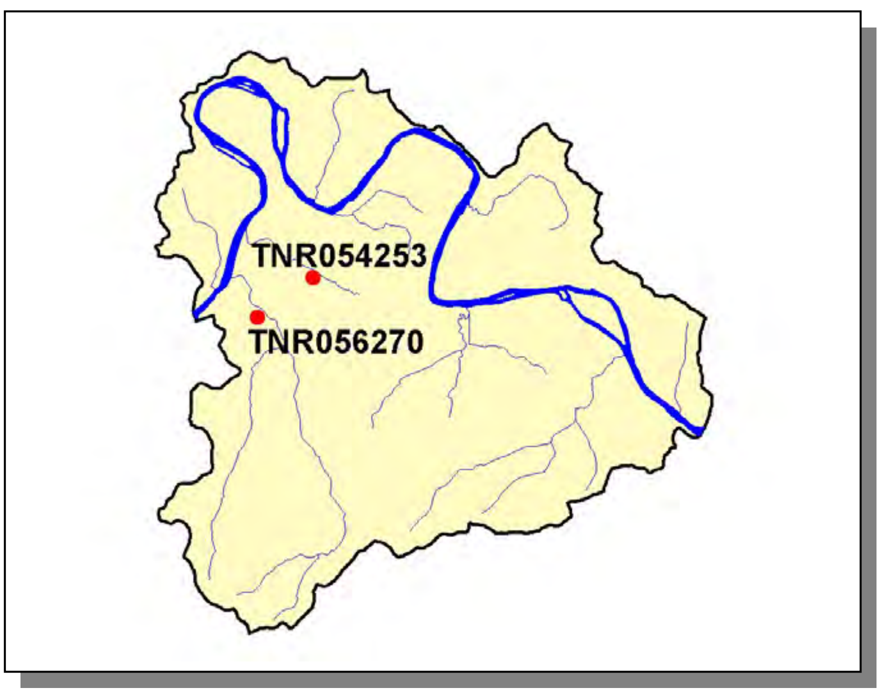


Figure 4-13. Location of TMSP Sites in Subwatershed 051302010101. *More information, including the names of facilities, is provided in Appendix IV.*

4.2.A.i.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
2,433	4,201	115	5	267	47

Table 4-5. Summary of Livestock Count Estimates in Subwatershed 051302010101. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Smith	17,187	29,672	814	683	1,883	332

Table 4-6. Summary of Livestock Count Estimates in Smith County. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

	INVENTORY		REMOVAL RATE	
County	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Smith	81.0	81.0	1.1	2.6

Table 4-7. Forest Acreage and Annual Removal Rates (1987-1994) in Smith County.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	1.47
Grass (Hayland)	0.12
Legumes, Grass (Hayland)	0.11
Grass, Forbs, Legumes (Mixed Pasture)	0.66
Soybeans (Row Crops)	6.36
Tobacco (Row Crops)	6.96
Farmsteads and Ranch Headquarters	0.45

Table 4-8. Annual Estimated Total Soil Loss in Subwatershed 051302010101.

4.2.A.ii. 051302010102 (Peyton Creek).

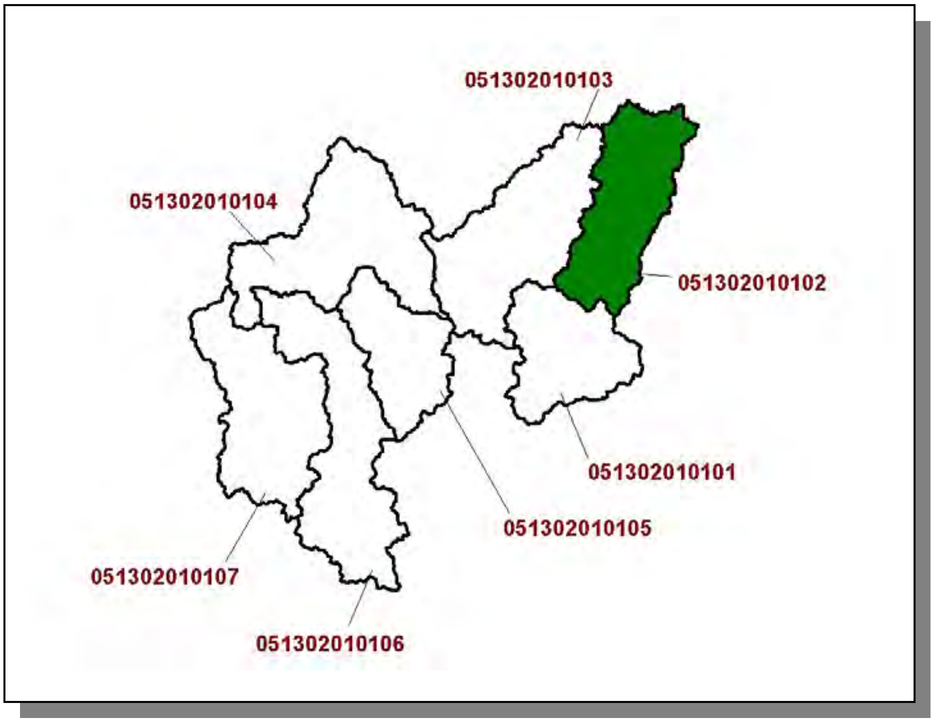


Figure 4-14. Location of Subwatershed 051302010102. *HUC-12 subwatershed boundaries are shown for reference.*

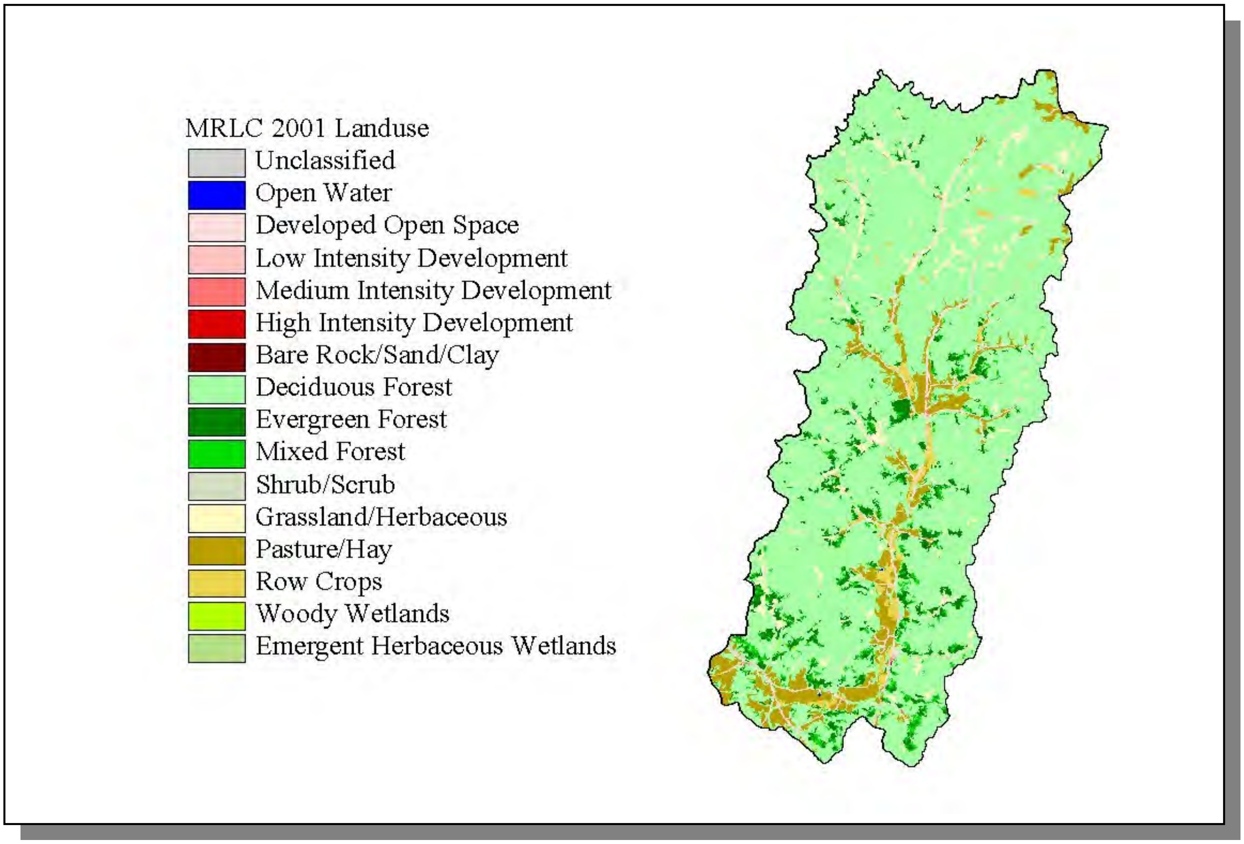


Figure 4-15. Illustration of Land Use Distribution in Subwatershed 051302010102.

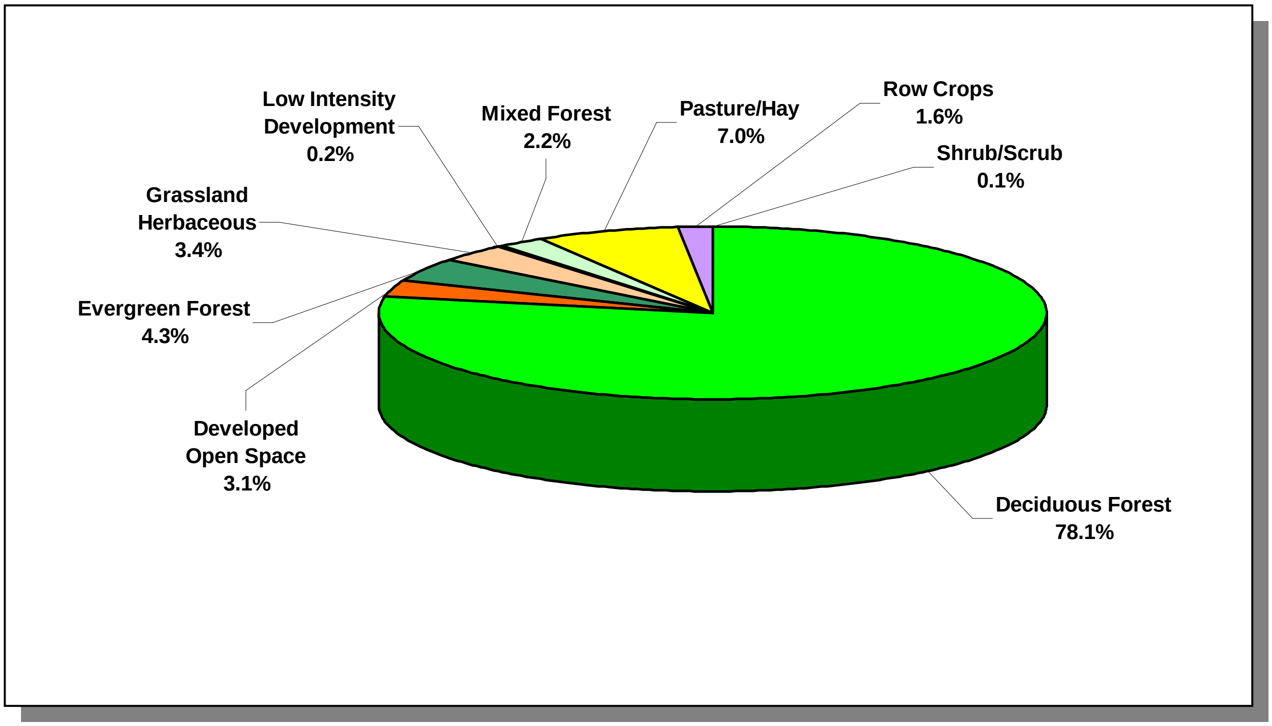


Figure 4-16. Land Use Distribution in Subwatershed 051302010102. *More information is provided in Appendix IV.*

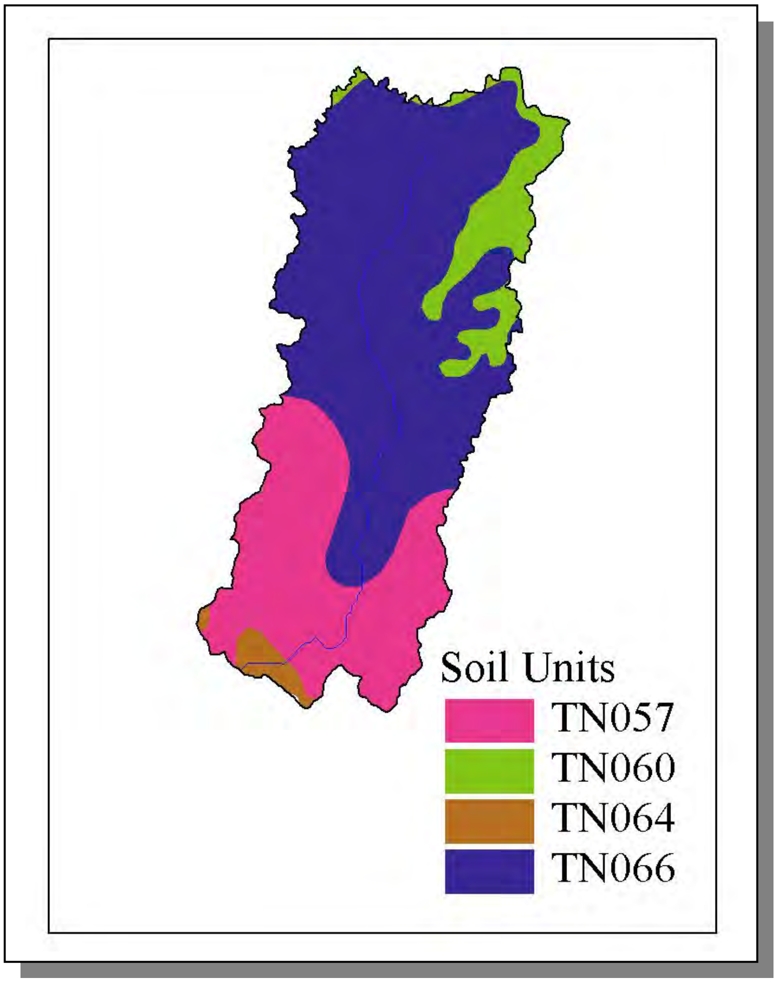


Figure 4-17. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010102.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN057	0.00	C	1.14	5.01	Clayey Loam	0.33
TN060	5.00	B	1.30	5.32	Silty Loam	0.39
TN064	7.00	C	1.19	5.82	Silty Loam	0.37
TN066	0.00	B	2.62	4.75	Loam	0.28

Table 4-9. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010102. *The definition of "Hydrologic Group" is provided in Appendix IV.*

	COUNTY POPULATION				ESTIMATED POPULATION IN WATERSHED			
County	1990	1997	2000	Portion of Watershed (%)	1990	1997	2000	% Change (1990-2000)
Macon	15,906	17,854	20,386	3.83	609	684	781	28.2
Smith	14,143	16,047	17,712	11.77	1,664	1,888	2,084	25.2
Trousdale	5,920	6,748	7,259	1.09	65	74	79	21.5
Total	**35,969**	**40,649**	**45,357**		**2,338**	**2,646**	**2,944**	**25.9**

Table 4-10. Population Estimates in Subwatershed 051302010102.

Figure 4-18. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 051302010102. *More information, including site names and locations, is provided in Appendix IV.*

4.2.A.ii.a. Point Source Contributions.

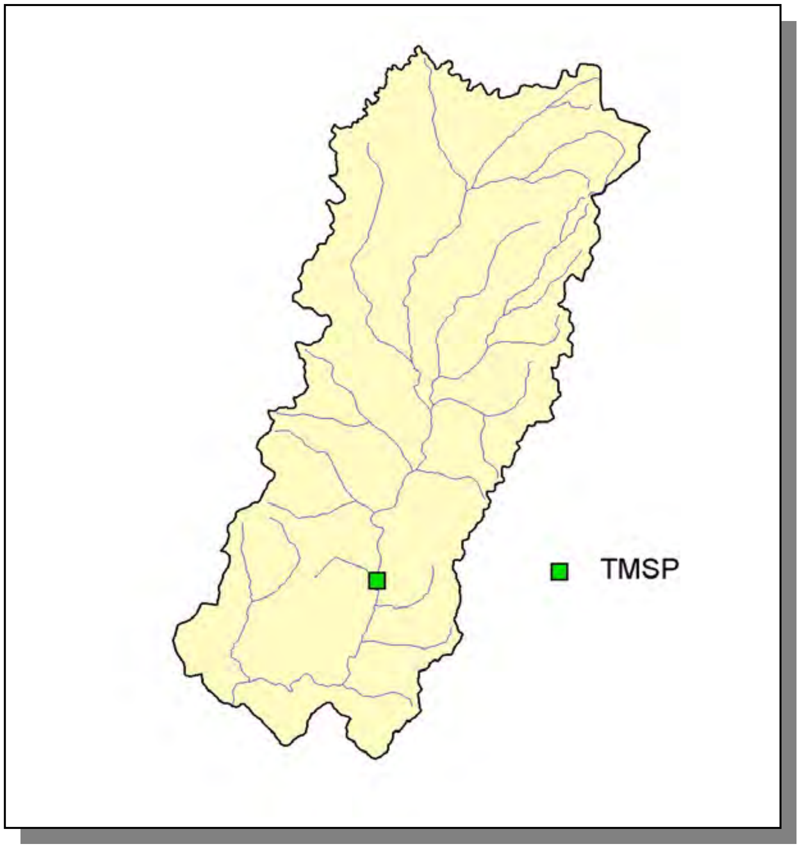


Figure 4-19. Location of Permits Issued in Subwatershed 051302010102. *More information, including the names of facilities, is provided in Appendix IV.*

Figure 4-20. Location of TMSP Sites in Subwatershed 051302010102. *More information, including the names of facilities, is provided in Appendix IV.*

4.2.A.ii.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
1,660	2,868	72	<5	194	29

Table 4-11. Summary of Livestock Count Estimates in Subwatershed 051302010102. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Macon	15,039	26,098	318	65	2,377	111
Smith	17,187	29,672	814	683	1,883	332
Trousdale	6,672	11,344	135	243	112	195

Table 4-12. Summary of Livestock Count Estimates in Macon, Smith, and Trousdale Counties. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

CROPS	TONS/ACRE/YEAR
Legumes (Pastureland)	0.10
Grass (Pastureland)	1.19
Grass (Hayland)	0.14
Legumes, Grass (Hayland)	0.12
Legumes (Hayland)	0.13
Grass, Forbs, Legumes (Mixed Pasture)	0.74
Corn (Row Crops)	3.99
Soybeans (Row Crops)	6.36
Tobacco (Row Crops)	7.95
Wheat (Close-Grown Cropland)	3.43
Other Vegetable and Truck Crops	5.48
Conservation Reserve Program Lands	0.28
Farmsteads and Ranch Headquarters	0.37

Table 4-13. Annual Estimated Total Soil Loss in Subwatershed 051302010102.

4.2.A.iii. 051302010103 (Cumberland River).

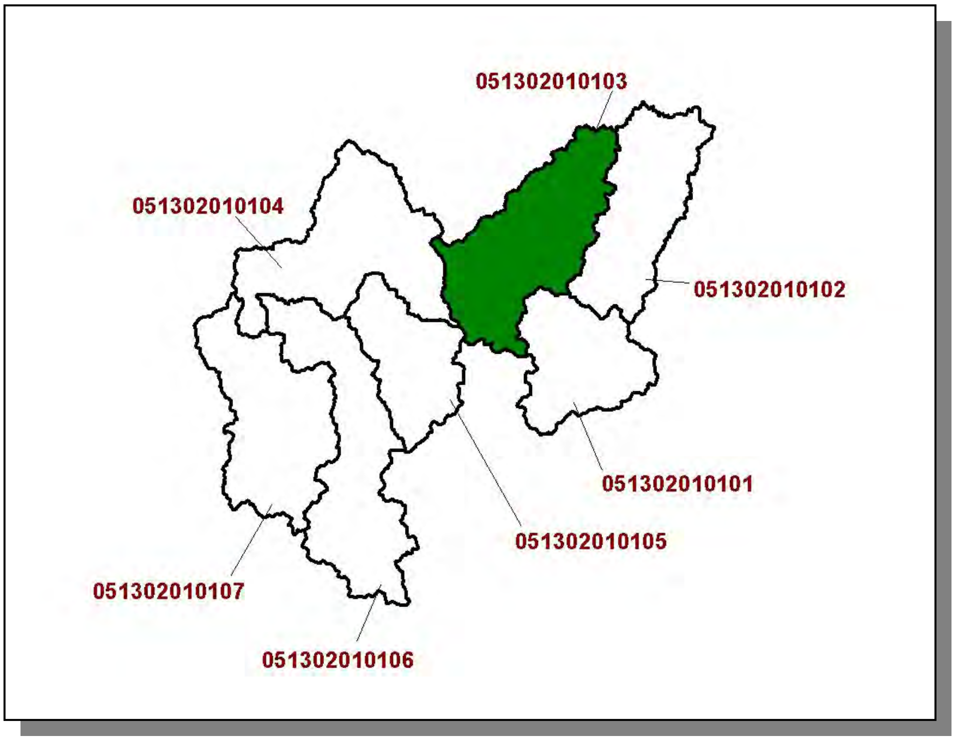


Figure 4-21. Location of Subwatershed 051302010103. *HUC-12 subwatershed boundaries are shown for reference.*

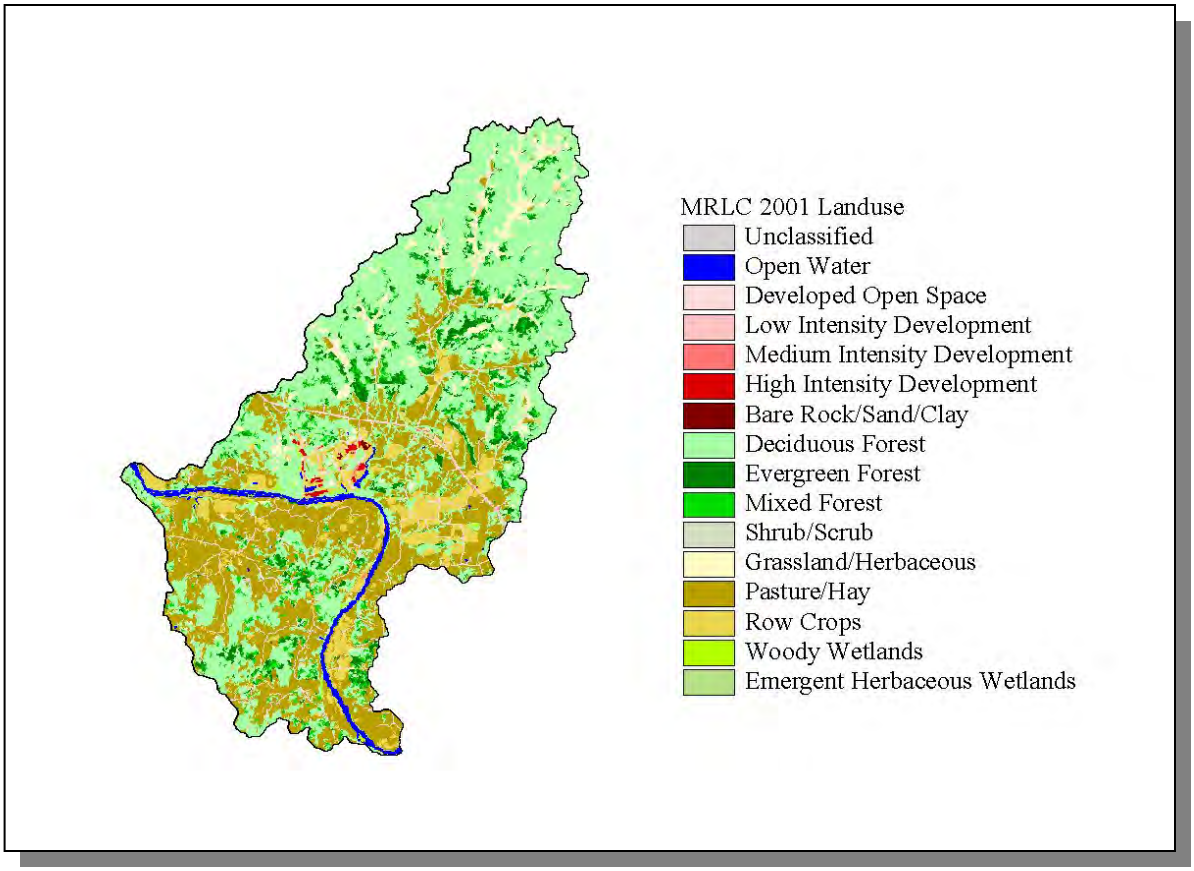


Figure 4-22. Illustration of Land Use Distribution in Subwatershed 051302010103.

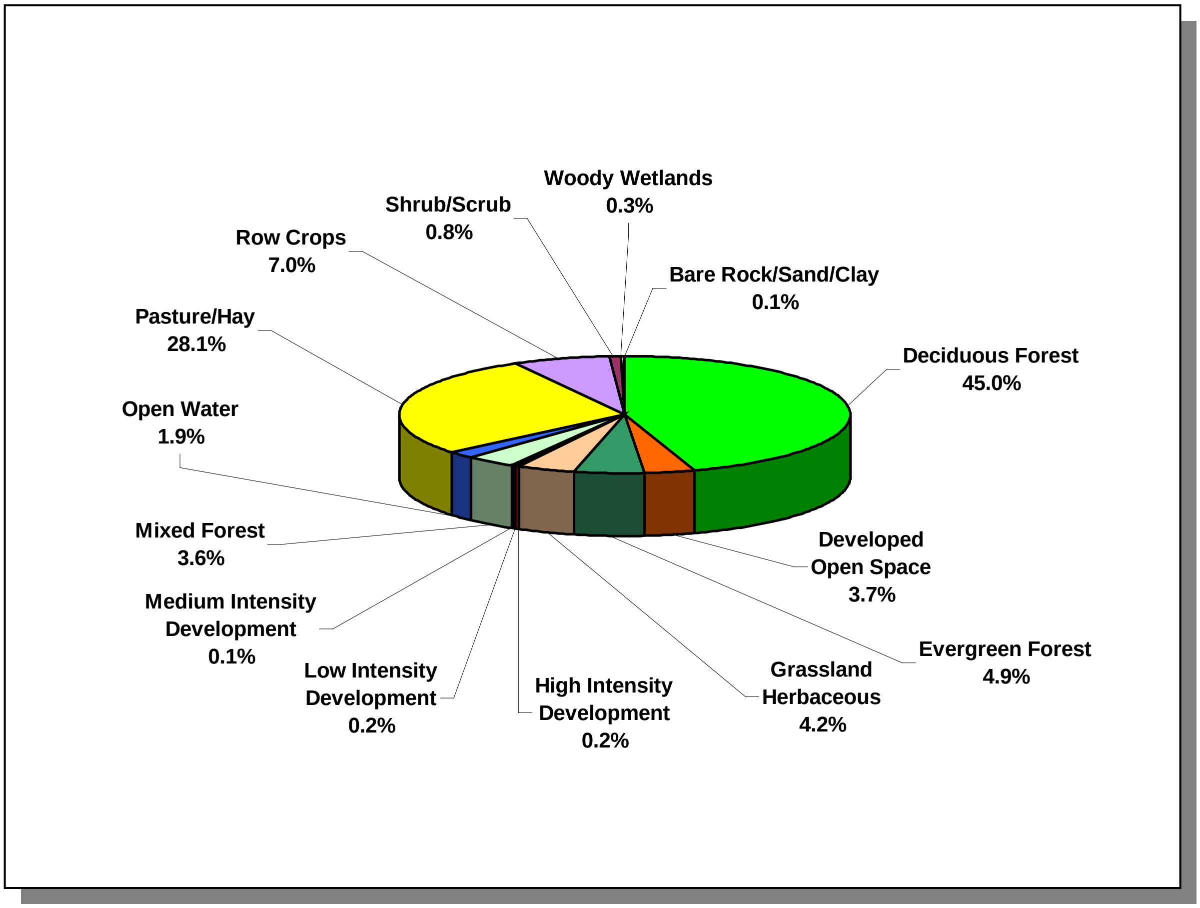


Figure 4-23. Land Use Distribution in Subwatershed 051302010103. *More information is provided in Appendix IV.*

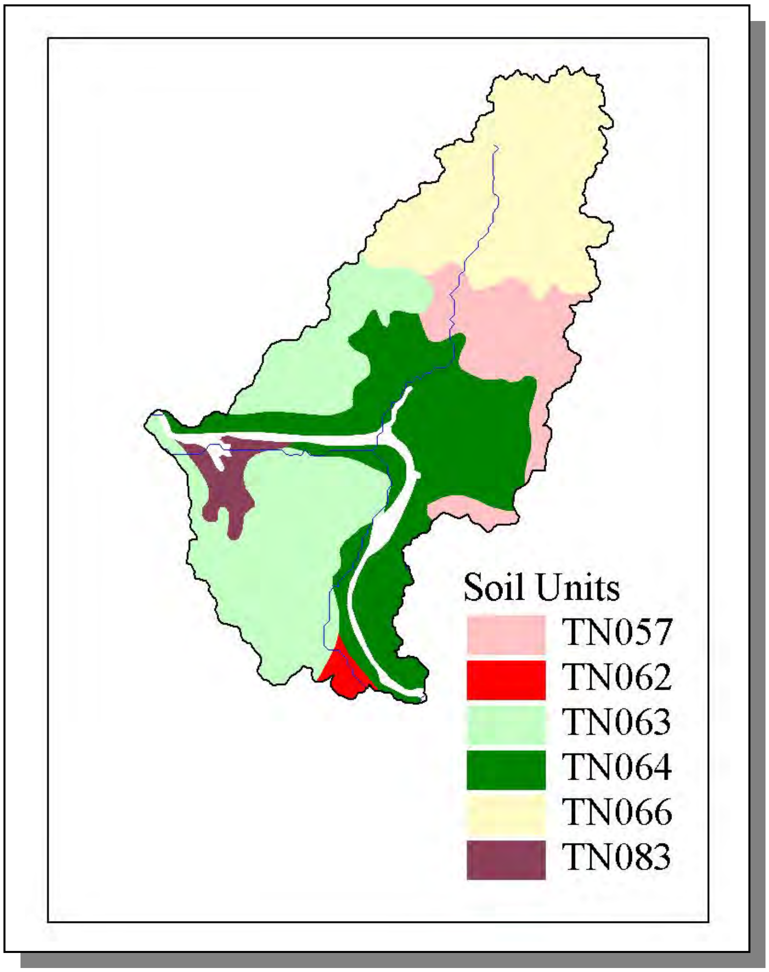


Figure 4-24. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010103.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN057	0.00	C	1.14	5.01	Clayey Loam	0.33
TN062	0.00	C	0.98	4.40	Clayey Loam	0.26
TN063	0.00	C	1.19	5.72	Clayey Loam	0.32
TN064	7.00	C	1.19	5.82	Silty Loam	0.37
TN066	0.00	B	2.62	4.75	Loam	0.28
TN083	9.00	C	1.32	5.97	Silty Loam	0.36

Table 4-14. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010103. *The definition of "Hydrologic Group" is provided in Appendix IV.*

	COUNTY POPULATION				ESTIMATED POPULATION IN WATERSHED			
County	1990	1997	2000	Portion of Watershed (%)	1990	1997	2000	% Change (1990-2000)
Macon	15,906	17,854	20,386	1.04	166	186	213	28.3
Smith	14,143	16,047	17,712	9.1	1,287	1,460	1,612	25.3
Trousdale	5,920	6,748	7,259	26.95	1,595	1,818	1,956	22.6
Total	**35,969**	**40,649**	**45,357**		**3,048**	**3,464**	**3,781**	**24.0**

Table 4-15. Population Estimates in Subwatershed 051302010103.

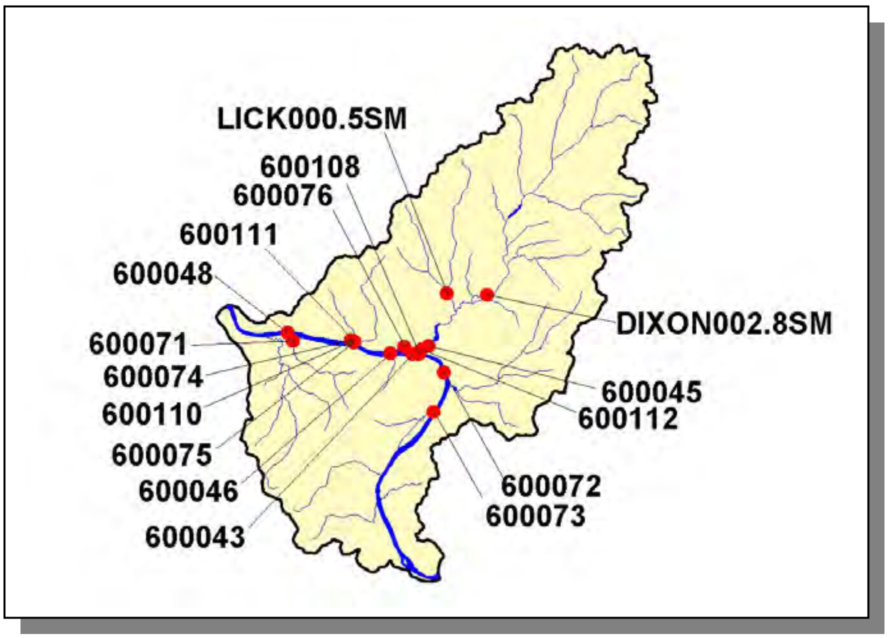


Figure 4-25. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 051302010103. *More information, including site names and locations, is provided in Appendix IV.*

4.2.A.iii.a. Point Source Contributions.

There are no point source contributions in this subwatershed.

4.2.A.iii.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
4,134	7,106	155	8	334	91

Table 4-16. Summary of Livestock Count Estimates in Subwatershed 051302010103. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Macon	15,039	26,098	318	65	2,377	111
Smith	17,187	29,672	814	683	1,883	332
Trousdale	6,672	11,344	135	243	112	195
Wilson	27,209	51,090	1,505	1,585	1,700	465

Table 4-17. Summary of Livestock Count Estimates in Macon, Smith, Trousdale, and Wilson Counties. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

CROPS	TONS/ACRE/YEAR
Legumes (Pastureland)	0.40
Grass (Pastureland)	0.90
Grass (Hayland)	0.12
Legumes, Grass (Hayland)	0.23
Legumes (Hayland)	0.13
Grass, Forbs, Legumes (Mixed Pasture)	0.55
Corn (Row Crops)	3.47
Soybeans (Row Crops)	6.38
Tobacco (Row Crops)	7.20
Wheat (Close-Grown Cropland)	3.00
All Other Close-Grown Cropland	2.49
Other Vegetable and Truck Crops	5.48
Conservation Reserve Program Lands	0.28
Farmsteads and Ranch Headquarters	0.31

Table 4-18. Annual Estimated Total Soil Loss in Subwatershed 051302010103.

4.2.A.iv. 051302010104 (Cumberland River).

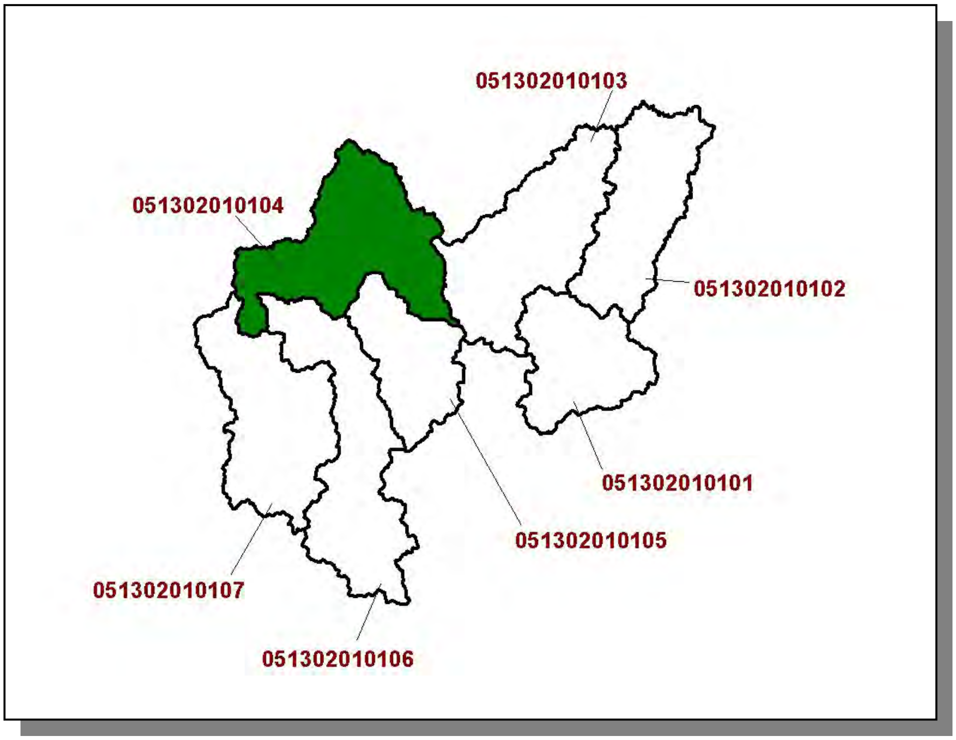


Figure 4-26. Location of Subwatershed 051302010104. *HUC-12 subwatershed boundaries are shown for reference.*

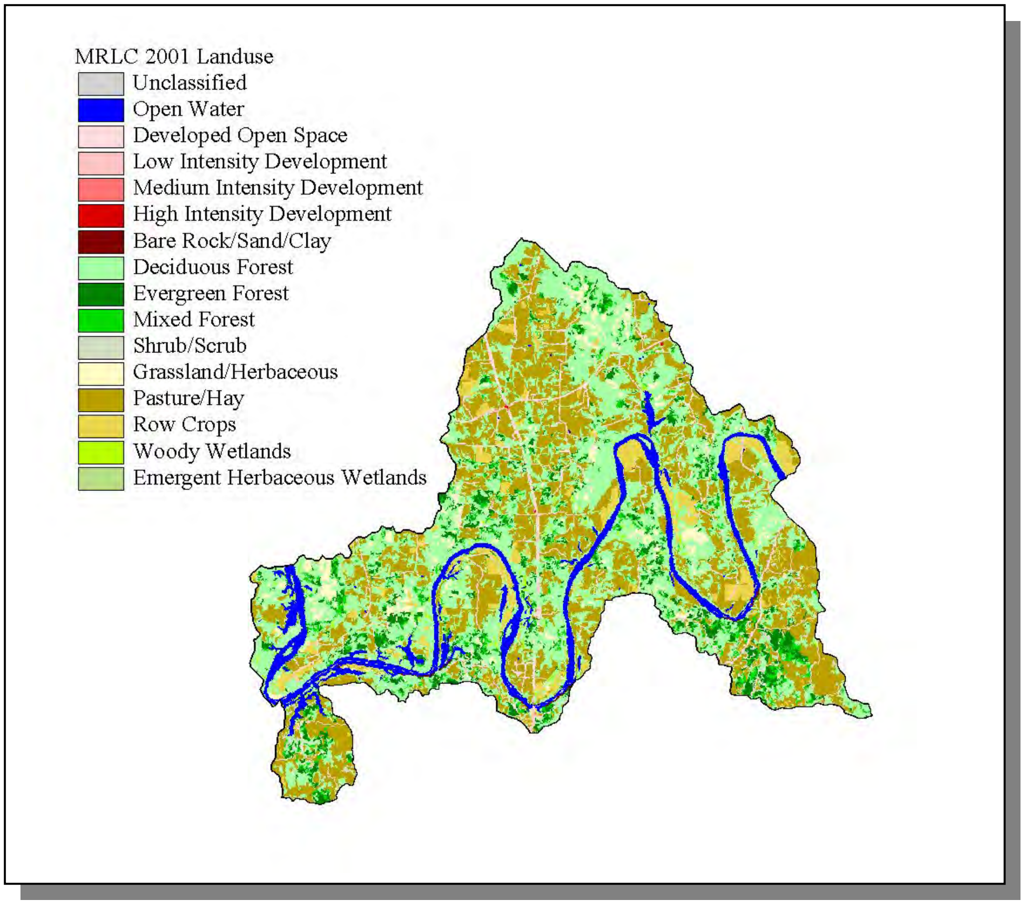


Figure 4-27. Illustration of Land Use Distribution in Subwatershed 051302010104.

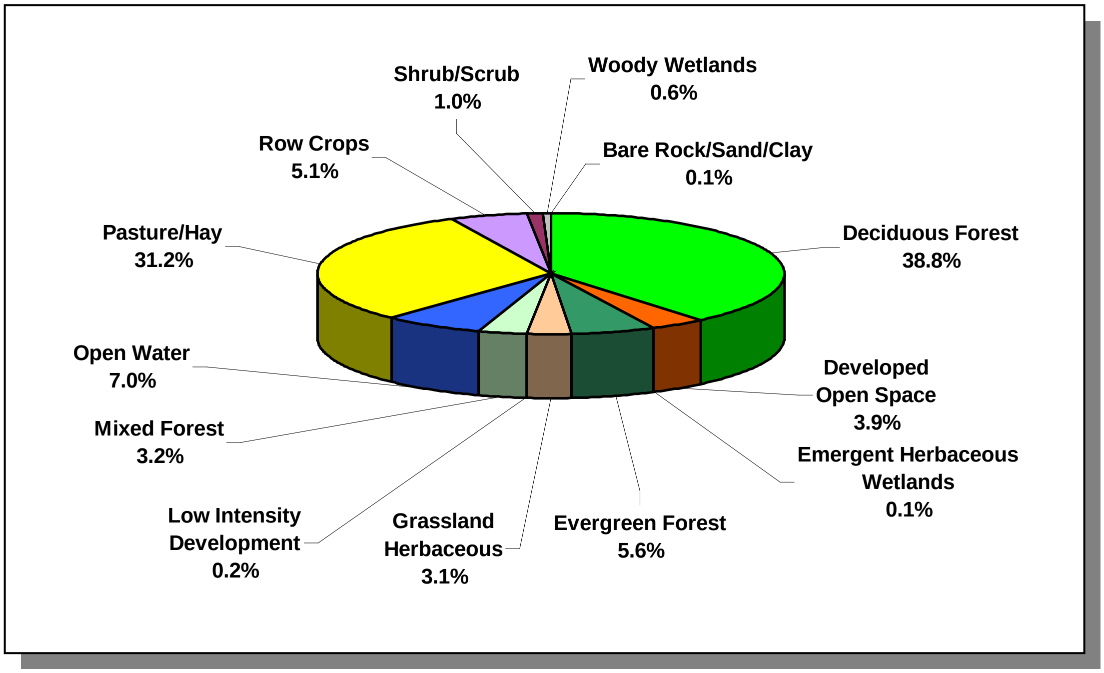


Figure 4-28. Land Use Distribution in Subwatershed 051302010104. *More information is provided in Appendix IV.*

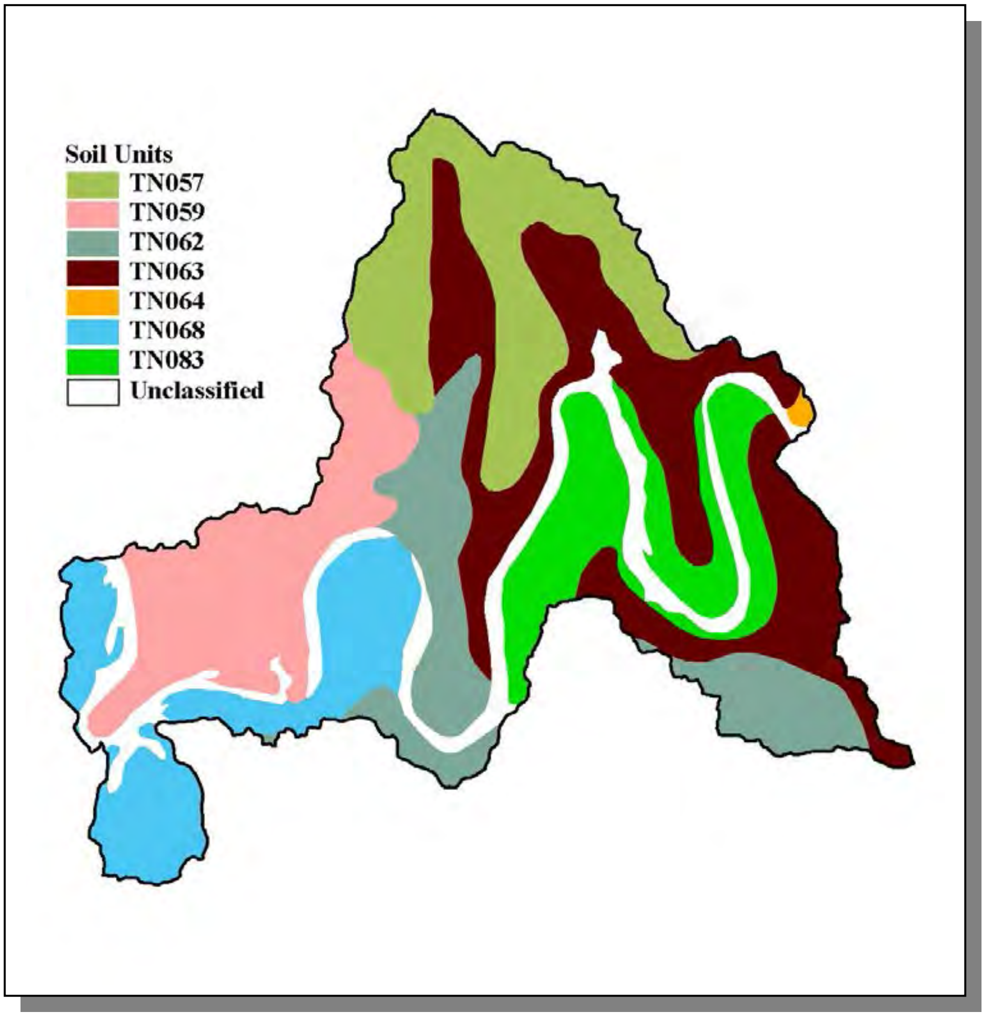


Figure 4-29. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010104.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN057	0.00	C	1.14	5.01	Clayey Loam	0.33
TN059	0.00	C	1.08	5.70	Silty Clayey Loam	0.35
TN062	0.00	C	0.98	4.40	Clayey Loam	0.26
TN063	0.00	C	1.19	5.72	Clayey Loam	0.32
TN064	7.00	C	1.19	5.82	Silty Loam	0.37
TN068	0.00	B	1.35	5.38	Silty Loam	0.37
TN083	9.00	C	1.32	5.97	Silty Loam	0.36

Table 4-19. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010104. *The definition of "Hydrologic Group" is provided in Appendix IV.*

	COUNTY POPULATION				ESTIMATED POPULATION IN WATERSHED			
County	1990	1997	2000	Portion of Watershed (%)	1990	1997	2000	% Change (1990-2000)
Sumner	103,281	121,936	130,449	2.41	2,485	2,934	3,138	26.3
Trousdale	5,920	6,748	7,259	29.68	1,757	2,003	2,154	22.6
Total	**109,201**	**128,684**	**137,708**		**4,242**	**4,937**	**5,292**	**24.8**

Table 4-20. Population Estimates in Subwatershed 051302010104.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Hartsville	Trousdale	2,188	964	907	57	0

Table 4-21. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 051302010104.

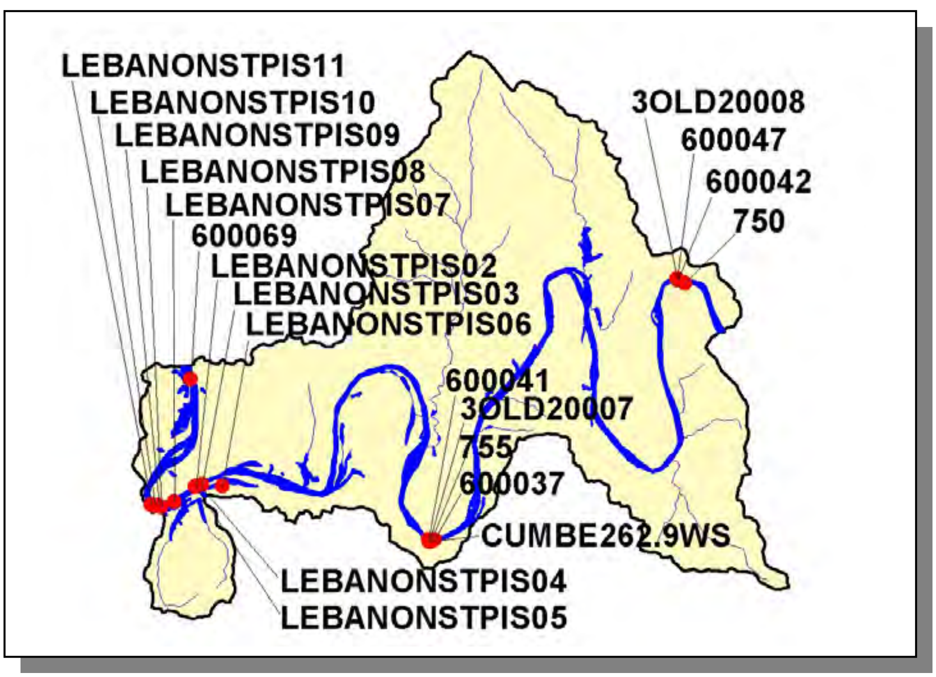


Figure 4-30. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 051302010104. *More information, including site names and locations, is provided in Appendix IV.*

4.2.A.iv.a. Point Source Contributions.

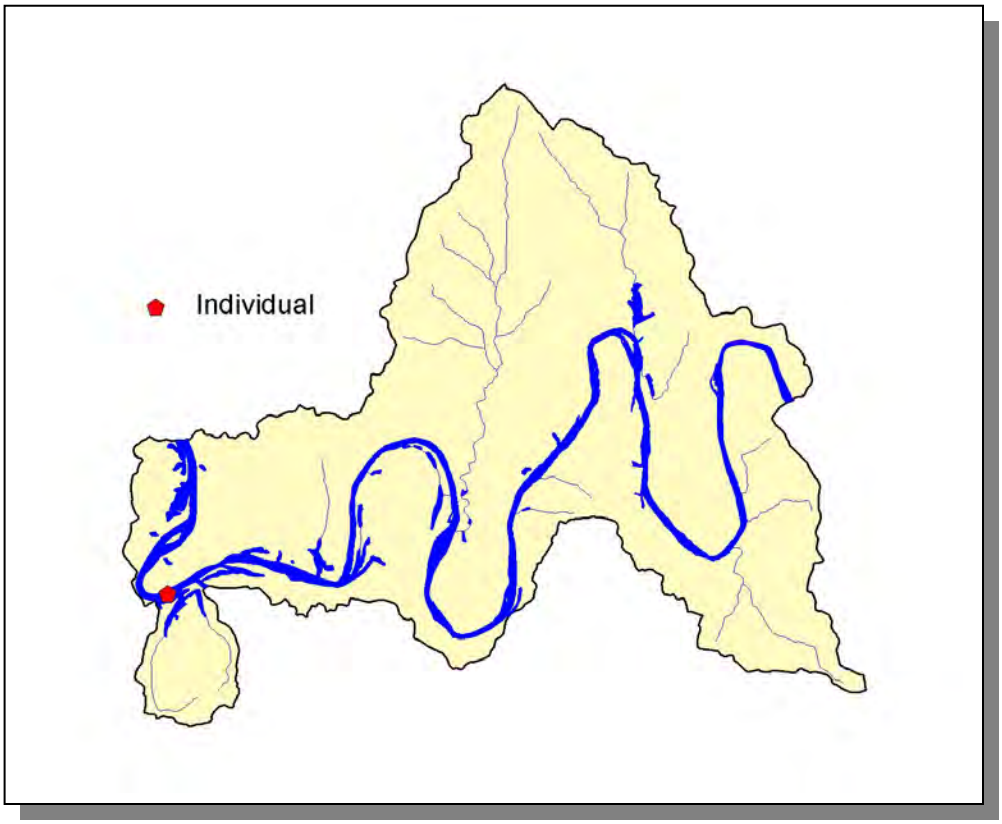


Figure 4-31. Location of Permits Issued in Subwatershed 051302010104. *More information, including the names of facilities, is provided in Appendix IV.*

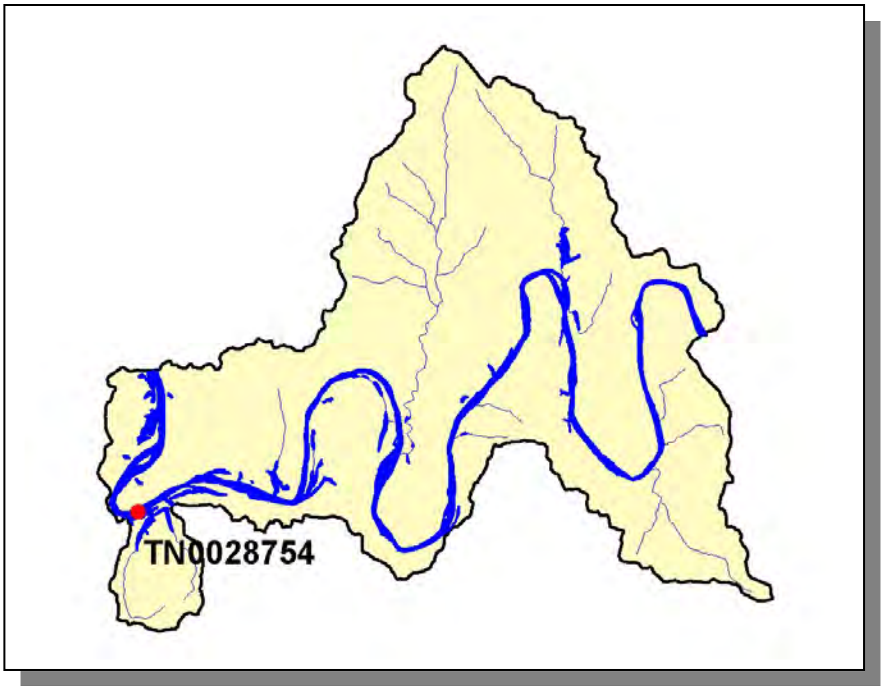


Figure 4-32. Location of Active NPDES Sites in Subwatershed 051302010104. More information, including the names of facilities, is provided in Appendix IV.

4.2.A.iv.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
3,432	6,116	117	7	136	82

Table 4-22. Summary of Livestock Count Estimates in Subwatershed 051302010104. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/),* ***"****Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Sumner	22,296	45,116	1,515	50	2,500	189
Trousdale	6,672	11,344	135	243	112	195
Wilson	27,209	51,090	1,505	1,585	1,700	465

Table 4-23. Summary of Livestock Count Estimates in Sumner, Trousdale and Wilson Counties. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/),* ***"****Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

	INVENTORY		REMOVAL RATE	
County	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Sumner	88.2	88.2	2.0	6.3
Trousdale	30.0	30.0	0.1	0.4
Wilson	98.1	97.0	1.7	6.8

Table 4-24. Forest Acreage and Annual Removal Rates (1987-1994) in Sumner, Trousdale, and Wilson Counties.

CROPS	TONS/ACRE/YEAR
Legumes (Pastureland)	0.43
Grass (Pastureland)	0.45
Grass (Hayland)	0.22
Legumes, Grass (Hayland)	0.33
Legumes (Hayland)	0.12
Grass, Forbs, Legumes (Mixed Pasture)	0.57
Corn (Row Crops)	6.34
Soybeans (Row Crops)	8.57
Tobacco (Row Crops)	11.07
Wheat (Close-Grown Cropland)	1.97
All Other Close-Grown Cropland	2.49
Other Cropland not Planted	19.23
Conservation Reserve Program Lands	0.26
Farmsteads and Ranch Headquarters	0.25

Table 4-25. Annual Estimated Total Soil Loss in Subwatershed 051302010104.

4.2.A.v. 051302010105 (Cedar Creek).

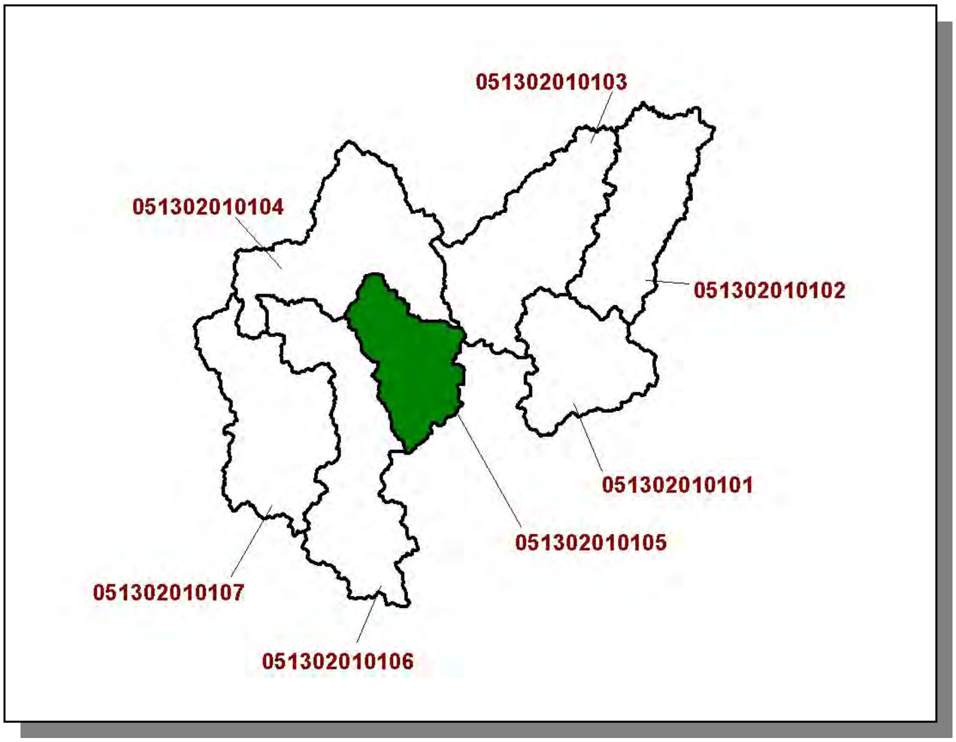


Figure 4-33. Location of Subwatershed 051302010105. *HUC-12 subwatershed boundaries are shown for reference.*

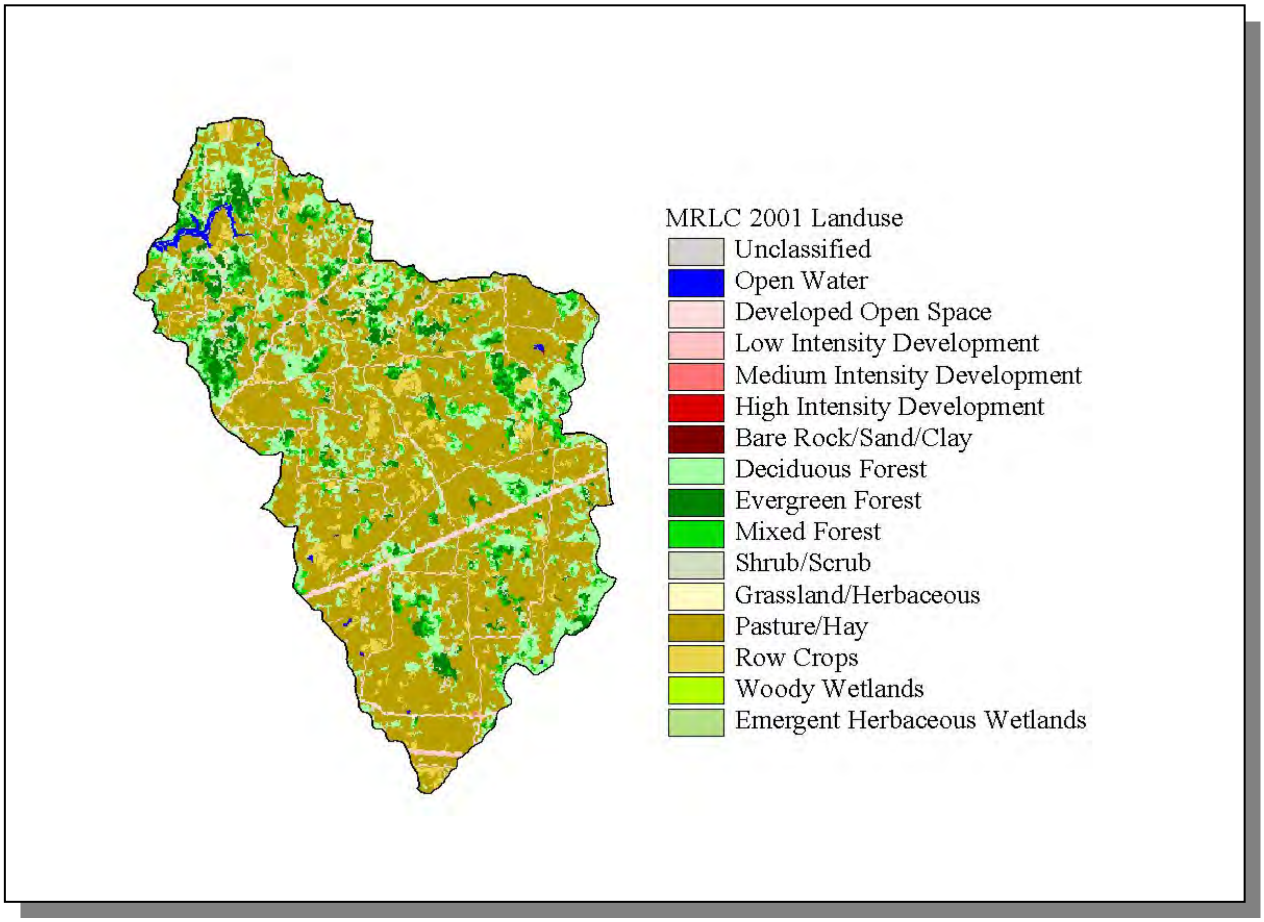


Figure 4-34. Illustration of Land Use Distribution in Subwatershed 051302010105.

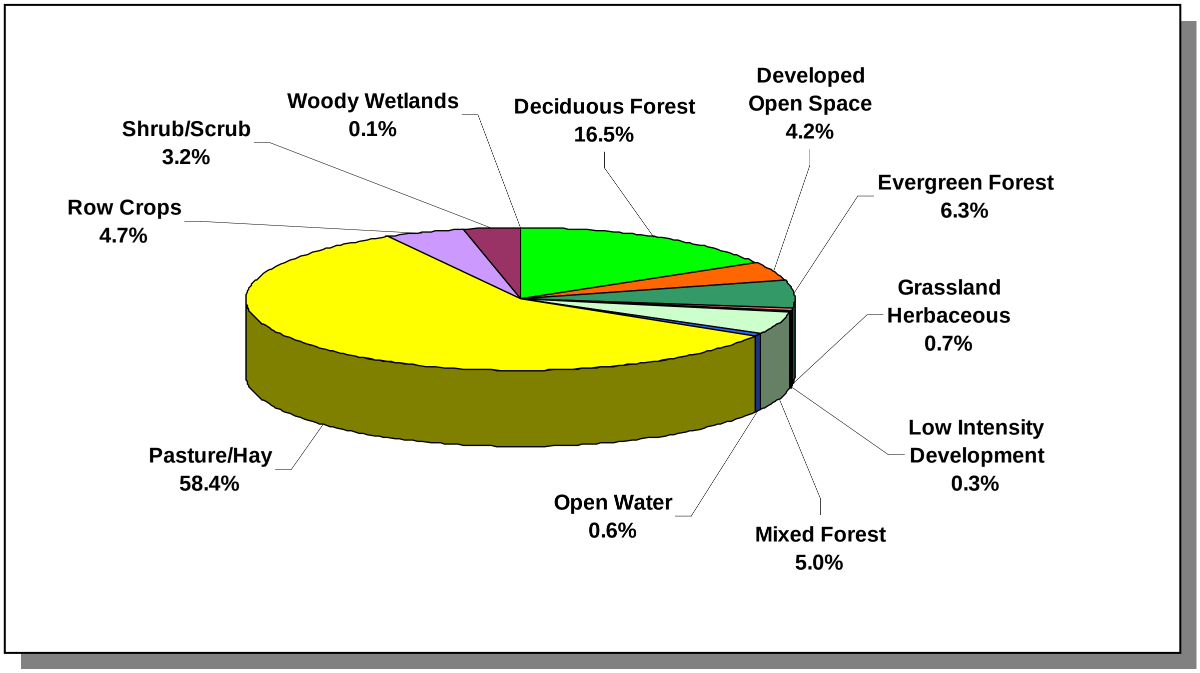


Figure 4-35. Land Use Distribution in Subwatershed 051302010105. *More information is provided in Appendix IV.*

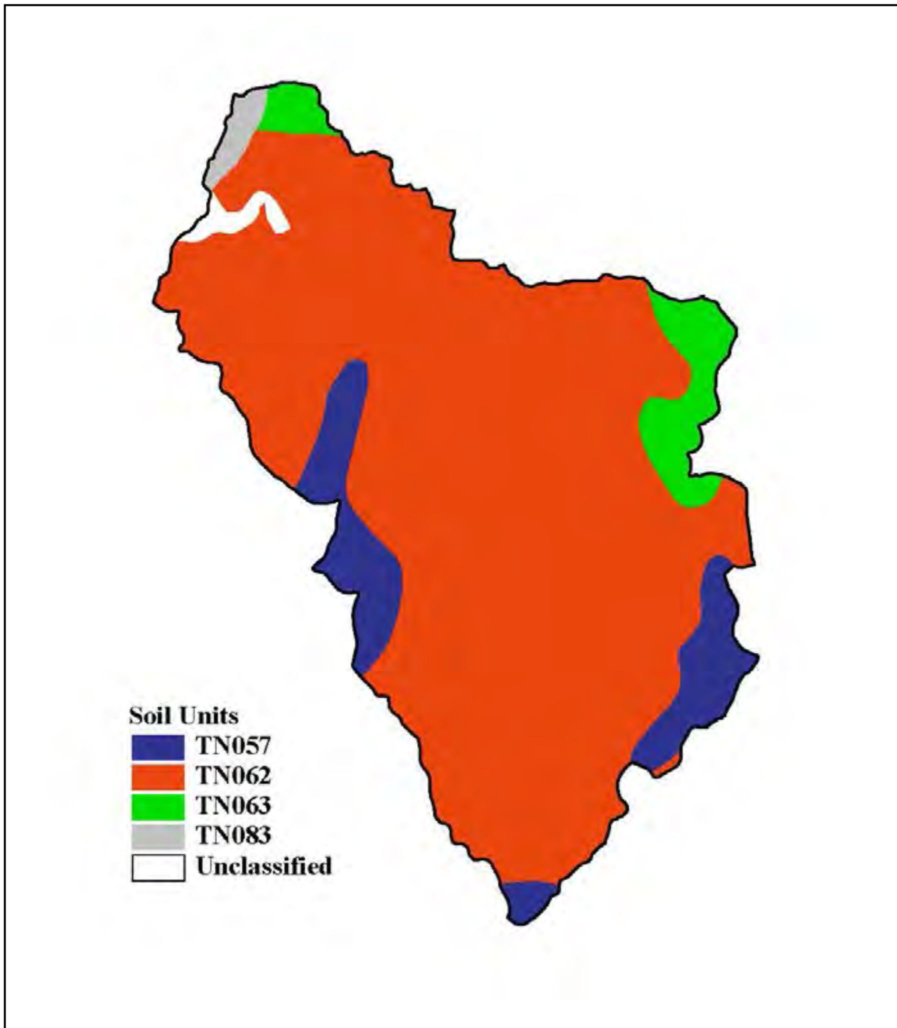


Figure 4-36. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010105.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN057	0.00	C	1.14	5.01	Clayey Loam	0.33
TN062	0.00	C	0.98	4.40	Clayey Loam	0.26
TN063	0.00	C	1.19	5.72	Clayey Loam	0.32
TN083	9.00	C	1.32	5.97	Silty Loam	0.36

Table 4-26. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010105. *The definition of "Hydrologic Group" is provided in Appendix IV.*

	COUNTY POPULATION				ESTIMATED POPULATION IN WATERSHED			
County	1990	1997	2000	Portion of Watershed (%)	1990	1997	2000	% Change (1990-2000)
Trousdale	5,920	6,748	7,259	0.38	22	25	27	22.7

Table 4-27. Population Estimates in Subwatershed 051302010105.

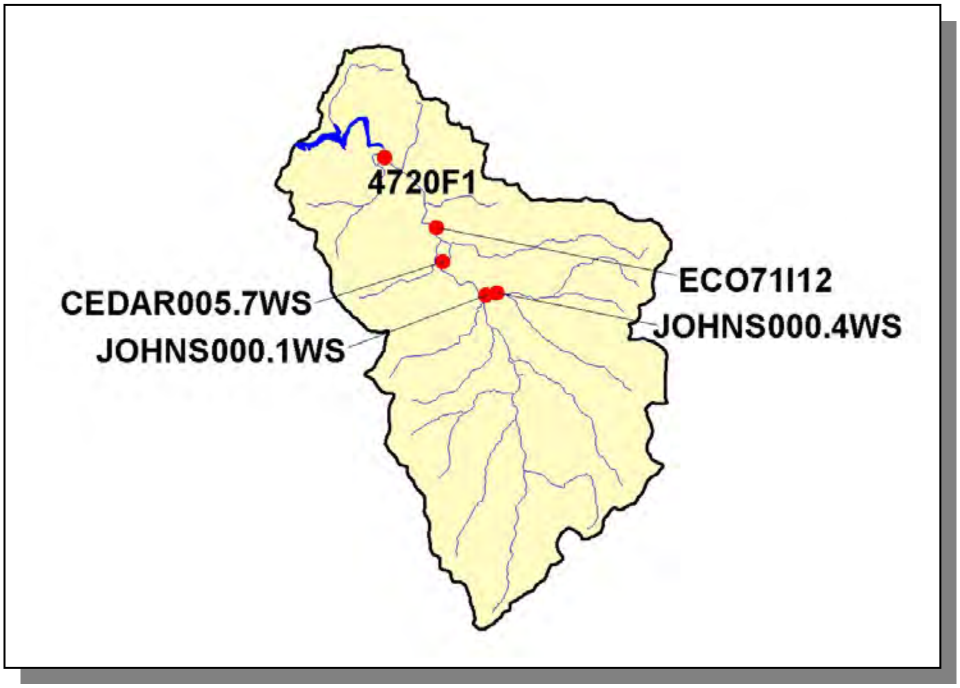


Figure 4-37. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 051302010105. *More information, including site names and locations, is provided in Appendix IV.*

4.2.A.v.a. Point Source Contributions.

Figure 4-38. Location of Permits Issued in Subwatershed 051302010105. *More information, including the names of facilities, is provided in Appendix IV.*

Figure 4-39. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 051302010105. *More information is provided in Appendix IV.*

4.2.A.v.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
2,461	4,615	135	8	152	43

Table 4-28. Summary of Livestock Count Estimates in Subwatershed 051302010105. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), **"**Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Trousdale	6,672	11,344	135	243	112	195
Wilson	27,209	51,090	1,505	1,585	1,700	465

Table 4-29. Summary of Livestock Count Estimates in Trousdale and Wilson Counties. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), **"**Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

	INVENTORY		REMOVAL RATE	
County	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Trousdale	30.0	30.0	0.1	0.4
Wilson	98.1	97.0	1.7	6.8

Table 4-30. Forest Acreage and Annual Removal Rates (1987-1994) in Trousdale and Wilson Counties.

CROPS	TONS/ACRE/YEAR
Legumes (Pastureland)	0.43
Grass (Pastureland)	0.42
Grass (Hayland)	0.37
Legumes, Grass (Hayland)	0.37
Grass, Forbs, Legumes (Mixed Pasture)	0.91
Corn (Row Crops)	2.22
Soybeans (Row Crops)	6.72
Tobacco (Row Crops)	19.07
Wheat (Close-Grown Cropland)	1.96
All Other Close-Grown Cropland	2.49
Farmsteads and Ranch Headquarters	0.26

Table 4-31. Annual Estimated Total Soil Loss in Subwatershed 051302010105.

4.2.A.vi. 051302010106 (Spring Creek).

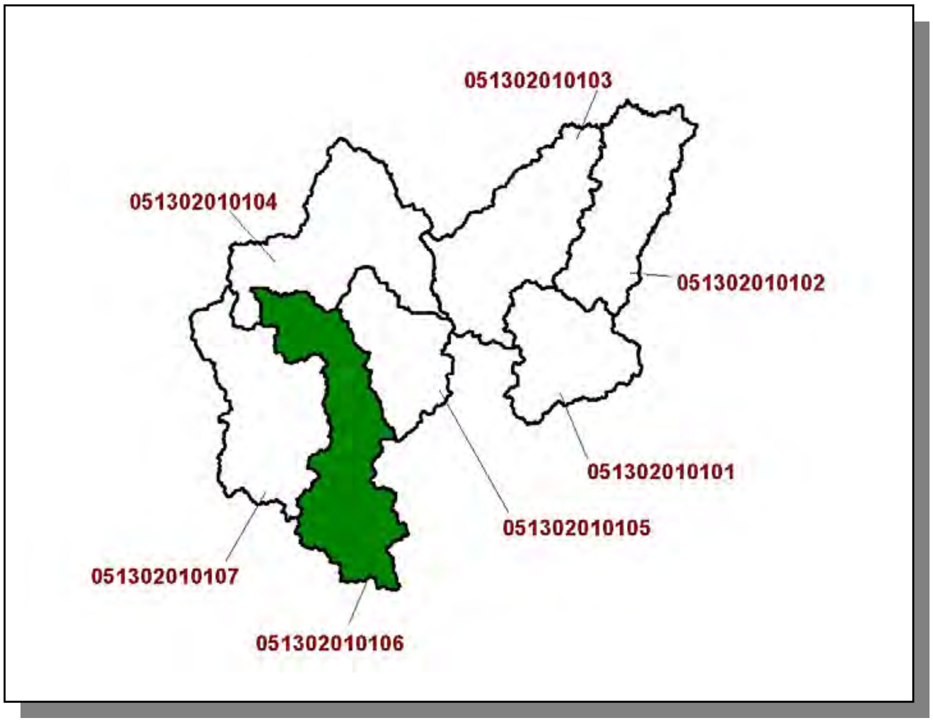


Figure 4-40. Location of Subwatershed 051302010106. *HUC-12 subwatershed boundaries are shown for reference.*

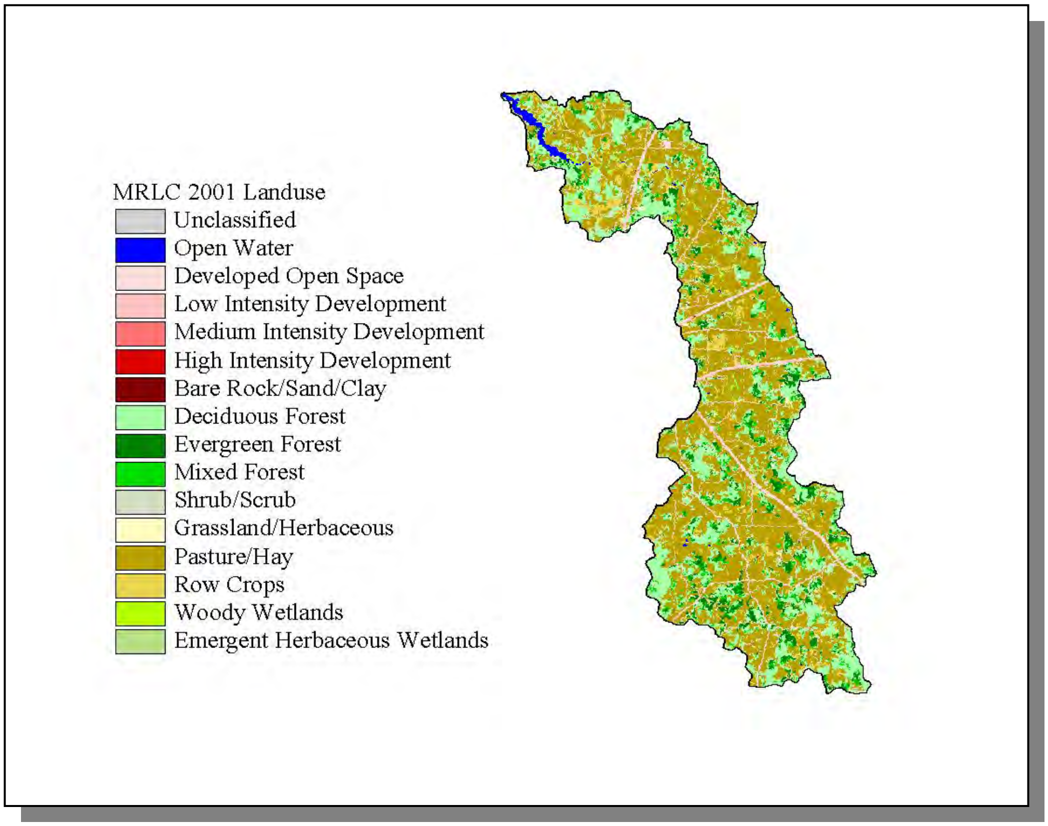


Figure 4-41. Illustration of Land Use Distribution in Subwatershed 051302010106.

