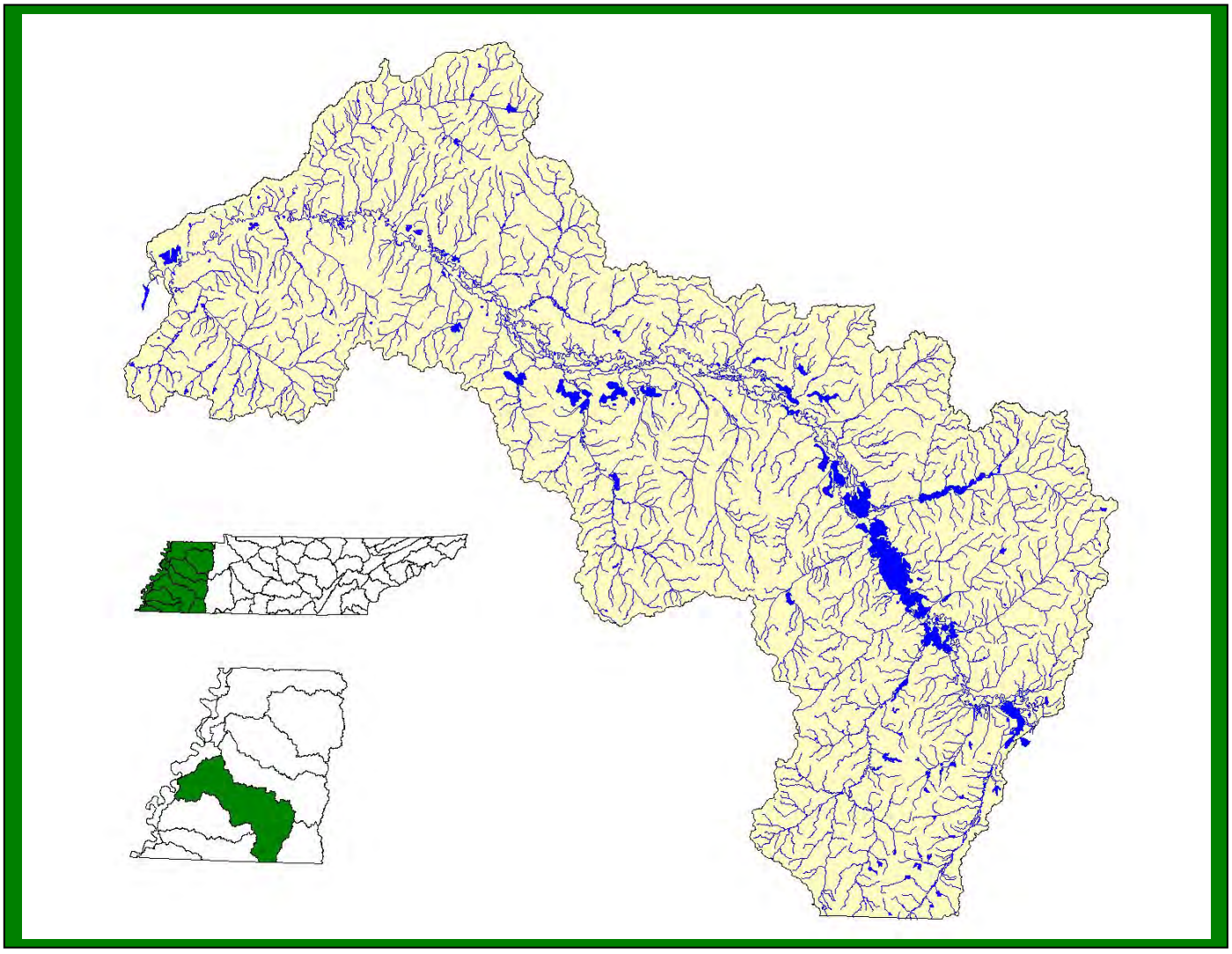
LOWER HATCHIE RIVER WATERSHED (08010208) OF THE MISSISSIPPI RIVER BASIN

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 Lower Hatchie River Watershed by the Division of Water Pollution Control October 11, 2007.

Prepared by the Jackson Environmental Field Office staff

And the Memphis Environmental Field Office Staff:
Eddy Bouzeid
Joellyn Brazile
Lew Hoffman
Scott Howell
Maylynne Pynkala
Matthew Rosta
Michael Swanger
Terry Templeton, Manager

And the Nashville Central Office, Watershed Management Section:
Richard Cochran
David Duhl
Regan McGahen
Josh Upham
Jennifer Watson
Sherry Wang, Manager

LOWER HATCHIE RIVER 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

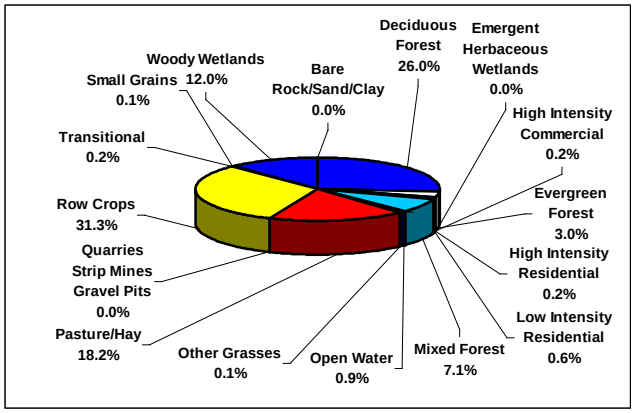
Summary – Lower Hatchie River Watershed (08010208)

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 Lower Hatchie River 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.

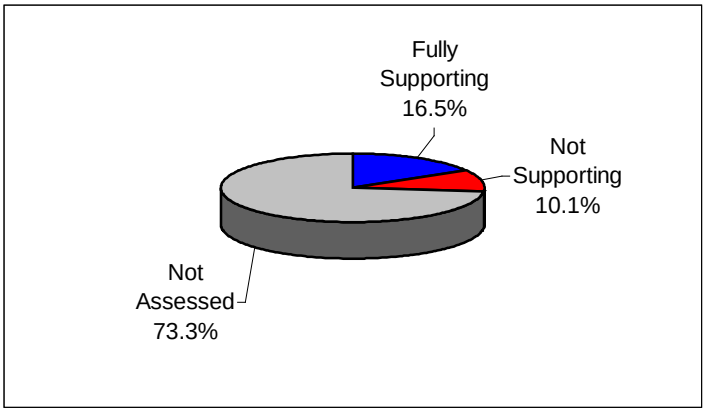
A detailed description of the watershed can be found in Chapter 2. The Lower Hatchie River Watershed is approximately 1,461 square miles (1,448 mi^2 in Tennessee) and includes parts of seven Tennessee counties. A part of the Mississippi River drainage basin, the watershed has 2,530.8 stream miles in Tennessee.



Land Use Distribution in the Tennessee Portion of the Lower Hatchie River Watershed.

One state forest, one state park, one wildlife management area, one state historic area, one state scenic river segment, and three national wildlife refuges are located in the watershed. Thirty-three rare plant and animal species have been documented in the watershed, including four rare fish species and two rare mussel species, and 1 rare amphibian species.

A review of water quality sampling and assessment is presented in Chapter 3. Using the Watershed Approach to Water Quality, 551 sampling events occurred in the Lower Hatchie River Watershed in 2000-2005. These were conducted at ambient, ecoregion or watershed monitoring sites. Monitoring results support the conclusion that 51.2% of stream miles assessed fully support one or more designated uses.



Water Quality Assessment of Streams and Rivers in the Tennessee Portion of the Lower Hatchie River Watershed. Assessment data are based on the 2004 Water Quality Assessment of 2,530.8 stream miles 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, pathogens, 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
0801020801	080102080101 (Hatchie River)
	080102080102 (Porters Creek)
	080102080103 (Wade Creek)
	080102080104 (Cub Creek)
	080102080105 (Hatchie River)
	080102080106 (Piney Creek)
	080102080107 (Grays Creek)
	080102080108 (Pleasant Run Creek)
	080102080109 (Mill Creek)
	080102080110 (Short Creek)
	080102080111 (Clear Creek)
0801020802	080102080201 (Upper Spring Creek)
	080102080202 (Lower Spring Creek)
0801020803	080102080301 (Lacy Creek)
	080102080302 (Clover Creek)
0801020804	080102080401 (Hatchie River)
	080102080402 (Muddy Creek)
	080102080403 (Big Black Creek)
	080102080404 (Hatchie River)
	080102080405 (Jeffers Creek)
	080102080406 (Bear Creek)
	080102080407 (Poplar Creek)
	080102080408 (Carter Creek)
	080102080409 (Sugar Creek)
	080102080410 (Hatchie River)
	080102080411 (Little Muddy Creek)
	080102080412 (Cypress Creek)
0801020805	080102080501 (Upper Big Muddy Creek)
	080102080502 (Lower Big Muddy Creek)
0801020806	080102080601 (Hatchie River)
	080102080602 (Lagoon Creek)
	080102080603 (Hatchie River)
	080102080604 (Town Creek)
	080102080605 (Hatchie River)
	080102080606 (Mathis Creek)
0801020807	080102080701 (Upper Cane Creek)
	080102080702 (Lower Cane Creek)
0801020808	080102080801 (Upper Indian Creek)
	080102080802 (Lower Indian Creek)

The Tennessee Portion of the Lower Hatchie River Watershed is Composed of thirty-nine USGS-Delineated Subwatersheds (12-Digit Subwatersheds).

The full Lower Hatchie River Watershed Water Quality Management Plan can be found at: http://www.state.tn.us/environment/wpc/watershed/wsmplans/

Point source contributions to the Tennessee portion of the Lower Hatchie River Watershed consist of twenty-one individual NPDES-permitted facilities, four 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 11, 2007) are Aquatic Resource Alteration Permits (49), Tennessee Multi-Sector Permits (32), Mining Permits (8), Ready Mix Concrete Plant Permits (5), and Water Treatment Plant Permits (2). 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 Lower Hatchie River 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, Tennessee Department of Agriculture, West Tennessee River Basin Authority, and Mississippi Department of Environmental Quality) are summarized. Local initiatives of organizations active in the watershed (Friends of West Tennessee Refuges, Chickasaw-Shiloh RC&D Council, and The Nature Conservancy) are also described.

Point and Nonpoint source approaches to water quality problems in the Lower Hatchie River 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.

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. Components of the Watershed Approach. 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.

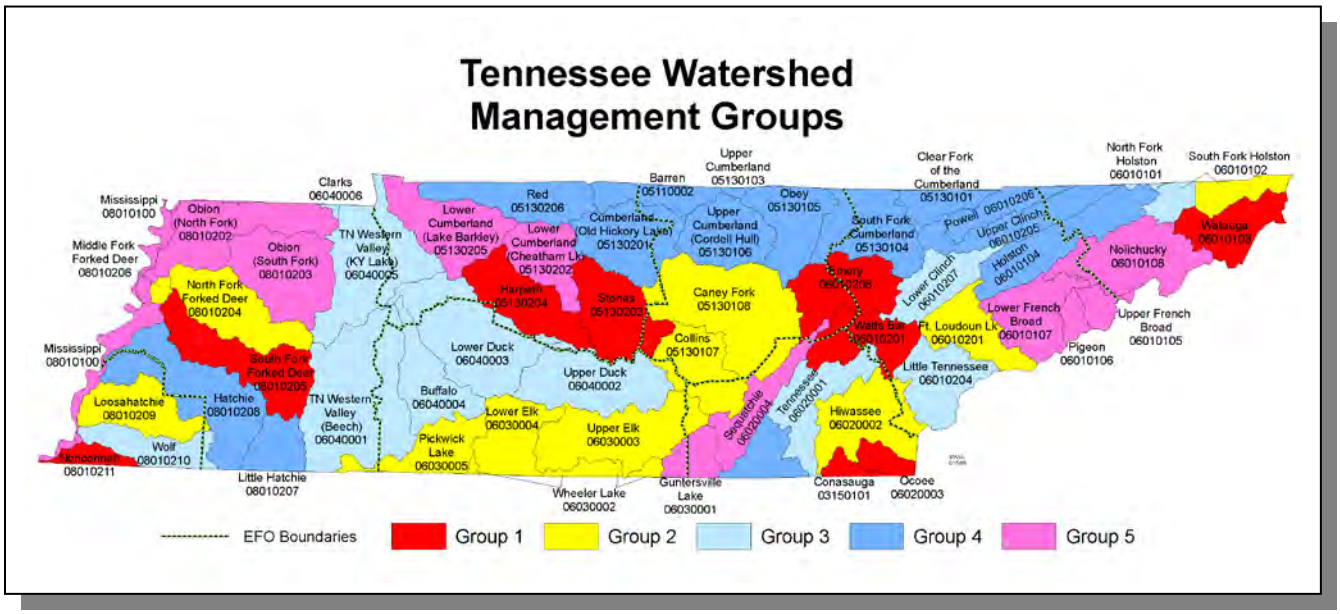


Figure 1-1. Watershed Groups in Tennessee's Watershed Approach to Water Quality.

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.

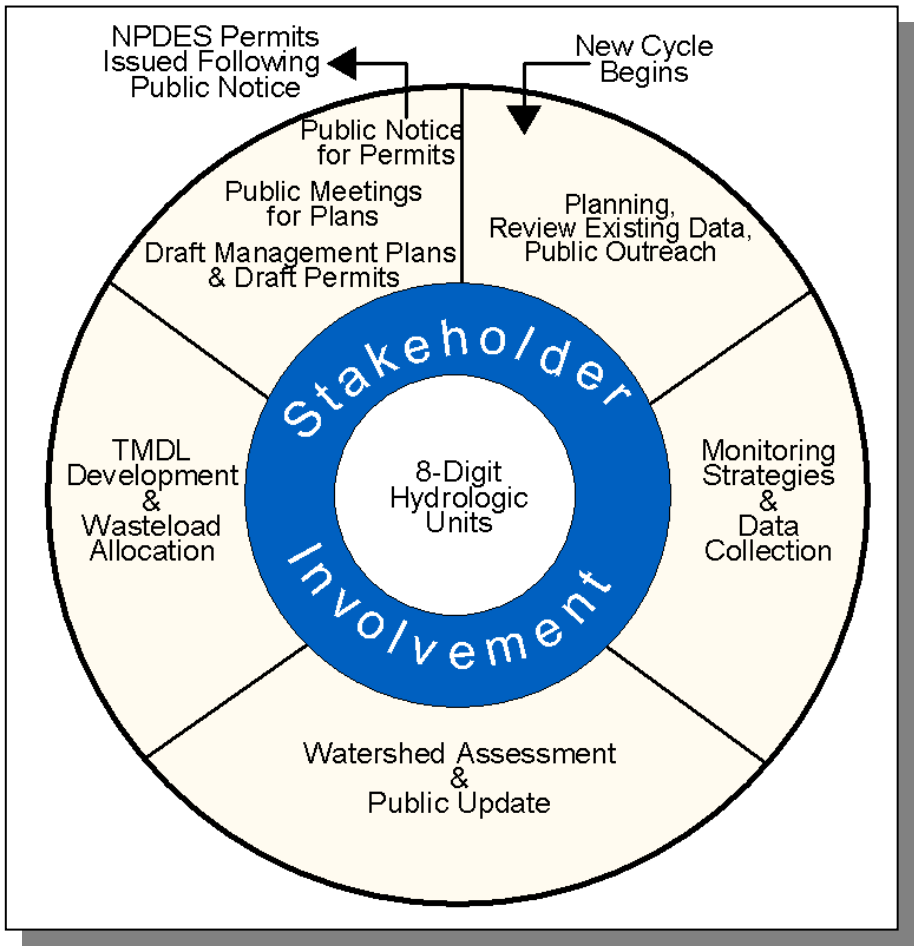


Figure 1-2. The Watershed Approach Cycle.

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 LOWER HATCHIE RIVER WATERSHED

2.1. BACKGROUND. The Hatchie River and Watershed derive their name from the Chickasaw Native Americans (the syllable “Chie” is believed to mean flowing water).

The Hatchie River is a major watercourse of southwestern Tennessee. It is of considerable geographic, cultural, and historic significance. In large measure this is due to the fact that it is the only major stream of West Tennessee that has never been impounded, channelized, or otherwise modified by human activity to any major degree, although several of its tributaries have. Its environs are indicative of what much of West Tennessee must have resembled prior to the time of pioneer settlement in the early 19th century.

The Hatchie River originates in northern Mississippi and crosses into Hardeman County, TN near the community of Pocahontas. The Hatchie flows north, in a very

roundabout, sinuous way, then turns northwest toward the Hardeman County seat of Bolivar. While there is usually a discernable main channel, the Hatchie at this point is largely a zone of wetlands approximately one mile wide. Bolivar was the head of navigation for small, shallow-draught steamboats in the 19th century.

From Bolivar, the Hatchie continues generally northwest, crossing into Haywood County and the southwestern corner of Madison County. At this point it enters the Hatchie Natuional Wildlife Refuge. The rest of the stream course from this point generally trends west. There is a "bow" to the north in the final part of the stream course, which forms the line between Tipton County and Lauderdale County. The Hatchie enters the Mississippi River just north of the Hatchie Towhead and just south of the Lower Hatchie National Refuge. The Hatchie River is designated as a "scenic river" under the Tennessee Wild and Scenic Rivers Act.

This Chapter describes the location and characteristics of the Lower Hatchie River Watershed.

2.2. DESCRIPTION OF THE WATERSHED.

2.2.A. General Location. The Tennessee portion of the Lower Hatchie River Watershed is located in West Tennessee and includes parts of Chester, Fayette, Hardeman, Haywood, Lauderdale, Madison, and Tipton Counties.

Figure 2-1. General Location of the Lower Hatchie River Watershed.

COUNTY	% OF WATERSHED IN EACH COUNTY
Hardeman	36.4
Haywood	21.5
Tipton	16.2
Lauderdale	12.2
Fayette	6.3
Madison	5.5
Chester	1.9

Table 2-1. The Tennessee Portion of the Lower Hatchie River Watershed Includes Parts of Seven West Tennessee Counties.

2.2.B. Population Density Centers. Twenty-six highways serve the major communities in the Tennessee portion of the Lower Hatchie River Watershed.

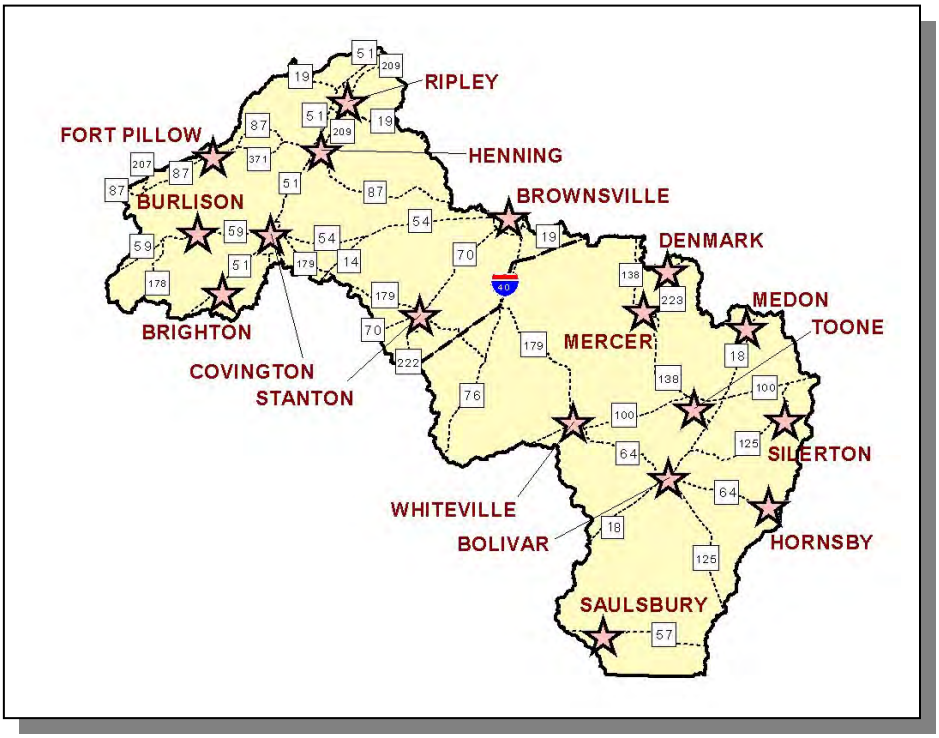


Figure 2-2. Communities and Roads in the Tennessee Portion of the Lower Hatchie River Watershed.

MUNICIPALITY	POPULATION	COUNTY
Brownsville*	10,748	Haywood
Covington*	8,463	Tipton
Ripley*	7,844	Lauderdale
Bolivar*	5,802	Hardeman
Whiteville	4,539	Hardeman
Brighton	1,719	Tipton
Henning	1,218	Lauderdale
Stanton	615	Haywood
Burlison	453	Tipton
Toone	330	Hardeman
Hornsby	306	Hardeman
Medon	269	Madison
Saulsbury	99	Hardeman
Silerton	60	Hardeman / Chester

Table 2-2. Municipalities in the Tennessee Portion of the Lower Hatchie River 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 Lower Hatchie River Watershed, designated 08010208 by the USGS, is approximately 1,461 square miles (1448 square miles in Tennessee) and drains to the Mississippi River.

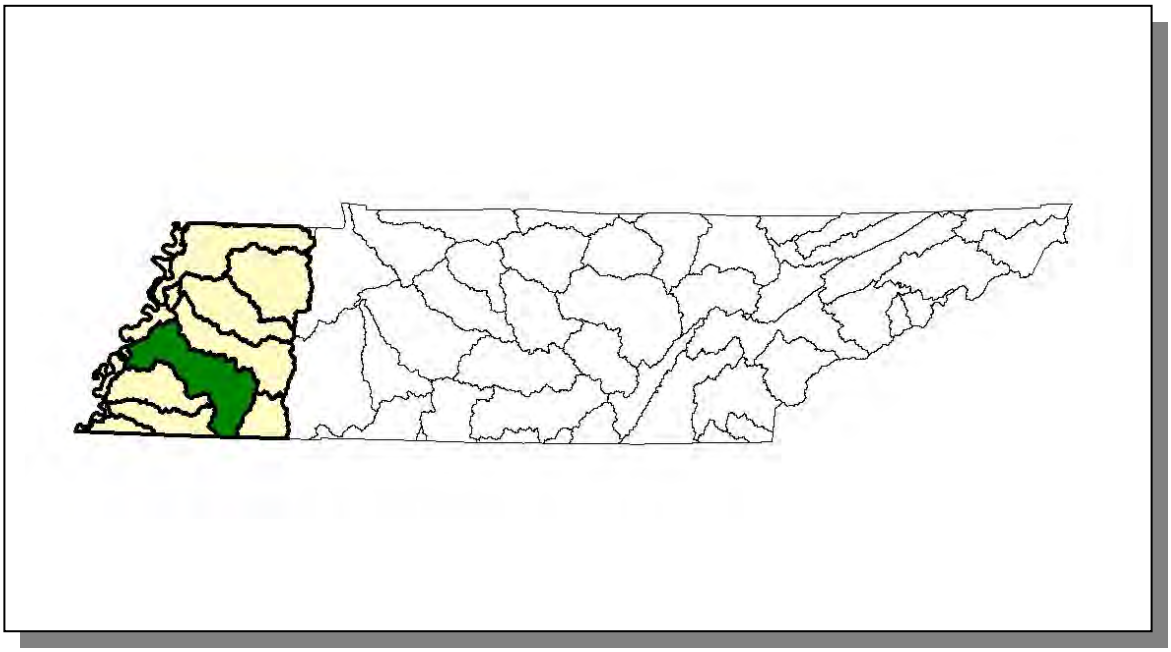


Figure 2-3. The Lower Hatchie River Watershed is Part of the Mississippi River Basin.