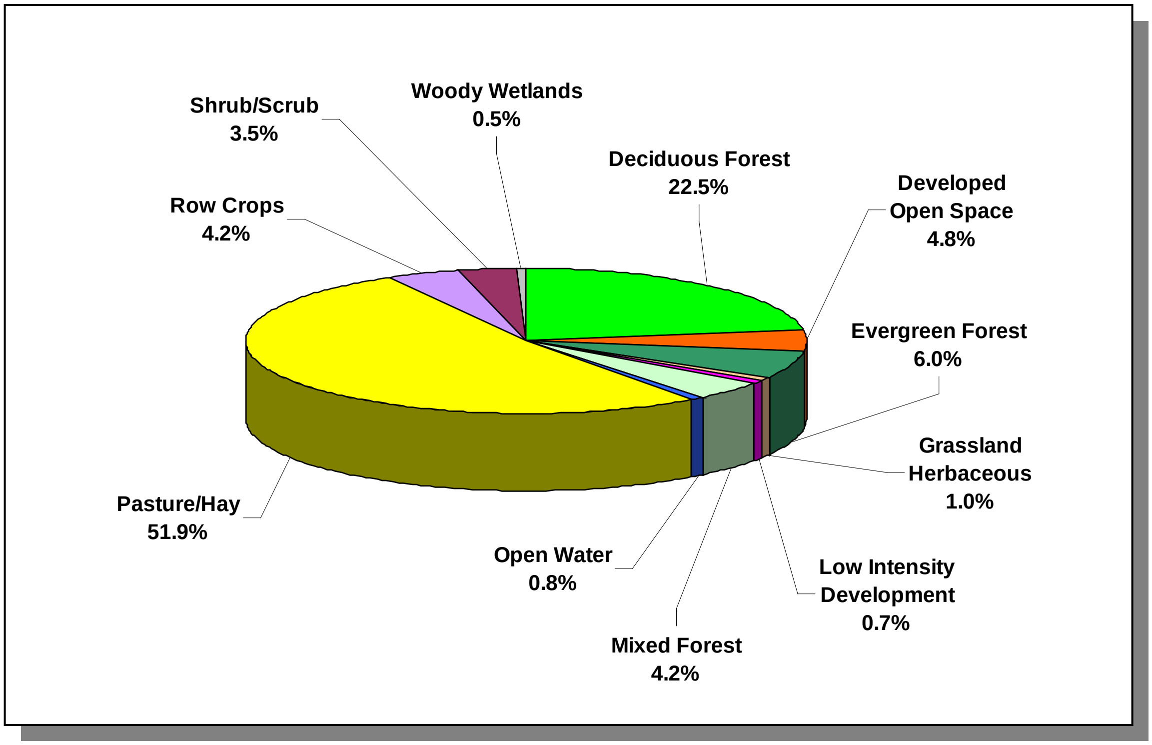


Figure 4-42. Land Use Distribution in Subwatershed 051302010106. *More information is provided in Appendix IV.*

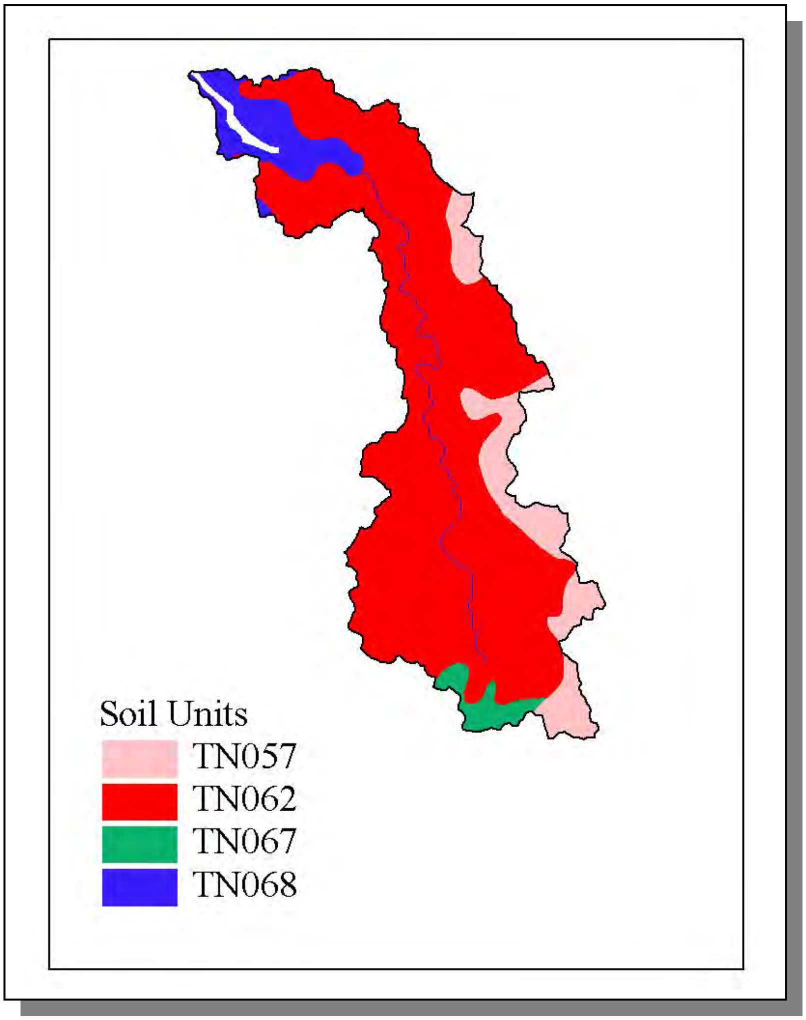


Figure 4-43. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010106.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN057	0.00	C	1.14	5.01	Clayey Loam	0.33
TN062	0.00	C	0.98	4.40	Clayey Loam	0.26
TN067	2.00	C	2.69	5.51	Silty Loam	0.35
TN068	0.00	B	1.35	5.38	Silty Loam	0.37

Table 4-32. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010106. *The definition of "Hydrologic Group" is provided in Appendix IV*

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	COUNTY POPULATION				ESTIMATED POPULATION IN WATERSHED			
County	1990	1997	2000	Portion of Watershed (%)	1990	1997	2000	% Change (1990-2000)
Sumner	103,281	121,936	130,449	0.02	21	24	26	23.8

Table 4-33. Population Estimates in Subwatershed 051302010106.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Lebanon	Wilson	15,208	6,592	5,440	1,137	15

Table 4-34. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 051302010106.

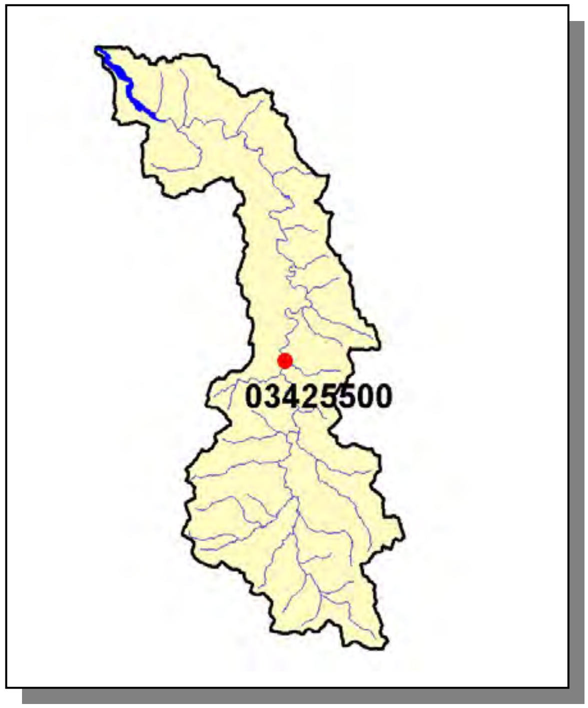

Figure 4-44. Location of Historical Streamflow Data Collection Sites in Subwatershed 051302010106. *More information is provided in Appendix IV.*

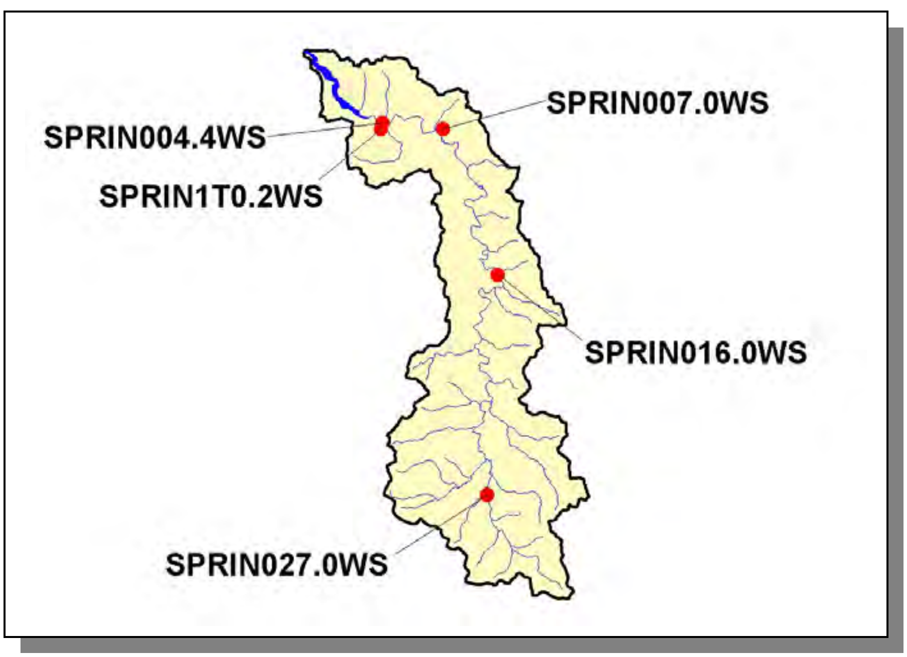

Figure 4-45. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 051302010106. *More information, including site names and locations, is provided in Appendix IV.*

4.2.A.vi.a. Point Source Contributions.

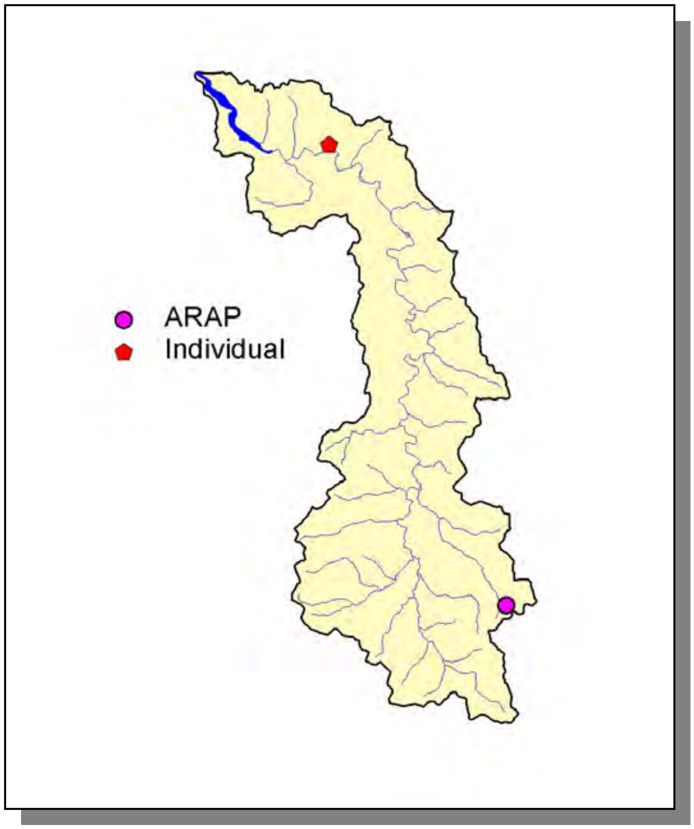

Figure 4-46. Location of Permits Issued in Subwatershed 051302010106. *More information, including the names of facilities, is provided in Appendix IV.*

Figure 4-47. Location of Active NPDES Sites in Subwatershed 051302010106. *More information, including the names of facilities, is provided in Appendix IV.*

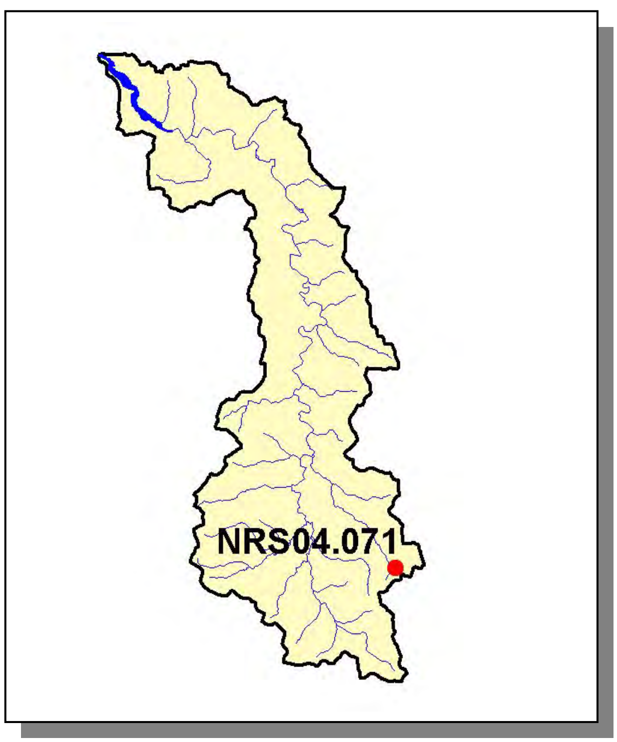

Figure 4-48. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 051302010106. *More information is provided in Appendix IV.*

4.2.A.vi.b. Nonpoint Source Contributions.

LIVESTOCK					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
3,890	7,305	215	12	243	66

Table 4-35. Summary of Livestock Count Estimates in Subwatershed 051302010106. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Sumner	22,296	45,116	1,515	50	2,500	189
Wilson	27,209	51,090	1,505	1,585	1,700	465

Table 4-36. Summary of Livestock Count Estimates in Sumner and Wilson Counties. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

	INVENTORY		REMOVAL RATE	
County	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Sumner	88.2	88.2	2.0	6.3
Wilson	98.1	97.0	1.7	6.8

Table 4-37. Forest Acreage and Annual Removal Rates (1987-1994) in Sumner and Wilson Counties.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.42
Grass (Hayland)	0.37
Legumes, Grass (Hayland)	0.37
Legumes (Hayland)	0.12
Grass, Forbs, Legumes (Mixed Pasture)	0.91
Corn (Row Crops)	2.24
Soybeans (Row Crops)	6.73
Tobacco (Row Crops)	19.23
Wheat (Close-Grown Cropland)	1.96
All Other Close-Grown Cropland	2.49
Other Cropland not Planted	19.23
Conservation Reserve Program Lands	0.26
Farmsteads and Ranch Headquarters	0.26

Table 4-38. Annual Estimated Total Soil Loss in Subwatershed 051302010106.

4.2.A.vii. 051302010107 (Bartons Creek).

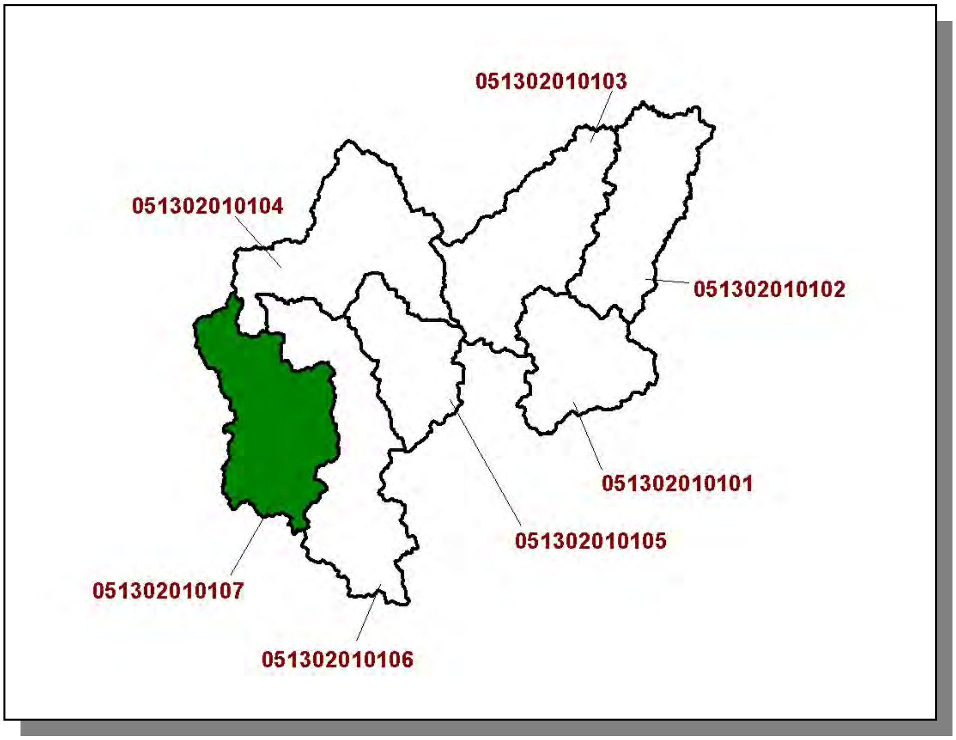

Figure 4-49. Location of Subwatershed 051302010107. *HUC-12 subwatershed boundaries are shown for reference.*

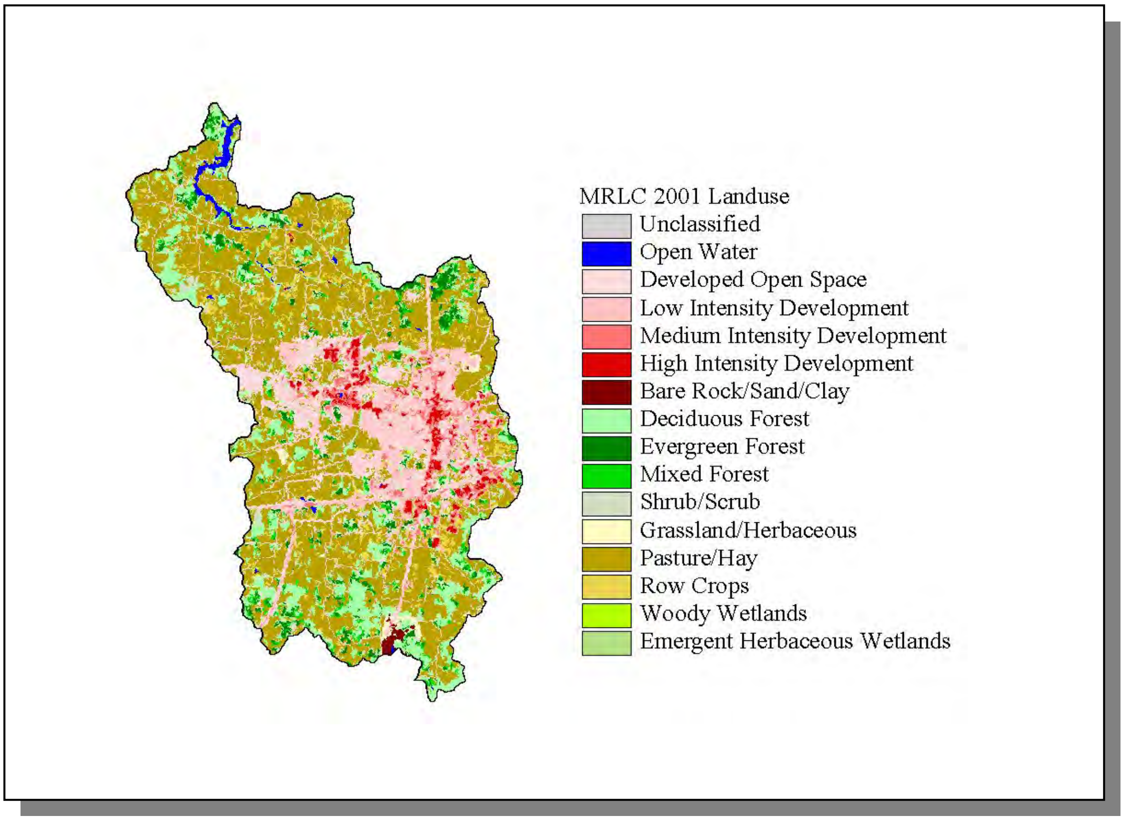

Figure 4-50. Illustration of Land Use Distribution in Subwatershed 051302010107.

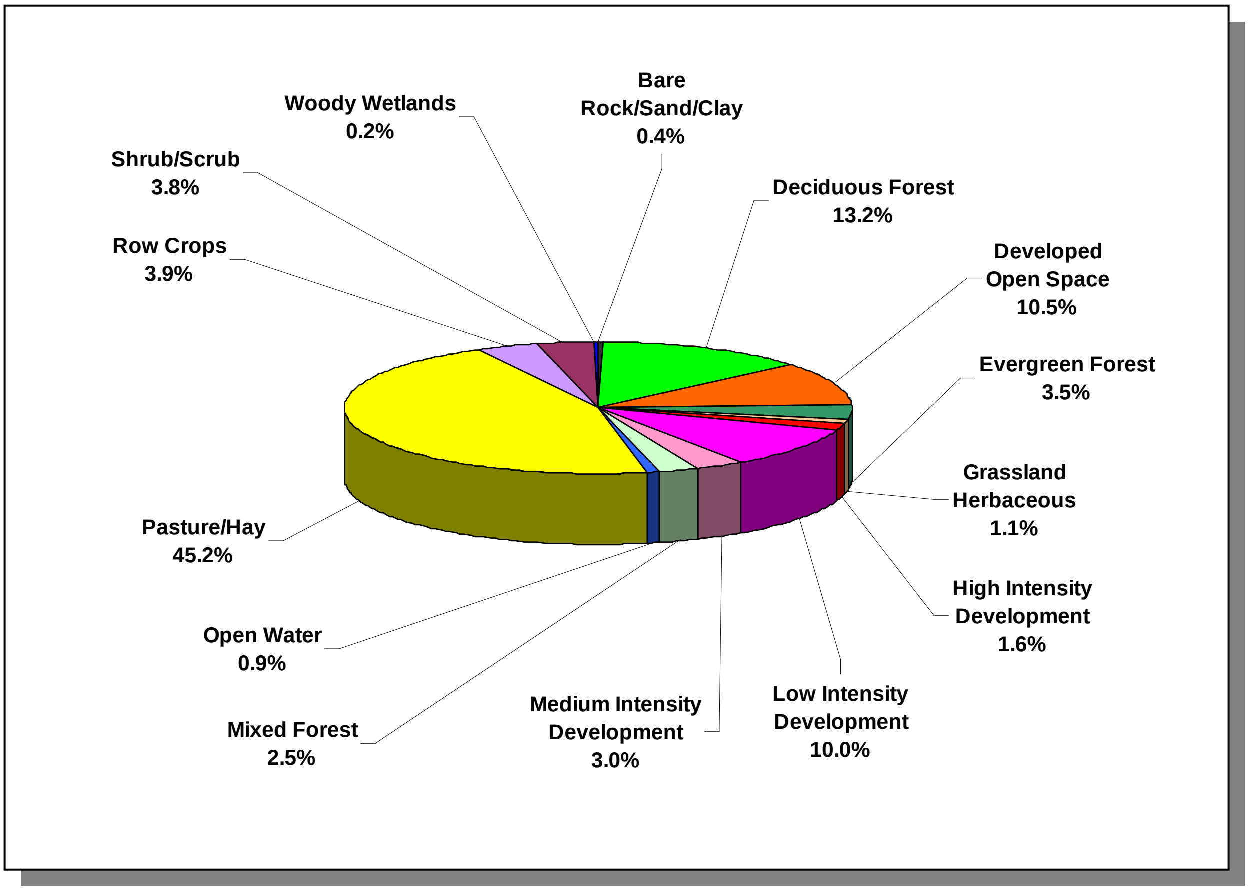

Figure 4-51. Land Use Distribution in Subwatershed 051302010107. *More information is provided in Appendix IV.*

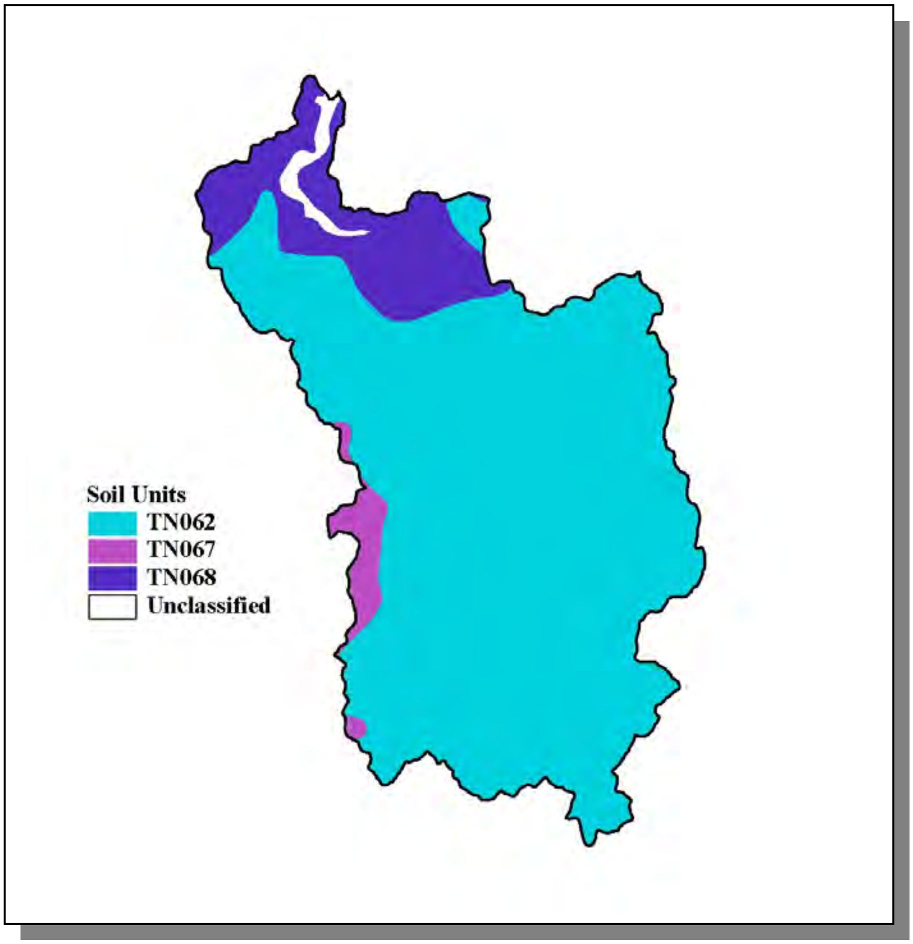

Figure 4-52. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010107.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN062	0.00	C	0.98	4.40	Clayey Loam	0.26
TN067	2.00	C	2.69	5.51	Silty Loam	0.35
TN068	0.00	B	1.35	5.38	Silty Loam	0.37

Table 4-39. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010107. *The definition of "Hydrologic Group" is provided in Appendix IV.*

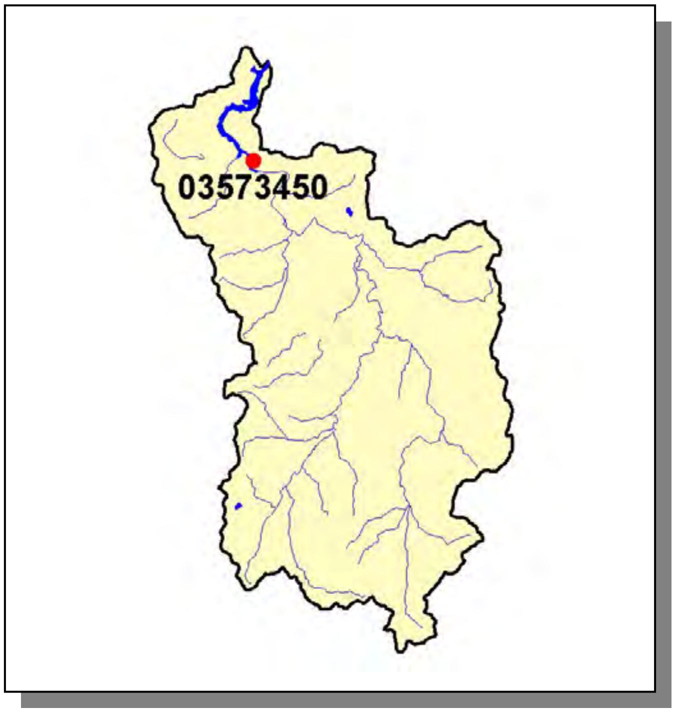

Figure 4-53. Location of Historical Streamflow Data Collection Sites in Subwatershed 051302010107. *More information is provided in Appendix IV.*

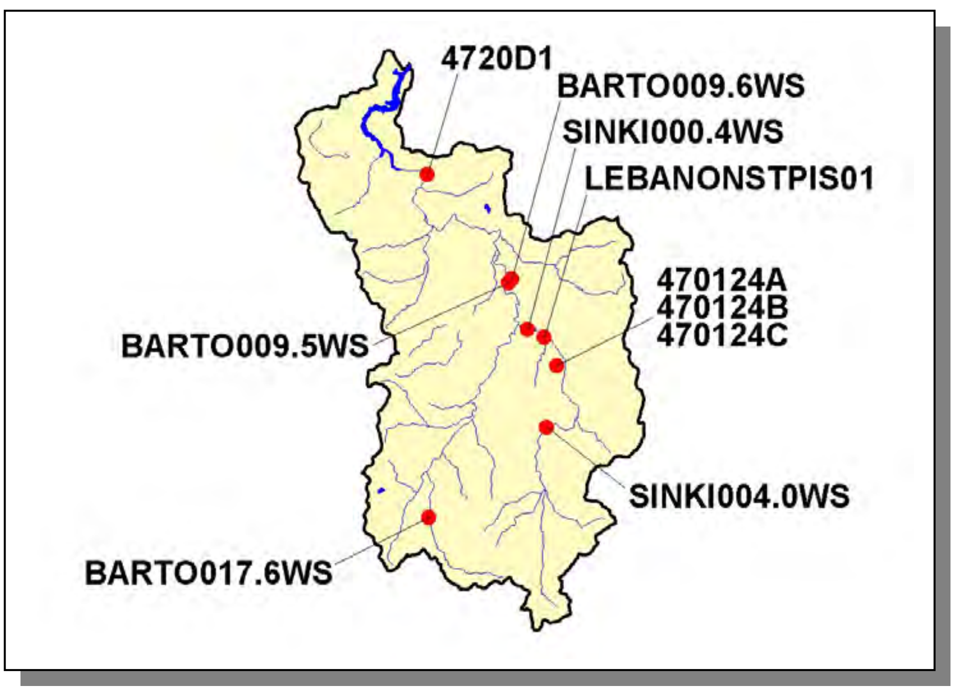

Figure 4-54. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 051302010107. *More information, including site names and locations, is provided in Appendix IV.*

4.2.A.vii.a. Point Source Contributions.

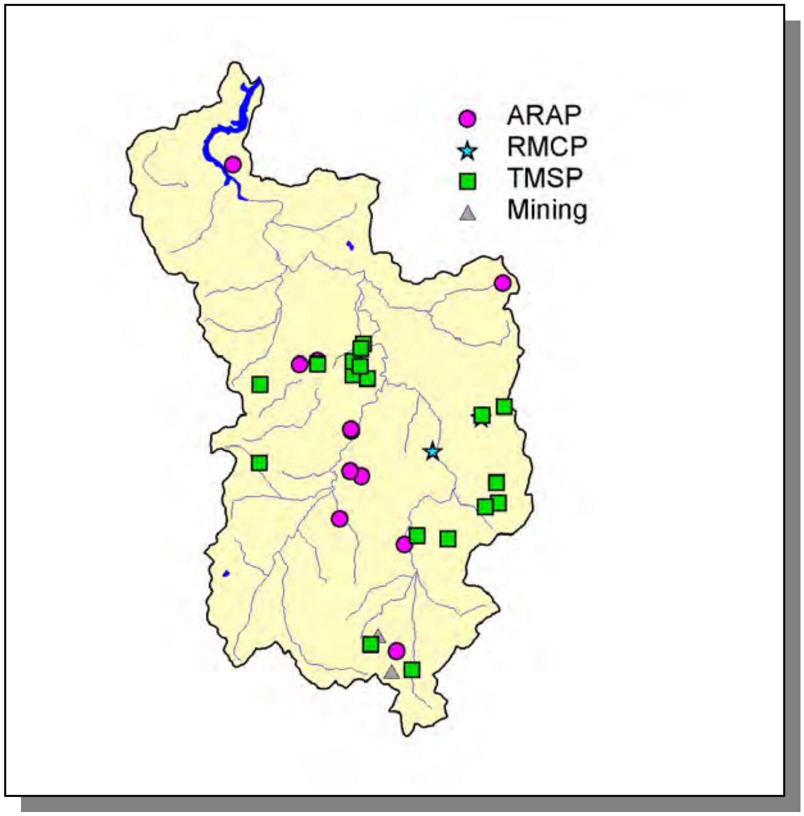

Figure 4-55. Location of Permits Issued in Subwatershed 051302010107. *More information, including the names of facilities, is provided in Appendix IV.*

Figure 4-56. Location of Active Mining Sites in Subwatershed 051302010107. *More information, including the names of mining operations, is provided in Appendix IV.*

Figure 4-57. Location of Ready Mix Concrete Plants (RMCP) in Subwatershed 051302010107. *More information, including the names of facilities, is provided in Appendix IV.*

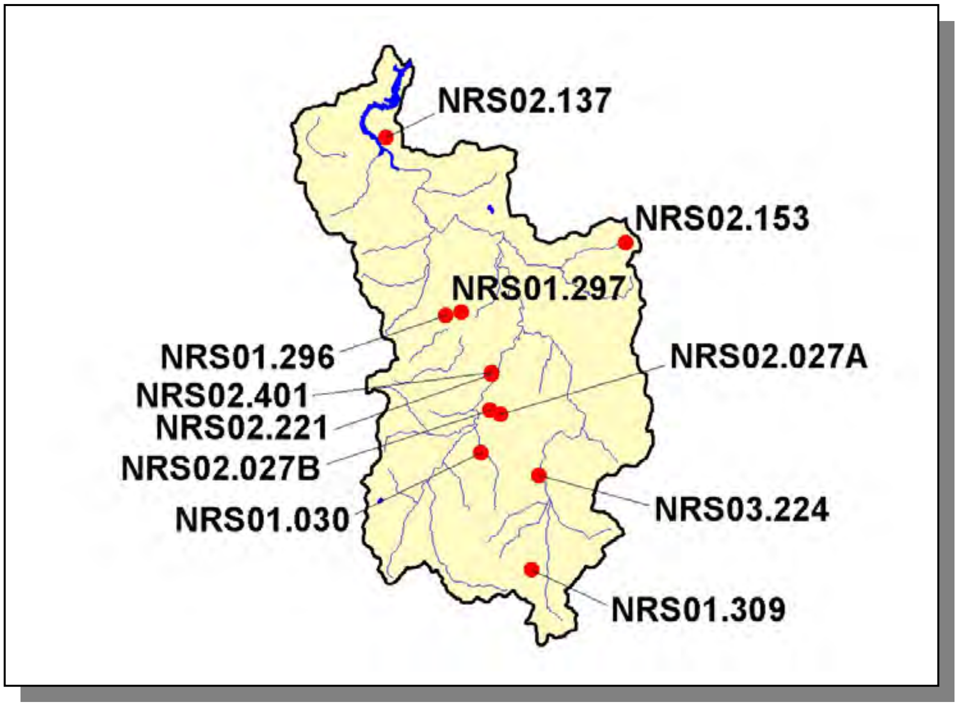

Figure 4-58. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 051302010107. *More information is provided in Appendix IV.*

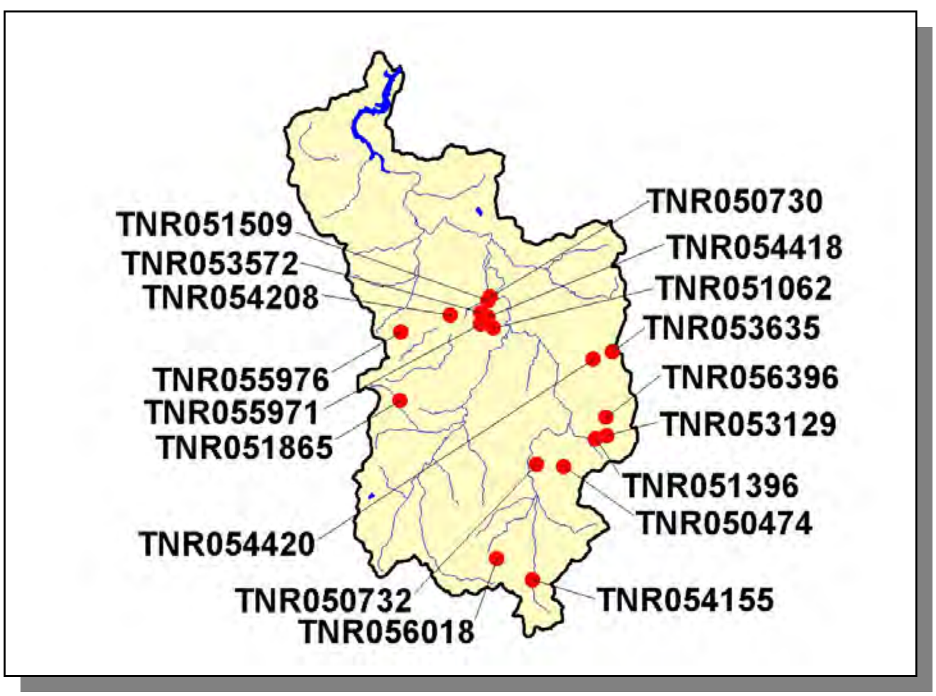

Figure 4-59. Location of TMSP Sites in Subwatershed 051302010107. *More information, including the names of facilities, is provided in Appendix IV.*

4.2.A.vii.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
2,958	5,554	164	9	185	51

Table 4-40. Summary of Livestock Count Estimates in Subwatershed 051302010107. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), **"**Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Wilson	27,209	51,090	1,505	1,585	1,700	465

Table 4-41. Summary of Livestock Count Estimates in Wilson County. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), **"**Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

	INVENTORY		REMOVAL RATE	
County	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Wilson	98.1	97.0	1.7	6.8

Table 4-42. Forest Acreage and Annual Removal Rates (1987-1994) in Wilson County.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.42
Grass (Hayland)	0.37
Legumes, Grass (Hayland)	0.38
Grass, Forbs, Legumes (Mixed Pasture)	0.91
Corn (Row Crops)	2.22
Soybeans (Row Crops)	6.72
Tobacco (Row Crops)	19.23
Wheat (Close-Grown Cropland)	1.96
All Other Close-Grown Cropland	2.49
Farmsteads and Ranch Headquarters	0.26

Table 4-43. Annual Estimated Total Soil Loss in Subwatershed 051302010107.

4.2.B. 0513020102.

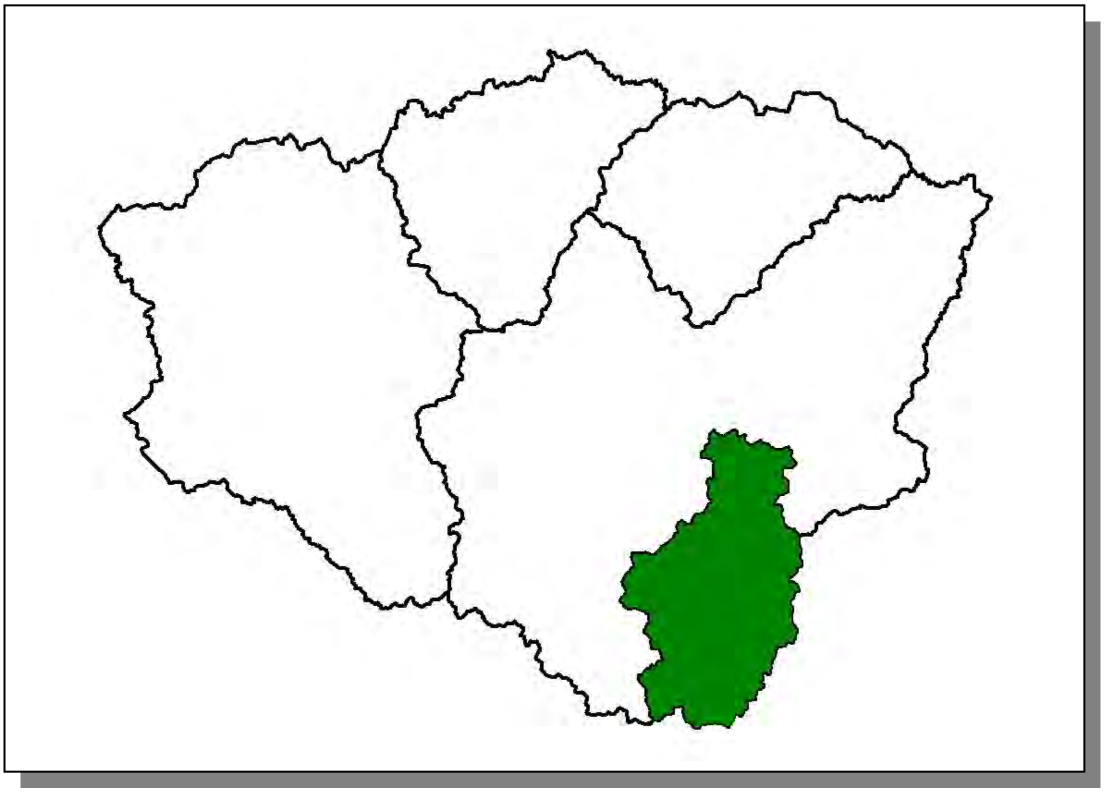

Figure 4-60. Location of Subwatershed 0513020102. *All Old Hickory Lake HUC-10 subwatershed boundaries are shown for reference.*

4.2.B.i. 051302010201 (Round Lick Creek).

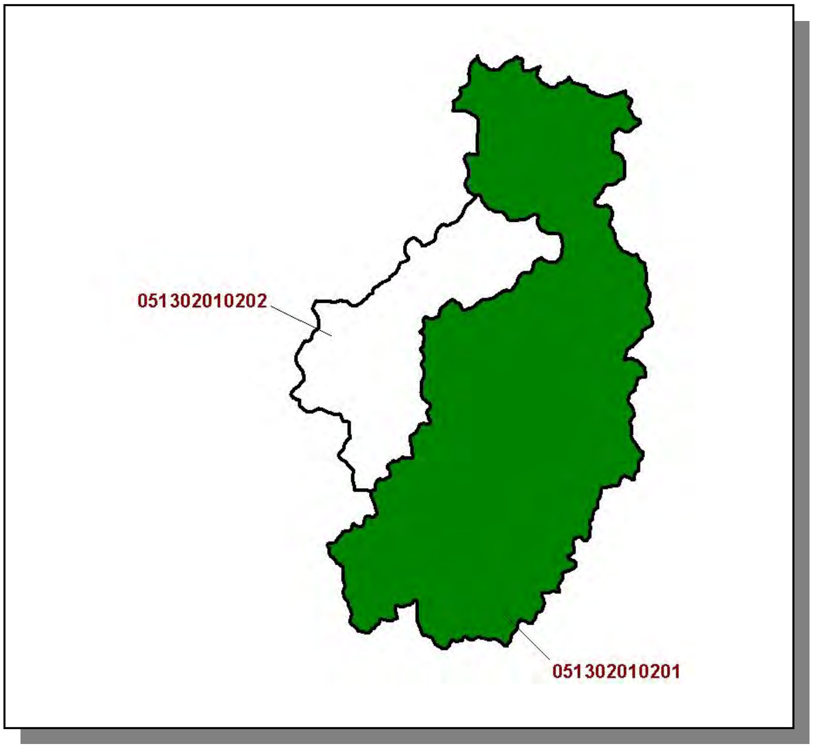

Figure 4-61. Location of Subwatershed 051302010201. *HUC-12 subwatershed boundaries are shown for reference.*

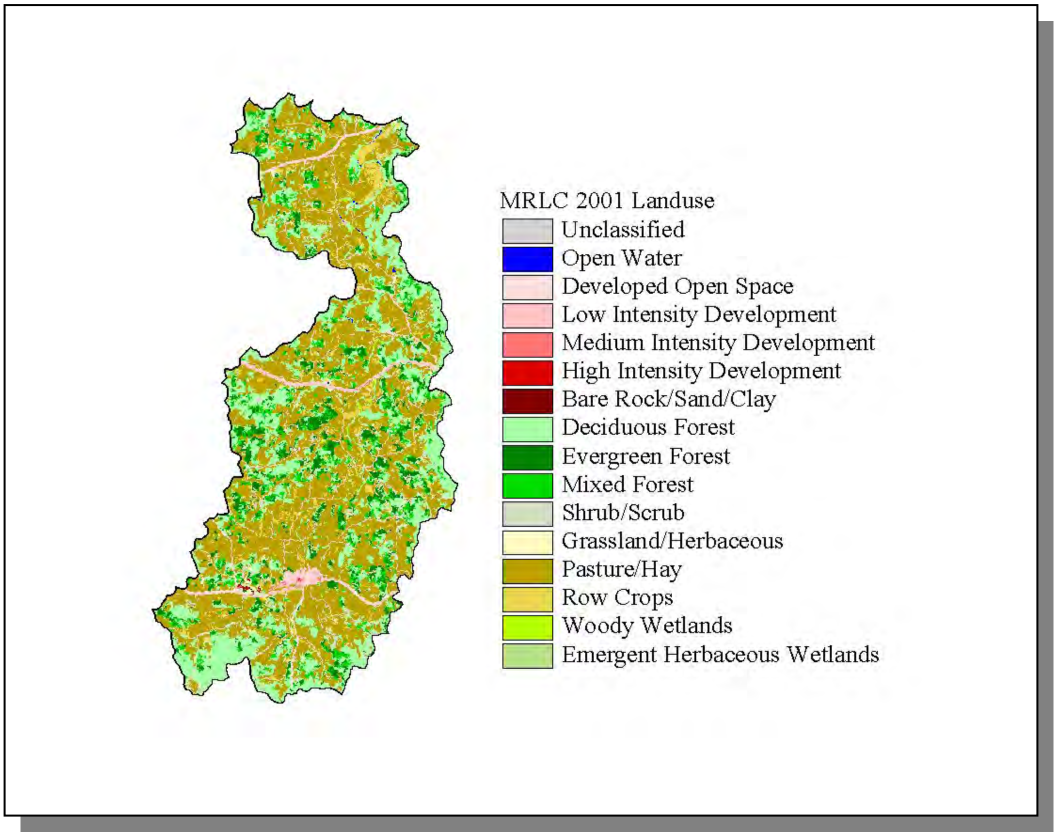

Figure 4-62. Illustration of Land Use Distribution in Subwatershed 051302010201.

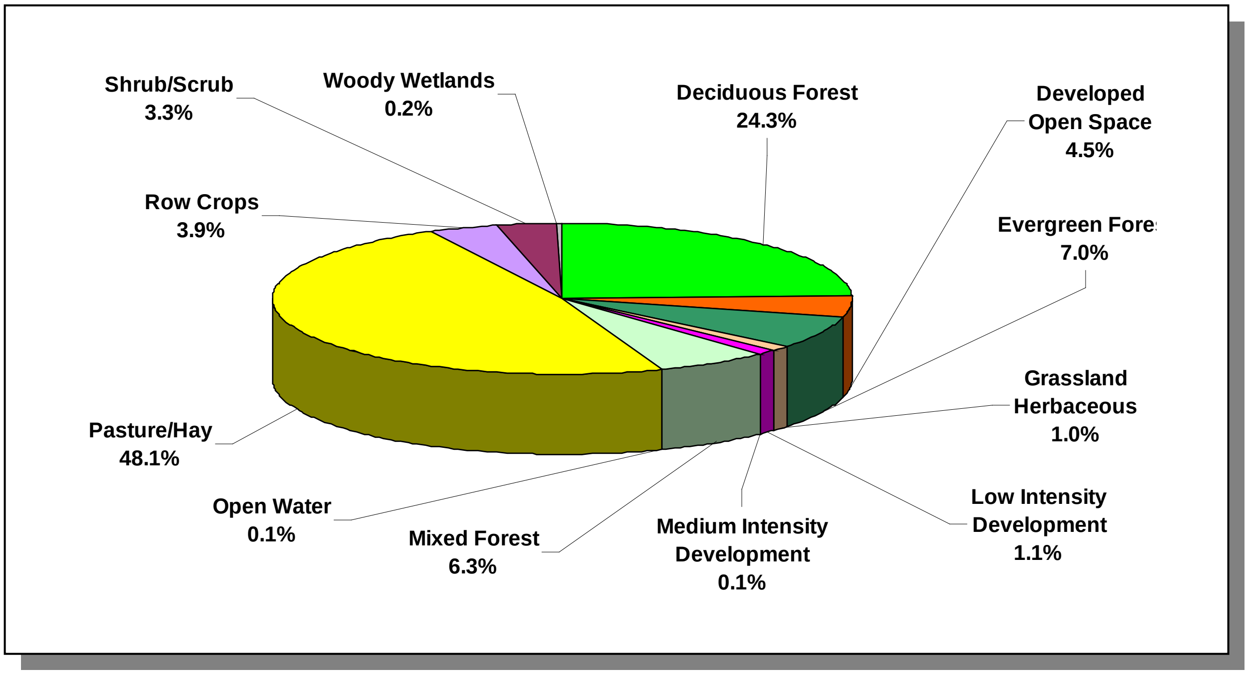

Figure 4-63. Land Use Distribution in Subwatershed 051302010201. *More information is provided in Appendix IV.*

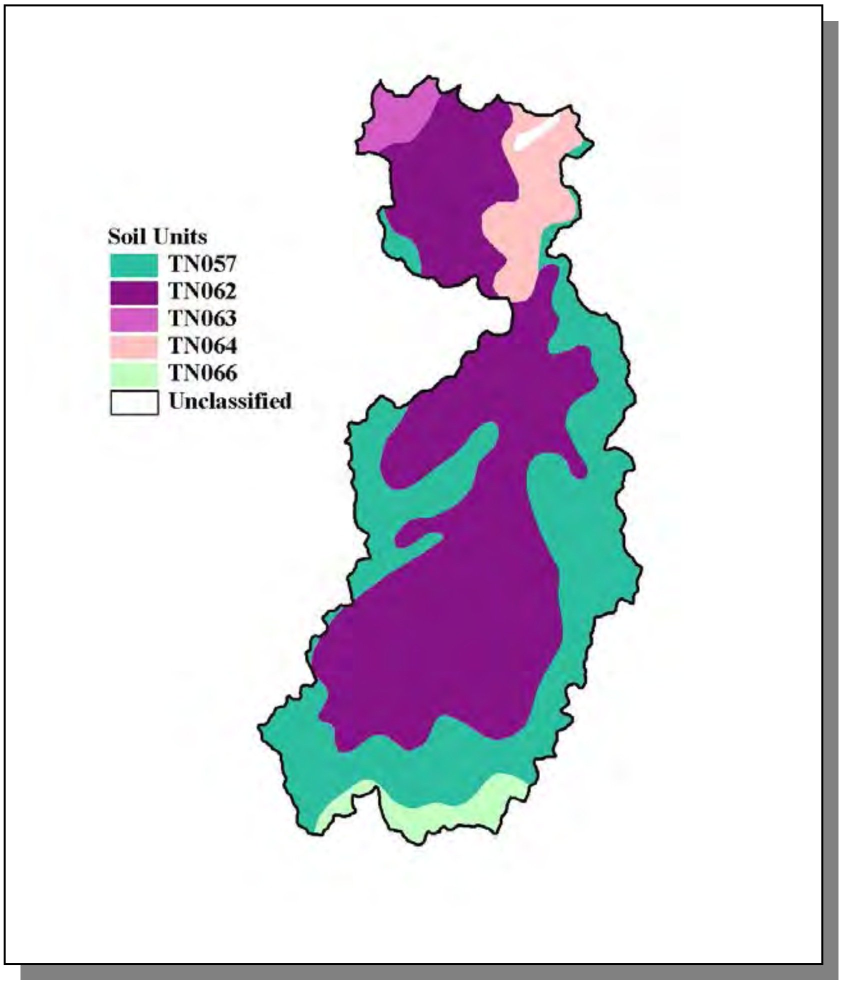

Figure 4-64. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010201.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN057	0.00	C	1.14	5.01	Clayey Loam	0.33
TN062	0.00	C	0.98	4.40	Clayey Loam	0.26
TN063	0.00	C	1.19	5.72	Clayey Loam	0.32
TN064	7.00	C	1.19	5.82	Silty Loam	0.37
TN066	0.00	B	2.62	4.75	Loam	0.28

Table 4-44. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010201. *The definition of "Hydrologic Group" is provided in Appendix IV.*

	COUNTY POPULATION				ESTIMATED POPULATION IN WATERSHED			
County	1990	1997	2000	Portion of Watershed (%)	1990	1997	2000	% Change (1990-2000)
Smith	14,143	16,047	17,712	4.96	702	797	879	25.2

Table 4-45. Population Estimates in Subwatershed 051302010201.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Watertown	Wilson	1,250	566	512	54	0

Table 4-46. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 051302010201.

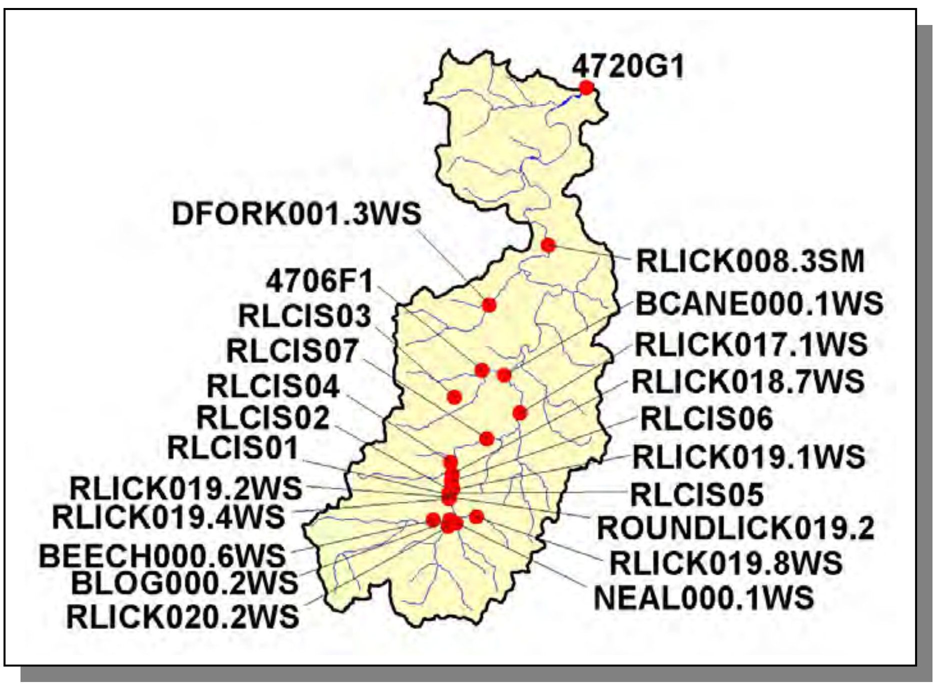

Figure 4-65. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 051302010201. *More information, including site names and locations, is provided in Appendix IV.*

4.2.B.i.a. Point Source Contributions.

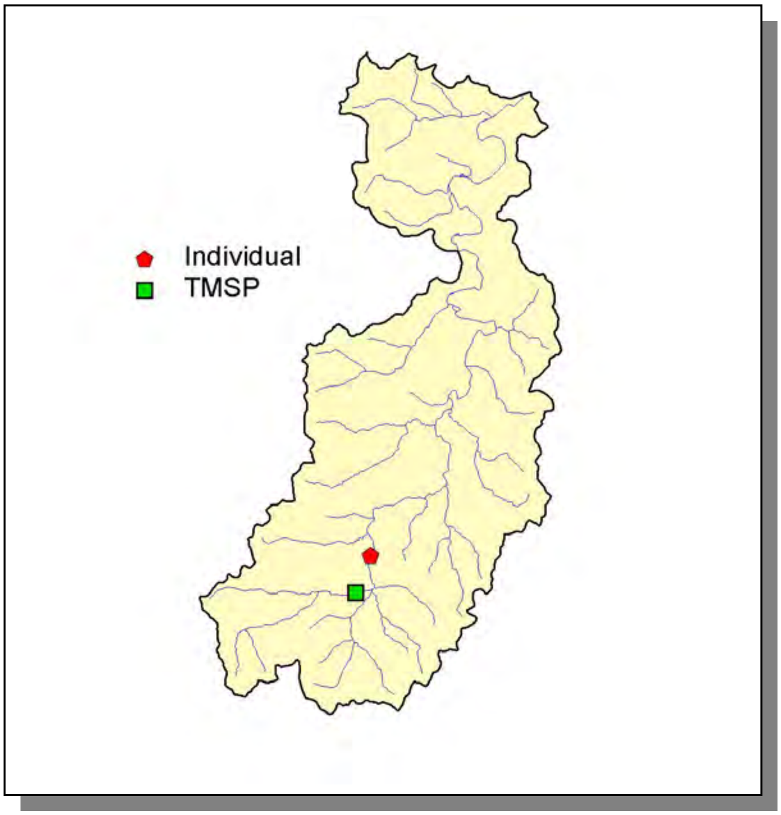

Figure 4-66. Location of Permits Issued in Subwatershed 051302010201. *More information, including the names of facilities, is provided in Appendix IV.*

Figure 4-67. Location of Active NPDES Sites in Subwatershed 051302010201. *More information, including the names of facilities, is provided in Appendix IV.*

Figure 4-68. Location of TMSP Sites in Subwatershed 051302010201. *More information, including the names of facilities, is provided in Appendix IV.*

4.2.B.i.a.i. Dischargers to Water Bodies Listed on the 2004 303(d) List

There is one NPDES facility discharging to water bodies listed on the 2004 303(d) list in Subwatershed 051302010201:

- TN0025488 (Watertown STP) discharges to Round Lick Creek @ RM 19.2

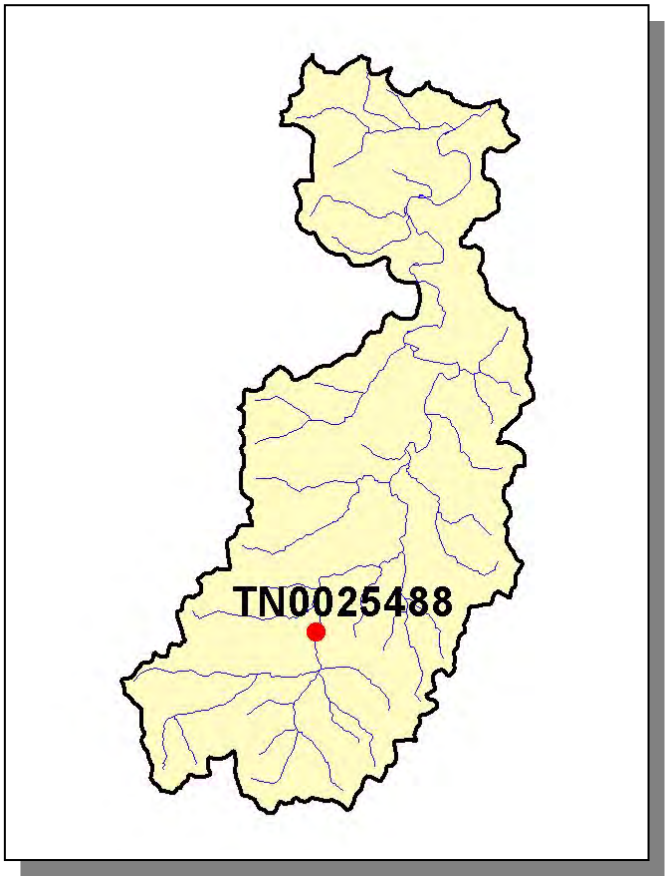

Figure 4-69. Location of NPDES Dischargers to Water Bodies Listed on the 2004 303(d) List in Subwatershed 051302010201. *More information, including the names of facilities, is provided in Appendix IV.*

Permit #	3Q2	1Q10	3Q10	3Q20	7Q10
TN0025488	0.12	na	0.03	0.02	0.04

Table 4-47. Receiving Stream Low Flow Information for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 051302010201. *Data are in cubic feet per second (CFS). Data were obtained from the USGS web application StreamStats at http://water.usgs.gov/osw/streamstats/. (na, data not available)*

PERMIT #	WET	$CBOD_5$	NH_3	FECAL COLIFORM	TRC	TSS	SETTLEABLE SOLIDS	DO	pH	Ag
TN0025488	X	X	X	X	X	X	X	X	X	X

Table 4-48. Inorganic Parameters Monitored for Daily Maximum Limits for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 051302010201. *WET, Whole Effluent Toxicity; $CBOD_5$, Carbonaceous Biochemical Oxygen Demand (5-Day); TRC, Total Residual Chlorine; TSS, Total Suspended Solids; DO, Dissolved Oxygen.*

4.2.B.i.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
3,953	7,248	210	11	301	70

Table 4-49. Summary of Livestock Count Estimates in Subwatershed 051302010201. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Smith	17,187	29,672	814	683	1,883	332
Wilson	27,209	51,090	1,505	1,585	1,700	465

Table 4-50. Summary of Livestock Count Estimates in Smith and Wilson Counties. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

	INVENTORY		REMOVAL RATE	
County	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Smith	81.0	81.0	1.1	2.6
Wilson	98.1	97.0	1.7	6.8

Table 4-51. Forest Acreage and Annual Removal Rates (1987-1994) in Smith and Wilson Counties.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.67
Grass (Hayland)	0.31
Legumes, Grass (Hayland)	0.31
Grass, Forbs, Legumes (Mixed Pasture)	0.85
Corn (Row Crops)	2.22
Sorghum (Row Crops)	6.64
Tobacco (Row Crops)	16.34
Wheat (Close-Grown Cropland)	1.96
All Other Close-Grown Cropland	2.49
Farmsteads and Ranch Headquarters	0.30

Table 4-52. Annual Estimated Total Soil Loss in Subwatershed 051302010201.

4.2.B.ii. 051302010202 (Jennings Fork).

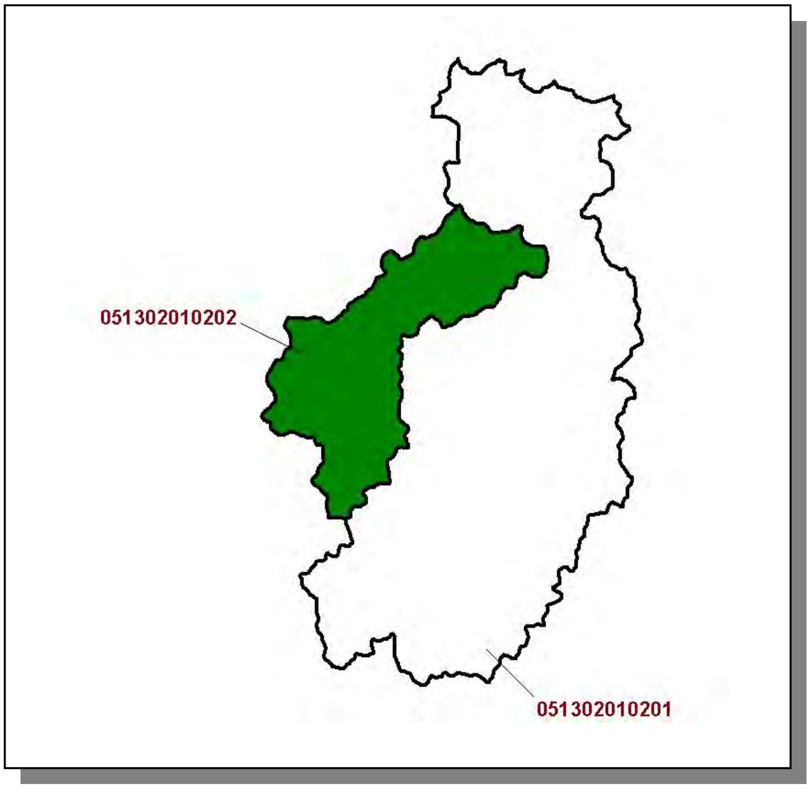

Figure 4-70. Location of Subwatershed 051302010202. *HUC-12 subwatershed boundaries are shown for reference.*

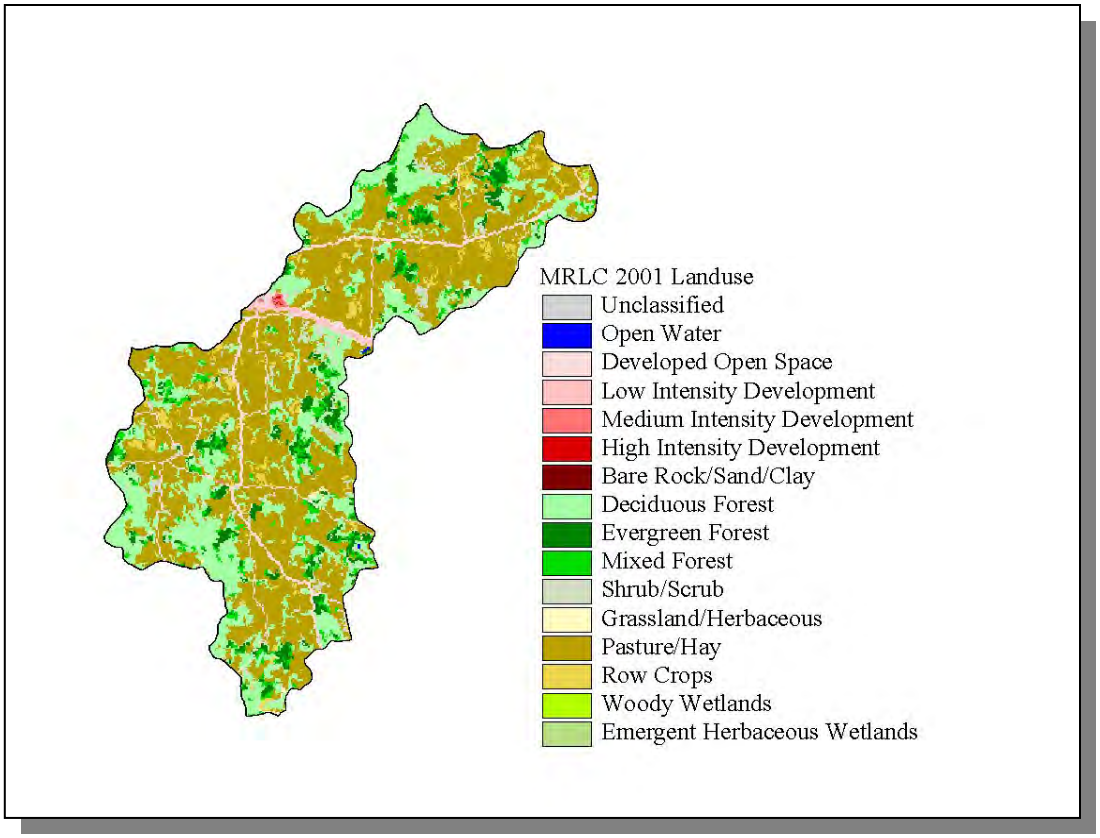

Figure 4-71. Illustration of Land Use Distribution in Subwatershed 051302010202.

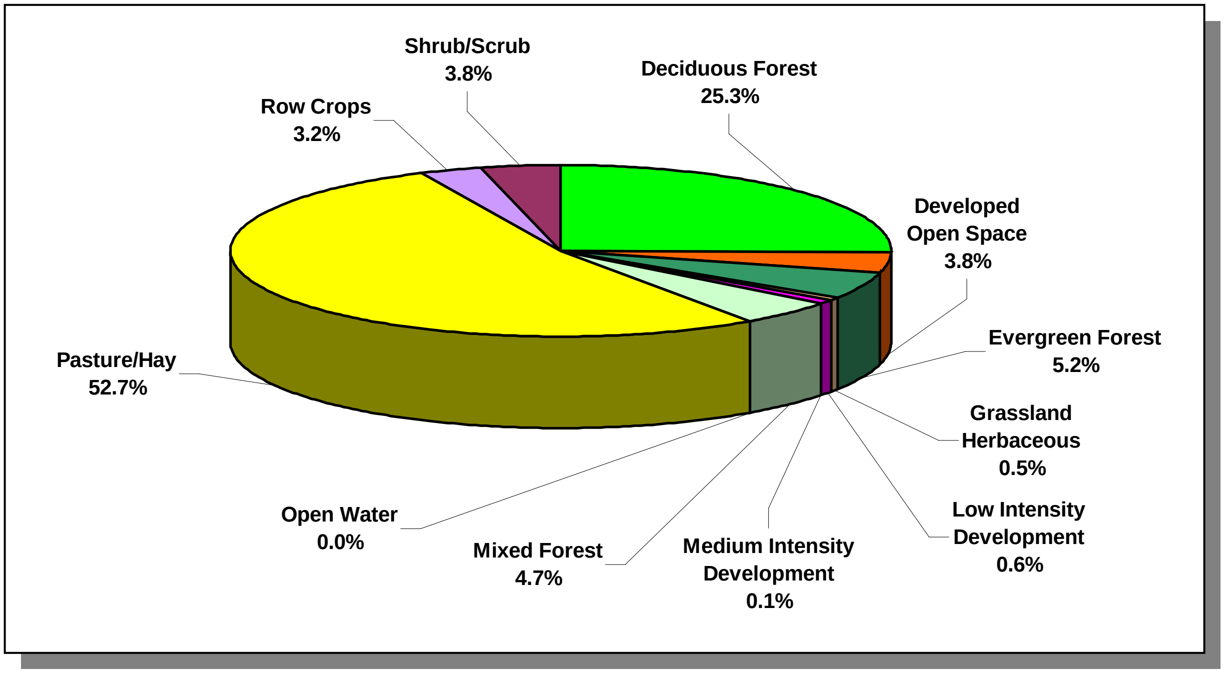

Figure 4-72. Land Use Distribution in Subwatershed 051302010202. *More information is provided in Appendix IV.*

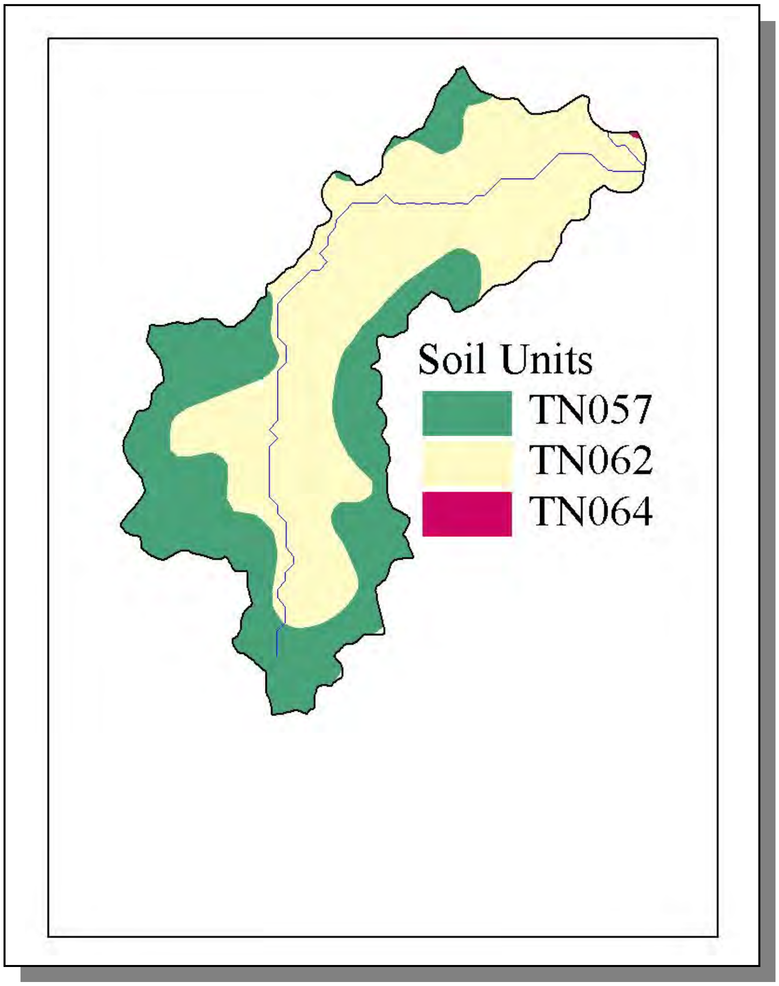

Figure 4-73. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010202.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN057	0.00	C	1.14	5.01	Clayey Loam	0.33
TN062	0.00	C	0.98	4.40	Clayey Loam	0.26
TN064	7.00	C	1.19	5.82	Silty Loam	0.37

Table 4-53. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010202. *The definition of "Hydrologic Group" is provided in Appendix IV.*

	COUNTY POPULATION				ESTIMATED POPULATION IN WATERSHED			
County	1990	1997	2000	Portion of Watershed (%)	1990	1997	2000	% Change (1990-2000)
Smith	14,143	16,047	17,712	0.02	3	4	4	33.3

Table 4-54. Population Estimates in Subwatershed 051302010202.

Figure 4-74. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 051302010202. *More information, including site names and locations, is provided in Appendix IV.*

4.2.B.ii.a. Point Source Contributions.

There are no point source contributions in this subwatershed.

4.2.B.ii.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
1,290	2,421	71	<5	81	22

Table 4-55. Summary of Livestock Count Estimates in Subwatershed 051302010202. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), **"**Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Smith	17,187	29,672	814	683	1,883	332
Wilson	27,209	51,090	1,505	1,585	1,700	465

Table 4-56. Summary of Livestock Count Estimates in Smith and Wilson Counties. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), **"**Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

	INVENTORY		REMOVAL RATE	
County	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Smith	81.0	81.0	1.1	2.6
Wilson	98.1	97.0	1.7	6.8

Table 4-57. Forest Acreage and Annual Removal Rates (1987-1994) in Smith and Wilson Counties.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.43
Grass (Hayland)	0.37
Legumes, Grass (Hayland)	0.37
Grass, Forbs, Legumes (Mixed Pasture)	0.91
Corn (Row Crops)	2.22
Soybeans (Row Crops)	6.72
Tobacco (Row Crops)	19.18
Wheat (Close-Grown Cropland)	1.96
All Other Close-Grown Cropland	2.49
Farmsteads and Ranch Headquarters	0.26

Table 4-58. Annual Estimated Total Soil Loss in Subwatershed 051302010202.

4.2.C. 0513020103.

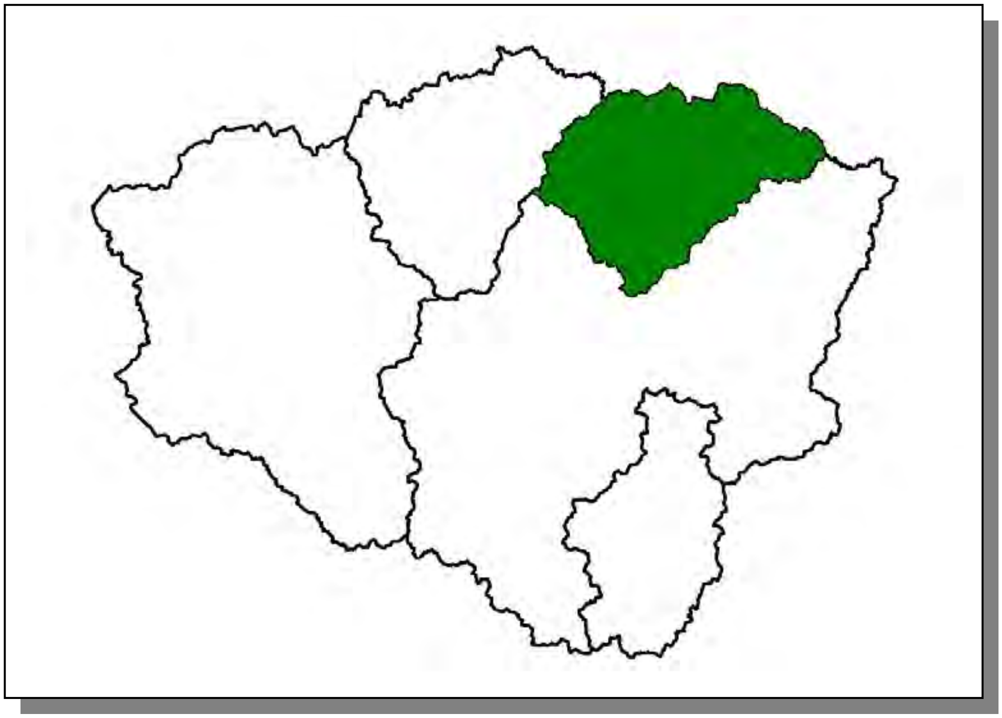

Figure 4-75. Location of Subwatershed 0513020103. *All Old Hickory Lake HUC-10 subwatershed boundaries are shown for reference.*

4.2.C.i. 051302010301 (Upper Goose Creek).

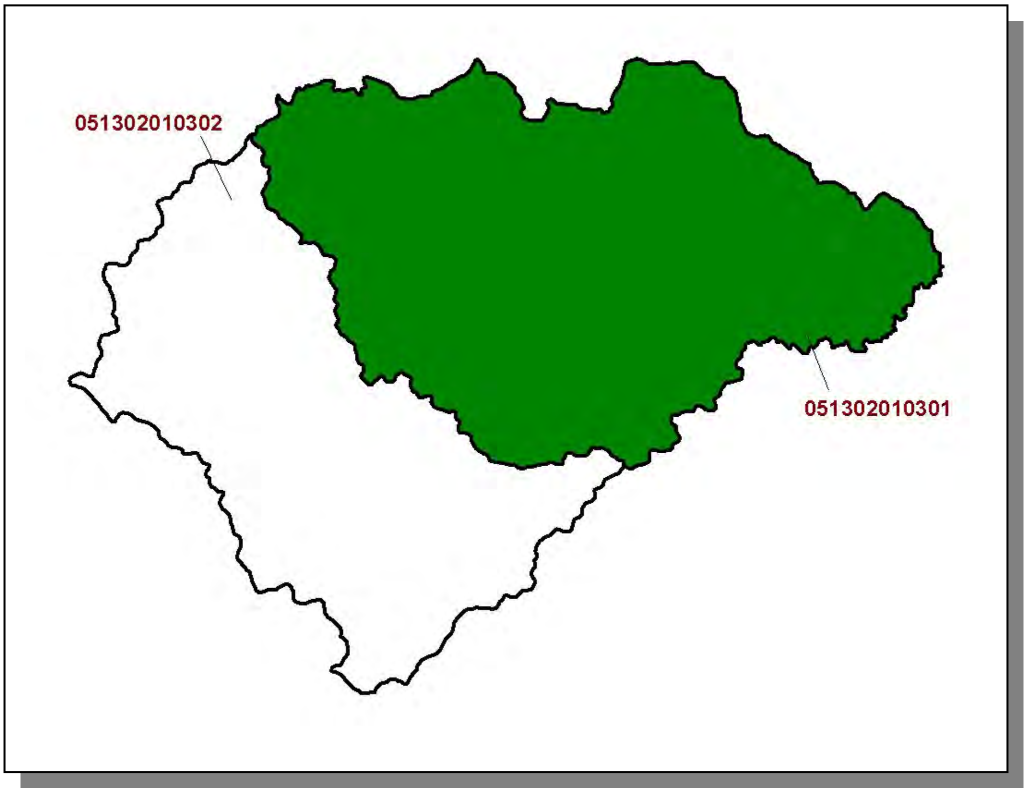

Figure 4-76. Location of Subwatershed 051302010301. *HUC-12 subwatershed boundaries are shown for reference.*

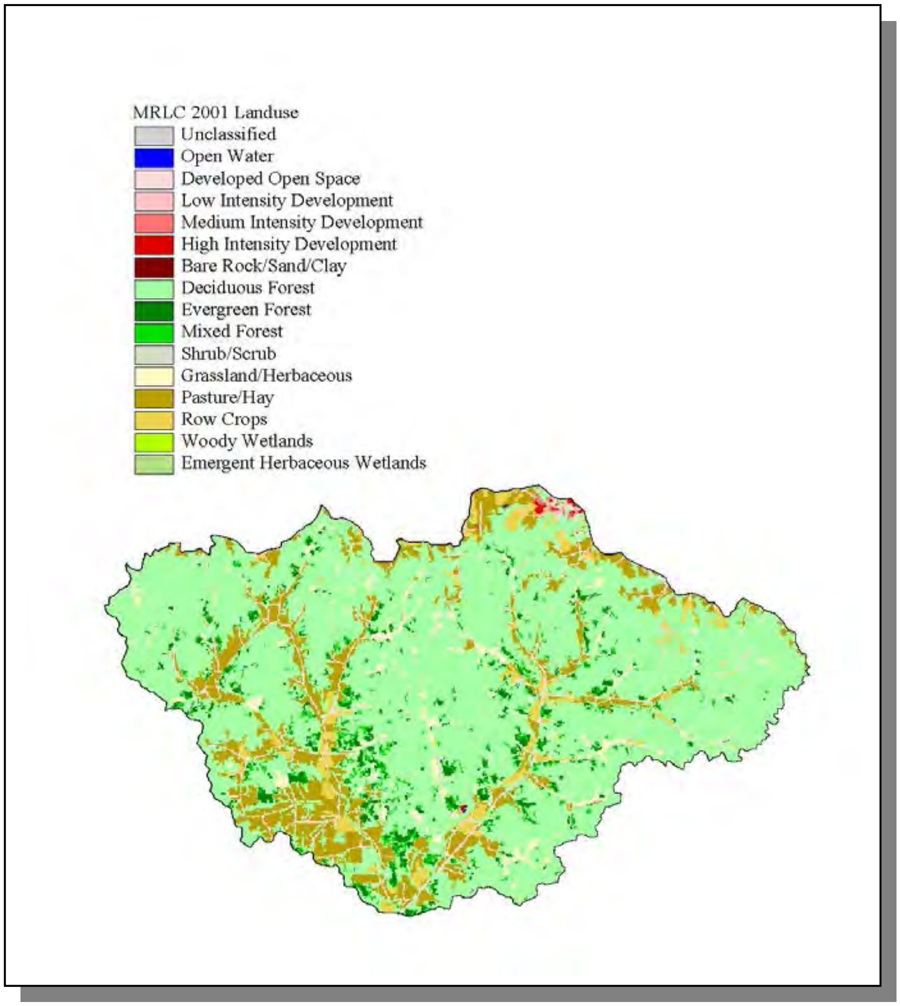

Figure 4-77. Illustration of Land Use Distribution in Subwatershed 051302010301.

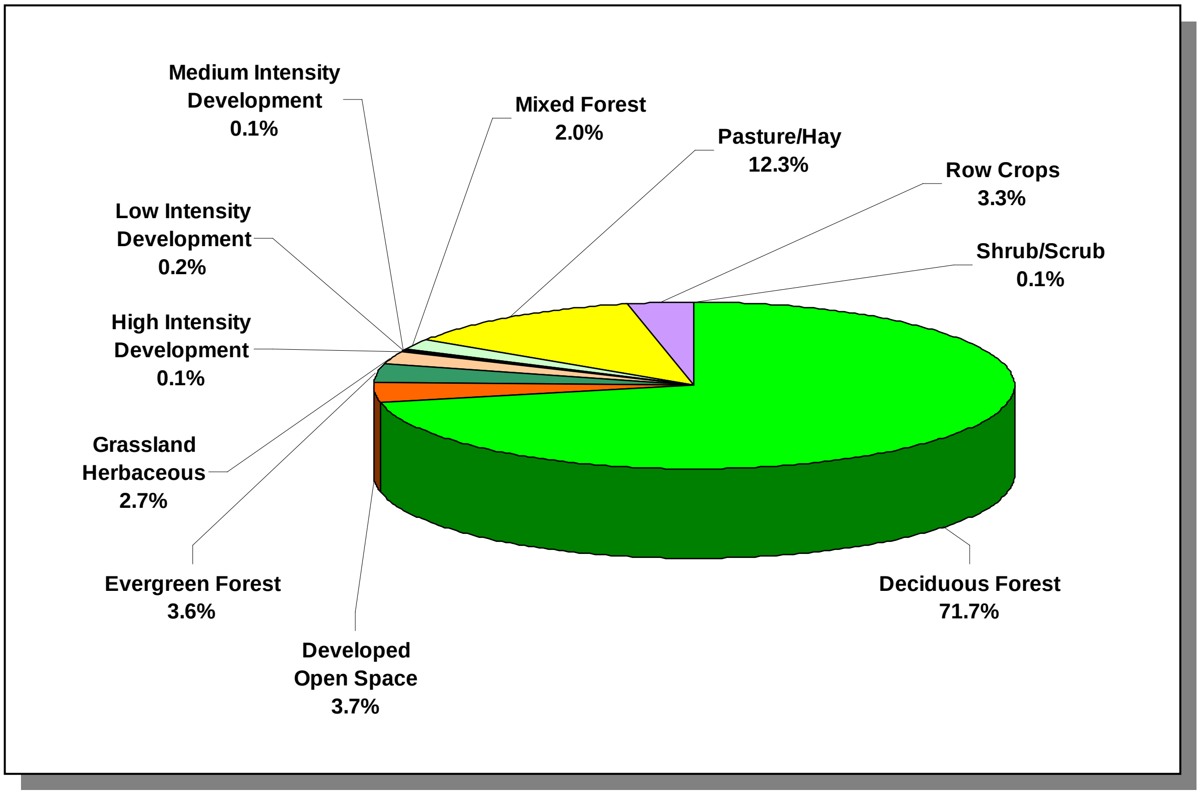

Figure 4-78. Land Use Distribution in Subwatershed 051302010301. *More information is provided in Appendix IV.*

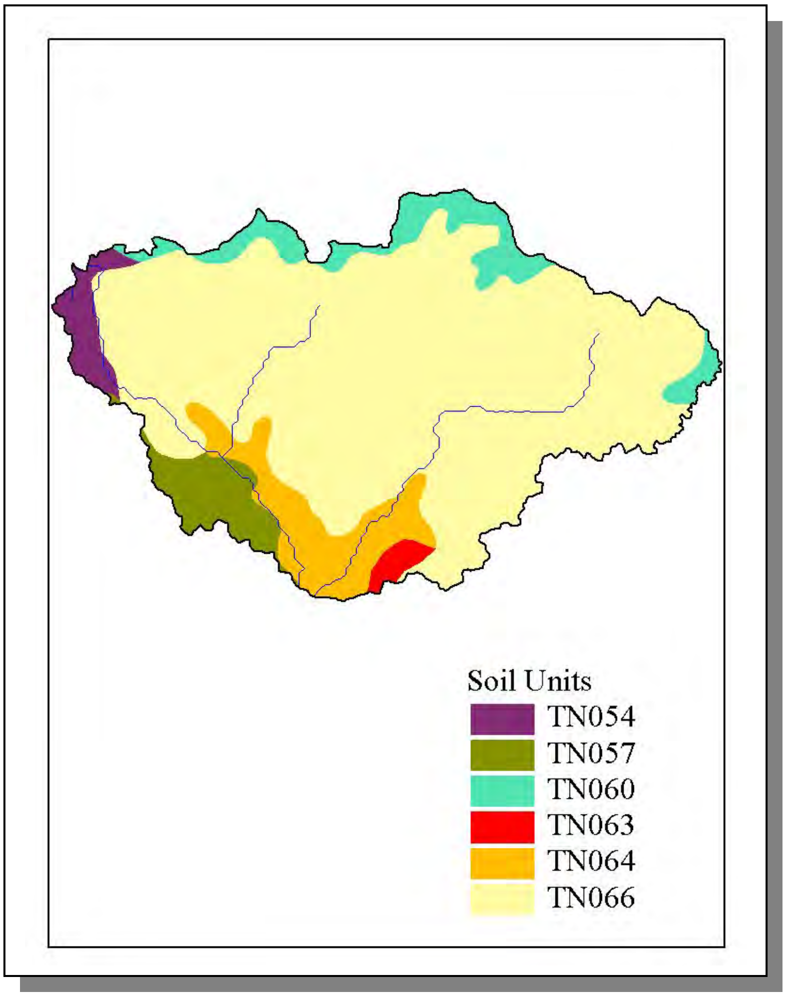

Figure 4-79. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010301.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN054	0.00	C	3.04	4.84	Loam	0.32
TN057	0.00	C	1.14	5.01	Clayey Loam	0.33
TN060	5.00	B	1.30	5.32	Sity Loam	0.39
TN063	0.00	C	1.19	5.72	Clayey Loam	0.32
TN064	7.00	C	1.19	5.82	Silty Loam	0.37
TN066	0.00	B	2.62	4.75	Loam	0.28

Table 4-59. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010301. *The definition of "Hydrologic Group" is provided in Appendix IV.*

	COUNTY POPULATION				ESTIMATED POPULATION IN WATERSHED			
County	1990	1997	2000	Portion of Watershed (%)	1990	1997	2000	% Change (1990-2000)
Macon	15,906	17,854	20,386	18.09	2,878	3,230	3,689	28.2
Trousdale	5,920	6,748	7,259	5.06	300	342	368	22.7
Total	**21,826**	**24,602**	**27,645**		**3,178**	**3,572**	**4,057**	**27.7**

Table 4-60. Population Estimates in Subwatershed 051302010301.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Lafayette	Macon	3,641	1,695	1,323	348	24

Table 4-61. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 051302010301.

Figure 4-80. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 051302010301. *More information, including site names and locations, is provided in Appendix IV.*

4.2.C.i.a. Point Source Contributions.

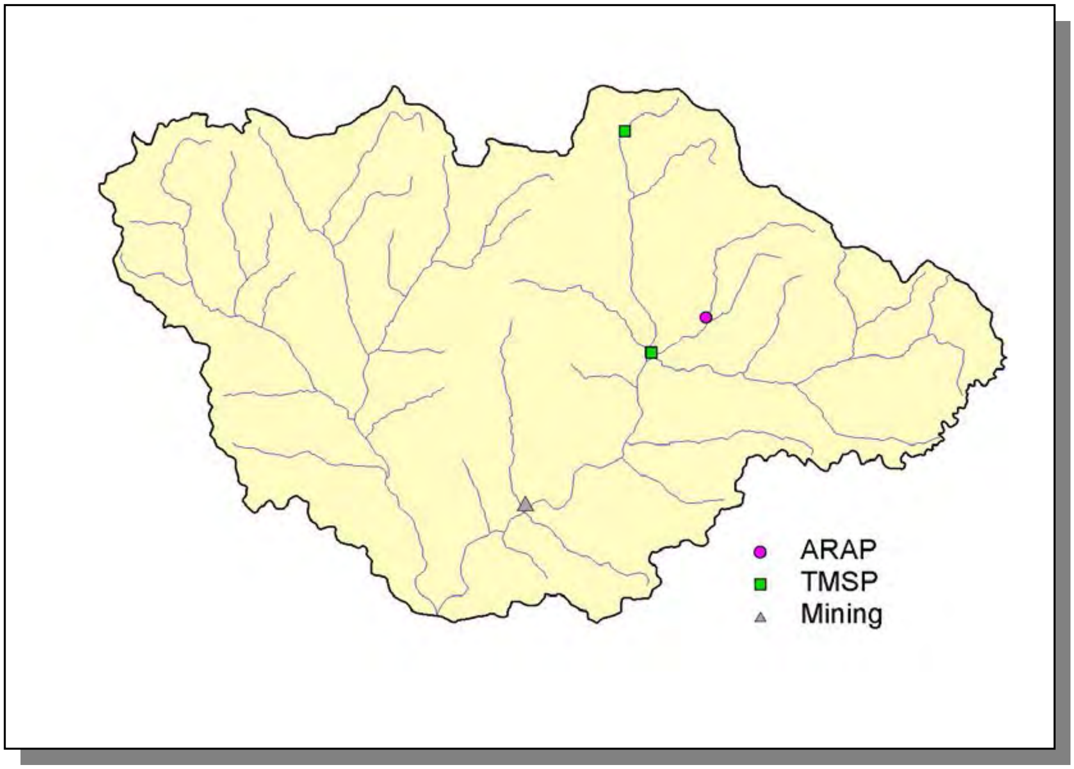

Figure 4-81. Location of Permits Issued in Subwatershed 051302010301. *More information, including the names of facilities, is provided in Appendix IV.*

Figure 4-82. Location of Active Mining Sites in Subwatershed 051302010301. *More information, including the names of mining operations, is provided in Appendix IV.*

Figure 4-83. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 051302010301. *More information is provided in Appendix IV.*

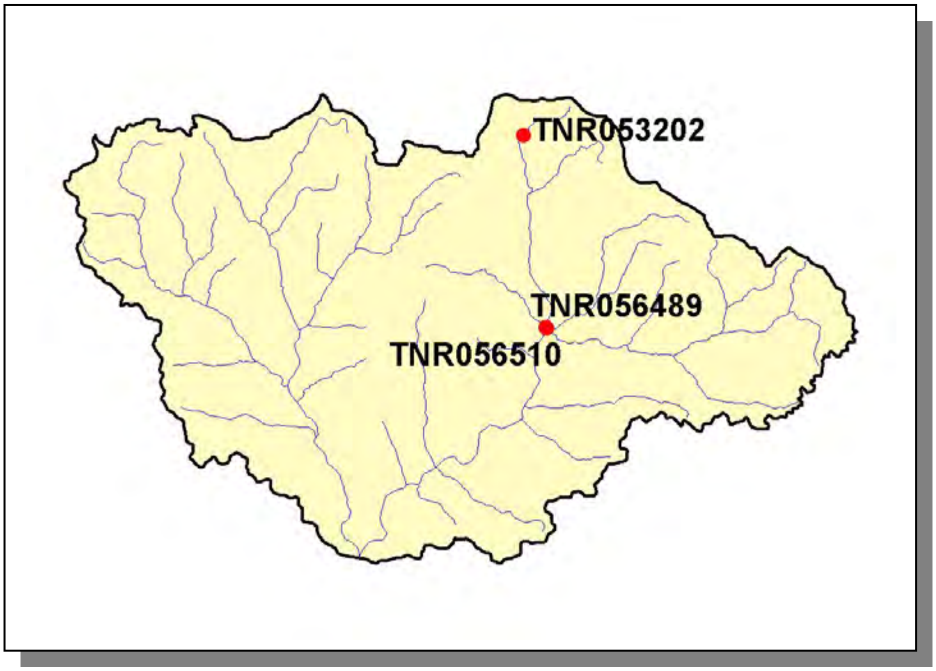

Figure 4-84. Location of TMSP Sites in Subwatershed 051302010301. *More information, including the names of facilities, is provided in Appendix IV.*

4.2.C.i.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
2,450	4,240	52	5	340	25

Table 4-62. Summary of Livestock Count Estimates in Subwatershed 051302010301. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Macon	15,039	26,098	318	675	2,377	111
Trousdale	6,672	11,344	135	243	112	195

Table 4-63. Summary of Livestock Count Estimates in Macon and Trousdale Counties. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

CROPS	TONS/ACRE/YEAR
Legumes (Pasture)	0.10
Grass (Pastureland)	0.43
Grass (Hayland)	0.20
Legumes, Grass (Hayland)	0.16
Legumes (Hayland)	0.13
Grass, Forbs, Legumes (Mixed Pasture)	0.97
Corn (Row Crops)	3.99
Tobacco (Row Crops)	10.68
Wheat (Close-Grown Cropland)	3.43
Other Vegetable and Truck Crops	5.48
Conservation Reserve Program Lands	0.28
Farmsteads and Ranch Headquarters	0.16

Table 4-64. Annual Estimated Total Soil Loss in Subwatershed 051302010301.

4.2.C.ii. 051302010302 (Lower Goose Creek).

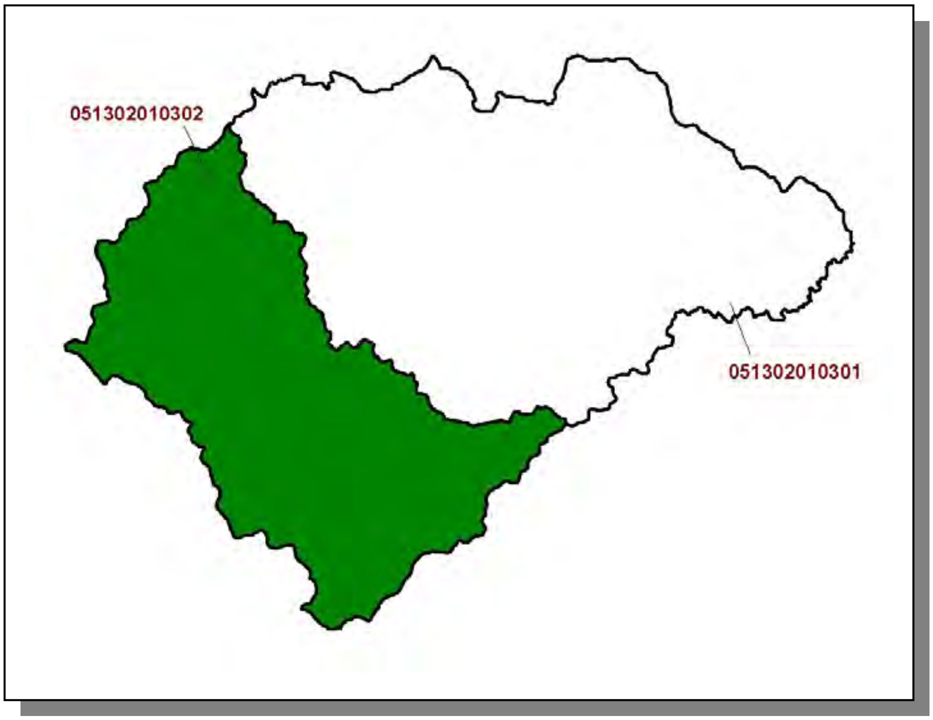

Figure 4-85. Location of Subwatershed 051302010302. *HUC-12 subwatershed boundaries are shown for reference.*

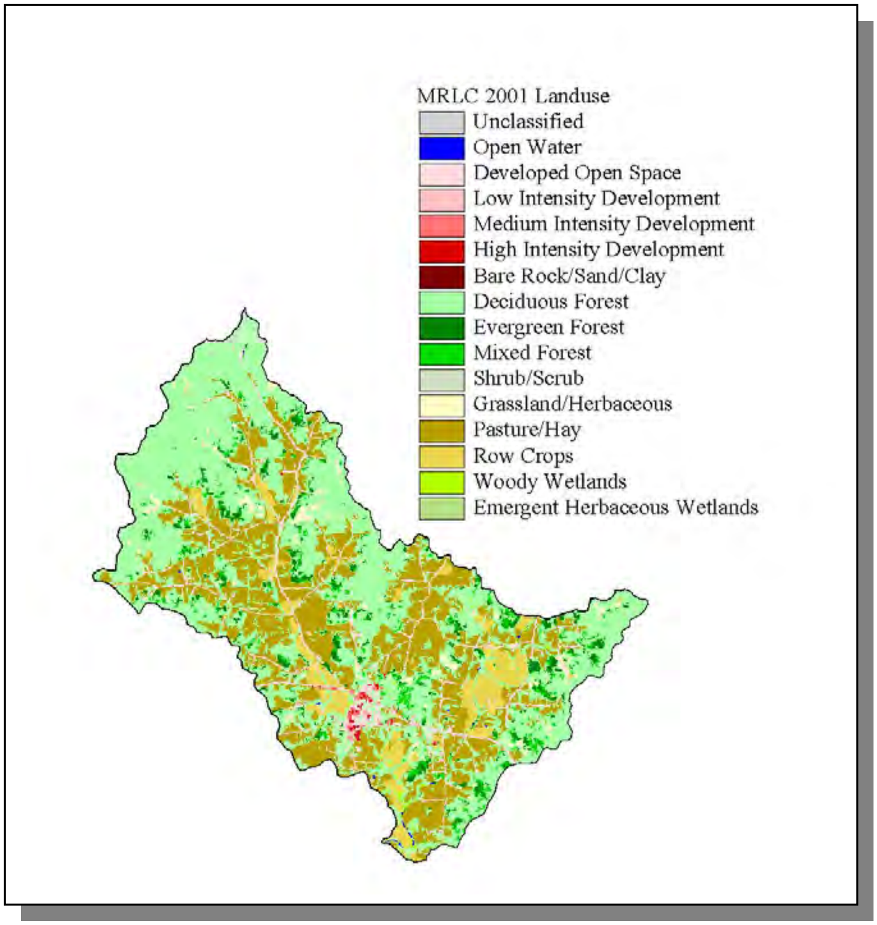

Figure 4-86. Illustration of Land Use Distribution in Subwatershed 051302010302.

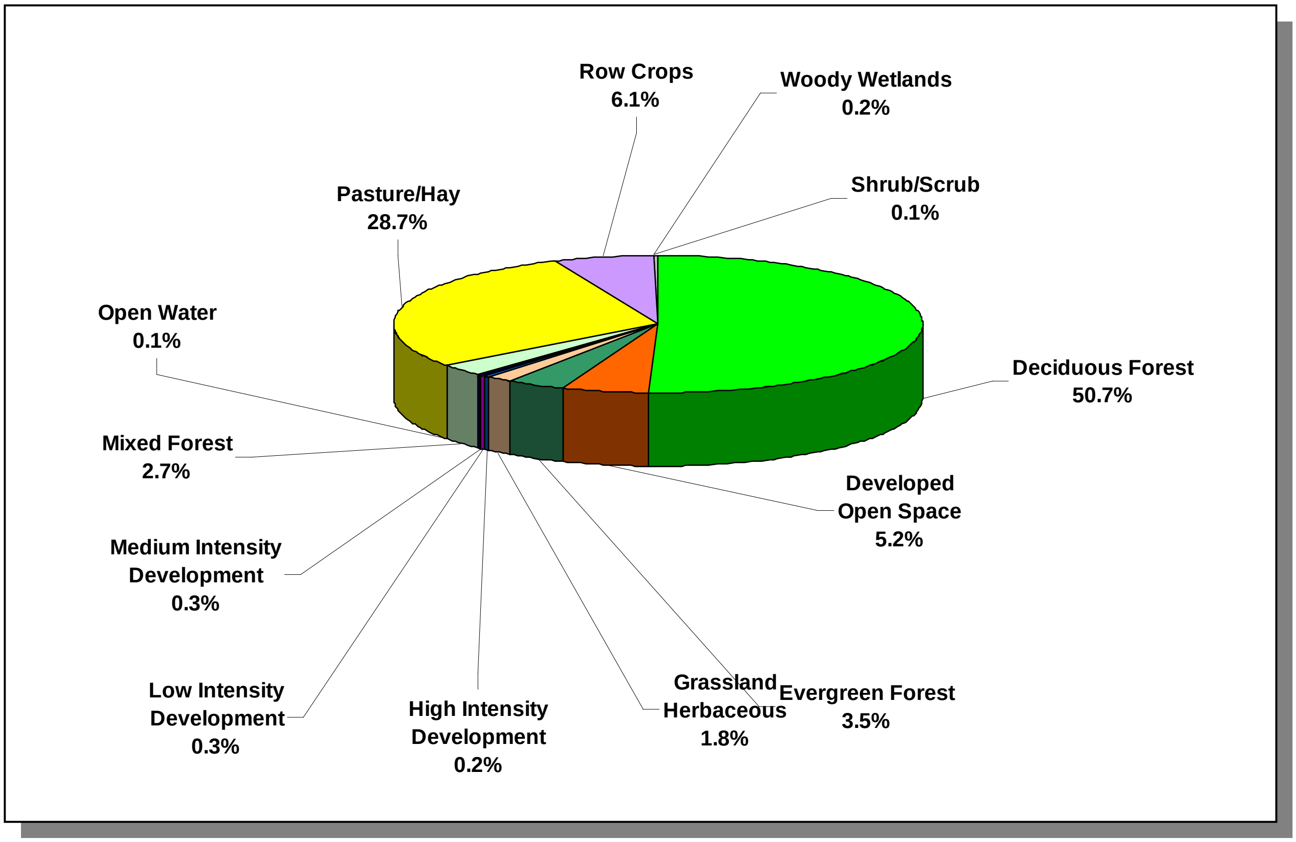

Figure 4-87. Land Use Distribution in Subwatershed 051302010302. *More information is provided in Appendix IV.*

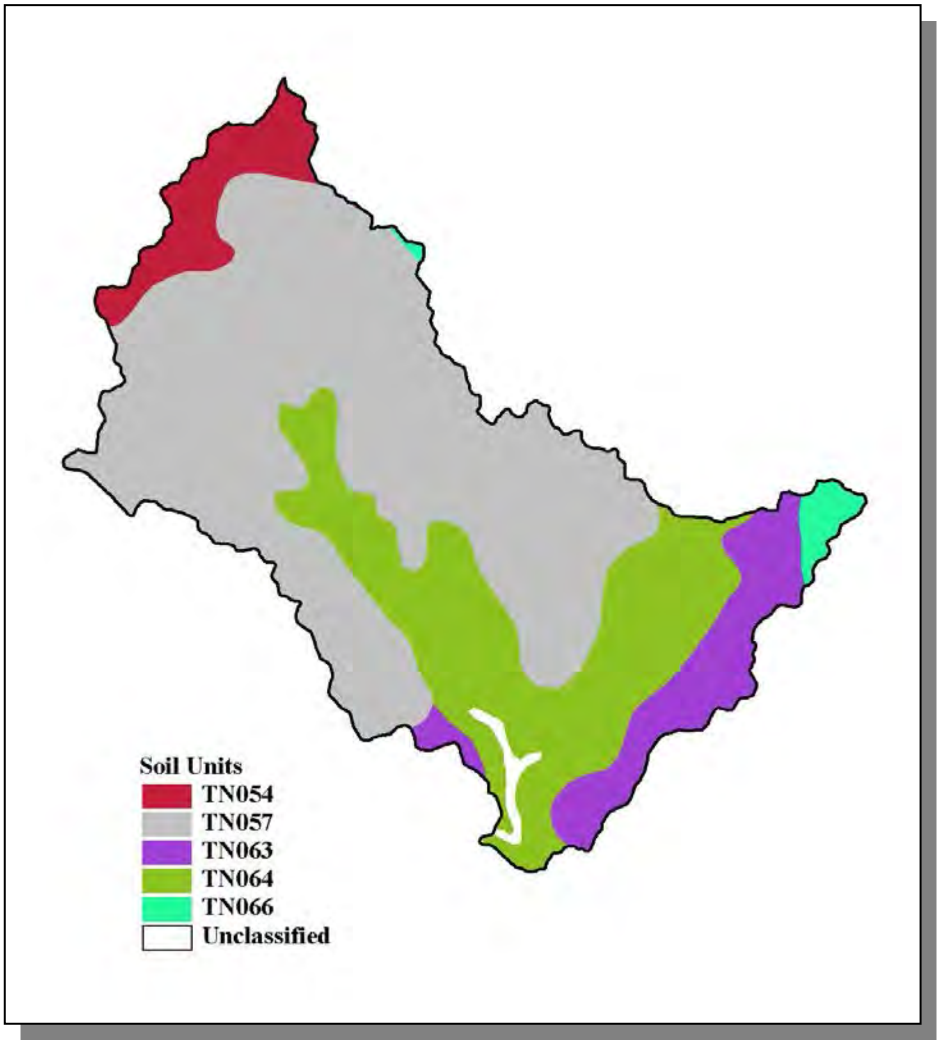

Figure 4-88. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010302.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN054	0.00	C	3.04	4.84	Loam	0.32
TN057	0.00	C	1.14	5.01	Clayey Loam	0.33
TN063	0.00	C	1.19	5.72	Clayey Loam	0.32
TN064	7.00	C	1.19	5.82	Silty Loam	0.37
TN066	0.00	B	2.62	4.75	Loam	0.28

Table 4-65. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010302. *The definition of "Hydrologic Group" is provided in Appendix IV.*

	COUNTY POPULATION				ESTIMATED POPULATION IN WATERSHED			
County	1990	1997	2000	Portion of Watershed (%)	1990	1997	2000	% Change (1990-2000)
Macon	15,906	17,854	20,386	0.87	138	154	176	27.5
Sumner	103,281	121,936	130,449	0.07	71	84	90	26.8
Trousdale	5,920	6,748	7,259	34.64	2,051	2,338	2,515	22.6
Total	**125,107**	**146,538**	**158,094**		**2,260**	**2,576**	**2,781**	**23.1**

Table 4-66. Population Estimates in Subwatershed 051302010302.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Hartsville	Trousdale	2,188	964	907	57	0

Table 4-67. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 051302010302.

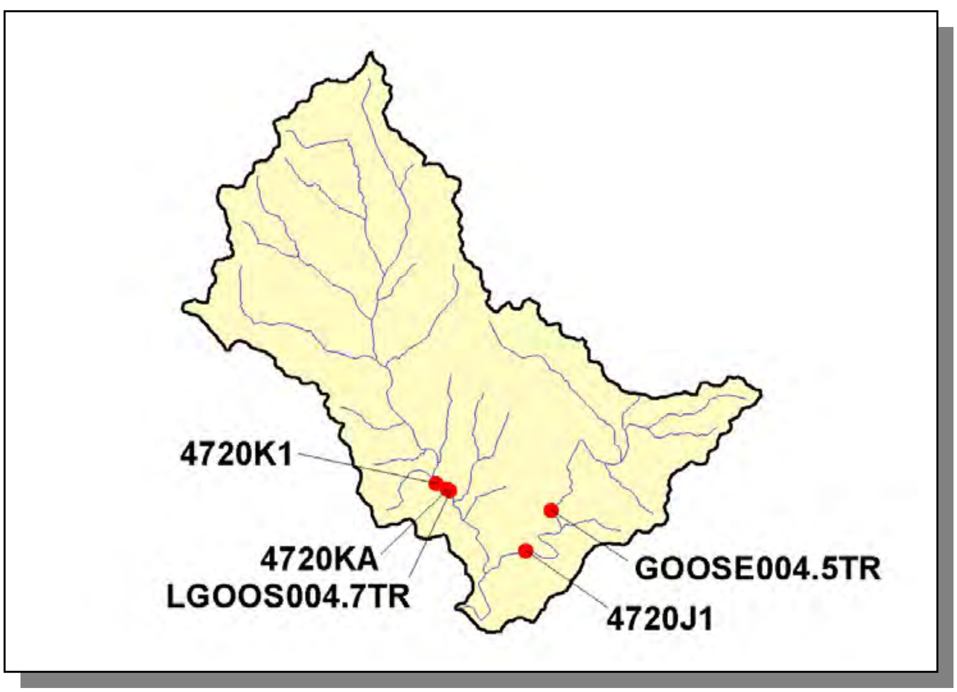

Figure 4-89. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 051302010302. *More information, including site names and locations, is provided in Appendix IV.*

4.2.C.ii.a. Point Source Contributions.

There are no point source contributions in this subwatershed.

4.2.C.ii.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
2,699	4,592	55	<5	55	77

Table 4-68. Summary of Livestock Count Estimates in Subwatershed 051302010302. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Macon	15,039	26,098	318	675	2,377	111
Sumner	22,296	45,116	1,515	50	2,500	189
Trousdale	6,672	11,344	135	243	112	195

Table 4-69. Summary of Livestock Count Estimates in Macon, Sumner, and Trousdale Counties. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

CROPS	TONS/ACRE/YEAR
Legumes ((pastureland)	0.41
Grass (Pastureland)	0.46
Grass (Hayland)	0.10
Legumes, Grass (Hayland)	0.34
Legumes (Hayland)	0.13
Grass, Forbs, Legumes (Mixed Pasture)	0.43
Corn (Row Crops)	5.01
Soybeans (Row Crops)	11.27
Wheat (Close-Grown Cropland)	3.43
Tobacco (Row Crops)	6.77
Other Vegetable and Truck Crops	5.48
Other Cropland not Planted	19.23
Conservation Reserve Program Lands	0.28
Farmsteads and Ranch Headquarters	0.21

Table 4-70. Annual Estimated Total Soil Loss in Subwatershed 051302010302.

4.2.D. 0513020104.

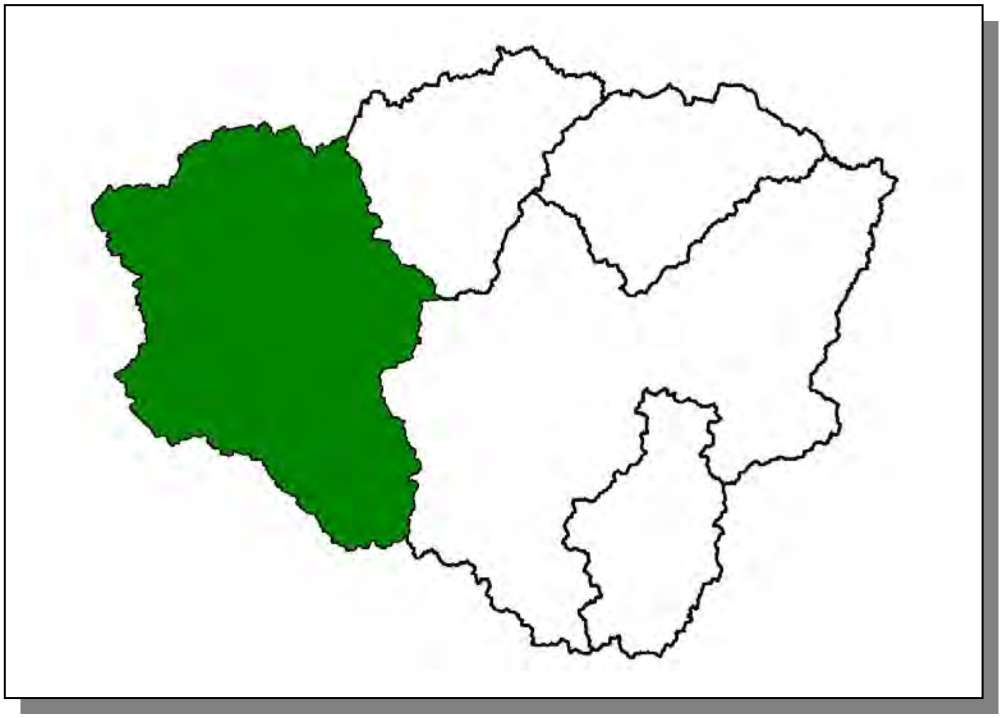

Figure 4-90. Location of Subwatershed 0513020104. *All Old Hickory Lake HUC-10 subwatershed boundaries are shown for reference.*

4.2.D.i. 051302010401 (Cumberland River).

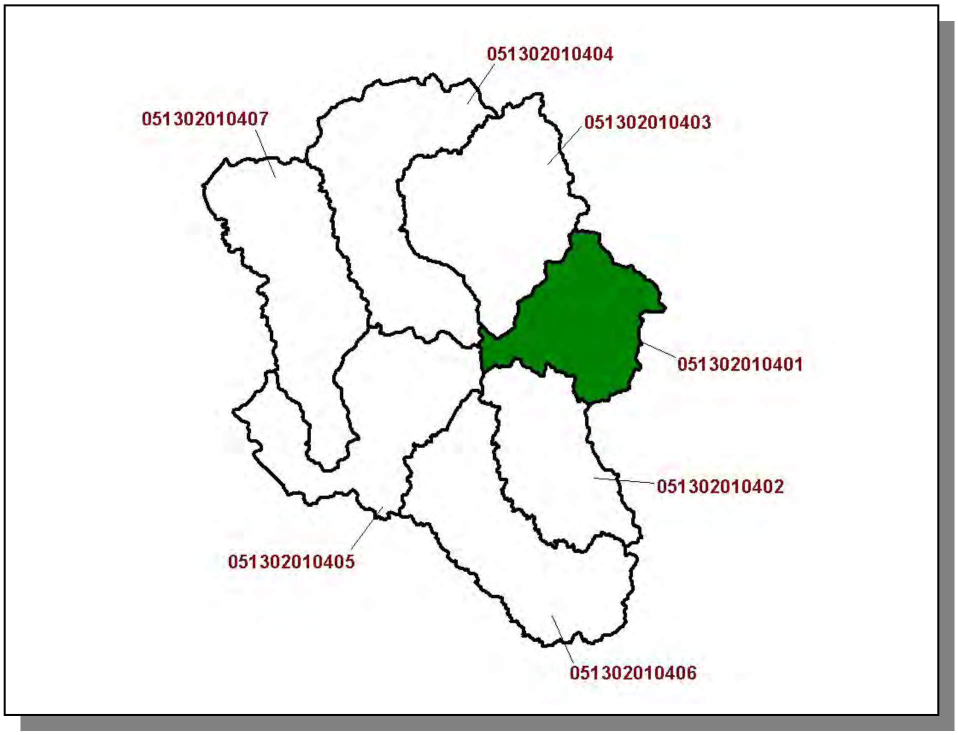

Figure 4-91. Location of Subwatershed 051302010401. *HUC-12 subwatershed boundaries are shown for reference.*

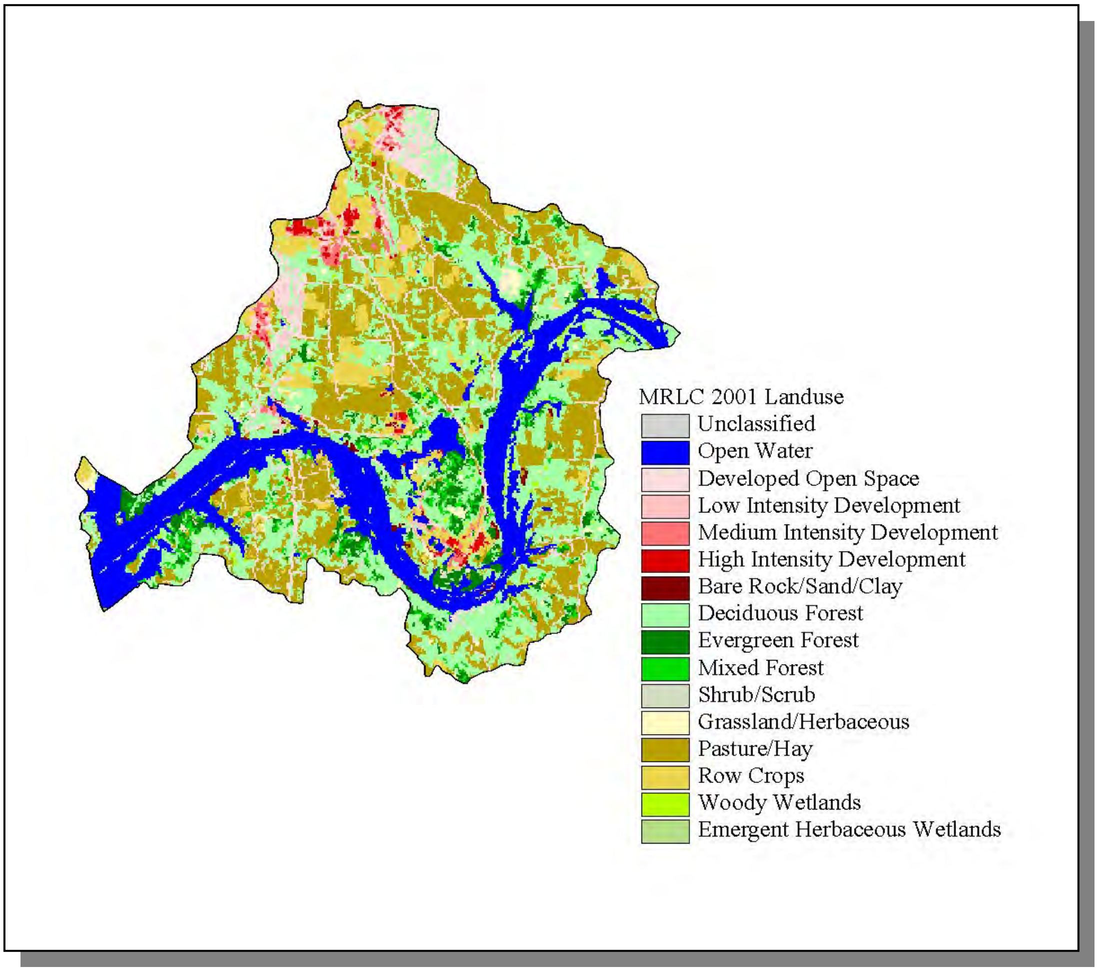

Figure 4-92. Illustration of Land Use Distribution in Subwatershed 051302010401.

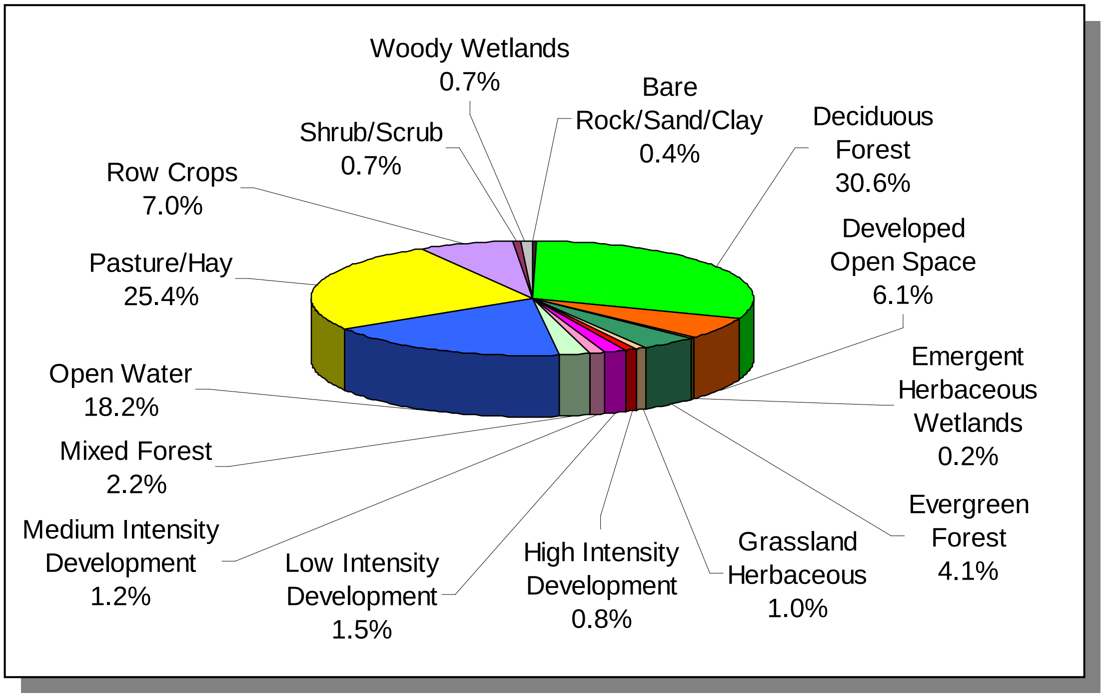

Figure 4-93. Land Use Distribution in Subwatershed 051302010401. *More information is provided in Appendix IV.*

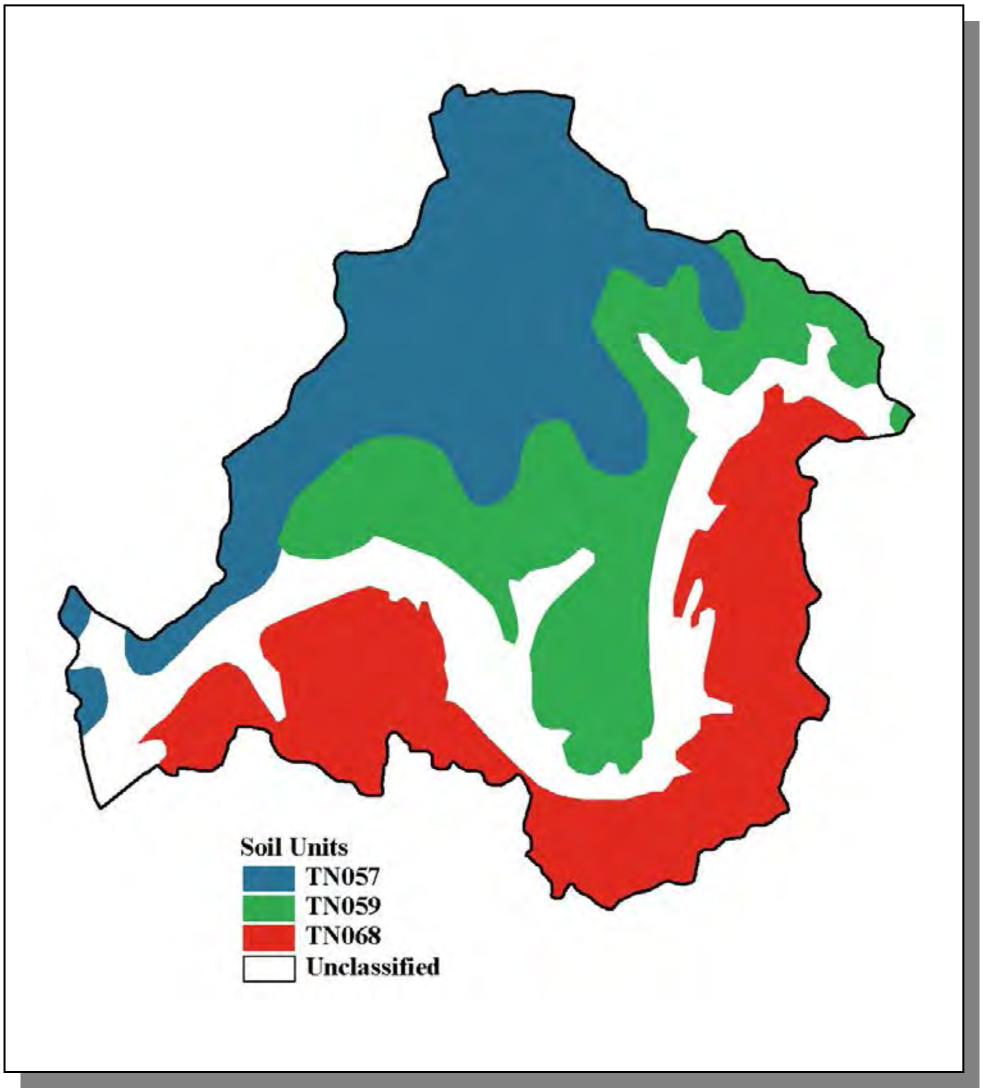

Figure 4-94. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010401.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN057	0.00	C	1.14	5.01	Clayey Loam	0.33
TN059	0.00	C	1.08	5.70	Silty Clayey Loam	0.35
TN068	0.00	B	1.35	5.38	Silty Loam	0.37

Table 4-71. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010401. *The definition of "Hydrologic Group" is provided in Appendix IV.*

	COUNTY POPULATION				ESTIMATED POPULATION IN WATERSHED			
County	1990	1997	2000	Portion of Watershed (%)	1990	1997	2000	% Change (1990-2000)
Sumner	103,281	121,936	130,449	4.19	4,328	5,109	5,466	26.3

Table 4-72. Population Estimates in Subwatershed 051302010401.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Gallatin	Sumner	18,794	7,635	6,931	704	0

Table 4-73. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 051302010401.

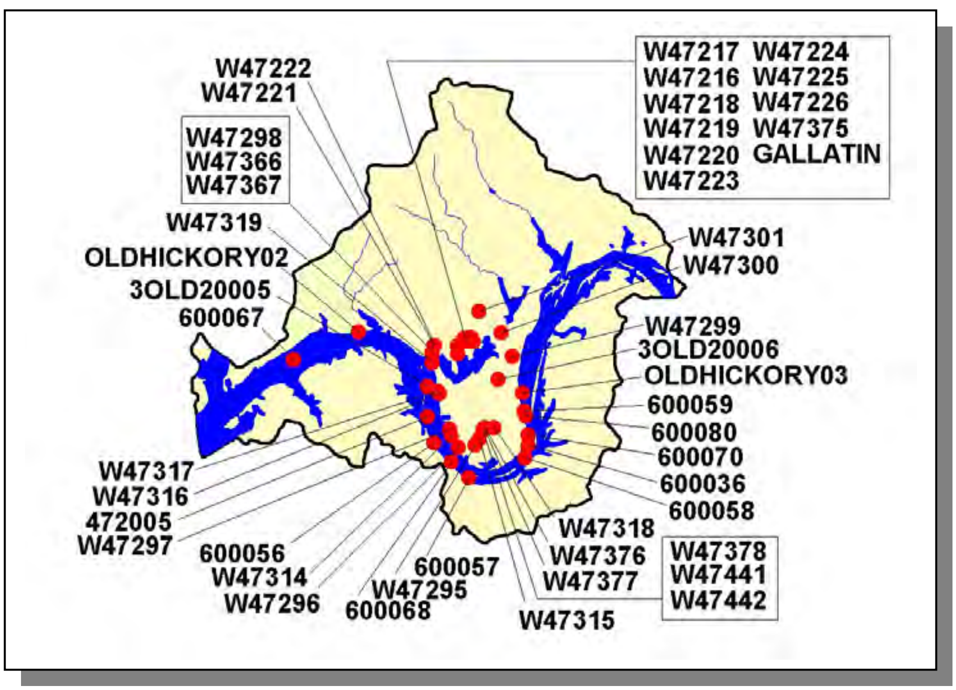

Figure 4-95. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 051302010401. *More information, including site names and locations, is provided in Appendix IV.*

4.2.D.i.a. Point Source Contributions.

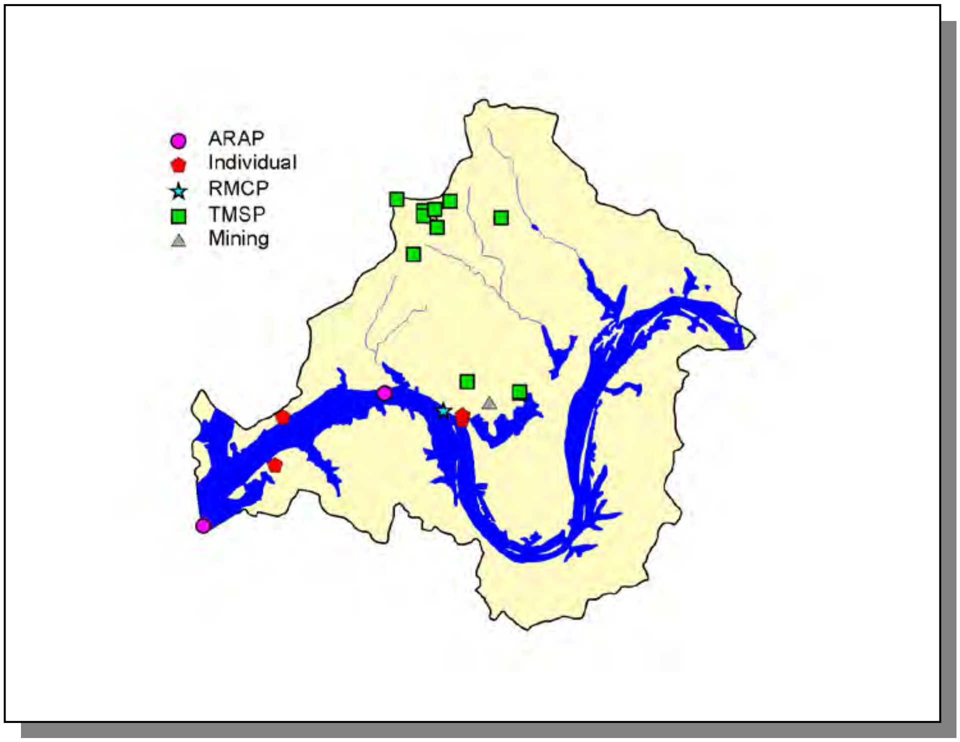

Figure 4-96. Location of Permits Issued in Subwatershed 051302010401. More information, including the names of facilities, is provided in Appendix IV.

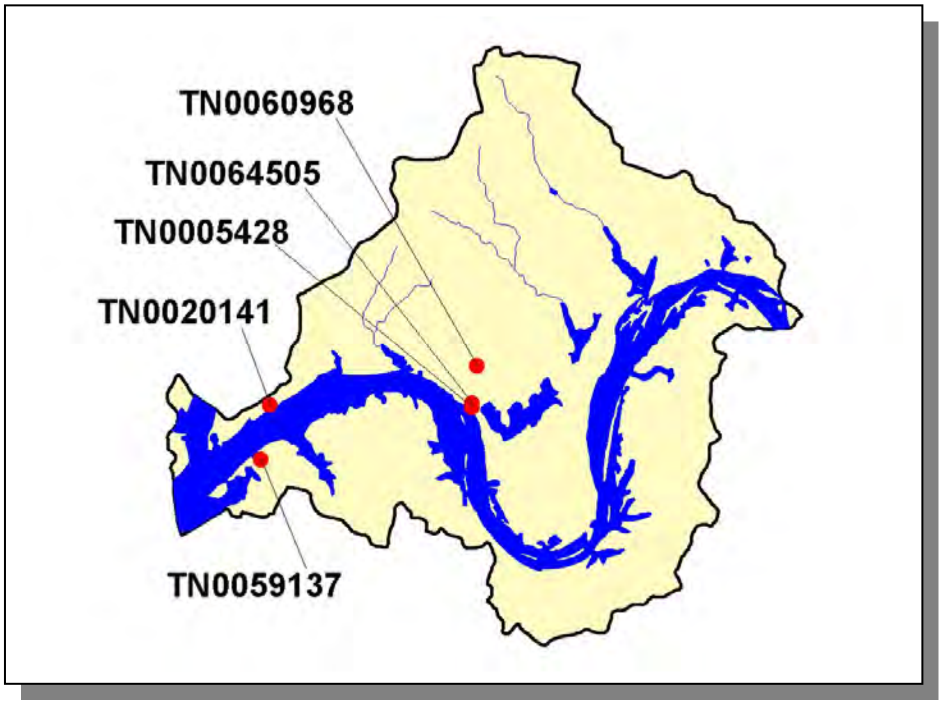

Figure 4-97. Location of Active NPDES Sites in Subwatershed 051302010401. *More information, including the names of facilities, is provided in Appendix IV.*

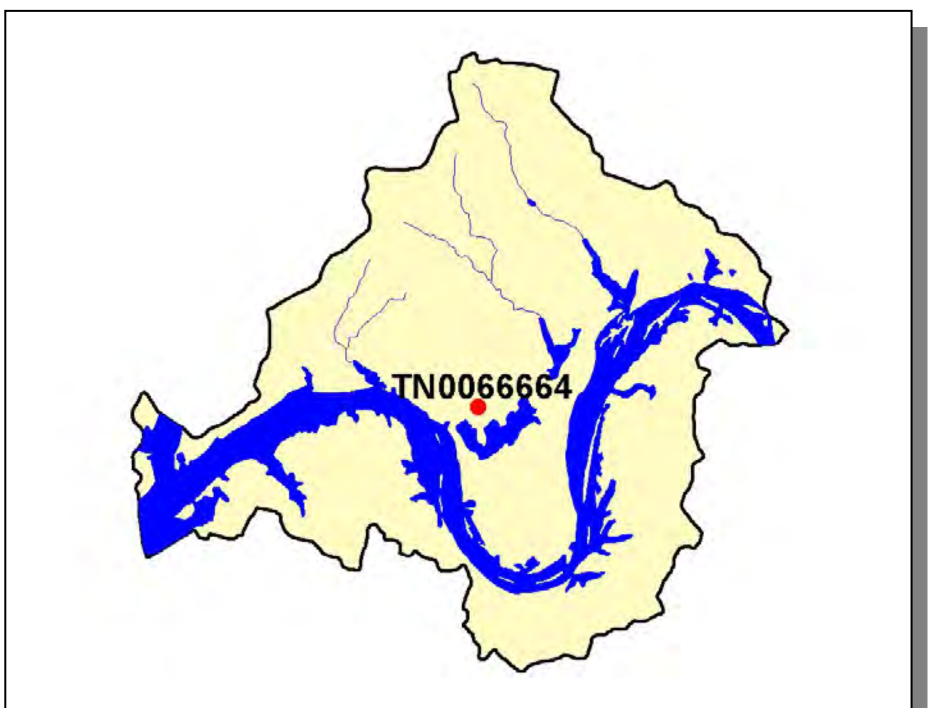

Figure 4-98. Location of Active Mining Sites in Subwatershed 051302010401. *More information, including the names of mining operations, is provided in Appendix IV.*

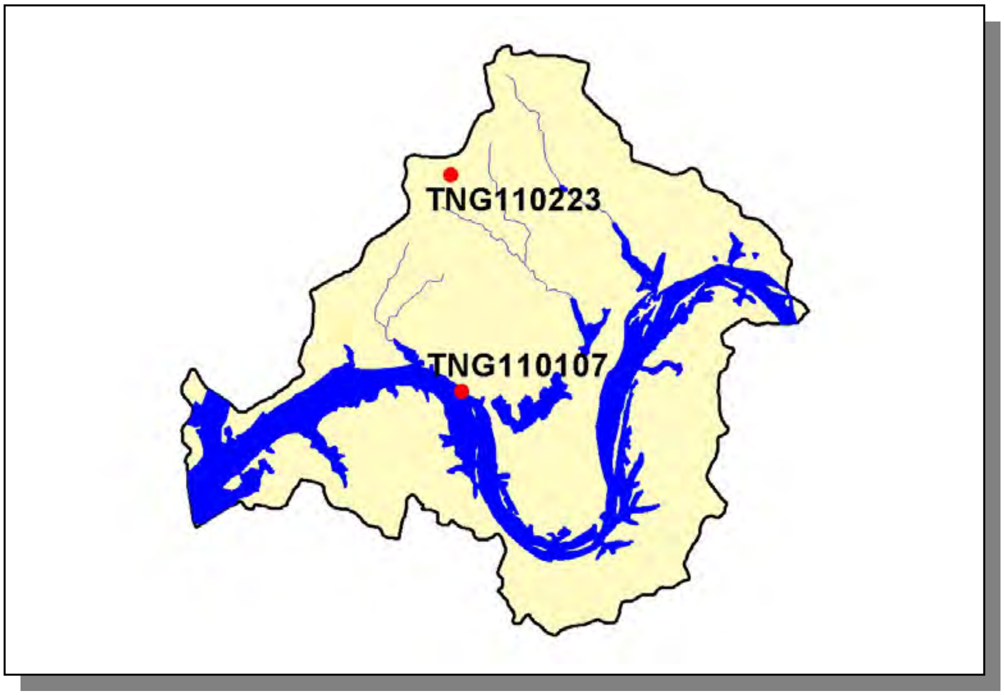

Figure 4-99. Location of Ready Mix Concrete Plants (RMCP) in Subwatershed 051302010401. *More information is provided in Appendix IV.*

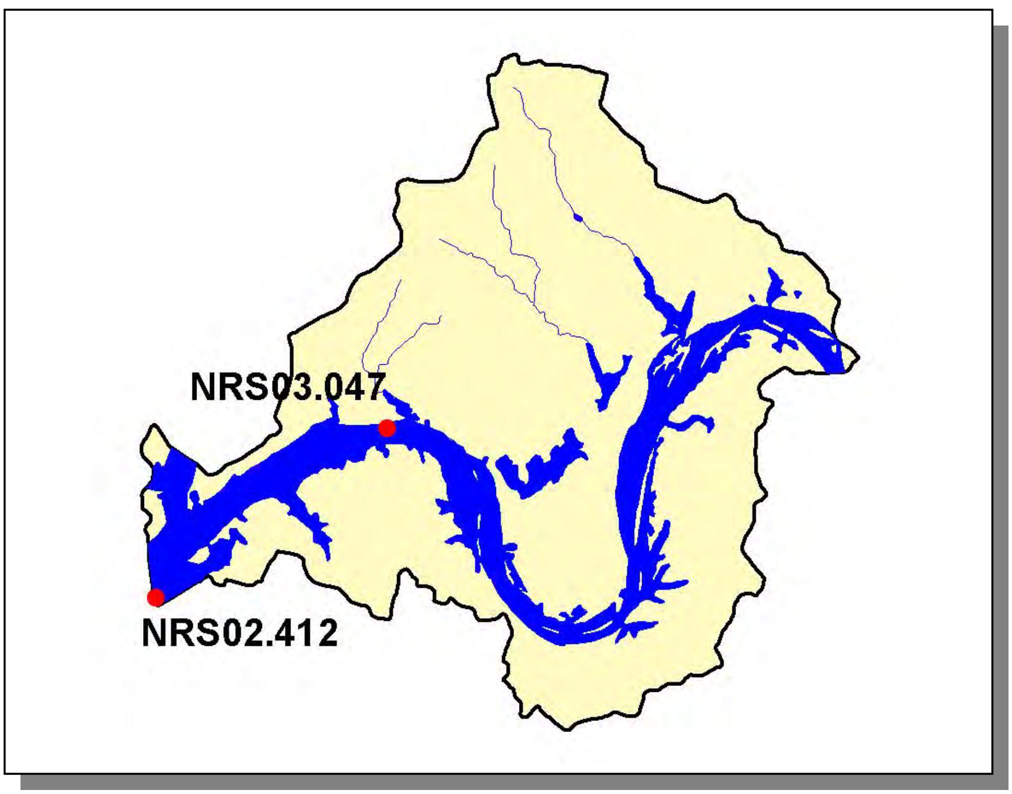

Figure 4-100. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 051302010401. *More information is provided in Appendix IV.*

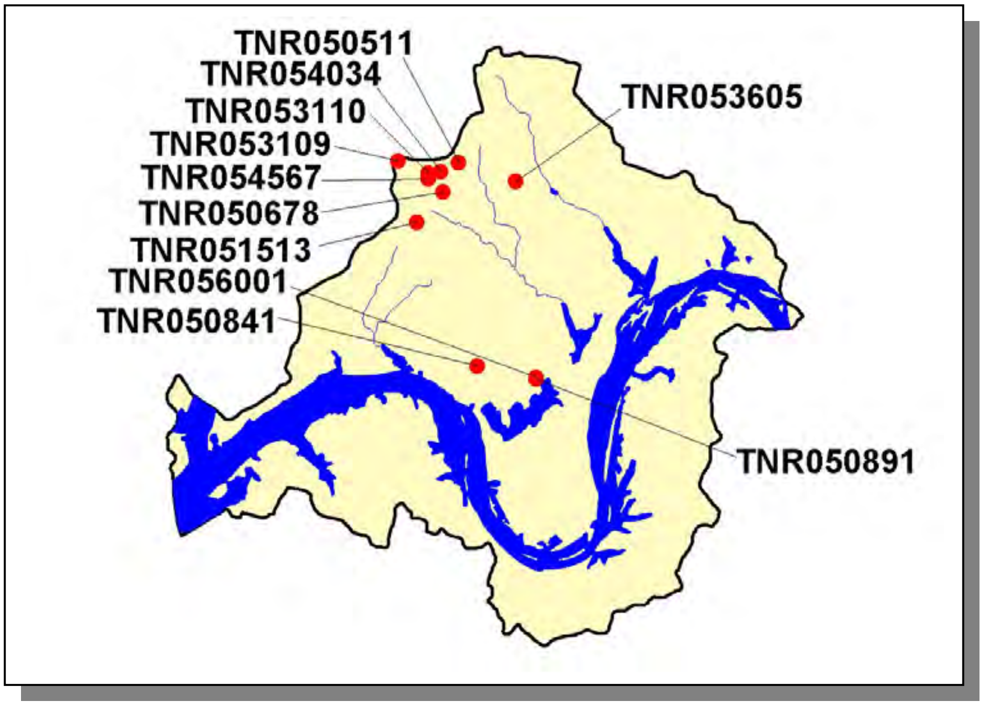

Figure 4-101. Location of TMSP Sites in Subwatershed 051302010401. *More information, including the names of facilities, is provided in Appendix IV.*

4.2.D.i.a.i. Dischargers to Water Bodies Listed on the 2004 303(d) List

There is one NPDES facility discharging to water bodies listed on the 2004 303(d) list in Subwatershed 051302010401:

- TN0059137 (Boxwell Reservation) discharges to Spence Creek Embayment @ RM 1.0

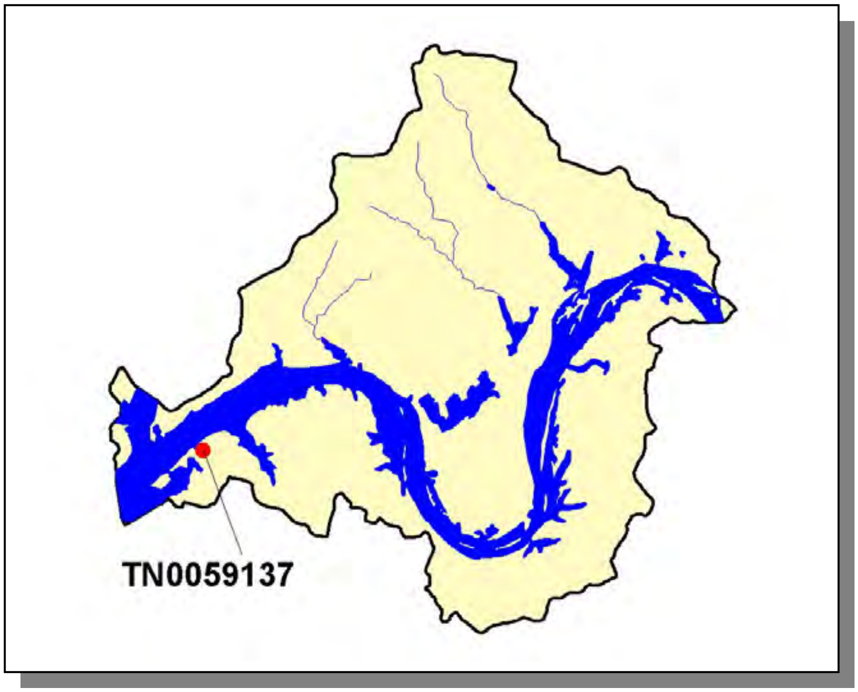

Figure 4-102. Location of NPDES Dischargers to Water Bodies Listed on the 2004 303(d) List in Subwatershed 051302010401. *More information, including the names of facilities, is provided in Appendix IV.*

Permit #	3Q2	1Q10	3Q10	3Q20	7Q10
TN0059137	0.00	na	0.00	0.00	0.00

Table 4-74. Receiving Stream Low Flow Information for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 051302010401. *Data are in cubic feet per second (CFS). Data were obtained from the USGS web application StreamStats at http://water.usgs.gov/osw/streamstats/. (na, data not available)*

PERMIT #	FLOW
TN0059137	X

Table 4-75. Monitoring Requirements for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 051302010401.

PERMIT #	$CBOD_5$	NH_3	TRC	TSS	SETTLEABLE SOLIDS	DO	pH
TN0059137	X		X	X	X	X	X

Table 4-76. Inorganic Parameters Monitored for Daily Maximum Limits for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 051302010401. *$CBOD_5$, Carbonaceous Biochemical Oxygen Demand (5-Day); TRC, Total Residual Chlorine; TSS, Total Suspended Solids; DO, Dissolved Oxygen.*

PERMIT #	*E. coli*	FECAL COLIFORM
TN0059137	X	X

Table 4-77. Bacteria Monitored for Daily Maximum Limits for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 051302010401.

4.2.D.i.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
1,055	2,087	67	<5	102	12

Table 4-78. Summary of Livestock Count Estimates in Subwatershed 051302010401. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.*

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Sumner	22,296	45,116	1,515	50	2,500	189
Wilson	27,209	51,090	1,505	1,585	1,700	465

Table 4-79. Summary of Livestock Count Estimates in Sumner and Wilson Counties. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

	INVENTORY		REMOVAL RATE	
County	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Sumner	88.2	88.2	2.0	6.3
Wilson	98.1	97.0	1.7	6.8

Table 4-80. Forest Acreage and Annual Removal Rates (1987-1994) in Sumner and Wilson Counties.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.45
Grass (Hayland)	0.32
Legumes, Grass (Hayland)	0.26
Legumes (Hayland)	0.12
Grass, Forbs, Legumes (Mixed Pasture)	0.62
Corn (Row Crops)	10.12
Soybeans (Row Crops)	10.28
Tobacco (Row Crops)	19.23
Wheat (Close-Grown Cropland)	1.97
All Other Close-Grown Cropland	2.49
Other Cropland not Planted	19.23
Conservation Reserve Program Lands	0.26
Farmsteads and Ranch Headquarters	0.32

Table 4-81. Annual Estimated Total Soil Loss in Subwatershed 051302010401.

4.2.D.ii. 051302010402 (Spencer Creek).