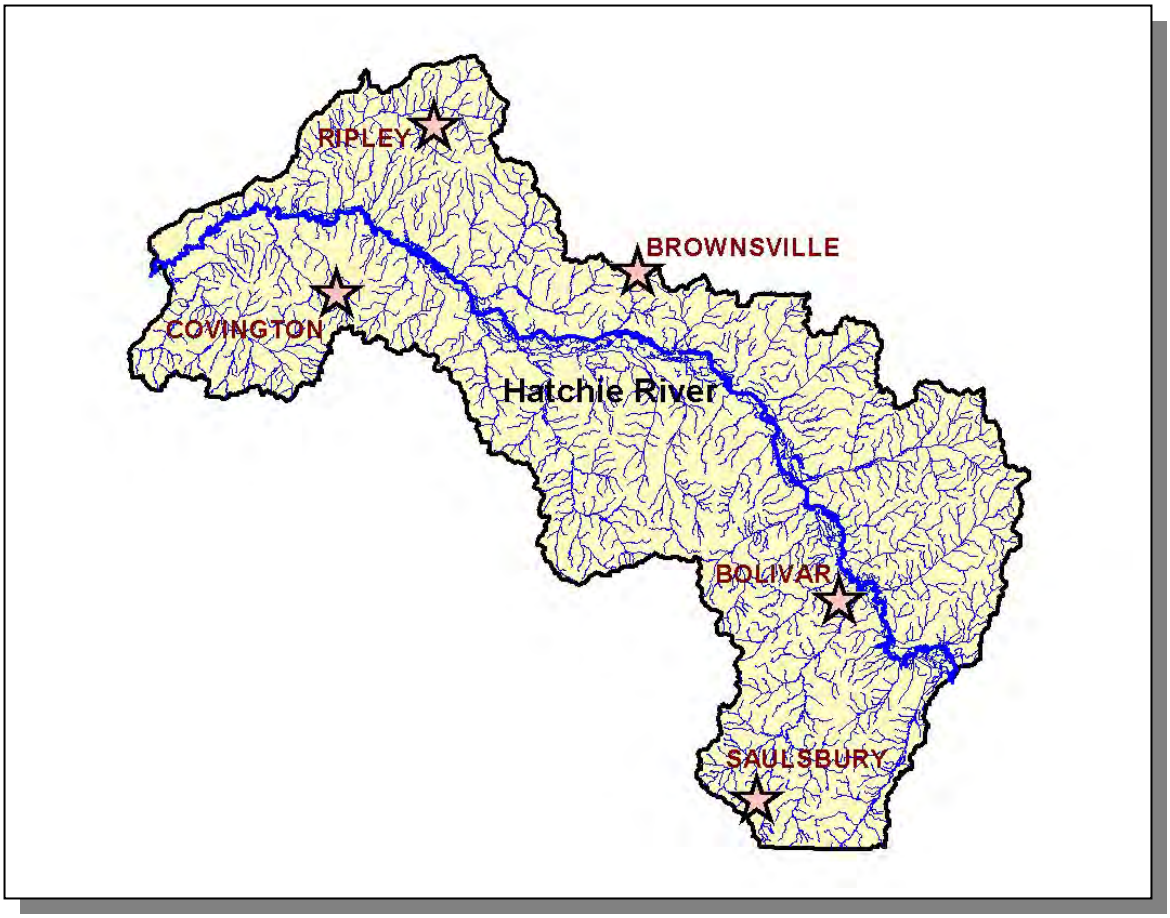


Figure 2-4. Hydrology in the Tennessee Portion of the Lower Hatchie River Watershed. *There are 2,530.8 stream miles recorded in River Reach File 3 in the Tennessee portion of the Lower Hatchie River Watershed. Location of the Hatchie River and the cities of Bolivar, Brownsville, Covington, Ripley, and Saulsbury are shown for reference.*

2.3.B. Dams. There are 83 dams inventoried by TDEC Division of Water Supply in the Tennessee portion of the Lower Hatchie River Watershed. These dams either retain 30 acre-feet of water or have structures at least 20 feet high.

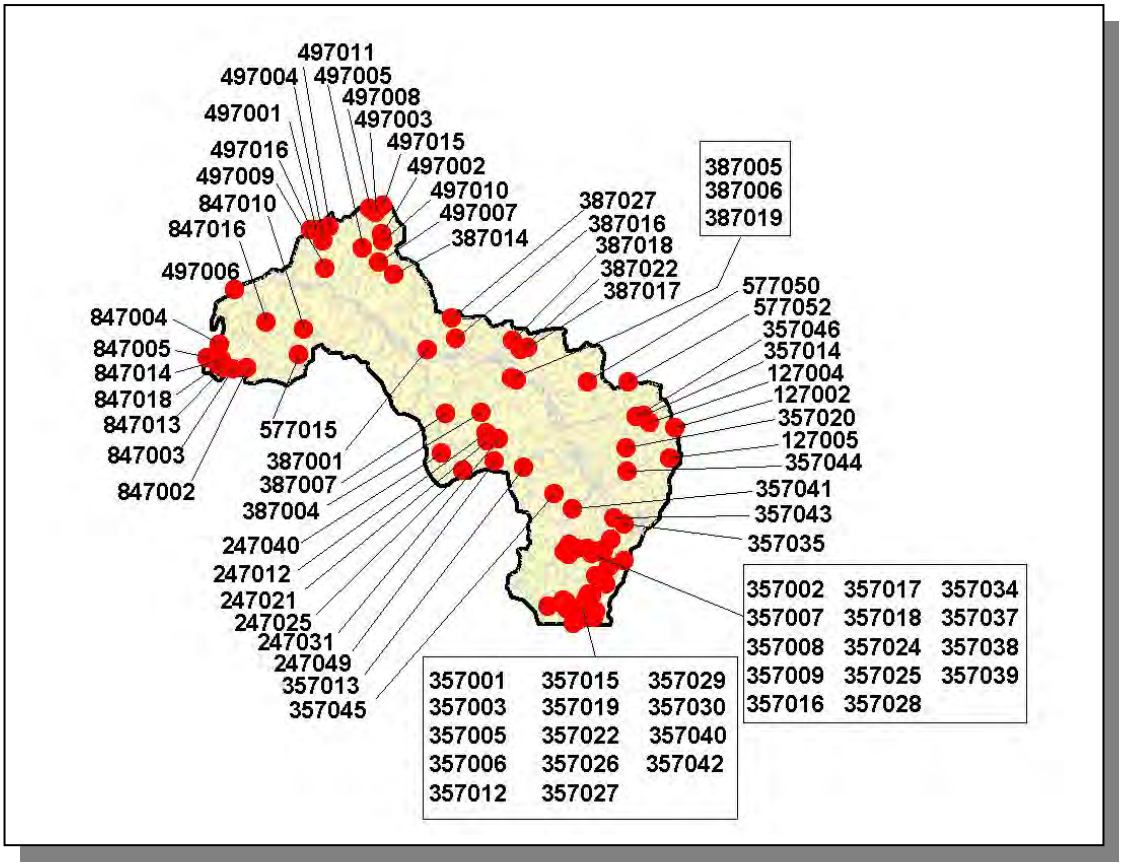


Figure 2-5. Location of Inventoried Dams in the Tennessee Portion of the Lower Hatchie River Watershed. *More information, including identification of inventoried dams labeled, is provided in Appendix II and at http://gwidc.memphis.edu/website/dams/viewer.htm.*

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.

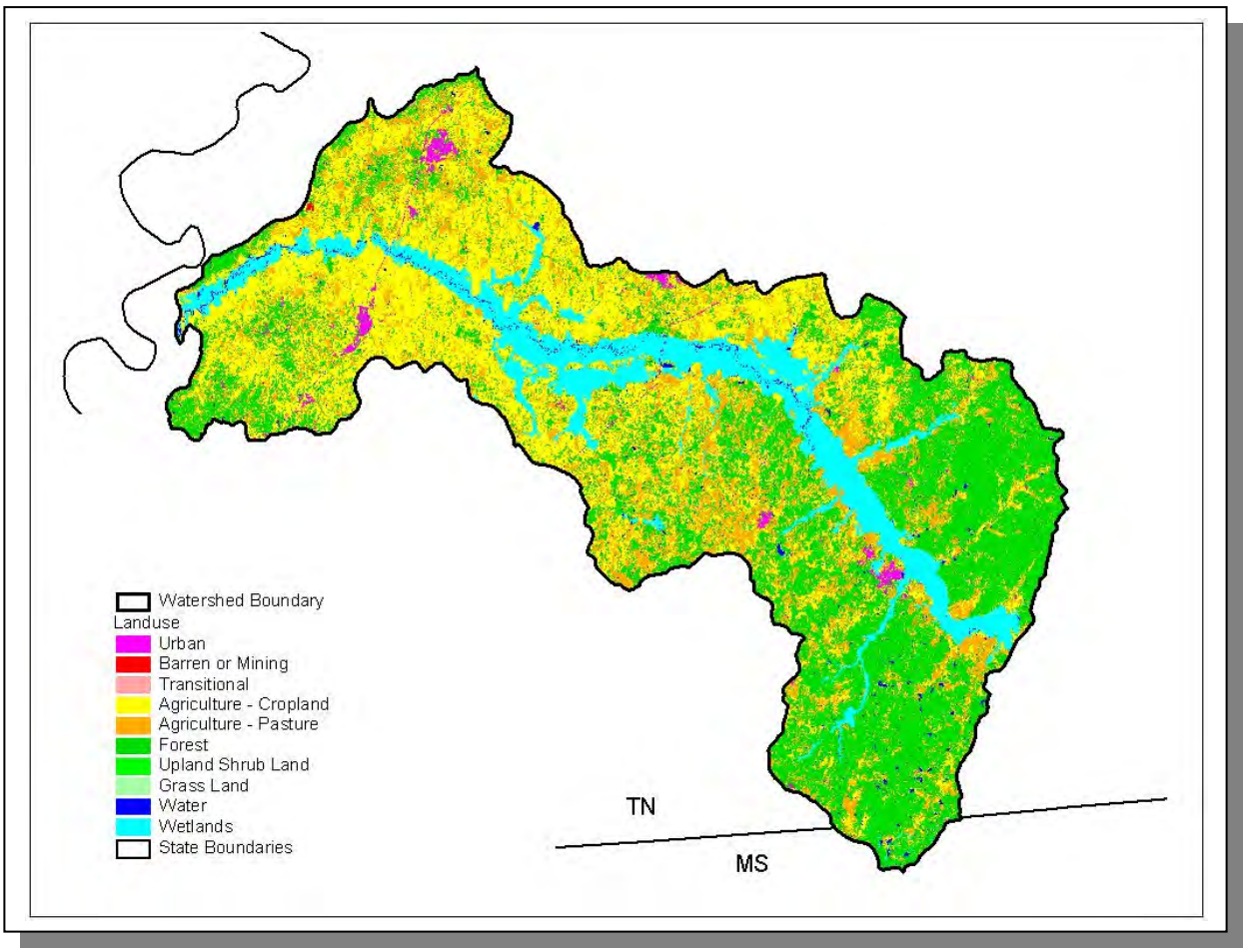


Figure 2-6. Illustration of Select Land Cover/Land Use Data from MRLC Satellite Imagery.

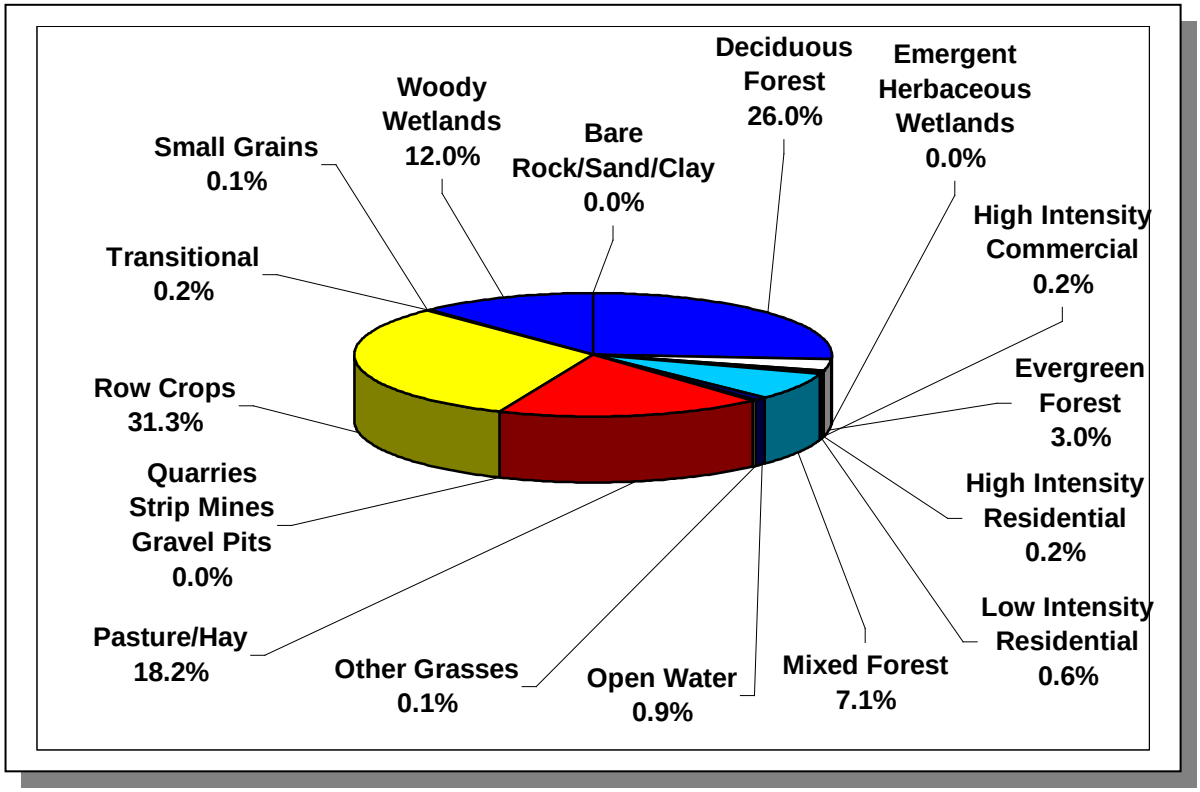


Figure 2-7. Land Use Distribution in the Tennessee Portion of the Lower Hatchie River Watershed. *More information is provided in Appendix II.*

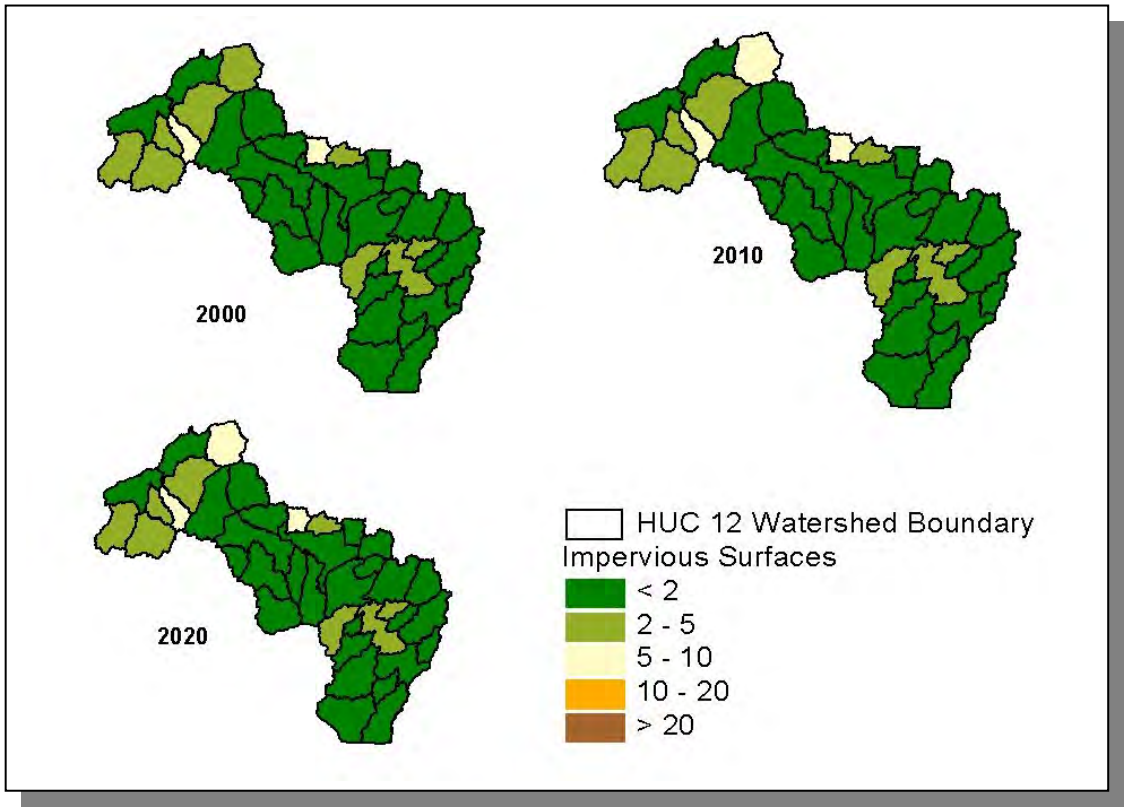


Figure 2-8. Illustration of Total Impervious Area in the Tennessee Portion of the Lower Hatchie River Watershed. *All HUC-12 subwatersheds are shown. Current and projected total impervious cover (percent of total area) is provided by EPA Region 4. More information can be found at: http://www.epa.gov/ATHENS/research/impervious/*

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 Tennessee portion of the Lower Hatchie River Watershed lies within 3 Level III ecoregions (Southeastern Plains, Mississippi Alluvial Plain, and Mississippi Valley Loess Plains) and contains 4 Level IV subecoregions:

- The **Southeastern Plains and Hills (65e)** contains north-south trending bands of sand and clay formations. Tertiary-age sand, clay, and lignite are to the west, with Cretaceous fine sand, fossiliferous micaceous sand, and silty clays to the east. Elevations reach over 650 feet with more rolling topography and relief than the Loess Plains (74b) to the west. Streams have increased gradient, sandy substrates, and distinct faunal characteristics. Natural vegetation is oak-hickory forest, grading into oak-hickory-pine to the south.

- The **Northern Mississippi Alluvial Plain (73a)** within Tennessee is a relatively flat region of the Quaternary alluvial deposits of sand, silt, clay, and gravel. It is bounded distinctly on the east by the Bluff Hills (74a), and on the west by the Mississippi River. Average elevations are 200-300 feet with little relief. Most of the region is in cropland, with isolated areas of deciduous forest. Soybeans, cotton, corn, sorghum, and vegetables are the main crops. The natural vegetation consists of Southern floodplain forest (oak, tupelo, bald cypress). The two main distinctions in the Tennessee portion of the ecoregion are between areas of loamy, silty, and sandy soils with better drainage, and areas of more clayey soils of poor drainage that may contain wooded swamp-land and oxbow lakes. Waterfowl, raptors, and migratory songbirds are relatively abundant in the region.

- The **Loess Plains (74b)** gently rolling, irregular plains, 250-500 feet in elevation, with loess up to 50 feet thick. The region is a productive agricultural area of soybeans cotton, corn, milo, and sorghum crops, along with livestock and poultry. Soil erosion can be a problem on the steeper, upland Alfisol soils. Bottom soils are mostly silty Entisols. Oak-hickory and southern floodplain forests are the natural vegetation types, although most of the forest cover has been removed for cropland. Some less-disturbed bottomland forest and cypress-gum swamp habitats still remain. Several large river systems with wide floodplains; the Obion, Forked Deer, Hatchie, Loosahatchie, and Wolf, cross the region. Streams are low-gradient and murky with silt and sand bottoms. Most of the streams have been channelized.

- The **Bluff Hills (74a)** consist of sand, clay, silt, and lignite, and are capped by loess greater than 60 feet deep. The disjunct region in Tennessee encompasses those thick loess areas that are generally the steepest, most dissected and forested. The carved loess has a mosaic of microenvironments, including huge dry slopes and ridges, moist slopes, ravines, bottomland areas, and small cypress swamps. While oak-hickory is the general forest type, some of the undisturbed bluff vegetation is rich in mesophytes, such as beech and sugar maple, with similarities to hardwood forests of eastern Tennessee. Smaller streams of the Bluff Hills have localized reaches of increased gradient and small areas of gravel substrate that create aquatic habitats that are distinct from those of the Loess Plains (74b) to the east. Unique, isolated fish assemblages more typical of upland habitats can be found in these stream reaches. Gravels are also exposed in places at the base of the bluffs.

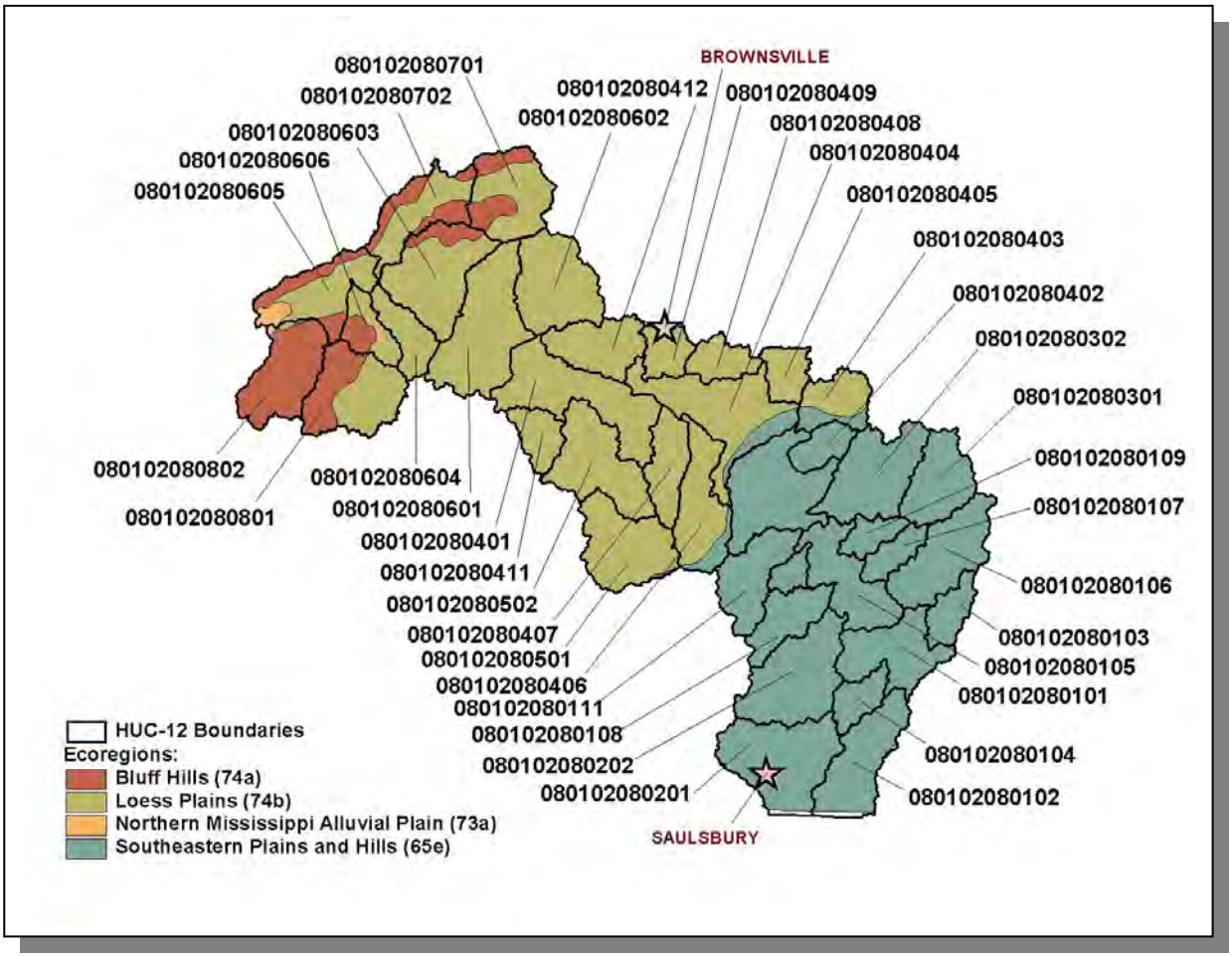


Figure 2-9. Level IV Ecoregions in the Tennessee Portion of the Lower Hatchie River Watershed. *HUC-12 subwatershed boundaries and locations of Brownsville and Saulsbury are shown for reference.*

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.

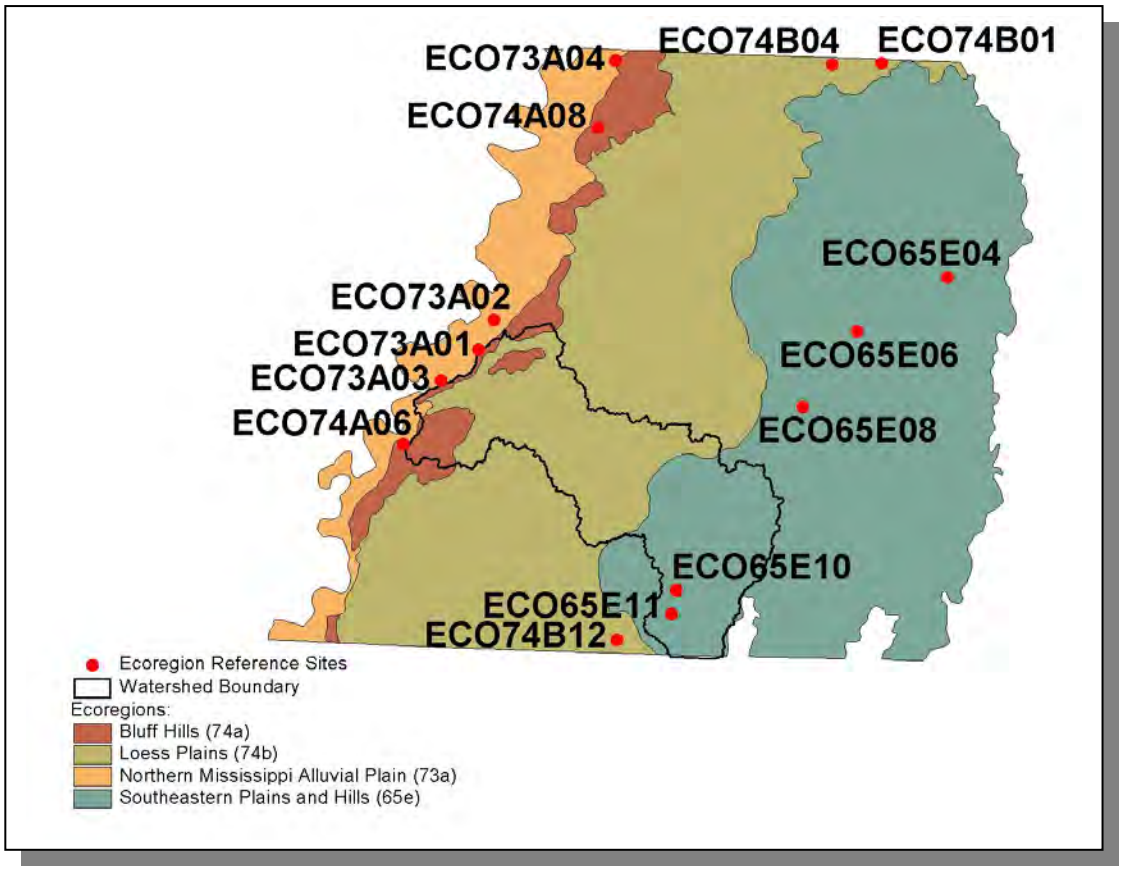


Figure 2-10. Ecoregion Monitoring Sites in Level IV Ecoregions 65e, 73a, 74a, and 74b. *The Tennessee portion of the Lower Hatchie River Watershed is shown for reference. More information, including which ecoregion reference sites were inactive or dropped prior to 01/01/2006, is provided in Appendix II.*

2.6. NATURAL RESOURCES.

2.6.A. 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
Mussels	2
Amphibians	1
Birds	5
Fish	4
Mammals	6
Reptiles	3
Plants	12
Total	**33**

Table 2-3. There are 33 Known Rare Plant and Animal Species in the Tennessee Portion of the Lower Hatchie River Watershed.