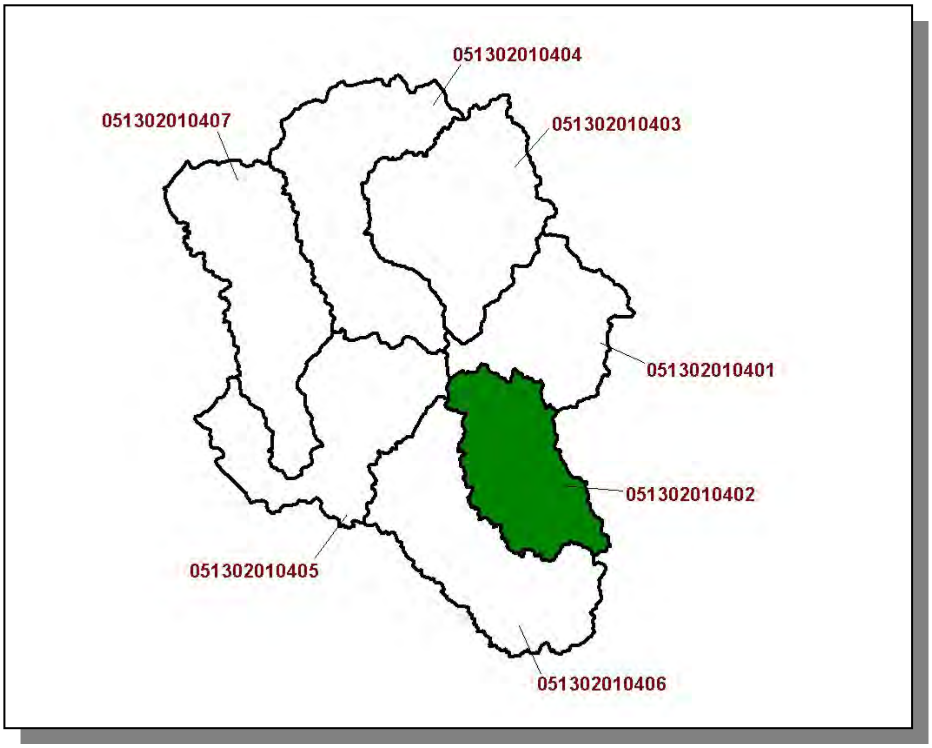

Figure 4-103. Location of Subwatershed 051302010402. *HUC-12 subwatershed boundaries are shown for reference.*

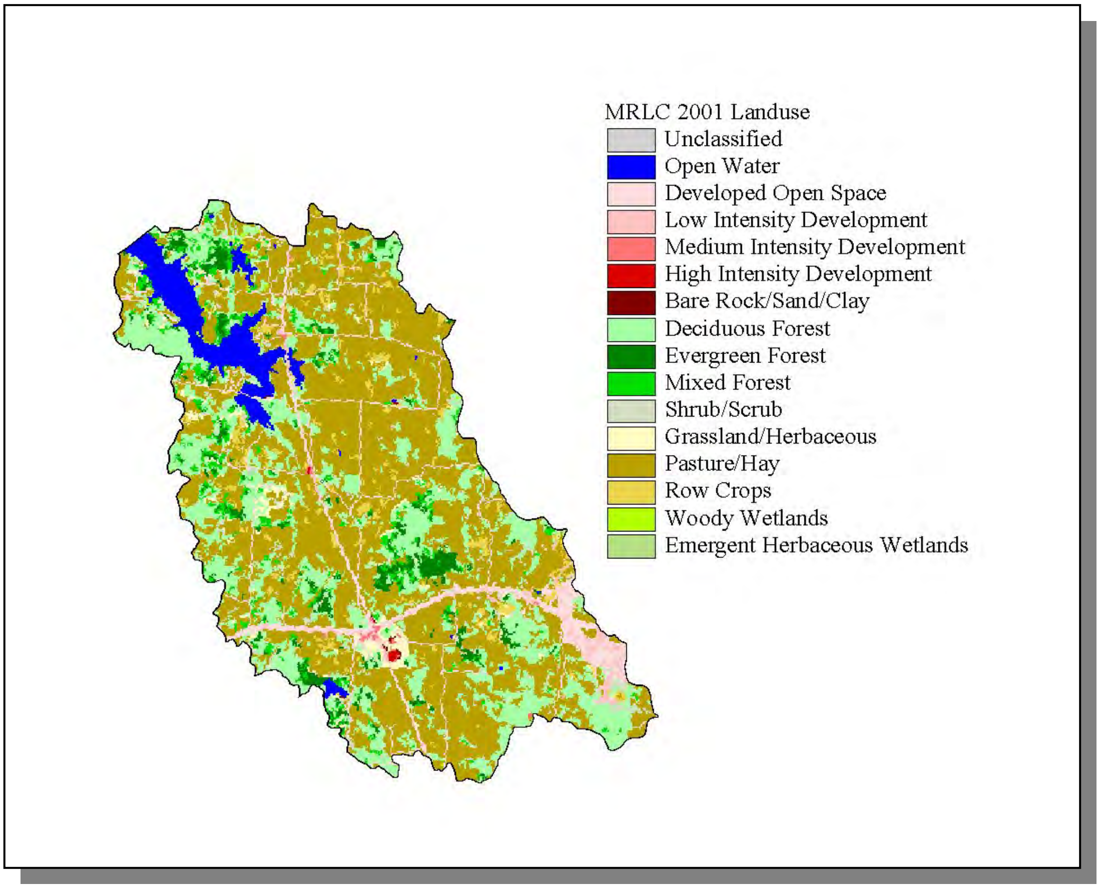

Figure 4-104. Illustration of Land Use Distribution in Subwatershed 051302010402.

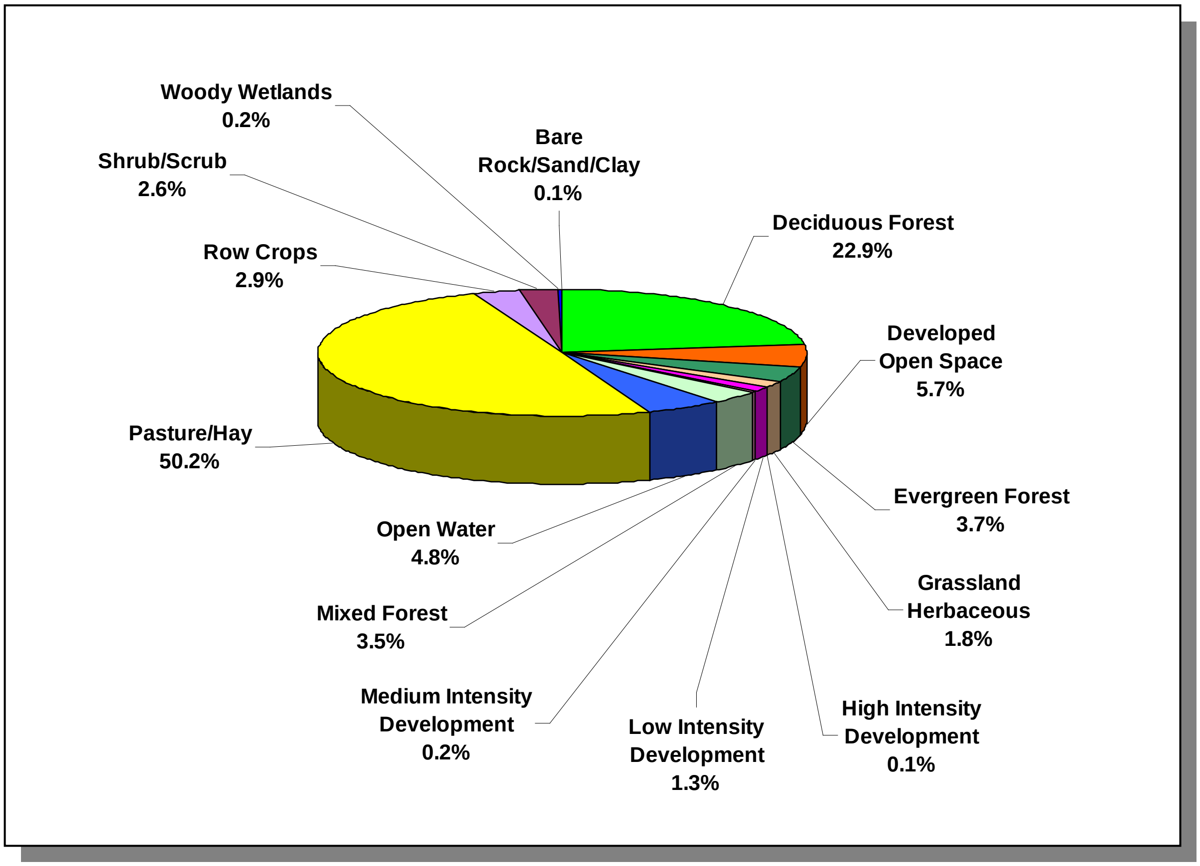

Figure 4-105. Land Use Distribution in Subwatershed 051302010402. *More information is provided in Appendix IV.*

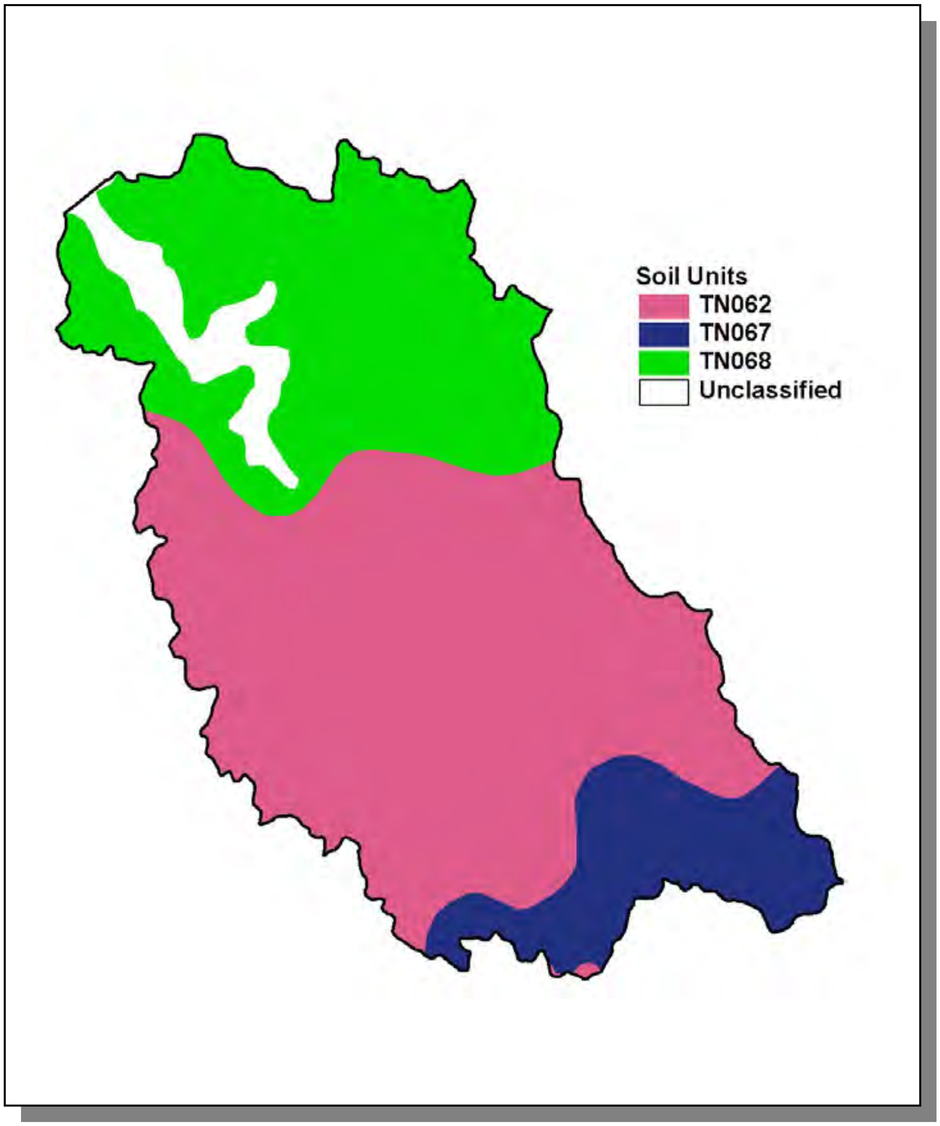

Figure 4-106. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010402.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN062	0.00	C	0.98	4.40	Clayey Loam	0.26
TN067	2.00	C	2.69	5.51	Silty Loam	0.35
TN068	0.00	B	1.35	5.38	Silty Loam	0.37

Table 4-82. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010402. *The definition of "Hydrologic Group" is provided in Appendix IV.*

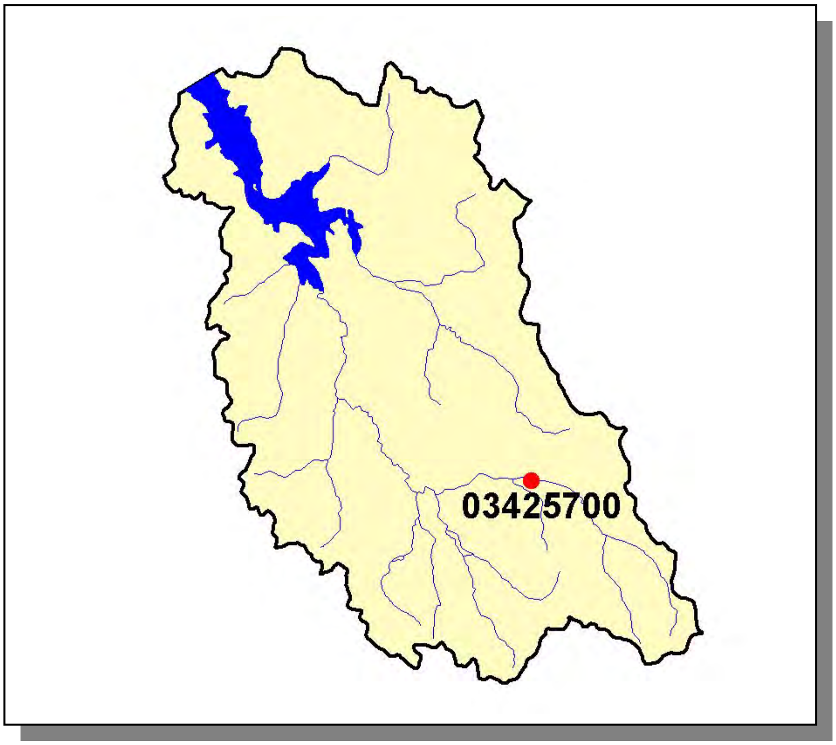

Figure 4-107. Location of Historical Streamflow Data Collection Sites in Subwatershed 051302010402. *More information is provided in Appendix IV.*

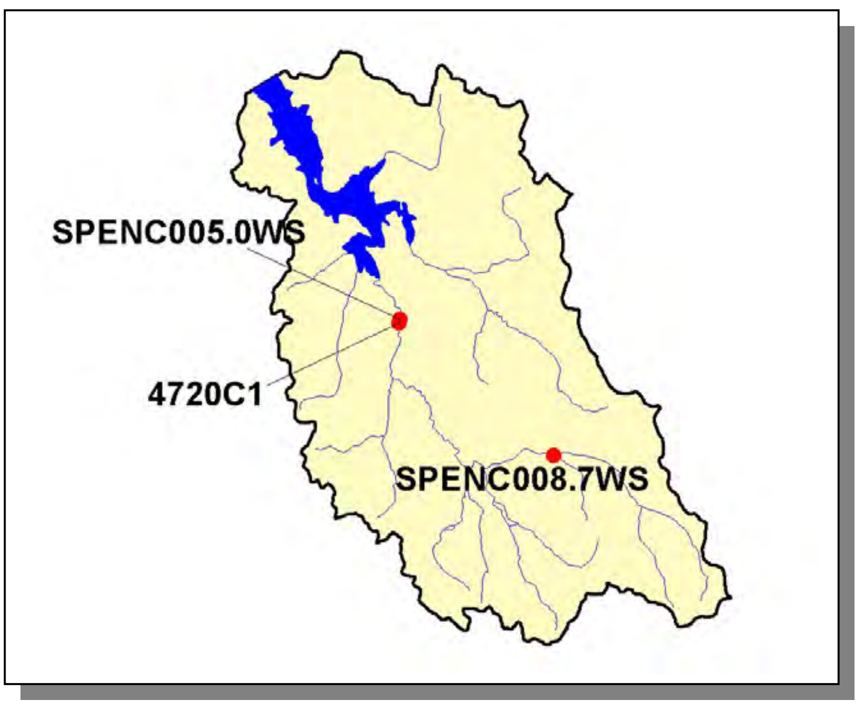

Figure 4-108. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 051302010402. *More information, including site names and locations, is provided in Appendix IV.*

4.2.D.ii.a. Point Source Contributions.

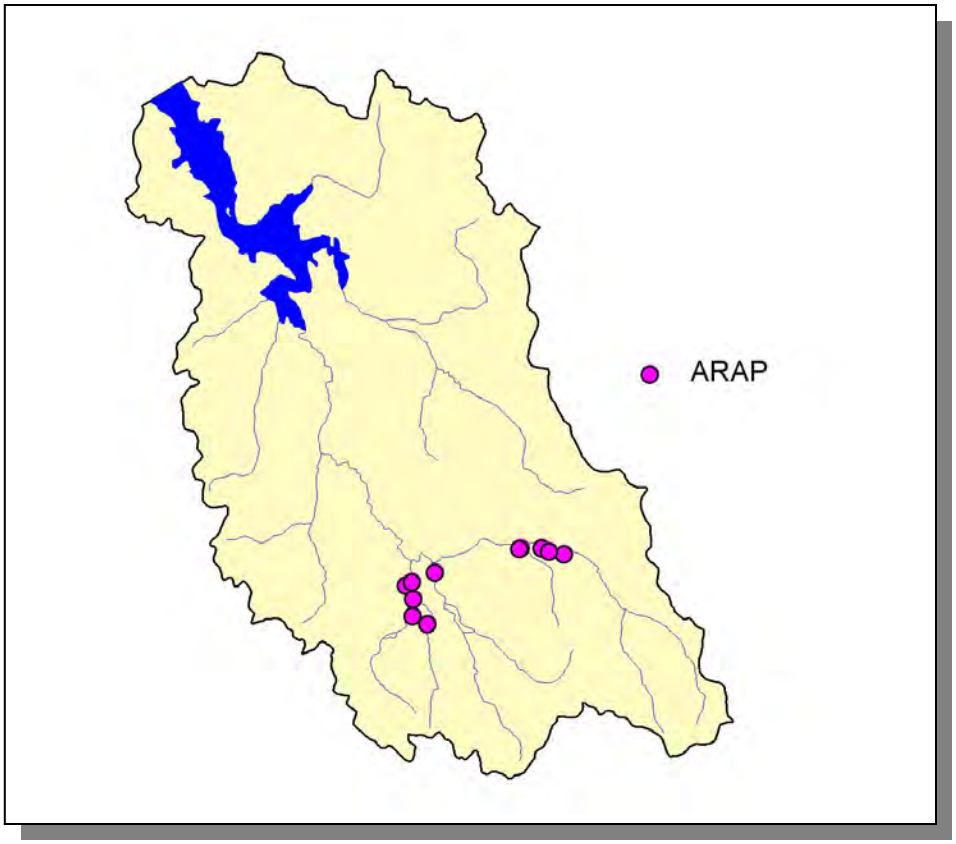

Figure 4-109. Location of Permits Issued in Subwatershed 051302010402. *More information, including the names of facilities, is provided in Appendix IV.*

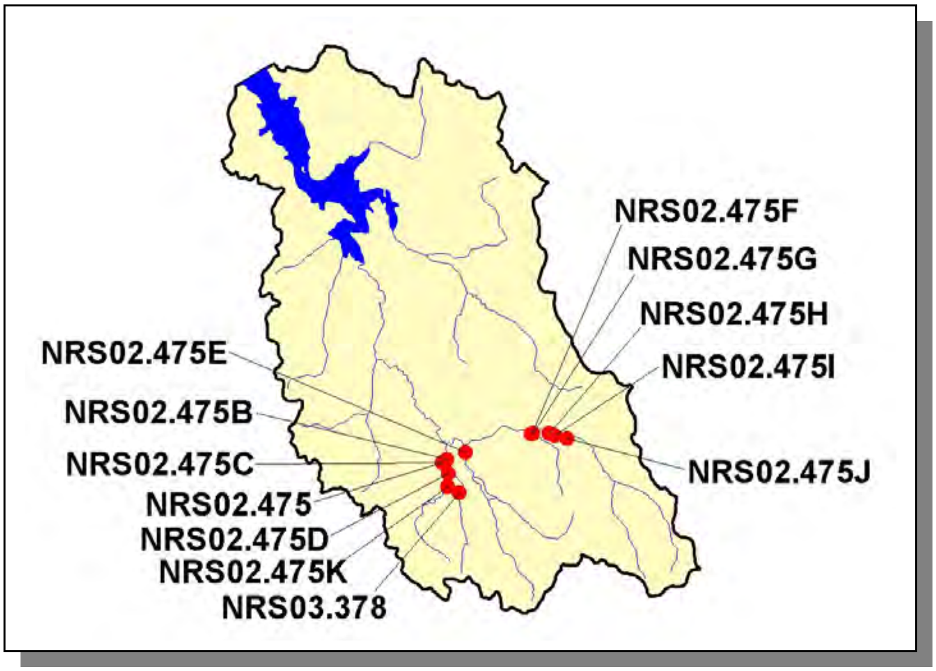

Figure 4-110. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 051302010402. *More information is provided in Appendix IV.*

4.2.D.ii.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
1,971	3,701	109	6	123	34

Table 4-83. Summary of Livestock Count Estimates in Subwatershed 051302010402. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Wilson	27,209	51,090	1,505	1,585	1,700	465

Table 4-84. Summary of Livestock Count Estimates in Wilson County. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

	INVENTORY		REMOVAL RATE	
County	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Wilson	98.1	97.0	1.7	6.8

Table 4-85. Forest Acreage and Annual Removal Rates (1987-1994) in Wilson County.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.42
Grass (Hayland)	0.37
Legumes, Grass (Hayland)	0.38
Grass, Forbs, Legumes (Mixed Pasture)	0.91
Corn (Row Crops)	2.22
Soybeans (Row Crops)	6.72
Tobacco (Row Crops)	19.23
Wheat (Close-Grown Cropland)	1.96
All Other Close-Grown Cropland	2.49
Farmsteads and Ranch Headquarters	0.26

Table 4-86. Annual Estimated Total Soil Loss in Subwatershed 051302010402.

4.2.D.iii. 051302010403 (East Camp Creek).

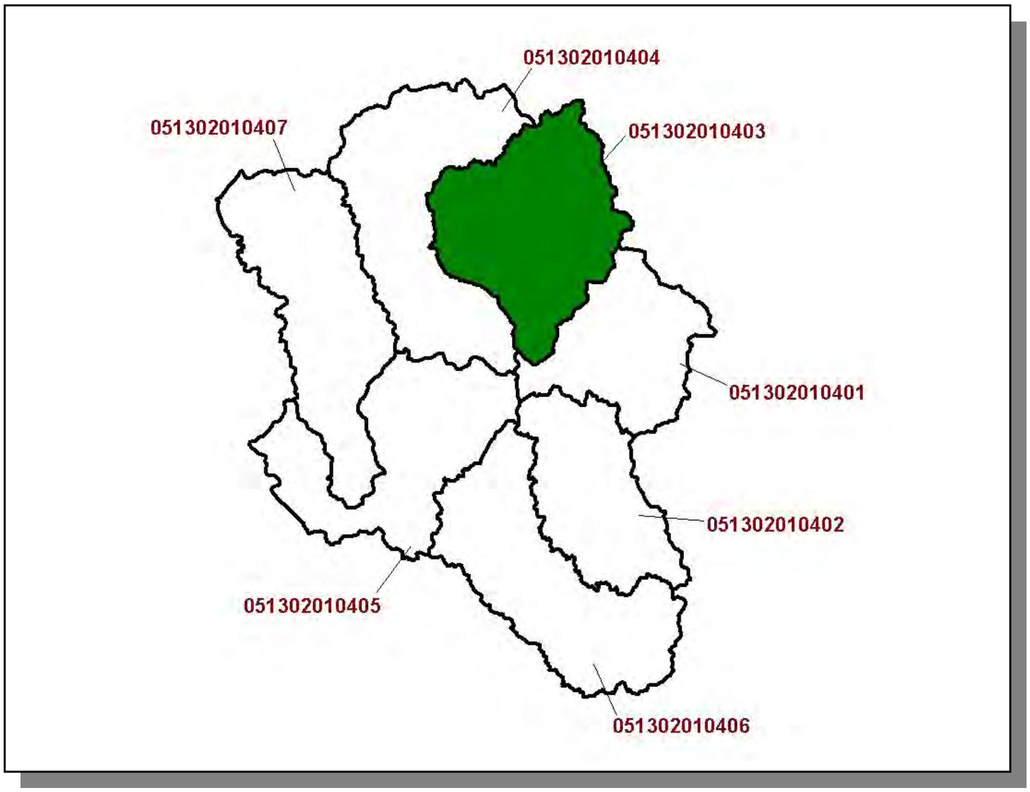

Figure 4-111. Location of Subwatershed 051302010403. *HUC-12 subwatershed boundaries are shown for reference.*

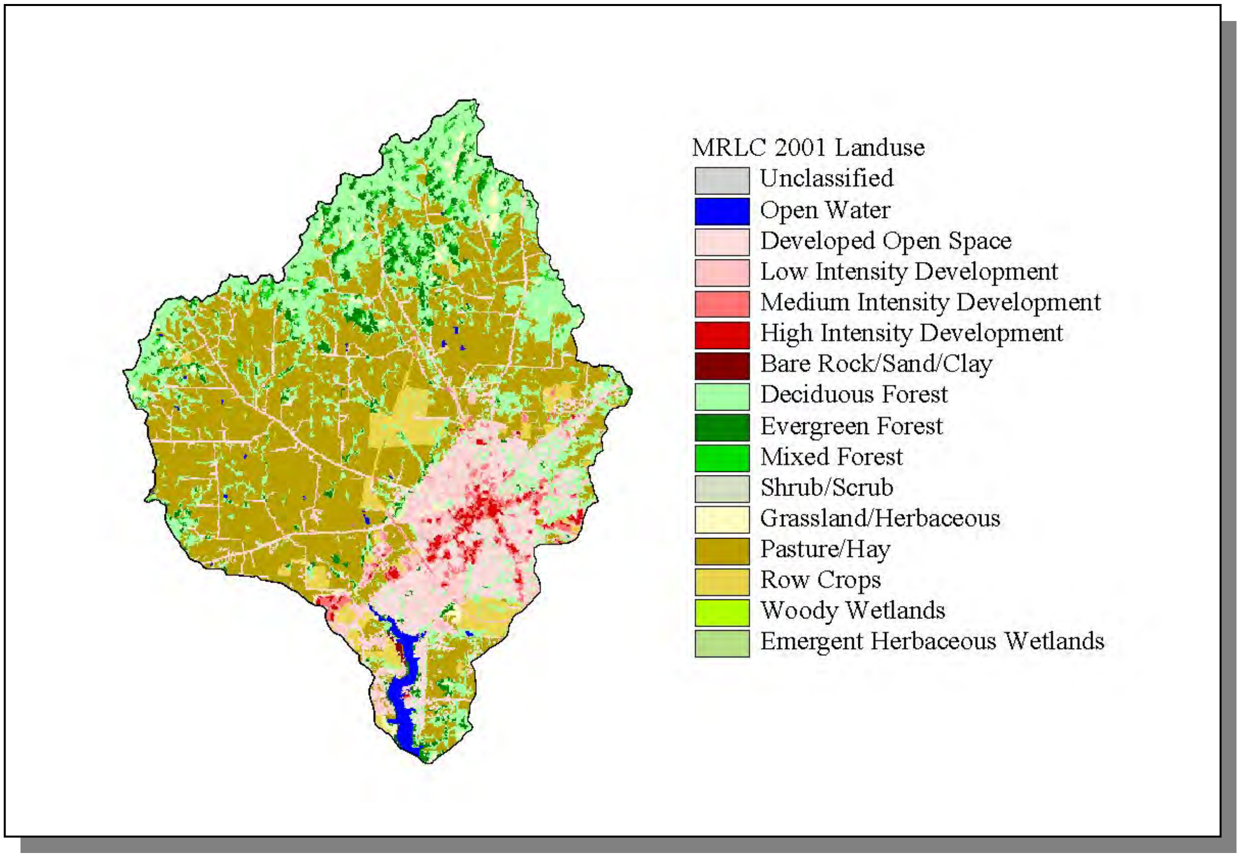

Figure 4-112. Illustration of Land Use Distribution in Subwatershed 051302010403.

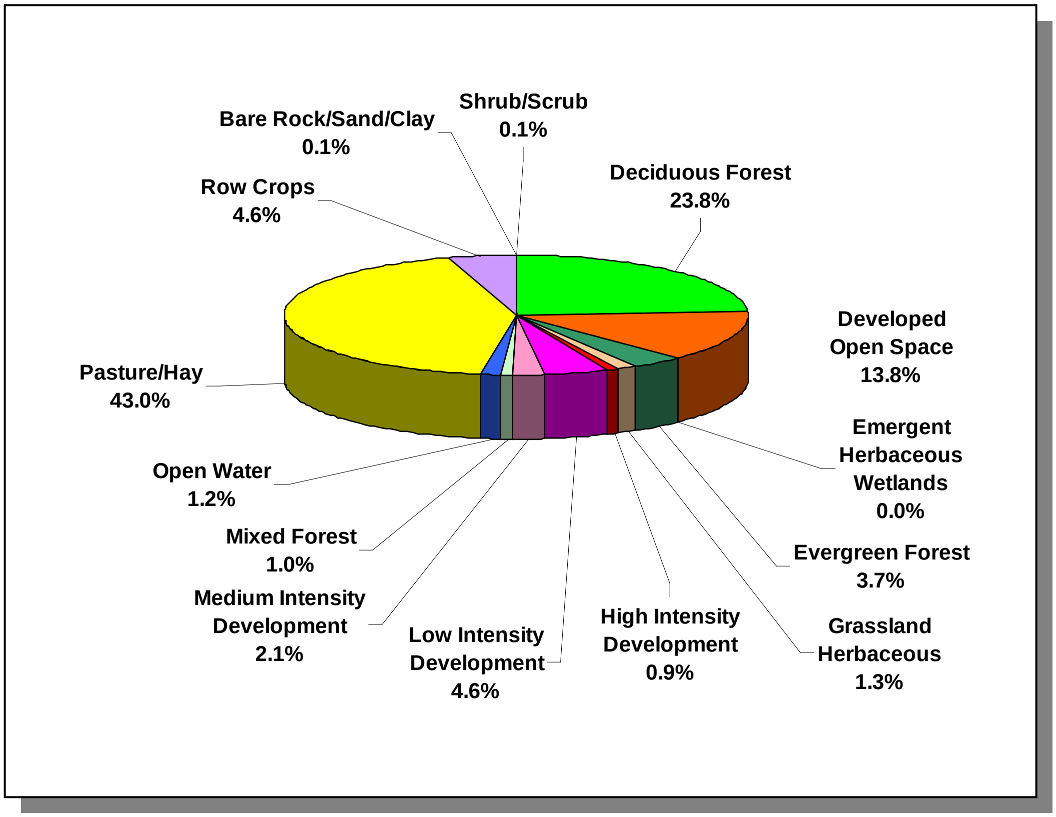

Figure 4-113. Land Use Distribution in Subwatershed 051302010403. *More information is provided in Appendix IV.*

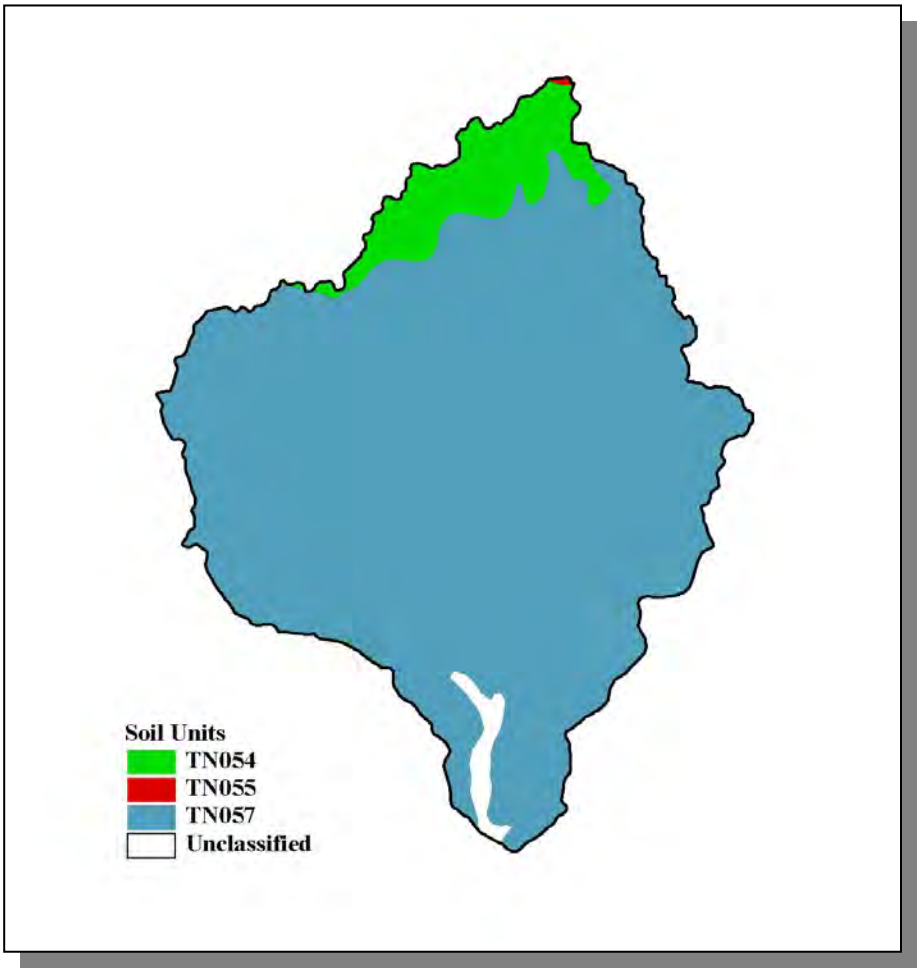

Figure 4-114. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010403.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN054	0.00	C	3.04	4.84	Loam	1.74
TN055	3.00	C	2.45	5.24	Loam	1.80
TN057	0.00	C	1.14	5.01	Clayey Loam	0.33

Table 4-87. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010403. *The definition of "Hydrologic Group" is provided in Appendix IV.*

	COUNTY POPULATION				ESTIMATED POPULATION IN WATERSHED			
County	1990	1997	2000	Portion of Watershed (%)	1990	1997	2000	% Change (1990-2000)
Sumner	103,281	121,936	130,449	8.24	8,508	10,044	10,746	26.3

Table 4-88. Population Estimates in Subwatershed 051302010403.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Gallatin	Sumner	18,794	7,635	6,931	704	0

Table 4-89. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 051302010403.

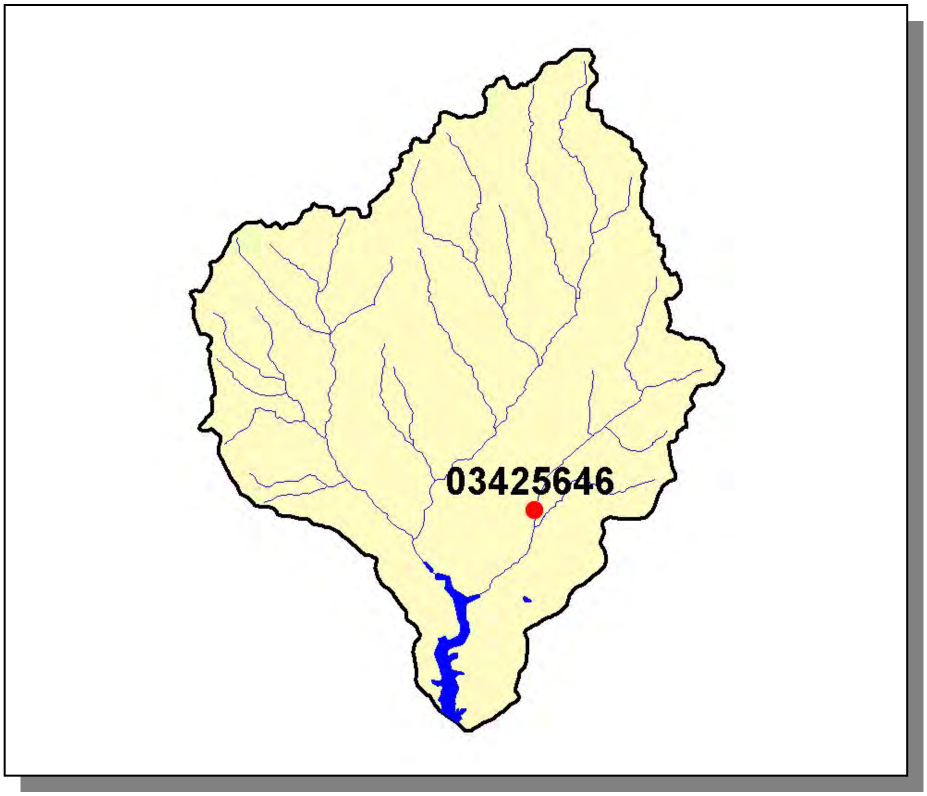

__Figure 4-115. Location of Historical Streamflow Data Collection Sites in Subwatershed 051302010403.__ More information is provided in Appendix IV.

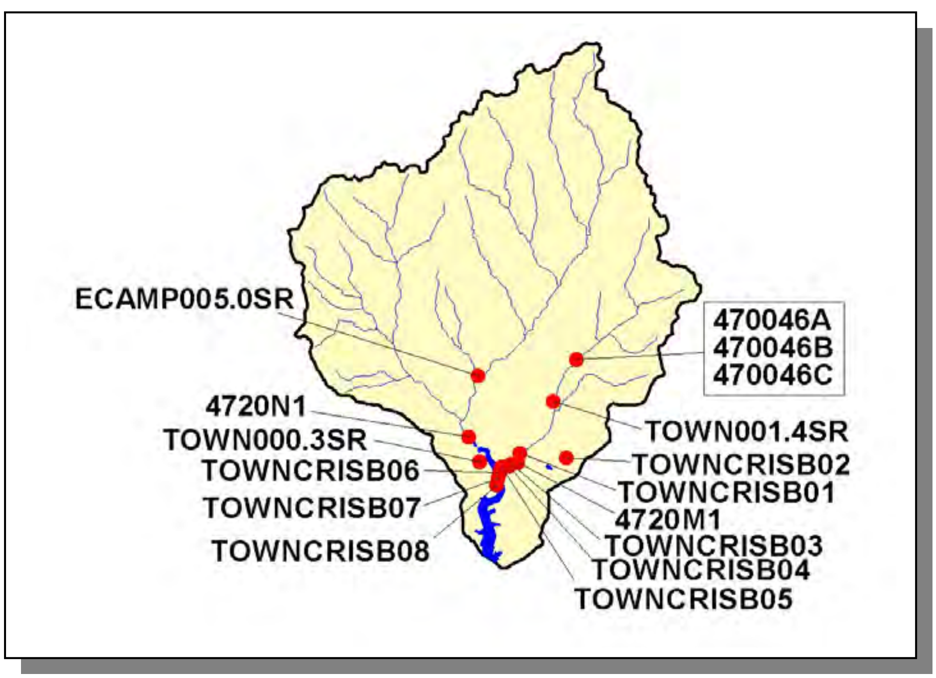

__Figure 4-116. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 051302010403.__ More information, including site names and locations, is provided in Appendix IV.

4.2.D.iii.a. Point Source Contributions.

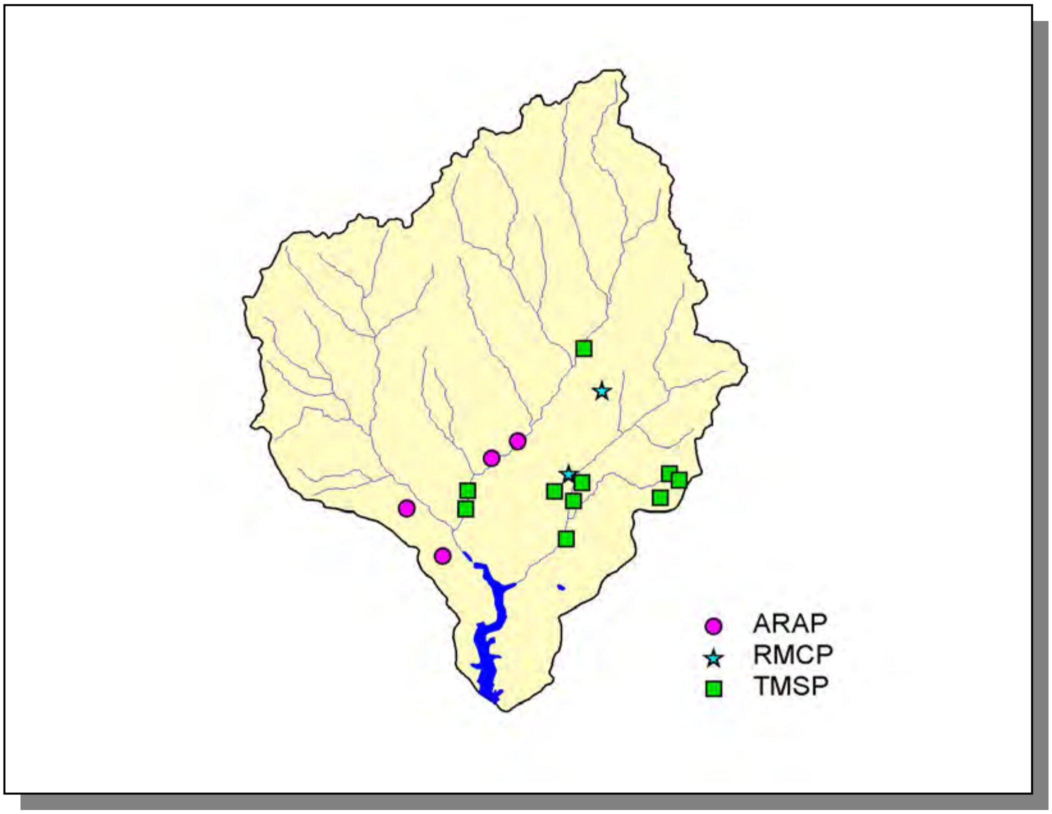

Figure 4-117. Location of Permits Issued in Subwatershed 051302010403. *More information, including the names of facilities, is provided in Appendix IV.*

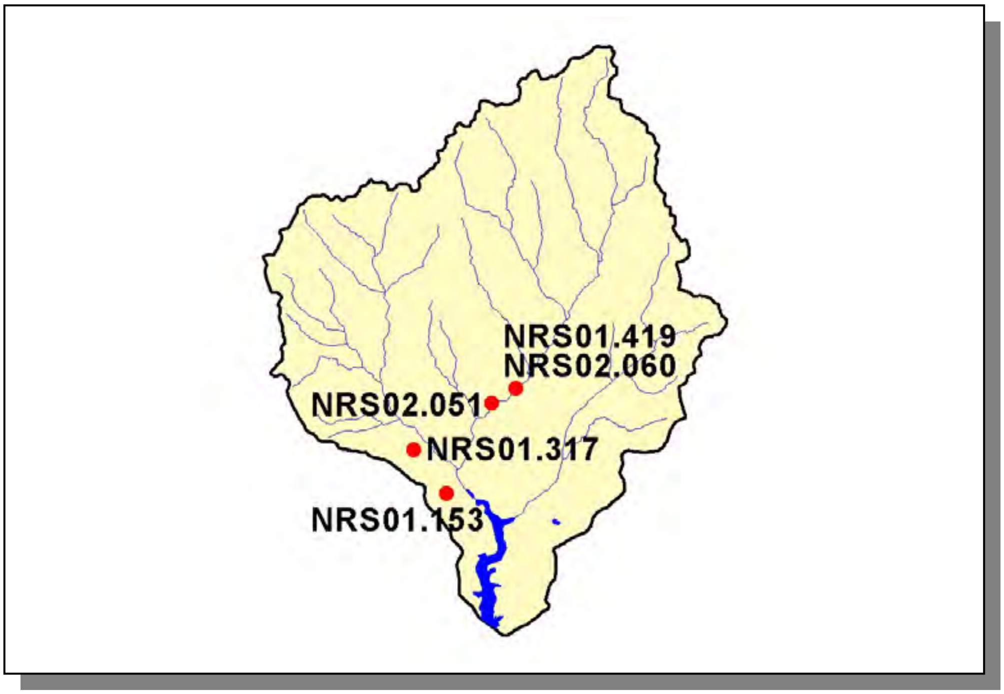

Figure 4-118. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 051302010403. *More information is provided in Appendix IV.*

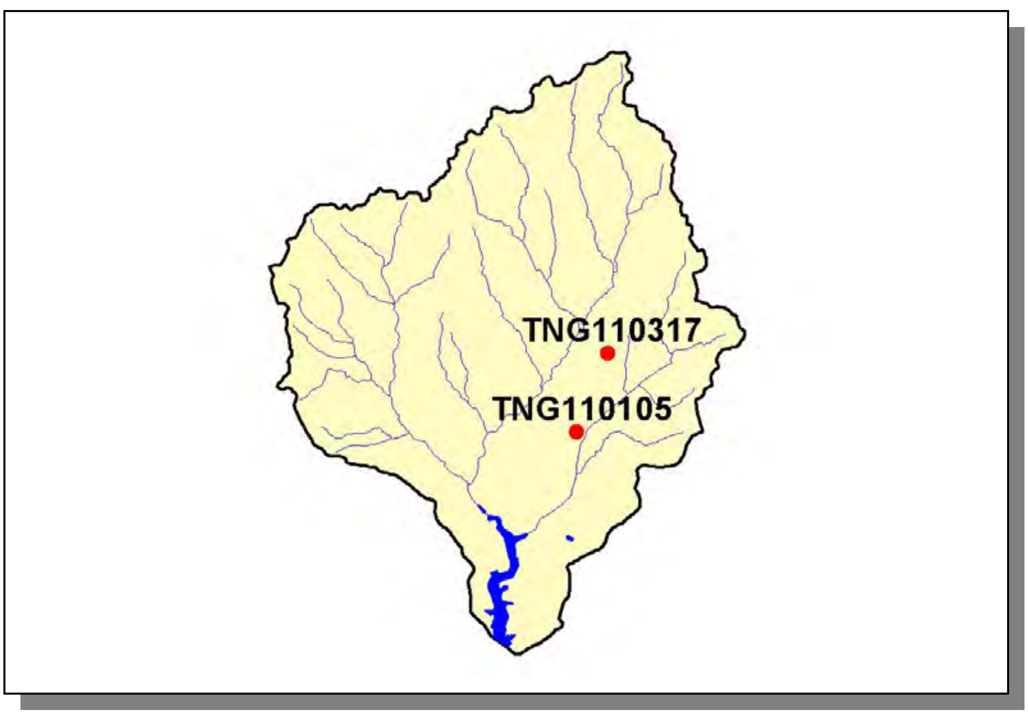

Figure 4-119. Location of Ready Mix Concrete Plants (RMCP) in Subwatershed 051302010403. *More information is provided in Appendix IV.*

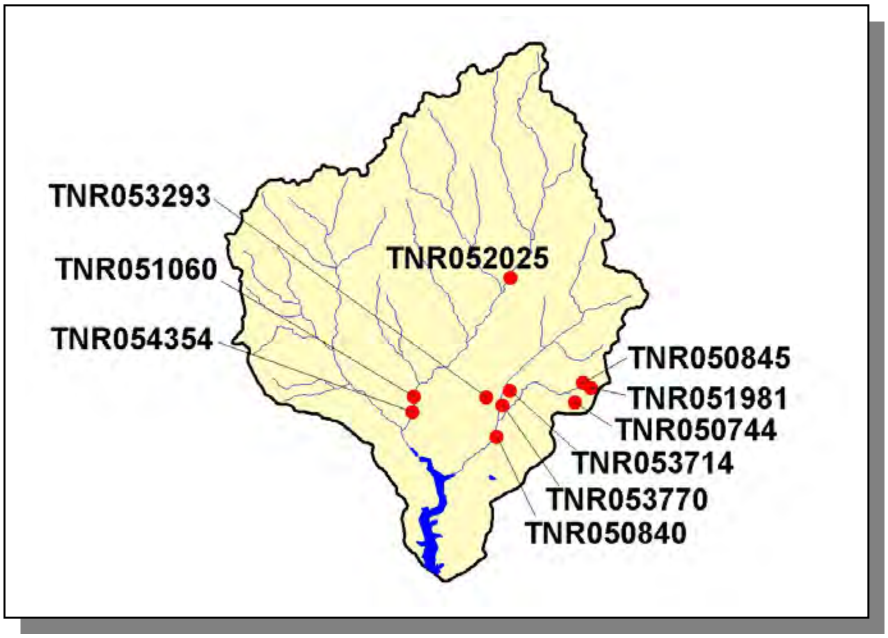

Figure 4-120. Location of TMSP Sites in Subwatershed 051302010403. *More information, including the names of facilities, is provided in Appendix IV.*

4.2.D.iii.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
2,628	5,804	195	6	322	24

Table 4-90. Summary of Livestock Count Estimates in Subwatershed 051302010403. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Sumner	22,296	45,116	1,515	50	2,500	189

Table 4-91. Summary of Livestock Count Estimates in Sumner County. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

	INVENTORY		REMOVAL RATE	
County	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Sumner	88.2	88.2	2.0	6.3

Table 4-92. Forest Acreage and Annual Removal Rates (1987-1994) in Sumner County.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.46
Grass (Hayland)	0.31
Legumes, Grass (Hayland)	0.23
Legumes (Hayland)	0.12
Grass, Forbs, Legumes (Mixed Pasture)	0.54
Corn (Row Crops)	12.32
Soybeans (Row Crops)	11.27
Other Cropland not Planted	19.23
Conservation Reserve Program Lands	0.26
Farmsteads and Ranch Headquarters	0.34

Table 4-93. Annual Estimated Total Soil Loss in Subwatershed 051302010403.

4.2.D.iv. 051302010404 (Station Camp Creek).

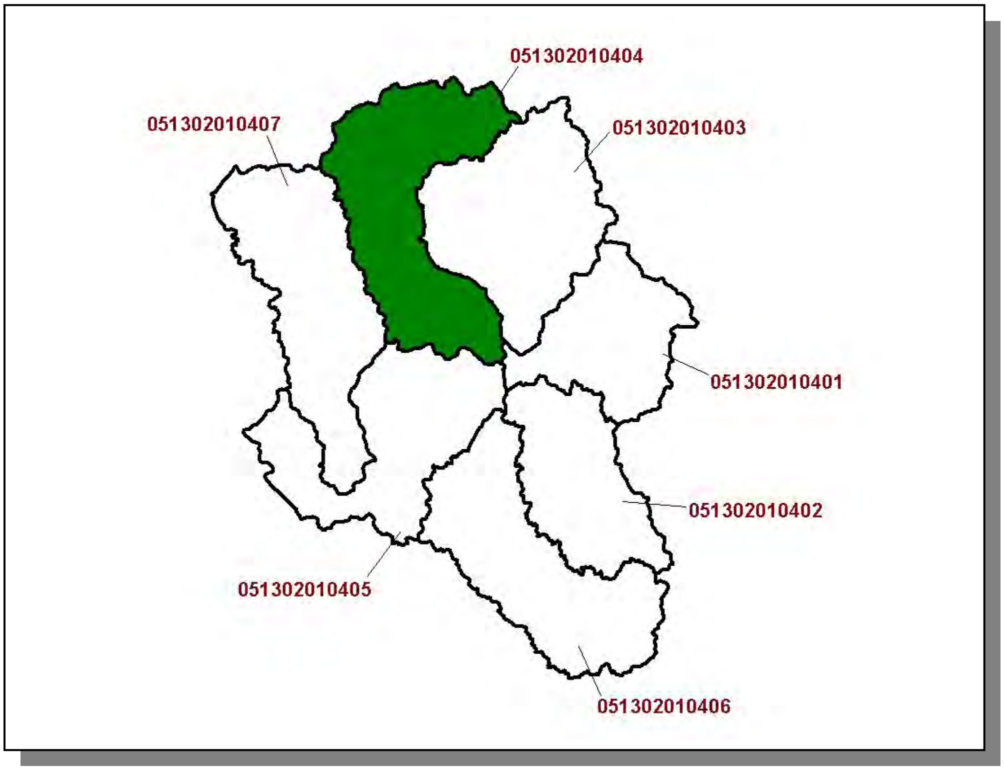

Figure 4-121. Location of Subwatershed 051302010404. *HUC-12 subwatershed boundaries are shown for reference.*

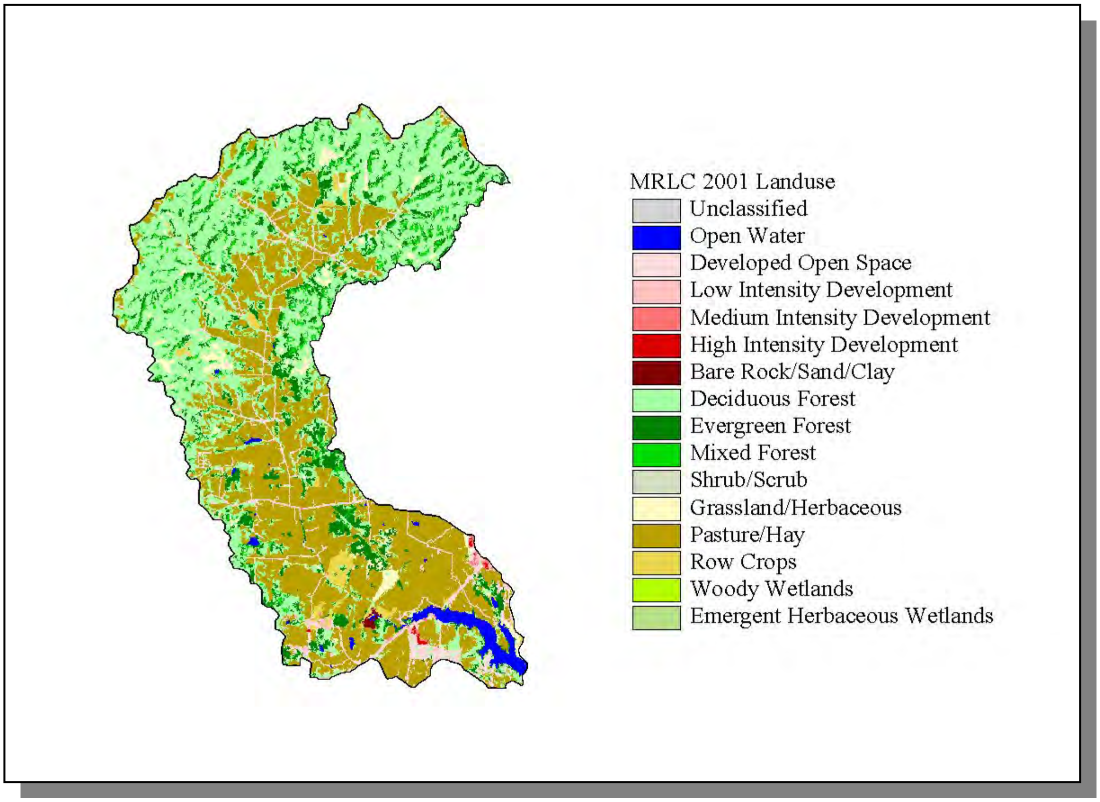

Figure 4-122. Illustration of Land Use Distribution in Subwatershed 051302010404.

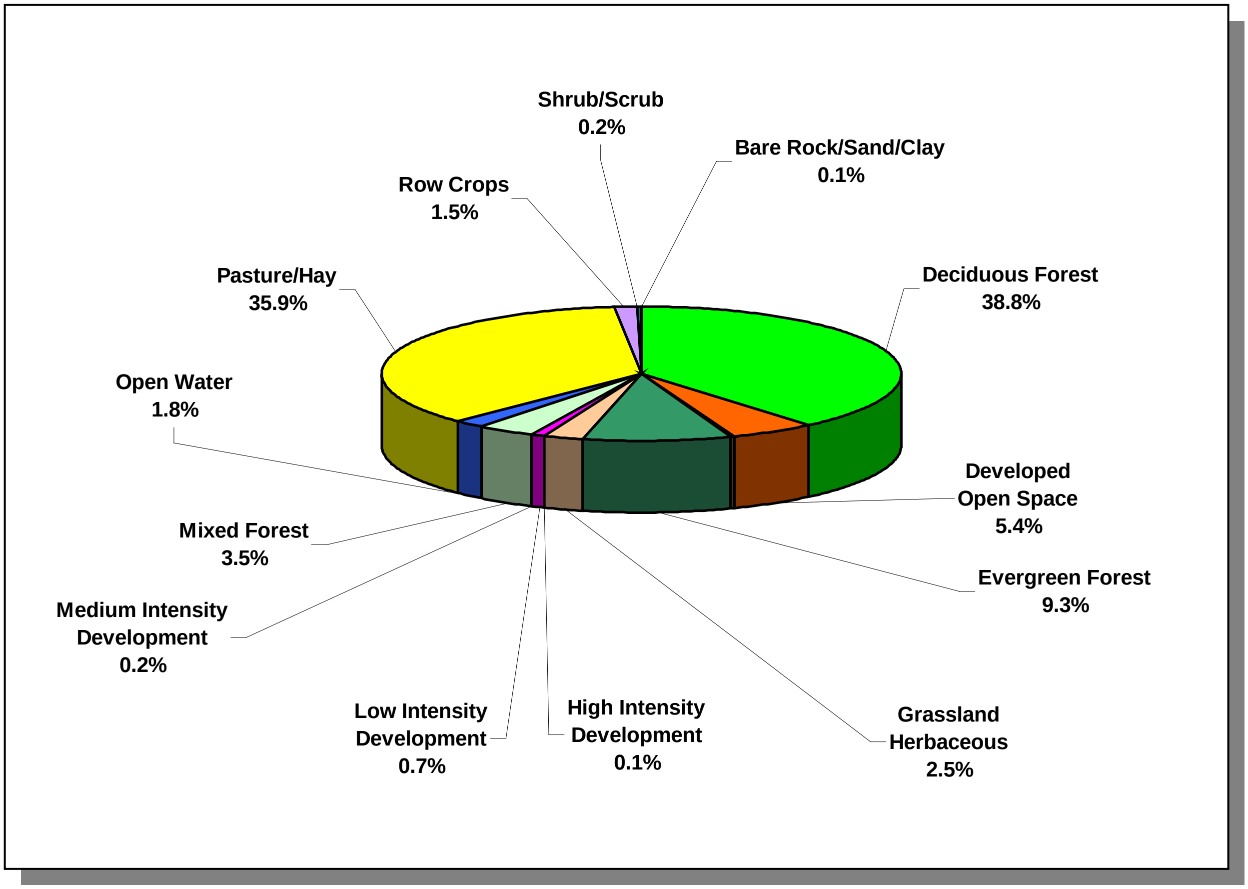

Figure 4-123. Land Use Distribution in Subwatershed 051302010404. *More information is provided in Appendix IV.*

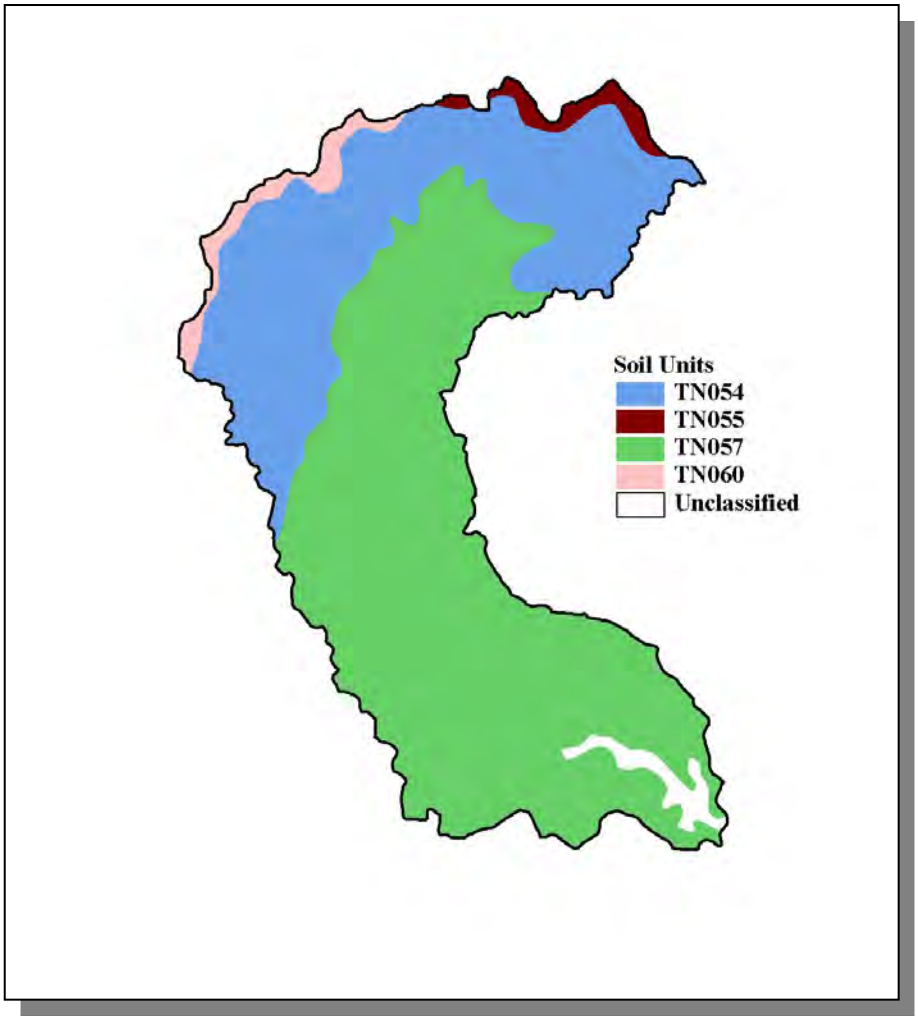

Figure 4-124. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010404.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN054	0.00	C	3.04	4.84	Loam	0.32
TN055	3.00	C	2.45	5.24	Loam	0.34
TN057	0.00	C	1.14	5.01	Clayey Loam	0.33
TN060	5.00	B	1.30	5.32	Silty Loam	0.39

Table 4-94. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010404. *The definition of "Hydrologic Group" is provided in Appendix IV.*

	COUNTY POPULATION				ESTIMATED POPULATION IN WATERSHED			
County	1990	1997	2000	Portion of Watershed (%)	1990	1997	2000	% Change (1990-2000)
Sumner	103,281	121,936	130,449	8.64	8,926	10,539	11,275	26.3

Table 4-95. Population Estimates in Subwatershed 051302010404.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Gallatin	Sumner	18,794	7,635	6,931	704	0
Hendersonville	Sumner	32,188	12,472	8,395	4,069	8
Total		**50,982**	**20,107**	**15,326**	**4,773**	**8**

Table 4-96. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 051302010404.

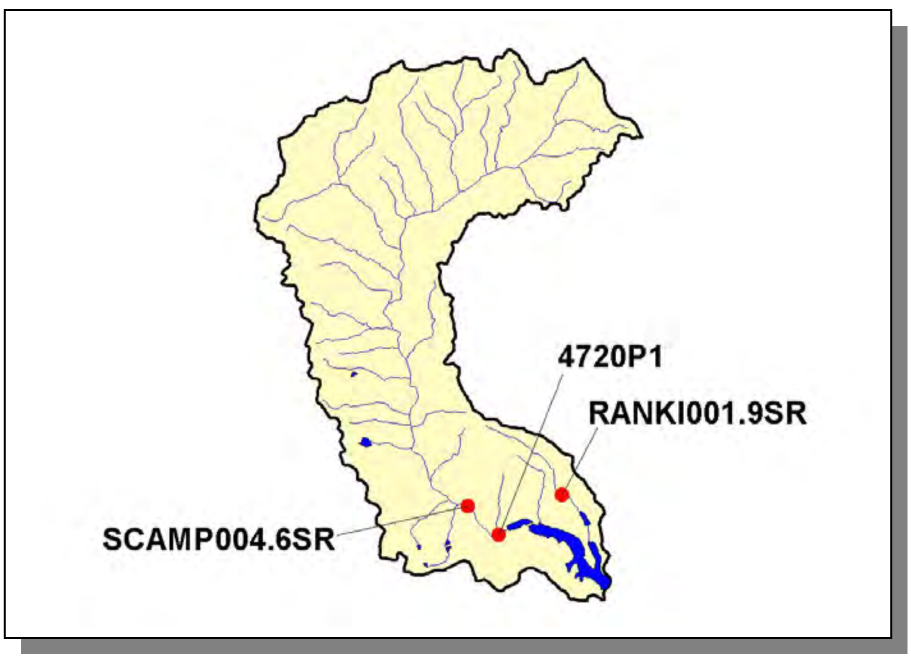

Figure 4-125. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 051302010404. *More information, including site names and locations, is provided in Appendix IV.*

4.2.D.iv.a. Point Source Contributions.

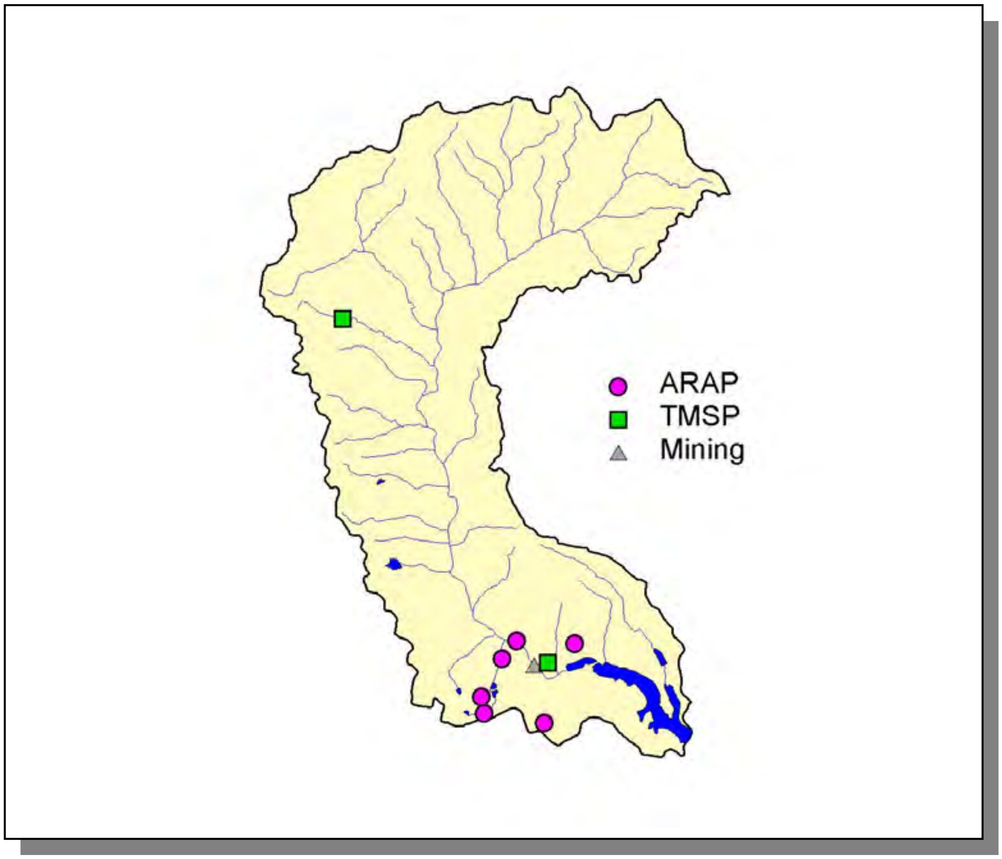

Figure 4-126. Location of Permits Issued in Subwatershed 051302010404. *More information, including the names of facilities, is provided in Appendix IV.*

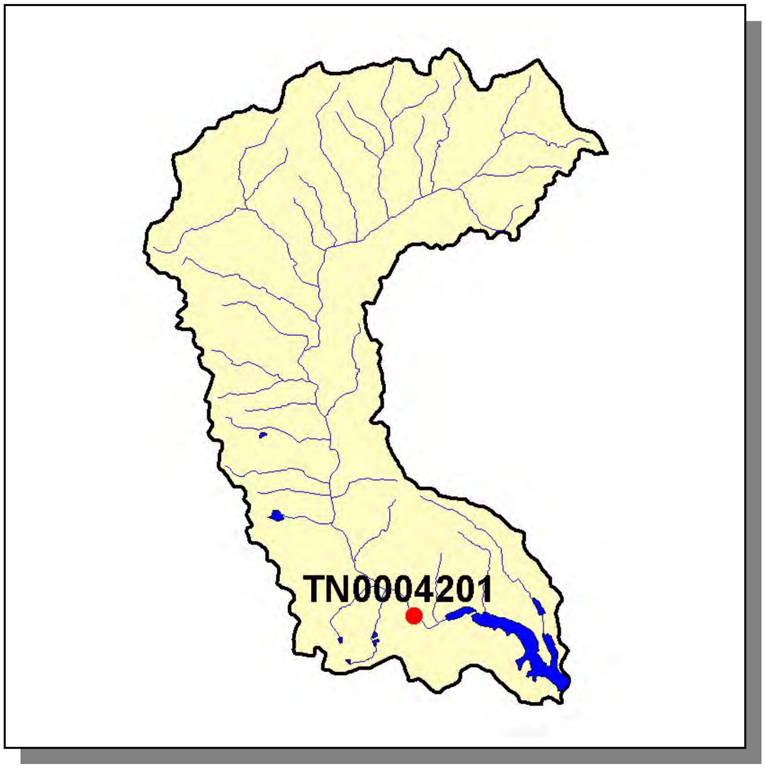

Figure 4-127. Location of Active Mining Sites in Subwatershed 051302010404. *More information, including the names of mining operations, is provided in Appendix IV.*

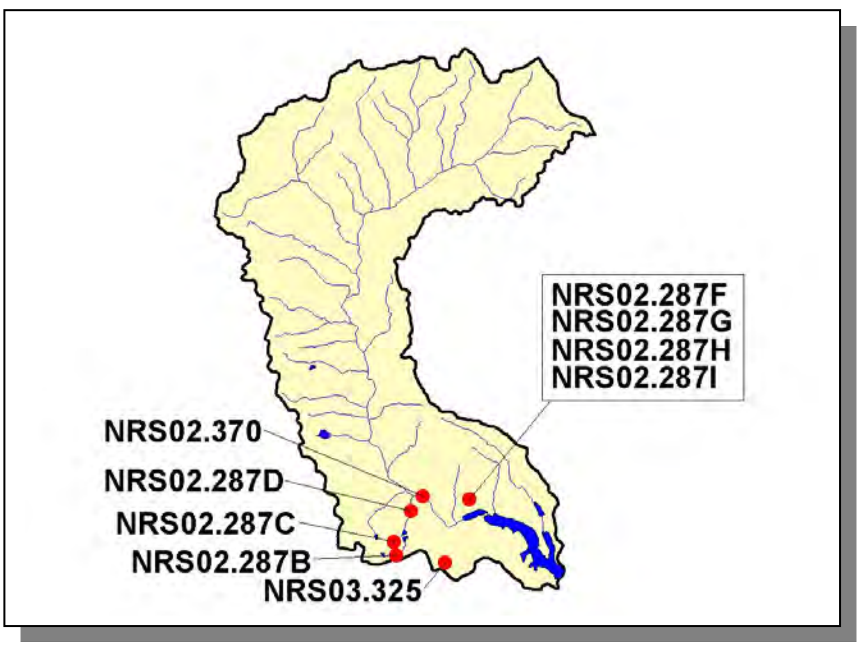

Figure 4-128. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 051302010404. *More information is provided in Appendix IV.*

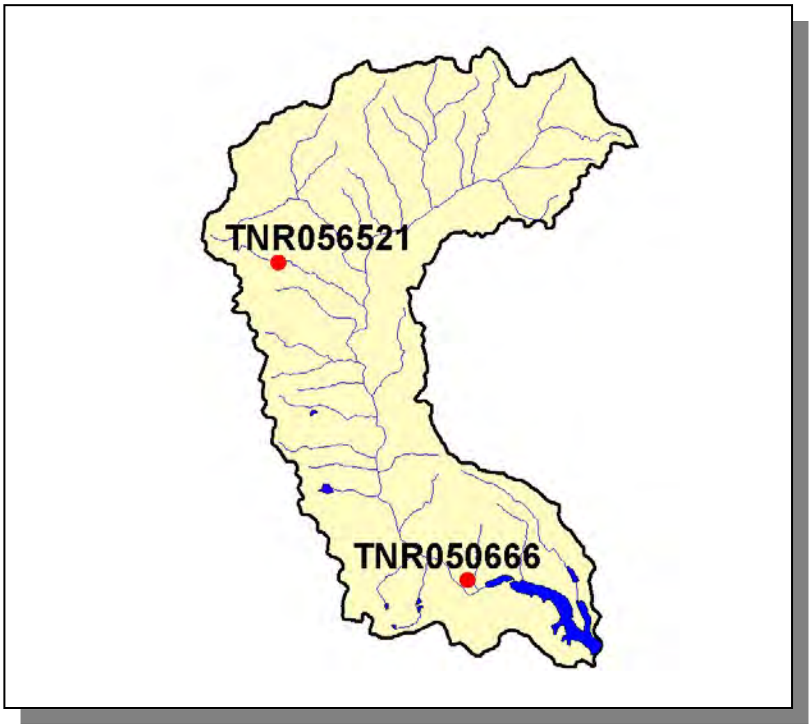

Figure 4-129. Location of TMSP Sites in Subwatershed 051302010404. *More information, including the names of facilities, is provided in Appendix IV.*

4.2.D.iv.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
2,454	4,967	167	6	275	21

Table 4-97. Summary of Livestock Count Estimates in Subwatershed 051302010404. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Sumner	22,296	45,116	1,515	50	2,500	189

Table 4-98. Summary of Livestock Count Estimates in Sumner County. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

	INVENTORY		REMOVAL RATE	
County	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Sumner	88.2	88.2	2.0	6.3

Table 4-99. Forest Acreage and Annual Removal Rates (1987-1994) in Sumner County.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.46
Grass (Hayland)	0.31
Legumes, Grass (Hayland)	0.23
Legumes (Hayland)	0.12
Grass, Forbs, Legumes (Mixed Pasture)	0.54
Corn (Row Crops)	12.32
Soybeans (Row Crops)	11.27
Other Cropland not Planted	19.23
Conservation Reserve Program Lands	0.26
Farmsteads and Ranch Headquarters	0.34

Table 4-100. Annual Estimated Total Soil Loss in Subwatershed 051302010404.

4.2.D.v. 051302010405 (Cumberland River).

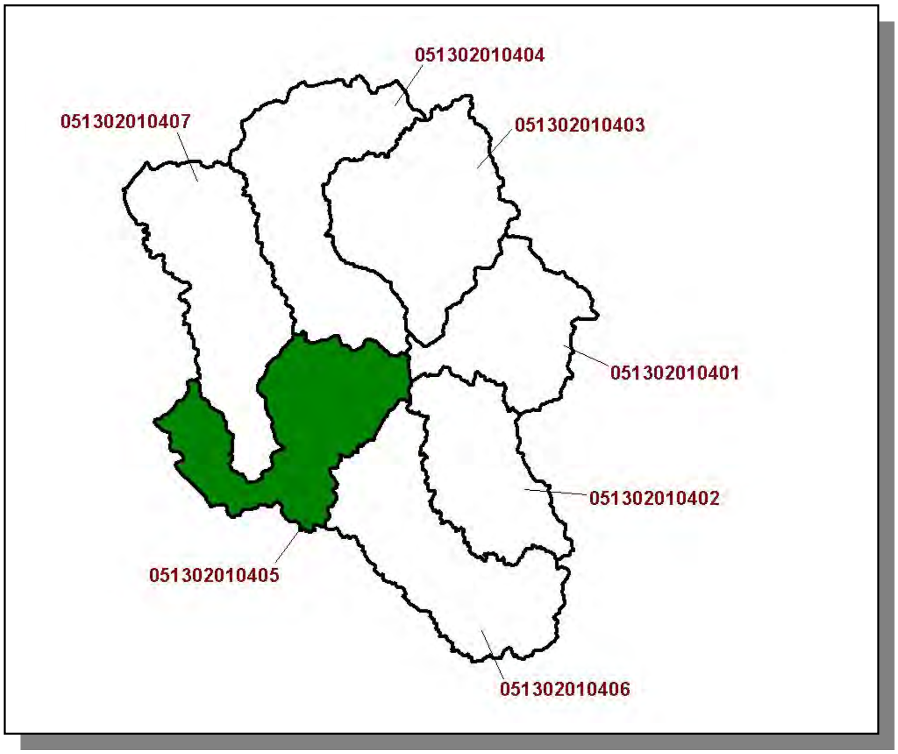

Figure 4-130. Location of Subwatershed 051302010405. *HUC-12 subwatershed boundaries are shown for reference.*

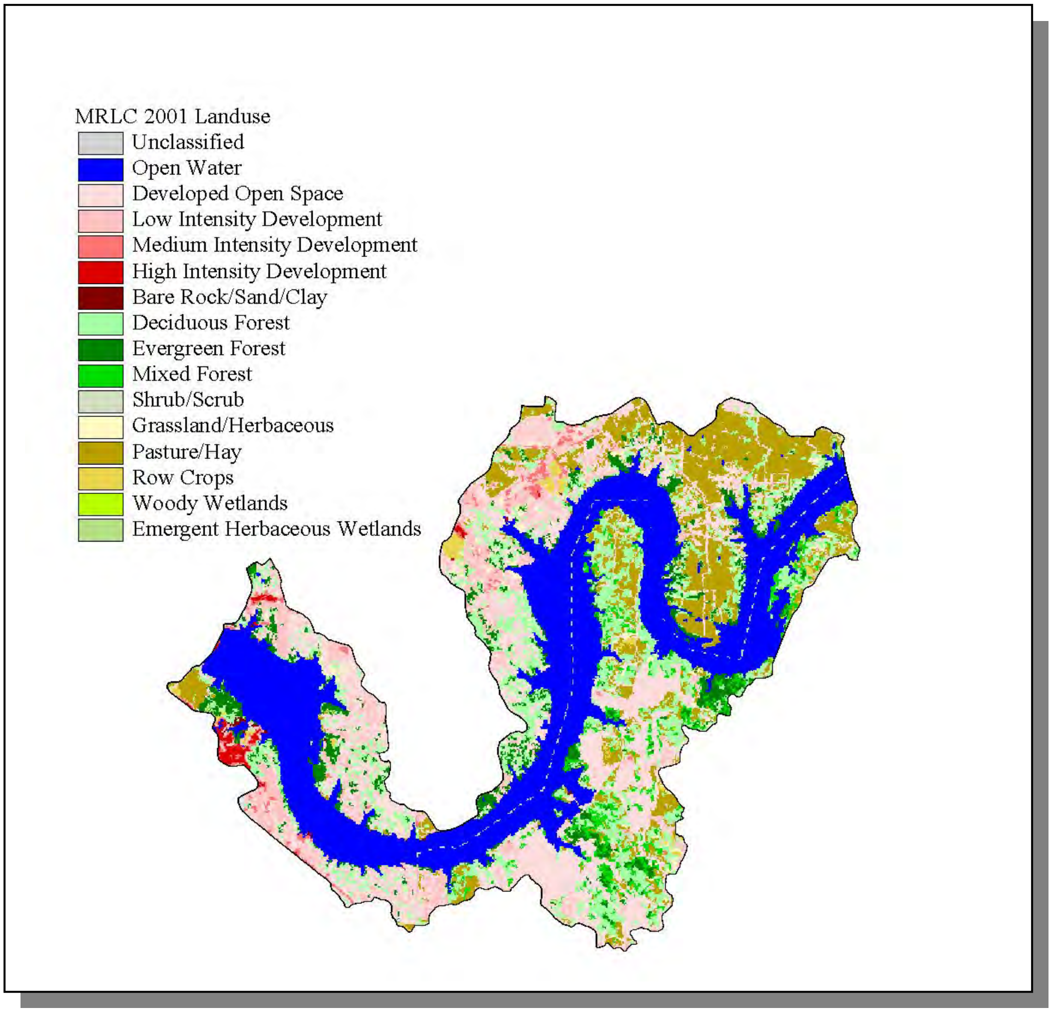

Figure 4-131. Illustration of Land Use Distribution in Subwatershed 051302010405.

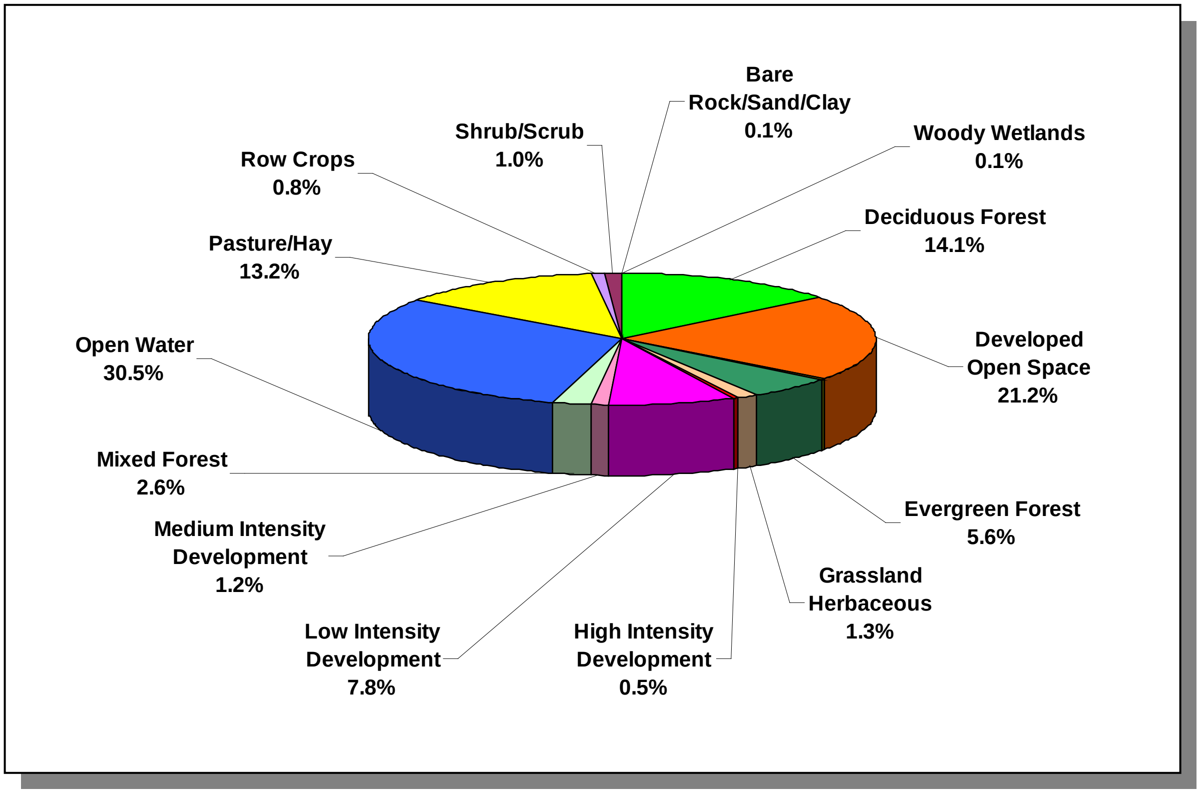

Figure 4-132. Land Use Distribution in Subwatershed 051302010405. More information is provided in Appendix IV.

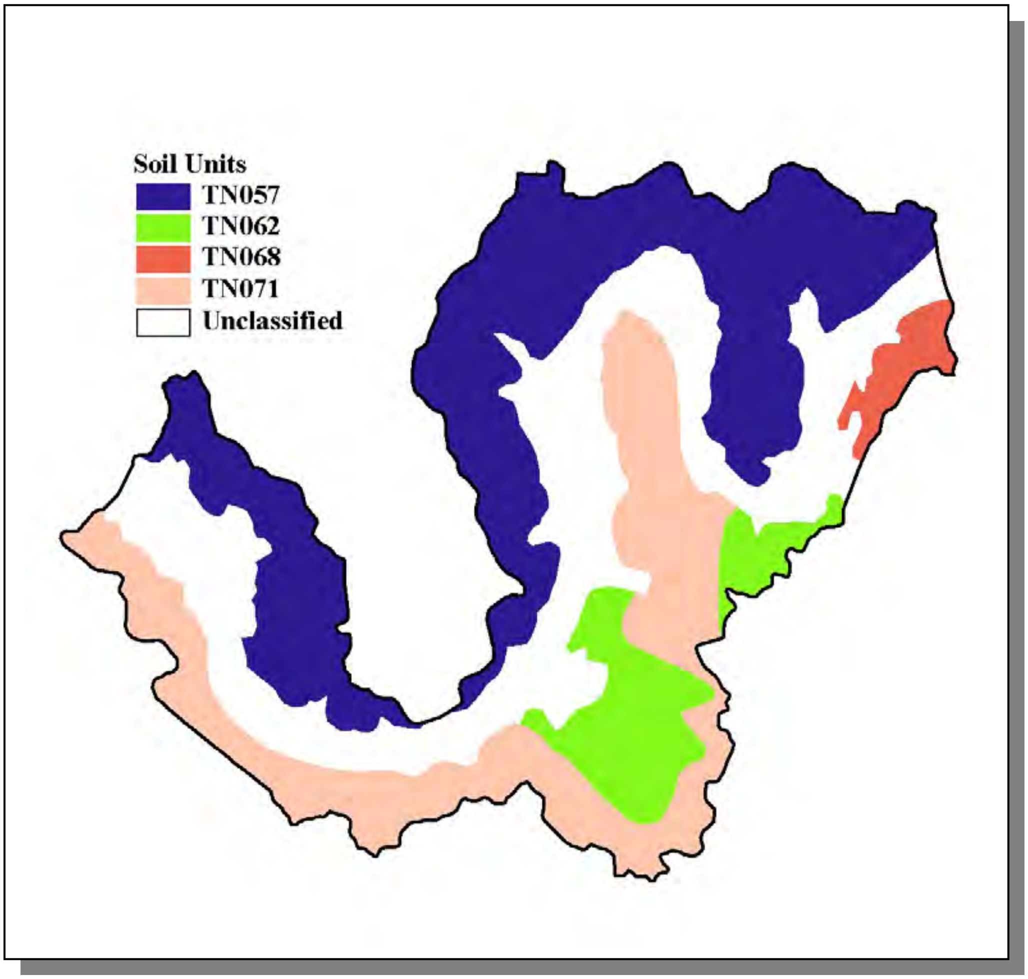

Figure 4-133. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010405.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN057	0.00	C	1.14	5.01	Clayey Loam	0.33
TN062	0.00	C	0.98	4.40	Clayey Loam	0.26
TN068	0.00	B	1.35	5.38	Silty Loam	0.37
TN071	0.00	C	2.37	5.70	Silty Loam	0.33

Table 4-101. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010405. *The definition of "Hydrologic Group" is provided in Appendix IV.*

	COUNTY POPULATION				ESTIMATED POPULATION IN WATERSHED			
County	1990	1997	2000	Portion of Watershed (%)	1990	1997	2000	% Change (1990-2000)
Davidson	510,784	535,032	569,891	1.04	5,289	5,540	5,901	11.6
Sumner	103,281	121,936	130,449	4.45	4,599	5,429	5,808	26.3
Total	**614,065**	**656,968**	**700,340**		**9,888**	**10,969**	**11,709**	**18.4**

Table 4-102. Population Estimates in Subwatershed 051302010405.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Mount Juliet	Wilson	5,389	1,926	1,265	661	0
Gallatin	Sumner	18,794	7,635	6,931	704	0
Hendersonville	Sumner	32,188	12,472	8,395	4,069	8
Lakewood	Davidson	1,867	830	582	248	0
Nashville (Remainder)	Davidson	488,518	219,521	203,640	15,576	305
Total		**546,756**	**242,384**	**220,813**	**21,258**	**313**

Table 4-103. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 051302010405.

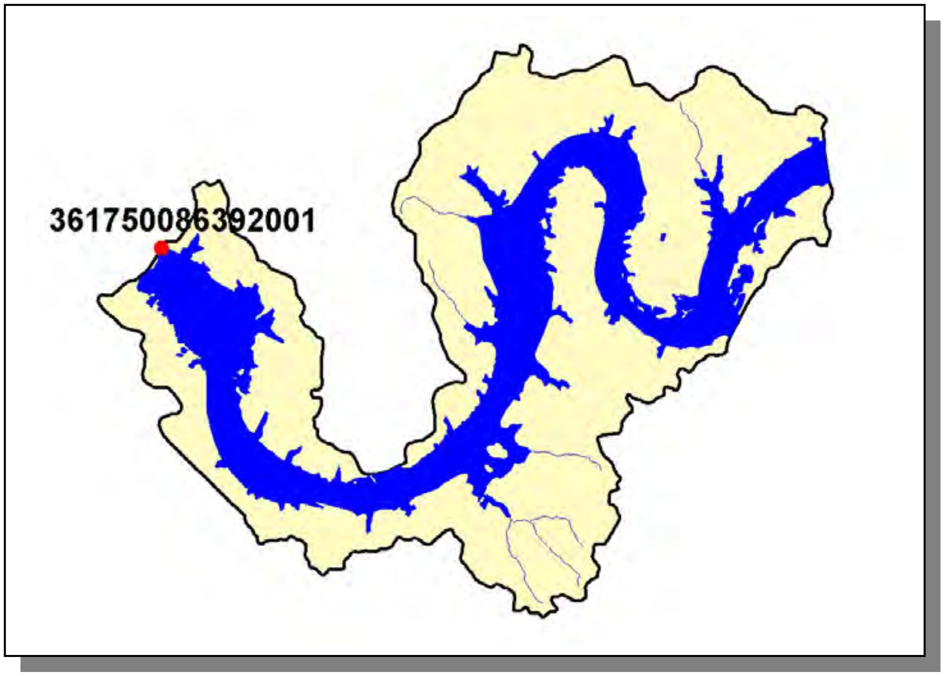

Figure 4-134. Location of Historical Streamflow Data Collection Sites in Subwatershed 051302010405. *More information is provided in Appendix IV.*

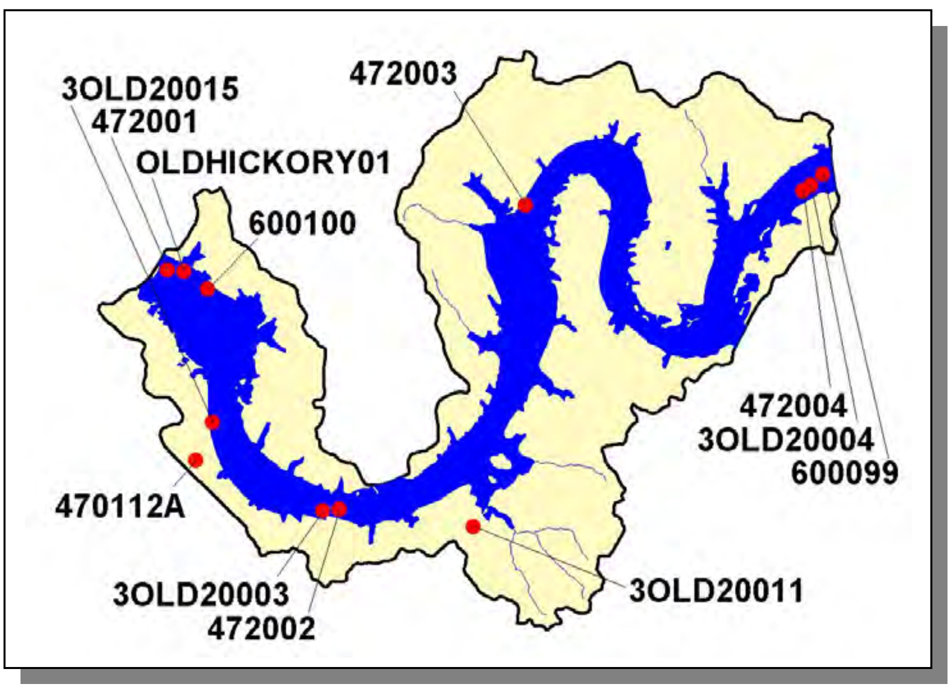

Figure 4-135. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 051302010405. *More information, including site names and locations, is provided in Appendix IV.*

4.2.D.v.a. Point Source Contributions.

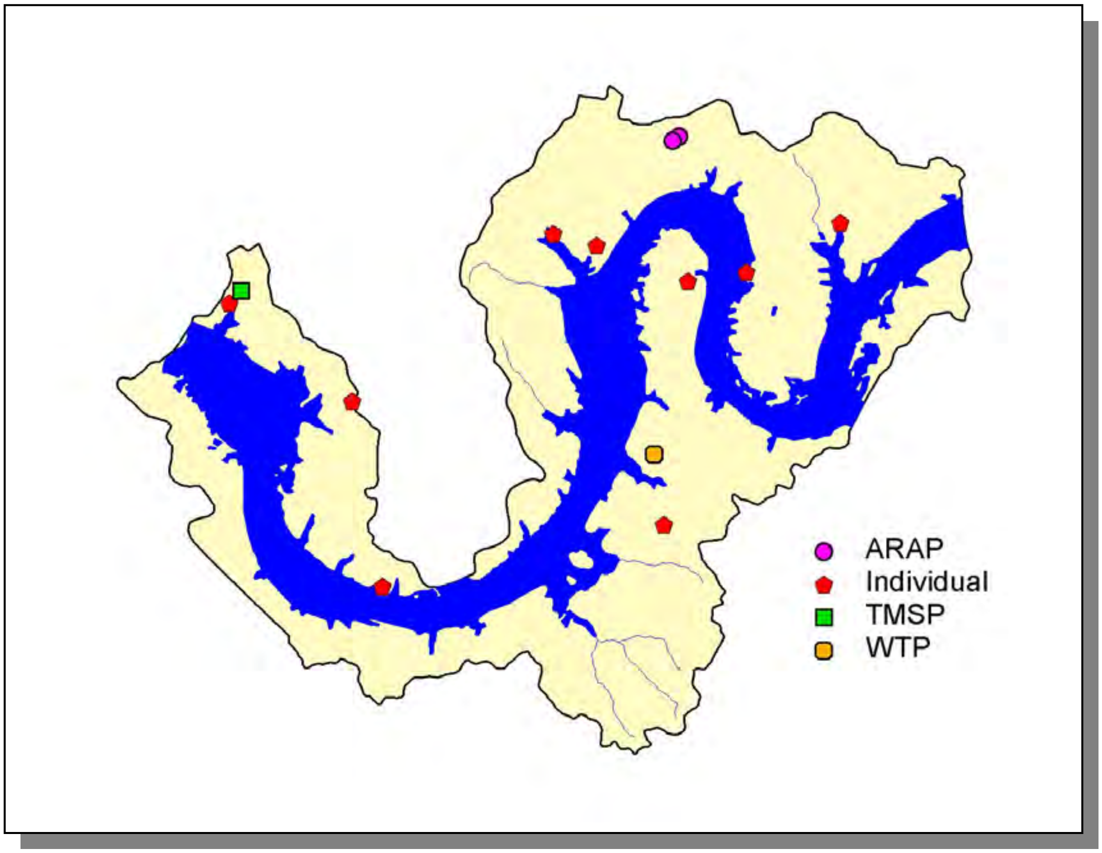

Figure 4-136. Location of Permits Issued in Subwatershed 051302010405. *More information, including the names of facilities, is provided in Appendix IV.*

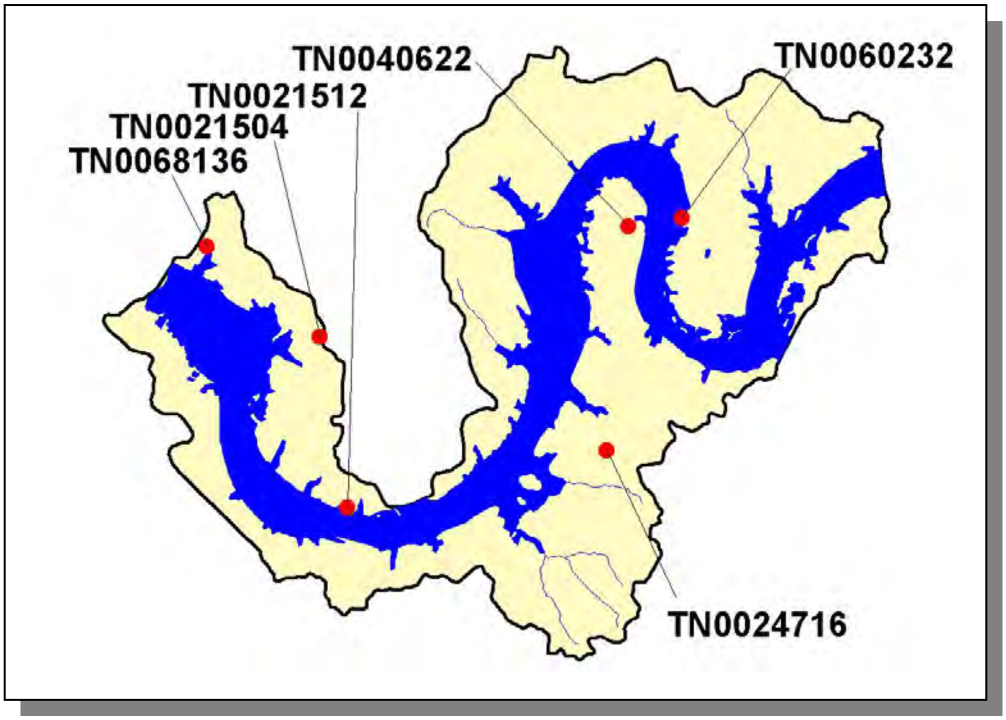

Figure 4-137. Location of Active NPDES Sites in Subwatershed 051302010405. *More information, including the names of facilities, is provided in Appendix IV.*

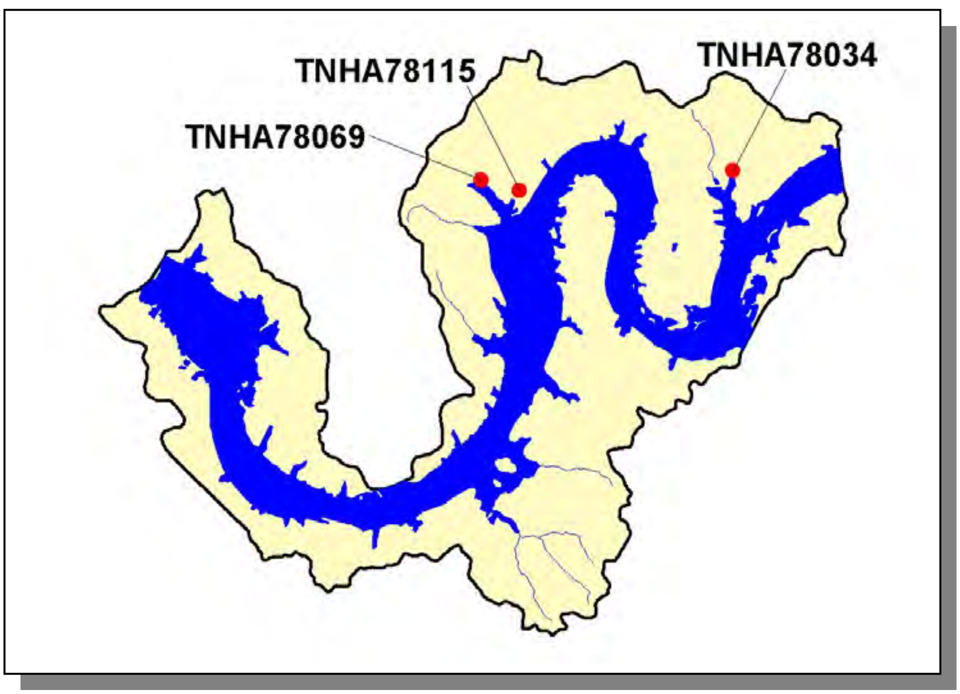

Figure 4-138. Location of Permitted Herbicide Application Sites in Subwatershed 051302010405. *More information is provided in Appendix IV.*

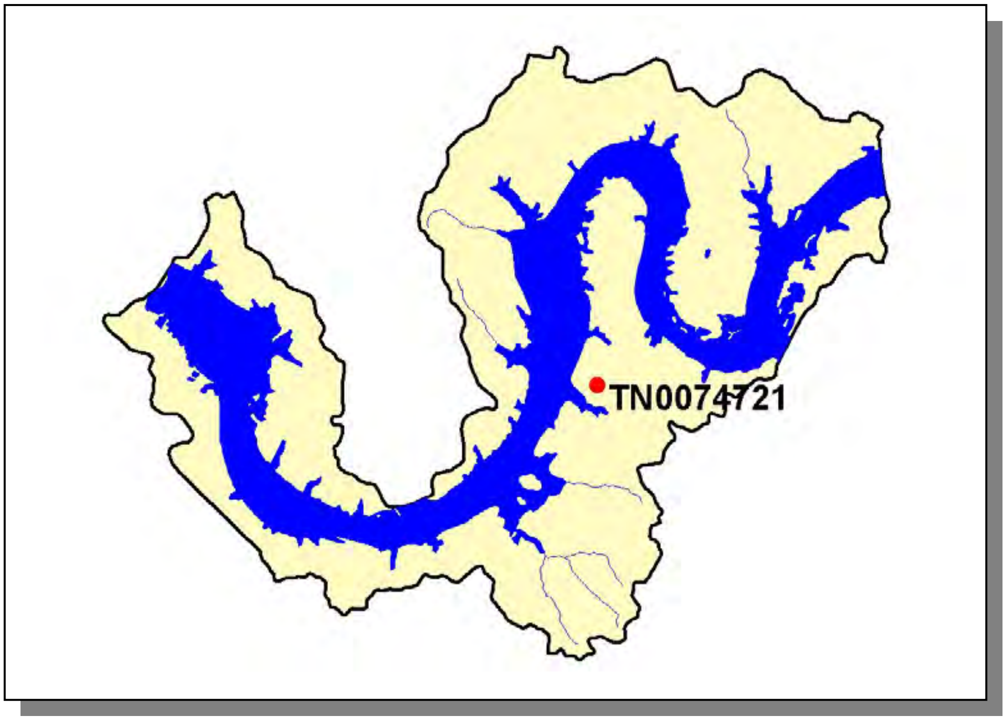

Figure 4-139. Location of Water Treatment Plants in Subwatershed 051302010405. *More information, including the names of facilities, is provided in Appendix IV.*

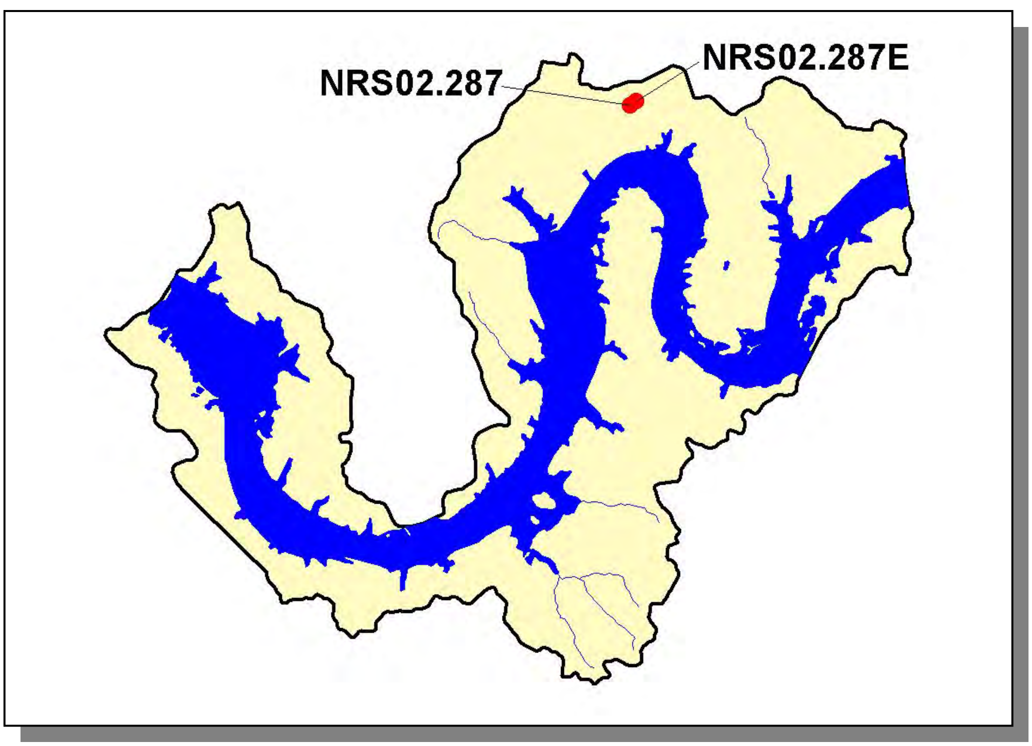

Figure 4-140. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 051302010405. *More information is provided in Appendix IV.*

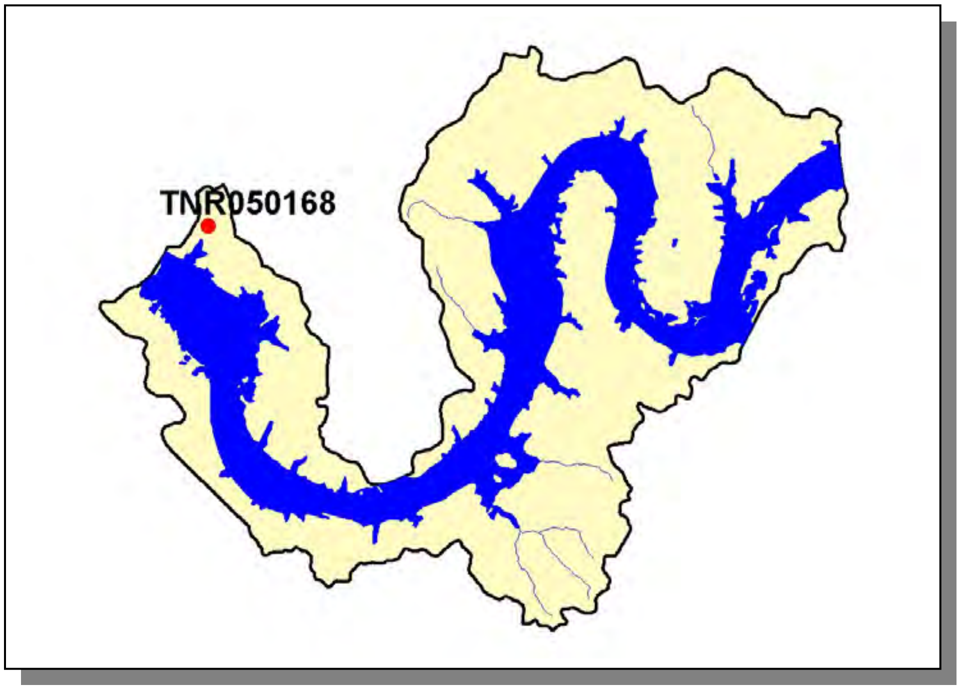

Figure 4-141. Location of TMSP Sites in Subwatershed 051302010405. *More information, including the names of facilities, is provided in Appendix IV.*

4.2.D.v.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
807	1,762	51	<5	78	9

Table 4-104. Summary of Livestock Count Estimates in Subwatershed 051302010405. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/),* **"***Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Davidson	0	9,207	0	1,572	73	0
Sumner	22,296	45,116	1,515	50	2,500	189
Wilson	27,209	51,090	1,505	1,585	1,700	465

Table 4-105. Summary of Livestock Count Estimates in Davidson, Sumner and Wilson Counties. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/),* **"***Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

	INVENTORY		REMOVAL RATE	
County	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Davidson	108.7	108.1	2.3	9.7
Sumner	88.2	88.2	2.0	6.3
Wilson	98.1	97.0	1.7	6.8

Table 4-106. Forest Acreage and Annual Removal Rates (1987-1994) in Davidson, Sumner, and Wilson Counties.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.45
Grass (Hayland)	0.30
Legumes, Grass (Hayland)	0.28
Legumes (Hayland)	0.12
Grass, Forbs, Legumes (Mixed Pasture)	0.64
Corn (Row Crops)	9.13
Soybeans (Row Crops)	10.51
Tobacco (Row Crops)	19.23
Wheat (Close-Grown Cropland)	1.96
All Other Close-Grown Cropland	2.42
Other Cropland not Planted	19.23
Conservation Reserve Program Lands	0.26
Farmsteads and Ranch Headquarters	0.32

Table 4-107. Annual Estimated Total Soil Loss in Subwatershed 051302010405.

4.2.D.vi. 051302010406 (Cedar Creek).

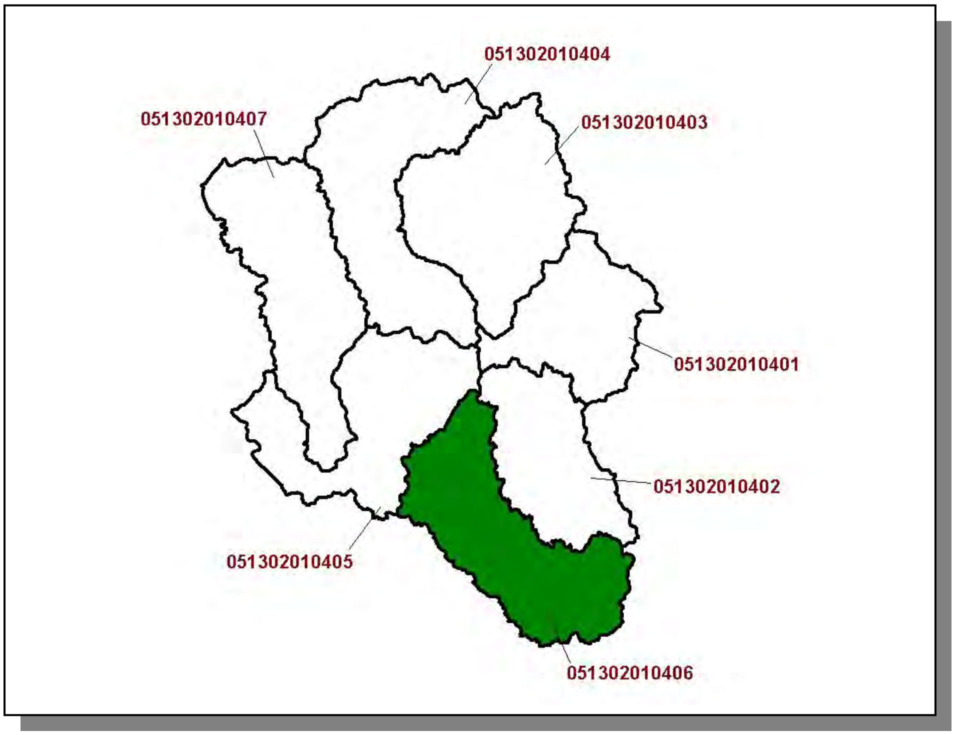

Figure 4-142. Location of Subwatershed 051302010406. *HUC-12 subwatershed boundaries are shown for reference.*

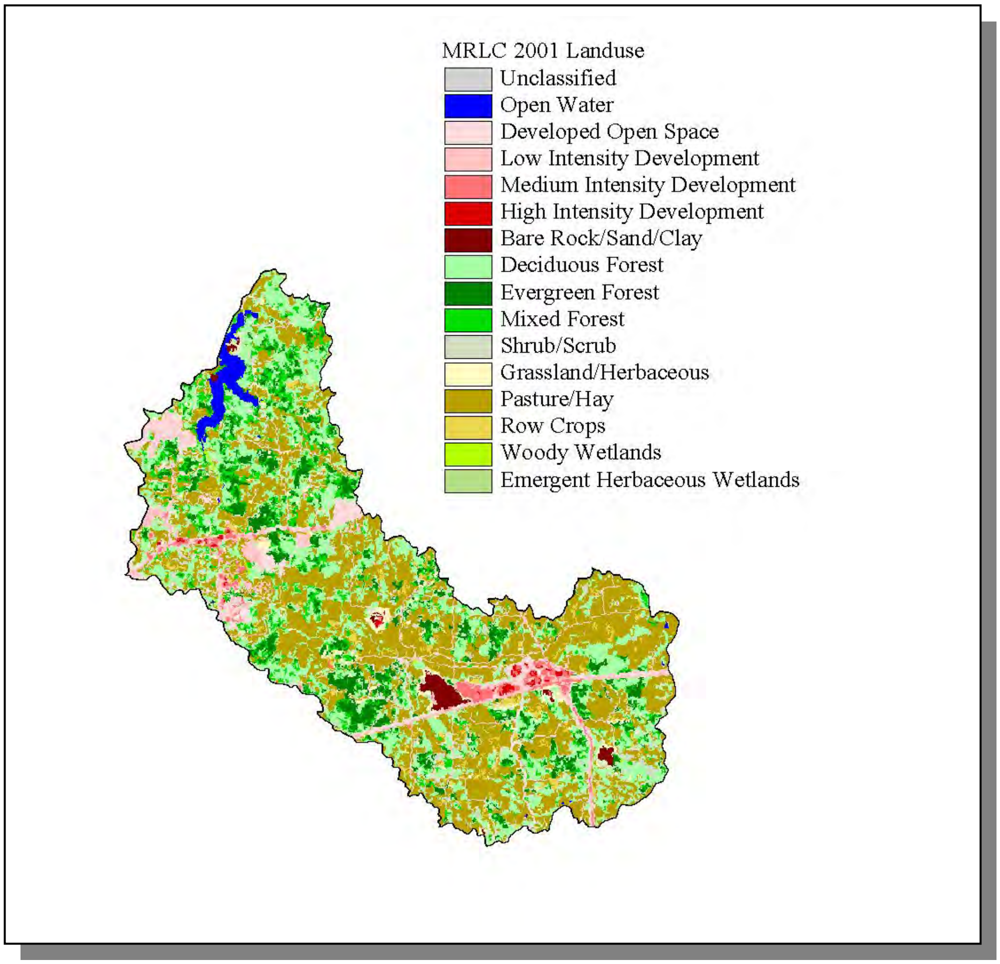

Figure 4-143. Illustration of Land Use Distribution in Subwatershed 051302010406.

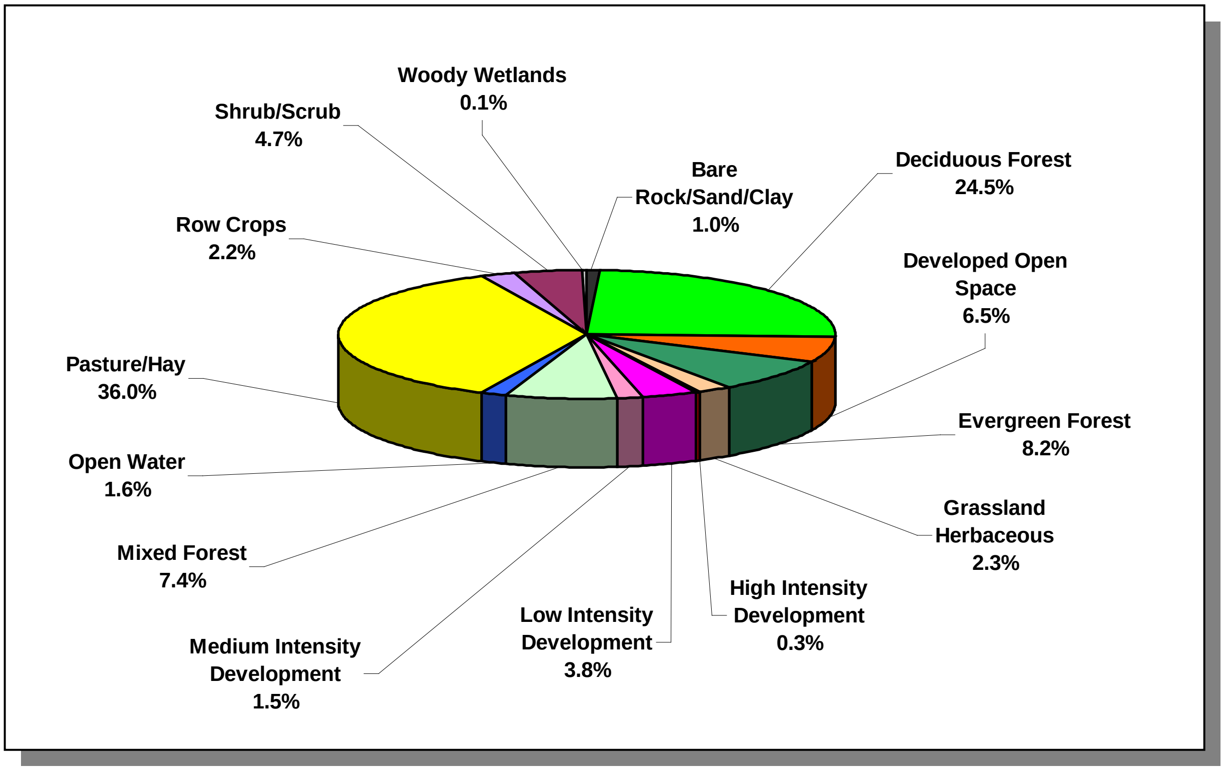

Figure 4-144. Land Use Distribution in Subwatershed 051302010406. *More information is provided in Appendix IV.*

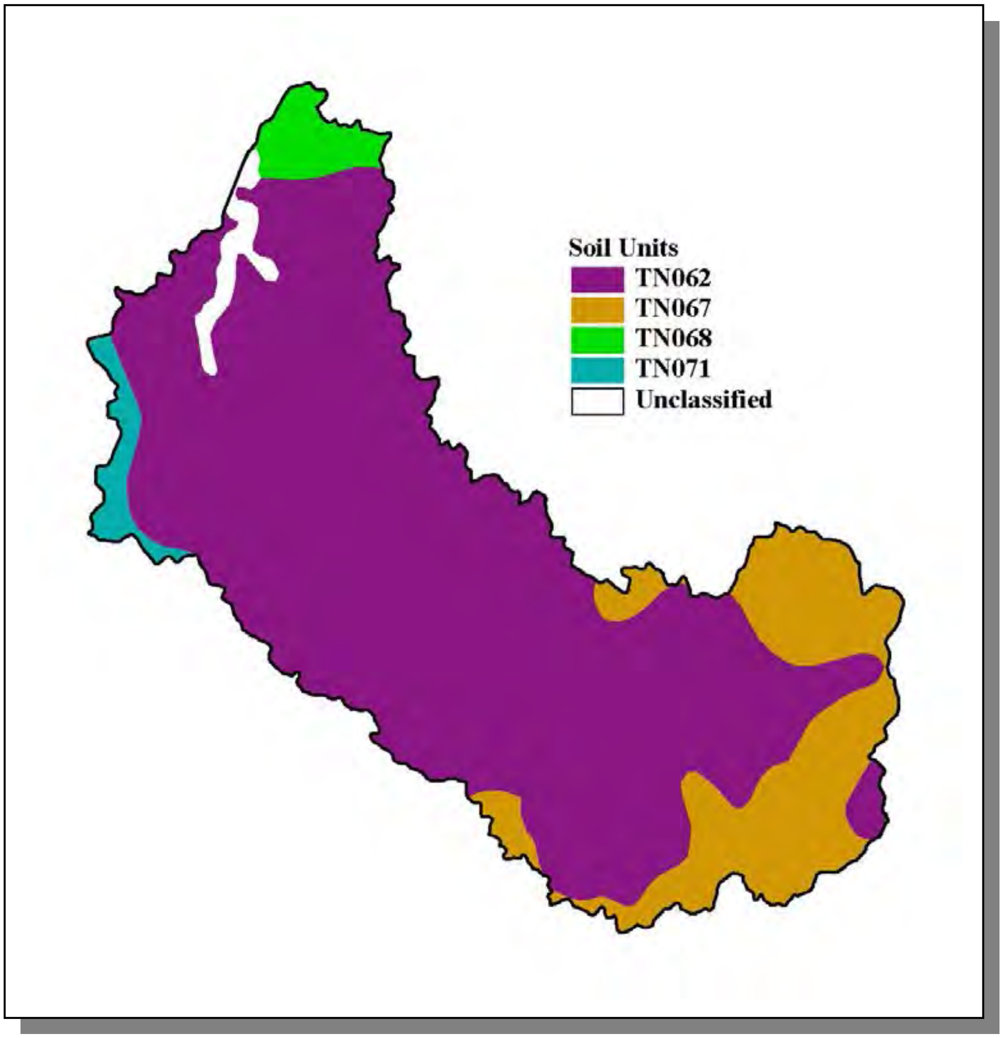

Figure 4-145. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010406.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN062	0.00	C	0.98	4.40	Clayey Loam	0.26
TN067	2.00	C	2.69	5.51	Silty Loam	0.35
TN068	0.00	B	1.35	5.38	Silty Loam	0.37
TN071	0.00	C	2.37	5.70	Silty Loam	0.33

Table 4-108. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010406. *The definition of "Hydrologic Group" is provided in Appendix IV.*

	COUNTY POPULATION				ESTIMATED POPULATION IN WATERSHED			
County	1990	1997	2000	Portion of Watershed (%)	1990	1997	2000	% Change (1990-2000)
Sumner	103,281	121,936	130,449	0.01	10	12	13	30.0

Table 4-109. Population Estimates in Subwatershed 051302010406.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Lebanon	Wilson	15,208	6,592	5,440	1,137	15
Mount Juliet	Wilson	5,389	1,926	1,265	661	0
Total		**20,597**	**8,518**	**6,705**	**1,798**	**15**

Table 4-110. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 051302010406.

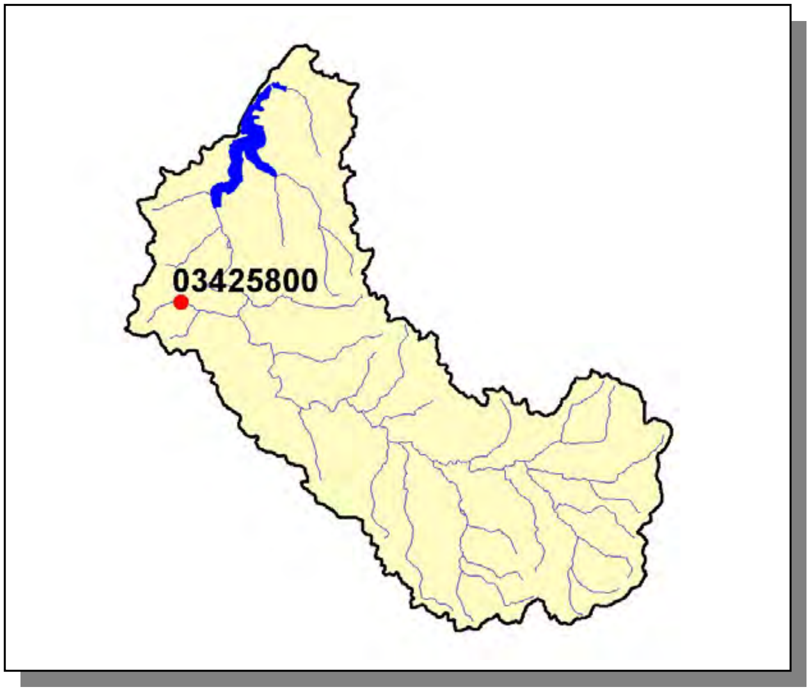

Figure 4-146. Location of Historical Streamflow Data Collection Sites in Subwatershed 051302010406. *More information is provided in Appendix IV.*

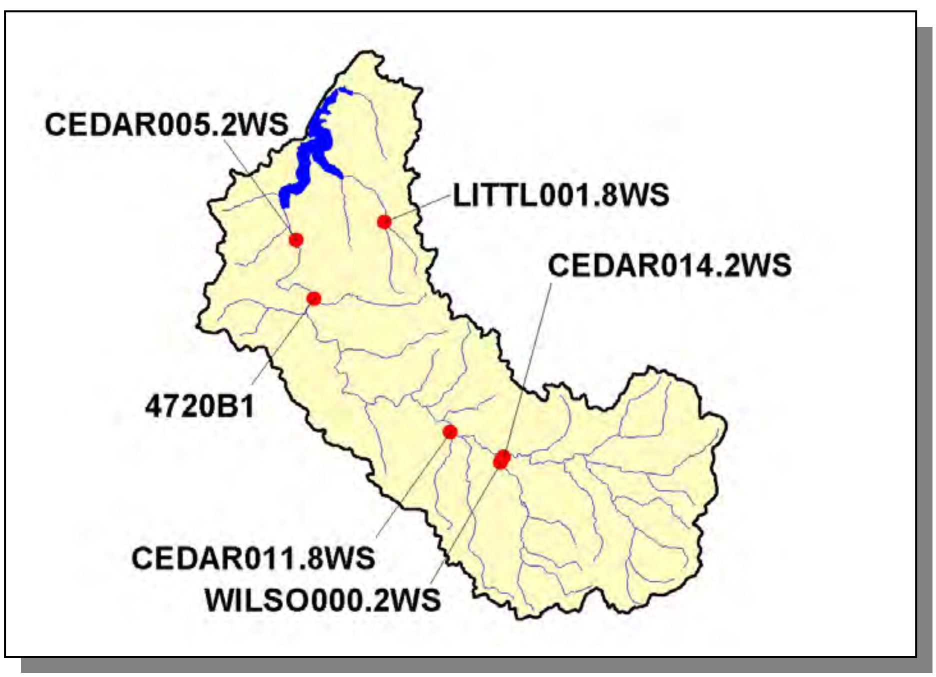

Figure 4-147. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 051302010406. *More information, including site names and locations, is provided in Appendix IV.*

4.2.D.vi.a. Point Source Contributions.

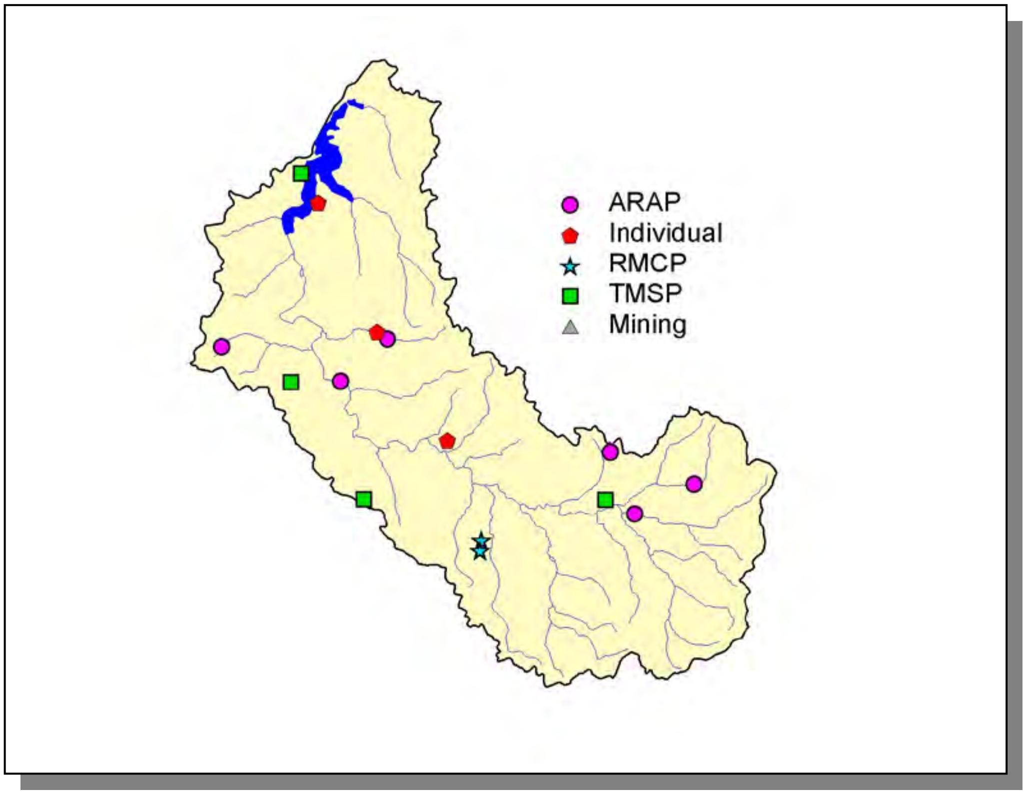

Figure 4-148. Location of Permits Issued in Subwatershed 051302010406. *More information, including the names of facilities, is provided in Appendix IV.*

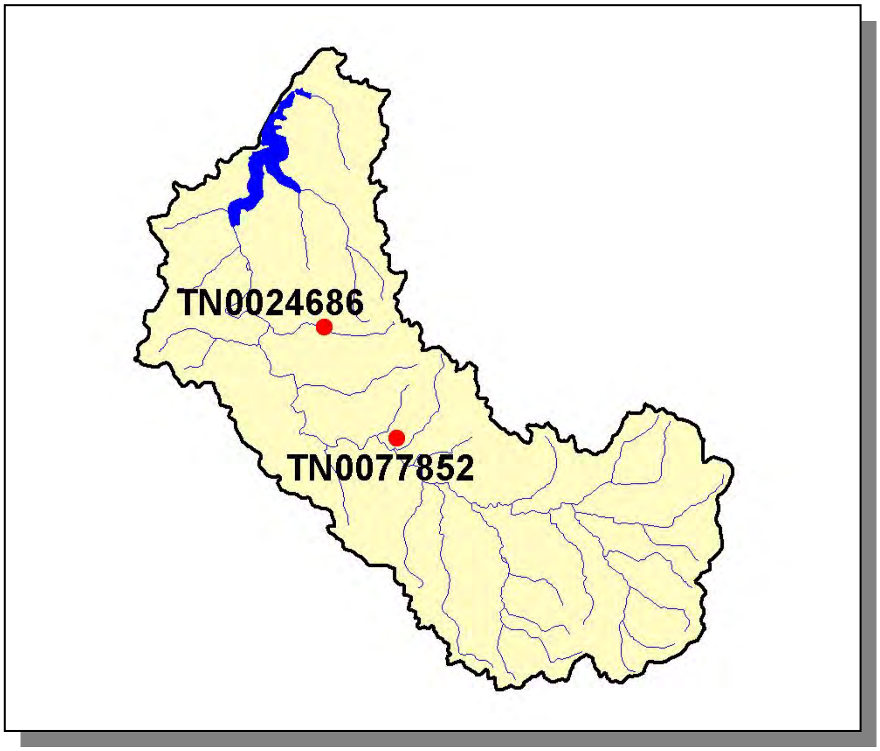

Figure 4-149. Location of Active NPDES Sites in Subwatershed 051302010406. *More information, including the names of facilities, is provided in Appendix IV.*

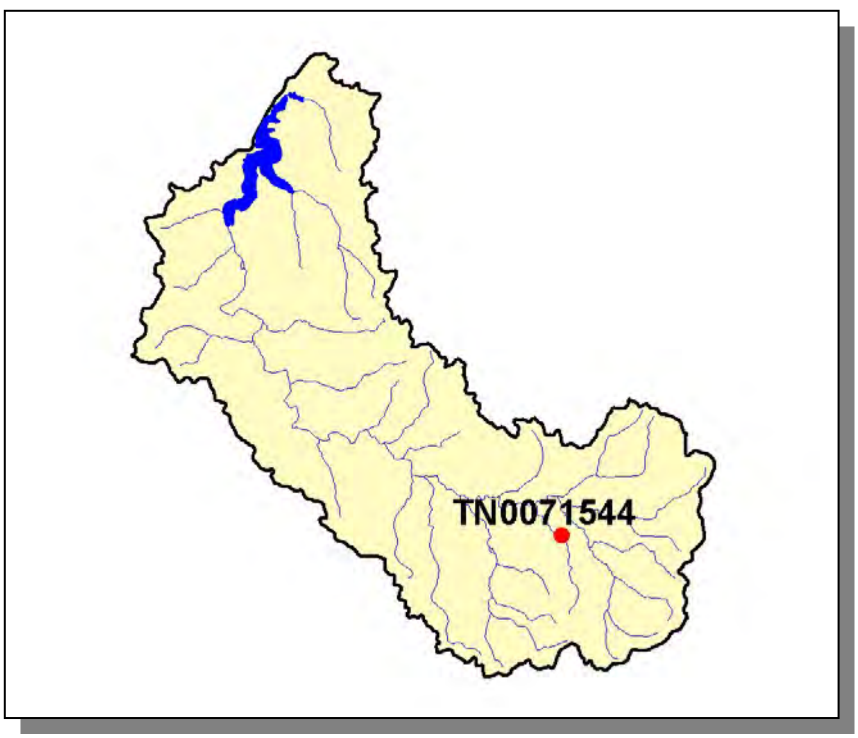

Figure 4-150. Location of Active Mining Sites in Subwatershed 051302010406. *More information, including the names of mining operations, is provided in Appendix IV.*

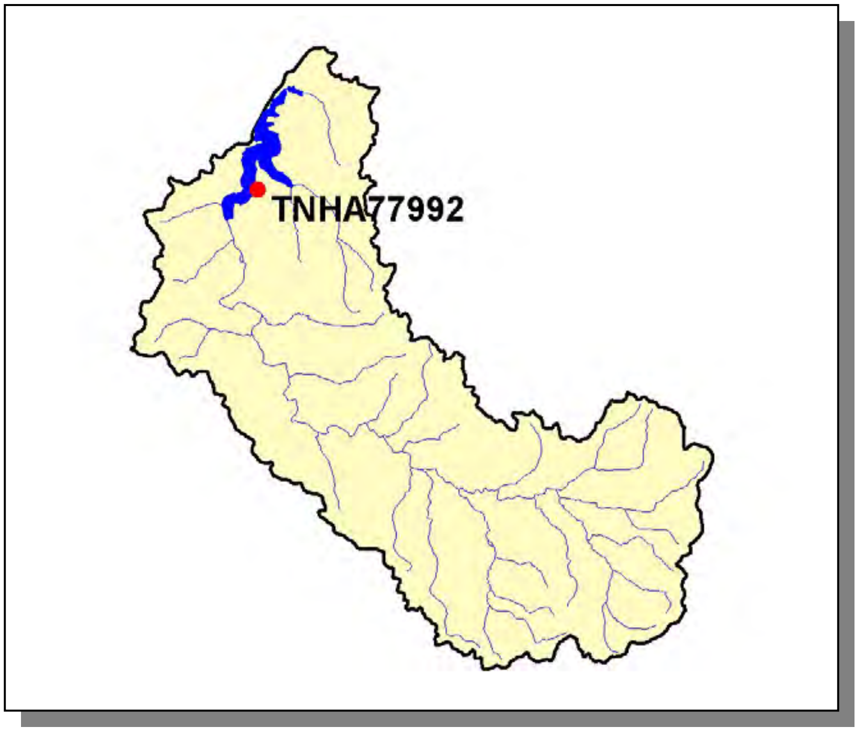

Figure 4-151. Location of Permitted Herbicide Application Sites in Subwatershed 051302010406. *More information is provided in Appendix IV.*

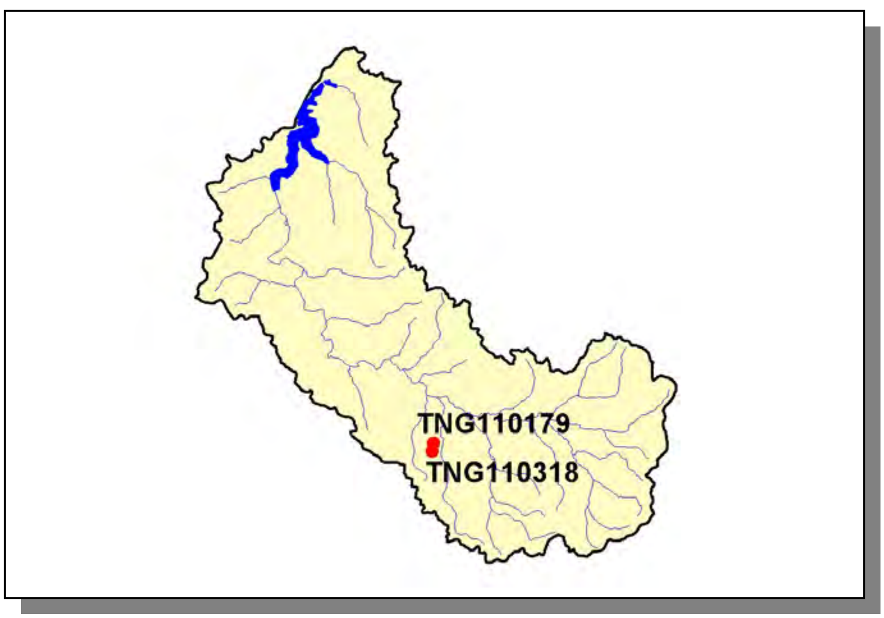

Figure 4-152. Location of Ready Mix Concrete Plants (RMCP) in Subwatershed 051302010406. *More information is provided in Appendix IV.*

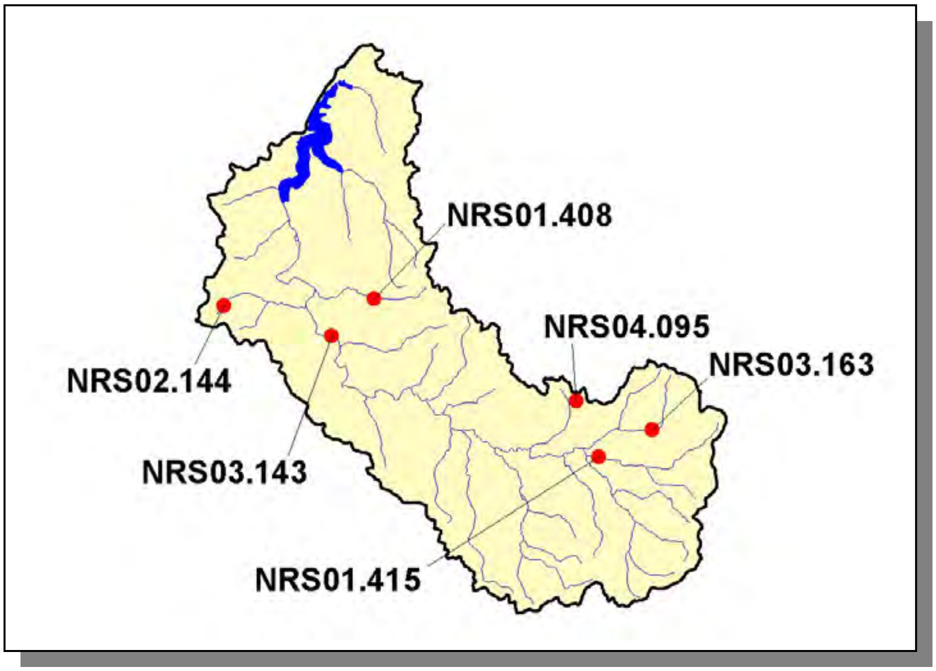

Figure 4-153. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 051302010406. *More information is provided in Appendix IV.*

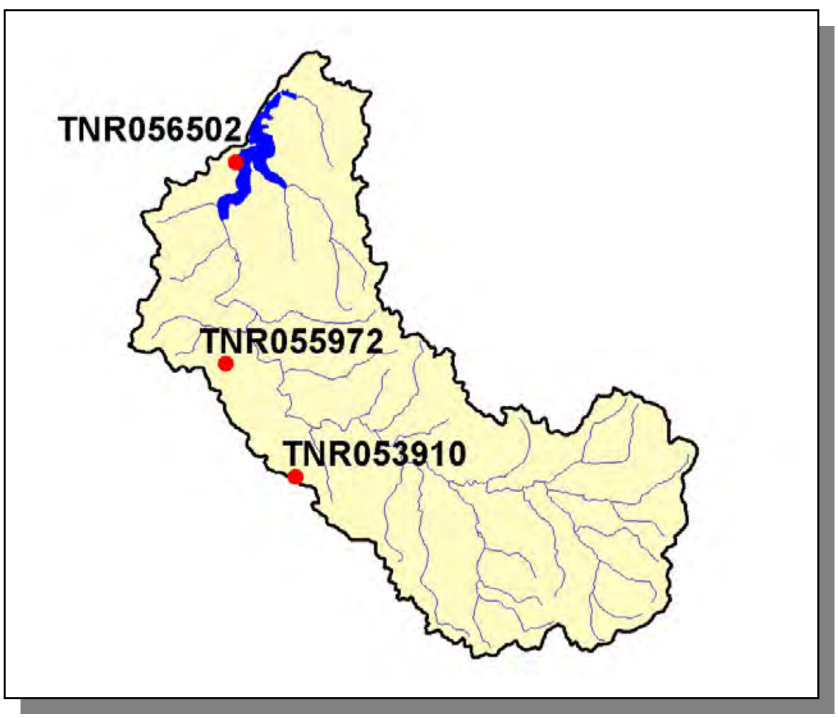

Figure 4-154. Location of TMSP Sites in Subwatershed 051302010406. *More information, including the names of facilities, is provided in Appendix IV.*

4.2.D.vi.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
1,785	3,351	99	6	112	31

Table 4-111. Summary of Livestock Count Estimates in Subwatershed 051302010406. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Sumner	22,296	45,116	1,515	50	2,500	189
Wilson	27,209	51,090	1,505	1,585	1,700	465

Table 4-112. Summary of Livestock Count Estimates in Sumner and Wilson Counties. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

	INVENTORY		REMOVAL RATE	
County	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Sumner	88.2	88.2	2.0	6.3
Wilson	98.1	97.0	1.7	6.8

Table 4-113. Forest Acreage and Annual Removal Rates (1987-1994) in Sumner and Wilson Counties.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.42
Grass (Hayland)	0.37
Legumes, Grass (Hayland)	0.37
Legumes (Hayland)	0.12
Grass, Forbs, Legumes (Mixed Pasture)	0.91
Corn (Row Crops)	2.24
Soybeans (Row Crops)	6.73
Tobacco (row Crops)	19.23
Wheat (Close-Grown Cropland)	1.96
All Other Close-Grown Cropland	2.49
Other Cropland not Planted	19.23
Conservation Reserve Program Lands	0.26
Farmsteads and Ranch Headquarters	0.26

Table 4-114. Annual Estimated Total Soil Loss in Subwatershed 051302010406.

4.2.D.vii. 051302010407 (Drakes Creek).

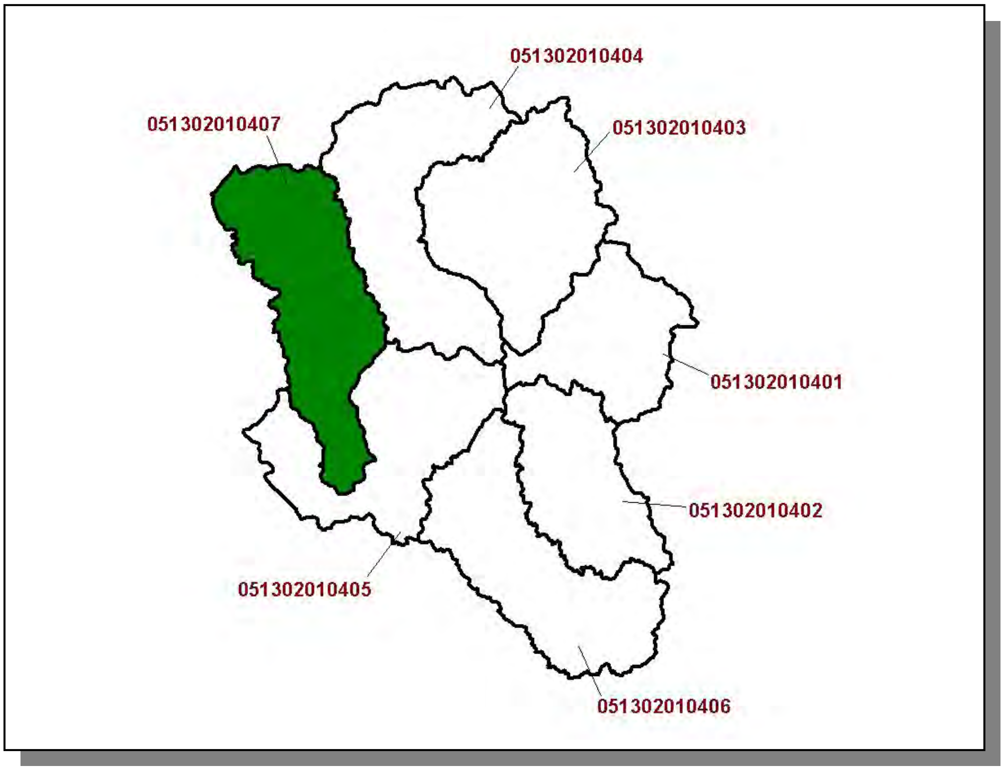

Figure 4-155. Location of Subwatershed 051302010407. *HUC-12 subwatershed boundaries are shown for reference.*

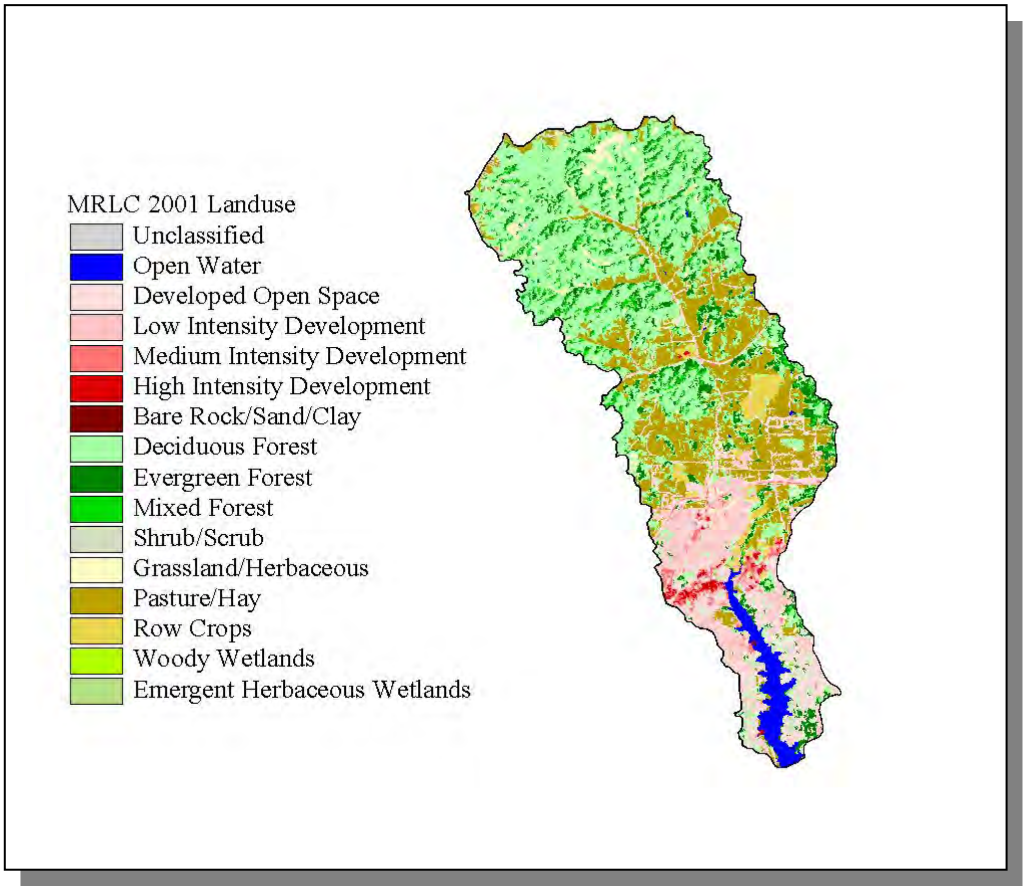

Figure 4-156. Illustration of Land Use Distribution in Subwatershed 051302010407.

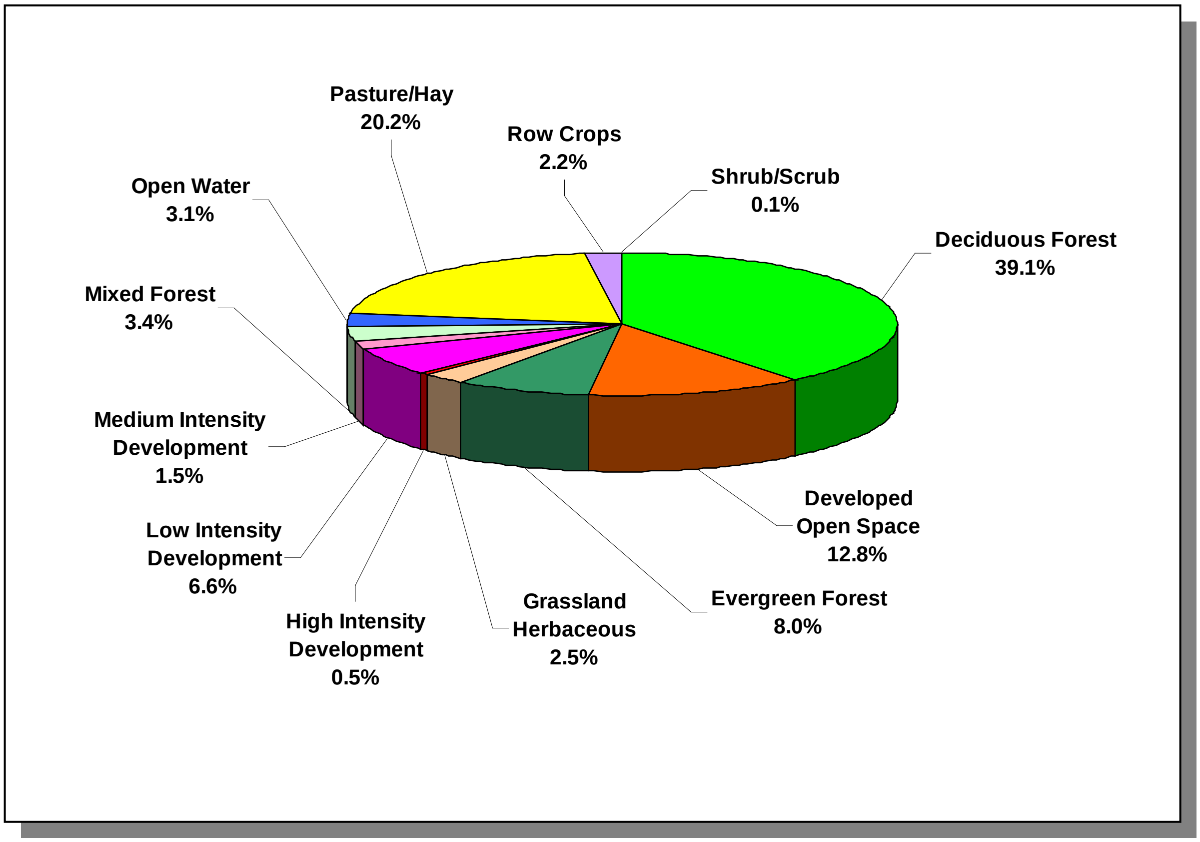

Figure 4-157. Land Use Distribution in Subwatershed 051302010407. *More information is provided in Appendix IV.*

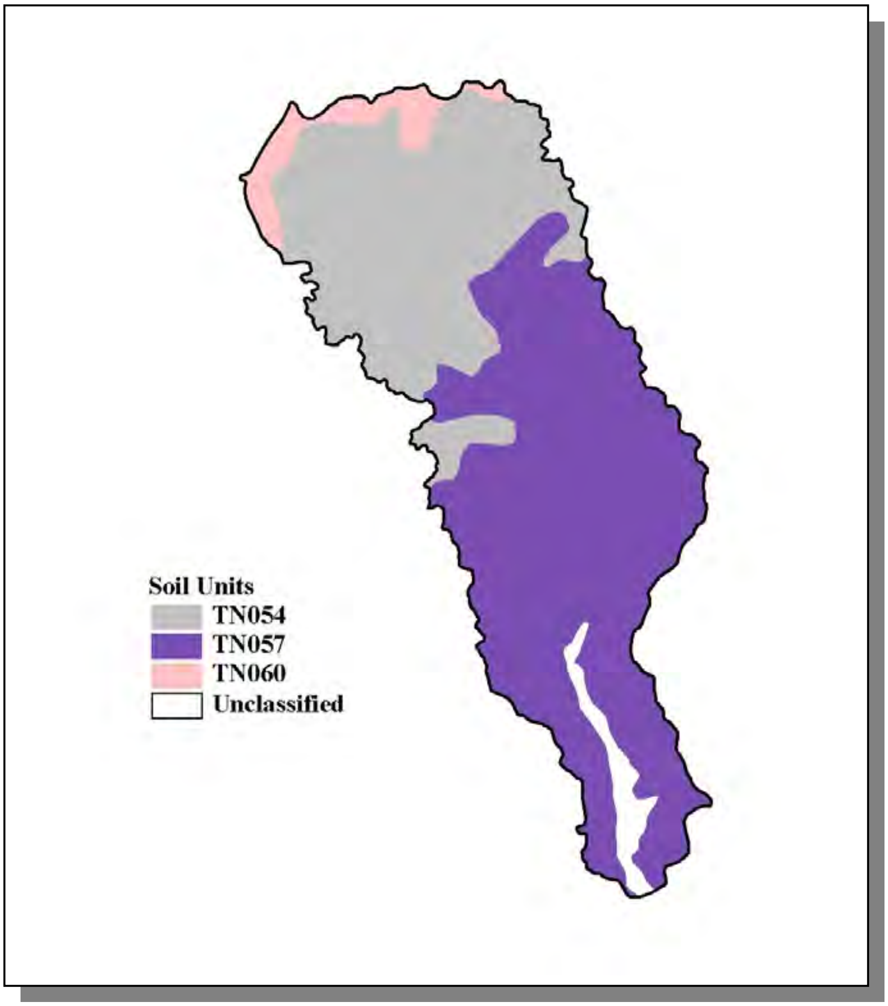

Figure 4-158. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010407.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN054	0.00	C	3.04	4.84	Loam	0.32
TN057	0.00	C	1.14	5.01	Clayey Loam	0.33
TN060	5.00	B	1.30	5.32	Silty Loam	0.39

Table 4-115. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010407. *The definition of "Hydrologic Group" is provided in Appendix IV.*

	COUNTY POPULATION				ESTIMATED POPULATION IN WATERSHED			
County	1990	1997	2000	Portion of Watershed (%)	1990	1997	2000	% Change (1990-2000)
Robertson	41,494	51,533	54,433	0.02	9	11	11	22.2
Sumner	103,281	121,936	130,449	8.14	8,410	9,929	10,622	26.3
Total	**144,775**	**173,469**	**184,882**		**8,419**	**9,940**	**10,633**	**26.3**

Table 4-116. Population Estimates in Subwatershed 051302010407.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Hendersonville	Sumner	32,188	12,472	8,395	4,069	8
Millersville	Sumner	2,544	1,033	849	180	4
Whitehouse	Robertson	3,025	1,130	991	136	3
Total		**37,757**	**14,635**	**10,235**	**4,385**	**15**

Table 4-117. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 051302010407.