In the Tennessee portion of the Lower Hatchie River Watershed, there are four known rare fish species, one rare amphibian species, and two known rare mussel species.

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS
Ammocrypta beani	Naked sand darter		D
Ammocrypta vivax	Scaly sand darter		D
Cycleptus elongates	Blue sucker		T
Noturus stigmosus	Northern madtom		D
Obovaria jacksoniana	Southern hickorynut		
Villosa vibex	Southern rainbow		
Hyla gratiosa	Barking tree frog		D

Table 2-4. Rare Aquatic Species in the Tennessee Portion of the Lower Hatchie River Watershed. Federal Status: LE, Listed Endangered by the U.S. Fish and Wildlife Service, MC, Management Concern for 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.B. 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/

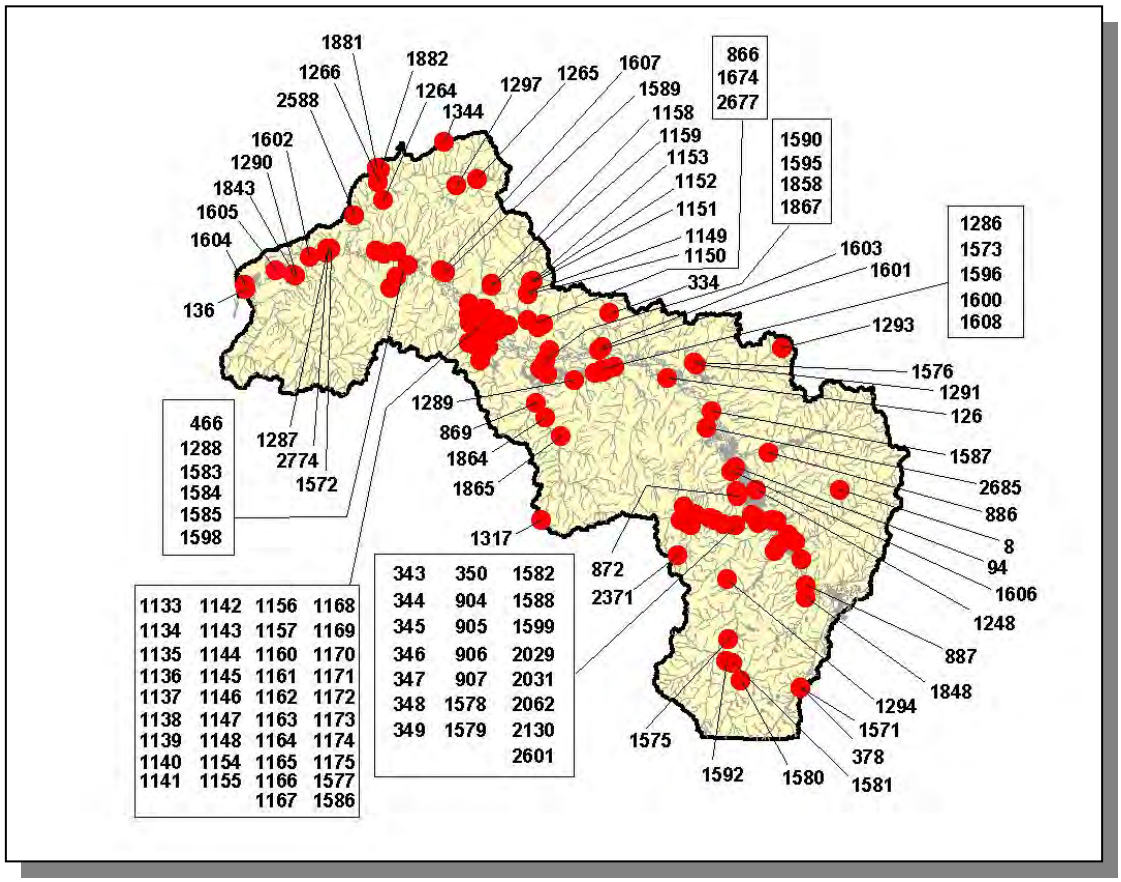


Figure 2-11. Location of Wetland Sites in TDEC Division of Natural Heritage Database in the Tennessee Portion of the Lower Hatchie River Watershed. This map represents an incomplete inventory and should not be considered a dependable indicator of the presence of wetlands. *There may be additional wetland sites in the watershed. More information, including identification of wetland sites labeled, is provided in Appendix II.*

2.7. CULTURAL RESOURCES.

2.7.A. State Scenic River. The Tennessee portion of the Hatchie River is designated a State Scenic River.

> **Hatchie River** is designated as a Class I Natural River Area as a swamp river.

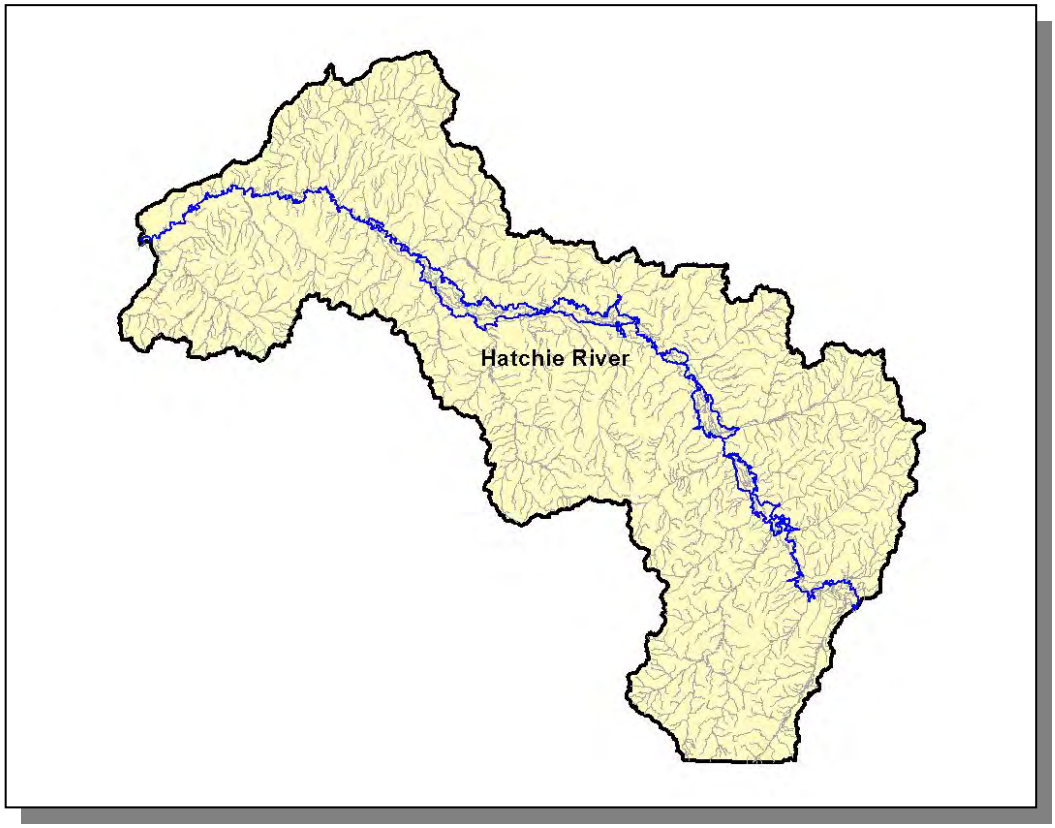


Figure 2-12. The Tennesse Portion of the Hatchie River is Designated a State Scenic River*. More information can be found at http://www.state.tn.us/environment/nh/scenicrivers/.*

2.7.B. 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 one stream in the Tennessee portion of the Lower Hatchie River Watershed:

> Hatchie River (RM 0 to RM 163) is a slow, meandering swamp river with many oxbows surrounded by wilderness and inhabited by a large, diversified wildlife population, including rare species.

RIVER	SCENIC	RECREATION	GEOLOGIC	FISH	WILDLIFE	HISTORIC	CULTURAL
Hatchie River	X	X	X	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.C. Public Lands. Some sites representative of the cultural heritage are under state or federal protection:

- Chickasaw National Wildlife Refuge is a 25,006-acre complex located near Ripley. More information may be found at at http://www.fws.gov/Refuges/profiles/index.cfm?id=42526.

- Chickasaw State Forest is a 12,571-acre state forest located in Chester and Hardeman Counties. At the time most of the lands were purchased by the federal Resettlement Administration Program in 1938 it was highly eroded and degraded by farming and timber harvesting. The lands were deeded to the state in 1955. More information may be found at http://www.state.tn.us/agriculture/forestry/stateforests/1.html

- Chickasaw State Park is located on some of the highest terrain in West Tennessee. Started as a Works Progress Administration WPA) project in 1934, it came under state management in 1939. More information may be found at http://www.state.tn.us/environment/parks/parks/Chickasaw/

- Chickasaw Wildlife Management Area is an 11,215-acre area managed by TWRA in Hardeman and Chester Counties.

- Fort Pillow State Historic Area is a 1642-acre park located in on the Chickasaw Bluffs of Lauderdale County. The site has both historical and archaeological significance. More information may be found at: http://www.state.tn.us/environment/parks/parks/FortPillow/

- Fort Pillow State Prison Farm is operated by the Tennessee Department of Corrections.

- Glen Springs Lake is a 310-acre lake in Tipton County and is owned and operated by the Tennessee Wildlife Resources Agency for Fishing. More information may be found at: http://www.state.tn.us/twra/fish/pond/famlake/glennsprings.html

- Grays Creek is a 20-acre area managed by Tennessee Wildlife Resources Agency in Hardeman County. More information may be found at http://www.state.tn.us/twra/grayswma.html.

- Hatchie NWR is an 11,556-acre refuge established in 1964. The refuge is located entirely in Haywood County. More information may be found at http://www.fws.gov/hatchie/

- Lower Hatchie NWR is a 10,331-acre refuge located in Lauderdale and Tipton Counties. More information may be found at http://www.fws.gov/southeast/pubs/facts/lhacon.pdf.

- Whiteville Lake is a 158-acre area managed by Tennessee Wildlife Resources Agency in Hardeman County. More information may be found at http://www.state.tn.us/twra/fish/pond/famlake/whiteville.html.

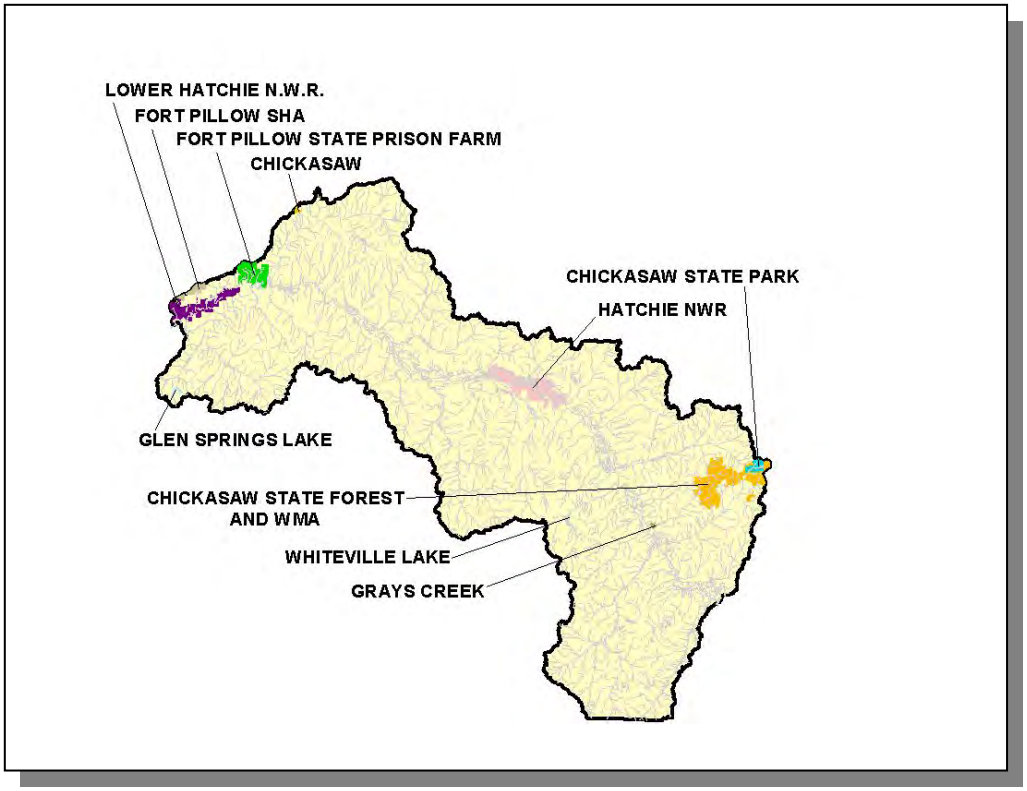


Figure 2-13. Public Lands in the Tennessee Portion of the Lower Hatchie River Watershed. *Data are from Tennessee Wildlife Resources Agency. NWR, National Wildlife Refuge; SHA, State Historical Area; SNA, State Natural Area; WMA, Wildlife Management Area.*

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
Bear Creek	1			Mill Creek	4		
Big Black Creek	4	4		Muddy Creek			
Big Muddy Creek Canal	3		2	Oak Dain Creek	4		
Cane Branch	3			Pennycost Creek	4		
Cane Creek	4	3	2,3	Piney Creek			
Carters Creek	4			Pleasant Run Creek	3		
Clear Creek	3,4			Poplar Creek	1,4	2,4	
Clover Creek	3,4			Porters creek	4		
Copper Springs Creek	3			Potters Creek	4		
Cypress Creek	3			Richland Creek	4		
District Branch Lagoon Creek	3			Saulsbury Creek	3		
Dry Creek	3			Short Creek	4		
East Fork Spring Creek	3		3	Smart Creek	3		
Flat Creek	3			Spring Creek	2	2,3	3
Grays Creek	2			Stewart Branch Porters Creek	3		
Groggins Creek	3			Sugar Creek	3	4	
Hatchie River	1,2,3	1,2	2	Town Creek	4		2
Hickory Creek	4	4		Unnamed Trib to Cane Creek	4		
Hurricane Creek	3			Unnamed Trib to Carters Creek	4		
Hyde Creek	4			Unnamed Trib to Hatchie River (North)	4		
Indian Creek	4			Unnamed Trib to Hatchie River (South)	4		
Jeffers Creek	3			Unnamed Trib to Little Muddy Creek	4		
Lagoon Creek	2			Wade Creek	4		
Little Muddy Creek	4			West Fork Spring Creek			1
Marshall/Snow Creek	3						

Table 2-6. Tennessee Rivers Assessment Project Stream Scoring in the Lower Hatchie River 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 LOWER HATCHIE RIVER 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 Tennessee portion of the Lower Hatchie River 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.

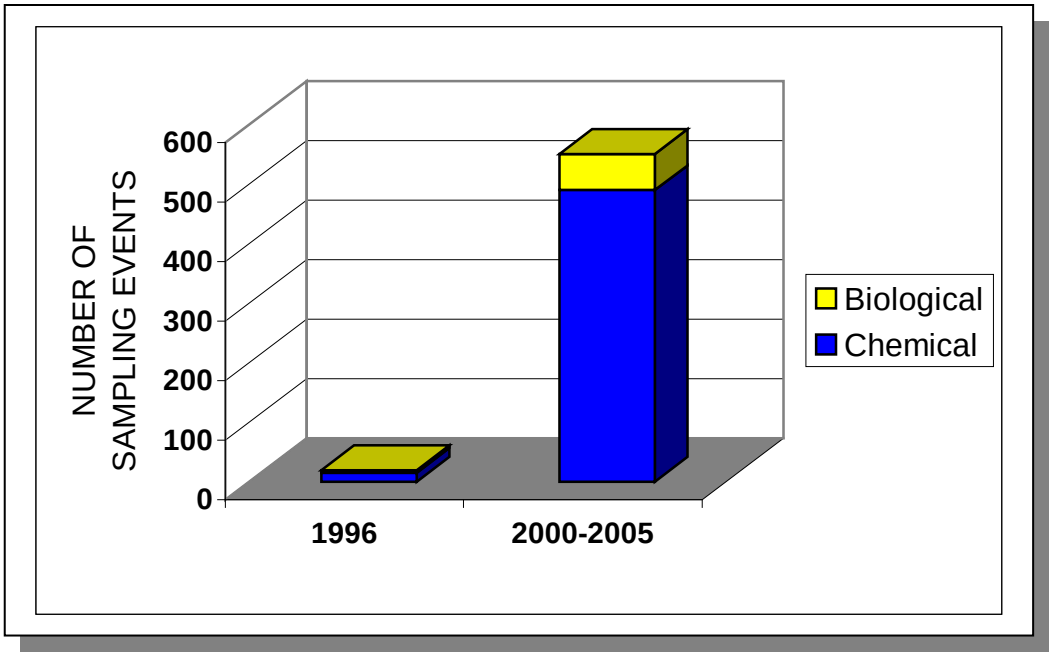


Figure 3-1. Number of Sampling Events Using the Traditional Approach (1996) and Watershed Approach (July 1, 2000 through June 30, 2005) in the Tennessee Portion of the Lower Hatchie River Watershed.

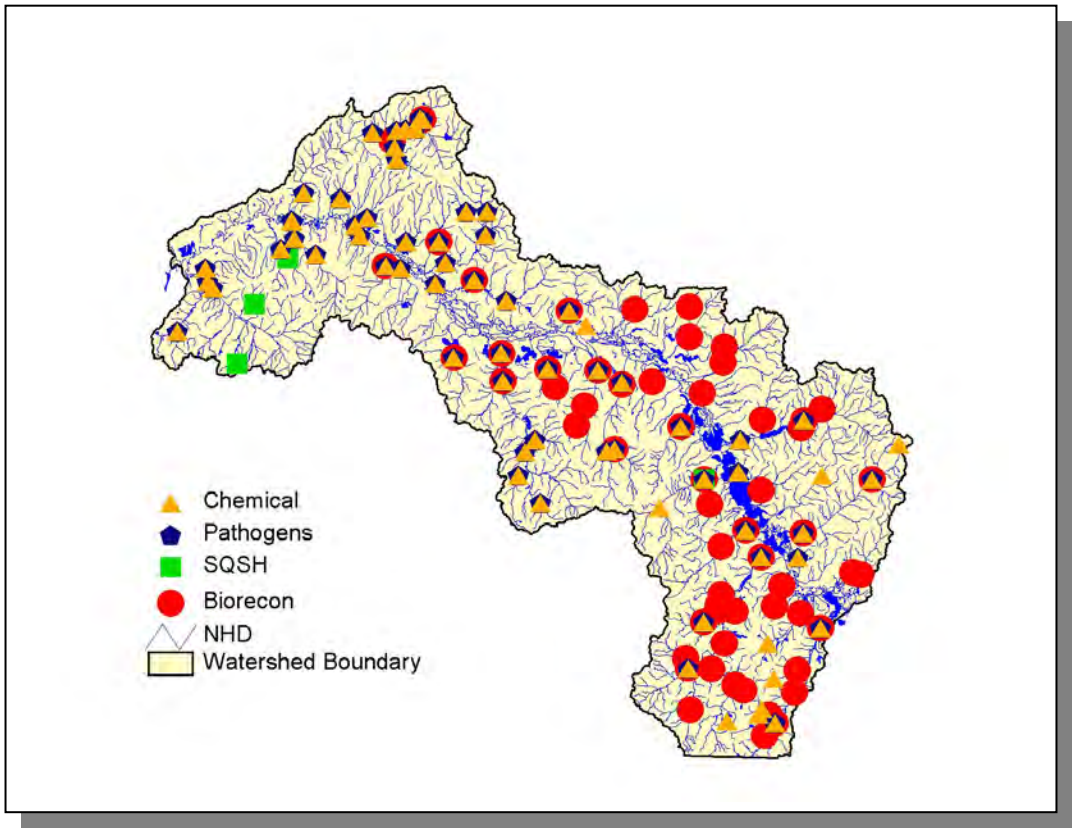


Figure 3-2. Location of Monitoring Sites in the Tennessee Portion of the Lower Hatchie River Watershed (July 1, 2000 through June 30, 2005). *Pathogens include E. coli and fecal coliform; NHD, National Hydrography Dataset of Streams; SQSH, Semi-Quantitative Single Habitat Assessment.*

	1996	2000-2005
Biological	4	78
Chemical	15	473
Total	**19**	**551**

Table 3-1. Number of Sampling Events in the Tennessee Portion of the Lower Hatchie River 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-Jackson and Environmental Field Office-Memphis 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 Tennessee portion of the Lower Hatchie River 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 Tennessee portion of the Lower Hatchie River Watershed lies within 3 Level III ecoregions (Southeastern Plains, Mississippi Alluvial Plain and Mississippi Valley Loess Plain) and contains 4 subecoregions (Level IV):

- Southern Plains and Hills (65e)
- Northern Mississippi Alluvial Plain (73a)
- Bluff Hills (74a)
- Loess Plain (74b)

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.

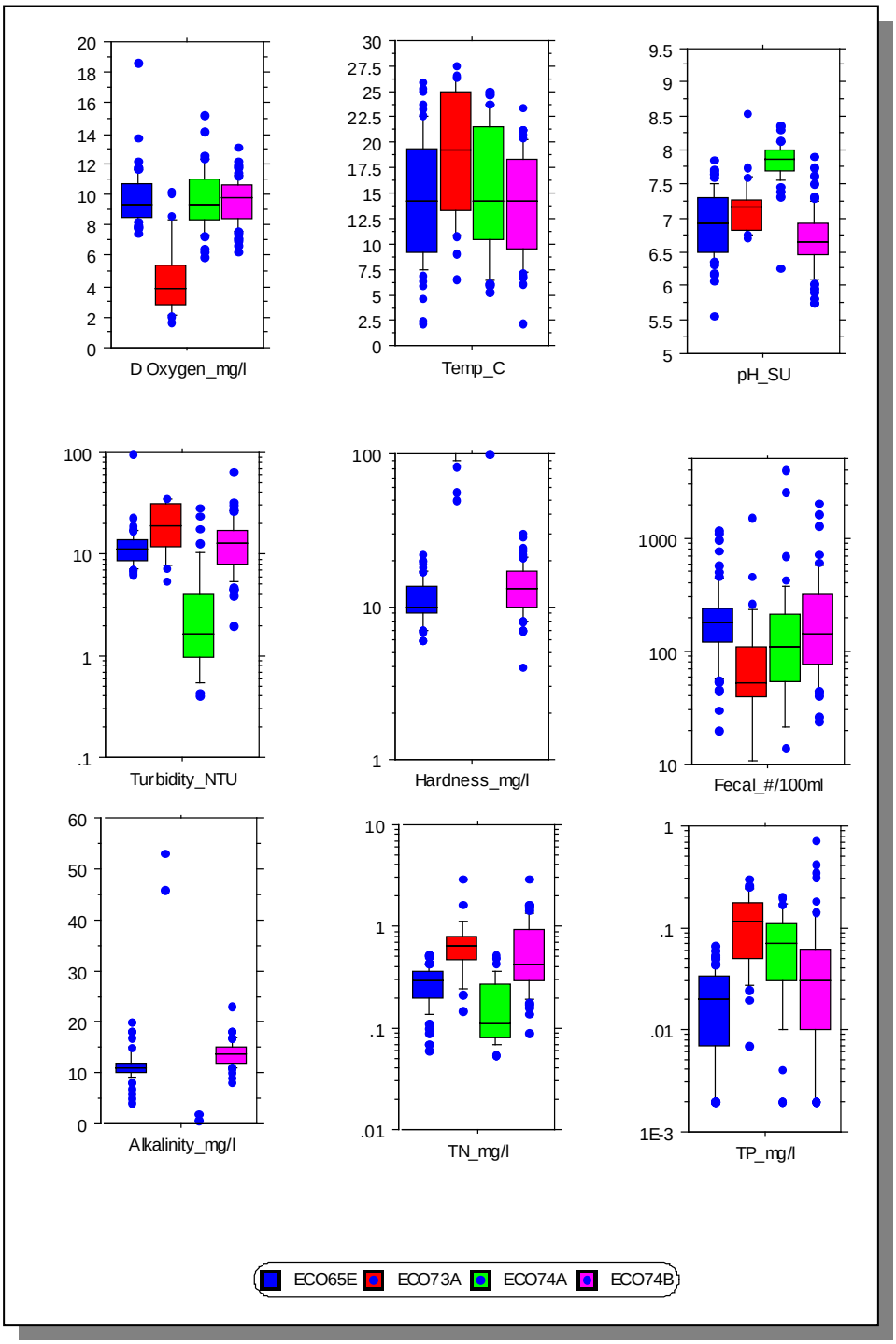


Figure 3-3. Select Chemical Data Collected in the Tennessee Portion of Lower Hatchie River Watershed Ecoregion Sites. *Boxes and bars illustrate 10th, 25th, median, 75th, and 90th*

percentiles. Extreme values are also shown as dots. Fecal, fecal coliform bacteria; TN, Total Nitrogen; TP, Total Phosphorus.