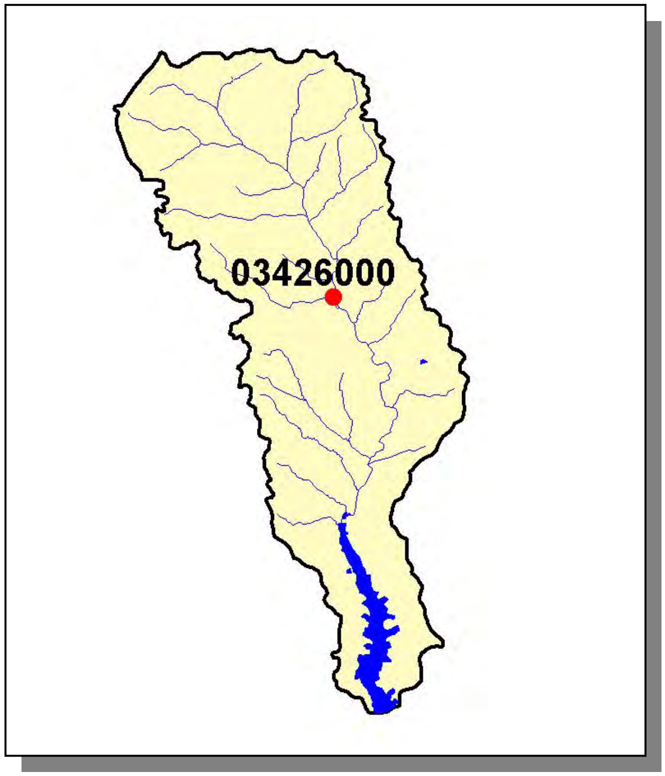

Figure 4-159. Location of Historical Streamflow Data Collection Sites in Subwatershed 051302010407. *More information is provided in Appendix IV.*

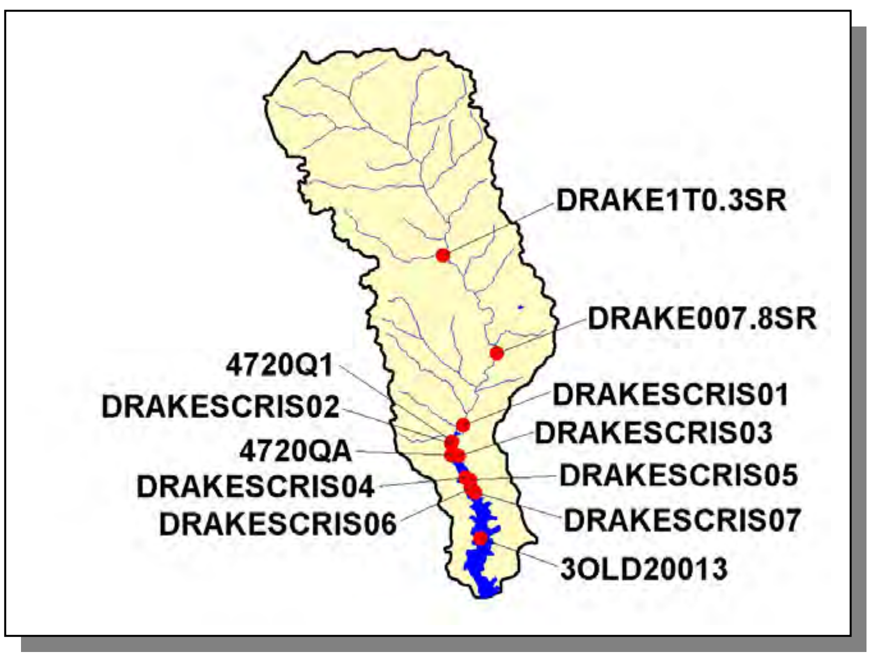

Figure 4-160. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 051302010407. *More information, including site names and locations, is provided in Appendix IV.*

4.2.D.vii.a. Point Source Contributions.

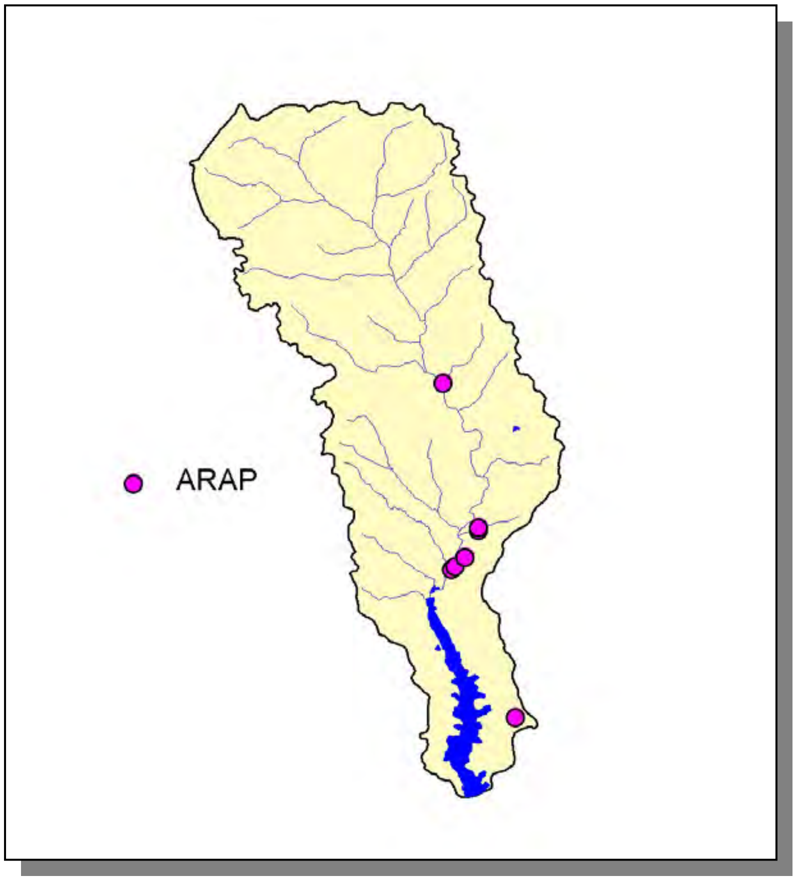

Figure 4-161. Location of Permits Issued in Subwatershed 051302010407. *More information, including the names of facilities, is provided in Appendix IV.*

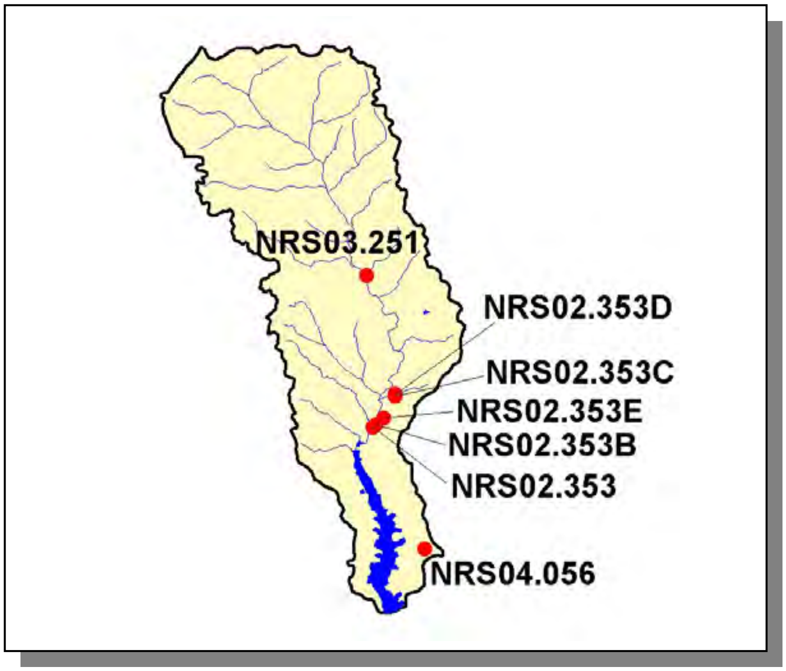

Figure 4-162. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 051302010407. *More information is provided in Appendix IV.*

4.2.D.vii.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
1,372	2,778	94	<5	156	12

Table 4-118. Summary of Livestock Count Estimates in Subwatershed 051302010407. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), **"**Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Robertson	22,502	47,887	3,478	31	6,982	279
Sumner	22,296	45,116	1,515	50	2,500	189

Table 4-119. Summary of Livestock Count Estimates in Robertson, and Sumner Counties. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), **"**Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

	INVENTORY		REMOVAL RATE	
County	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Robertson	53.0	53.0	2.2	9.7
Sumner	88.2	88.2	2.0	6.3

Table 4-120. Forest Acreage and Annual Removal Rates (1987-1994) in Robertson and Sumner Counties.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.46
Grass (Hayland)	0.31
Legumes, Grass (Hayland)	0.23
Legumes (Hayland)	0.12
Grass, Forbs, Legumes (Mixed Pasture)	0.54
Corn (Row Crops)	12.30
Soybeans (Row Crops)	11.27
Tobacco (Row Crops)	11.87
Wheat (Close-Grown Cropland)	1.68
Other Cropland not Planted	19.21
Conservation Reserve Program Lands	0.26
Other Land in Farms	0.27
Farmsteads and Ranch Headquarters	0.34

Table 4-121. Annual Estimated Total Soil Loss in Subwatershed 051302010407.

4.2.E. 0513020105.

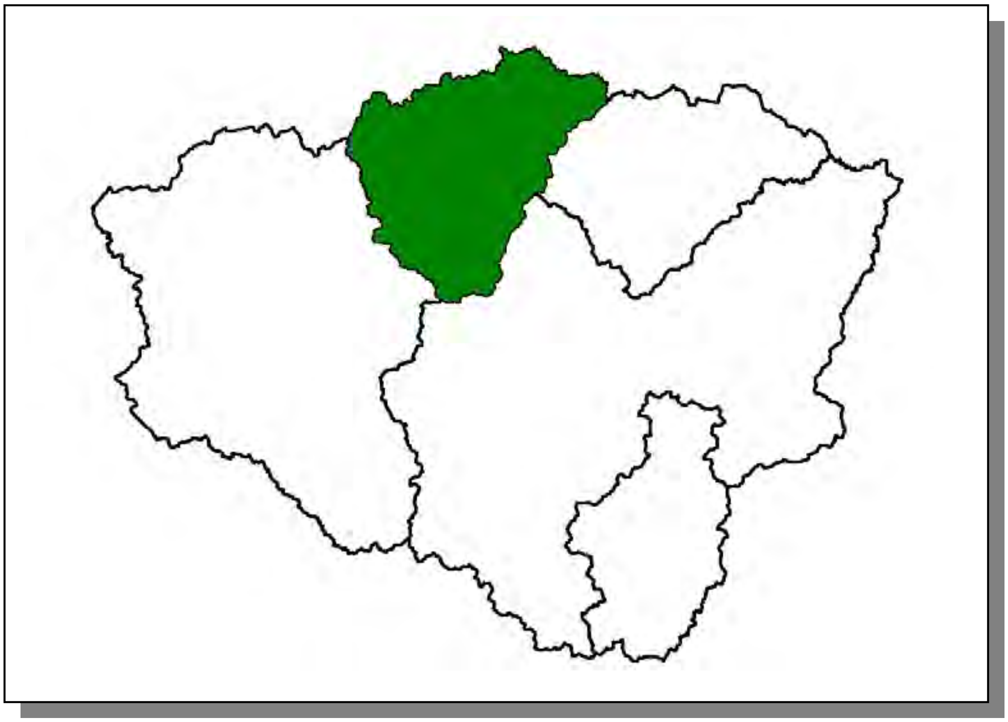

Figure 4-163. Location of Subwatershed 0513020105. *All Old Hickory Lake HUC-10 subwatershed boundaries are shown for reference.*

4.2.E.i. 051302010501 (Upper Bledsoe Creek).

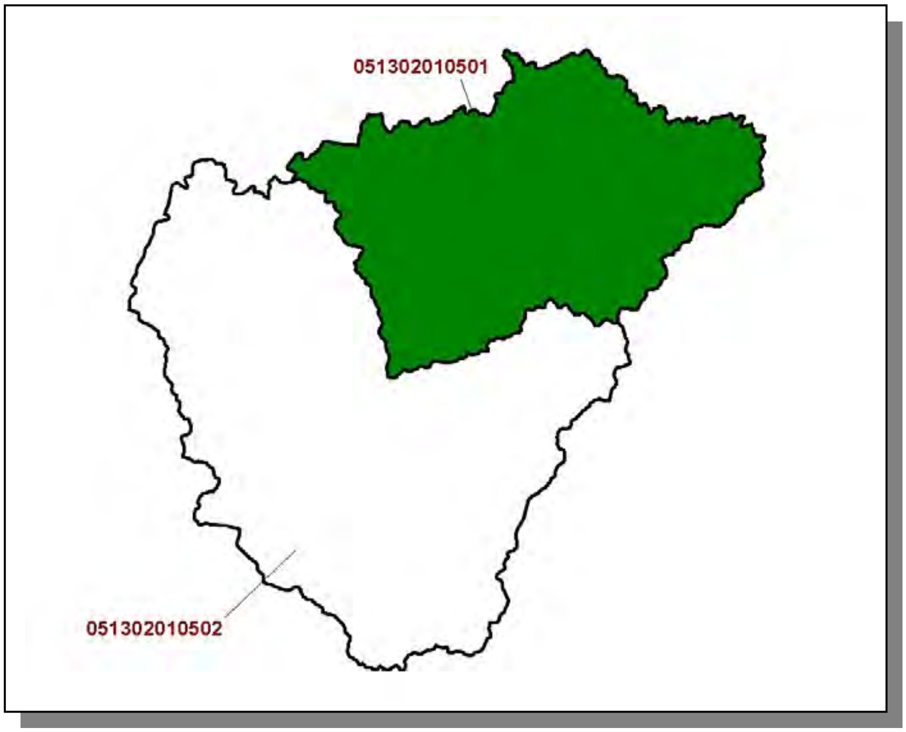

Figure 4-164. Location of Subwatershed 051302010501. *HUC-12 subwatershed boundaries are shown for reference.*

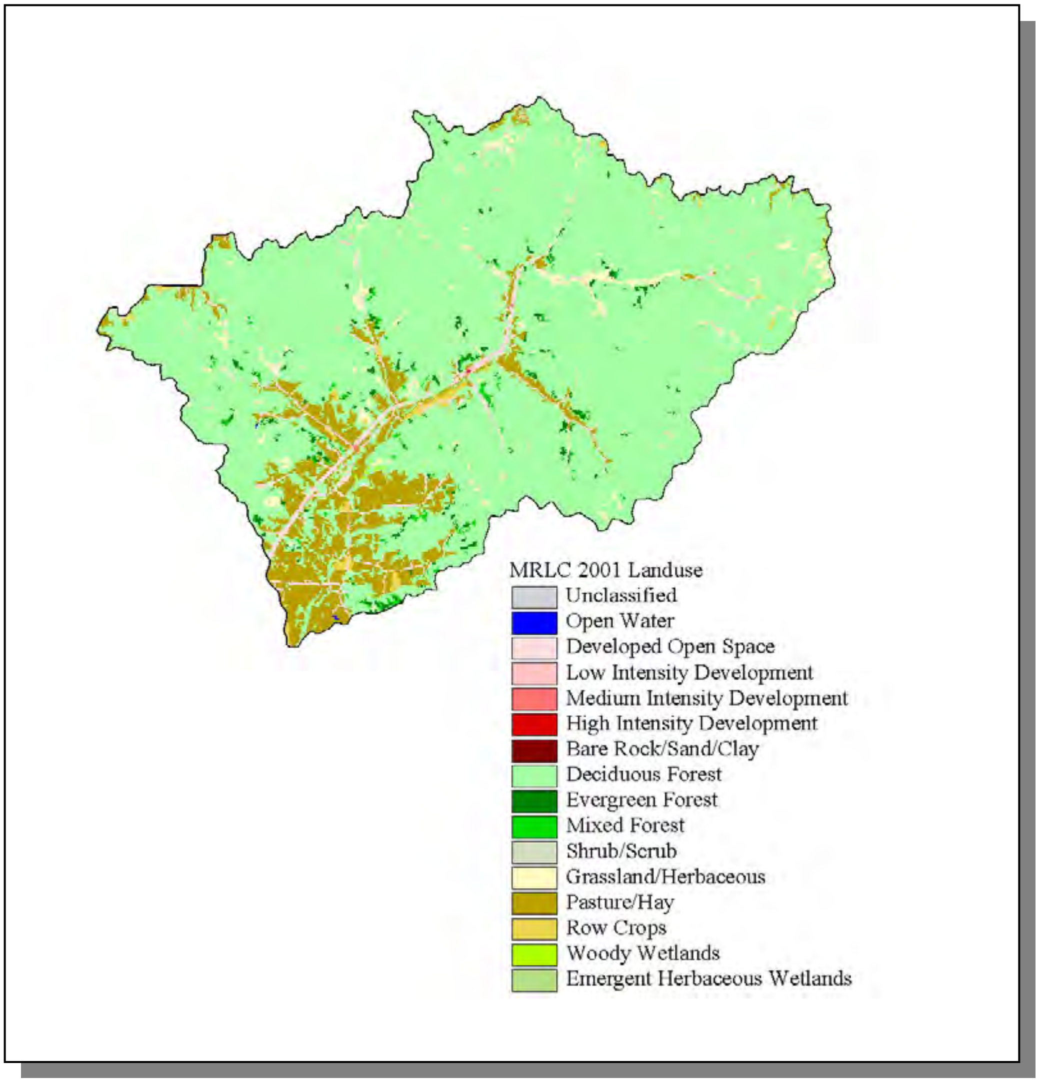

Figure 4-165. Illustration of Land Use Distribution in Subwatershed 051302010501.

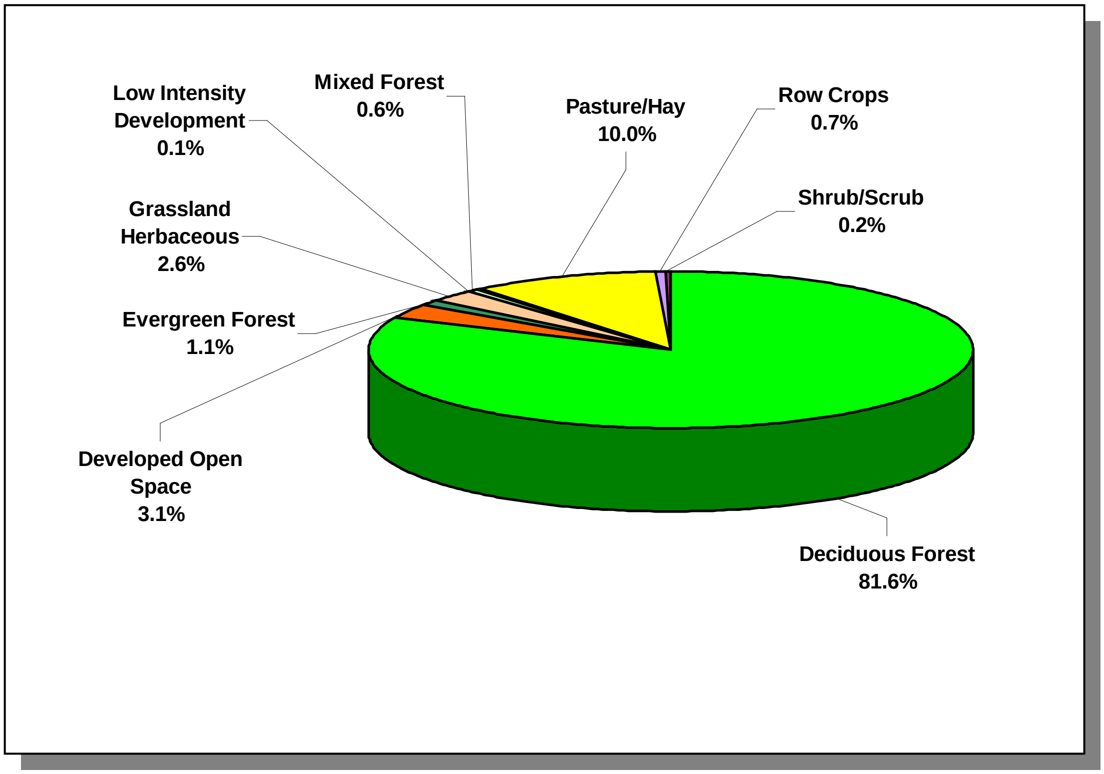

Figure 4-166. Land Use Distribution in Subwatershed 051302010501. *More information is provided in Appendix IV.*

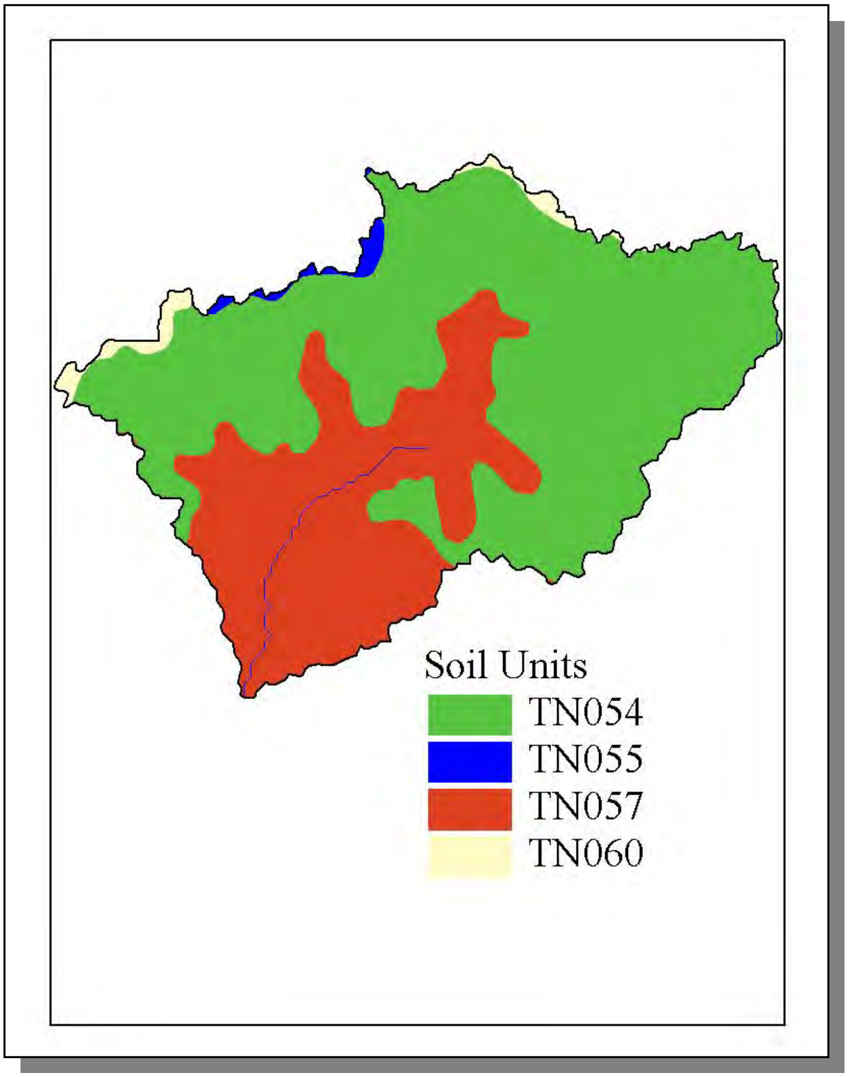

Figure 4-167. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010501.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN054	0.00	C	3.04	4.84	Loam	0.32
TN055	3.00	C	2.45	5.24	Loam	0.34
TN057	0.00	C	1.14	5.01	Clayey Loam	0.33
TN060	5.00	B	1.30	5.32	Silty Loam	0.39

Table 4-122. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010501. *The definition of "Hydrologic Group" is provided in Appendix IV.*

	COUNTY POPULATION				ESTIMATED POPULATION IN WATERSHED			
County	1990	1997	2000	Portion of Watershed (%)	1990	1997	2000	% Change (1990-2000)
Macon	15,906	17,854	20,386	1.24	197	222	253	28.4
Sumner	103,281	121,936	130,449	7.23	7,466	8,815	9,431	26.3
Trousdale	5,920	6,748	7,259	1.00	59	67	73	23.7
Total	**125,107**	**146,538**	**158,094**		**7,722**	**9,104**	**9,757**	**26.4**

Table 4-123. Population Estimates in Subwatershed 051302010501.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Westmoreland	Sumner	1,726	709	625	82	2

Table 4-124. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 051302010501.

Figure 4-168. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 051302010501. *More information, including site names and locations, is provided in Appendix IV.*

4.2.E.i.a. Point Source Contributions.

There are no point source contributions in this subwatershed.

4.2.E.i.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
740	1,484	48	<5	85	6

Table 4-125. Summary of Livestock Count Estimates in Subwatershed 051302010501. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/),* ***"****Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Macon	15,039	26,098	318	675	2,377	111
Sumner	22,296	45,116	1,515	50	2,500	189
Trousdale	6,672	11,344	135	243	112	195

Table 4-126. Summary of Livestock Count Estimates in Macon, Sumner, and Trousdale Counties. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/),* ***"****Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

	INVENTORY		REMOVAL RATE	
County	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Macon				
Sumner	88.2	88.2	2.0	6.3
Trousdale	30.0	30.0	0.1	0.4

Table 4-127. Forest Acreage and Annual Removal Rates (1987-1994) in Macon, Sumner, and Trousdale Counties.

CROPS	TONS/ACRE/YEAR
Legumes (Pastureland)	0.15
Grass (Pastureland)	0.46
Grass (Hayland)	0.30
Legumes, Grass (Hayland)	0.23
Grass, Forbs, Legumes (Mixed Pasture)	0.58
Legumes (Hayland)	0.12
Corn (Row Crops)	11.58
Soybeans (Row Crops)	11.27
Tobacco (Row Crops)	10.06
Wheat (Close-Grown Cropland)	3.43
Other Vegetable and Truck Crops	5.48
Other Cropland not Planted	19.23
Conservation Reserve Program Lands	0.26
Farmsteads and Ranch Headquarters	0.32

Table 4-128. Annual Estimated Total Soil Loss in Subwatershed 051302010501.

4.2.E.ii. 051302010502 (Lower Bledsoe Creek).

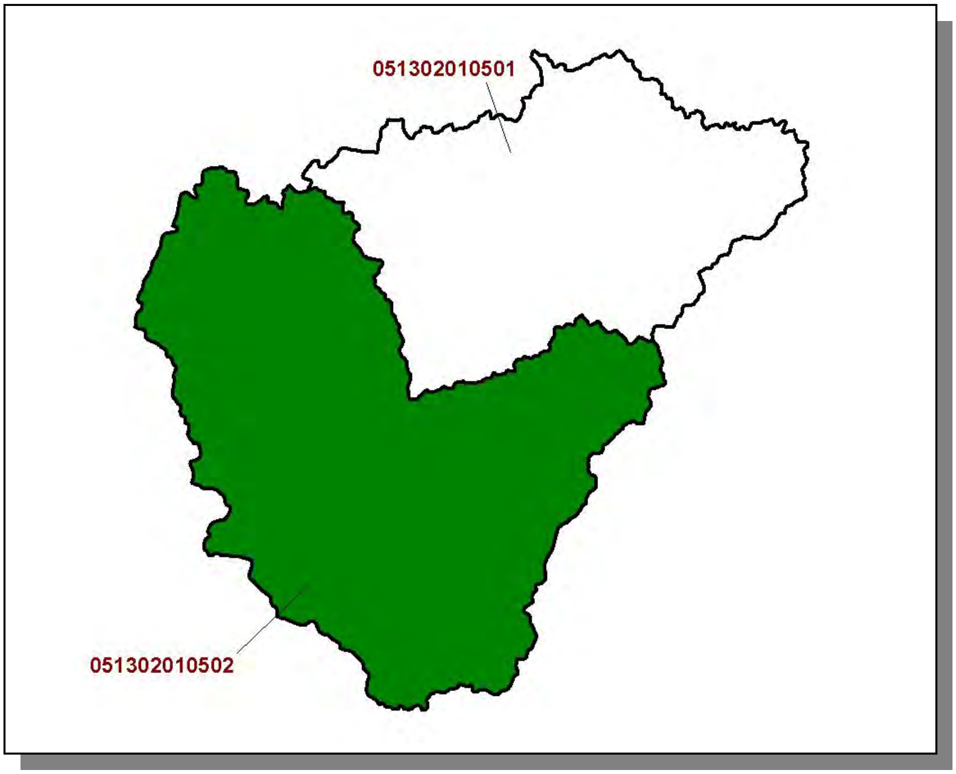

Figure 4-169. Location of Subwatershed 051302010502. *HUC-12 subwatershed boundaries are shown for reference.*

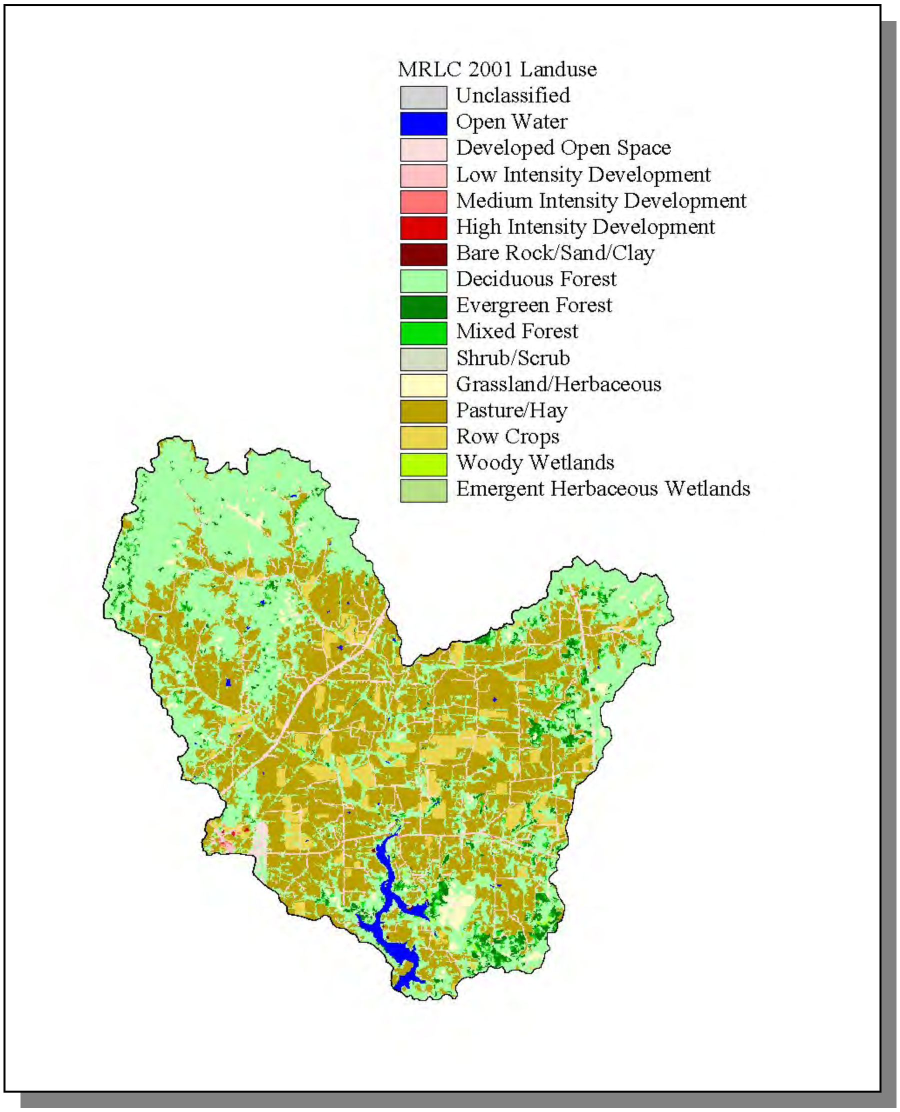

Figure 4-170. Illustration of Land Use Distribution in Subwatershed 051302010502.

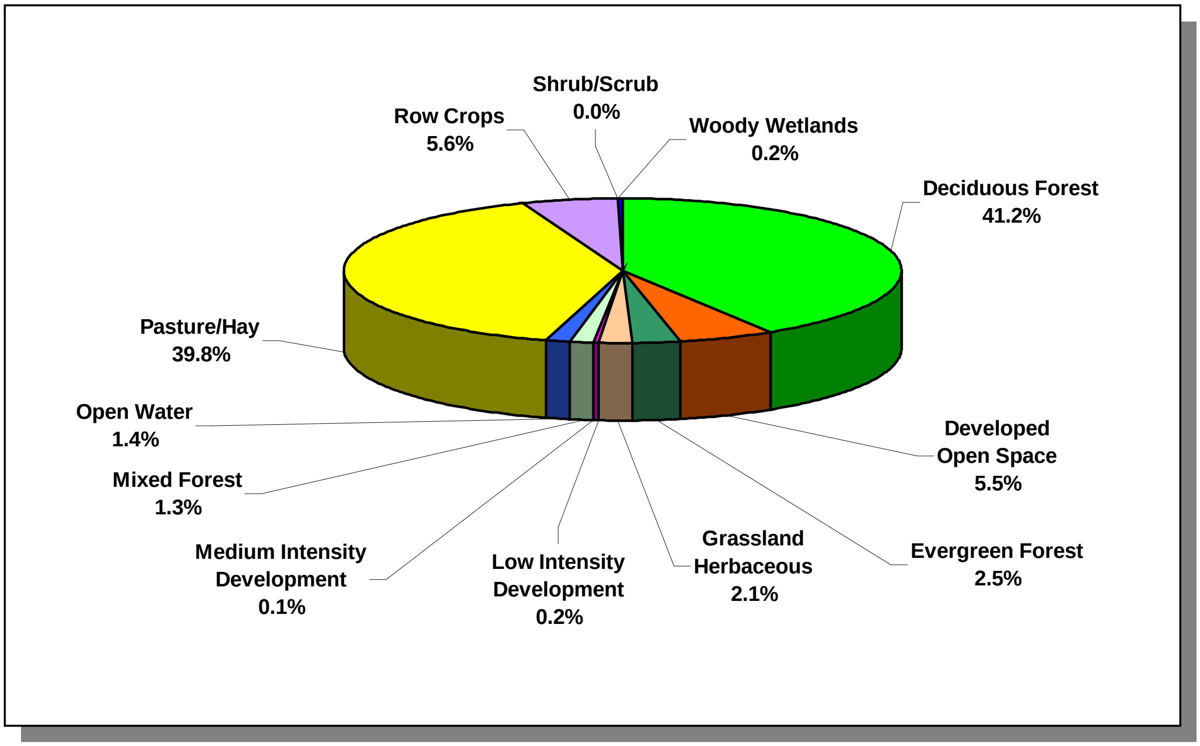

Figure 4-171. Land Use Distribution in Subwatershed 051302010502. *More information is provided in Appendix IV.*

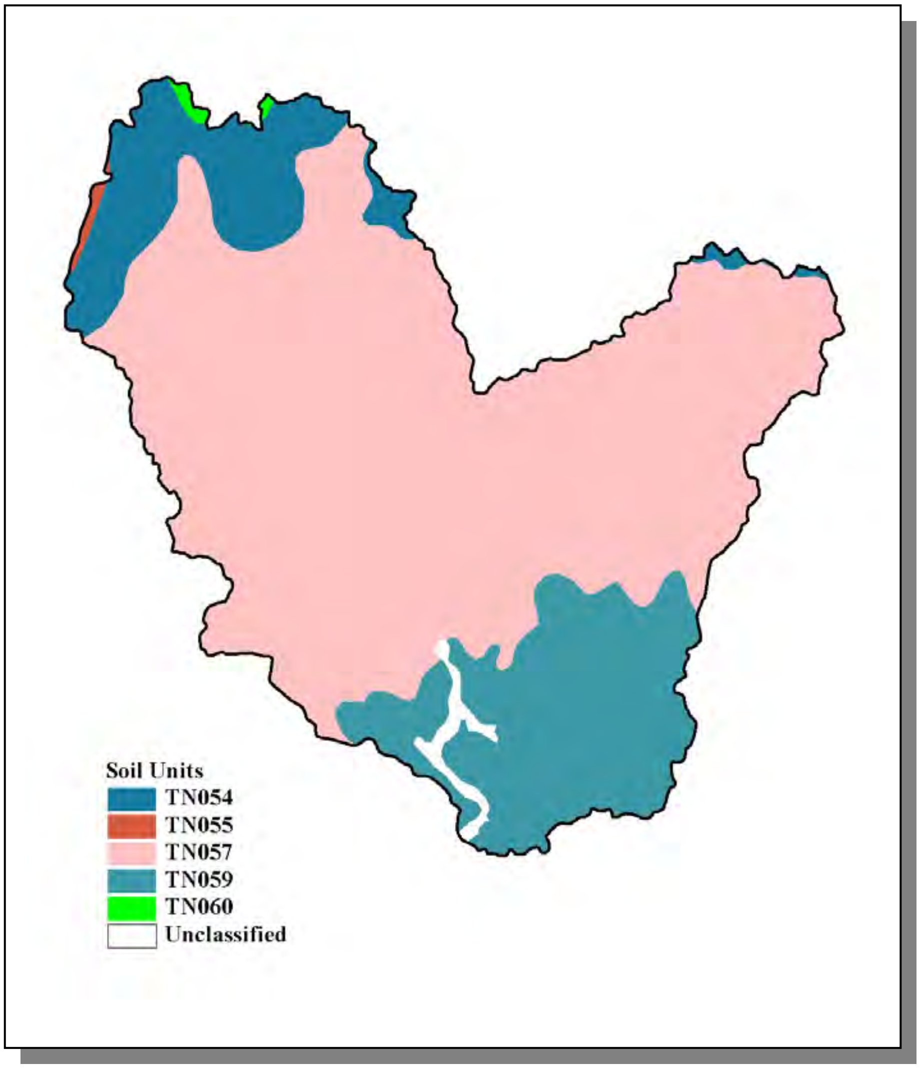

Figure 4-172. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010502.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN054	0.00	C	3.04	4.84	Loam	0.32
TN055	3.00	C	2.45	5.24	Loam	0.34
TN057	0.00	C	1.14	5.01	Clayey Loam	0.33
TN059	0.00	C	1.08	5.70	Silty Clayey Loam	0.35
TN060	5.00	B	1.30	5.32	Silty Loam	0.39

Table 4-129. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 051302010502. *The definition of "Hydrologic Group" is provided in Appendix IV.*

	COUNTY POPULATION				ESTIMATED POPULATION IN WATERSHED			
County	1990	1997	2000	Portion of Watershed (%)	1990	1997	2000	% Change (1990-2000)
Sumner	103,281	121,936	130,449	12.38	12,787	15,096	16,150	26.3
Trousdale	5,920	6,748	7,259	1.2	71	81	87	22.5
Total	**109,201**	**128,684**	**137,708**		**12,858**	**15,177**	**16,237**	**26.3**

Table 4-130. Population Estimates in Subwatershed 051302010502.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Gallatin	Sumner	21,495	4,346	4,305	26	15

Table 4-131. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 051302010502.

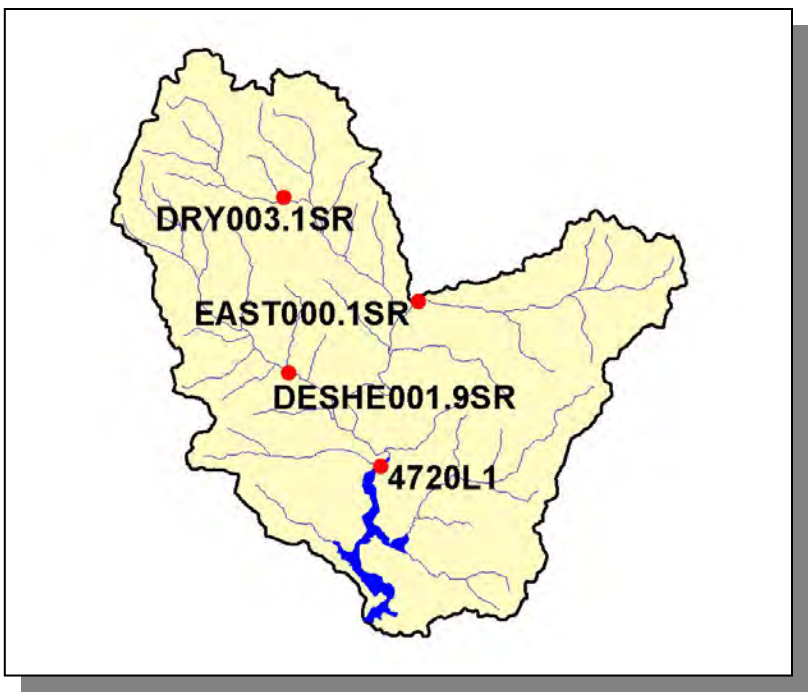

Figure 4-173. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 051302010502. *More information, including site names and locations, is provided in Appendix IV.*

4.2.E.ii.a. Point Source Contributions.

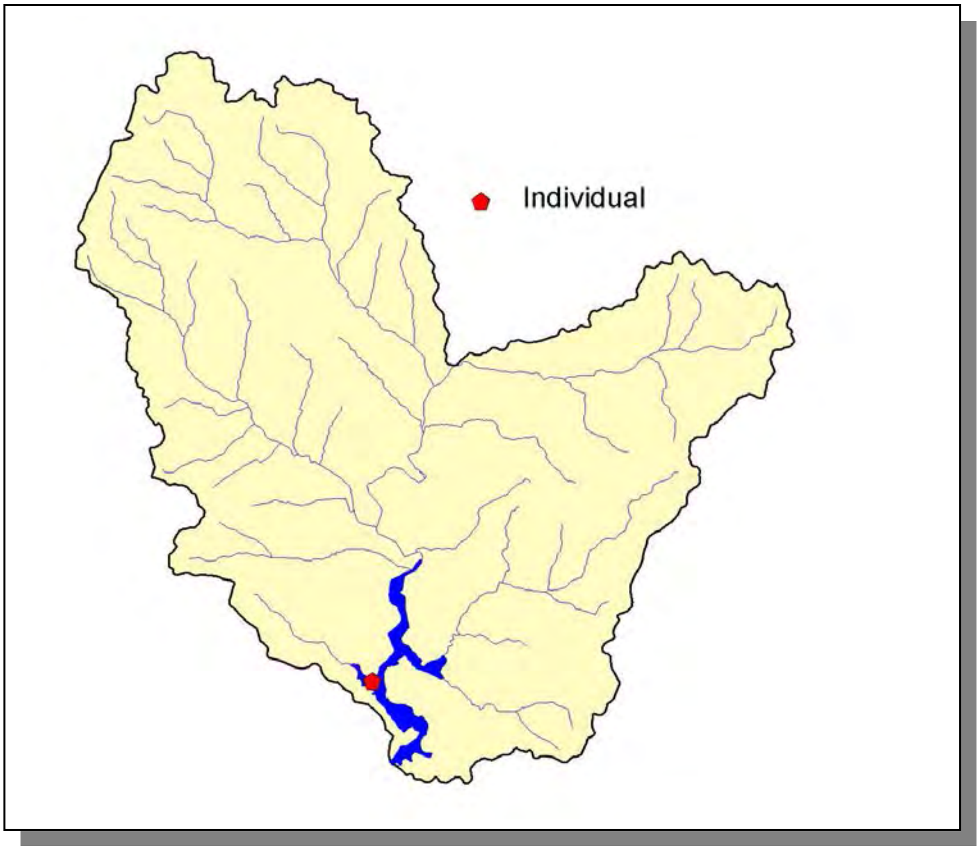

Figure 4-174. Location of Permits Issued in Subwatershed 051302010502. *More information, including the names of facilities, is provided in Appendix IV.*

Figure 4-175. Location of Active NPDES Sites in Subwatershed 051302010502. *More information, including the names of facilities, is provided in Appendix IV.*

4.2.E.ii.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
3,524	7,114	237	8	390	31

Table 4-132. Summary of Livestock Count Estimates in Subwatershed 051302010502. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), **"**Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Sumner	22,296	45,116	1,515	50	2,500	189
Trousdale	6,672	11,344	135	243	112	195

Table 4-133. Summary of Livestock Count Estimates in Sumner and Trousdale Counties. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), **"**Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.*

	INVENTORY		REMOVAL RATE	
County	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Sumner	88.2	88.2	2.0	6.3
Trousdale	30.0	30.0	0.1	0.4

Table 4-134. Forest Acreage and Annual Removal Rates (1987-1994) in Sumner and Trousdale Counties.

CROPS	TONS/ACRE/YEAR
Legumes (Pastureland)	0.43
Grass (Pastureland)	0.46
Grass (Hayland)	0.31
Legumes, Grass (Hayland)	0.23
Legumes (Hayland)	0.12
Grass, Forbs, Legumes (Mixed Pasture)	0.53
Corn (Row Crops)	12.32
Soybeans (Row Crops)	11.27
Tobacco (Row Crops)	6.47
Other Cropland not Planted	19.23
Conservation Reserve Program Lands	0.26
Farmsteads and Ranch Headquarters	0.34

Table 4-135. Annual Estimated Total Soil Loss in Subwatershed 051302010502.

CHAPTER 5

WATER QUALITY PARTNERSHIPS IN THE OLD HICKORY LAKE WATERSHED

5.1. BACKGROUND. The Watershed Approach relies on participation at the federal, state, local and nongovernmental levels to be successful. Two types of partnerships are critical to ensure success:

- Partnerships between agencies
- Partnerships between agencies and landowners

This chapter describes both types of partnerships in the Old Hickory Lake Watershed. The information presented is provided by the agencies and organizations described.

5.2. FEDERAL PARTNERSHIPS.

5.2.A. Natural Resources Conservation Service. The Natural Resources Conservation Service (NRCS), an agency of the U.S. Department of Agriculture, provides technical assistance, information, and advice to citizens in their efforts to conserve soil, water, plant, animal, and air resources on private lands.

Performance Results System (PRS) is a Web-based database application providing USDA Natural Resources Conservation Service, conservation partners, and the public fast and easy access to accomplishments and progress toward strategies and performance. The PRS may be viewed at http://prms.nrcs.usda.gov/prs. From the opening menu, select "Reports" in the top tool bar. You will select the time period that you are interested in and the conservation treatment of interest on the page that comes up. Depending on the time period of interest, you will have various report options to choose from, such as location, reporting period and program involved in the reporting. You may be required to "refresh" the page in order to get the current report to come up.

The data can be used to determine broad distribution trends in service provided to customers by NRCS conservation partnerships. These data do not show sufficient detail to enable evaluation of site-specific conditions (e.g., privately-owned farms and ranches) and are intended to reflect general trends.

Conservation Practice	Feet	Acres	Number
Conservation Buffers	675,932	37	
Erosion Control		11,038	
Nutrient Management		23,442	
Comprehensive Nutrient Management Plans			2
Pest Management		22,730	90
Grazing / Forages	27,548	9,301	
Tree and Shrub Practices		3,234	
Tillage and Cropping		11,687	
Wildlife Habitat Management		4,596	
Water Supply	9,760		10

Table 5-1. Landowner Conservation Practices in Partnership with NRCS in the Old Hickory Lake Watershed. *Data are from PRMS for October 1, 2001 through September 30, 2005 reporting period. More information is provided in Appendix V.*

5.2.B. United States Geological Survey – Tennessee Water Science Center Programs.
The United States Geological Survey (USGS) provides relevant and objective scientific information and data for public use in evaluation of the quantity, quality, and use of the Nation's water resources. National USGS water resource assessments include the National Streamflow Information Program (http://water.usgs.gov/nsip/), National Atmospheric Deposition Network (http://bqs.usgs.gov/acidrain/), the National Stream Quality Accounting Network (http://water.usgs.gov/nasqan/), and the National Water-Quality Assessment Program (http://water.usgs.gov/nawqa). For a national overview of USGS water resources programs, please visit http://water.usgs.gov. Specific information on the Upper and Lower Tennessee River NAWQA study units can be found at http://tn.water.usgs.gov/lten/tenn.html .

In addition to National assessments, the USGS also conducts hydrologic investigations and data collection in cooperation with numerous Federal, State, and local agencies to address issues of National, regional, and local concern. Hydrologic investigations conducted by the USGS Tennessee Water Science Center address scientific questions pertaining to five general thematic topics:

1. Water Use and Availability,
2. Landforms and Ecology,
3. Watersheds and Land Use,
4. Occurrence, Fate, and Transport of Contaminants, and
5. Floods and Droughts.

In support of these investigations, the USGS Tennessee Water Science Center records streamflow continuously at more than 100 gaging stations, makes instantaneous measurements of streamflow at numerous other locations as needed or requested, monitors ground-water levels Statewide, and analyzes the physical, chemical, and biologic characteristics of surface and ground waters. In addition, the Water Science Center compiles annual water-use records for the State of Tennessee and collects a variety of data in support of National USGS baseline and other networks. More information pertaining to USGS activities in Tennessee can be accessed at http://tn.water.usgs.gov .

USGS Water Resources Information on the Internet. Real-time and historical streamflow, water-level, and water-quality data at sites operated by the USGS Tennessee Water Science Center can be accessed on-line at http://waterdata.usgs.gov/tn/nwis/nwis . Data can be retrieved by county, hydrologic unit code, or major river basin using drop-down menus on the web page. For specific information or questions about USGS streamflow data, contact Donna Flohr at (615) 837-4730 or dfflohr@usgs.gov . Recent USGS Tennessee Water Science Center publications can be accessed by visiting http://tn.water.usgs.gov/pubpg.html . A searchable bibliographic database is also provided for locating other USGS reports and products addressing specific scientific topics.

5.2.C. U.S. Fish and Wildlife Service. The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people. Sustaining our nation's fish and wildlife resources is a task that can be accomplished only through the combined efforts of governments, businesses, and private citizens. The U.S. Fish and Wildlife Service (Service) works with State and Federal agencies and Tribal governments, helps corporate and private landowners conserve habitat, and cooperates with other nations to halt illegal wildlife trade. The Service also administers a Federal Aid program that distributes funds annually to States for fish and wildlife restoration, boating access, hunter education, and related projects across America. The funds come from Federal excise taxes on fishing, hunting, and boating equipment.

Endangered Species Program

Through the Endangered Species Program, the Service consults with other federal agencies concerning their program activities and their effects on endangered and threatened species. Other Service activities under the Endangered Species Program include the listing of rare species under the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended: 16 U.S.C. 1531 et seq.) and the recovery of listed species. Once listed, a species is afforded the full range of protections available under the ESA, including prohibitions on killing, harming or otherwise taking a species. In some instances, species listing can be avoided by the development of Candidate Conservation Agreements, which may remove threats facing the candidate species, and funding efforts such as the Private Stewardship Grant Program. The federally endangered gray bat (*Myotis grisescens*), pink mucket (*Lampsilis abrupta*), rough pigtoe (*Pleurobema plenum*), dromedary pearlymussel (*Dromus dromas*), and Spring Creek bladderpod (*Lesquerella perforata*) occur in the Old Hickory Lake Watershed. There were likely numerous federally listed mussel species present in the Cumberland River. The impoundment of the river has seriously degraded water quality and habitat for these species. For a complete listing of endangered and threatened species in Tennessee, please visit the Service's website at http://*cookeville.fws.gov.*

Recovery is the process by which the decline of an endangered or threatened species is stopped and reversed, and threats to the species' survival are eliminated, so that long-term survival in nature can be ensured. The goal of the recovery process is to restore listed species to a point where they are secure and self-sustaining in the wild and can be removed from the endangered species list. Under the ESA, the Service and National Marine Fisheries Service were delegated the responsibility of carrying out the recovery program for all listed species.

In a partnership with the Tennessee Chapter of The Nature Conservancy (TNC), Tennessee Wildlife Resources Agency (TWRA), and Tennessee Department of Environment and Conservation (TDEC) Division of Natural Heritage, the Service developed a State Conservation Agreement for Cave Dependent Species in Tennessee (SCA). The SCA targets unlisted but rare species and protects these species through a suite of proactive conservation agreements. The goal is to preclude the need to list these species under the ESA. This agreement covers middle and eastern Tennessee and will benefit water quality in many watersheds within the State.

In an effort to preclude the listing of a rare species, the Service engages in proactive conservation efforts for unlisted species. The program covers not only formal candidates but other rare species that are under threat. Early intervention preserves management options and minimizes the cost of recovery.

Partners for Fish and Wildlife Program

The U.S. Fish and Wildlife Service established the Partners for Fish and Wildlife Program to restore historic habitat types which benefit native fishes and wildlife. The program adheres to the concept that restoring or enhancing habitats such as wetlands or other unique habitat types will substantially benefit federal trust species on private lands by providing food and cover or other essential needs. Federal trust species include threatened and endangered species, as well as migratory birds (e.g. waterfowl, wading birds, shorebirds, neotropical migratory songbirds).

Participation is voluntary and various types of projects are available. Projects include livestock exclusion fencing, alternate water supply construction, streambank stabilization, restoration of native vegetation, wetland restoration/enhancement, riparian zone reforestation, and restoration of in-stream aquatic habitats.

HOW TO PARTICIPATE ...

- Interested landowners contact a Partners for Fish and Wildlife Biologist to discuss the proposed project and establish a site visit.
- A visit to the site is then used to determine which activities the landowner desires and how those activities will enhance habitat for trust resources. Technical advice on proposed activities is provided by the Service, as appropriate.
- Proposed cost estimates are discussed by the Service and landowner.
- A detailed proposal which describes the proposed activities is developed by the Service biologist and the landowner. Funds are competitive, therefore the proposal is submitted to the Service’s Ecosystem team for ranking and then to the Regional Office for funding.
- After funding is approved, the landowner and the Service co-sign a Wildlife Extension Agreement (minimum 10-year duration).
- Project installation begins.
- When the project is completed, the Service reimburses the landowner after receipts and other documentation are submitted according to the Wildlife Extension Agreement.

For more information regarding the Endangered Species and Partners for Fish and Wildlife programs, please contact the Cookeville Ecological Services Field Office at 931/528-6481 or visit their website at http://*cookeville.fws.gov*.

5.2.D. United States Army Corps of Engineers-Nashville District. The Nashville District, U.S. Army Corps of Engineers is one of seven districts in the Lakes and Rivers Division. The district's area is determined by the Cumberland River and the Tennessee River's watersheds and encompasses 59,000 square miles in portions of seven states. This geographic area is represented by 14 senators and 20 Congressional representatives. The Nashville District's missions include providing flood protection, recreation, hydropower, and navigation. The District also provides environmental stewardship through our Regulatory and Civil Works programs, conducts emergency response to disasters, and to performs other authorized Civil Works projects.

Within the 18,000 square mile Cumberland River Basin, overall responsibilities for the Nashville District include operation and maintenance of 10 reservoir projects. Each of these is operated for some or all of the following purposes: hydropower production, flood control, navigation, water supply, water quality, fish and wildlife, and recreation.

Within the much larger, 41,000 square mile Tennessee River Basin the Nashville District operates a series of navigation locks and has regulatory permit authority over dredge and fill activities under the Clean Water Act and the Rivers and Harbors Act.

As of 2005, the District's flood control projects have prevented more than $1.96 billion in flood damages. The District also provides flood prevention planning assistance to the states and local governments.

Lakes in the Nashville District are the most popular in the nation. More than 36 million people visited our 10 lakes last year. These recreation users had an economic impact on the region of nearly $877 million dollars. Five Nashville District lakes rank among the top 25 in Corps-wide visitation. In 2000, the District's 70 commercial concessionaires produced $1.3 million in profit, and returned more than $300,000 to the U.S. Treasury in rent payments for leases.

The Nashville District has the capacity to produce more than 914 megawatts of clean electricity, enough to power the needs of a city the size of Nashville, at nine different hydropower generations plants in the Cumberland River Basin. The District generates about $44 million in revenue from the sale of this power annually. This revenue is returned to the U.S. Treasury.

The Nashville District operates and maintains 1,175 commercially navigable river miles; almost 10% of the total within the U.S. Army Corps of Engineers. The district operates and maintains 14 navigation lock projects; nine on the Tennessee River, four on the Cumberland River, and one on the Clinch River. There are more than 40,000 commercial and recreational lockages annually. More than 74 million tons of commodities passed through these 14 locks during 2005. Wilson Lock in Alabama has the highest single lift east of the Rocky Mountains, between 93 and 100 feet, depending on the current river water level.

Regulatory Program

The U.S. Army Corps of Engineers has been involved in regulating certain activities in the nation's water since 1890. Prior to 1968, the primary thrust for the regulatory program was the protection of navigation. As a result of new laws and judicial decisions, the program has evolved to one that considers the full public interest by balancing the favorable impacts against detrimental impacts. The Nashville District annually handles more than 3,000 regulatory actions, 97% of which were evaluated in less than 60 days.

Section 10 of the Rivers and Harbors Act of 1899 **-** requires approval prior to the accomplishment of any work in or over navigable waters of the United States, or which affects the course, location, condition or capacity of such waters. Typical activities requiring Section 10 permits are:

- Construction of piers, wharves, bulkheads, dolphins, marinas, ramps, and cable/pipeline crossings.
- Dredging and excavation

Section 404 of the Clean Water Act **-** requires approval prior to discharging dredged or fill material into the waters of the United States. Typical activities requiring Section 404 permits are:

- Depositing of fill or dredged material in waters of the U.S. or adjacent wetlands.
- Site development fill for residential, commercial, or recreational developments.
- Construction of revetments, breakwaters, levees, dams, dikes, and weirs.
- Placement of riprap and road fills.

Civil Works Program

The Corps' ongoing Civil Works responsibilities date back to the early 1800's when Congress authorized the removal of navigation hazards and obstacles. Over the years, succeeding Administrations and Congresses have expanded the Corps' missions to include most all water-related planning, development, and construction areas where a Federal interest is involved. Funds for Congressionally Authorized Projects are provided through Energy and Water Appropriations Acts and through contributions from non-Federal entities for specific projects.

Civil Works projects may also be funded under the Continuing Authorities Program (CAP). Congress has provided the Corps with standing authorities to study and build specific water resources projects for specific purposes and with specified spending limits. CAP projects are usually implemented in a faster time frame, are limited in complexity, have Federal cost limits, are approved by the Division Commander, and do not need Congressional authorization.

Nashville District Corps of Engineers Water Quality Program

The Nashville District Corps of Engineers collects a significant volume of physical, chemical, and biological water quality data every year. These data are collected at representative points both within all ten Nashville District lakes, on various major and/or representative inflow streams, and in the tailwaters. Where there are known water quality problems, such as seasonal low DO in certain turbine releases, monitoring is significantly intensified to track and quantify a particular problem. This information is used to make informed decisions about how a project's powerplant should operate. Baseline, continuous recording, multiparameter water quality monitors keep track of conditions at critical points on the main stem of the Cumberland River from the mouth of the Obey River near Celina, Tennessee to the tailwater of Lake Barkley in western Kentucky. The monitor at the Old Hickory Dam tailwater, in particular, provides key information, since water discharged from Old Hickory must be able to absorb inputs from Nashville which is just downstream.

The data collected by the Nashville District are used to help determine watershed water quality trends and to provide for better management of the comprehensive reservoir system. The data are essential for running predictive water quality models, a growing trend in Corps' water management practice.

Additional information concerning projects, programs, and activities of the Nashville District Corps of Engineers can be obtained on the World Wide Web at http://www.orn.usace.army.mil/

Environmental Education

Environmental education opportunities are provided to area school age children by the Nashville District Corps of Engineers. Water Quality personnel have participated in environmental awareness programs for the past several years at the majority of Nashville District lakes. These programs are organized by the local lake Resource Management staff and involve various area schools. The programs provided allow students to have a "hands on" experience in water quality surveillance techniques. Typically the programs include an interactive discussion of overall water quality issues. This is supplemented with demonstrations of sophisticated water quality instrumentation, collection and analysis of biological specimens from local aquatic environments, and viewing of reference materials and preserved specimens. The value of such environmental education is enormous, because it reaches young people early in their lives and exposes them to a scientific learning experience that is impossible to duplicate in a formal classroom. This experience hopefully contributes to a greater lifelong awareness by the individual of the importance of conserving and improving water quality and wise use of water resources.

Additional Information

To obtain additional information about the District, please refer to the home page at: http://www.lrn.usace.army.mil/, or contact the following offices:

Public Affairs Office (General Information): (615) 736-7161
Regulatory Branch: (615) 369-7500

5.3. STATE PARTNERSHIPS.

5.3.A. TDEC Division of Water Supply. The Source Water Protection Program, authorized by the 1996 Amendments to the Safe Drinking Water Act, outline a comprehensive plan to achieve maximum public health protection. According to the plan, it is essential that every community take these six steps:

1) Delineate the drinking water source protection area
2) Inventory known and potential sources of contamination within these areas
3) Determine the susceptibility of the water supply system to these contaminants
4) Notify and involve the public about threats identified in the contaminant source inventory and what they mean to their public water system
5) Implement management measures to prevent, reduce or eliminate threats
6) Develop contingency planning strategies to deal with water supply contamination or service interruption emergencies (including natural disaster or terrorist activities).

Source water protection has a simple objective: to prevent the pollution of the lakes, rivers, streams, and ground water (wells and springs) that serve as sources of drinking water before they become contaminated. This objective requires locating and addressing potential sources of contamination to these water supplies. There is a growing recognition that effective drinking water system management includes addressing the quality and protection of the water sources.

Source Water Protection has a significant link with the Watershed Management Program goals, objectives and management strategies. Watershed Management looks at the health of the watershed as a whole in areas of discharge permitting, monitoring and protection. That same protection is important to protecting drinking water as well. Communication and coordination with a multitude of agencies is the most critical factor in the success of both Watershed Management and Source Water Protection.

Watershed management plays a role in the protection of both ground water and surface water systems. Watershed Management is particularly important in areas with karst (limestone characterized by solution features such as caves and sinkholes as well as disappearing streams and spring), since the differentiation between ground water and surface water is sometimes nearly impossible. What is surface water can become ground water in the distance of a few feet and vice versa.

Source water protection is not a new concept, but an expansion of existing wellhead protection measures for public water systems relying on ground water to now include surface water. This approach became a national priority, backed by federal funding, when the Safe Drinking Water Act amendments (SDWA) of 1996 were enacted. Under this Act, every public drinking water system in the country is scheduled to receive an assessment of both the sources of potential contamination to its water source of the threat these sources may pose by the year 2003 (extensions were available until 2004). The assessments are intended to enhance the protection of drinking water supplies within existing programs at the federal, state and local levels. Source water assessments were mandated and funded by Congress. Source water protection will be left up to the individual states and local governments without additional authority from Congress for that progression.

Tennessee's Wellhead Protection Rules were revised as of October 29, 2005 to include requirements for similar protection for public water systems using surface water sources under the heading of Drinking Water Source Protection Rule (1200-5-1-.34) in addition to the previous requirements for wellhead protection for public water systems using ground water sources. The rule addresses surface or ground water withdrawals in the vicinity of public water sources as well as potential contaminant sources threatening public water sources to reflect the amended prohibitions in the 2002 Amendments to the Tennessee Safe Drinking Water Act, TCA 68-221-771. There are additional reporting requirements of potential contaminant source inventories and emergency response for the public water systems as well. The Division of Water Supply will be able to use the Drinking Water Source Protection Rule to work in complimentary fashion with the Division of Water Pollution Control and other Departmental agencies in activities to protect public water sources.

As a part of the Source Water Assessment Program, public water systems are evaluated for their susceptibility to contamination. These individual source water assessments with susceptibility analyses are available to the public at http://www.state.tn.us/environment/dws as well as other information regarding the Source Water Assessment Program and public water systems.

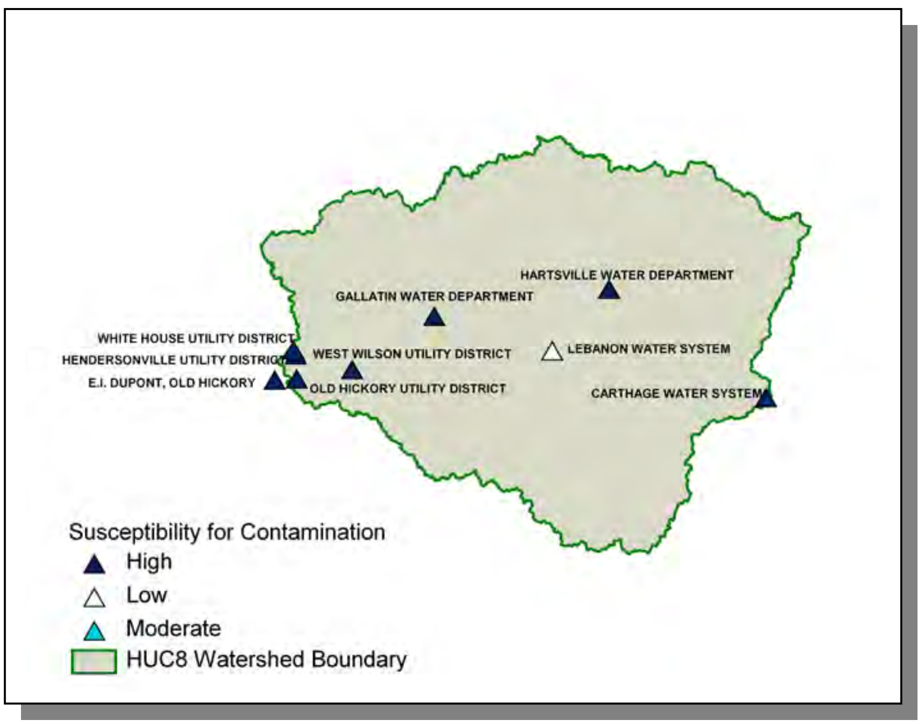

Figure 5-1. Susceptibility for Contamination in the Old Hickory Lake Watershed.

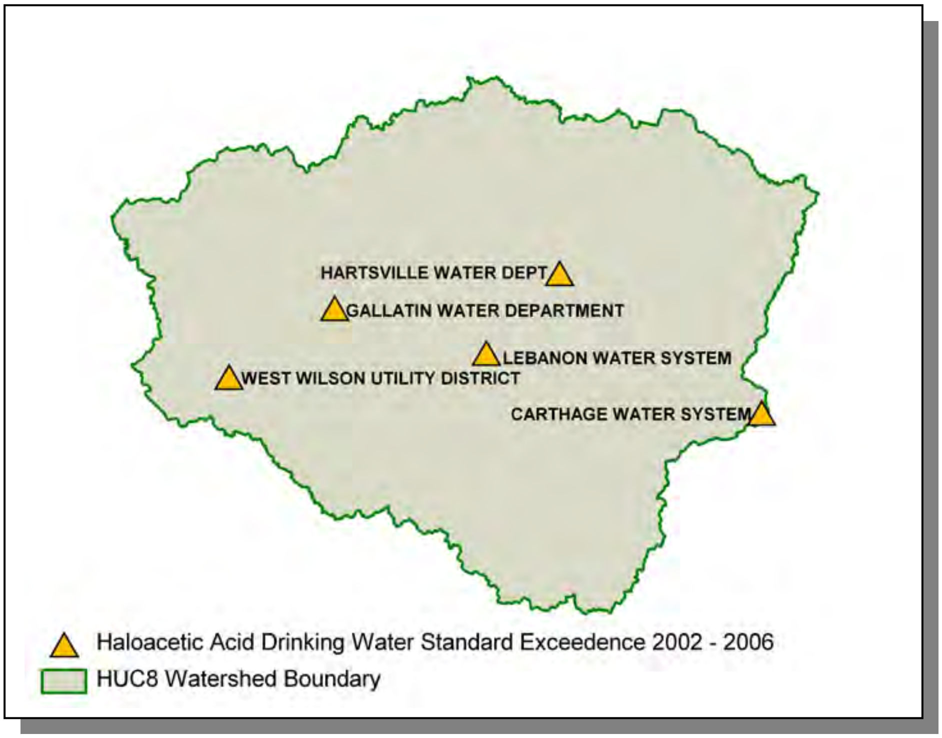

Figure 5-2. Exceedences of the Haloacetic Acid Drinking Water Standard in the Old Hickory Lake Watershed.

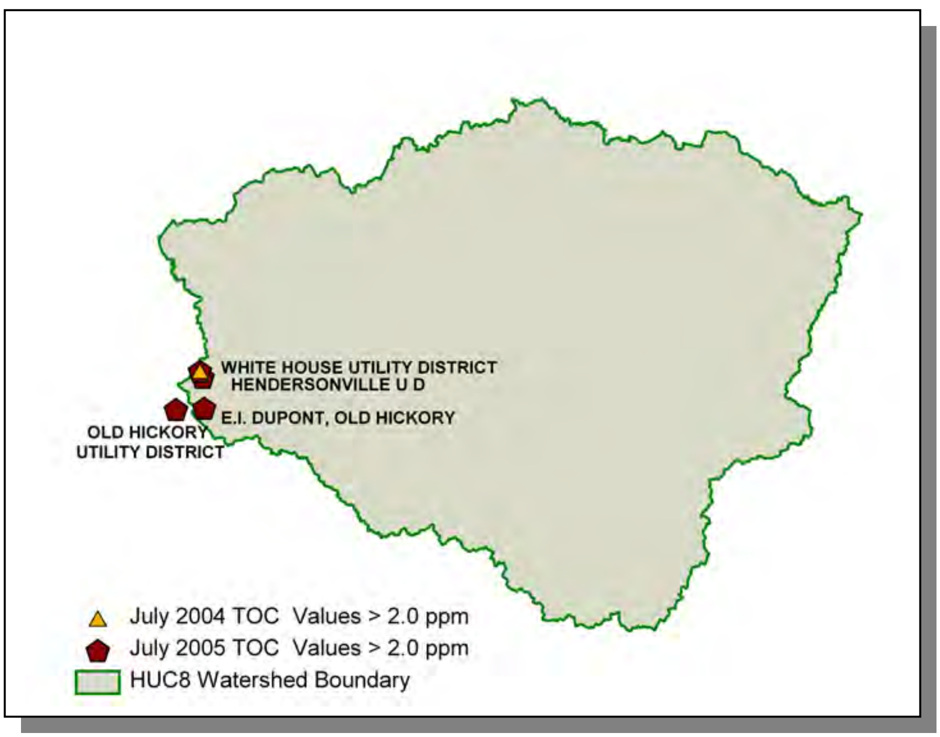

Figure 5-3. July 2004 and 2005 Raw Water Total Organic Carbon (TOC) Analysis in the Old Hickory Lake Watershed.

For further discussion on ground water issues in Tennessee, the reader is referred to the Ground Water Section of the 305(b) Water Quality Report at http://www.tdec.net/water.shtml.

5.3.B. State Revolving Fund. TDEC administers the state's Clean Water State Revolving Fund Program. Amendment of the Federal Clean Water Act in 1987 created the Clean Water State Revolving Fund (SRF) Program to provide low-interest loans to cities, counties, and utility districts for the planning, design, and construction of wastewater facilities. The U.S. Environmental Protection Agency awards annual capitalization grants to fund the program and the State of Tennessee provides a twenty-percent funding match. TDEC has awarded loans totaling approximately $550 million since the creation of the SRF Program. SRF loan repayments are returned to the program and used to fund future SRF loans.

SRF loans are available for planning, design, and construction of wastewater facilities, or any combination thereof. Eligible projects include new construction or upgrading/expansion of existing facilities, including wastewater treatment plants, pump stations, force mains, collector sewers, interceptors, elimination of combined sewer overflows, and nonpoint source pollution remedies.

SRF loan applicants must pledge security for loan repayment, agree to adjust user rates as needed to cover debt service and fund depreciation, and maintain financial records that follow governmental accounting standards. SRF loan interest rates range from zero percent to market rate, depending on the community's per-capita income, taxable sales, and taxable property values. Most SRF loan recipients qualify for interest rates between 2 and 4 percent. Interest rates are fixed for the life of the term of the loan. The maximum loan term is 20 years or the design life of the proposed wastewater facility, whichever is shorter.

TDEC maintains a Priority Ranking System and Priority List for funding the planning, design, and construction of wastewater facilities. The Priority Ranking List forms the basis for funding eligibility determinations and allocation of Clean Water SRF loans. Each project's priority rank is generated from specific priority ranking criteria and the proposed project is then placed on the Project Priority List. Only projects identified on the Project Priority List may be eligible for SRF loans. The process of being placed on the Project Priority List must be initiated by a written request from the potential SRF loan recipient or their engineering consultant. SRF loans are awarded to the highest priority projects that have met SRF technical, financial, and administrative requirements and are ready to proceed.

Since SRF loans include federal funds, each project requires development of a Facilities Plan, an environmental review, opportunities for minority and women business participation, a State-approved sewer use ordinance and Plan of Operation, and interim construction inspections.

For further information about Tennessee's Clean Water SRF Loan Program, call (615) 532-0445 or visit their Web site at http://www.tdec.net/srf.

5.3.C. Tennessee Department of Agriculture. The Tennessee Department of Agriculture's Water Resources Section consists of the federal Section 319 Nonpoint Source Program and the Agricultural Resources Conservation Fund Program. Both of these are grant programs which award funds to various agencies, non-profit organizations, and universities that undertake projects to improve the quality of Tennessee's waters and/or educate citizens about the many problems and solutions to water pollution. Both programs fund projects associated with what is commonly known as "nonpoint source pollution."

The Tennessee Department of Agriculture's Nonpoint Source Program (TDA-NPS) has the responsibility for management of the federal Nonpoint Source Program, funded by the US Environmental Protection Agency through the authority of Section 319 of the Clean Water Act. This program was created in 1987 as part of the reauthorization of the Clean Water Act, and it established funding for states, territories and Indian tribes to address NPS pollution. Nonpoint source funding is used for installing Best Management Practices (BMPs) to stop known sources of NPS pollution, training, education, demonstrations and water quality monitoring. The TDA-NPS Program is a non-regulatory program, promoting voluntary, incentive-based solutions to NPS problems. The TDA-NPS Program basically funds three types of programs:

- BMP Implementation Projects. These projects aid in the improvement of an impaired waterbody, or prevent a non-impaired water from becoming listed on the 303(d) List.

- Monitoring Projects. Up to 20% of the available grant funds are used to assist the water quality monitoring efforts in Tennessee streams, both in the state's 5-year watershed monitoring program, and also in performing before-and-after BMP installation, so that water quality improvements can be verified. Some monitoring in the Old Hickory Lake Watershed was funded under an agreement with the Tennessee Department of Agriculture, Nonpoint Source Program (U.S. Environmental Protection Agency Assistance Agreement C99944674-04-0).

- Educational Projects. The intent of educational projects funded through TDA-NPS is to raise the awareness of landowners and other citizens about practical actions that can be taken to eliminate nonpoint sources of pollution to the waters of Tennessee.

The Tennessee Department of Agriculture Agricultural Resources Conservation Fund Program (TDA-ARCF) provides cost-share assistance to landowners across Tennessee to install BMPs that eliminate agricultural nonpoint source pollution. This assistance is provided through Soil Conservation Districts, Resource Conservation and Development Districts, Watershed Districts, universities, and other groups. Additionally, a portion of the TDA-ARCF is used to implement information and education projects statewide, with the focus on landowners, producers, and managers of Tennessee farms and forests.

Participating contractors in the program are encouraged to develop a watershed emphasis for their individual areas of responsibility, focusing on waters listed on the Tennessee 303(d) List as being impaired by agriculture. Current guidelines for the

TDA-ARCF are available. Landowners can receive up to 75% of the cost of the BMP as a reimbursement.

Since January of 1999, the Department of Agriculture and the Department of Environment and Conservation have had a Memorandum of Agreement whereby complaints received by TDEC concerning agriculture or silviculture projects would be forwarded to TDA for investigation and possible correction. Should TDA be unable to obtain correction, they would assist TDEC in the enforcement against the violator. More information forestry BMPs is available at:

http://www.state.tn.us/agriculture/forestry/bmpmanual.html

The complaint form is available at:

http://www.state.tn.us/environment/wpc/forms/wqlogging_cn1274.doc

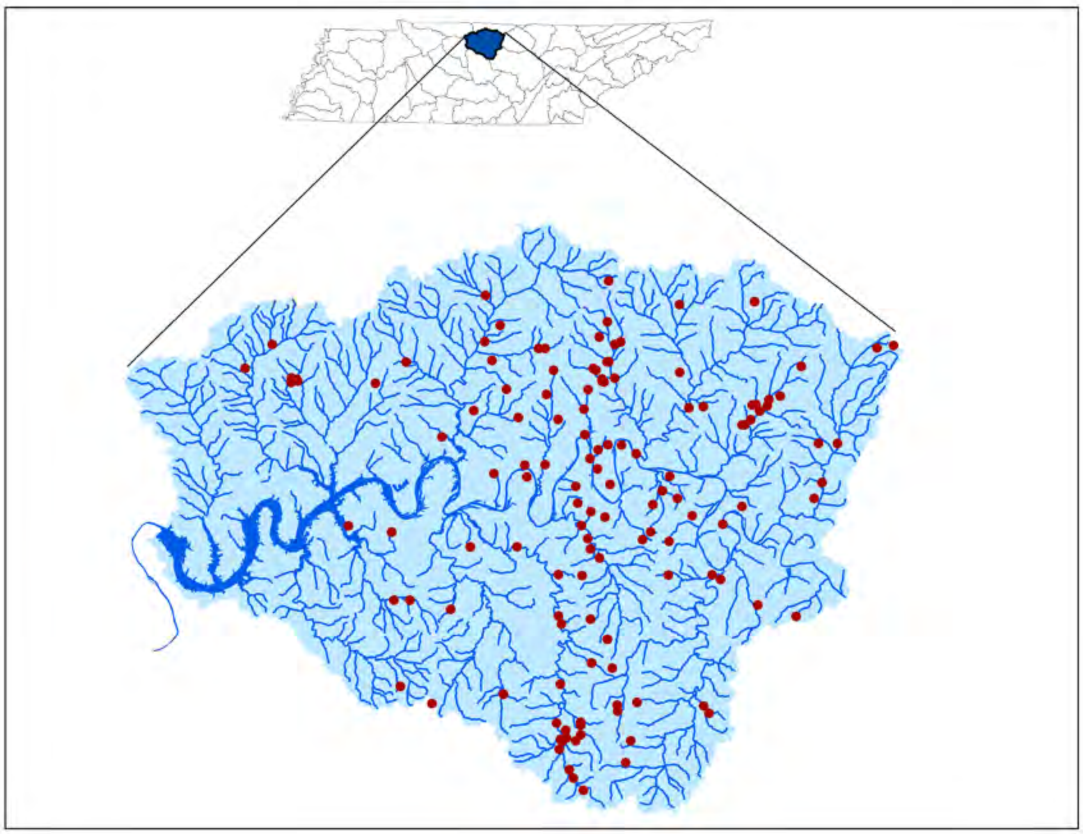

Figure 5-4. Location of BMPs installed from 1999 through 2005 in the Old Hickory Lake Watershed with Financial Assistance from the Tennessee Department of Agriculture's Nonpoint Source and Agricultural Resources Conservation Fund Grant Programs. *More information is provided in Appendix V.*

5.4. LOCAL INITIATIVES.

5.4.A. The Cumberland River Compact. The mission of the Cumberland River Compact is to enhance the water quality of the Cumberland River and its tributaries through education and by promoting cooperation among citizens, businesses, and agencies in Kentucky and Tennessee.

We are a unique non-profit group that believes we can have both a strong economy and a healthy environment. The Compact is made up of businesses, individuals, community organizations and agencies working in the Cumberland River watershed. Over 2 million people share this watershed. Compact members work with all interested organizations and individuals to help ensure that our rivers and streams continue to provide us with clean water, bountiful crops, healthy fisheries and abundant recreational opportunities.

Since 1997, the Compact has set out to create a Watershed Outreach Program in each of the 14 watersheds that make up the Cumberland Basin. Members and staff of the Compact work with local communities to develop watershed forums where citizens can come together to learn more about their watershed and participate in developing a shared vision for the future. We welcome your interest and participation in this challenging project.

For more information about the Cumberland River Compact and to learn more about your local watershed, contact us at info@cumberlandrivercompact.org ;615-837-1151 or join us on the web at http://www.cumberlandrivercompact.org.

The Cumberland River Compact helped form the Old Hickory Lake Watershed Association and reports that their mission is *"to protect and improve our watershed environment through outreach and stewardship*."

5.4.B. Old Hickory Watershed Association. The Old Hickory Watershed Association was formed in 2006 under the direction of the Cumberland River Compact. The Compact held a series of public meetings in the watershed with interested, concerned citizens. Out of these meetings a group of citizens formed the Old Hickory Watershed Association. They elected officers and adopted a mission statement which is:

"The Old Hickory Watershed Association strives to protect and improve our watershed through outreach and stewardship."

Members of the Old Hickory Watershed have participated in several waterfront clean-ups. They have hosted booths at a variety of events to educate the public on the importance of best water management practices in the Old Hickory Watershed. Members work with various local officials and the U.S. Army Corps of Engineers in enhancing the water quality in the Old Hickory Watershed. The goal of these activities is to educate and involve the public and local officials about protecting and enhancing our beautiful and necessary resource.

For more information, visit the Old Hickory Watershed home page at:

www.oldhickorywatershed.org.

5.4.C. The Central Basin RC&D Council. Resource Conservation & Development (RC&D) is a program of the USDA Natural Resources Conservation Service, which is administered at the local level by a non-profit council that is representative of the established area with the assistance of a Federal Coordinator. The Central Basin RC&D area was designated in January of 2002. The Council covers Davidson, Rutherford, Sumner, Trousdale, Williamson & Wilson counties in the Middle Tennessee area. The area is named for the geologic feature known as the Central or Nashville Basin which makes up the majority of the areas land mass with the remainder being part of the Highland Rim.

The Mission of the Central Basin RC&D Council is to promote the wise utilization of natural, cultural and other resources creating managed and sustainable growth that will improve the overall quality of life. The Vision of the Council is to create a diverse, cooperative, productive and effective working atmosphere that will identify and address needs and opportunities.

The RC&D Council works with local government, communities and individuals to make improvements by combining natural resource conservation with economic and social benefits.

5.4.D. The Nature Conservancy (TNC). The Tennessee State Wildlife Action Plan (SWAP), formerly known as the Comprehensive Wildlife Conservation Strategy (CWCS), was developed by the Tennessee Wildlife Resources Agency with assistance from The Nature Conservancy in 2005. Congress mandated that each state and territory in the United States develop a SWAP as a requirement for continued receipt of federal State Wildlife Grant funding. These plans require the completion of 8 key elements of wildlife planning: 1) a list of animal species of greatest conservation need, 2) information about the distribution and abundance of species targets, 3) locations and relative conditions of key habitats, 4) descriptions of problems affecting target species and their habitats, 5) descriptions of conservation actions and priorities for conserving target species and habitats, 6) details for monitoring target species, conservation actions, and adaptive management, 7) discussion of plans to review the SWAP at specific intervals, and 8) information about coordination and implementation of the SWAP with major stakeholders. In Tennessee, the SWAP was integrated into a spatial model using Geographic Information Systems (GIS) and other database technology.

Priority aquatic, terrestrial, and subterranean areas for conservation were identified across the state. Priorities were determined in the GIS model based upon relative differences in species rarity, population viability, and potential mobility of species across habitat units. Priority problems affecting species and needed conservation actions are detailed across each region of the state For complete information about the Tennessee SWAP, please visit:
http://www.state.tn.us/twra/cwcs/cwcsindex.html to read or download the full report.

Contact:
Chris Bullington
State Conservation Planning Manager
The Nature Conservancy, TN Chapter
2021 21st Avenue South; Suite C-400
Nashville, TN 37212
phone: (615) 383-9909 x 227

5.4.E. Hull-York Lakeland Resource Conservation and Development (RC&D) Council. The RC&D Council mission is to *"Provide leadership to local communities to improve quality of life and conserve natural resources by organizing partners and facilitating technical and financial assistance resources".*

Hull-York Lakeland RC&D Council covers 14-counties of the Upper Cumberland area. These counties are: Macon, Clay, Pickett, Fentress, Overton, Jackson, Smith, DeKalb, Putnam, Cumberland, White, Van Buren, Warren and Cannon. Recreation in this area is dependant on a high standard of water quality. The main recreational attractions in the RC&D area are Dale Hollow Lake, Center Hill Lake, Cordell Hull Lake, and the scenic trout waters of the Caney Fork River. These resources attract large numbers of visitors to the area each year, and Hull-York Lakeland therefore has a vested interest in insuring the water quality of its watersheds.

Hull-York Lakeland RC&D Council has many local, state, federal and private partners with similar interests in the RC&D area. These partners join forces to engage in programs and projects that help individual land users and communities improve and conserve the natural resources, and engage in projects that enhance community and economic development activities. Hull-York Lakeland was the first RC&D area authorized by USDA in the state of Tennessee, and one of the first in the nation. Hull-York Lakeland was authorized in 1966.

Past projects have included Cane Creek Park and Lake in Putnam County, Camp Discovery in Jackson County, farmers markets is several counties, and emergency services consolidation projects. Current projects include a 319(h) grant for development of a watershed management plan in the Post Oak Creek Watershed. This watershed is 16,000+ acres and has been identified on the Tennessee 303(d) list of impaired waters as not meeting intended uses due to agriculture. The RC&D Council's goal is to develop a plan that identifies needs and problems in the watershed in order to have it removed from the 303(d) list, and then submit a project for funding practices that address those needs and problems.

Hull-York Lakeland RC&D Council has received a grant from the Tennessee Department of Agriculture – Agriculture Resources Conservation Fund (TDA – ARCF) with which they have purchased a tree planter in order to promote tree planting in riparian corridors to improve and enhance water quality. The Council has also received grants from TDA-ARCF, TWRA, and Quail Unlimited in order to purchase a Native Warm Season Grass No-Till Drill. This drill was purchased in May 2006 to promote the planting of Native Warm Season Grasses in the Upper Cumberland Area to create and enhance wildlife habitat, as well as establish buffers and field borders to improve water quality.

In 2006 Hull-York Lakeland has so far received $108,442 in direct grants, and has assisted communities in the receipt of $445,692. These funds are being used to address water quality and community development issues. For more information about Hull-York Lakeland RC&D Council contact Jeff Sanders at (931) 528-6472, ext. 110, or jeff.sanders@tn.usda.gov. You can also go to the council's website at: http://www.hylrcd.org.

CHAPTER 6

RESTORATION STRATEGIES IN THE OLD HICKORY LAKE WATERSHED

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 Old Hickory Lake 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 permitees, 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 Old Hickory Lake Watershed public meeting was held October 5, 1999 as a joint meeting with the Barren River Watershed at the Volunteer State Community College Gallatin campus. 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

- Silt from Construction
- Rapid Development
- Low Dissolved oxygen in Old Hickory Lake, especially near Hendersonville
- Litter

6.2.B. Year 3 Public Meeting. The second Old Hickory Lake Watershed public meeting was held November 26, 2001 as a joint meeting with the Barren River Watershed at the Volunteer State Community College Gallatin campus. 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

- Hendersonville (Gallatin Road and Indian lake Road) lift stations have a bad odor and some fecal matter in stream
- The Waste Water Treatment Plant at Town Creek and East Fork Station Creek (Gallatin) bypasses after a heavy rain
- Increased silt in Old Hickory Lake and main tributaries
- Silt in Town Creek over the past 20 years
- Construction on Bartons and Bledsoe Creeks
- Municipal dischargers of "acceptable" levels of pollutants. It is not "acceptable" if there are water quality violations

6.2.C. Year 5 Public Meeting. The third scheduled Old Hickory Lake Watershed public meeting was held October 2, 2007 at the Electric Department in Gallatin and featured eight 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
- Old Hickory Watershed Association educational display

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

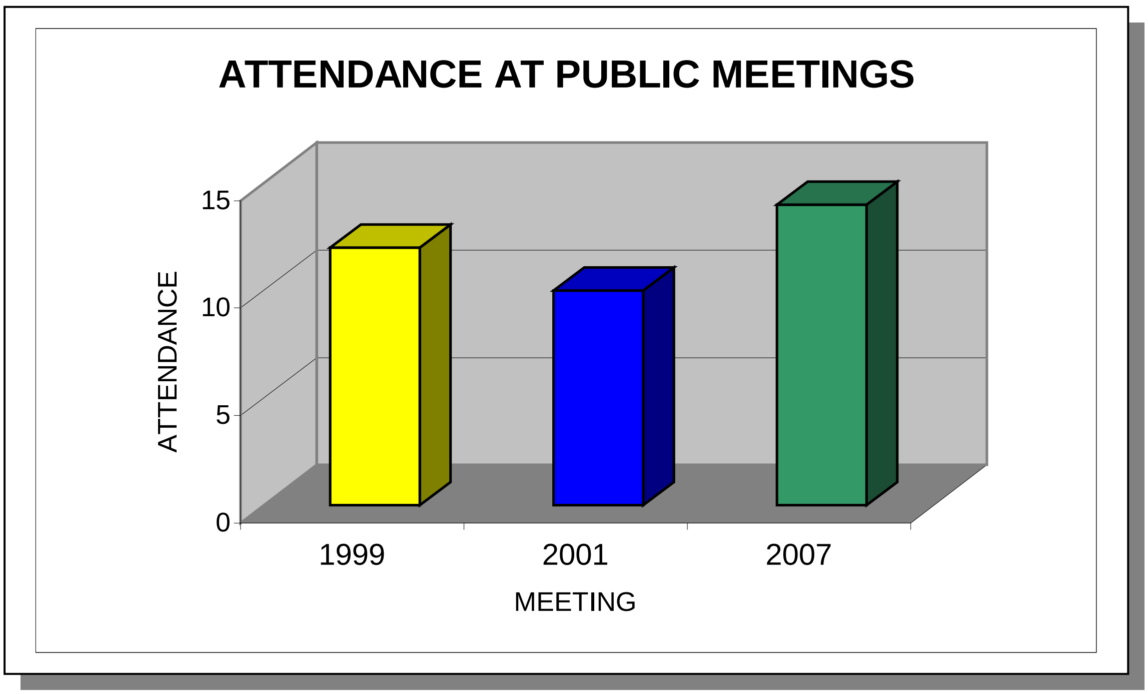

Figure 6-1. Attendance at the Old Hickory Lake Watershed Public Meetings. *Attendance numbers do not include TDEC personnel. Meetings in 1999 and 2001 represent Old Hickory Lake and Barren River Watersheds joint public meetings.*

Figure 6-2. At Watershed Meetings, Citizens Learn About Benthic Macroinvertebrates (Small Invertebrates that Live on the Bottom of the Streams) in Their Watershed.

Figure 6-3. Networking is a Valuable Outcome of Watershed Meetings.

Figure 6-4. Watershed Meetings Bring Citizens, Discharge Permit Holders, Universities, Local Interest Groups, NGOs, and Staff Together to Discuss the Condition of the Watershed.

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

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/.

TMDLs are prioritized for development based on many factors.

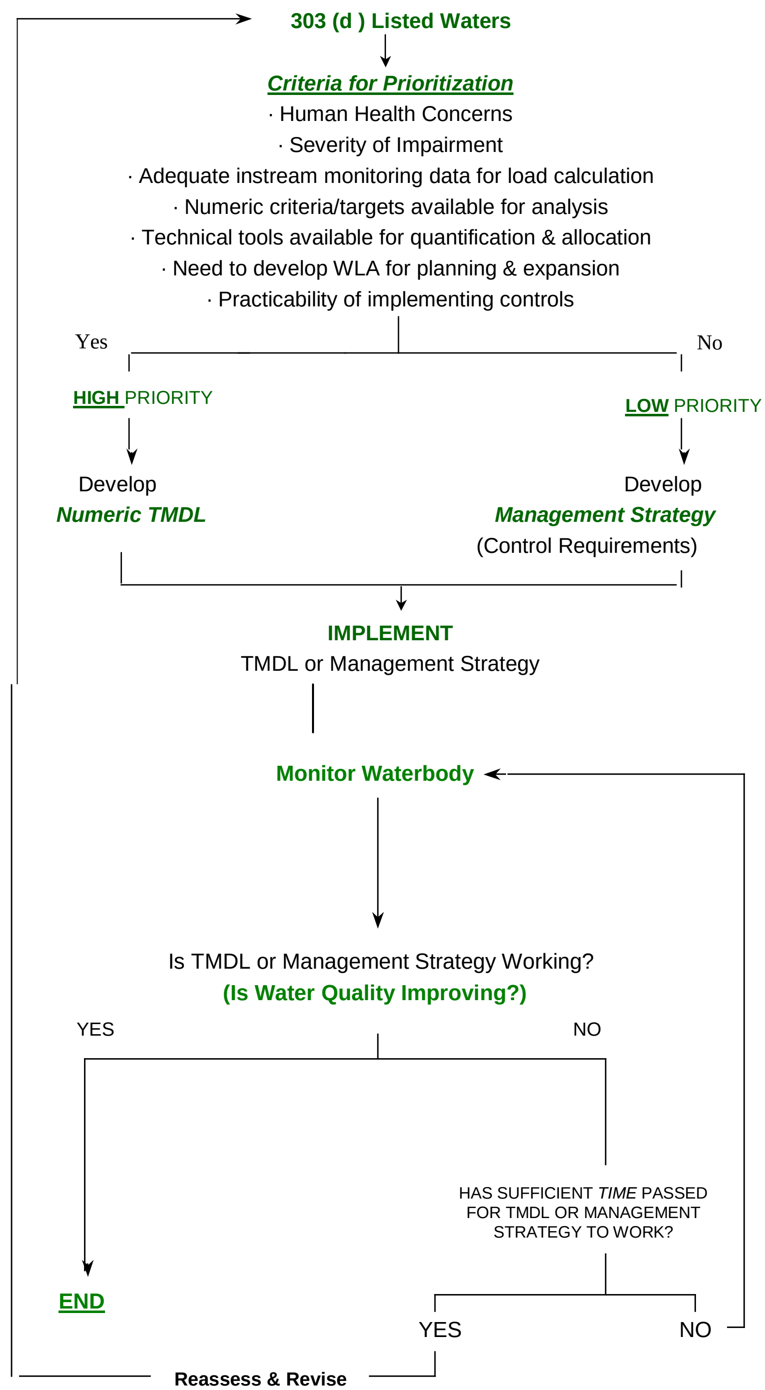

Figure 6-6. Prioritization Scheme for TMDL Development.

6.3.B. Nonpoint Sources

Common nonpoint sources of pollution in the Old Hickory Lake Watershed include urban storm water runoff, riparian vegetation removal and other habitat alterations, as well as inappropriate land development, road construction, and 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 Old Hickory Lake Watershed. 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.

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.

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, which in the Old Hickory Lake Watershed include Gallatin, Hendersonville, Lakewood, Lebanon, Mt. Juliet, Sumner County, and Wilson County.

The explosive housing and land development activities occurring through the Hendersonville-Gallatin corridor, and Mt. Juliet-Lebanon area, have made the development of these local programs essential, but—unfortunately—has also resulted in additional sediment runoff into many area streams. Examples of streams seriously impaired by sediment and land development in the Old Hickory Lake Watershed are Town Creek, the North and Middle Forks of Cedar Creek, Wilson Creek, and Sinking Creek.

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 Old Hickory Lake Watershed suffer from varying degrees of streambank erosion. When steam channels are altered, banks can become unstable and highly erodable. 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 many stream channels in this watershed, although none severely enough to cause a loss of use impairment at this time.

Several agencies such as the NRCS 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, especially in the more rural areas of southeastern Wilson County and portions of Trousdale and Smith Counties, could benefit from these types of projects, as well as tributaries to Old Hickory Lake in Smith County.

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

Voluntary activities

- Re-establish bank vegetation.
- 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 (Neal Branch, Big Caney Branch, Round Lick Creek).

Additional strategies

- Better community planning and MS4 oversight for the impacts of development on small streams, especially development in growing areas (Town Creek in Gallatin, Cedar Creek, Sinking and Bartons Creek in Lebanon, and urban growth areas in Carthage).
- 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).
- Encourage or require strong local buffer ordinances.
- Implement additional restrictions on logging in streamside management zones.
- Limit clearing of stream and ditch banks or other alterations (Little Goose Creek). *Note: Permits may be required for any work along streams.*
- Limit road and utility crossings of streams through better site design.
- Restrict the use of off-highway vehicles on stream banks and in stream channels.

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 throughout the Old Hickory Lake Watershed, due both to agricultural and residential/commercial land uses. Nearly all impacted streams would benefit from the establishment of more extensive riparian buffer zones, including Sinking Creek, Spring Creek, and Round Lick Creek, and tributaries to Old Hickory Lake).

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. Sinking Creek in Lebanon is an example of a stream that had to be temporarily posted due to chronic sewage overflows.

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 Cookeville and Nashville Environmental Field Offices 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, eight stream systems in the Old Hickory Lake Watershed are known to have excessive pathogen contamination. Round Lick Creek, Sinking Creek, and Bartons Creek are impacted by urban areas, with contributions of bacterial contamination coming from storm water runoff, sewage collection system leaks, and treatment plants operation failures. Many streams in agricultural watersheds show elevated bacterial levels including Spring Creek, Johnson Branch, Neal Branch, Beech Log Creek, and Little Goose Creek.

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.

Enforcement 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.

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.
- Develop and enforce leash laws and controls on pet fecal material.
- Greater efforts by sewer utilities to identify leaking lines or overflowing manholes.
- Review the pathogen limits in discharge permits to determine the need for further restriction.

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. Nearly every stream in the Old Hickory Lake Watershed within agricultural areas would benefit from additional riparian buffers.
- 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 (Gordonsville STP and Carthage STP).
- Impose timely and appropriate enforcement for noncomplying sewage treatment plants, large and small, and their collection systems (Sinking Creek, Bartons Creek).
- 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.
- 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.

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 Old Hickory Lake 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. Examples of streams that could benefit from these measures include the many small, urbanized tributaries within the urban centers of Hendersonville, Gallatin, Mt. Juliet, and Lebanon, as well as the Cumberland River which receives a large amount of storm water runoff from road surfaces, parking lots, and factories in Carthage.

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.

Enforcement strategies

- Continue to prohibit illicit discharges to storm drains and to search them out.
- Strengthen litter law enforcement at the local level.

Regulatory Strategies

- 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.

Some notable streams in the Old Hickory Lake Watershed that have suffered significant harm from alterations include Town Creek, Drakes Creek, Cedar Creek, North Creek, Spencer Creek, Sinking Creek, Little Goose Creek, and Rankin Branch.

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.
- Encourage developers to avoid extensive use of culverts in streams.

Current regulations

- Restrict modification of streams by means such as culverting, lining, or impounding.
- Require mitigation for impacts to streams and wetlands when modifications are allowed.
- Require permitting of all rock harvesting operations.

Additional Enforcement

- Increased enforcement may be needed when violations of current regulations occur, especially for illicit gravel dredging.

6.3.B.vi. 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 Old Hickory Lake 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 Old Hickory Lake Watershed.*

6.4.A. Municipal Permits

TN0022993 Carthage STP

Discharger rating: Minor
City: Carthage
County: Smith
EFO Name: Cookeville
Issuance Date: 4/1/04
Expiration Date: 2/27/09
Receiving Stream(s): Cumberland River (Old Hickory Reservoir) at mile 308
HUC-12: 051302010101
Effluent Summary: Treated municipal wastewater from Outfall 001
Treatment system: Activated sludge

Segment	TN05130201001_1000
Name	Old Hickory Reservoir
Size	27439
Unit	Acres
First Year on 303(d) List	-
Designated Uses	Fish and Aquatic Life (Supporting), Livestock Watering and Wildlife (Supporting), Recreation (Supporting), Industrial Water Supply (Supporting), Domestic Water Supply (Supporting), Irrigation (Supporting)
Causes	N/A
Sources	N/A

Table 6-1. Stream Segment Information for Carthage 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
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
Fecal Coliform	All Year	1000	#/100mL	DMax Conc	3/Week	Grab	Effluent
Fecal Coliform	All Year	200	#/100mL	MAvg Geo 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	209	lb/day	DMax Load	3/Week	Composite	Effluent
TSS	All Year	30	mg/L	WAvg Conc	3/Week	Composite	Effluent
TSS	All Year	156	lb/day	MAvg Load	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 Carthage STP.

Compliance History:
The following numbers of exceedences were noted in PCS:

6 Overflows
1 Settleable Solids
1 Total Chlorine
1Total Suspended Solids
1 Biological Oxygen Demand
1 Suspended Solids % Removal

Comments:
Carthage STP is a relatively old STP. The plant sits adjacent to the Cumberland River. Inflow and the Infiltration (I/I) of rainwater is an issue. I/I causes operational problems and permit violations. There is very little industry on the plant. Odor complaints are sometimes submitted to the STP operators due to the close proximity to downtown Carthage. The City states that they are going to step up the maintenance on the sewer collection system.

4/12/07 Compliance Review Meeting: Plant was in compliance. Bench sheets need some refinement. Due to growth in the area collection system maintenance should be a priority. Increased flows will affect the ability of this aging plant to treat the city's wastewater (this is demonstrated by the inflow of rain water during storm events).

TN0067733 Gordonsville STP

Discharger rating: Minor
City: South Carthage
County: Smith
EFO Name: Cookeville
Issuance Date: 7/1/06
Expiration Date: 4/30/09
Receiving Stream(s): Cumberland River (Old Hickory Reservoir) at mile 308.3
HUC-12: 051302010101
Effluent Summary: Treated municipal wastewater from Outfall 001
Treatment system: Activated sludge

Segment	TN05130201001_1000
Name	Old Hickory Reservoir
Size	27439
Unit	Acres
First Year on 303(d) List	-
Designated Uses	Fish and Aquatic Life (Supporting), Livestock Watering and Wildlife (Supporting), Recreation (Supporting), Industrial Water Supply (Supporting), Domestic Water Supply (Supporting), Irrigation (Supporting)
Causes	N/A
Sources	N/A

Table 6-3. Stream Segment Information for Gordonsville 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	81	lb/day	MAvg Load	3/Week	Composite	Effluent
BOD5	All Year	40	mg/L	WAvg Conc	3/Week	Composite	Effluent
BOD5	All Year		mg/L	MAvg Conc	3/Week	Composite	Influent (Raw Sewage)
BOD5	All Year	30	mg/L	MAvg Conc	3/Week	Composite	Effluent
BOD5	All Year		mg/L	DMax Conc	3/Week	Composite	Influent (Raw Sewage)
BOD5	All Year	108	lb/day	WAvg Load	3/Week	Composite	Effluent
Bypass of Treatment (occurrences)	All Year		Occurrences/Month	MAvg Load	Continuous	Visual	Wet Weather
D.O.	All Year	1	mg/L	DMin Conc	Weekdays	Grab	Effluent
E. coli	All Year	487	#/100mL	DMax Conc	3/Week	Grab	Effluent
E. coli	All Year	126	#/100mL	MAvg Geo Mean	3/Week	Grab	Effluent
Flow	All Year		MGD	DMax Load	Daily	Continuous	Effluent
Flow	All Year		MGD	MAvg Load	Daily	Continuous	Effluent
Flow	All Year		MGD	MAvg Load	Daily	Continuous	Influent (Raw Sewage)
Flow	All Year		MGD	DMax Load	Daily	Continuous	Influent (Raw Sewage)
Overflow Use Occurences	All Year		Occurences/Month	MAvg Load	Continuous	Visual	Wet Weather
Overflow Use Occurences	All Year		Occurences/Month	MAvg Load	Continuous	Visual	Non Wet Weather
Settleable Solids	All Year	1	mL/L	DMax Conc	3/Week	Grab	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		mg/L	DMax Conc	3/Week	Composite	Influent (Raw Sewage)
TSS	All Year	30	mg/L	MAvg Conc	3/Week	Composite	Effluent
TSS	All Year	81	lb/day	MAvg Load	3/Week	Composite	Effluent
TSS	All Year	40	mg/L	WAvg Conc	3/Week	Composite	Effluent
TSS	All Year		mg/L	MAvg Conc	3/Week	Composite	Influent (Raw Sewage)
TSS	All Year	108	lb/day	WAvg Load	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 6-4 Permit Limits for Gordonsville STP.

Compliance History:
The following numbers of exceedences were noted in PCS:

1 Overflow
1 Bypass
1 Biological Oxygen Demand
1 Total Suspended Solids

Comments:
This plant serves a large amount of industry and restaurants. The plant is in close proximity to the Cumberland River (across the river from the Carthage STP). It receives wastewater from areas as far away as Interstate 40. The plant is relatively new and works well. Some problems noted with composite sampling devices. Road cut near by (Hwy 70) presents a falling rock hazard.

TN0020141 Gallatin STP

Discharger rating:	Major
City:	Gallatin
County:	Sumner
EFO Name:	Nashville
Issuance Date:	6/1/06
Expiration Date:	4/30/09
Receiving Stream(s):	Cumberland River (Old Hickory Reservoir) at mile 237.9
HUC-12:	051302010401
Effluent Summary:	Treated municipal wastewater from Outfall 001
Treatment system:	Waste Activated Sludge to aerobic digester to land application contractor

Segment	TN05130201001_1000
Name	Old Hickory Reservoir
Size	27439
Unit	Acres
First Year on 303(d) List	-
Designated Uses	Fish and Aquatic Life (Supporting), Livestock Watering and Wildlife (Supporting), Recreation (Supporting), Industrial Water Supply (Supporting), Domestic Water Supply (Supporting), Irrigation (Supporting)
Causes	N/A
Sources	N/A

Table 6-5. Stream Segment Information for Gallatin STP.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
48hr LC50: Ceriodaphnia Dubia	All Year	1.9	Percent	DMin Conc	Semi-annually	Grab	Effluent
48hr LC50: Fathead Minnows	All Year	1.9	Percent	DMin Conc	Semi-annually	Grab	Effluent
BOD % removal	All Year	40	Percent	DMin % Removal	Weekdays	Calculated	% Removal
BOD % removal	All Year	85	Percent	MAvg % Removal	Weekdays	Calculated	% Removal
BOD5	All Year	45	mg/L	DMax Conc	Weekdays	Composite	Effluent
BOD5	All Year		mg/L	DMax Conc	Weekdays	Composite	Influent (Raw Sewage)
BOD5	All Year	1835	lb/day	WAvg Load	Weekdays	Composite	Effluent
BOD5	All Year	30	mg/L	MAvg Conc	Weekdays	Composite	Effluent
BOD5	All Year	1376	lb/day	MAvg Load	Weekdays	Composite	Effluent
BOD5	All Year		mg/L	MAvg Conc	Weekdays	Composite	Influent (Raw Sewage)
BOD5	All Year	40	mg/L	WAvg Conc	Weekdays	Composite	Effluent
Bypass of Treatment (occurrences)	All Year		Occurences/Month	MAvg Load	Continuous	Visual	Wet Weather
D.O.	All Year	1	mg/L	DMin Conc	Weekdays	Grab	Effluent
E. coli	All Year	487	#/100mL	DMax Conc	Weekdays	Grab	Effluent
E. coli	All Year	126	#/100mL	MAvg Geo Mean	Weekdays	Grab	Effluent
Flow	All Year		MGD	DMax Load	Daily	Continuous	Effluent
Flow	All Year		MGD	MAvg Load	Daily	Continuous	Effluent
Flow	All Year		MGD	MAvg Load	Daily	Continuous	Influent (Raw Sewage)
Flow	All Year		MGD	DMax Load	Daily	Continuous	Influent (Raw Sewage)
Overflow Use Occurences	All Year		Occurences/Month	MAvg Load	Continuous	Visual	Wet Weather
Overflow Use Occurences	All Year		Occurences/Month	MAvg Load	Continuous	Visual	Non Wet Weather
Settleable Solids	All Year	1	mL/L	DMax Conc	Weekdays	Grab	Effluent
TRC	All Year	2	mg/L	DMax Conc	Weekdays	Grab	Effluent
TSS	All Year	45	mg/L	DMax Conc	Weekdays	Composite	Effluent
TSS	All Year	1376	lb/day	MAvg Load	Weekdays	Composite	Effluent
TSS	All Year		mg/L	DMax Conc	Weekdays	Composite	Influent (Raw Sewage)
TSS	All Year	1835	lb/day	WAvg Load	Weekdays	Composite	Effluent
TSS	All Year	40	mg/L	WAvg Conc	Weekdays	Composite	Effluent
TSS	All Year		mg/L	MAvg Conc	Weekdays	Composite	Influent (Raw Sewage)
TSS	All Year	30	mg/L	MAvg Conc	Weekdays	Composite	Effluent
TSS % Removal	All Year	40	Percent	DMin % Removal	Weekdays	Calculated	% Removal
TSS % Removal	All Year	85	Percent	MAvg % Removal	Weekdays	Calculated	% Removal
pH	All Year	9	SU	DMax Conc	Weekdays	Grab	Effluent
pH	All Year	6	SU	DMin Conc	Weekdays	Grab	Effluent

Table 6-6. Permit Limits for Gallatin STP.

Compliance History:
The following numbers of exceedences were noted in PCS:

147 Overflows
9 Bypasses
11 Total Suspended Solids
7 Settleable Solids
7 Biological Oxygen Demand
2 Escherichia coli

Enforcement:
Commissioner's Order 05-0369: Multiple NPDES violations including 32 unpermitted overflows and/or bypasses. Order requires corrective action on collection system and moratorium on new connections.

Comments:
3/17/07 Performance Audit: Some records not on file at STP. Problems with land application at Dickey Lassiter site, hauler/site owner not properly land applying biosolids, no soil analysis conducted, not applying at agronomic rates, 8,000 gallon loads discharged to one point, not sending reports to EPA or WPC, not keeping records of application rates, biosolids holding pond not used for designed/approved purpose, and not removing biosolids from holding pond to land apply.

TN0030899 Hartsville STP

Discharger rating:	Minor
City:	Hartsville
County:	Trousdale
EFO Name:	Nashville
Issuance Date:	2/1/07
Expiration Date:	4/29/09
Receiving Stream(s):	Cumberland River (Old Hickory Reservoir) at mile 278.6
HUC-12:	051302010104
Effluent Summary:	treated domestic wastewater from Outfall 001
Treatment system:	Activated sludge plant with chlorination and dechlorination; Waste Activated Sludge to aerobic digester to drybed to landfill.

Segment	TN05130201001_1000
Name	Old Hickory Reservoir
Size	27439
Unit	Acres
First Year on 303(d) List	-
Designated Uses	Fish and Aquatic Life (Supporting), Livestock Watering and Wildlife (Supporting), Recreation (Supporting), Industrial Water Supply (Supporting), Domestic Water Supply (Supporting), Irrigation (Supporting)
Causes	N/A
Sources	N/A

Table 6-7. Stream Segment Information for Hartsville STP.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
BOD % removal	All Year	40	Percent	DMin % Removal	3/Week	Calculated	Percent Removal
BOD % removal	All Year	85	Percent	MAvg % Removal	3/Week	Calculated	Percent Removal
BOD5	All Year	45	mg/L	DMax Conc	3/Week	Composite	Effluent
BOD5	All Year		mg/L	DMax Conc	3/Week	Composite	Influent (Raw Sewage)
BOD5	All Year	30	mg/L	MAvg Conc	3/Week	Composite	Effluent
BOD5	All Year	188	lb/day	MAvg Load	3/Week	Composite	Effluent
BOD5	All Year	250	lb/day	WAvg Load	3/Week	Composite	Effluent
BOD5	All Year	40	mg/L	WAvg Conc	3/Week	Composite	Effluent
BOD5	All Year		mg/L	MAvg Conc	3/Week	Composite	Influent (Raw Sewage)
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
Fecal Coliform	All Year	1000	#/100mL	DMax Conc	3/Week	Grab	Effluent
Fecal Coliform	All Year	200	#/100mL	MAvg Geo Mean	3/Week	Grab	Effluent
Flow	All Year		MGD	DMax Load	Daily	Continuous	Effluent
Flow	All Year		MGD	MAvg Load	Daily	Continuous	Influent (Raw Sewage)
Flow	All Year		MGD	MAvg Load	Daily	Continuous	Effluent
Flow	All Year		MGD	DMax Load	Daily	Continuous	Influent (Raw Sewage)
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	250	lb/day	WAvg Load	3/Week	Composite	Effluent
TSS	All Year		mg/L	DMax Conc	3/Week	Composite	Influent (Raw Sewage)
TSS	All Year	30	mg/L	MAvg Conc	3/Week	Composite	Effluent
TSS	All Year		mg/L	MAvg Conc	3/Week	Composite	Influent (Raw Sewage)
TSS	All Year	40	mg/L	WAvg Conc	3/Week	Composite	Effluent
TSS	All Year	188	lb/day	MAvg Load	3/Week	Composite	Effluent
TSS % Removal	All Year	40	Percent	DMin % Removal	3/Week	Calculated	Percent Removal
TSS % Removal	All Year	85	Percent	MAvg % Removal	3/Week	Calculated	Percent Removal
pH	All Year	9	SU	DMax Conc	Weekdays	Grab	Effluent
pH	All Year	6	SU	DMin Conc	Weekdays	Grab	Effluent

Table 6-8. Permit Limits for Hartsville STP.

Compliance History:
The following numbers of exceedences were noted in PCS:

5 Biological Oxygen Demand
4 Total Suspended Solids
1 pH
1 Suspended Solids % Removal

Enforcement:
6/30/04 Notice of Violation: Failure to collect representative samples and follow EPA approved methods.

4/7/05 Notice of Violation; Dry weather manhole overflow near the STP due to pumpage from the STP.

3/5/05 Notice of Violation: Problems with E coli analysis

Comments:
6/27/07 Technical Assistance and file review: In compliance

TN0059137 Boxwell Reservation, Boys Scouts of America

Discharger rating:	Minor
City:	Lebanon
County:	Wilson
EFO Name:	Nashville
Issuance Date:	11/1/04
Expiration Date:	9/30/09
Receiving Stream(s):	Outfall 001 to Spencer Creek Embayment at mile 1.0 and Outfall 002 to the Old Hickory Reservoir at mile 237.5
HUC-12:	051302010401
Effluent Summary:	Treated domestic wastewater from Outfalls 001 and 002.
Treatment system:	Extended aeration for discharge 001 and septic tank, recirculating sand filter and UV disinfection for discharge 002.

Segment	TN05130201001T_1400
Name	Spencer Creek
Size	11.6
Unit	Miles
First Year on 303(d) List	-
Designated Uses	Fish and Aquatic Life (Supporting), Recreation (Supporting), Irrigation (Supporting), Livestock Watering and Wildlife (Supporting)
Causes	N/A
Sources	N/A

Table 6-9. Stream Segment Information for Boxwell Reservation, Boys Scouts of America at Spencer Creek.

Segment	TN05130201001_1000
Name	Old Hickory Reservoir
Size	27439
Unit	Acres
First Year on 303(d) List	-
Designated Uses	Fish and Aquatic Life (Supporting), Livestock Watering and Wildlife (Supporting), Recreation (Supporting), Industrial Water Supply (Supporting), Domestic Water Supply (Supporting), Irrigation (Supporting)
Causes	N/A
Sources	N/A

Table 6-10. Stream Segment Information for Boxwell Reservation, Boys Scouts of America at Old Hickory Reservoir.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
BOD5	All Year	45	mg/L	DMax Conc	Monthly	Grab	Effluent
BOD5	All Year	30	mg/L	MAvg Conc	Monthly	Grab	Effluent
D.O.	All Year	1	mg/L	DMin Conc	Weekdays	Grab	Effluent
E. coli	All Year	126	#/100mL	MAvg Ari Mean	Monthly	Grab	Effluent
Fecal Coliform	All Year	1000	#/100mL	DMax Conc	Monthly	Grab	Effluent
Flow	All Year		MGD	DMax Load	Weekdays	Instantaneous	Effluent
Flow	All Year		MGD	MAvg Load	Weekdays	Instantaneous	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	Monthly	Grab	Effluent
TSS	All Year	30	mg/L	MAvg Conc	Monthly	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 6-11. Permit Limits for Outfall 001 and 002 for Boxwell Reservation, Boys Scouts of America.

Comments:
None

TN0056006 Carroll-Oakland Elementary School

Discharger rating:	Minor
City:	Lebanon
County:	Wilson
EFO Name:	Nashville
Issuance Date:	7/1/04
Expiration Date:	5/28/09
Receiving Stream(s):	Spring Creek at mile 5.1
HUC-12:	051302010106
Effluent Summary:	Treated domestic wastewater from Outfall 001
Treatment system:	Extended aeration

Segment	TN05130201013_2000
Name	Spring Creek
Size	10
Unit	Miles
First Year on 303(d) List	-
Uses	Recreation (Supporting), Irrigation (Supporting), Fish and Aquatic Life (Supporting), Livestock Watering and Wildlife (Supporting)
Causes	N/A
Sources	N/A

Table 6-12. Stream Segment Information for Carroll-Oakland Elementary School.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
Ammonia as N (Total)	Summer	4	mg/L	DMax Conc	2/Month	Grab	Effluent
Ammonia as N (Total)	Summer	2	mg/L	MAvg Conc	2/Month	Grab	Effluent
Ammonia as N (Total)	Winter	10	mg/L	DMax Conc	2/Month	Grab	Effluent
Ammonia as N (Total)	Winter	5	mg/L	MAvg Conc	2/Month	Grab	Effluent
CBOD5	All Year	20	mg/L	DMax Conc	2/Month	Grab	Effluent
CBOD5	All Year	10	mg/L	MAvg Conc	2/Month	Grab	Effluent
D.O.	All Year	6	mg/L	DMin Conc	Weekdays	Grab	Effluent
Fecal Coliform	All Year	1000	#/100mL	DMax Conc	2/Month	Grab	Effluent
Fecal Coliform	All Year	200	#/100mL	MAvg Geo Mean	2/Month	Grab	Effluent
Flow	All Year		MGD	DMax Load	Weekly	Instantaneous	Effluent
Flow	All Year		MGD	MAvg Load	Weekly	Instantaneous	Effluent
Settleable Solids	All Year	1	mL/L	DMax Conc	2/Week	Grab	Effluent
TRC	All Year	0.5	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	8.5	SU	DMax Conc	2/Week	Grab	Effluent
pH	All Year	9	SU	DMin Conc	2/Week	Grab	Effluent

Table 6-13. Permit Limits for Carroll-Oakland Elementary School.

Enforcement:
10/24/05 Notice of Violation for reasons stated below.

Comments:
10/24/05 Compliance Evaluation Inspection: Poor operation & maintenance, treatment units severely corroded & grills unsafe, repairs neglected, inadequate sludge removal & improper disposal. Not running effluent analysis at required frequency, inadequate self-monitoring records. Monthly Operating Reports show effluent violations for CBOD, ammonia, total chlorine residual, dissolved oxygen, fecal coliform & E. coli.

TN0060968 Erwin Marine Group

Discharger rating:	Minor
City:	Gallatin
County:	Sumner
EFO Name:	Nashville
Issuance Date:	7/1/04
Expiration Date:	5/28/09
Receiving Stream(s):	Cumberland River (Old Hickory Reservoir) at mile 240.2
HUC-12:	051302010401
Effluent Summary:	Treated domestic wastewater from Outfall 001
Treatment system:	Extended Aeration

Segment	TN05130201001_1000
Name	Old Hickory Reservoir
Size	27439
Unit	Acres
First Year on 303(d) List	-
Designated Uses	Fish and Aquatic Life (Supporting), Livestock Watering and Wildlife (Supporting), Recreation (Supporting), Industrial Water Supply (Supporting), Domestic Water Supply (Supporting), Irrigation (Supporting)
Causes	N/A
Sources	N/A

Table 6-14. Stream Segment Information for Erwin Marine Group.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
BOD5	All Year	45	mg/L	DMax Conc	Monthly	Grab	Effluent
BOD5	All Year	30	mg/L	MAvg Conc	Monthly	Grab	Effluent
D.O.	All Year	1	mg/L	DMin Conc	Weekdays	Grab	Effluent
E. coli	All Year	126	#/100mL	MAvg Geo Mean	Monthly	Grab	Effluent
Fecal Coliform	All Year	1000	#/100mL	DMax Conc	Monthly	Grab	Effluent
Fecal Coliform	All Year	200	#/100mL	MAvg Geo Mean	Monthly	Grab	Effluent
Flow	All Year		MGD	DMax Load	Weekdays	Instantaneous	Effluent
Flow	All Year		MGD	MAvg Load	Weekdays	Instantaneous	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	Monthly	Grab	Effluent
TSS	All Year	30	mg/L	MAvg Conc	Monthly	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 6-15. Permit Limits for Erwin Marine Group.

Comments:
None

TN0040622 Hendersonville Utility District-Saundersville STP

Discharger rating: Minor
City: Hendersonville
County: Sumner
EFO Name: Nashville
Issuance Date: 8/1/04
Expiration Date: 6/30/09
Receiving Stream(s): Cumberland River (Old Hickory Reservoir) at mile 313.5
HUC-12: 051302010405
Effluent Summary: Treated domestic wastewater from Outfall 001
Treatment system: Extended Aeration

Segment	TN05130201001_1000
Name	Old Hickory Reservoir
Size	27439
Unit	Acres
First Year on 303(d) List	-
Designated Uses	Fish and Aquatic Life (Supporting), Livestock Watering and Wildlife (Supporting), Recreation (Supporting), Industrial Water Supply (Supporting), Domestic Water Supply (Supporting), Irrigation (Supporting)
Causes	N/A
Sources	N/A

Table 6-16. Stream Segment Information for Hendersonville Utility District-Saundersville STP.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
BOD % removal	All Year	40	Percent	DMin % Removal	Weekly	Calculated	% Removal
BOD % removal	All Year	85	Percent	MAvg % Removal	Weekly	Calculated	% Removal
BOD5	All Year	45	mg/L	DMax Conc	Weekly	Grab	Effluent
BOD5	All Year	30	mg/L	MAvg Conc	Weekly	Grab	Effluent
BOD5	All Year	25	lb/day	MAvg Load	Weekly	Grab	Effluent
BOD5	All Year	33	lb/day	WAvg Load	Weekly	Grab	Effluent
BOD5	All Year	40	mg/L	WAvg Conc	Weekly	Grab	Effluent
D.O.	All Year	1	mg/L	DMin Conc	Weekdays	Grab	Effluent
E. coli	All Year	126	#/100mL	MAvg Geo Mean	Weekly	Grab	Effluent
Fecal Coliform	All Year	1000	#/100mL	DMax Conc	Weekly	Grab	Effluent
Fecal Coliform	All Year	200	#/100mL	MAvg Geo Mean	Weekly	Grab	Effluent
Flow	All Year		MGD	DMax Load	Daily	Composite	Effluent
Flow	All Year		MGD	MAvg Load	Daily	Composite	Effluent
Settleable Solids	All Year	1	mL/L	DMax Conc	Weekly	Grab	Effluent
TRC	All Year	2	mg/L	DMax Conc	Weekdays	Grab	Effluent
TSS	All Year	45	mg/L	DMax Conc	Weekly	Grab	Effluent
TSS	All Year	33	lb/day	WAvg Load	Weekly	Grab	Effluent
TSS	All Year	30	mg/L	MAvg Conc	Weekly	Grab	Effluent
TSS	All Year	25	lb/day	MAvg Load	Weekly	Grab	Effluent
TSS	All Year	40	mg/L	WAvg Conc	Weekly	Grab	Effluent
TSS % Removal	All Year	40	Percent	DMin % Removal	Weekly	Calculated	% Removal
TSS % Removal	All Year	85	Percent	MAvg % Removal	Weekly	Calculated	% Removal
pH	All Year	9	SU	DMax Conc	Weekdays	Grab	Effluent
pH	All Year	6	SU	DMin Conc	Weekdays	Grab	Effluent

Table 6-17. Permit Limits for Hendersonville Utility District-Saundersville STP.

Compliance History:
The following numbers of exceedences were noted in PCS:

12 Overflows
19 Bypasses
14 Settleable Solids
20 Total Chlorine
11 Suspended Solids % Removal
8 Biological Oxygen Demand
12 Total Suspended Solids
2 Escherichia coli

Enforcement:
3/10/05 Notice of Violation for deficiencies discovered during 1/26/05 Performance Audit Inspection with sampling, analytical, data calculating and reporting procedures. The HUD's self-monitoring program had been compromised.

Comments:
1/26/05 Performance Audit Inspection: WWTP performs ok with normal influent flows. Monthly Operationg Reports (MORs) indicate wet weather peak flows have been increasing which have tended to wash solids out of the WWTP causing permit violations; collection system appears to have excessive infiltration/inflow levels. This repeats the findings of the 2002 inspection. Numerous laboratory deficiencies.

12/13/05 Compliance Sampling Inspection: There are plans to retire this treatment plant and replace it with a pump station in the near future. There is a problem with inflow and infiltration (I/I). The collection system is undergoing rehabilitation work. There have been significant improvements made in the areas of sample collection, analyses and reporting since previous performance audit inspection in January 2005.

TN0024716 Lakeview Elementary School

Discharger rating:	Minor
City:	Mt. Juliet
County:	Wilson
EFO Name:	Nashville
Issuance Date:	7/1/04
Expiration Date:	5/28/09
Receiving Stream(s):	Wet weather conveyance at mile 0.4 to Smith Branch at mile 1.1 to the Cumberland River at mile 224.8
HUC-12:	051302010405
Effluent Summary:	treated domestic wastewater from Outfall 001
Treatment system:	Extended aeration.

Segment	TN05130201001T_0999
Name	Misc Tribs to Old Hickory Reservoir
Size	87.6
Unit	Miles
First Year on 303(d) List	-
Designated Uses	Fish and Aquatic Life (Not Assessed), Recreation (Not Assessed), Irrigation (Not Assessed), Livestock Watering and Wildlife (Not Assessed)
Causes	N/A
Sources	N/A

Table 6-18. Stream Segment Information for Lakeview Elementary School.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
Ammonia as N (Total)	Summer	4	mg/L	DMax Conc	2/Month	Grab	Effluent
Ammonia as N (Total)	Summer	2	mg/L	MAvg Conc	2/Month	Grab	Effluent
Ammonia as N (Total)	Winter	10	mg/L	DMax Conc	2/Month	Grab	Effluent
Ammonia as N (Total)	Winter	5	mg/L	MAvg Conc	2/Month	Grab	Effluent
CBOD5	All Year	20	mg/L	DMax Conc	2/Month	Grab	Effluent
CBOD5	All Year	10	mg/L	MAvg Conc	2/Month	Grab	Effluent
D.O.	All Year	6	mg/L	DMin Conc	Weekdays	Grab	Effluent
Fecal Coliform	All Year	1000	#/100mL	DMax Conc	2/Month	Grab	Effluent
Fecal Coliform	All Year	200	#/100mL	MAvg Geo Mean	2/Month	Grab	Effluent
Flow	All Year		MGD	DMax Load	Weekly	Instantaneous	Effluent
Flow	All Year		MGD	MAvg Load	Weekly	Instantaneous	Effluent
Settleable Solids	All Year	1	mL/L	DMax Conc	2/Week	Grab	Effluent
TRC	All Year	0.5	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	6.5	SU	DMin Conc	2/Week	Grab	Effluent

Table 6-19. Permit Limits for Lakeview Elementary School.

Enforcement:
10/25/05 Notice of Violation for reasons listed below.

Comments:
10/25/05 Compliance Evaluation Inspection: Poor operation & maintenance, severely corroded and deteriorating treatment units, unsafe conditions, and improper sludge disposal. Not running analysis at required frequency, inadequate self-monitoring records. Violations of effluent limits for CBOD, suspended solids, ammonia, total chlorine residual, & dissolved oxygen.

TN0028754 Lebanon STP

Discharger rating:	Major
City:	Lebanon
County:	Wilson
EFO Name:	Nashville
Issuance Date:	3/1/06
Expiration Date:	1/31/09
Receiving Stream(s):	Cumberland River (Old Hickory Reservoir) at mile 252.2
HUC-12:	051302010107
Effluent Summary:	Treated municipal wastewater from Outfall 001
Treatment system:	Waste Activated Sludge to holding tanks to land application

Segment	TN05130201001_1000
Name	Old Hickory Reservoir
Size	27439
Unit	Acres
First Year on 303(d) List	-
Designated Uses	Fish and Aquatic Life (Supporting), Livestock Watering and Wildlife (Supporting), Recreation (Supporting), Industrial Water Supply (Supporting), Domestic Water Supply (Supporting), Irrigation (Supporting)
Causes	N/A
Sources	N/A

Table 6-20. Stream Segment Information for Lebanon STP.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
CBOD % Removal	All Year	40	Percent	DMin % Removal	Weekdays	Calculated	% Removal
CBOD % Removal	All Year	85	Percent	MAvg % Removal	Weekdays	Calculated	% Removal
CBOD5	All Year	40	mg/L	DMax Conc	Weekdays	Composite	Effluent
CBOD5	All Year	2189	lb/day	WAvg Load	Weekdays	Composite	Effluent
CBOD5	All Year	25	mg/L	MAvg Conc	Weekdays	Composite	Effluent
CBOD5	All Year	35	mg/L	WAvg Conc	Weekdays	Composite	Effluent
CBOD5	All Year		mg/L	MAvg Conc	Weekdays	Composite	Influent (Raw Sewage)
CBOD5	All Year		mg/L	DMax Conc	Weekdays	Composite	Influent (Raw Sewage)
CBOD5	All Year	1564	lb/day	MAvg Load	Weekdays	Composite	Effluent
D.O.	All Year	3	mg/L	DMin Conc	Weekdays	Grab	Effluent
E. coli	All Year	487	#/100mL	DMax Conc	Weekdays	Grab	Effluent
E. coli	All Year	126	#/100mL	MAvg Geo Mean	Weekdays	Grab	Effluent
Flow	All Year		MGD	MAvg Load	Daily	Continuous	Effluent
Flow	All Year		MGD	DMax Load	Daily	Continuous	Effluent
Flow	All Year		MGD	DMax Load	Daily	Continuous	Influent (Raw Sewage)
Flow	All Year		MGD	MAvg Load	Daily	Continuous	Influent (Raw Sewage)
IC25 7day Ceriodaphnia dubia	All Year	0.9	Percent	DMin Conc	Quarterly	Composite	Effluent
IC25 7day Fathead Minnows	All Year	0.9	Percent	DMin Conc	Quarterly	Composite	Effluent
Settleable Solids	All Year	1	mL/L	DMax Conc	Weekdays	Grab	Effluent
TRC	All Year	2	mg/L	DMax Conc	Weekdays	Grab	Effluent
TSS	All Year	45	mg/L	DMax Conc	Weekdays	Composite	Effluent
TSS	All Year	2502	lb/day	WAvg Load	Weekdays	Composite	Effluent
TSS	All Year	40	mg/L	WAvg Conc	Weekdays	Composite	Effluent
TSS	All Year	1877	lb/day	MAvg Load	Weekdays	Composite	Effluent
TSS	All Year		mg/L	DMax Conc	Weekdays	Composite	Influent (Raw Sewage)
TSS	All Year		mg/L	MAvg Conc	Weekdays	Composite	Influent (Raw Sewage)
TSS	All Year	30	mg/L	MAvg Conc	Weekdays	Composite	Effluent
TSS % Removal	All Year	40	Percent	DMin % Removal	Weekdays	Calculated	% Removal
TSS % Removal	All Year	85	Percent	MAvg % Removal	Weekdays	Calculated	% Removal
pH	All Year	9	SU	DMax Conc	Weekdays	Grab	Effluent
pH	All Year	6	SU	DMin Conc	Weekdays	Grab	Effluent

Table 6-21. Permit Limits for Lebanon STP.

Compliance History:
The following numbers of exceedences were noted in PCS:

324 Overflows
4 Bypasses
13 Total Suspended Solids
17 Suspended Solids % Removal
9 Settleable Solids
3 Fecal coliforms
3 Total Chlorine
4 Carbonaceous Oxygen Demand
1 Carbonaceous Biological Oxygen Demand
1 Escherichia coli

Enforcement:
Commissioner's Order 04-0146 for chronic violations of NPDES permit limits from May 2002 thru May 2004: suspended solids, settleable solids, fecal, chlorine, CBOD, DO, Whole Effluent Toxicity, bypasses, and 160 collection system overflows.

Comments:
City is upgrading the STP.

12/22/05 Pretreatment Compliance Inspection: In compliance.
12/02/06 Compliance Evaluation Inspection: The facility's overall compliance status is satisfactory.

- Mr. Billy Dranes, treatment plant manager, reported no major operational or reporting problems at the facility.

- There were no apparent operational problems with the influent screening, grit removal unit, and aeration units.

- Two of the clarification units have been coated to prevent algae and slime buildup on the walls. The third unit is scheduled for coating,

- The plant growth previously observed in the chlorine contact chamber walls had been removed, but it had been replaced with additional plant growth. The ongoing problems with plant growth in the chlorine contact chamber walls is scheduled be addressed with the enlargement of the chamber.

- There is a designated manhole at the treatment plant for the discharge of septic tank waste for treatment in the main plant. Marine holding tank waste is discharged to the plant sludge-thickening tank for treatment as part of the sludge pasteurization operation.

TN0058220 TDEC Bledsoe Creek State Park

Discharger rating:	Minor
City:	Gallatin
County:	Sumner
EFO Name:	Nashville
Issuance Date:	4/1/04
Expiration Date:	12/31/09
Receiving Stream(s):	Bledsoe Creek Embayment at mile 2.3 to Old Hickory Reservoir at mile 248.4
HUC-12:	51302010502
Effluent Summary:	Treated domestic wastewater from Outfall 001
Treatment system:	Recirculating sand filter and UV disinfection

Segment	TN05130201001_1000
Name	Old Hickory Reservoir
Size	27439
Unit	Acres
First Year on 303(d) List	-
Designated Uses	Fish and Aquatic Life (Supporting), Livestock Watering and Wildlife (Supporting), Recreation (Supporting), Industrial Water Supply (Supporting), Domestic Water Supply (Supporting), Irrigation (Supporting)
Causes	N/A
Sources	N/A

Table 6-22. Stream Segment Information for TDEC Bledsoe Creek State Park.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
Ammonia as N (Total)	All Year	10	mg/L	DMax Conc	2/Month	Grab	Effluent
Ammonia as N (Total)	All Year	5	mg/L	MAvg Conc	2/Month	Grab	Effluent
CBOD5	All Year	20	mg/L	DMax Conc	2/Month	Grab	Effluent
CBOD5	All Year	10	mg/L	MAvg Conc	2/Month	Grab	Effluent
D.O.	All Year	5	mg/L	DMin Conc	Weekdays	Grab	Effluent
E. coli	All Year	487	#/100mL	MAvg Ari Mean	2/Month	Grab	Effluent
E. coli	All Year	126	#/100mL	MAvg Geo Mean	2/Month	Grab	Effluent
Flow	All Year		MGD	DMax Load	Weekdays	Instantaneous	Effluent
Flow	All Year		MGD	MAvg Load	Weekdays	Instantaneous	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 6-23. Permit Limits for TDEC Bledsoe Creek State Park.

Enforcement:
Notice of Violation on 6/9/04 for late application.

Comments:
2/05/07 Compliance Evaluation Inspection: Contract operator said the controls for the recirculation pumps have never operated properly because the controls were based on the assumption that this Recirculating Sand Filter would always have a continuous influent which this WWTP has never had. A licensed electrician installed float switches and timers in order to impose some control over the system and to prevent it from pumping itself dry.

TN0021491 USACOE Old Hickory Dam, Left Bank

Discharger rating: Minor
City: Old Hickory
County: Davidson
EFO Name: Nashville
Issuance Date: 10/1/04
Expiration Date: 8/31/09
Receiving Stream(s): Cumberland River (Old Hickory Reservoir) at mile 216.2
HUC-12: 051302010407
Effluent Summary: Treated domestic wastewater from Outfall 001
Treatment system: Extended aeration

Segment	TN05130201001_1000
Name	Old Hickory Reservoir
Size	27439
Unit	Acres
First Year on 303(d) List	-
Designated Uses	Fish and Aquatic Life (Supporting), Livestock Watering and Wildlife (Supporting), Recreation (Supporting), Industrial Water Supply (Supporting), Domestic Water Supply (Supporting), Irrigation (Supporting)
Causes	N/A
Sources	N/A

Table 6-24. Stream Segment Information for USACOE Old Hickory Dam, Left Bank.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
BOD5	All Year	45	mg/L	DMax Conc	Monthly	Grab	Effluent
BOD5	All Year	30	mg/L	WAvg Conc	Monthly	Grab	Effluent
D.O.	All Year	1	mg/L	DMin Conc	2/Week	Grab	Effluent
Fecal Coliform	All Year	1000	#/100mL	DMax Conc	Monthly	Grab	Effluent
Fecal Coliform	All Year	200	#/100mL	MAvg Geo Mean	Monthly	Grab	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	Monthly	Grab	Effluent
TSS	All Year	30	mg/L	WAvg Conc	Monthly	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 6-25. Permit Limits for USACOE Old Hickory Dam, Left Bank.

Comments:
2/2/07 Compliance Evaluation Inspection: Outfall sign needs current telephone number for DWPC/Nashville EFO. WWTP collection system has very high wet weather inflow and infiltration (I/I) but no reported permit violations. WWTP receives influent flow from USACOE office building and maintenance building, and from two public restrooms which are closed during the winter months.

TN0021512 USACOE, Old Hickory Lake, Shutes Branch Recreation Area

Discharger rating:	Minor
City:	Mt. Juliet
County:	Wilson
EFO Name:	Nashville
Issuance Date:	10/1/04
Expiration Date:	8/31/09
Receiving Stream(s):	Cumberland River (Old Hickory Reservoir) at mile 223.5
HUC-12:	051302010405
Effluent Summary:	Treated domestic wastewater from Outfall 001
Treatment system:	Extended aeration

Segment	TN05130201001_1000
Name	Old Hickory Reservoir
Size	27439
Unit	Acres
First Year on 303(d) List	-
Designated Uses	Fish and Aquatic Life (Supporting), Livestock Watering and Wildlife (Supporting), Recreation (Supporting), Industrial Water Supply (Supporting), Domestic Water Supply (Supporting), Irrigation (Supporting)
Causes	N/A
Sources	N/A

Table 6-26. Stream Segment Information for USACOE, Old Hickory Lake, Shutes Branch Recreation Area.

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	126	#/100mL	MAvg Geo Mean	Monthly	Grab	Effluent
Fecal Coliform	All Year	1000	#/100mL	DMax Conc	Monthly	Grab	Effluent
Fecal Coliform	All Year	200	#/100mL	MAvg Geo Mean	Monthly	Grab	Effluent
Flow	All Year		MGD	DMax Load	Weekdays	Instantaneous	Effluent
Flow	All Year		MGD	MAvg Load	Weekdays	Instantaneous	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 6-27. Permit Limits for USACOE, Old Hickory Lake, Shutes Branch Recreation Area.

Comments:
None

TN0021504 USACOE, Old Hickory Power House, Rockland Recreation Area

Discharger rating: Minor
City: Hendersonville
County: Sumner
EFO Name: Nashville
Issuance Date: 10/1/04
Expiration Date: 8/31/09
Receiving Stream(s): Cumberland River (Old Hickory Reservoir) at mile 216.4
HUC-12: 051302010405
Effluent Summary: Treated domestic wastewater from Outfall 001
Treatment system: Extended aeration

Segment	TN05130201001_1000
Name	Old Hickory Reservoir
Size	27439
Unit	Acres
First Year on 303(d) List	-
Designated Uses	Fish and Aquatic Life (Supporting), Livestock Watering and Wildlife (Supporting), Recreation (Supporting), Industrial Water Supply (Supporting), Domestic Water Supply (Supporting), Irrigation (Supporting)
Causes	N/A
Sources	N/A

Table 6-28. Stream Segment Information for USACOE, Old Hickory Power House, Rockland Recreation Area.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
BOD5	All Year	45	mg/L	DMax Conc	Monthly	Grab	Effluent
BOD5	All Year	30	mg/L	MAvg Conc	Monthly	Grab	Effluent
D.O.	All Year	1	mg/L	DMin Conc	Weekdays	Grab	Effluent
E. coli	All Year	126	#/100mL	MAvg Geo Mean	Monthly	Grab	Effluent
Fecal Coliform	All Year	1000	#/100mL	DMax Conc	Monthly	Grab	Effluent
Fecal Coliform	All Year	200	#/100mL	MAvg Geo Mean	Monthly	Grab	Effluent
Flow	All Year		MGD	DMax Load	Weekdays	Instantaneous	Effluent
Flow	All Year		MGD	MAvg Load	Weekdays	Instantaneous	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	Monthly	Grab	Effluent
TSS	All Year	30	mg/L	MAvg Conc	Monthly	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 6-29. Permit Limits for USACOE, Old Hickory Power House, Rockland Recreation Area.

Comments:
10/24/06 Compliance Evaluation Inspection: In compliance

Notes from inspection:

- The wastewater treatment plant appeared to be well-operated and maintained. Mr. Winfrey explained that flow is received from the USA-COE Visitor's Center, the Maintenance Building, the Power House restrooms, and the Recreation Area restrooms (in season). All required records were being kept and retained as required by the permit. The grounds were secured by a perimeter fence with locked gate.

- The receiving stream (Cumberland River) showed no visual adverse impact from the treated effluent. The outfall pipe was posted with an identification sign as required by the permit. However, the telephone number posted for the Nashville Environmental Field Office is obsolete; the correct number that should be displayed per page 14 of the permit is: 1-888-891-8332.

- Review of the Monthly Operation Reports (MOR/DMR) received from January 2003 through September 2006 indicated excellent compliance with the permit effluent limits. This is commendable performance.

TN0025488 Watertown STP

Discharger rating:	Minor
City:	Watertown
County:	Wilson
EFO Name:	Nashville
Issuance Date:	11/1/06
Expiration Date:	8/30/09
Receiving Stream(s):	Round Lick at mile 19.2
HUC-12:	051302010201
Effluent Summary:	Treated domestic wastewater from Outfall 001
Treatment system:	Extended aeration with ultraviolet disinfecting

Segment	TN05130201021_2000
Name	Round Lick Creek
Size	8.7
Unit	Miles
First Year on 303(d) List	2004
Designated Uses	Recreation (Non-Supporting), Irrigation (Supporting), Fish and Aquatic Life (Non-Supporting), Livestock Watering and Wildlife (Supporting)
Causes	Alteration in stream-side or littoral vegetative covers, Escherichia coli, Sedimentation/Siltation, Nitrates, Oxygen, Dissolved
Sources	Grazing in Riparian or Shoreline Zones, Municipal Point Source Discharges

Table 6-30. Stream Segment Information for Watertown STP.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
Ammonia as N (Total)	Summer	2.5	mg/L	DMax Conc	Weekly	Composite	Effluent
Ammonia as N (Total)	Summer	4.5	lb/day	DMax Load	Weekly	Composite	Effluent
Ammonia as N (Total)	Summer	2	mg/L	MAvg Conc	Weekly	Composite	Effluent
Ammonia as N (Total)	Summer	1.1	mg/L	WAvg Conc	Weekly	Composite	Effluent
Ammonia as N (Total)	Summer	2.5	lb/day	MAvg Load	Weekly	Composite	Effluent
Ammonia as N (Total)	Winter	4.5	mg/L	DMax Conc	Weekly	Composite	Effluent
Ammonia as N (Total)	Winter	7.4	lb/day	MAvg Load	Weekly	Composite	Effluent
Ammonia as N (Total)	Winter	9	lb/day	DMax Load	Weekly	Composite	Effluent
Ammonia as N (Total)	Winter	3.3	mg/L	WAvg Conc	Weekly	Composite	Effluent
Ammonia as N (Total)	Winter	4	mg/L	MAvg Conc	Weekly	Composite	Effluent
CBOD % Removal	All Year	40	Percent	DMin % Removal	Weekly	Calculated	% Removal
CBOD % Removal	All Year	85	Percent	MAvg % Removal	Weekly	Calculated	% Removal
CBOD5	Summer	20	mg/L	DMax Conc	Weekly	Composite	Effluent
CBOD5	Summer	34	lb/day	WAvg Load	Weekly	Composite	Effluent
CBOD5	Summer	23	lb/day	MAvg Load	Weekly	Composite	Effluent
CBOD5	Summer	10	mg/L	MAvg Conc	Weekly	Composite	Effluent
CBOD5	Summer	15	mg/L	WAvg Conc	Weekly	Composite	Effluent
CBOD5	Winter	35	mg/L	DMax Conc	Weekly	Composite	Effluent
CBOD5	Winter	68	lb/day	WAvg Load	Weekly	Composite	Effluent
CBOD5	Winter	25	mg/L	MAvg Conc	Weekly	Composite	Effluent
CBOD5	Winter	56	lb/day	MAvg Load	Weekly	Composite	Effluent
CBOD5	Winter	30	mg/L	WAvg Conc	Weekly	Composite	Effluent
Cd (T)	All Year	0.0015	mg/L	DMax Conc	Annually	Composite	Effluent
D.O.	All Year	6	mg/L	DMin Conc	Weekdays	Grab	Effluent
E. coli	All Year	941	#/100mL	DMax Conc	Weekly	Grab	Effluent
E. coli	All Year	126	#/100mL	MAvg Geo Mean	Weekly	Grab	Effluent
Flow	All Year		MGD	DMax Load	Weekly	Continuous	Effluent
Flow	All Year		MGD	DMax Load	Weekly	Continuous	Intake
Flow	All Year		MGD	MAvg Load	Weekly	Continuous	Effluent
Flow	All Year		MGD	MAvg Load	Weekly	Continuous	Intake
Hg (T)	All Year	5E-05	mg/L	DMax Conc	Annually	Composite	Effluent
NOEL 7day Ceriodaphnia Dubia	All Year	100	Percent	DMin Conc	Quarterly	Composite	Effluent
NOEL 7day Ceriodaphnia Dubia	All Year	100	Percent	DMin Conc	Monthly	Composite	% Removal
NOEL 7day Fathead Minnows	All Year	100	Percent	DMin Conc	Quarterly	Composite	Effluent
NOEL 7day Fathead Minnows	All Year	100	Percent	DMin Conc	Monthly	Composite	%Removal
Settleable Solids	All Year	1	mL/L	DMax Conc	Weekly	Composite	Effluent
TSS	All Year	45	mg/L	DMax Conc	Weekly	Composite	Effluent
TSS	All Year	90	lb/day	WAvg Load	Weekly	Composite	Effluent
TSS	All Year	40	mg/L	WAvg Conc	Weekly	Composite	Effluent
TSS	All Year	68	lb/day	MAvg Load	Weekly	Composite	Effluent
TSS	All Year	30	mg/L	MAvg Conc	Weekly	Composite	Effluent

Table 6-31a.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
TSS % Removal	All Year	40	Percent	DMin % Removal	Weekly	Calculated	% Removal
TSS % Removal	All Year	85	Percent	MAvg % Removal	Weekly	Calculated	% Removal
pH	All Year	8.5	SU	DMax Conc	3/Week	Grab	Effluent
pH	All Year	6.5	SU	DMin Conc	3/Week	Grab	Effluent

Table 6-31b.

Tables 6-31a-b. Permit Limits for Watertown STP.

Compliance History:
The following numbers of exceedences were noted in PCS:

4 Overflows
39 Bypasses
5 Dissolved Oxygen
9 Ammonia
2 Suspended Solids % Removal
1 Escherichia coli
1 Total Suspended Solids
1 Carbonaceous Oxygen Demand
1 Settleable Solids

Enforcement:
3/22/06 Notice of Violation for failure to issue Industrial User with 180 days
1/7/03 Commissioner's Order 02-0745: Previous Orders (00-011D & 00-012D) required a WWTP upgrade that was not completed in a timely way. Continued permit exceedances.

Comments:
3/22/06 Operational Compliance Inspection. Not in Compliance – failure to issue Industrial User permit with 180 days.

6/6/07 Pretreatment Technical Assistance Visit and file review. There is presently an informal flow restriction on the Technical Plating Rubber Company discharge. I suggest that these informal flow restrictions be placed in an Industrial user permit as a condition of compliance.

The pretreatment files were found in satisfactory condition. No deficiencies were observed, and the Pretreatment Coordinator reported no problems in implementing the program.

TN0060232 White House Utility District

Discharger rating: Minor
City: Hendersonville
County: Sumner
EFO Name: Nashville
Issuance Date: 4/1/04
Expiration Date: 2/28/09
Receiving Stream(s): Cumberland River (Old Hickory Reservoir) at mile 230.2
HUC-12: 051302010405
Effluent Summary: Treated domestic wastewater from Outfall 001
Treatment system: Extended aeration - Schreiber Bio-Reel.

Segment	TN05130201001_1000
Name	Old Hickory Reservoir
Size	27439
Unit	Acres
First Year on 303(d) List	-
Designated Uses	Fish and Aquatic Life (Supporting), Livestock Watering and Wildlife (Supporting), Recreation (Supporting), Industrial Water Supply (Supporting), Domestic Water Supply (Supporting), Irrigation (Supporting)
Causes	N/A
Sources	N/A

Table 6-32. Stream Segment Information for White House Utility District.

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
Fecal Coliform	All Year	1000	#/100mL	DMax Conc	2/Month	Grab	Effluent
Fecal Coliform	All Year	200	#/100mL	MAvg Geo Mean	2/Month	Grab	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	20	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 6-33. Permit Limits for White House Utility District.

Comments:
11/01/06 Compliance Evaluation Inspection: In compliance. Identification sign for the outfall is missing; it needs to be re-posted as described in the permit. Effluent flowmeter is now checked every 6 months by Labtronix (22.5 degree v-notch weir w/ultrasonic WL detector). SCADA system installed which facilitates remote monitoring and control. May change from Sanuril tablets to liquid bleach disinfection. Currently replacing a section of sewer line to reduce inflow and infiltration (I/I). New aluminum covers over the Schreiber BioReel basins. New residential type perimeter fence installed in lieu of wire mesh type.

6.4.B. Industrial Permits:

TN0068161 Cordell Hull Hydro Power Plant

Discharger rating: Minor
City: Carthage
County: Smith
EFO Name: Cookeville
Issuance Date: 3/1/04
Expiration Date: 11/30/09
Receiving Stream(s): Cumberland River (Old Hickory Reservoir) at mile 313.5
HUC-12: 051301060309
Effluent Summary: Noncontact cooling waters, station sump wastewater (which includes waters such as cooling water, river water that has leaked into plant at various points; river water from unwatering of penstock, scroll case, and draft tube; air compressor blowdown and other condensate; and floor washwater); river water from unwatering operations; river water that has leaked into the plant; test waters from fire protection system; and spent waters from certain activities outdoors, including pressure washing of painted surfaces, slot cutting the dam and washing equipment
Treatment system: -

Segment	TN05130106005_1000
Name	Cordell Hull Lake
Size	13901
Unit	Acres
First Year on 303(d) List	-
Designated Uses	Domestic Water Supply (Supporting), Industrial Water Supply (Supporting), Fish and Aquatic Life (Supporting), Recreation (Supporting), Irrigation (Supporting), Livestock Watering and Wildlife (Supporting)
Causes	N/A
Sources	N/A

Table 6-34. Stream Segment Information for Cordell Hull Hydro Power Plant.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
Flow	All Year		MGD	DMax Load	Daily	Estimate	Effluent
Flow	All Year		MGD	MAvg Load	Daily	Estimate	Effluent
PCB Total Scan Effluent	All Year	0.01	mg/L	DMax Conc	Annually	Grab	Effluent
Settleable Solids	All Year	0.5	mL/L	DMax Conc	Annually	Grab	Effluent

Table 6-35. Permit Limits for Cordell Hull Hydro Power Plant.