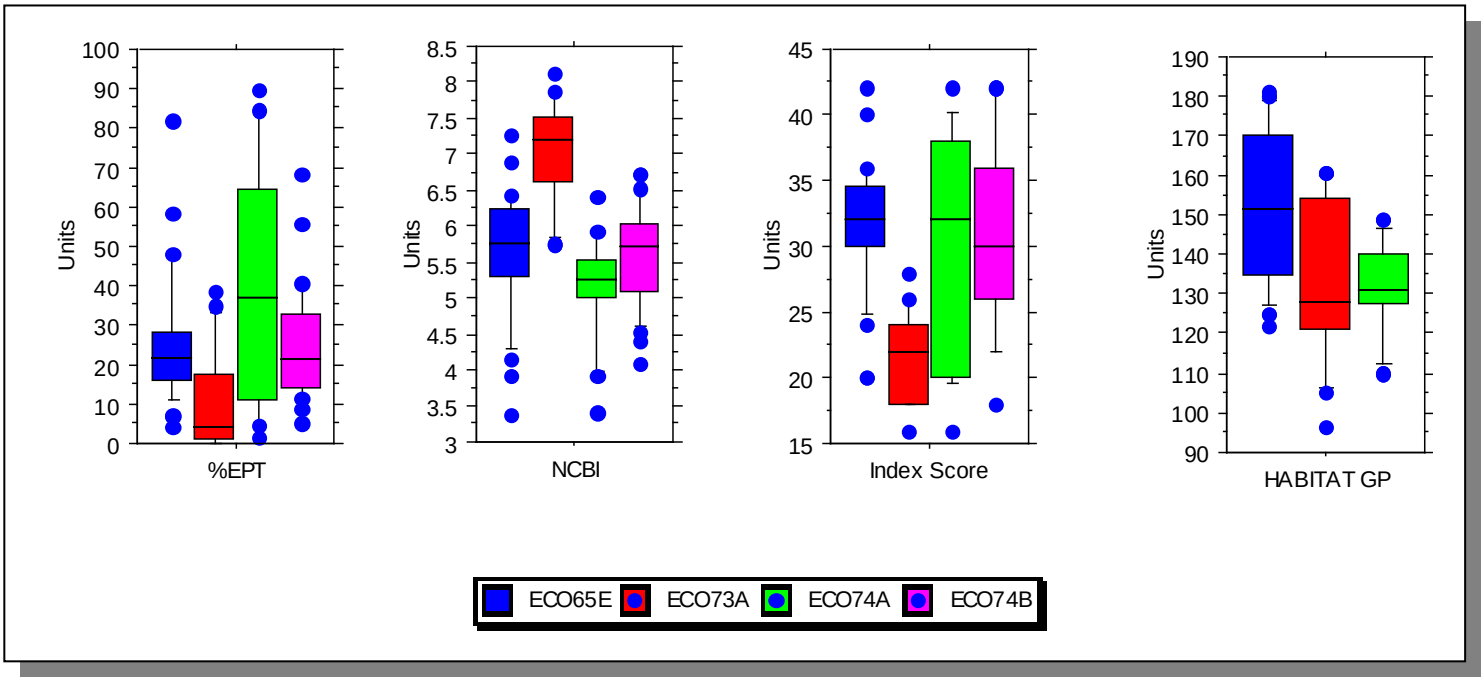


Figure 3-4. Benthic Macroinvertebrate and Habitat Scores for the Tennessee Portion of Lower Hatchie River Watershed Ecoregion Sites. *Boxes and bars illustrate 10th, 25th, median, 75th, and 90th percentiles. Extreme values are also shown as dots. NCBI, North Carolina Biotic Index. Index Score and Habitat 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. 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.

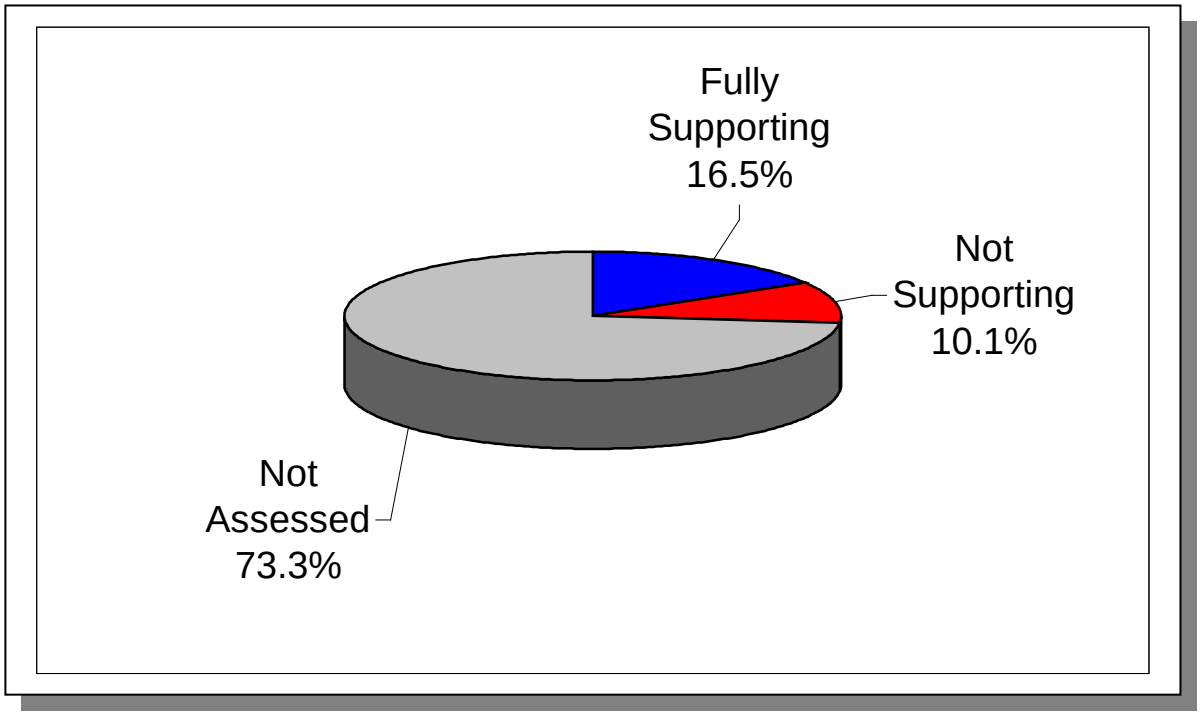


Figure 3-5. Water Quality Assessment of Streams in the Tennessee Portion of the Lower Hatchie River Watershed. *Assessment data are based on the 2004 Water Quality Assessment of 2,530.8 stream miles in the watershed. More information is provided in Appendix III.*

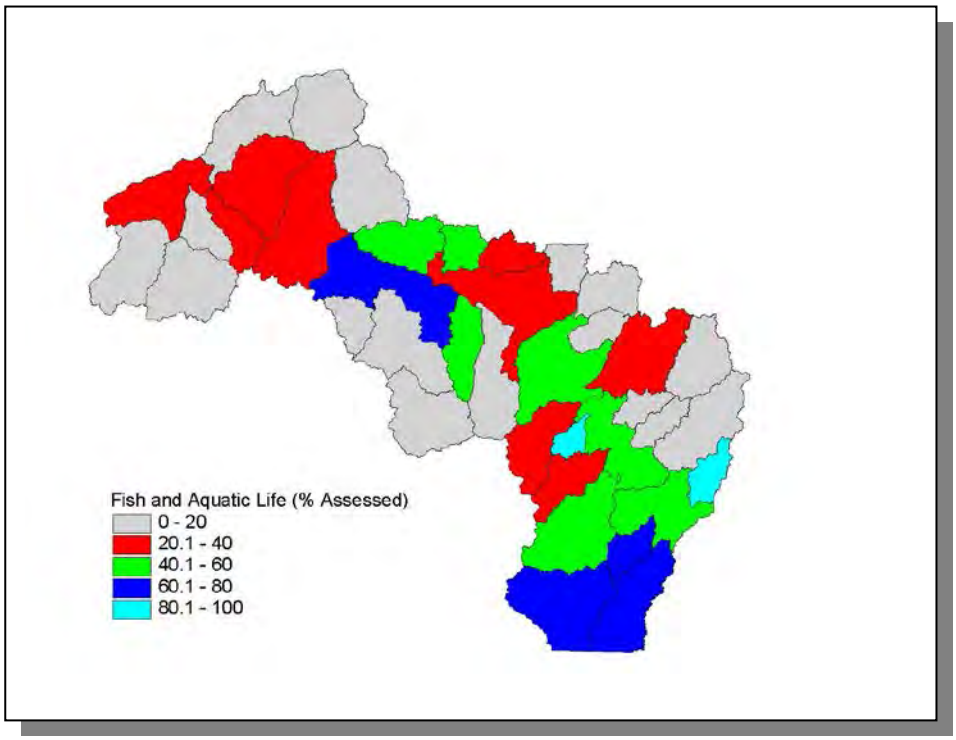


Figure 3-6. Percentage of Stream Miles Assessed for Support of Fish and Aquatic Life Designated Use in HUC-12 Subwatersheds.

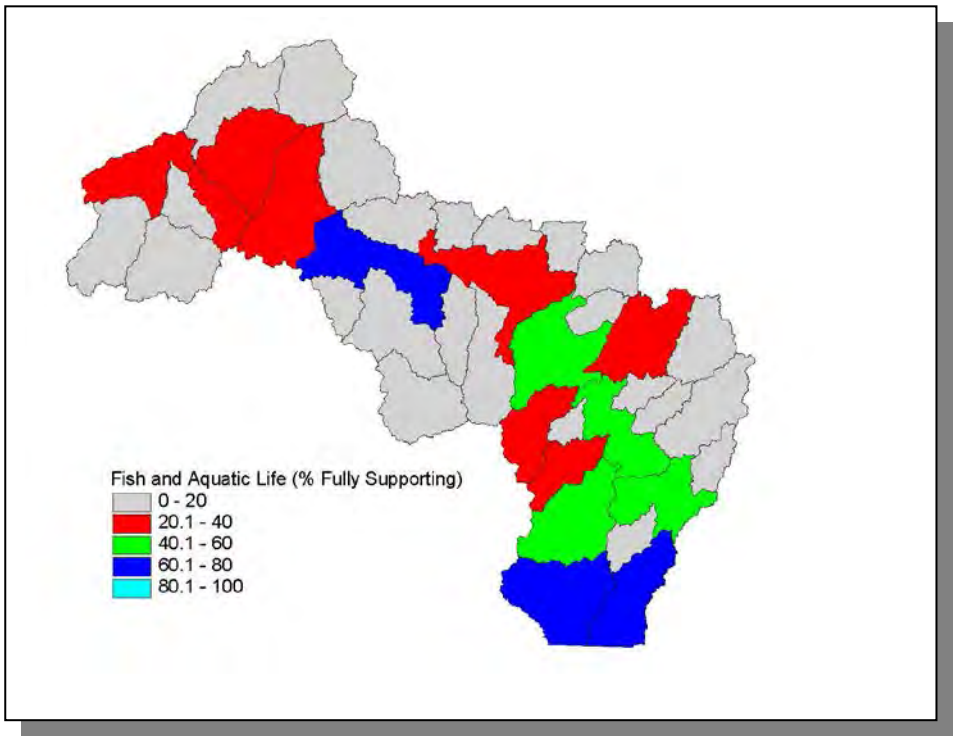


Figure 3-7. Percentage of Stream Miles Fully Supporting for Fish and Aquatic Life Designated Use in HUC-12 Subwatersheds.

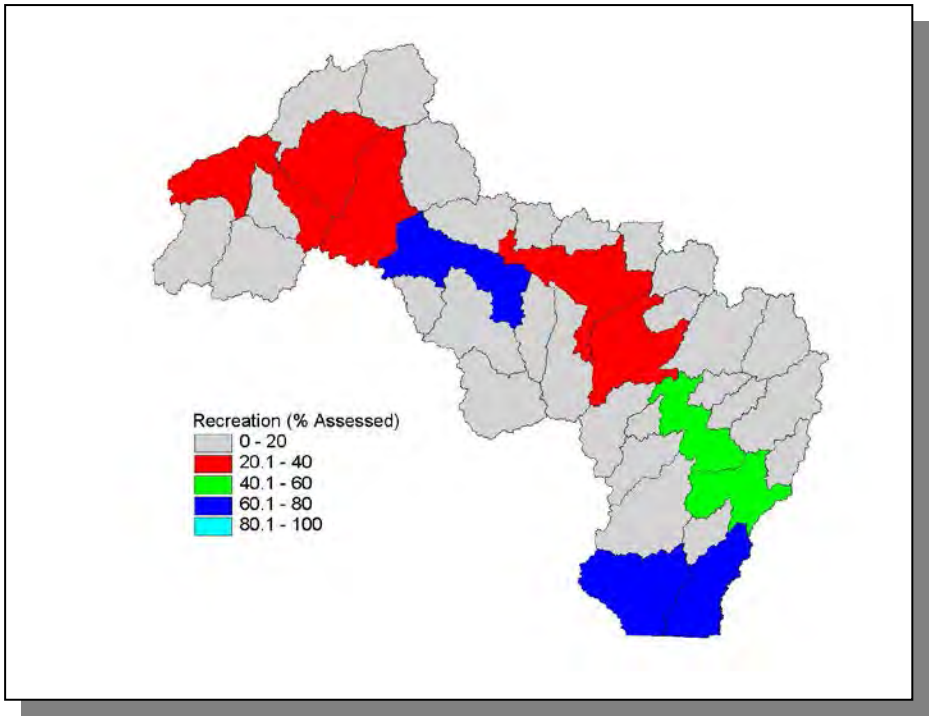


Figure 3-8. Percentage of Stream Miles Assessed for Support of Recreation Designated Use in HUC-12 Subwatersheds.

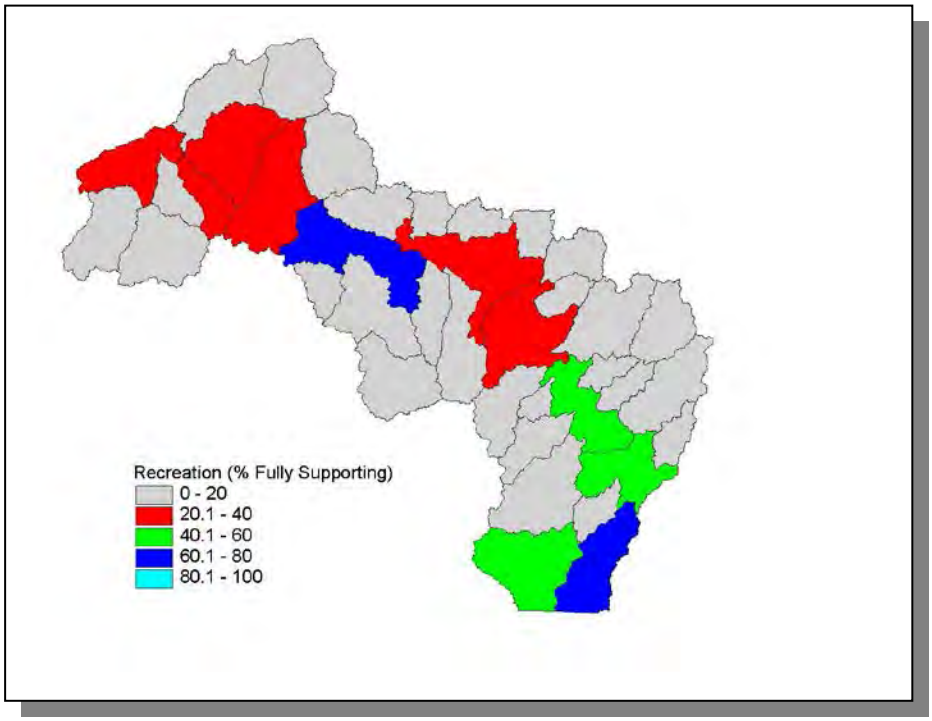


Figure 3-9. Percentage of Stream Miles Fully Supporting for Recreation Designated Use in HUC-12 Subwatersheds.

3.3.A. Assessment Summary.

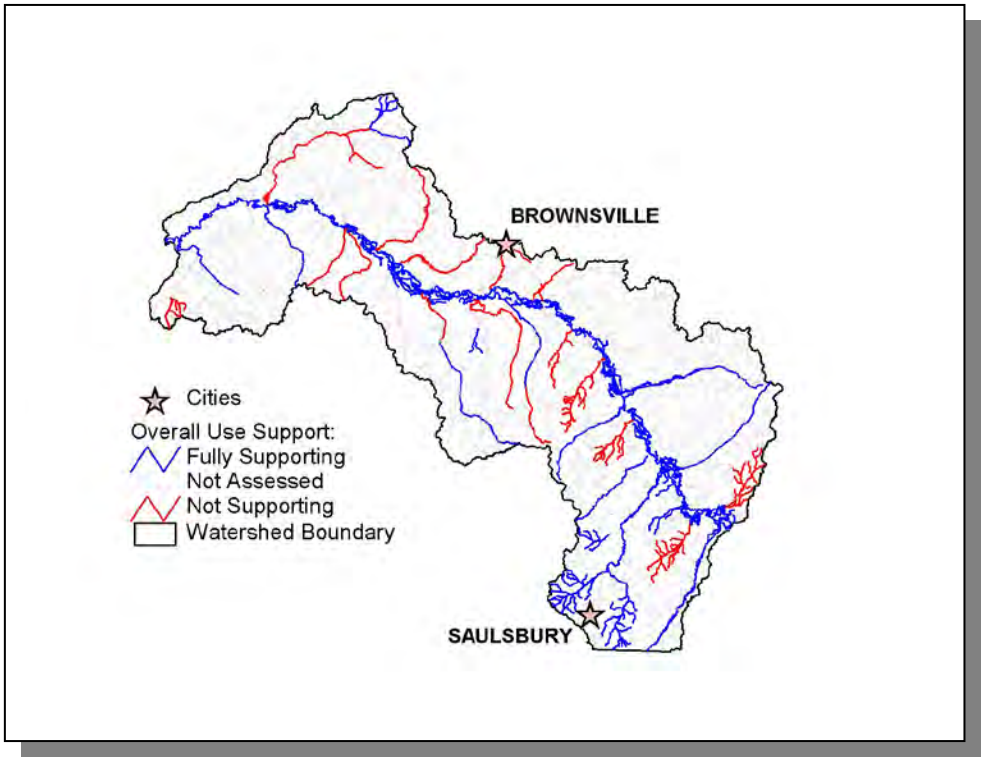


Figure 3-10. Overall Use Support Attainment in the Tennessee Portion of the Lower Hatchie River Watershed. *Assessment data are based on the 2004 Water Quality Assessment. Water Quality Standards are described at http://www.state.tn.us/sos/rules/1200/1200-04/1200-04.htm. Locations of Brownsville and Saulsbury are shown for reference. More information is provided in Appendix III.*

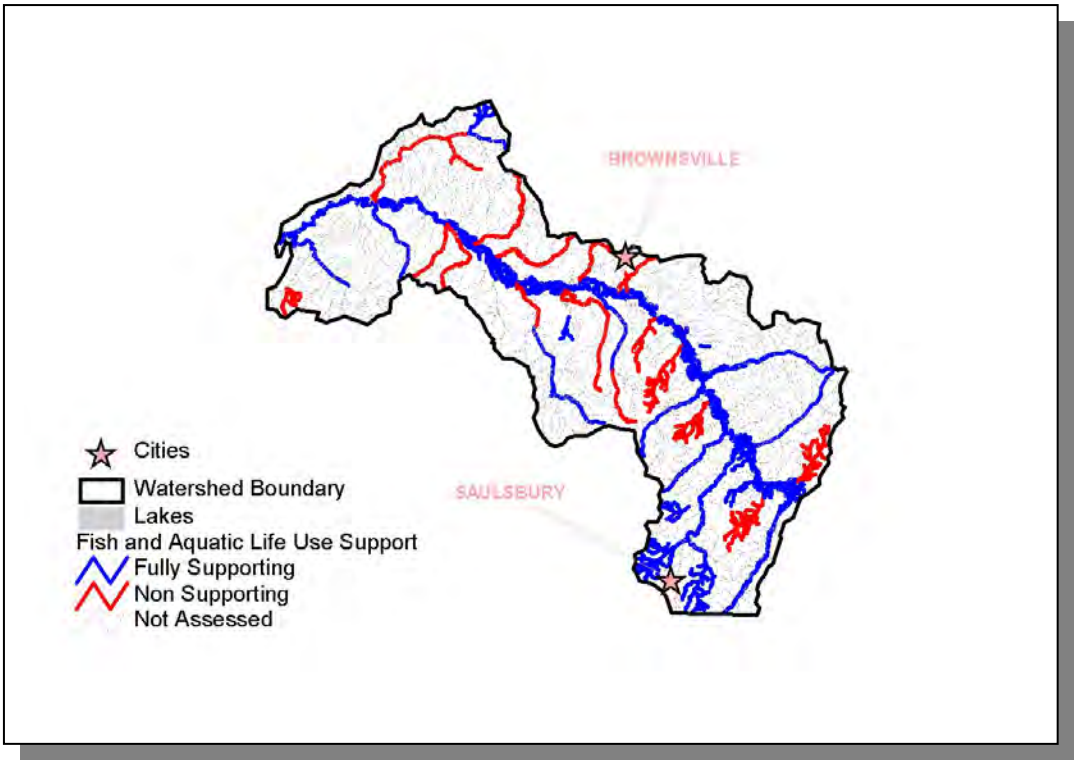


Figure 3-11. Fish and Aquatic Life Use Support Attainment in the Tennessee Portion of the Lower Hatchie River Watershed. *Assessment data are based on the 2004 Water Quality Assessment. Water Quality Standards are described at http://www.state.tn.us/sos/rules/1200/1200-04/1200-04.htm. Locations of Brownsville and Saulsbury are shown for reference. More information is provided in Appendix III.*

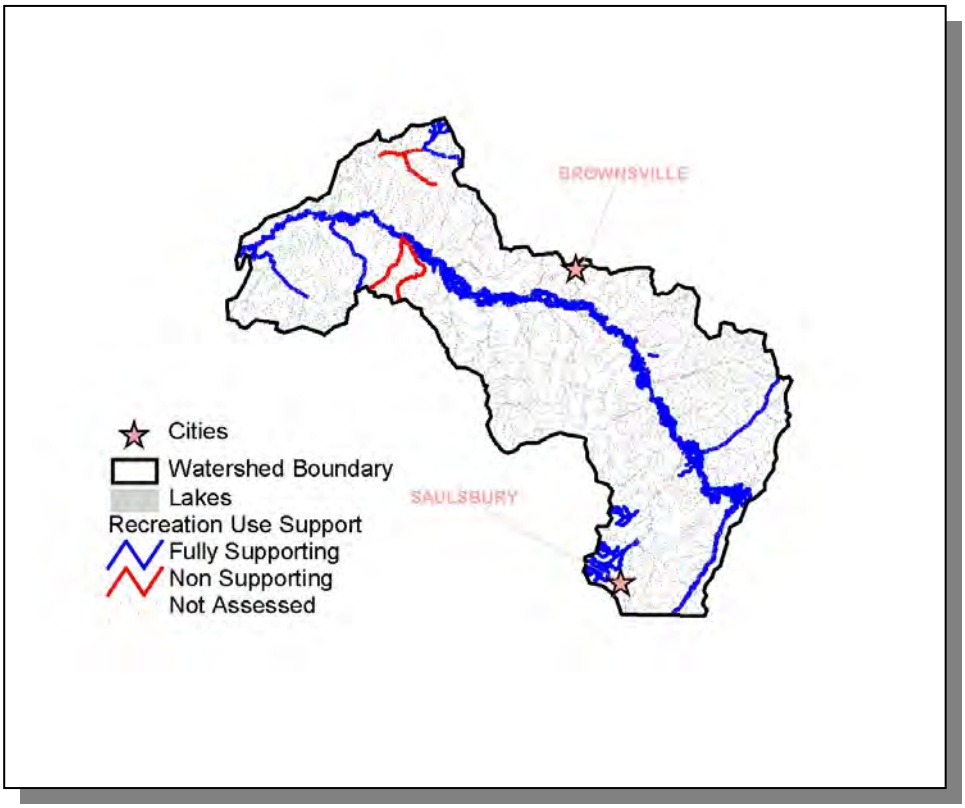


Figure 3-12. Recreation Use Support Attainment in the Tennessee Portion of the Lower Hatchie River Watershed. *Assessment data are based on the 2004 Water Quality Assessment. Water Quality Standards are described at http://www.state.tn.us/sos/rules/1200/1200-04/1200-04.htm. Locations of Brownsville and Saulsbury are shown for reference. More information is provided in Appendix III.*

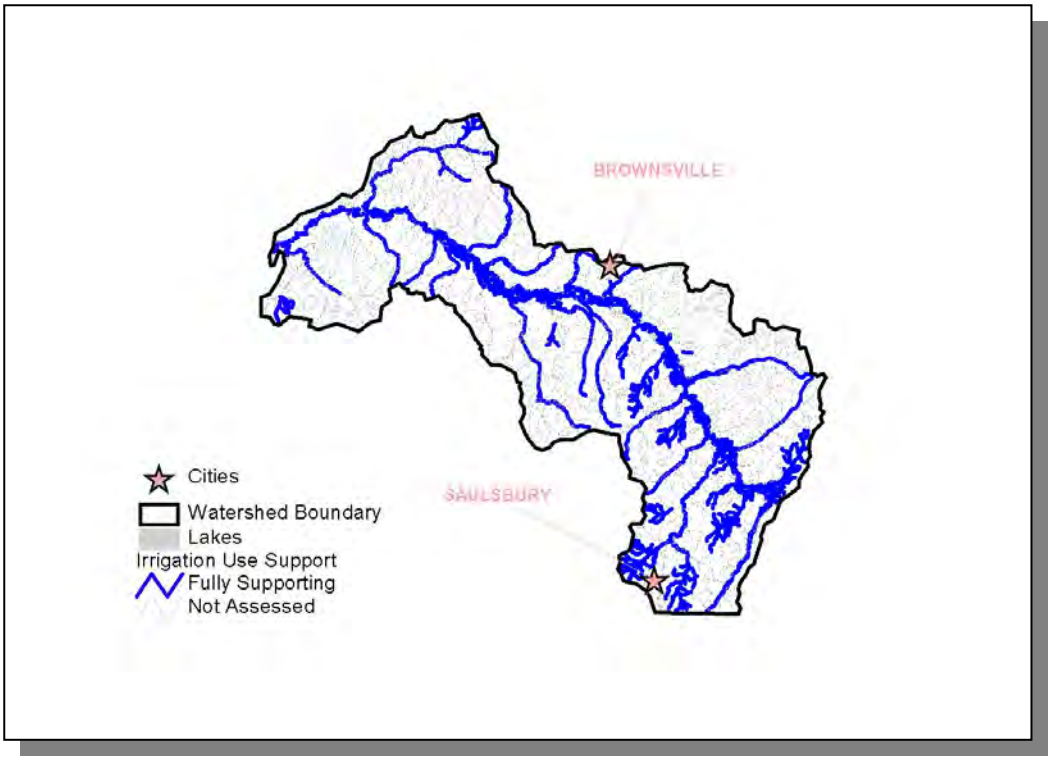


Figure 3-13. Irrigation Use Support Attainment in the Tennessee Portion of the Lower Hatchie River Watershed. *Assessment data are based on the 2004 Water Quality Assessment. Water Quality Standards are described at http://www.state.tn.us/sos/rules/1200/1200-04/1200-04.htm. Locations of Brownsville and Saulsbury are shown for reference. More information is provided in Appendix III.*

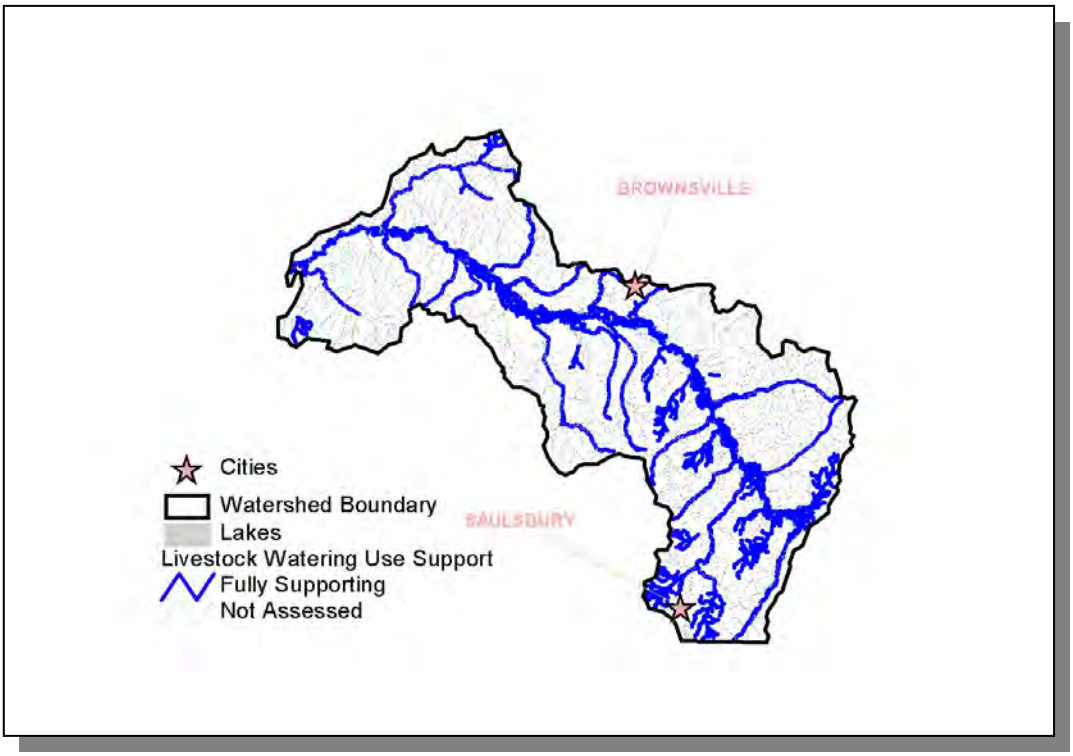


Figure 3-14. Livestock Watering and Wildlife Use Support Attainment in the Tennessee Portion of the Lower Hatchie River Watershed. *Assessment data are based on the 2004 Water Quality Assessment. Water Quality Standards are described at http://www.state.tn.us/sos/rules/1200/1200-04/1200-04.htm. Locations of Brownsville and Saulsbury are shown for reference. More information is provided in Appendix III.*

3.3.B. Use Impairment Summary.

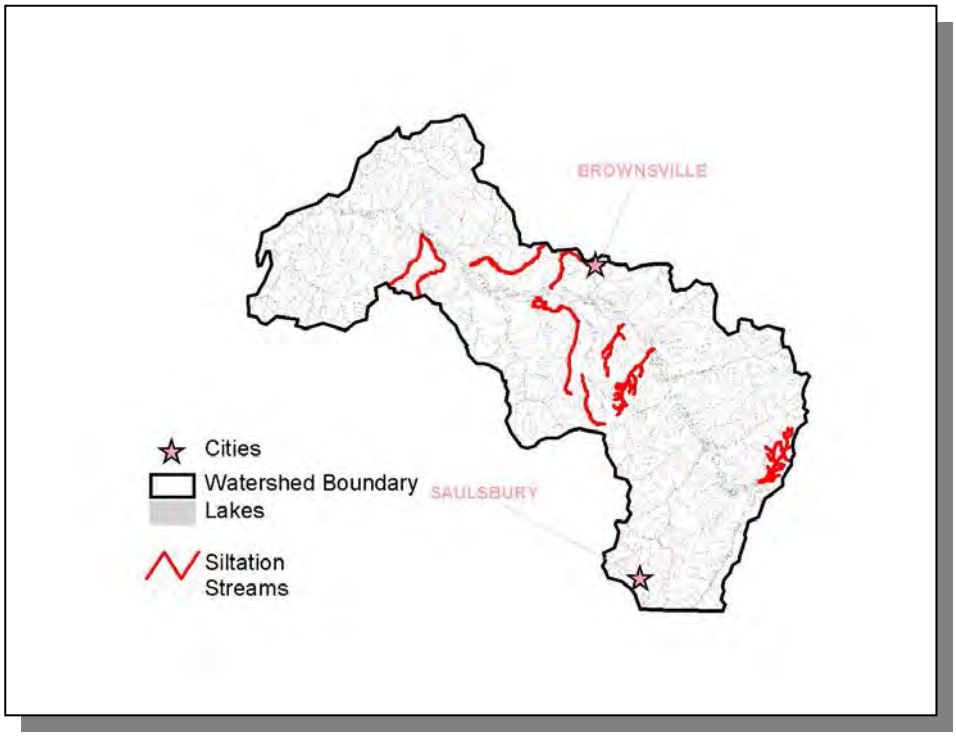


Figure 3-15. Impaired Streams Due to Siltation in the Tennessee Portion of the Lower Hatchie River Watershed. *Assessment data are based on the 2002 Water Quality Assessment. Locations of Brownsville and Saulsbury are shown for reference. More information is provided in Appendix III.*

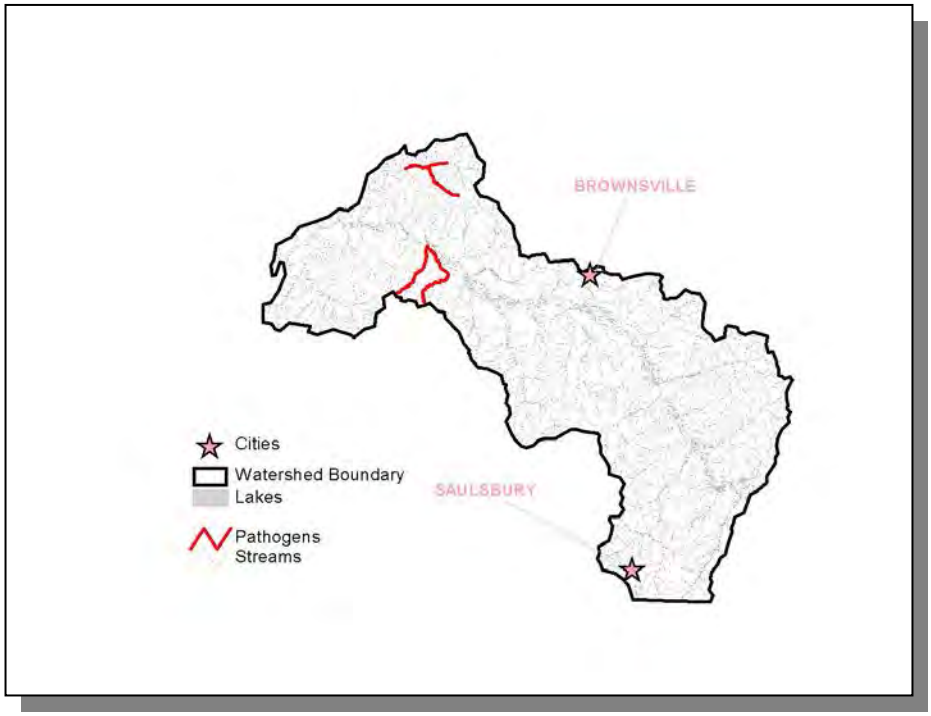


Figure 3-16. Impaired Streams Due to Pathogens in the Tennessee Portion of the Lower Hatchie River Watershed. *Assessment data are based on the 2004 Water Quality Assessment. Pathogens represent E. Coli and total fecal coliform data. Locations of Brownsville and Saulsbury are shown for reference. More information is provided in Appendix III.*

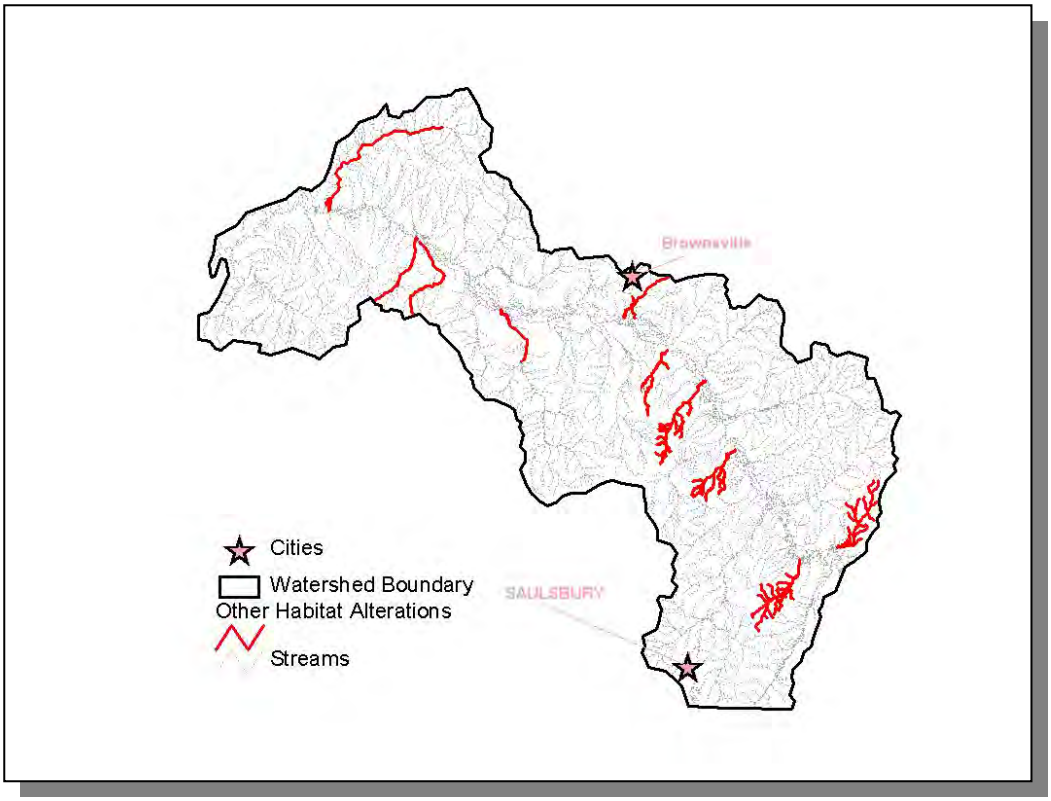


Figure 3-17. Impaired Streams Due to Other Habitat Alterations in the Tennessee Portion of the Lower Hatchie River Watershed. *Assessment data are based on the 2004 Water Quality Assessment. Locations of Covington and Saulsbury are shown for reference. More information is provided in Appendix III.*

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 LOWER HATCHIE RIVER 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 Tennessee portion of the Lower Hatchie River Watershed (HUC 08010208) has been delineated into eight HUC 10 (10-digit) subwatersheds, each of which is composed of one 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.

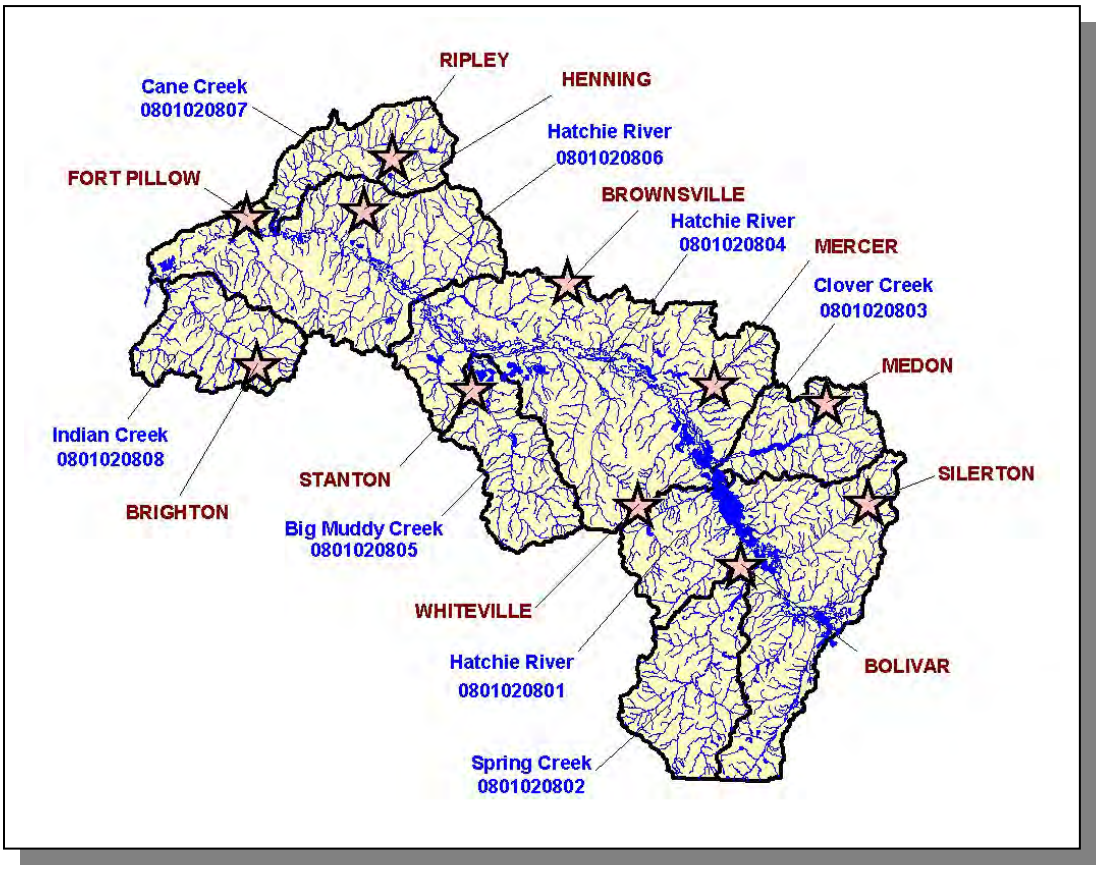


Figure 4-1. The Tennessee Portion of the Lower Hatchie River Watershed is Composed of Eight USGS-Delineated Subwatersheds (10-Digit Subwatersheds). *Locations of Bolivar, Brighton, Brownsville, Fort Pillow, Henning, Medon, Mercer, Ripley, Silerton, Stanton, and Whiteville are shown for reference.*

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 Tennessee portion of the Lower Hatchie River Watershed.

HUC-10	HUC-12	
0801020801	080102080101 (Hatchie River)	080102080107 (Grays Creek)
	080102080102 (Porters Creek)	080102080108 (Pleasant Run Creek)
	080102080103 (Wade Creek)	080102080109 (Mill Creek)
	080102080104 (Cub Creek)	080102080110 (Short Creek)
	080102080105 (Hatchie River)	080102080111 (Clear Creek)
	080102080106 (Piney Creek)	
0801020802	080102080201 (Upper Spring Creek)	080102080202 (Lower Spring Creek)
0801020803	080102080301 (Lacy Creek)	080102080302 (Clover Creek)
0801020804	080102080401 (Hatchie River)	080102080407 (Poplar Creek)
	080102080402 (Muddy Creek)	080102080408 (Carter Creek)
	080102080403 (Big Black Creek)	080102080409 (Sugar Creek)
	080102080404 (Hatchie River)	080102080410 (Hatchie River)
	080102080405 (Jeffers Creek)	080102080411 (Little Muddy Creek)
	080102080406 (Bear Creek)	080102080412 (Cypress Creek)
0801020805	080102080501 (Upper Big Muddy Creek)	080102080502 (Lower Big Muddy Creek)
0801020806	080102080601 (Hatchie River)	080102080604 (Town Creek)
	080102080602 (Lagoon Creek)	080102080605 (Hatchie River)
	080102080603 (Hatchie River)	080102080606 (Mathis Creek)
0801020807	080102080701 (Upper Cane Creek)	080102080702 (Lower Cane Creek)
0801020808	080102080801 (Upper Indian Creek)	080102080802 (Lower Indian 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. 0801020801.

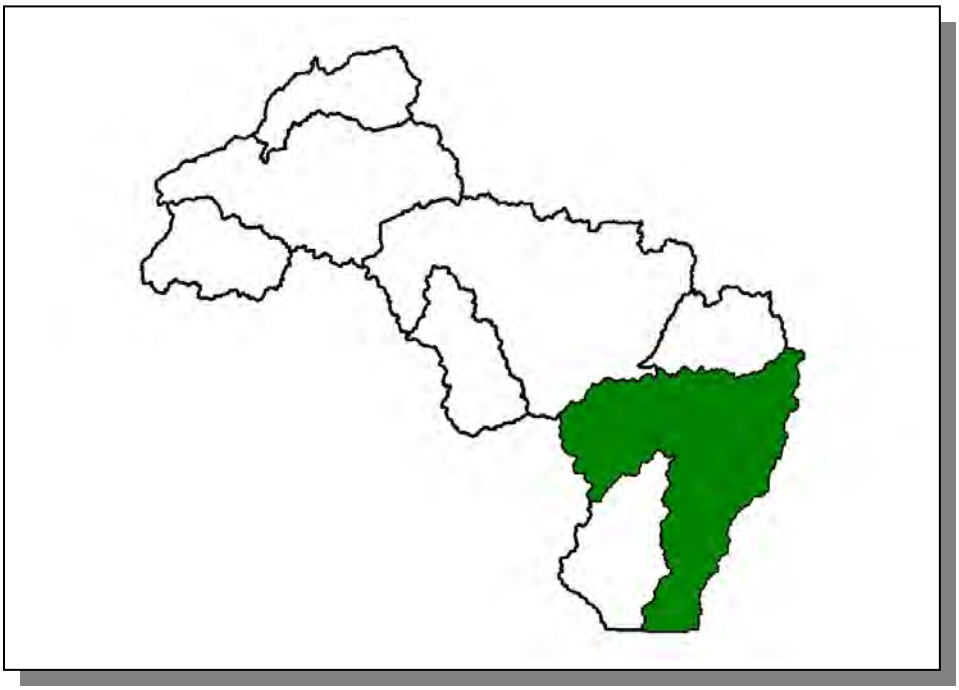


Figure 4-2. Location of Subwatershed 0801020801. *HUC-10 subwatershed boundaries in Tennessee are shown for reference.*

4.2.A.i. 080102080101 (Hatchie River).

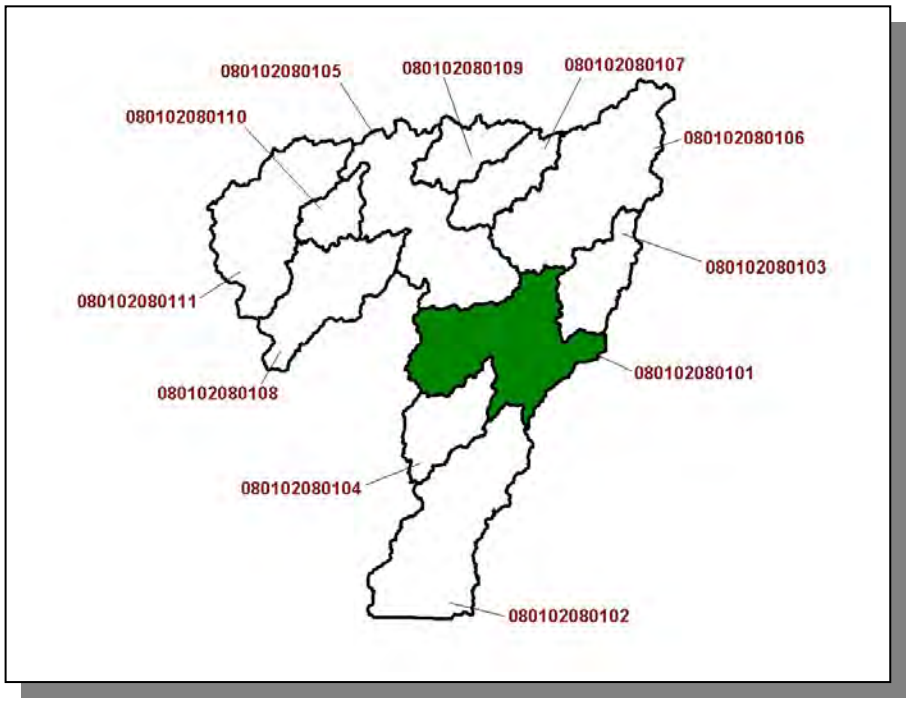


Figure 4-3. Location of Subwatershed 080102080101. *All HUC-12 subwatershed boundaries are shown for reference.*

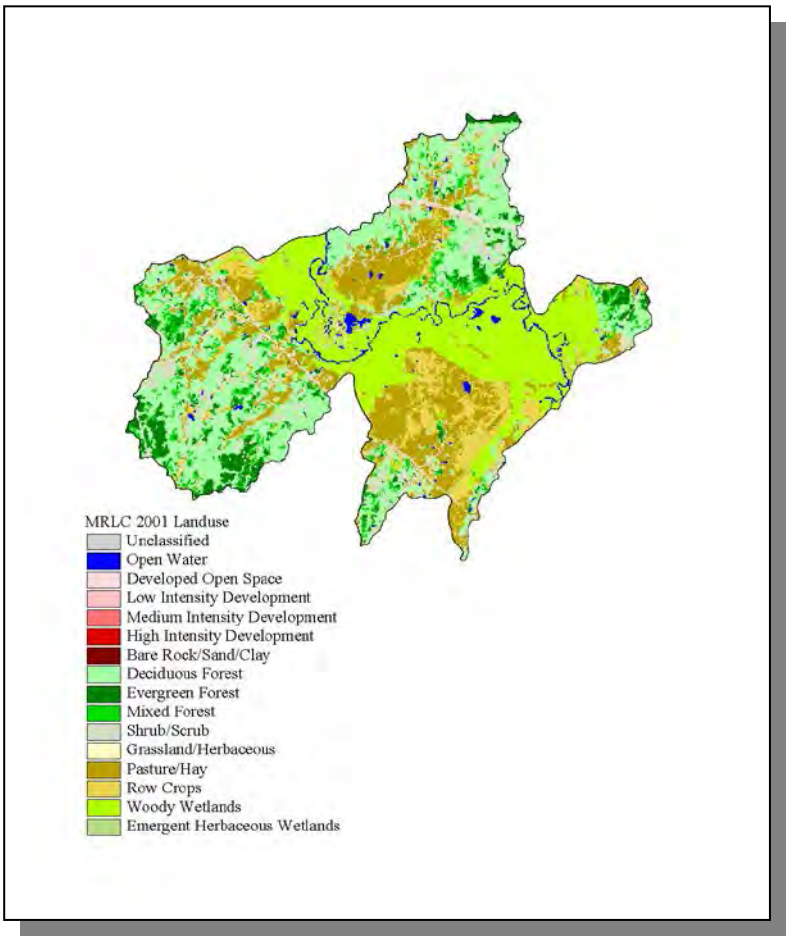


Figure 4-4. Illustration of Land Use Distribution in Subwatershed 080102080101.