Comments:
Hydroelectric generator. The permit allows for discharges associated with power generation at the U.S.A.C.O.E. Dam. Concentrations of PCBs at the Dam are virtually non- existent. BMPs for sediment loss are kept on site. Corps sites are usually in very good condition.

TN0078417 City of Lebanon Landfill

Discharger rating:	Minor
City:	Lebanon
County:	Wilson
EFO Name:	Nashville
Issuance Date:	2/1/05
Expiration Date:	12/30/09
Receiving Stream(s):	Unnamed tributary of Spring Creek
HUC-12:	051302010106
Effluent Summary:	Treated leachate from inactive municipal landfill through Outfall 001.
Treatment system:	Leachate from landfill is routed through subsurface flow constructed wetlands cells.

Segment	TN05130201013_0300
Name	Unnamed Trib to Spring Creek
Size	3.1
Unit	Miles
First Year on 303(d) List	-
Designated Uses	Recreation (Not Assessed), Irrigation (Supporting), Fish and Aquatic Life (Supporting), Livestock Watering and Wildlife (Supporting)
Causes	N/A
Sources	N/A

Table 6-36. Stream Segment Information for City of Lebanon Landfill.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
Ammonia as N (Total)	All Year	2.2	mg/L	DMax Conc	2/Month	Grab	Effluent
Ammonia as N (Total)	All Year	1.1	mg/L	MAvg Conc	2/Month	Grab	Effluent
BOD5	All Year	45	mg/L	DMax Conc	2/Month	Grab	Effluent
BOD5	All Year	12	mg/L	MAvg Conc	2/Month	Grab	Effluent
Benzoic acid	All Year	0.12	mg/L	DMax Conc	2/Month	Grab	Effluent
Benzoic acid	All Year	0.071	mg/L	MAvg Conc	2/Month	Grab	Effluent
Flow	All Year		MGD	DMax Load	2/Month	Instantaneous	Effluent
Flow	All Year		MGD	MAvg Load	2/Month	Instantaneous	Effluent
Phenols	All Year	0.026	mg/L	DMax Conc	2/Month	Grab	Effluent
Phenols	All Year	0.015	mg/L	MAvg Conc	2/Month	Grab	Effluent
TSS	All Year	45	mg/L	DMax Conc	2/Month	Grab	Effluent
TSS	All Year	27	mg/L	MAvg Conc	2/Month	Grab	Effluent
Zn (T)	All Year	0.2	mg/L	DMax Conc	2/Month	Grab	Effluent
Zn (T)	All Year	0.11	mg/L	MAvg Conc	2/Month	Grab	Effluent
alpha-Terpineol	All Year	0.033	mg/L	DMax Conc	2/Month	Grab	Effluent
alpha-Terpineol	All Year	0.016	mg/L	MAvg Conc	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
para-Cresol	All Year	0.025	mg/L	DMax Conc	2/Month	Grab	Effluent
para-Cresol	All Year	0.014	mg/L	MAvg Conc	2/Month	Grab	Effluent

Table 6-37. Permit Limits for City of Lebanon Landfill.

Enforcement:
2/21/06 Notice of Violation for failure to have approved plans.

Comments:
2/21/06 Compliance Evaluation Inspection: Facility under construction, Failure to have approved plans, which resulted in a Notice of Violation.

TN0077852 TVA - Wilson 500-KV Substation

Discharger rating:	Minor
City:	Mt. Juliet
County:	Wilson
EFO Name:	Nashville
Issuance Date:	7/24/03
Expiration Date:	6/30/09
Receiving Stream(s):	Unnamed tributary to Cedar Creek
HUC-12:	051302010406
Effluent Summary:	Groundwater from dewatering system used for establishing hydraulic gradient at mineral oil remediation site from Outfall 001
Treatment system:	-

Segment	TN05130201011_0999
Name	Misc Tribs to Cedar Creek
Size	21.4
Unit	Miles
First Year on 303(d) List	-
Designated Uses	Fish and Aquatic Life (Not Assessed), Recreation (Not Assessed), Irrigation (Not Assessed), Livestock Watering and Wildlife (Not Assessed)
Causes	N/A
Sources	N/A

Table 6-38. Stream Segment Information for TVA - Wilson 500-KV Substation.

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	Monthly	Visual	Effluent
Flow	All Year		MGD	DMax Load	Monthly	Instantaneous	Effluent
Flow	All Year		MGD	MAvg Load	Monthly	Instantaneous	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 6-39. Permit Limits for TVA - Wilson 500-KV Substation.

Comments:
Dewatering system used for establishing hydraulic gradient at mineral oil remediation. 02/13/07 Site visit: Site has 2-permits. SOP-02050 for the spray field from this same system, TVA wants to let it expire (Nov.30, 2007). The Individual "outfall" also releases storm water diverted from the site and the retained areas around tanks and transformers. TMSP Sector O would cover all other portions of the site for storm water issues. Let SOP expire, then combine all discharges into one permit. SWPPP should be included to cover storm water being collected and discharged from pond.

TN0064505 Resource Authority in Sumner County Ash Landfill

Discharger rating:	Minor
City:	Gallatin
County:	Sumner
EFO Name:	Nashville
Issuance Date:	1/1/05
Expiration Date:	11/29/10
Receiving Stream(s):	Cumberland River (Old Hickory Reservoir) at mile 240.57
HUC-12:	051302010401
Effluent Summary:	Storm water runoff/leachate from municipal incinerator ash landfill from Outfall 001
Treatment system:	-

Segment	TN05130201001_1000
Name	Old Hickory Reservoir
Size	27439
Unit	Acres
First Year on 303(d) List	-
Designated Uses	Fish and Aquatic Life (Supporting), Livestock Watering and Wildlife (Supporting), Recreation (Supporting), Industrial Water Supply (Supporting), Domestic Water Supply (Supporting), Irrigation (Supporting)
Causes	N/A
Sources	N/A

Table 6-40. Stream Segment Information for Resource Authority in Sumner County Ash Landfill.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
Ag (T)	All Year	0.05	mg/L	DMax Conc	Monthly	Composite	Effluent
Ammonia as N (Total)	All Year	10	mg/L	DMax Conc	Weekly	Composite	Effluent
Ammonia as N (Total)	All Year	4.9	mg/L	MAvg Conc	Weekly	Composite	Effluent
BOD5	All Year	140	mg/L	DMax Conc	Weekly	Composite	Effluent
BOD5	All Year	37	mg/L	MAvg Conc	Weekly	Composite	Effluent
Cd (T)	All Year	0.043	mg/L	DMax Conc	Monthly	Composite	Effluent
Flow	All Year		MGD	DMax Load	Weekly	Instantaneous	Effluent
Flow	All Year		MGD	MAvg Load	Weekly	Instantaneous	Effluent
Oil and Grease (Freon EM)	All Year	15	mg/L	DMax Conc	2/Month	Grab	Effluent
Oil and Grease (Freon EM)	All Year	10	mg/L	MAvg Conc	2/Month	Grab	Effluent
Pb (T)	All Year	0.21	mg/L	DMax Conc	Weekly	Composite	Effluent
Phenols	All Year	0.026	mg/L	DMax Conc	See Permit	Grab	Effluent
Phenols	All Year	0.015	mg/L	MAvg Conc	See Permit	Grab	Effluent
TSS	All Year	40	mg/L	DMax Conc	Weekly	Composite	Effluent
TSS	All Year	27	mg/L	MAvg Conc	Weekly	Composite	Effluent
Zn (T)	All Year	0.2	mg/L	DMax Conc	Weekly	Composite	Effluent
Zn (T)	All Year	0.11	mg/L	MAvg Conc	Weekly	Composite	Effluent
pH	All Year	9	SU	DMax Conc	Monthly	Grab	Effluent
pH	All Year	6	SU	DMin Conc	Monthly	Grab	Effluent

Table 6-41. Permit Limits for Resource Authority in Sumner County Ash Landfill.

Compliance History:
The following numbers of exceedences were noted in PCS:

12 Total Suspended Solids
3 Biological Oxygen Demand
18 Ammonia

Enforcement:
Consent Order sent by Office of General Counsel on March 31, 2004; same Order resent January 12, 2006.

Comments:
2/27/06 Compliance Evaluation Inspection: Not in compliance. Permittee said ash landfill closed last May 2005 but closure plan not yet submitted to Department of Solid Waste management for approval. Leachate pump station still operational; no treatment provided. Pump station wet well not covered, safety hazard.

TN0005428 TVA Gallatin Fossil Plant

Discharger rating:	Major
City:	Gallatin
County:	Sumner
EFO Name:	Nashville
Issuance Date:	6/11/07
Expiration Date:	11/29/09
Receiving Stream(s):	Cumberland River at mile 240.5 (001), mile 242.5 (002, 006, & 009), and mile 244.5 (004)
HUC-12:	051302010401
Effluent Summary:	Ash transport water, chemical and nonchemical metal cleaning wastes, water treatment plant wastes, combustion turbine oil/water separator effluent, demineralization waste neutralization sump discharges, miscellaneous equipment cooling water, floor washing wastes, boiler makeup water leakage, boiler blowdown, chemical lab drain water, boiler bottom overflow sump discharge, powerhouse extension pump discharge, U-Building pad wash oil/water separator, car wash, ash sluice water leakage, coal pile runoff, and storm water runoff through Outfall 001; steam condenser cooling water, pulverizer cooling water, turbine oil cooling water, and hydrogen cooler cooling water through Outfall 002; intake screen backwash through Outfall 004.
Treatment system:	Treatment: Outfall 001 - Settling, neutralization, pH adjustment with CO2, oil water separator; IMP 005 - neutralization, chemical precipitation, settling.

Segment	TN05130201001_1000
Name	Old Hickory Reservoir
Size	27439
Unit	Acres
First Year on 303(d) List	-
Designated Uses	Fish and Aquatic Life (Supporting), Livestock Watering and Wildlife (Supporting), Recreation (Supporting), Industrial Water Supply (Supporting), Domestic Water Supply (Supporting), Irrigation (Supporting)
Causes	N/A
Sources	N/A

Table 6-42. Stream Segment Information for TVA Gallatin Fossil Plant.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
Ag (T)	All Year		mg/L	DMax Conc	Quarterly	Grab	Effluent
Al (T)	All Year		mg/L	DMax Conc	Quarterly	Grab	Effluent
As (T)	All Year		mg/L	DMax Conc	Quarterly	Grab	Effluent
Fe (T)	All Year		mg/L	DMax Conc	Quarterly	Grab	Effluent
Flow	All Year		MGD	MAvg Load	Weekly	Instantaneous	Effluent
Flow	All Year		MGD	DMax Load	Weekly	Instantaneous	Effluent
IC25 7day Ceriodaphnia dubia	All Year		Percent	DMin Conc	Annually	Composite	Effluent
IC25 7day Fathead Minnows	All Year		Percent	DMin Conc	Annually	Composite	Effluent
Mn (T)	All Year		mg/L	DMax Conc	Quarterly	Grab	Effluent
Oil and Grease (Freon EM)	All Year	18	mg/L	DMax Conc	Monthly	Grab	Effluent
Oil and Grease (Freon EM)	All Year	14	mg/L	MAvg Conc	Monthly	Grab	Effluent
Pb (T)	All Year		mg/L	DMax Conc	Quarterly	Grab	Effluent
Sb (T)	All Year		mg/L	DMax Conc	Quarterly	Grab	Effluent
Se (T)	All Year		mg/L	DMax Conc	Quarterly	Grab	Effluent
TSS	All Year	92.7	mg/L	DMax Conc	Monthly	Grab	Effluent
TSS	All Year	28	mg/L	MAvg Conc	Monthly	Grab	Effluent
pH	All Year	9	SU	DMax Conc	Weekly	Grab	Effluent
pH	All Year	6	SU	DMin Conc	Weekly	Grab	Effluent

Table 6-43. Permit Limits for Outfall 001 at TVA Gallatin Fossil Plant.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
Flow	All Year		MGD	DMax Load	Daily	Estimate	Effluent
Flow	All Year		MGD	MAvg Load	Daily	Estimate	Effluent
IC25 7day Ceriodaphnia Dubia	All Year	100	Percent	DMin Conc	Quarterly	Composite	Effluent
IC25 7day Fathead Minnows	All Year	100	Percent	DMin Conc	Quarterly	Composite	Effluent
Oxidants Total Residual	All Year	0.011	mg/L	MAvg Conc	Weekly	Calculated	Effluent
Oxidants Total Residual	All Year	0.019	mg/L	DMax Conc	Weekly	Calculated	Effluent
Temperature (°C)	All Year	32.8	°C	DMax Conc	Daily	Calculated	Effluent
Temperature (°C)	All Year		°C	DMax Conc	Continuous	Recorder	Intake
Time of Chlorine Addition (minute/day/unit)	All Year	120	Minutes	DMax Load	Daily	Pump Log	Effluent

Table 6-44. Permit Limits for Outfall 002 at TVA Gallatin Fossil Plant.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
Flow	All Year		MGD	DMax Load	Quarterly	Estimate	Effluent
pH	All Year		SU	DMax Conc	Quarterly	Grab	Effluent
pH	All Year		SU	DMin Conc	Quarterly	Grab	Effluent

Table 6-45. Permit Limits for Outfall 006 and 009 at TVA Gallatin Fossil Plant.

Comments:
Modification to permit to change 316(b) requirements based on suspension by EPA. Fossil fueled steam-electric generating plant with capacity of 1,580.4 MW.

3/23/06 Compliance Evaluation Inspection: In compliance

APPENDIX II

ID	NAME	HAZARD
197029	Crystal	3
837001	Elmwood Tailings	H
837008	Haynes Lake	H
837011	Portland City Lake	S
837012	Womack	S
837013	Crutcher Lake	2
837017	Liles	L
857001	Wilson Farms	L
957003	Ramsgate Development	H
837019	Bent Tree	H
837020	Polk	S
837021	Trotter	H

Table A2-1. Inventoried Dams in the Old Hickory Lake Watershed. *Hazard Codes: H, High; (S, 2), Significant; (L, 3), Low. TDEC only regulates dams indicated by a numeric hazard score.*

LAND COVER/LAND USE	ACRES	% OF WATERSHED
Bare Rock/Sand/Clay	772	0.1
Deciduous Forest	240,041	38.1
Developed Open Space	40,901	6.5
Emergent Herbaceous Wetlands	149	0.0
Evergreen Forest	31,810	5.0
Grassland/Herbaceous	12,735	2.0
High Intensity Development	1,753	0.3
Low Intensity Development	12,935	2.1
Medium Intensity Development	3,713	0.6
Mixed Forest	20,895	3.3
Open Water	21,088	3.3
Pasture/Hay	208,137	33.0
Row Crops	24,857	3.9
Shrub/Scrub	9,543	1.5
Woody Wetlands	1,244	0.2
Total	**630,572**	**100.0**

Table A2-2. Land Use Distribution in Old Hickory Lake Watershed. *Data are from Multi-Resolution Land Characterization (MRLC) derived by applying a generalized Anderson level II system to mosaics of Landsat thematic mapper images collected every five years.*

ECOREGION	REFERENCE STREAM	WATERSHED (HUC 8)	
Western Pennyroyal Karst (71e)	Buzzard Creek (71E09)	Red River	05130206
	Passenger Creek (71E14)	Red River	05130206
Eastern Highland Rim (71g)	Flat Creek (71G03)	Cordell Hull Lake	05130106
	Spring Creek (71G04)	Cordell Hull Lake	01530106
	Hurricane Creek (71G10)	Upper Elk River	06030003
Outer Nashville Basin (71h)	Flynn Creek (71H03)	Cordell Hull Lake	05130106
	Clear Fork (71H06)	Caney Fork River	05130108
	Carson Fork (71H09)	Stones River	05130203
Inner Nashville Basin (71i)	Stewart Creek (71I03)	Stones River	05130203
	Flat Creek (71I10)	Upper Duck River	06040002
	Cedar Creek (71I12)	Old Hickory Lake	05130201
	Fall Creek (71I13)	Stones River	05130203
	Little Flat Creek (71I14)	Upper Duck River	06040002
	Harpeth River (71I15)	Harpeth River	05130204
	West Fork Stones River (71I16)	Stones River	05130203

Table A2-3. Ecoregion Monitoring Sites in Ecoregions 71e, 71g, 71h, and 71i.

CODE	NAME	AGENCY	AGENY ID
44	TDEC/DNA Brimstone Creek Site	TDEC/DNA	S.USTNHP 185
202	USACOE-Nashville Client Site	USACOE-Nashville	
211	USACOE-Nashville Client Site	USACOE-Nashville	
256	USACOE-Nashville Client Site	USACOE-Nashville	
258	USACOE-Nashville Client Site	USACOE-Nashville	
267	USACOE-Nashville Client Site	USACOE-Nashville	
322	TDOT SR 25 Mitigation/Permit Site	TDOT	
433	TDEC/WPC Lebanon WPC Mitigation Site	TDEC/WPC	
451	TDEC/WPC SR 25 (Carthage Bypass) Permit/Mitigation	TDEC/WPC	
521	TDOT North Fork Cedar Creek Permit Site	TDOT	
522	TDOT North Fork Cedar Creek Mitigation Site	TDOT	
2728	USACOE Old Hickory Lake 218.3 R Site	USACOE-Nashville	960048021

Table A2-4. Wetland Sites in the Old Hickory Lake Watershed in TDEC Database. *TDEC, Tennessee Department of Environment and Conservation; DNA, Division of Natural Areas; WPC, Water Pollution Control; TDOT, Tennessee Department of Transportation; USACOE, US Army Corps of Engineers.* ***This table represents an incomplete inventory and should not be considered a dependable indicator of the presence of wetlands in the watershed.***

APPENDIX III

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Bledsoe Creek	TN05130201035_1000	18.2
Cedar Creek	TN05130201011_1000	11.9
Cedar Creek	TN05130201015_1000	10.9
Dixon Creek	TN05130201027_1000	9.4
Drakes Creek	TN05130201047_1000	12.7
Dry Fork	TN05130201035_0200	22.8
East Camp Creek	TN05130201041_1000	9.7
Goose Creek	TN05130201028_1000	14.8
Jennings Fork	TN05130201021_0800	21.5
Johnson Branch	TN05130201015_0200	7.6
Lick Creek	TN05130201027_0100	7.7
Little Creek	TN05130201001T_1500	4.2
Middle Fork	TN05130201028_0300	17.6
Peyton Creek	TN05130201026_1000	16.4
Plunkett Creek	TN05130201001T_1100	11.6
Round Lick Creek	TN05130201021_1000	28.6
Spencer Creek	TN05130201001T_1450	7.3
Spring Creek	TN05130201013_1000	0.8
Spring Creek	TN05130201013_2000	10.0
Spring Creek	TN05130201013_3000	8.7
Spring Creek	TN05130201013_4000	9.0
Station Camp Creek	TN05130201046_1000	14.4
Unnamed Trib to Spring Creek	TN05130201013_0300	3.1

Table A3-1. Streams Fully Supporting Fish and Aquatic Life Designated Use in the Old Hickory Lake Watershed.

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (ACRES)
Old Hickory Reservoir	TN05130201001_1000	27,439

Table A3-2. Lakes Fully Supporting Fish and Aquatic Life Designated Use in the Old Hickory Lake Watershed.

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Bartons Creek	TN05130201055_1000	16.9
Beech Log Creek	TN05130201021_0400	8.5
Big Caney Branch	TN05130201021_0600	6.3
Little Goose Creek	TN05130201028_0100	12.7
Middle Fork Cedar Creek	TN05130201011_0200	4.3
Neal Branch	TN05130201021_0300	3.7
North Fork Cedar Creek	TN05130201011_0100	4.2
North Fork Cedar Creek	TN05130201011_0100	4.2
Round Lick Creek	TN05130201021_2000	8.7
Round Lick Creek	TN05130201021_3000	8.8
Sinking Creek	TN05130201055_0200	7.4
Sinking Creek	TN05130201055_0250	10.0
Spencer Creek	TN05130201001T_1400	11.6
Town Creek	TN05130201001T_0200	12.1
Wilson Creek	TN05130201011_0400	8.1

Table A3-3. Streams Not Supporting Fish and Aquatic Life Designated Use in the Old Hickory Lake Watershed.

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Bates Branch	TN05130201001T_0400	3.7
Brinkley Creek	TN05130201046_0100	3.3
Browning Creek	TN05130201028_0110	3.7
Brushy Fork Creek	TN05130201035_0300	13.7
Carr Creek	TN05130201028_0320	8.7
Carter Branch	TN05130201028_0400	3.0
Clendenon Branch	TN05130201015_0100	4.0
Davis Branch	TN05130201026_0100	5.3
Deshea Creek	TN05130201035_0100	24.1
Dry Branch	TN05130201028_0800	3.0
Dry Fork	TN05130201028_0700	14.5
Dry Fork Branch	TN05130201001T_1300	7.9
Dry Fork Creek	TN05130201021_0700	6.6
East Fork	TN05130201035_0700	12.0
Echo Creek	TN05130201028_0310	14.2
Finley Branch	TN05130201028_1100	4.0
Ford Branch	TN05130201028_0500	9.3
Haley Branch	TN05130201021_0200	6.0
Hams Branch	TN05130201028_0140	2.6
Hawkins Branch	TN05130201028_0120	5.0

Table A3-4a.

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Hickerson Creek	TN05130201028_0200	3.9
Hogan Branch	TN05130201047_0100	3.0
Hogan Creek	TN05130201001T_0800	7.2
Horn Springs Branch	TN05130201055_0300	6.8
Indian Trail Creek	TN05130201047_0200	3.6
Liberty Branch	TN05130201041_0100	21.0
Lick Creek	TN05130201001T_0300	11.0
Liggett Branch	TN05130201046_0200	3.0
Little Goose Creek	TN05130201028_0150	10.0
Little Peyton Creek	TN05130201026_0400	4.7
Martha Branch	TN05130201001T_1410	5.0
Misc Tribs to Bartons Creek	TN05130201055_0999	20.2
Misc Tribs to Bledsoe Creek	TN05130201035_0999	33.0
Misc Tribs to Cedar Creek	TN05130201015_0999	21.4
Misc Tribs to Dixon Creek	TN05130201027_0999	16.2
Misc Tribs to Drakes Creek	TN05130201047_0999	35.3
Misc Tribs to East Camp Creek	TN05130201041_0999	8.4
Misc Tribs to Goose Creek	TN05130201028_0999	7.7
Misc Tribs to Old Hickory Reservoir	TN05130201001T_0999	87.6
Misc Tribs to Peyton Creek	TN05130201026_0999	15.9
Misc Tribs to Spring Creek	TN05130201013_0999	34.8
Misc Tribs to Station Camp Creek	TN05130201046_0999	34.1
Nickajack Branch	TN05130201026_0200	4.1
Otter Fork	TN05130201035_0600	5.0
Pee Dee Creek	TN05130201046_0300	7.5
Pumpkin Branch	TN05130201028_0900	2.3
Rankin Branch	TN05130201001T_0100	3.3
Rockhouse Hollow Branch	TN05130201035_0500	5.4
Rocky Creek	TN05130201001T_0500	16.7
Rogues Fork Creek	TN05130201035_0400	5.5
Sanderson Branch	TN05130201026_0500	17.3
Scanty Branch	TN05130201027_0200	4.5
Second Creek	TN05130201001T_0600	4.6
Shop Springs Branch	TN05130201013_0100	6.7
Skillet Creek	TN05130201028_0130	6.1
South Fork Cedar Creek	TN05130201011_0300	7.9
Strother Branch	TN05130201046_0400	6.9
Sullivan Branch	TN05130201011_0500	4.0
Sullivan Branch	TN05130201028_0600	5.4
Sulphur Branch	TN05130201021_0900	7.6
Toetown Branch	TN05130201026_0300	4.7
Unnamed Trib to East Camp Creek	TN05130201041_0200	8.2

Table A3-4b.

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Unnamed Trib to Round Lick Creek	TN05130201021_0100	5.2
Unnamed Trib to Round Lick Creek	TN05130201021_0500	2.8
Walker Branch	TN05130201055_0100	6.1
Wallace Branch	TN05130201041_0300	3.7
Ward Branch	TN05130201001T_1200	12.8
Ward Creek	TN05130201001T_0900	5.6
West Fork Spring Creek	TN05130201013_0200	9.2
Wilburn Creek	TN05130201001T_0700	9.9
Young Branch	TN05130201015_0300	3.3

Table A3-4c.

Table A3-4a-c. Streams Not Assessed for Fish and Aquatic Life Designated Use in the Old Hickory Lake Watershed.

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Cedar Creek	TN05130201011_1000	11.9
Cedar Creek	TN05130201015_1000	10.9
East Camp Creek	TN05130201041_1000	9.7
Little Creek	TN05130201001T_1500	4.2
Spring Creek	TN05130201013_2000	10.0
Spring Creek	TN05130201013_3000	8.7
Town Creek	TN05130201001T_0200	12.1

Table A3-5. Streams Fully Supporting Recreation Designated Use in the Old Hickory Lake Watershed.

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (ACRES)
Old Hickory Reservoir	TN05130201001_1000	27,439

Table A3-6. Lakes Fully Supporting Recreation Designated Use in the Old Hickory Lake Watershed.

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Bartons Creek	TN05130201055_1000	16.9
Beech Log Creek	TN05130201021_0400	8.5
Johnson Branch	TN05130201015_0200	7.6
Neal Branch	TN05130201021_0300	3.7
Round Lick Creek	TN05130201021_2000	8.7
Sinking Creek	TN05130201055_0200	7.4
Sinking Creek	TN05130201055_0250	10.0
Spencer Creek	TN05130201001T_1400	11.6
Spring Creek	TN05130201013_4000	9.0

Table A3-7. Streams Not Supporting Recreation Designated Use in the Old Hickory Lake Watershed.

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Bates Branch	TN05130201001T_0400	3.7
Big Caney Branch	TN05130201021_0600	6.3
Bledsoe Creek	TN05130201035_1000	18.2
Brinkley Creek	TN05130201046_0100	3.3
Browning Creek	TN05130201028_0110	3.7
Brushy Fork Creek	TN05130201035_0300	13.7
Carr Creek	TN05130201028_0320	8.7
Carter Branch	TN05130201028_0400	3.0
Clendenon Branch	TN05130201015_0100	4.0
Davis Branch	TN05130201026_0100	5.3
Deshea Creek	TN05130201035_0100	24.1
Dixon Creek	TN05130201027_1000	9.4
Drakes Creek	TN05130201047_1000	12.7
Dry Branch	TN05130201028_0800	3.0
Dry Fork	TN05130201028_0700	14.5
Dry Fork	TN05130201035_0200	22.8
Dry Fork Branch	TN05130201001T_1300	7.9
Dry Fork Creek	TN05130201021_0700	6.6
East Fork	TN05130201035_0700	12.0
Echo Creek	TN05130201028_0310	14.2
Finley Branch	TN05130201028_1100	4.0
Ford Branch	TN05130201028_0500	9.3
Goose Creek	TN05130201028_1000	14.8
Haley Branch	TN05130201021_0200	6.0
Hams Branch	TN05130201028_0140	2.6

Table A3-8a.

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Hawkins Branch	TN05130201028_0120	5.0
Hickerson Creek	TN05130201028_0200	3.9
Hogan Branch	TN05130201047_0100	3.0
Hogan Creek	TN05130201001T_0800	7.2
Horn Springs Branch	TN05130201055_0300	6.8
Indian Trail Creek	TN05130201047_0200	3.6
Jennings Fork	TN05130201021_0800	21.5
Liberty Branch	TN05130201041_0100	21.0
Lick Creek	TN05130201001T_0300	11.0
Lick Creek	TN05130201027_0100	7.7
Liggett Branch	TN05130201046_0200	3.0
Little Goose Creek	TN05130201028_0100	12.7
Little Goose Creek	TN05130201028_0150	10.0
Little Peyton Creek	TN05130201026_0400	4.7
Martha Branch	TN05130201001T_1410	5.0
Middle Fork	TN05130201028_0300	17.6
Middle Fork Cedar Creek	TN05130201011_0200	4.3
Misc Tribs to Bartons Creek	TN05130201055_0999	20.2
Misc Tribs to Bledsoe Creek	TN05130201035_0999	33.0
Misc Tribs to Cedar Creek	TN05130201015_0999	21.4
Misc Tribs to Dixon Creek	TN05130201027_0999	16.2
Misc Tribs to Drakes Creek	TN05130201047_0999	35.3
Misc Tribs to East Camp Creek	TN05130201041_0999	8.4
Misc Tribs to Goose Creek	TN05130201028_0999	7.7
Misc Tribs to Old Hickory Reservoir	TN05130201001T_0999	87.6
Misc Tribs to Peyton Creek	TN05130201026_0999	15.9
Misc Tribs to Spring Creek	TN05130201013_0999	34.8
Misc Tribs to Station Camp Creek	TN05130201046_0999	34.1
Nickajack Branch	TN05130201026_0200	4.1
North Fork Cedar Creek	TN05130201011_0100	4.2
Otter Fork	TN05130201035_0600	5.0
Pee Dee Creek	TN05130201046_0300	7.5
Peyton Creek	TN05130201026_1000	16.4
Plunkett Creek	TN05130201001T_1100	11.6
Pumpkin Branch	TN05130201028_0900	2.3
Rankin Branch	TN05130201001T_0100	3.3
Rockhouse Hollow Branch	TN05130201035_0500	5.4
Rocky Creek	TN05130201001T_0500	16.7
Rogues Fork Creek	TN05130201035_0400	5.5
Round Lick Creek	TN05130201021_1000	28.6

Table A3-8b.

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Round Lick Creek	TN05130201021_3000	8.8
Sanderson Branch	TN05130201026_0500	17.3
Scanty Branch	TN05130201027_0200	4.5
Second Creek	TN05130201001T_0600	4.6
Shop Springs Branch	TN05130201013_0100	6.7
Skillet Creek	TN05130201028_0130	6.1
South Fork Cedar Creek	TN05130201011_0300	7.9
Spencer Creek	TN05130201001T_1450	7.3
Station Camp Creek	TN05130201046_1000	14.4
Strother Branch	TN05130201046_0400	6.9
Sullivan Branch	TN05130201011_0500	4.0
Sullivan Branch	TN05130201028_0600	5.4
Sulphur Branch	TN05130201021_0900	7.6
Toetown Branch	TN05130201026_0300	4.7
Unnamed Trib to East Camp Creek	TN05130201041_0200	8.2
Unnamed Trib to Round Lick Creek	TN05130201021_0100	5.2
Unnamed Trib to Round Lick Creek	TN05130201021_0500	2.8
Unnamed Trib to Spring Creek	TN05130201013_0300	3.1
Walker Branch	TN05130201055_0100	6.1
Wallace Branch	TN05130201041_0300	3.7
Ward Branch	TN05130201001T_1200	12.8
Ward Creek	TN05130201001T_0900	5.6
West Fork Spring Creek	TN05130201013_0200	9.2
Wilburn Creek	TN05130201001T_0700	9.9
Wilson Creek	TN05130201011_0400	8.1
Young Branch	TN05130201015_0300	3.3

Table A3-8c.

Table A3-8a-c. Streams Not Assessed for Recreation Designated Use in the Old Hickory Lake Watershed.

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Bartons Creek	TN05130201055_1000	16.9
Bates Branch	TN05130201001T_0400	3.7
Beech Log Creek	TN05130201021_0400	8.5
Big Caney Branch	TN05130201021_0600	6.3
Bledsoe Creek	TN05130201035_1000	18.2
Brinkley Creek	TN05130201046_0100	3.3
Browning Creek	TN05130201028_0110	3.7
Brushy Fork Creek	TN05130201035_0300	13.7
Carr Creek	TN05130201028_0320	8.7
Carter Branch	TN05130201028_0400	3.0
Cedar Creek	TN05130201015_1000	10.9
Cedar Creek	TN05130201011_1000	11.9
Clendenon Branch	TN05130201015_0100	4.0
Davis Branch	TN05130201026_0100	5.3
Deshea Creek	TN05130201035_0100	24.1
Dixon Creek	TN05130201027_1000	9.4
Drakes Creek	TN05130201047_1000	12.7
Dry Branch	TN05130201028_0800	3.0
Dry Fork	TN05130201028_0700	14.5
Dry Fork	TN05130201035_0200	22.8
Dry Fork Branch	TN05130201001T_1300	7.9
Dry Fork Creek	TN05130201021_0700	6.6
East Camp Creek	TN05130201041_1000	9.7
East Fork	TN05130201035_0700	12.0
Echo Creek	TN05130201028_0310	14.2
Finley Branch	TN05130201028_1100	4.0
Ford Branch	TN05130201028_0500	9.3
Goose Creek	TN05130201028_1000	14.8
Haley Branch	TN05130201021_0200	6.0
Hams Branch	TN05130201028_0140	2.6
Hawkins Branch	TN05130201028_0120	5.0
Hickerson Creek	TN05130201028_0200	3.9
Hogan Branch	TN05130201047_0100	3.0
Hogan Creek	TN05130201001T_0800	7.2
Horn Springs Branch	TN05130201055_0300	6.8
Indian Trail Creek	TN05130201047_0200	3.6
Jennings Fork	TN05130201021_0800	21.5
Johnson Branch	TN05130201015_0200	7.6
Liberty Branch	TN05130201041_0100	21.0
Lick Creek	TN05130201027_0100	7.7
Lick Creek	TN05130201001T_0300	11.0
Liggett Branch	TN05130201046_0200	3.0
Little Creek	TN05130201001T_1500	4.2
Little Goose Creek	TN05130201028_0150	10.0
Little Goose Creek	TN05130201028_0100	12.7
Little Peyton Creek	TN05130201026_0400	4.7

Table A3-9a

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Martha Branch	TN05130201001T_1410	5.0
Middle Fork	TN05130201028_0300	17.6
Middle Fork Cedar Creek	TN05130201011_0200	4.3
Misc Tribs to Bartons Creek	TN05130201055_0999	20.2
Misc Tribs to Bledsoe Creek	TN05130201035_0999	33.0
Misc Tribs to Cedar Creek	TN05130201015_0999	21.4
Misc Tribs to Dixon Creek	TN05130201027_0999	16.2
Misc Tribs to Drakes Creek	TN05130201047_0999	35.3
Misc Tribs to East Camp Creek	TN05130201041_0999	8.4
Misc Tribs to Goose Creek	TN05130201028_0999	7.7
Misc Tribs to Old Hickory Reservoir	TN05130201001T_0999	87.6
Misc Tribs to Peyton Creek	TN05130201026_0999	15.9
Misc Tribs to Spring Creek	TN05130201013_0999	34.8
Misc Tribs to Station Camp Creek	TN05130201046_0999	34.1
Neal Branch	TN05130201021_0300	3.7
Nickajack Branch	TN05130201026_0200	4.1
North Fork Cedar Creek	TN05130201011_0100	4.2
Otter Fork	TN05130201035_0600	5.0
Pee Dee Creek	TN05130201046_0300	7.5
Peyton Creek	TN05130201026_1000	16.4
Plunkett Creek	TN05130201001T_1100	11.6
Pumpkin Branch	TN05130201028_0900	2.3
Rankin Branch	TN05130201001T_0100	3.3
Rockhouse Hollow Branch	TN05130201035_0500	5.4
Rocky Creek	TN05130201001T_0500	16.7
Rogues Fork Creek	TN05130201035_0400	5.5
Round Lick Creek	TN05130201021_2000	8.7
Round Lick Creek	TN05130201021_3000	8.8
Round Lick Creek	TN05130201021_1000	28.6
Sanderson Branch	TN05130201026_0500	17.3
Scanty Branch	TN05130201027_0200	4.5
Second Creek	TN05130201001T_0600	4.6
Shop Springs Branch	TN05130201013_0100	6.7
Sinking Creek	TN05130201055_0200	7.4
Sinking Creek	TN05130201055_0250	10.0
Skillet Creek	TN05130201028_0130	6.1
South Fork Cedar Creek	TN05130201011_0300	7.9
Spencer Creek	TN05130201001T_1450	7.3
Spencer Creek	TN05130201001T_1400	11.6
Spring Creek	TN05130201013_1000	0.8
Spring Creek	TN05130201013_3000	8.7
Spring Creek	TN05130201013_4000	9.0
Spring Creek	TN05130201013_2000	10.0
Station Camp Creek	TN05130201046_1000	14.4
Strother Branch	TN05130201046_0400	6.9
Sullivan Branch	TN05130201011_0500	4.0

Table A3-9b

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Sullivan Branch	TN05130201028_0600	5.4
Sulphur Branch	TN05130201021_0900	7.6
Toetown Branch	TN05130201026_0300	4.7
Town Creek	TN05130201001T_0200	12.1
Unnamed Trib to East Camp Creek	TN05130201041_0200	8.2
Unnamed trib to Round Lick Creek	TN05130201021_0500	2.8
Unnamed trib to Round Lick Creek	TN05130201021_0100	5.2
Unnamed Trib to Spring Creek	TN05130201013_0300	3.1
Walker Branch	TN05130201055_0100	6.1
Wallace Branch	TN05130201041_0300	3.7
Ward Branch	TN05130201001T_1200	12.8
Ward Creek	TN05130201001T_0900	5.6
West Fork Spring Creek	TN05130201013_0200	9.2
Wilburn Creek	TN05130201001T_0700	9.9
Wilson Creek	TN05130201011_0400	8.1
Young Branch	TN05130201015_0300	3.3

Table A3-9c.

Table A3-9a-c. Stream Impairment Due to Siltation in the Old Hickory Lake Watershed.

APPENDIX IV

LAND USE/LAND COVER	AREAS IN HUC-12 SUBWATERSHEDS (ACRES)				
	0101	0102	0103	0104	0105
Bare Rock/Sand/Clay	39		41	43	2
Deciduous Forest	9,789	25,263	18,666	16,780	3,865
Developed Open Space	1,530	1,001	1,517	1,701	986
Emergent Herbaceous Wetlands	14		7	31	
Evergreen Forest	1,271	1,385	2,037	2,443	1,468
Grassland/Herbaceous	320	1,104	1,736	1,327	153
High Intensity Development	65		95	6	1
Low Intensity Development	389	64	94	74	75
Medium Intensity Development	155	10	35	8	2
Mixed Forest	1,467	706	1,485	1,391	1,172
Open Water	878	4	805	3,041	134
Pasture/Hay	8,065	2,266	11,656	13,483	13,692
Row Crops	1,724	508	2,895	2,227	1,111
Shrub/Scrub	677	25	327	452	755
Woody Wetlands	38	14	108	277	12
Total	**26,420**	**32,352**	**41,504**	**43,284**	**23,429**

Table A4-1a.

LAND USE/LAND COVER	AREAS IN HUC-12 SUBWATERSHEDS (ACRES)				
	0106	0107	0201	0202	0301
Bare Rock/Sand/Clay	8	153	16		3
Deciduous Forest	9,550	5,071	10,322	3,118	29,195
Developed Open Space	2,020	4,025	1,907	467	1,526
Emergent Herbaceous Wetlands	5	6	1		
Evergreen Forest	2,554	1,353	2,979	646	1,464
Grassland/Herbaceous	410	433	431	61	1,114
High Intensity Development	4	630	10	4	46
Low Intensity Development	310	3,838	479	80	71
Medium Intensity Development	5	1,154	32	17	55
Mixed Forest	1,771	975	2,670	581	820
Open Water	327	339	32	4	4
Pasture/Hay	22,049	17,308	20,446	6,501	5,020
Row Crops	1,765	1,499	1,676	393	1,348
Shrub/Scrub	1,474	1,437	1,409	463	34
Woody Wetlands	193	64	83	5	20
Total	**42,444**	**38,287**	**42,494**	**12,339**	**40,721**

Table A4-1b.

LAND USE/LAND COVER	AREAS IN HUC-12 SUBWATERSHEDS (ACRES)				
	0302	0401	0402	0403	0404
Bare Rock/Sand/Clay		71	12	20	38
Deciduous Forest	14,152	5,848	4,587	7,022	11,992
Developed Open Space	1,459	1,167	1,145	4,058	1,669
Emergent Herbaceous Wetlands	9	32	1	8	8
Evergreen Forest	972	788	747	1,098	2,873
Grassland/Herbaceous	514	199	366	382	762
High Intensity Development	48	157	11	261	27
Low Intensity Development	90	280	265	1,351	220
Medium Intensity Development	89	230	37	606	62
Mixed Forest	751	412	696	284	1,083
Open Water	26	3,475	965	361	559
Pasture/Hay	8,019	4,868	10,072	12,666	11,114
Row Crops	1,717	1,335	577	1,348	475
Shrub/Scrub	26	132	524	23	53
Woody Wetlands	61	142	43		
Total	**27,934**	**19,135**	**20,048**	**29,487**	**30,935**

Table A4-1c.

LAND USE/LAND COVER	AREAS IN HUC-12 SUBWATERSHEDS (ACRES)				
	0405	0406	0407	0501	0502
Bare Rock/Sand/Clay	28	281	3		12
Deciduous Forest	3,758	7,228	11,419	23,787	18,629
Developed Open Space	5,672	1,909	3,753	891	2,496
Emergent Herbaceous Wetlands	11		1		14
Evergreen Forest	1,503	2,413	2,343	322	1,151
Grassland/Herbaceous	341	670	725	749	938
High Intensity Development	145	88	144	1	8
Low Intensity Development	2,083	1,107	1,932	29	103
Medium Intensity Development	309	435	438	5	27
Mixed Forest	693	2,183	988	174	593
Open Water	8,145	461	912	3	612
Pasture/Hay	3,513	10,605	5,891	2,925	17,979
Row Crops	216	656	640	204	2,542
Shrub/Scrub	262	1,388	22	54	7
Woody Wetlands	27	42		14	104
Total	**26,708**	**29,466**	**29,211**	**29,158**	**45,215**

Table A4-1d.

Tables A4-1a-d. Land Use Distribution in the Old Hickory Lake Watershed by HUC-12. *Data are from 1992 Multi-Resolution Land Characterization (MRLC) derived by applying a generalized Anderson Level II system to mosaics of Landsat thematic mapper images collected every five years.*

HYDROLOGIC SOIL GROUPS
GROUP A SOILS have low runoff potential and high infiltration rates even when wet. They consist chiefly of sand and gravel and are well to excessively drained.
GROUP B SOILS have moderate infiltration rates when wet and consist chiefly of soils that are moderately deep to deep, moderately to well drained, and moderately coarse to coarse textures.
GROUP C SOILS have low infiltration rates when wet and consist chiefly of soils having a layer that impedes downward movement of water with moderately fine to fine texture.
GROUP D SOILS have high runoff potential, very low infiltration rates, and consist chiefly of clay soils.

Table A4-2. Hydrologic Soil Groups in Tennessee as Described in WCS. *Soils are grouped into four hydrologic soil groups that describe a soil's permeability and, therefore, its susceptibility to runoff.*

STATION	HUC 10	STREAM	AREA (MI^2)	DAILY FLOW			3Q2	1Q10	3Q10	7Q10	3Q20
				AVG	MAX	MIN					
3425000	0513020101	Cumberland River	10690.00	17435.5	204000.0	366.0	na	na	na	na	na
3425500	0513020101	Spring Creek	35.30	59.2	3080.0	0.0	na	na	na	na	na
3573450	0513020101	Big Spring Creek	44.30	na	na	na	na	na	na	5.0	na
3425700	0513020104	Spencer Creek	3.32	na	na	na	na	na	na	na	na
3425800	0513020104	Cedar Creek	0.86	na	na	na	na	na	na	na	na
3426000	0513020104	Drakes Creek	19.20	24.5	1280.0	0.0	na	na	na	na	na

Table A4-3. Stream Flow Data from USGS Gaging Stations in the Old Hickory Lake Watershed. *Data are in cubic feet per second (CFS). Data were obtained from the USGS web application StreamStats at http://water.usgs.gov/osw/streamstats. (na, data not available)*

AGENCY	STATION	LOCATION	HUC-12
TDECWPC	CUMBE308.25SM	Cumberland River @ RM 308.25	051302010101
TDECWPC	PLUNK000.9SM	Plunkett Creek @ RM 0.9	051302010101
TDECWPC	PEYTO002.7SM	Peyton Creek @ RM 2.7	051302010102
TDECWPC	DIXON002.8SM	Dixon Creek @ RM 2.8	051302010103
TDECWPC	LICK000.5SM	Lick Creek @ RM 0.5	051302010103
TDECWPC	CUMBE262.9WS	Cumberland River @ RM 262.9	051302010104
TDECWPC	CEDAR005.7WS	Cedar Creek @ RM 5.7	051302010105
TDECWPC	ECO71I12	Cedar Creek @ RM 4.6	051302010105
TDECWPC	JOHNS000.1WS	Johnson Branch @ RM 0.1	051302010105
TDECWPC	JOHNS000.4WS	Johnson Branch @ RM 0.4	051302010105
TDECWPC	SPRIN004.4WS	Spring Creek @ RM 4.4	051302010106
TDECWPC	SPRIN007.0WS	Spring Creek @ RM 7.0	051302010106
TDECWPC	SPRIN016.0WS	Spring Creek @ RM 16.0	051302010106
TDECWPC	SPRIN027.0WS	Spring Creek @ RM 27.0	051302010106
TDECWPC	SPRIN1T0.2WS	UT to Spring Creek @ RM 0.2	051302010106
TDECWPC	BARTO009.5WS	Bartons Creek @ RM 9.5	051302010107
TDECWPC	BARTO009.6WS	Bartons Creek @ RM 9.6	051302010107
TDECWPC	BARTO017.6WS	Bartons Creek @ RM 17.6	051302010107
TDECWPC	SINKI000.4WS	Sinking Creek @ RM 0.4	051302010107
TDECWPC	SINKI004.0WS	Sinking Creek @ RM 4.0	051302010107
TDECWPC	BCANE000.1WS	Big Caney Branch @ RM 0.1	051302010201
TDECWPC	BEECH000.6WS	Beechlog Creek @ RM 0.6	051302010201
TDECWPC	BLOG000.2WS	Beech Log Creek @ RM 0.2	051302010201
TDECWPC	DFORK001.3WS	Dry Fork Creek @ RM 1.3	051302010201
TDECWPC	NEAL000.1WS	Neal Branch @ RM 0.1	051302010201
TDECWPC	RLICK008.3SM	Round Lick Creek @ RM 8.3	051302010201
TDECWPC	RLICK017.1WS	Round Lick Creek @ RM 17.1	051302010201
TDECWPC	RLICK018.7WS	Round Lick Creek @ RM 18.7	051302010201
TDECWPC	RLICK019.1WS	Round Lick Creek @ RM 19.1	051302010201
TDECWPC	RLICK019.2WS	Round Lick Creek @ RM 19.2	051302010201
TDECWPC	RLICK019.4WS	Round Lick Creek @ RM 19.4	051302010201
TDECWPC	RLICK019.8WS	Round Lick Creek @ RM 19.8	051302010201
TDECWPC	RLICK020.2WS	Round Lick Creek @ RM 20.2	051302010201
TDECWPC	JENNI000.4SM	Jennings Fork @ RM 0.4	051302010202
TDECWPC	MIDDL001.0TR	Middle Fork @ RM 1.0	051302010301
TDECWPC	GOOSE004.5TR	Goose Creek @ RM 4.5	051302010302
TDECWPC	LGOOS004.7TR	Little Goose Creek @ RM 4.7	051302010302
TDECWPC	SPENC005.0WS	Spencer Creek @ RM 5.0	051302010402
TDECWPC	SPENC008.7WS	Spencer Creek @ RM 8.7	051302010402
TDECWPC	ECAMP005.0SR	East Camp Creek @ RM 5.0	051302010403
TDECWPC	TOWN000.3SR	Town Creek @ RM 0.3	051302010403

Table A4-4a.

AGENCY	STATION	LOCATION	HUC-12
TDECWPC	TOWN001.4SR	Town Creek @ RM 1.4	051302010403
TDECWPC	RANKI001.9SR	Rankin Branch @ RM 1.9	051302010404
TDECWPC	SCAMP004.6SR	Station Camp Creek @ RM 4.6	051302010404
TDECWPC	CEDAR005.2WS	Cedar Creek @ RM 5.2	051302010406
TDECWPC	CEDAR011.8WS	Cedar Creek @ RM 11.8	051302010406
TDECWPC	CEDAR014.2WS	Cedar Creek @ RM 14.2	051302010406
TDECWPC	LITTL001.8WS	Little Creek @ RM 1.8	051302010406
TDECWPC	WILSO000.2WS	Wilson Creek @ RM 0.2	051302010406
TDECWPC	DRAKE007.8SR	Drakes Creek @ RM 7.8	051302010407
TDECWPC	DRAKE1T0.3SR	UT to Drakes Creek @ RM 0.3	051302010407
TDECWPC	BLEDS009.9SR	Bledsoe Creek @ RM 9.9	051302010502
TDECWPC	DESHE001.9SR	Deshea Creek @ RM 1.9	051302010502
TDECWPC	DRY003.1SR	Dry Fork @ RM 3.1	051302010502
TDECWPC	EAST000.1SR	East Fork @ RM 0.1	051302010502

Table A4-4b.

Tables A4-4a-b. STORET Water Quality Monitoring Stations in the Old Hickory Lake Watershed*. TDECWPC, Tennessee Department of Environment and Conservation Division of Water Pollution Control; UT, Unnamed Tributary.*

FACILITY NUMBER	FACILITY NAME	SIC	SIC NAME	MADI	WATERBODY	HUC-12
TN0022993	Carthage STP	4952	Sewerage System	Minor	Cumberland River @ RM 308	051302010101
TN0067733	Gordonsville STP	4952	Sewerage System	Minor	Cumberland River @ RM 308.3	050613020101
TN0028754	Lebanon STP	4952	Sewerage System	Major	Cumberland River @ RM 252.2	050113020104
TN0056006	Carroll-Oakland Elementary School	4952	Sewerage System	Minor	Spring Creek @ RM 5.1	050113020106
TN0020141	Gallatin STP	4952	Sewerage System	Major	Cumberland River @ RM 237.9	051302010401
TN0025488	Watertown STP	4952	Sewerage System	Minor	Round Lick Creek @ RM 19.2	050513020201
TN0005428	TVA-Gallatin Fossil Plant	4911	Electric Services	Major	Cumberland River @ RM 240.5	051302010401
TN0059137	Boxwell Reservation	4952	Sewerage System	Minor	Spence Creek Embayment @ RM 1.0	051302010401
TN0060968	Erwin Marine Group	4952	Sewerage System	Minor	Cumberland River @ RM 240.2	051302010401
TN0064505	Resource Authority	4953	Refuse Systems	Minor	Cumberland River @ RM 240.57	051302010401
TN0021504	USACOE Old Hickory Power House	4952	Sewerage System	Minor	Cumberland River @ RM 216.4	051302010405
TN0021512	USACOE Old Hickory Lake Shutes Branch Rec Area	4952	Sewerage System	Minor	Cumberland River (Old Hickory Lake) @ RM 223.5	051302010405
TN0024716	Lakeview Elementary School	4952	Sewerage System	Minor	Smith Branch @ RM 1.1	051302010405
TN0040622	Hendersonville Utility District	4952	Sewerage System	Minor	Cumberland River @ RM 229.1	051302010405
TN0060232	White House Utility District	4952	Sewerage System	Minor	Cumberland River @ RM 230.2	051302010405
TN0068136	Old Hickory Hydropower Plant	4911	Electric Services	Minor	Cumberland River @ RM 216.2	051302010405
TN0024686	West Elementary School	4952	Sewerage System	Minor	Silver Springs Branch @ RM 1.0	051302010406
TN0077852	TVA Wilson 500kv Substation	4911	Electric Services	Minor	UT to Cedar Creek	051302010406
TN0058220	Bledsoe Creek State Park STP	4952	Sewerage System	Minor	Old Hickory Reservoir	051302010502

Table A4-5. NPDES Permittees in the Old Hickory Lake Watershed. *SIC, Standard Industrial Classification; MADI, Major Discharge Indicator; UT, Unnamed Tributary.*

FACILITY NUMBER	FACILITY NAME	SIC	SIC NAME	MADI	WATERBODY	HUC-12
TNHA78034	Tom Milligan and Neighbors	0782	Lawn and Garden Services	Minor	Cumberland River @ RM 234.5	051302010405
TNHA78069	Bluegrass Yacht and Country Club	0782	Lawn and Garden Services	Minor	Cumberland River @ RM 227.5	051302010405
TNHA78115	Drew Maddox, Aquaservices, Inc.	0782	Lawn and Garden Services	Minor	Cumberland River @ RM 227.7	051302010405
TNHA77992	Gay Winds Subdivision Aquaservices, Inc.	0782	Lawn and Garden Services	Minor	Cumberland River @ RM 233.4	051302010406

Table A4-6. NPDES Permittees (for Herbicide Application) in the Old Hickory Lake Watershed. *SIC, Standard Industrial Classification; MADI, Major Discharge Indicator.*

FACILITY NUMBER	PERMITEE	WATERBODY	HUC-12
TN0074721	West Wilson Utility District	Cumberland River @ RM 225.2	051302010405

Table A4-7. Water Treatment Plants in the Old Hickory Lake Watershed.

FACILITY NUMBER	PERMITEE	SIC	SIC NAME	WATERBODY	HUC-12
TN0059617	Hoover, Incorporated (Crushed Stone Plant #640)	1422	Crushed and Broken Limestone	UT to Sinking Creek	051302010107
TN0070998	Vulcan Construction Materials (Wilson County Quarry)	1422	Crushed and Broken Limestone	UT to Sinking Creek	051302010107
TN0072371	Rogers Group, Incorporated (Hillsdale Quarry)	1422	Crushed and Broken Limestone	Goose Creek	051302010301
TN0066664	Sumner County Highway Dept. (Quarry #1)	1422	Crushed and Broken Limestone	Cumberland River	051302010401
TN0004201	Rogers Group, Incorporated (Gallatin Quarry)	1422	Crushed and Broken Limestone	Station Camp Creek	051302010404
TN0071544	Vulcan Construction Materials (109 Quarry)	1422	Crushed and Broken Limestone	South Fork Cedar Creek	051302010406

Table A4-8. Active Permitted Mining Sites in the Old Hickory Lake Watershed. *SIC, Standard Industrial Classification; UT, Unnamed Tributary.*

FACILITY NUMBER	FACILITY NAME	WATERBODY	HUC-12
TNG110035	Cumberland Supply Company	WWC to Cumberland River	051302010101
TNG110159	Horizon Concrete, Incorporated	Russell Branch	051302010107
TNG110169	IMI Tennessee, Incorporated	UT to Silver Creek	051302010107
TNG110107	Garrott Brothers Cont. Mix, Inc.	Cumberland River @ RM 241	051302010401
TNG110223	Metro Ready-Mix Concrete, Inc.		051302010401
TNG110317	Garrott Brothers Continuous Mix	East Town Creek Town Creek	051302010403
TNG110105	Garrott Brothers Cont. Mix, Inc.	Metro Storm Sewer to Town Creek	051302010403
TNG110318	Horizon Concrete, Incorporated	UT to Rutland Branch	051302060406
TNG110179	Horizon Concrete, Incorporated	Sullivan Branch	051302010406

Table A4-9. Ready Mix Concrete Plants in the Old Hickory Lake Watershed. *UT, Unnamed Tributary; WWC, Wet Weather Conveyance.*

LOG NUMBER	COUNTY	DESCRIPTION	WATERBODY	HUC-12
NRS03.185	Smith	Culvert Encapsulation	UT to Cumberland River	051302010101
NRS03.358	Sumner	Water Line Construction	Lick Creek	051302010105
NRS04.071	Wilson	Road Construction	Bartons Creek	051302010106
NRS01.030	Wilson	Box Culvert	Bartons Creek	051302010107
NRS01.296	Wilson	Replace Box Culverts (2)	Unnamed Tributaries (4)	051302010107
NRS01.297	Wilson	Replace Box Culverts (2)	Unnamed Tributaries (4)	051302010107
NRS01.309	Wilson	Gravity Sewer Crossings (3) and Temporary Road Crossings (3)	South Fork Cedar Creek and UT	051302010107
NRS02.027A	Wilson	Road Construction	Bartons Creek	051302010107
NRS02.027B	Wilson	Bridge Construction	Bartons Creek	051302010107
NRS02.137	Wilson	Dredging	Bartons Creek	051302010107
NRS02.153	Wilson	Bridge Repair	Spring Creek	051302010107
NRS02.221	Wilson	Stream Relocation and Culverting	UT to Bartons Creek	051302010107
NRS02.401	Wilson	Utility Line Crossing	UT to Bartons Creek	051302010107
NRS03.224	Wilson	Channel Realighnment	Sinking Creek	051302010107
NRS03.069	Macon	Bridge and Approaches	Sullivan Branch	051302010301
NRS02.412	Wilson	Dredging	Spencer Creek	051302010401
NRS03.047	Wilson	Bridge Repair	Cumberland River	051302010401
NRS02.475	Wilson	Road Construction	Wetland	051302010402
NRS02.475B	Wilson	Road Construction	Spencer Creek	051302010402

Table A4-10a.

LOG NUMBER	COUNTY	DESCRIPTION	WATERBODY	HUC-12
NRS02.475C	Wilson	Road Construction	Wetland	051302010402
NRS02.475D	Wilson	Road Construction	Spencer Creek	051302010402
NRS02.475E	Wilson	Road Construction	Martha Branch	051302010402
NRS02.475F	Wilson	Road Construction	Spencer Creek	051302010402
NRS02.475G	Wilson	Road Construction	Wetland	051302010402
NRS02.475H	Wilson	Road Construction	Spencer Creek	051302010402
NRS02.475I	Wilson	Road Construction	Spencer Creek	051302010402
NRS02.475J	Wilson	Road Construction	Spencer Creek	051302010402
NRS02.475K	Wilson	Road Construction	Spencer Creek	051302010402
NRS03.378	Wilson	Sewer Line Crossing	Spencer Creek	051302010402
NRS01.153	Sumner	Channel Relocation	UT to East Camp Creek	051302010403
NRS01.317	Sumner	Channel Relocation and Culverting	Liberty Branch, East Camp Creek, and 2 Unnamed Tributaries	051302010403
NRS01.419	Sumner	Bridge Repair	East Camp Creek	051302010403
NRS02.051	Sumner	Widen Bridge and Deck	Station Camp Creek	051302010403
NRS02.060	Sumner	Bridge Repair	East Station Camp Creek	051302010403
NRS02.287	Sumner		Station Camp Creek	051302010404
NRS02.287B	Sumner		UT to Station Camp Creek	051302010404
NRS02.287C	Sumner		UT to Station Camp Creek	051302010404
NRS02.287D	Sumner		UT to Station Camp Creek	051302010404
NRS02.287I	Sumner		Station Camp Creek	051302010404
NRS02.287G	Sumner		Station Camp Creek	051302010404
NRS02.287H	Sumner		Spring Creek	051302010404
NRS02.370	Sumner	Bridge and Approach	Station Camp Creek	051302010404
NRS03.325	Sumner	Road Crossing and Sanitary Sewer Line	UT to Station Camp Creek	051302010404
NRS02.287	Sumner		Station Camp Creek	051302010405
NRS02.287E	Sumner		UT to Station Camp Creek	051302010405
NRS01.408	Wilson	Gravity Sewer Line Crossing	Silver Springs Branch	051302010406
NRS01.415	Wilson	Natural Gas Line	Cedar Creek	051302010406
NRS02.144	Wilson	Utility Line Crossing	UT to Cedar Creek	051302010406
NRS03.143	Wilson	Utility Line	Cedar Creek	051302010406
NRS03.163	Wilson	Road Crossing	North Fork Cypress Creek	051302010406
NRS04.095	Wilson	Utility Crossing	Spencer Creek and Cedar Creek	051302010406
NRS02.287E	Sumner		Existing Spring	051302010407
NRS02.353	Sumner	Stream Encapsulation	UT to Shoal Creek	051302010407
NRS02.353B	Sumner			051302010407
NRS02.353C	Sumner			051302010407
NRS02.353D	Sumner			051302010407
NRS02.353E	Sumner			051302010407
NRS03.251	Sumner	Sanitary Sewer Line	UT to Drakes Creek	051302010407
NRS04.056	Sumner	Fill Adjacent Wetland	Old Hickory Lake	051302010407

Table A4-10b.

Tables A4-10a-b. Individual ARAP Permits Issued January 2000 Through June 2004 in Old Hickory Lake Watershed. *UT, Unnamed Tributary.*

FACILITY NUMBER	FACILITY NAME	SECTOR	RECEIVING STREAM	AREA*	HUC-12
TNR053202	Lafayette Municipal Airport	S, P	Sink Hole	80	051302010301
TNR053521	Mid-American Converting, Inc.	D, P	Beech Log Creek	12	051302010201
TNR054253	J.C. Owen Lumber Company	A	Round Lick Creek	6	051302010101
TNR056270	Rock City Garage	M	Plunketts Creek	10	051302010101
TNR056489	Ronnie Likens	M	Sullivan Branch and Ford Branch	0.5	051302010301
TNR056510	Likens Auto Salvage	M	Town Creek	2	051302010301
TNR053186	TVA-Gallatin Fossil Plant	O	Cumberland River @ RM 242.9, @ RM 243, and @ RM 244	179.4	051302010102
TNR053293	Byron's Bar-B-Q	U	Town Creek	7	051302010403
TNR050744	G.F. Office Furniture	W	Cumberland River	42	051302010403
TNR050474	T.M.T., Incorporated	P	Sinking Creek	7.88	051302010104
TNR050730	LoJac Safety	AA		2	051302010107
TNR050732	LoJac Lebanon Plant	D		5	051302010107
TNR051062	TRW Automotive	AB	UT to Bartons Creek	9	051302010107
TNR051396	Kenneth O. Lester Company	P	Sinking Creek	15.23	051302010107
TNR051509	Perma-Pipe	AA	Bartons Creek	22.8	051302010107
TNR051865	Metokote Corporation Plant	AA		1.7	051302010107
TNR053129	American Corrugated	B	Black Branch	11.9	051302010107
TNR053572	Lebanon Wire Products	AA	Bartons Creek	5.9	051302010107
TNR053635	Net Transportation, Inc.	P	Walker Branch	7	051302010107
TNR054155	Spectrum Plastics, Incorporated	AB	Black Branch	5	051302010107
TNR054208	Toshiba America	AC	UT to Bartons Creek	47.5	051302010107
TNR054418	Rock-Tenn Converting Co.	B	Bartons Creek	8.3	051302010107
TNR054420	Lebanon Steel Fabricators, Inc.	AA	Sinking Creek	4	051302010107
TNR055971	First Student, Incorporated	P	Bartons Creek @ RM 8.5	1.65	051302010107
TNR055976	C and D Landfill	L	Middle Fork Drakes Creek	69	051302010107
TNR056018	A.C. Hilltop Auto Salvage	M	Unnamed Tributary	2.6	051302010107
TNR056396	Southtec, LLC	AA	Sink Holes	16.83	051302010107
TNR050511	Power Chemical Corporation	D	Town Creek	0.5	051302010401
TNR050678	Hoeganaes Corporation	F	UT to Cumberland River @ RM 246.0	61	051302010401
TNR050841	EMG, Incorporated Glass Plant	R	Cumberland River	4.5	051302010401
TNR050891	Resource Recovery Facility	L	Cumberland River	10	051302010401
TNR051513	Fleetwood Homes of Tennessee	A, P	UT to Cumberland River	18.2	051302010401
TNR053109	ABC Technologies, Incorporated	AB, Y	Sinkhole Creek	2.3	051302010401
TNR053605	Sumner County Regional Airport	S	Unnamed Tributary	0.99	051302010401
TNR054034	ABC Group Fuel Systems, Inc.	AB	Sinkhole Creek	2.3	051302010401
TNR054110	Salga Plastics, Incorporated	N	Duffys Branch	1	051302010401
TNR054567	Linatex Corporation of America	Y	Metro Storm Sewer to UT to Cumberland River	8	051302010401
TNR056001	Ash Landfill	L	Cumberland River	25	051302010401
TNR050840	EMG, Inc. Assembly Plant	R	Town Creek	3.5	051302010403
TNR050845	John L. Armitage Paint Co.	C	Town Creek	8.2	051302010403
TNR051060	Bosch Braking System	AB	East Camp Creek	8	051302010403
TNR051981	Insteel Wire Products	F	UT to Town Creek	3.8	051302010403

Table A4-11a.

FACILITY NUMBER	FACILITY NAME	SECTOR	RECEIVING STREAM	AREA*	HUC-12
TNR052025	Safety-Kleen Systems, Inc.	N	East Camp Creek	1.67	051302010403
TNR053714	Northstar Environmental Group	P	UT to Town Creek	3.22	051302010403
TNR053770	Cresent Manufacturing Company	W, P	Town Creek	30	051302010403
TNR054354	Precision Castings of Tennessee	F	East Camp Creek	6.7	051302010403
TNR050666	Alley-Cassetty Brick and Block	E	Station Camp Creek	6.9	051302010404
TNR056521	Quad B. Lumber Company	A	Leggett Branch	23.89	051302010404
TNR050168	Adcock's garage	M	Old Hickory Lake	2.5	051302010405
TNR053910	Jones Brothers, Incorporated	AD, P	UT to Cedar Creek	8	051302010406
TNR055972	First Student, Incorporated	P	Stoner Creek @ RM 3.5	0.78	051302010406
TNR056502	Cedar Creek Boat Dock	R	Old Hickory Lake	0.25	051302010406

Table A4-11b.

Tables A4-11a-b. Active Permitted TMSP Facilities in the Old Hickory Lake Watershed. *Area, acres of property associated with industrial activity; UT, Unnamed Tributary; WWC, Wet Weather Conveyance. Sector details may be found in Table A4-12.*

SECTOR	TMSP SECTOR NAME
A	Timber Products Facilities
AA	Facilities That Manufacture Metal Products including Jewelry, Silverware and Plated Ware
AB	Facilities That Manufacture Transportation Equipment, Industrial or Commercial Machinery
AC	Facilities That Manufacture Electronic and Electrical Equipment and Components, Photographic and Optical Goods
AD	Facilities That Are Not Covered Under Sectors A Thru AC (Monitoring Required)
AE	Facilities That Are Not Covered Under Sectors A Thru AC (Monitoring Not Required)
B	Paper and Allied Products Manufacturing Facilities
C	Chemical and Allied Products Manufacturing Facilities
D	Asphalt Paving, Roofing Materials, and Lubricant Manufacturing Facilities
E	Glass, Clay, Cement, Concrete, and Gypsum Product Manufacturing Facilities
F	Primary Metals Facilities
G	Metal Mines (Ore Mining and Dressing) (RESERVED)
H	Inactive Coal Mines and Inactive Coal Mining-Related Facilities
I	Oil or Gas Extraction Facilities
J	Construction Sand and Gravel Mining and Processing and Dimension Stone Mining and Quarrying Facilities
K	Hazardous Waste Treatment Storage or Disposal Facilities
L	Landfills and Land Application Sites
M	Automobile Salvage Yards
N	Scrap Recycling and Waste and Recycling Facilities
O	Steam Electric Power Generating Facilities
P	Vehicle Maintenance or Equipment Cleaning areas at Motor Freight Transportation Facilities, Passenger Transportation Facilities, Petroleum Bulk Oil Stations and Terminals, the United States Postal Service, or Railroad Transportation Facilities
Q	Vehicle Maintenance Areas and Equipment Cleaning Areas of Water Transportation Facilities
R	Ship or Boat Building and Repair Yards
S	Vehicle Maintenance Areas, Equipment Cleaning Areas or From Airport Deicing Operations located at Air Transportation Facilities
T	Wastewater Treatment Works
U	Food and Kindred Products Facilities
V	Textile Mills, Apparel and other Fabric Product Manufacturing Facilities
W	Furniture and Fixture Manufacturing Facilities
X	Printing and Platemaking Facilities
Y	Rubber and Miscellaneous Plastic Product Manufacturing Facilities
Z	Leather Tanning and Finishing Facilities

Table A4-12. TMSP Sectors and Descriptions.

APPENDIX V

Land Treatment - Conservation Buffers					
	Contour Buffer Strips (acres)	Field Borders (feet)	Filter Strip (feet)	Streambank / Shoreline Protection (feet)	Riparian Forest Buffer (acres)
FY 2001	6	24126		8585	10
FY 2002	3	13035	4		4
FY 2003	5	531460	2	3300	9
FY 2004		6400			
FY 2005		89020			

Table A5-1a. Land Treatment Conservation Practices (Conservation Buffers), in Partnership with NRCS in the Old Hickory Lake Watershed. *Data are from Performance & Results Measurement System (PRMS) for each fiscal year reporting period (October 1 through September 30) from 2001 to 2005.*

Erosion Control		
	Est. soil saved (tons/year)	Land Treated with erosion control measures (acres)
FY 2001	43499	2387
FY 2002	50743	2453
FY 2003	58191	6198
FY 2004		
FY 2005		

Table A5-1b. Erosion Control Conservation Practices, in Partnership with NRCS in the Old Hickory Lake Watershed. *Data are from Performance & Results Measurement System (PRMS) for each fiscal year reporting period (October 1 through September 30) from 2001 to 2005.*

Nutrient Management			
	AFO Nutrient Mgmt Applied (acres)	Non-AFO Nutrient Mgmt. Applied (acres)	Total Applied (acres)
FY 2001		4820	4820
FY 2002	121	2691	2812
FY 2003		6624	6624
FY 2004	5942		5942
FY 2005	3244		3244

Table A5-1c. Nutrient Management Conservation Practices in Partnership with NRCS in the Old Hickory Lake Watershed. *Data are from Performance & Results Measurement System (PRMS) for each fiscal year reporting period (October 1 through September 30) from 2001 to 2005.*

Comprehensive Nutrient Mgmt Plans		
	Planned Comprehensive Nutrient Mgmt Plans (number)	Total Comprehensive Nutrient Mgmt Plans (number)
FY 2001		
FY 2002	2	2
FY 2003		
FY 2004		
FY 2005		

Table A5-1d. Comprehensive Nutrient Management plans, Conservation Practices in Partnership with NRCS in the Old Hickory Lake Watershed. *Data are from Performance & Results Measurement System (PRMS) for each fiscal year reporting period (October 1 through September 30) from 2001 to 2005.*

Pest Management		
	Pest Mgmt. Systems (number)	Pest Mgmt. Systems (acres)
FY 2001	90	4798
FY 2002		3084
FY 2003		4815
FY 2004		6018
FY 2005		4015

Table A5-1e. Pest Management Conservation Practices in Partnership with NRCS in the Old Hickory Lake Watershed. *Data are from Performance & Results Measurement System (PRMS) for each fiscal year reporting period (October 1 through September 30) from 2001 to 2005.*

Grazing / Forages				
	Prescribed Grazing (acres)	Fencing (feet)	Heavy Use Area Protection (acres)	Pasture and Hay Planting (acres)
FY 2001	1646			
FY 2002	1141			
FY 2003	897			
FY 2004	2524	12348		1483
FY 2005	1484	15200	1	125

Table A5-1f. Grazing/Forages Conservation Practices in Partnership with NRCS in the Old Hickory Lake Watershed. *Data are from Performance & Results Measurement System (PRMS) for each fiscal year reporting period (October 1 through September 30) from 2001 to 2005.*

Tree & Shrub Practices				
	Land Improved through Forest Stand improvement (acres)	Total Tree & Shrub Estab. (acres)	Forestland Re-established or improved (acres)	Use Exclusion (acres)
FY 2001	298		298	
FY 2002	417		417	
FY 2003	560	6	566	
FY 2004	597	27	624	
FY 2005	1040		1040	289

Table A5-1g. Tree and Shrub Conservation Practices in Partnership with NRCS in the Old Hickory Lake Watershed. *Data are from Performance & Results Measurement System (PRMS) for each fiscal year reporting period (October 1 through September 30) from 2001 to 2005.*

Land Treatment - Tillage & Cropping					
	Residue Mgmt, No-till, Strip till (acres)	Residue Mgmt - Mulch Till (acres)	Tillage & Residue Mgmt Systems (acres)	Conservation Crop Rotation (acres)	Cover Crop (acres)
FY 2001			1040		
FY 2002	384	140	524		
FY 2003	2188	239	2427		
FY 2004	1308		1308	1662	2756
FY 2005	230	226	456	1215	299

Table A5-1h. Land Treatment Conservation Practices (Tillage and Cropping), in Partnership with NRCS in the Old Hickory Lake Watershed. *Data are from Performance & Results Measurement System (PRMS) for each fiscal year reporting period (October 1 through September 30) from 2001 to 2005.*

Wildlife Habitat Management			
	Upland Habitat Mgmt (acres)	Wetland Habitat Mgmt (acres)	Total Wildlife Habitat Mgmt Applied (acres)
FY 2001	280		280
FY 2002	696		696
FY 2003	890	20	910
FY 2004	1533		1533
FY 2005	1177		1177

Table A5-1i. Wildlife Habitat Management Conservation Practices in Partnership with NRCS in the Old Hickory Lake Watershed. *Data are from Performance & Results Measurement System (PRMS) for each fiscal year reporting period (October 1 through September 30) from 2001 to 2005.*

Water Supply			
	Pipeline (ft)	Pond (number)	Watering Facility (number)
FY 2001			
FY 2002			
FY 2003			
FY 2004	1,600	1	
FY 2005	8160	0	9

Table A5-1j. Water Supply Conservation Practices in Partnership with NRCS in the Old Hickory Lake Watershed. *Data are from Performance & Results Measurement System (PRMS) for each fiscal year reporting period (October 1 through September 30) from 2001 to 2005.*

COMMUNITY	AWARD DATE	AWARD AMOUNT
HENDERSONVILLE U.D.	06/04/02	$ 1,800,000
HENDERSONVILLE U.D.	12/14/04	$ 2,048,366
HENDERSONVILLE U.D.	06/29/04	$ 2,040,000
LEBANON	05/05/92	$ 3,789,607
LEBANON	06/18/93	$ 3,343,283
LEBANON	07/14/94	$ 2,692,290
LEBANON	02/12/04	$ 4,400,000
LEBANON	07/10/96	$ 7,298,065

Table A5-2a. Communities in the Old Hickory Lake Watershed that have received Clean Water State Revolving Fund Grants or Loans since the inception of the program.

COMMUNITY	AWARD DATE	AWARD AMOUNT
LAGUARDO U.D.	07/13/00	$ 675,000
LEBANON	06/29/04	$ 1,586,169

Table A5-2b. Communities in the Old Hickory Lake Watershed that have received Drinking Water State Revolving Fund Grants or Loans since the inception of the program.

PRACTICE	NRCS CODE	NUMBER OF BMPs
Waste Management System	312.00000	4
Cover Crop	340.00000	18
Critical Area Planting	342.00000	2
Dike	356.00000	1
Diversion	362.00000	2
Pond	378.00000	24
Fence	382.00000	15
Grassed Waterway	412.00000	2
Use Exclusion	472.00000	6
Pasture/Hay Planting	512.00000	44
Pipeline	516.00000	1
Prescribed Grazing	528.00000	1
Heavy Use Area	561.00000	11
Streambank Protection	580.00000	2
Nutrient Management	590.00000	1
Watering Facility	614.00000	25
Underground Outlet	620.00000	1
Water/Sediment Control Basin	638.00000	1
TOTAL TMDLs	**-**	**161**

Table A5-3. Best Management Practices Installed by Tennessee Department of Agriculture and Partners in the Old Hickory Lake Watershed.