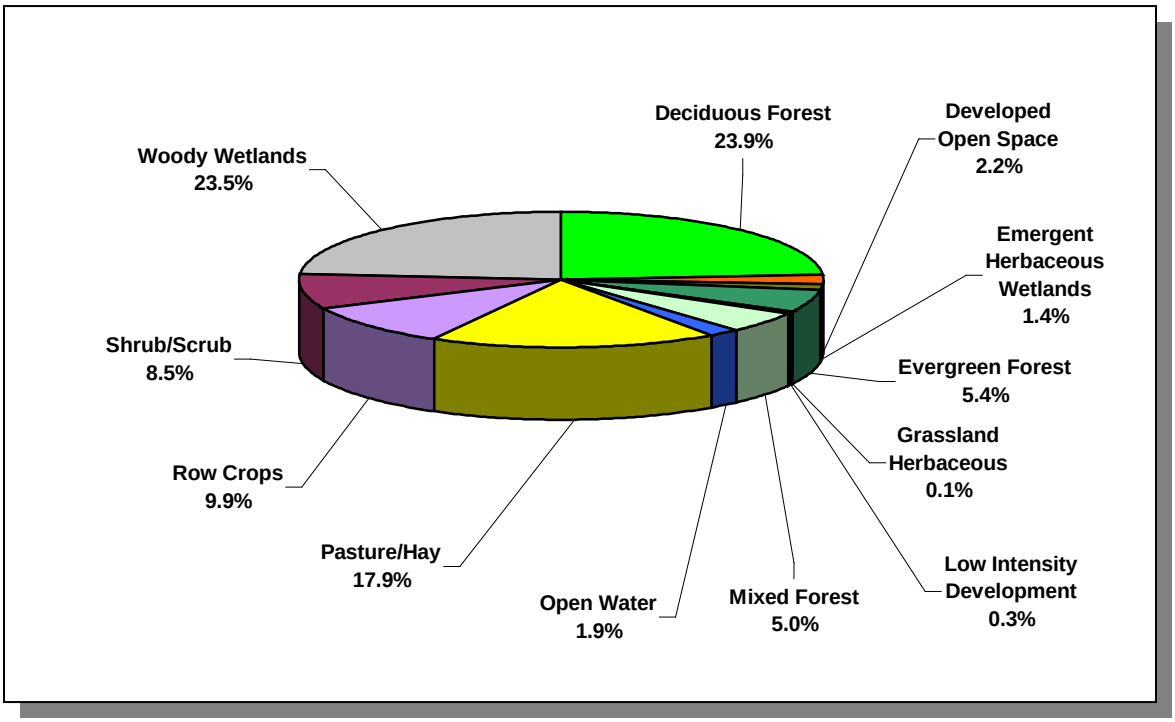


Figure 4-5. Illustration of Land Use Distribution in Subwatershed 080102080101.

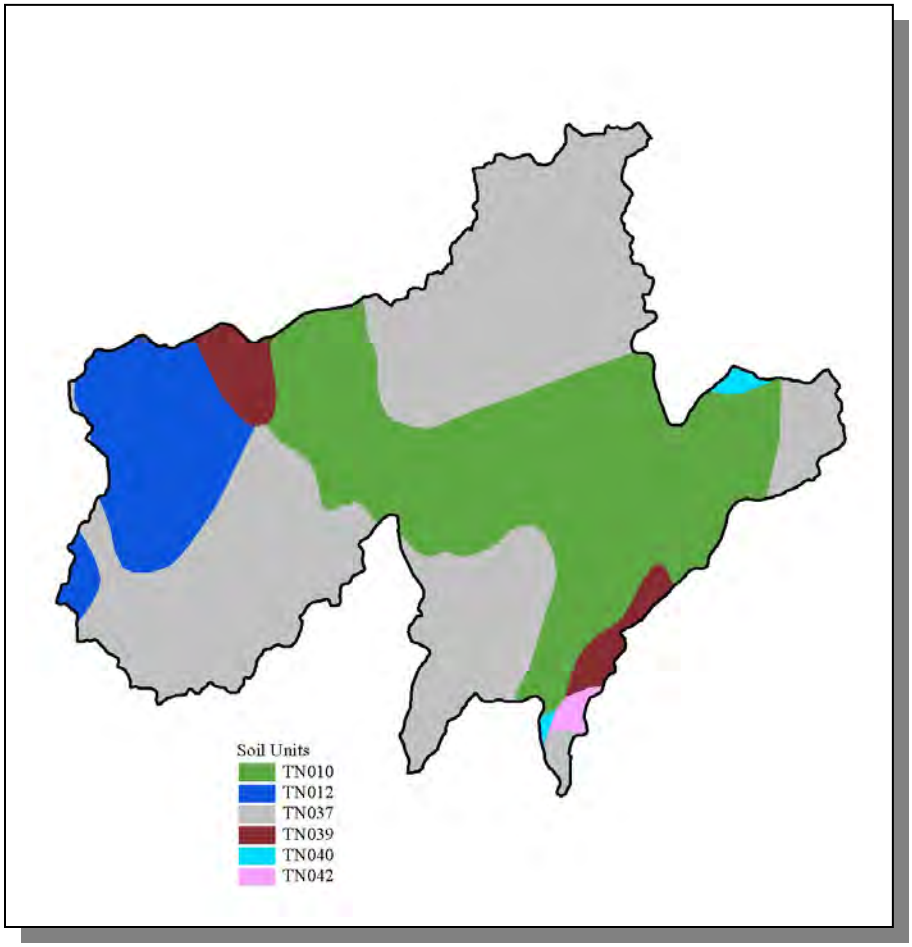


Figure 4-6. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080101.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN010	81.00	C	1.33	5.11	Silty Loam	0.44
TN012	1.00	C	2.52	5.13	SiltyLoam	0.39
TN037	0.00	C	3.51	4.86	Sandy Loam	0.27
TN039	24.00	C	1.35	5.20	SiltyLoam	0.47
TN040	40.00	C	1.35	5.18	SiltyLoam	0.38
TN042	0.00	C	2.53	5.11	SiltyLoam	0.34

Table 4-2. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080101. *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)
Hardeman	23,377	24,702	28,105	1.35	316	334	380	20.3

Table 4-3. Population Estimates in Subwatershed 080102080101.

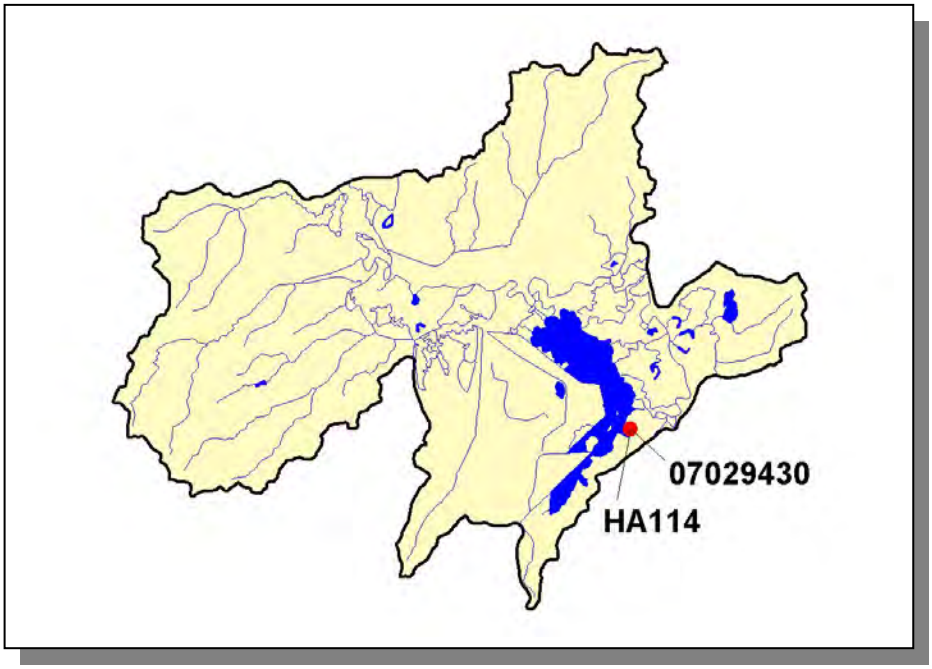


Figure 4-7. Location of Historical Streamflow Data Collection Sites in Subwatershed 080102080101. *More information is provided in Appendix IV.*

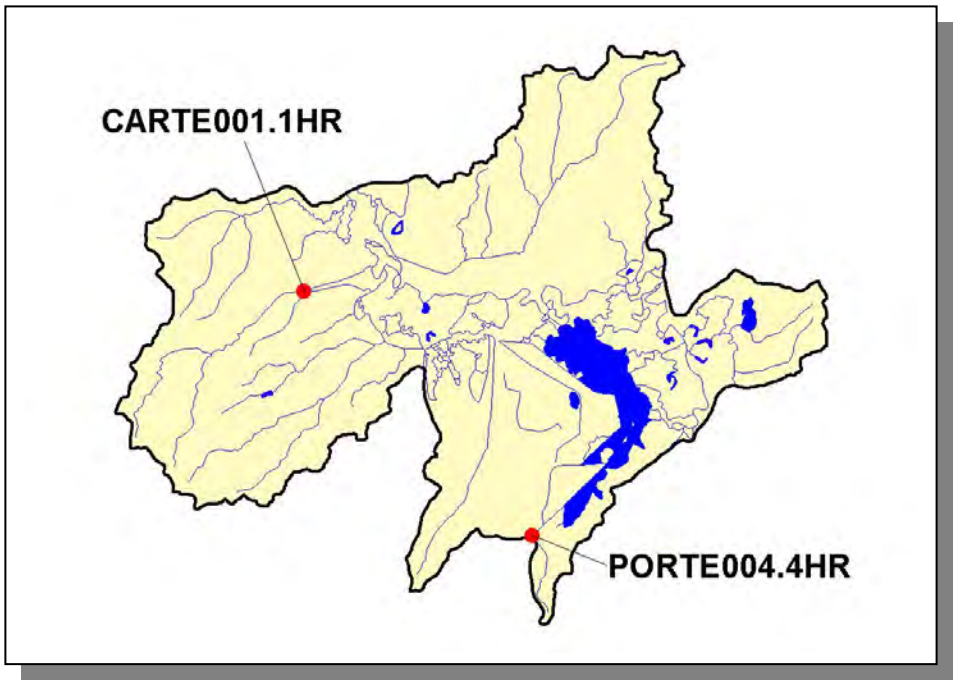


Figure 4-8. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 080102080101. *More information, including site names and locations, is provided in Appendix IV.*

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

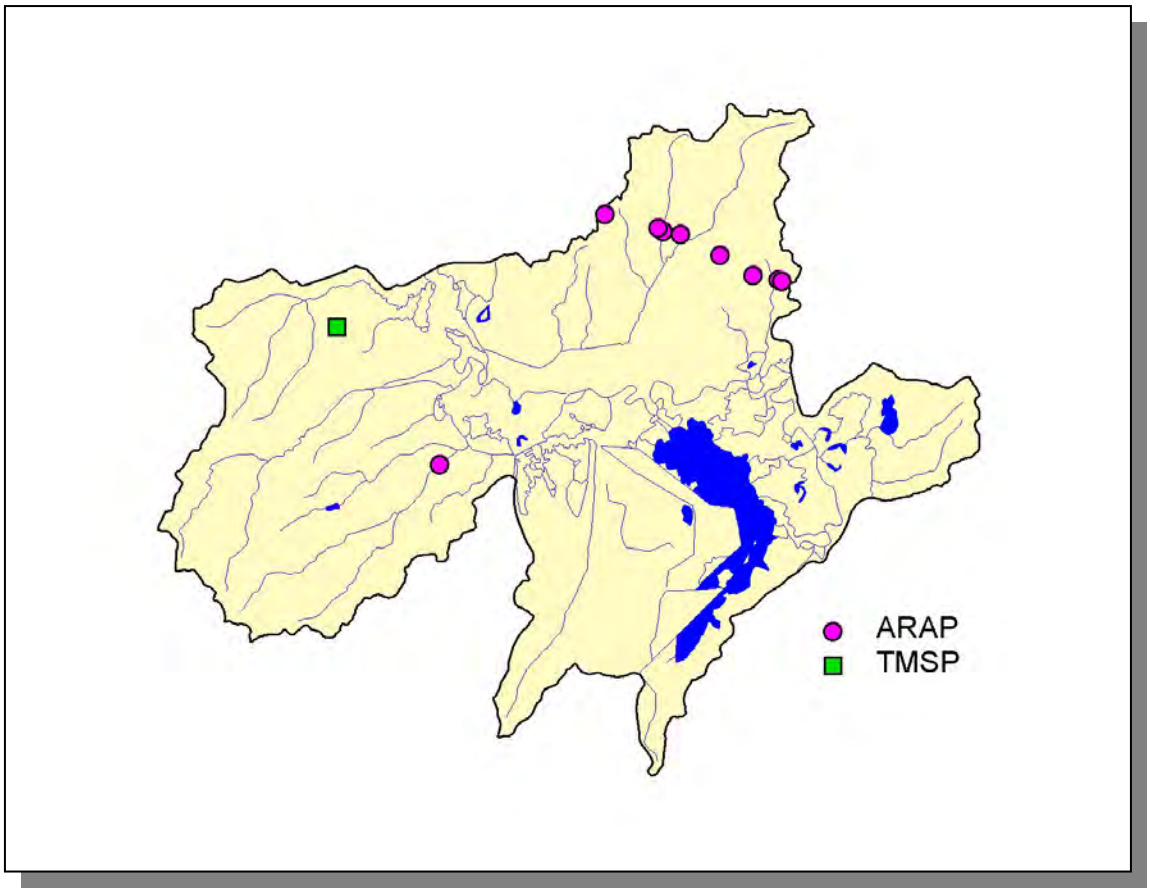


Figure 4-9. Location of Permits Issued in Subwatershed 080102080101. *More information, including the names of facilities, is provided in Appendix IV.*

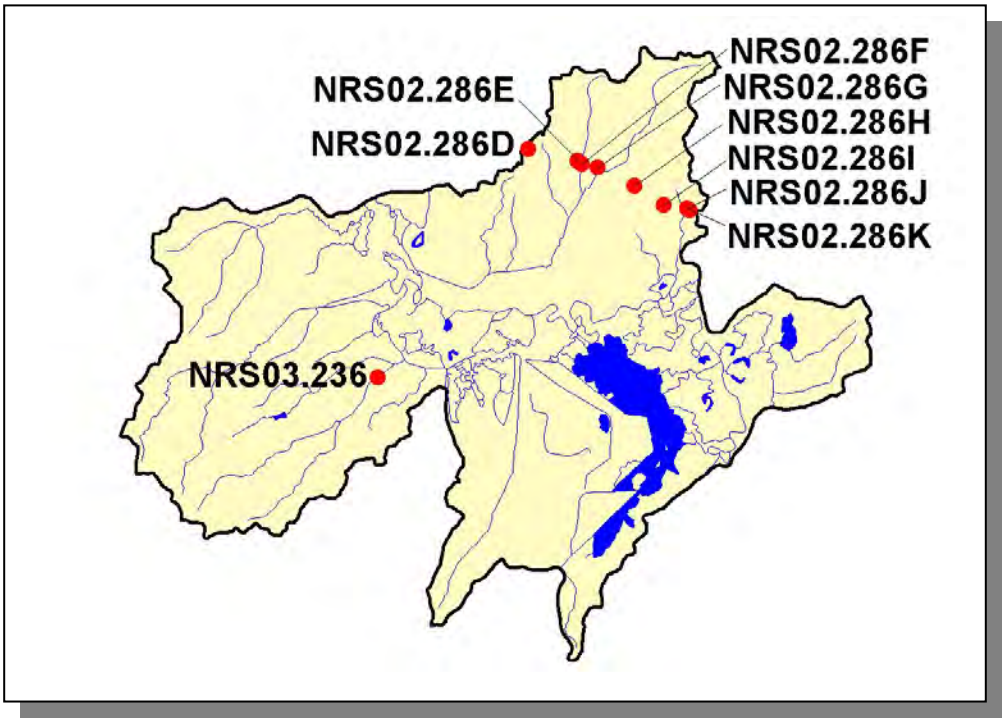


Figure 4-10. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 080102080101. *More information is provided in Appendix IV.*

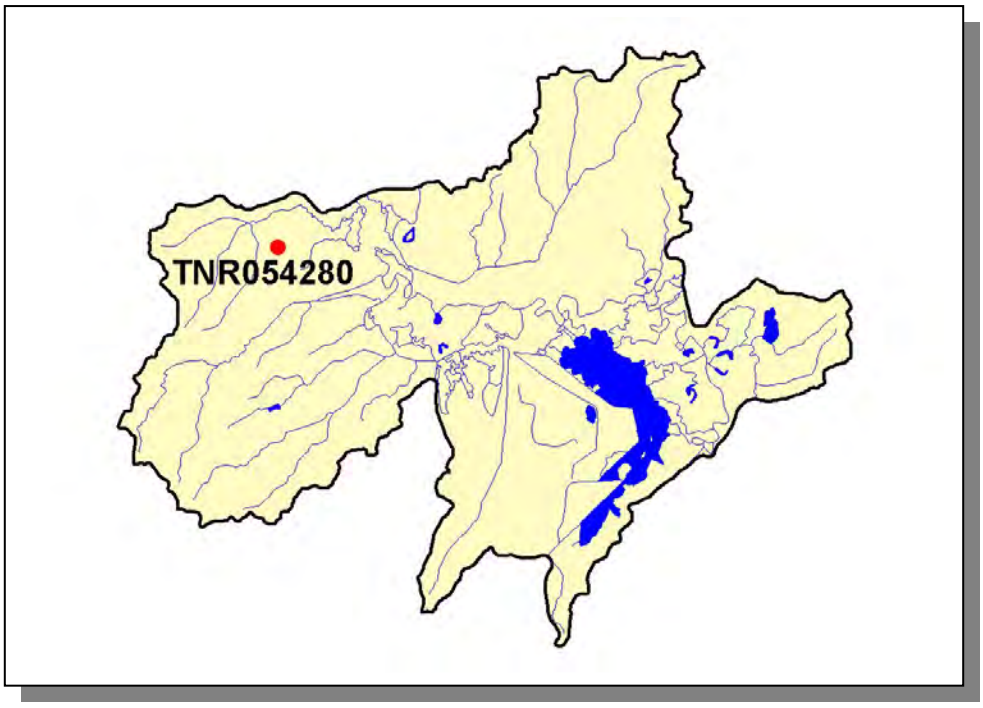


Figure 4-11. Location of TMSP Sites in Subwatershed 080102080101. *More information, including the names of facilities, is provided in Appendix IV.*

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

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
174	301	<5	<5	99	<5

Table 4-4. Summary of Livestock Count Estimates in Subwatershed 080102080101. *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
Hardeman	9,184	15,877	62	28	5,221	144

Table 4-5. Summary of Livestock Count Estimates in Hardeman 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)
Hardeman	247.1	247.1	5.0	16.6

Table 4-6. Forest Acreage and Annual Removal Rates (1987-1994) in Hardeman County.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	1.23
Grass (Hayland)	0.39
Grass, Forbs, Legumes (Mixed Pasture)	1.06
Corn (Row Crops)	11.41
Cotton (Row Crops)	25.79
Sorghum (Row Crops)	3.04
Soybeans (Row Crops)	12.89
Wheat (Close-Grown Cropland)	15.03
Summer Fallow (Other Cropland)	6.11
Other Cropland not Planted	4.23
Conservation Reserve Program Lands	0.27
Farmsteads and Ranch Headquarters	0.97

Table 4-7. Annual Estimated Total Soil Loss in Subwatershed 080102080101.

4.2.A.ii. 080102080102 (Porters Creek).

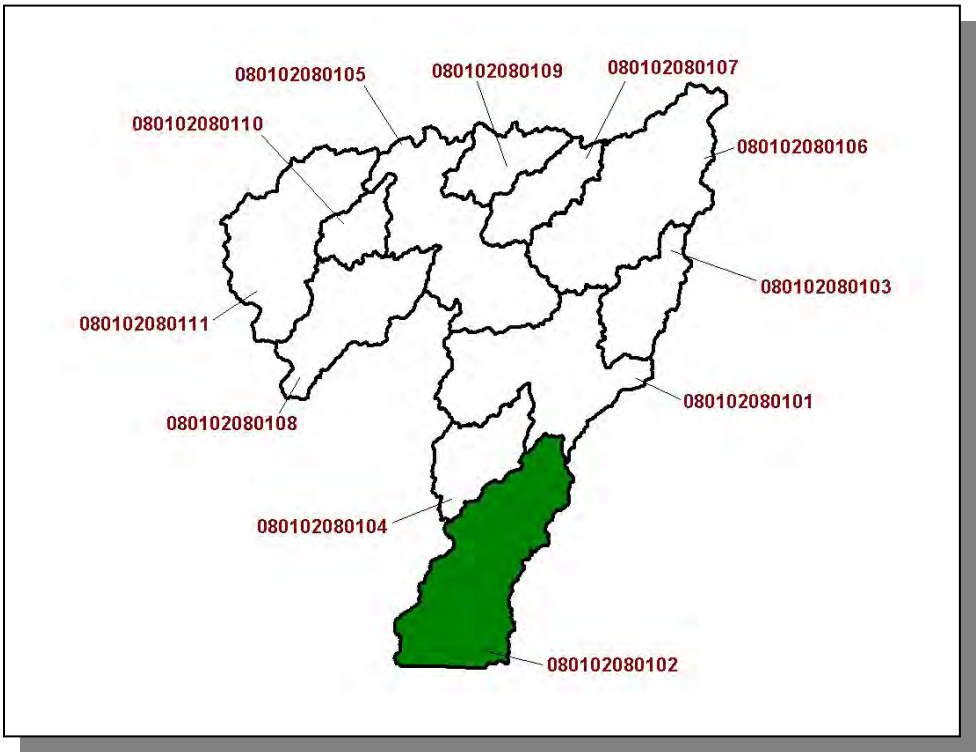


Figure 4-12. Location of Subwatershed 080102080102. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

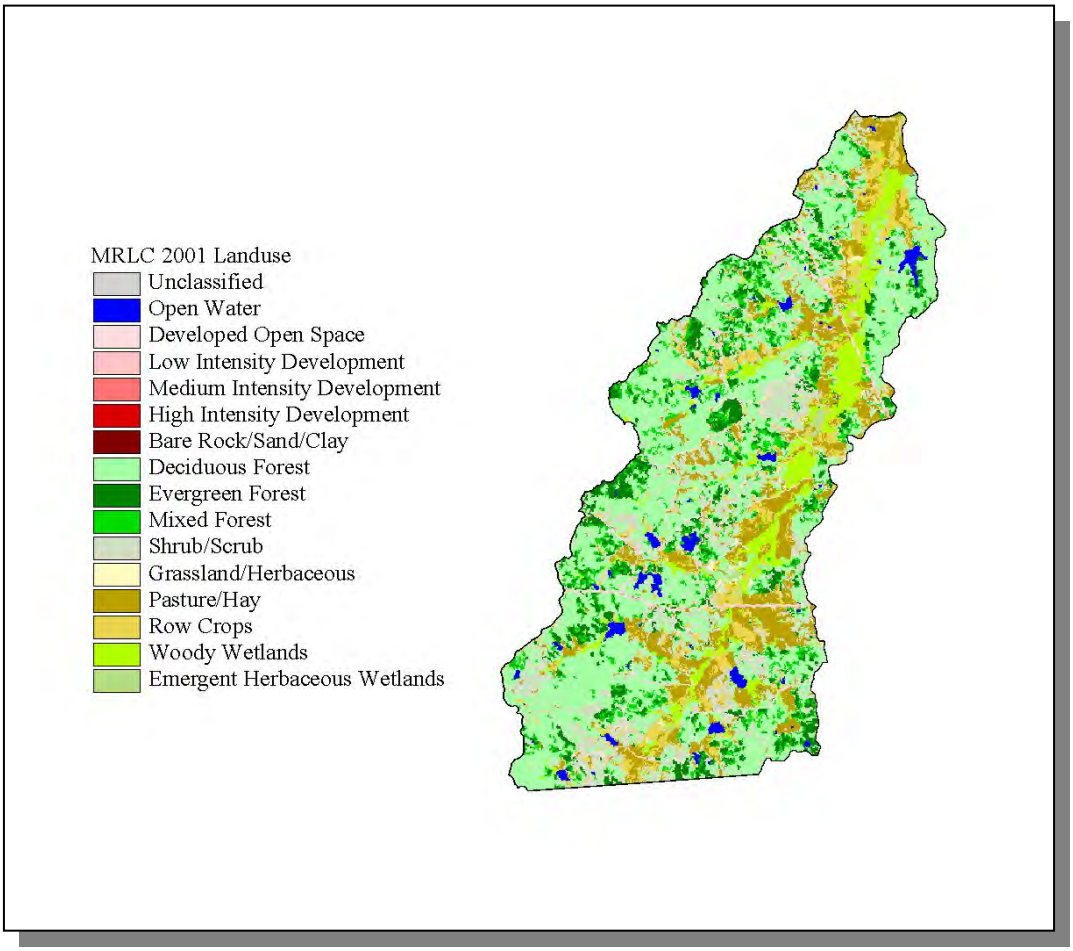


Figure 4-13. Illustration of Land Use Distribution in Subwatershed 080102080102.

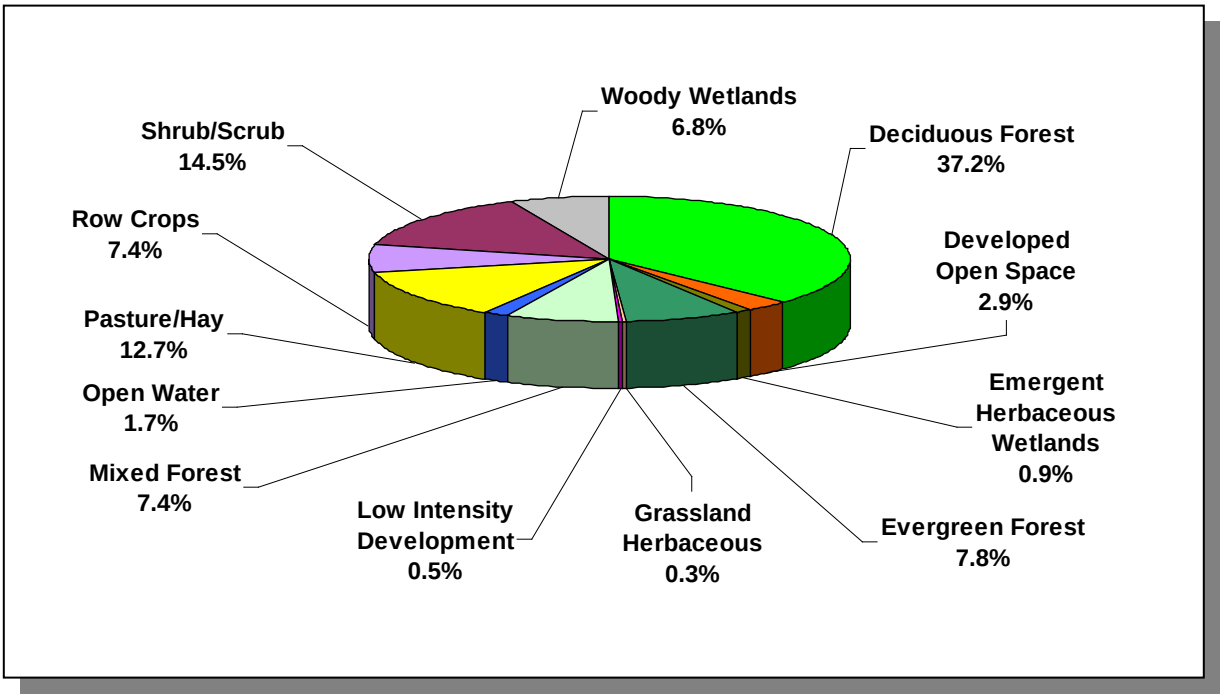


Figure 4-14. Land Use Distribution in Subwatershed 080102080102. *More information is provided in Appendix IV.*

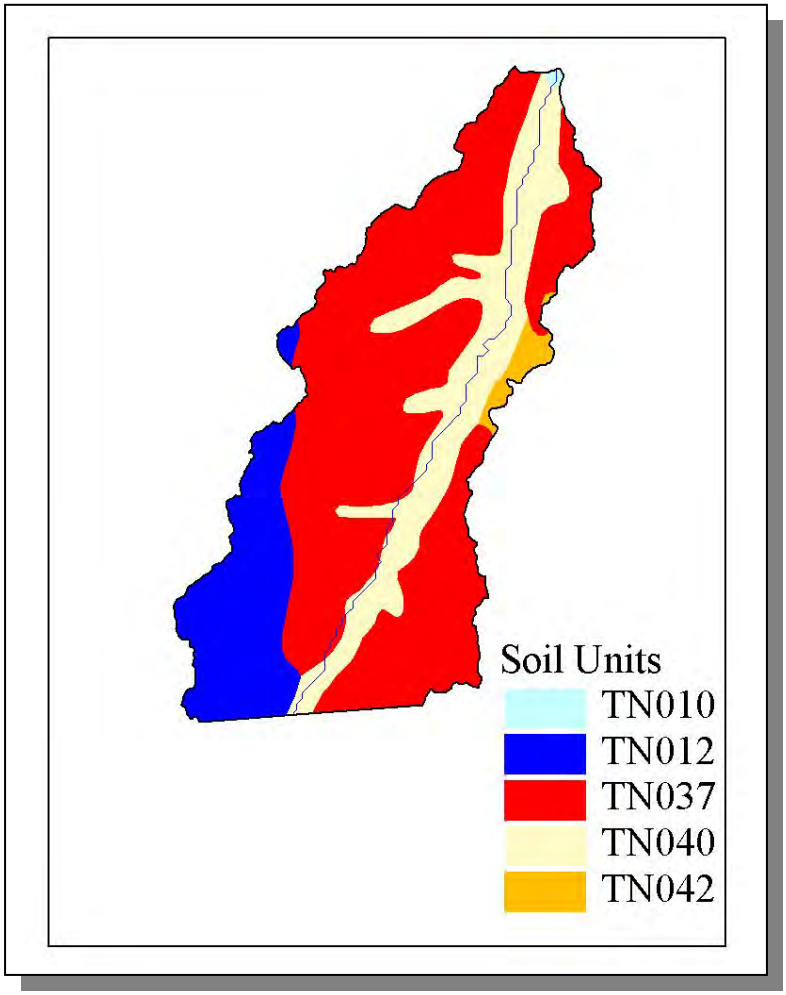


Figure 4-15. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080102.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN010	81.00	C	1.33	5.11	Silty Loam	0.44
TN012	1.00	C	2.52	5.13	Silty Loam	0.39
TN037	0.00	C	3.51	4.86	Sandy Loam	0.27
TN040	40.00	C	1.33	5.18	Silty Loam	0.38
TN042	0.00	C	2.53	5.11	Silty Loam	0.34

Table 4-8. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080102. *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)
Hardeman	23,377	24,702	28,105	6.61	1,545	1,632	1,857	20.2

Table 4-9. Population Estimates in Subwatershed 080102080102.

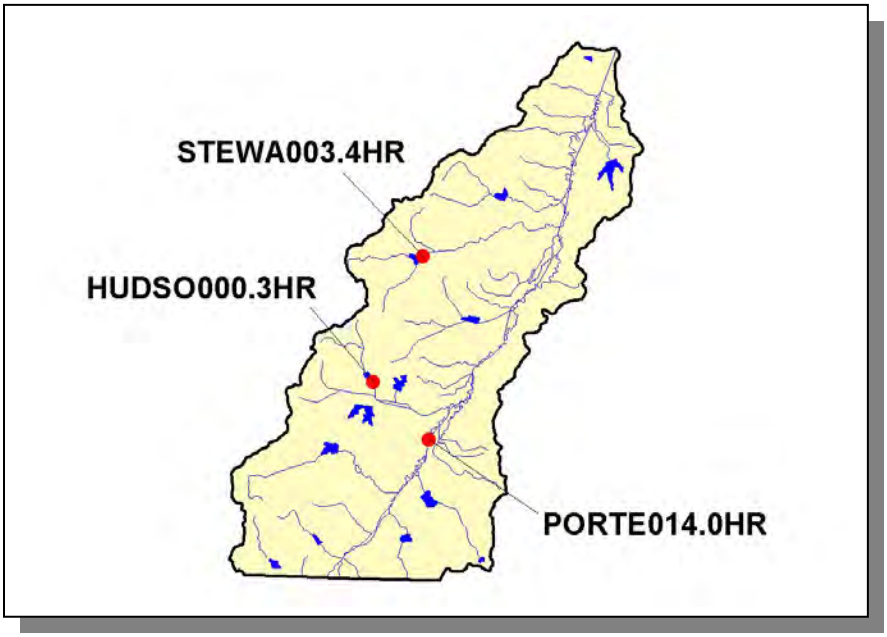


Figure 4-16. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 080102080102. *More information, including site names and locations, is provided in Appendix IV.*

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

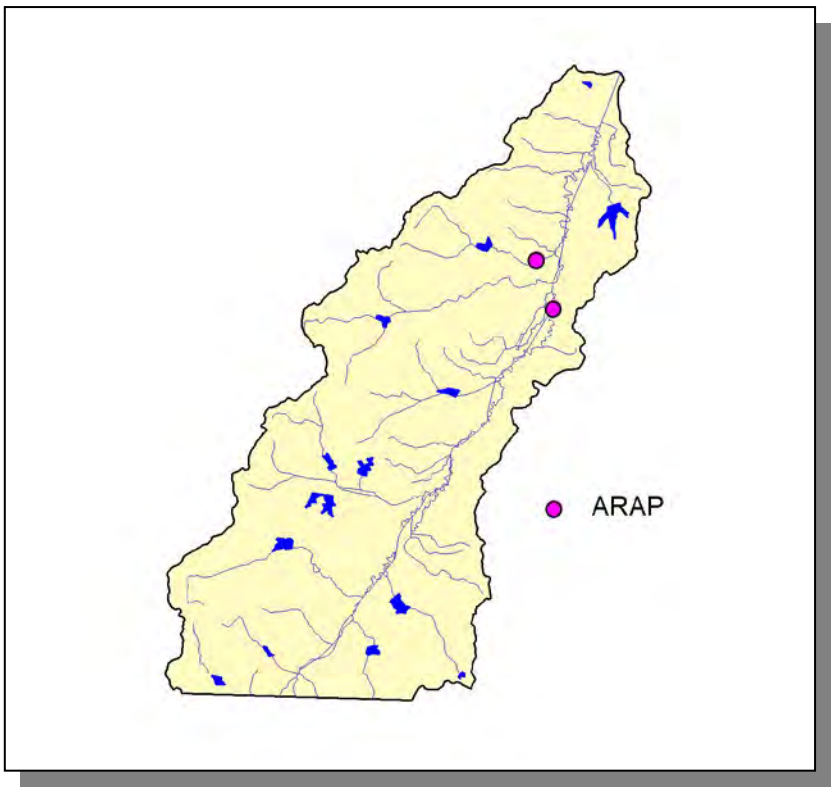


Figure 4-17. Location of Permits Issued in Subwatershed 080102080102. *More information, including the names of facilities, is provided in Appendix IV.*

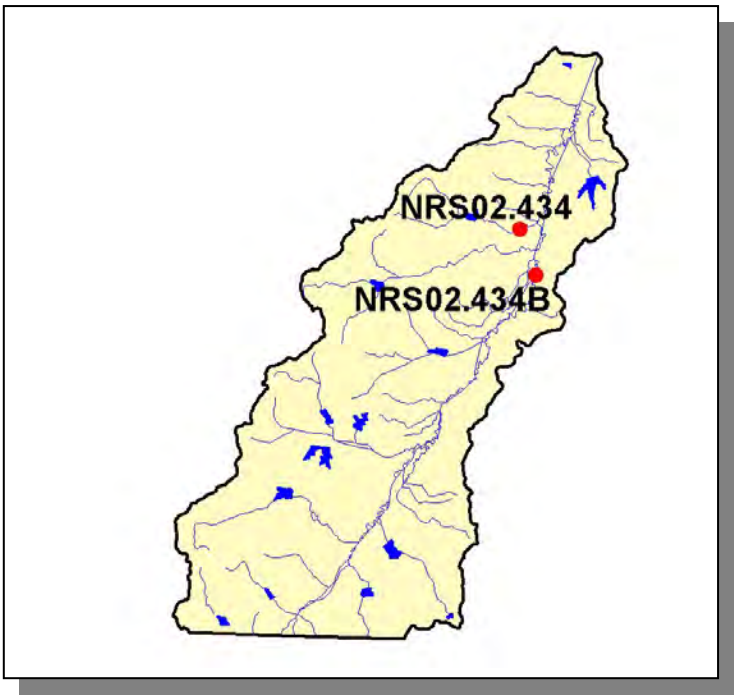


Figure 4-18. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 080102080102. *More information is provided in Appendix IV.*

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

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
507	879	5	<5	271	8

Table 4-10. Summary of Livestock Count Estimates in Subwatershed 080102080102. *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
Hardeman	9,184	15,877	62	28	5,221	144

Table 4-11. Summary of Livestock Count Estimates in Hardeman 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)
Hardeman	247.1	247.1	5.0	18.6

Table 4-12. Forest Acreage and Annual Removal Rates (1987-1994) in Hardeman County.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	1.23
Grass (Hayland)	0.44
Legumes (Hayland)	1.14
Grass, Forbs, Legumes (Mixed Pasture)	1.06
Corn (Row Crops)	11.07
Cotton (Row Crops)	24.92
Sorghum (Row Crops)	3.04
Soybeans (Row Crops)	12.61
Wheat (Close-Grown Cropland)	15.03
Summer Fallow (Other Cropland)	6.11
Other Cropland not Planted	4.15
Conservation Reserve Program Lands	0.47
Farmsteads and Ranch Headquarters	0.95

Table 4-13. Annual Estimated Total Soil Loss in Subwatershed 080102080102.

4.2.A.iii. 080102080103 (Wade Creek).

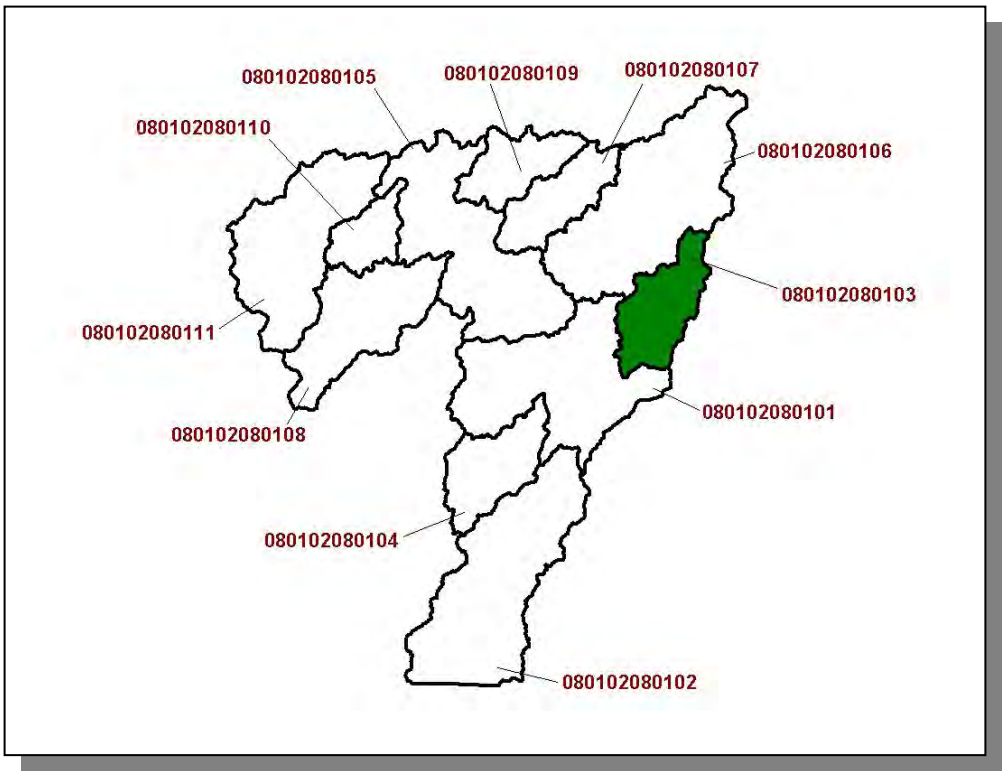


Figure 4-19. Location of Subwatershed 080102080103. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

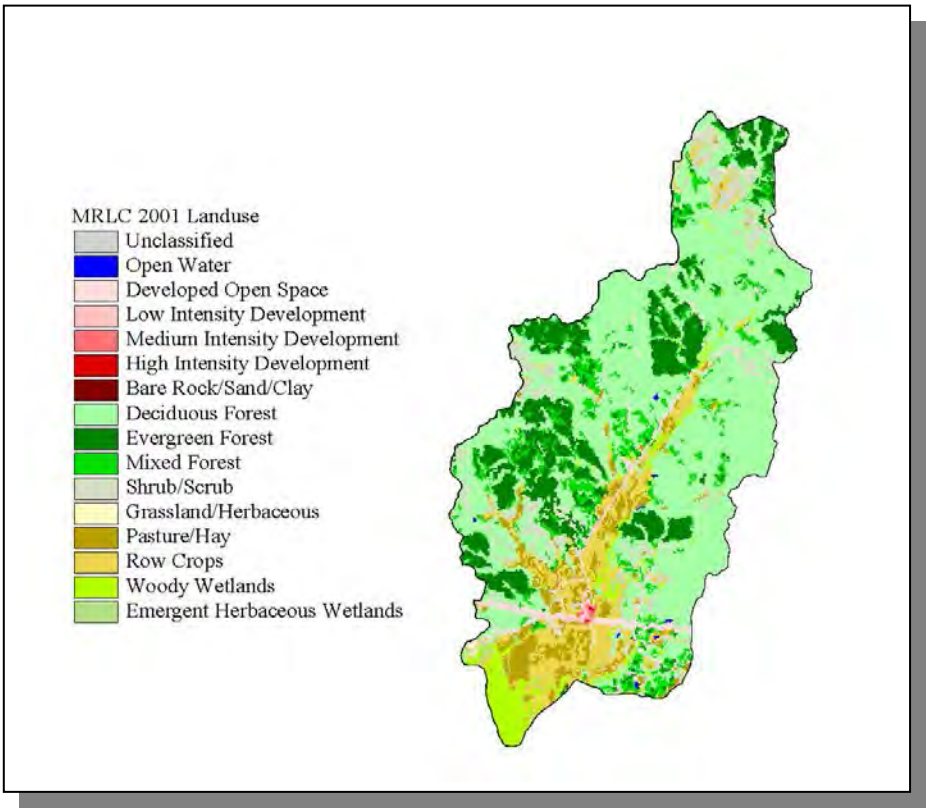


Figure 4-20. Illustration of Land Use Distribution in Subwatershed 080102080103.

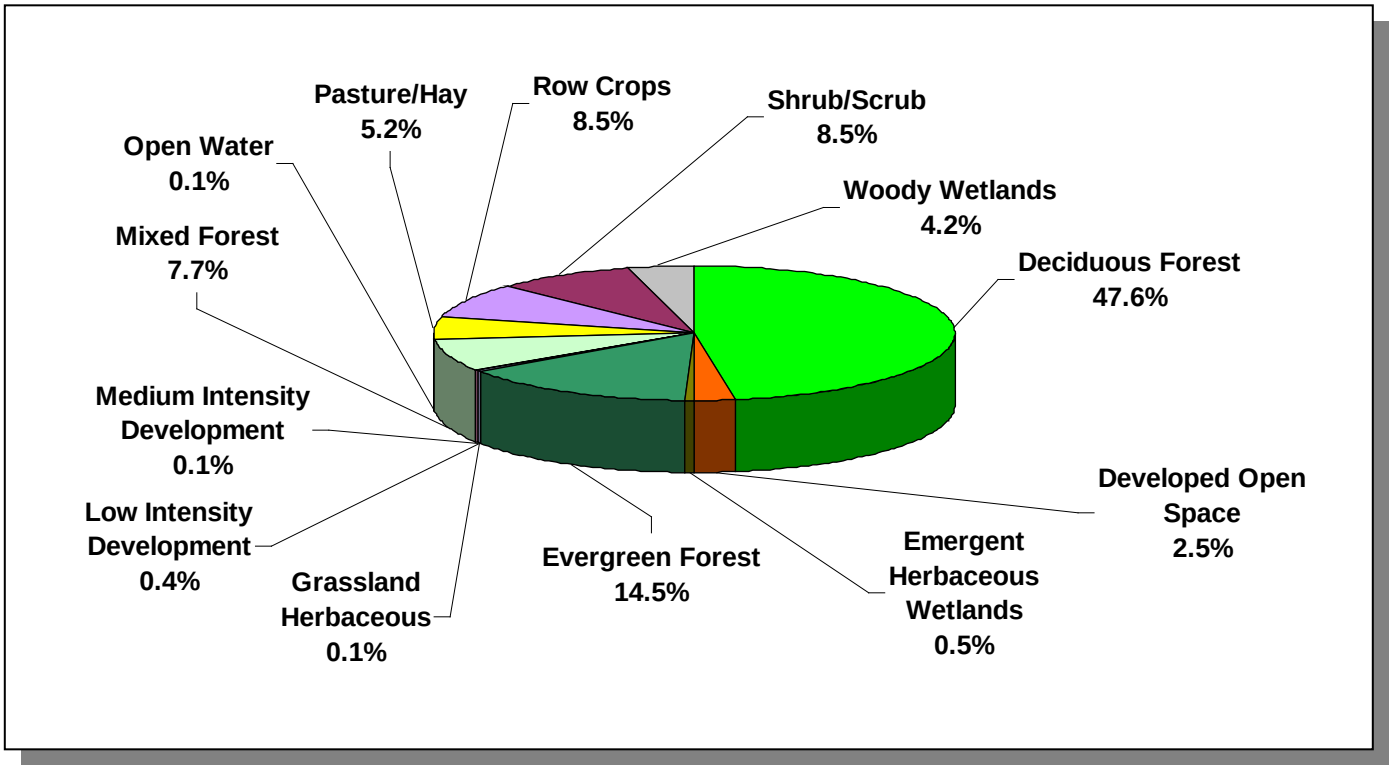


Figure 4-21. Land Use Distribution in Subwatershed 080102080103. *More information is provided in Appendix IV.*

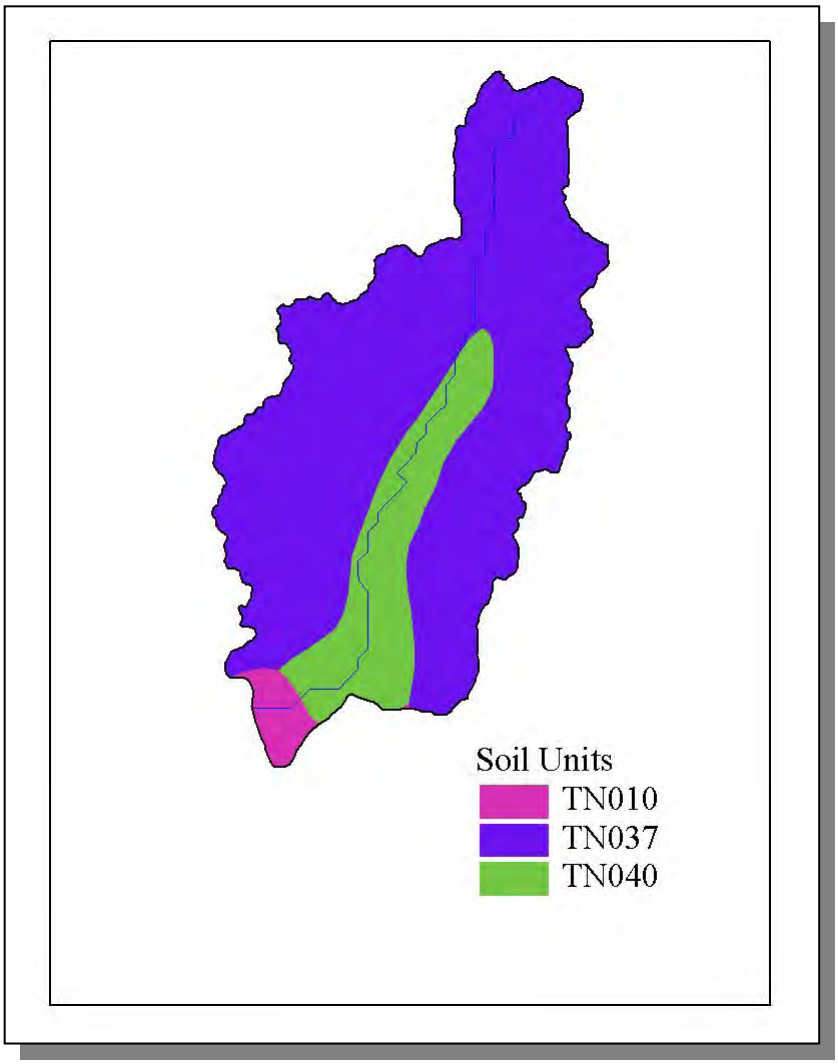


Figure 4-22. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080103.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN010	81.00	C	1.33	5.11	Silty Loam	0.44
TN037	0.00	C	3.51	4.86	Sandy Loam	0.27
TN040	40.00	C	1.33	5.18	Silty Loam	0.38

Table 4-14. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080103. *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)
Chester	12,819	14,469	15,540	0.31	40	46	49	22.5
Hardeman	23,377	24,702	28,105	2.32	543	574	653	20.3
Total	**36,196**	**39,171**	**43,645**		**583**	**620**	**702**	**20.4**

Table 4-15. Population Estimates in Subwatershed 080102080103.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Hornsby	Hardeman	293	128	8	115	5

Table 4-16. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 080102080103.

Figure 4-23. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 080102080103. *More information, including site names and locations, is provided in Appendix IV.*

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

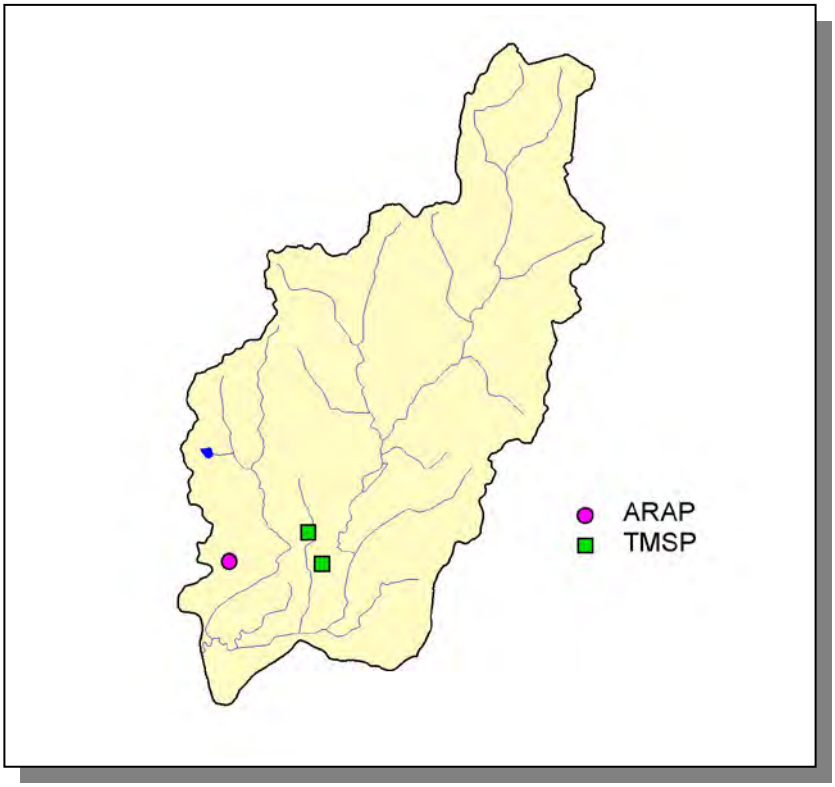


Figure 4-24. Location of Permits Issued in Subwatershed 080102080103. *More information, including the names of facilities, is provided in Appendix IV.*

Figure 4-25. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 080102080103. *More information is provided in Appendix IV.*

Figure 4-26. Location of TMSP Sites in Subwatershed 080102080103. *More information, including the names of facilities, is provided in Appendix IV.*

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

LIVESTOCK COUNTS				
Beef Cow	Cattle	Milk Cow	Hogs	Sheep
82	144	<5	47	<5

Table 4-17. Summary of Livestock Count Estimates in Subwatershed 080102080103. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves.*

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Chester	0	9,108	0	14	1,331	0
Hardeman	9,184	15,877	62	28	5,221	144

Table 4-18. Summary of Livestock Count Estimates in Chester and Hardeman 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)
Chester	99.4	99.4	0.3	1.3
Hardeman	247.1	247.1	5.0	18.6

Table 4-19. Forest Acreage and Annual Removal Rates (1987-1994) in Chester and Hardeman Counties.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	1.18
Grass (Hayland)	0.38
Legumes, Grass (Hayland)	0.21
Grass, Forbs, Legumes (Mixed Pasture)	1.03
Corn (Row Crops)	11.33
Cotton (Row Crops)	25.45
Sorghum (Row Crops)	3.04
Soybeans (Row Crops)	12.51
Wheat (Close-Grown Cropland)	14.79
Other Vegetable and Truck Crops	28.15
Summer Fallow (Other Cropland)	6.11
Other Cropland not Planted	4.01
Conservation Reserve Program Lands	0.28
Farmsteads and Ranch Headquarters	0.92

Table 4-20. Annual Estimated Total Soil Loss in Subwatershed 080102080103.

4.2.A.iv. 080102080104 (Cub Creek).

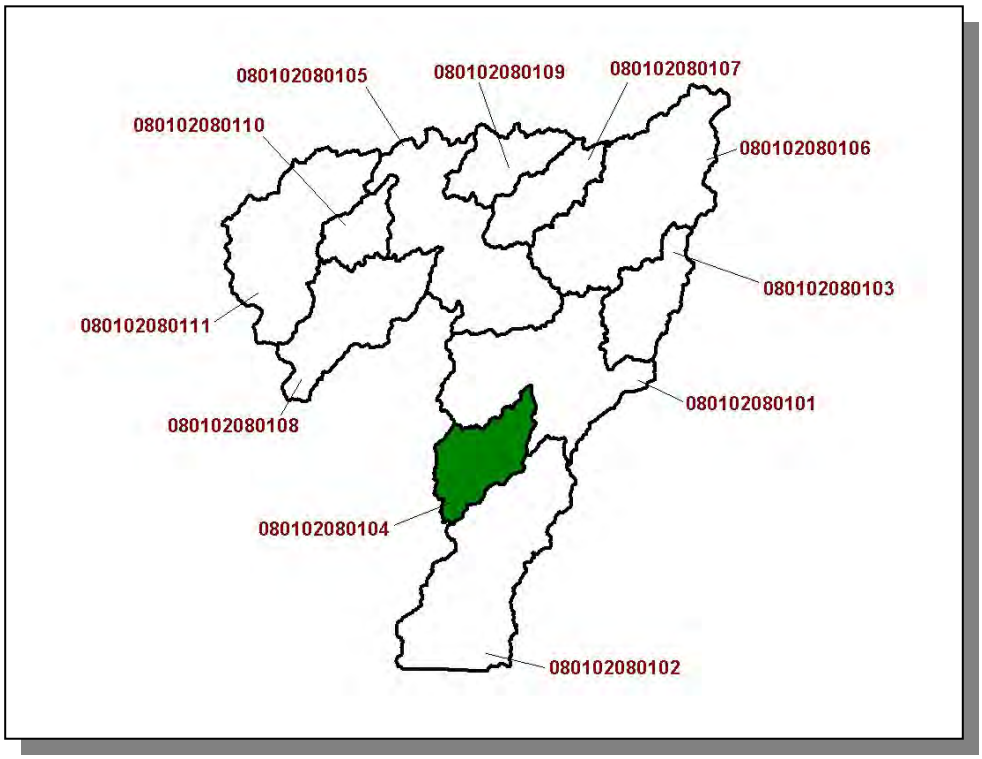


Figure 4-27. Location of Subwatershed 080102080104. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

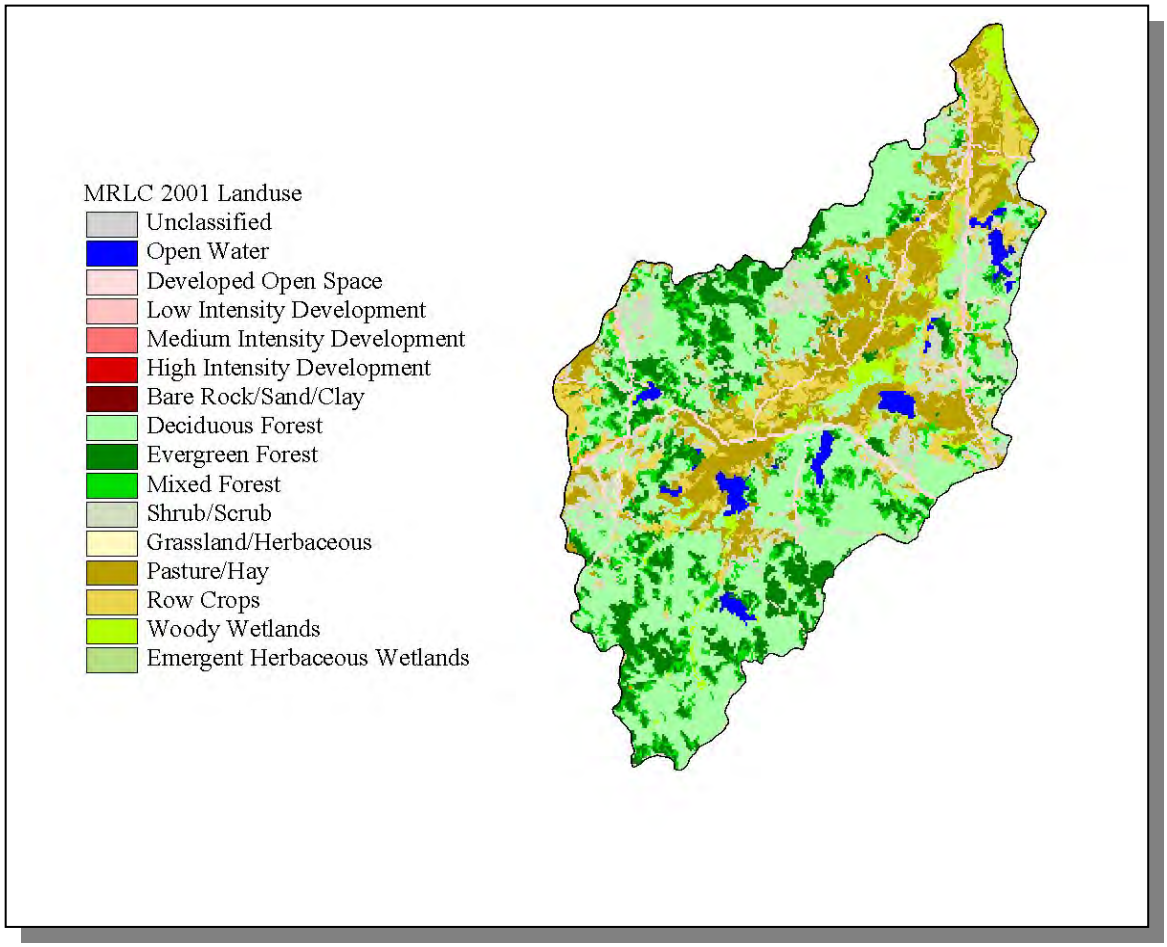


Figure 4-28. Illustration of Land Use Distribution in Subwatershed 080102080104.

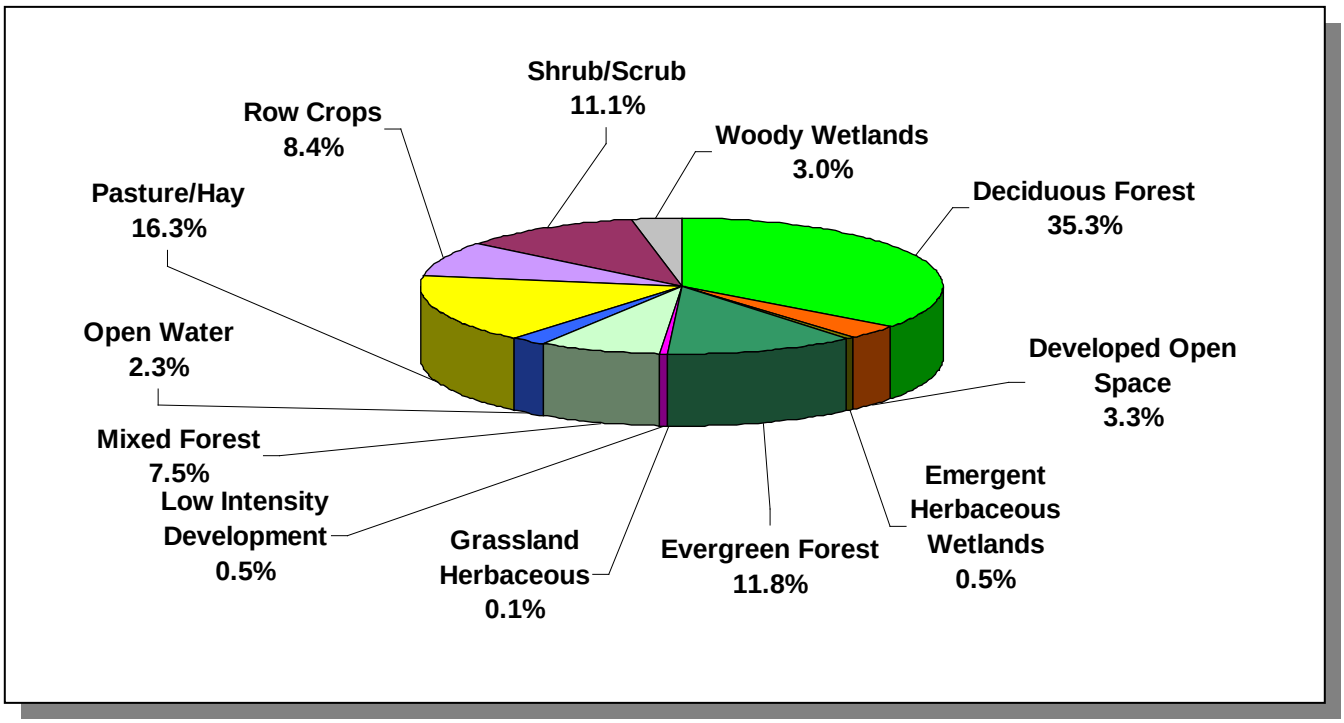


Figure 4-29. Land Use Distribution in Subwatershed 080102080104. *More information is provided in Appendix IV.*

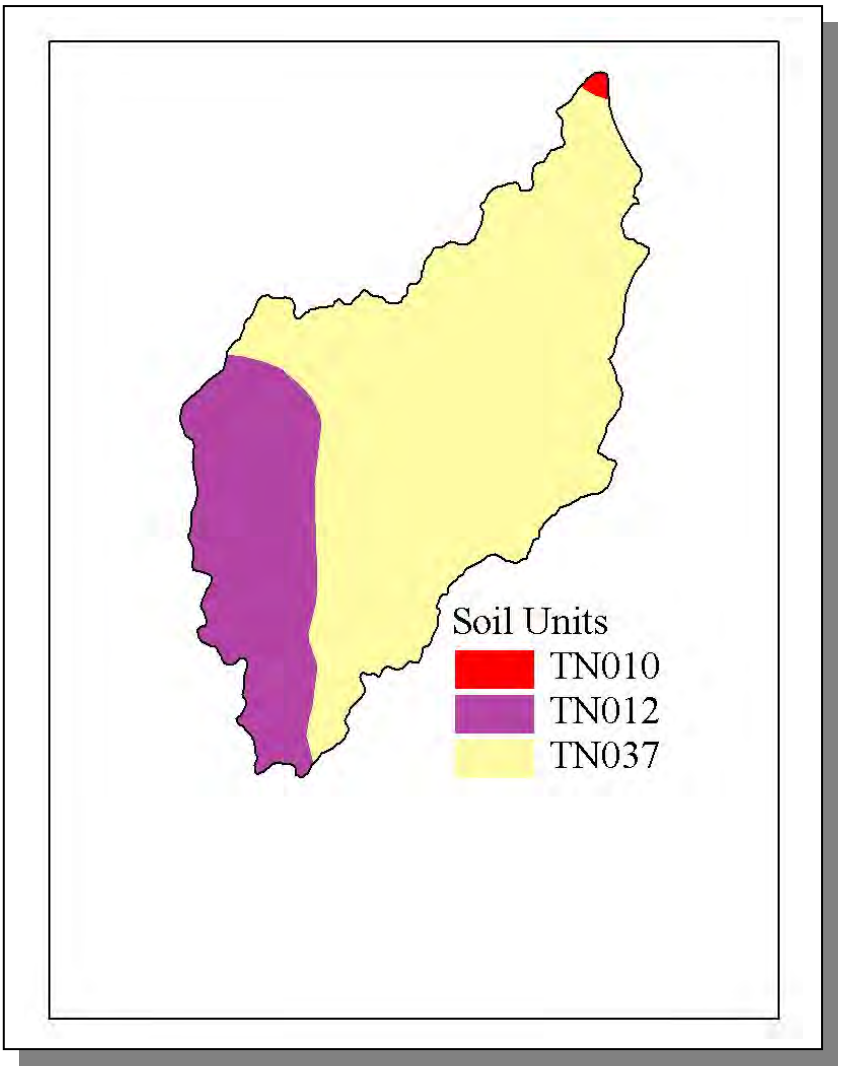


Figure 4-30. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080104.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN010	81.00	C	1.33	5.11	Silty Loam	0.44
TN012	1.00	C	2.52	5.13	Silty Loam	0.39
TN037	0.00	C	3.51	4.86	Sandy Loam	0.27

Table 4-21. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080104. *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)
Hardeman	23,377	24,702	28,105	2.43	569	601	684	20.2

Table 4-22. Population Estimates in Subwatershed 080102080104.

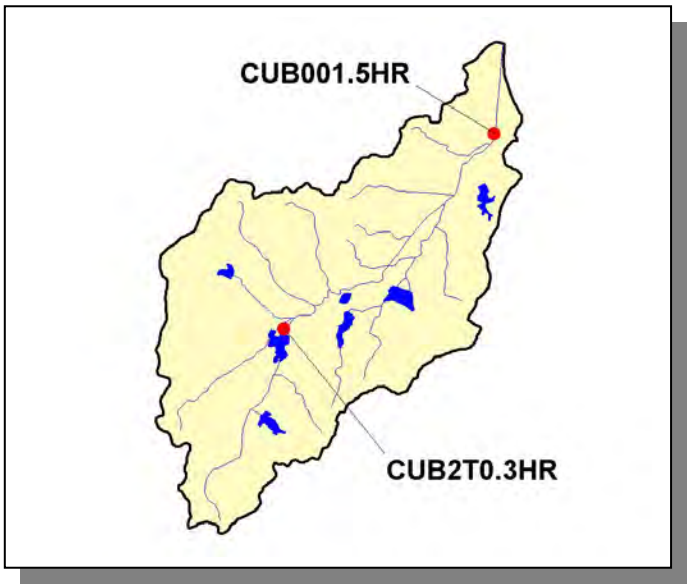

Figure 4-31. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 080102080104. *More information, including site names and locations, is provided in Appendix IV.*

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

There are no point source contributions in this subwatershed.

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

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
197	340	<5	<5	112	<5

Table 4-23. Summary of Livestock Count Estimates in Subwatershed 080102080104. *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
Hardeman	9,184	15,877	62	28	5,221	144

Table 4-24. Summary of Livestock Count Estimates in Hardeman 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)
Hardeman	247.1	247.1	5.0	18.6

Table 4-25. Forest Acreage and Annual Removal Rates (1987-1994) in Hardeman County.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	1.23
Grass (Hayland)	0.39
Grass, Forbs, Legumes (Mixed Pasture)	1.06
Corn (Row Crops)	11.41
Cotton (Row Crops)	25.79
Sorghum (Row Crops)	3.04
Soybeans (Row Crops)	12.89
Wheat (Close-Grown Cropland)	15.03
Summer Fallow (Other Cropland)	6.11
Other Cropland not Planted	4.23
Conservation Reserve Program Lands	0.27
Farmsteads and Ranch Headquarters	0.97

Table 4-26. Annual Estimated Total Soil Loss in Subwatershed 080102080104.

4.2.A.v. 080102080105 (Hatchie River).

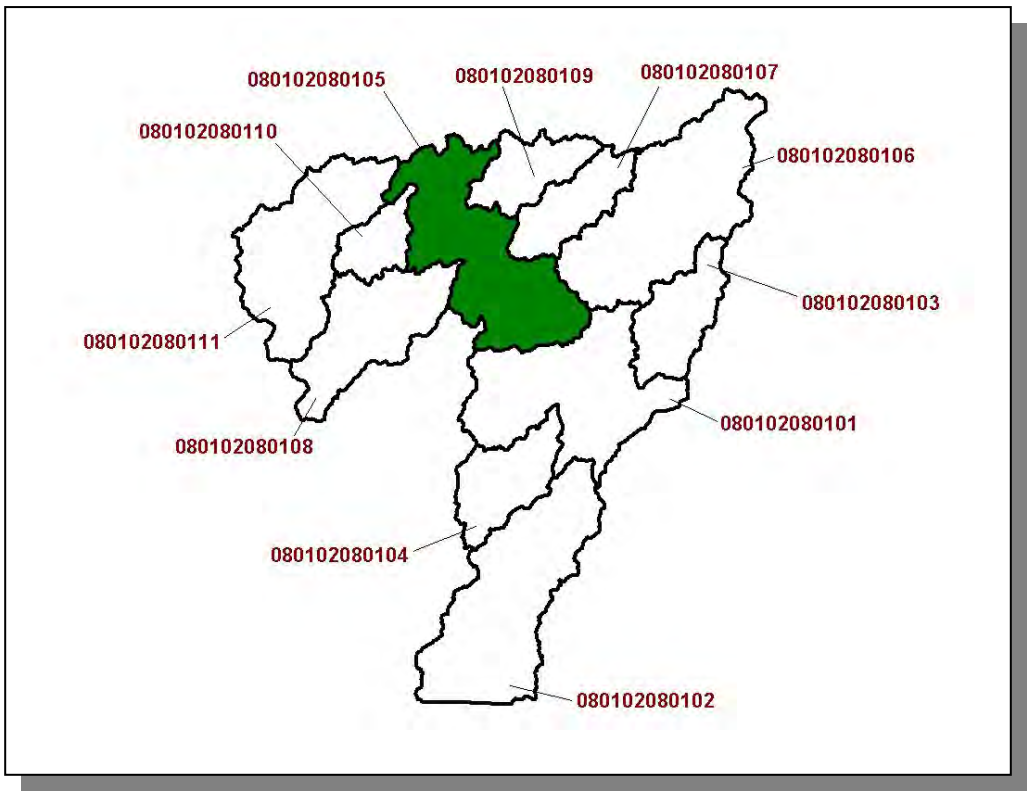

Figure 4-32. Location of Subwatershed 080102080105. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

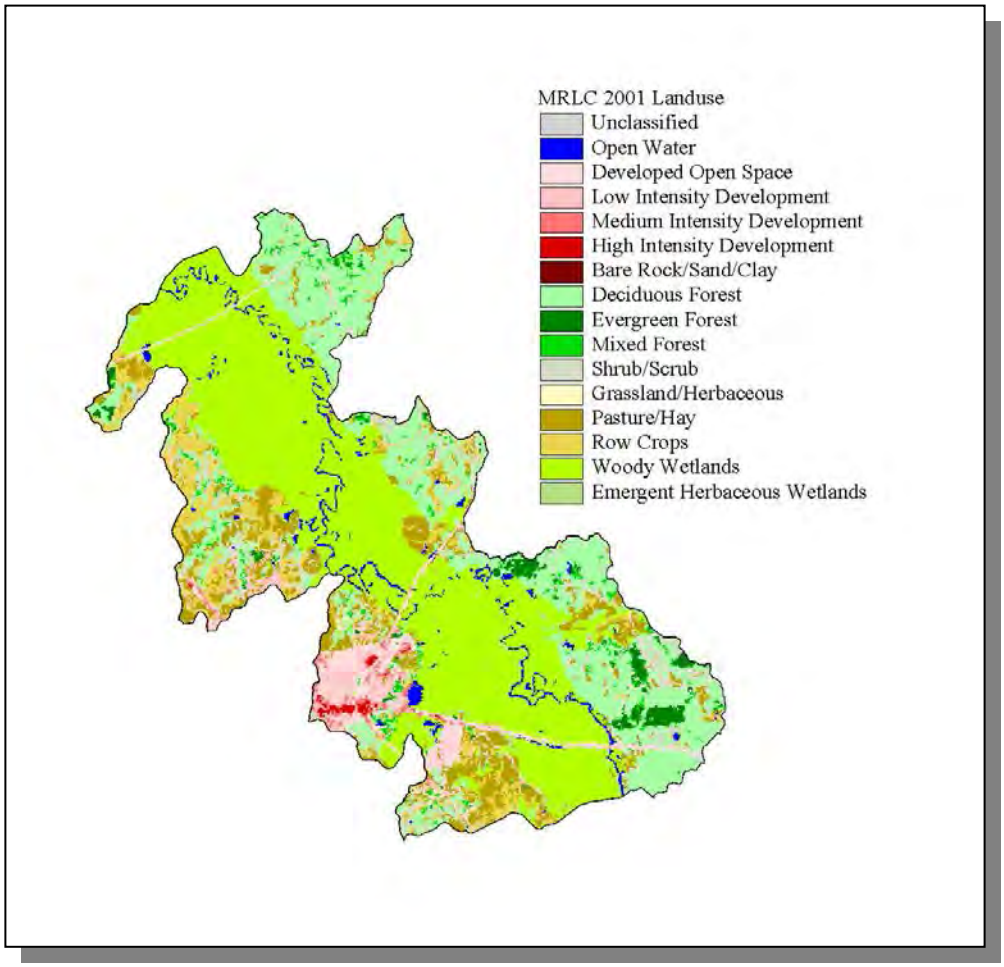

Figure 4-33. Illustration of Land Use Distribution in Subwatershed 080102080105.

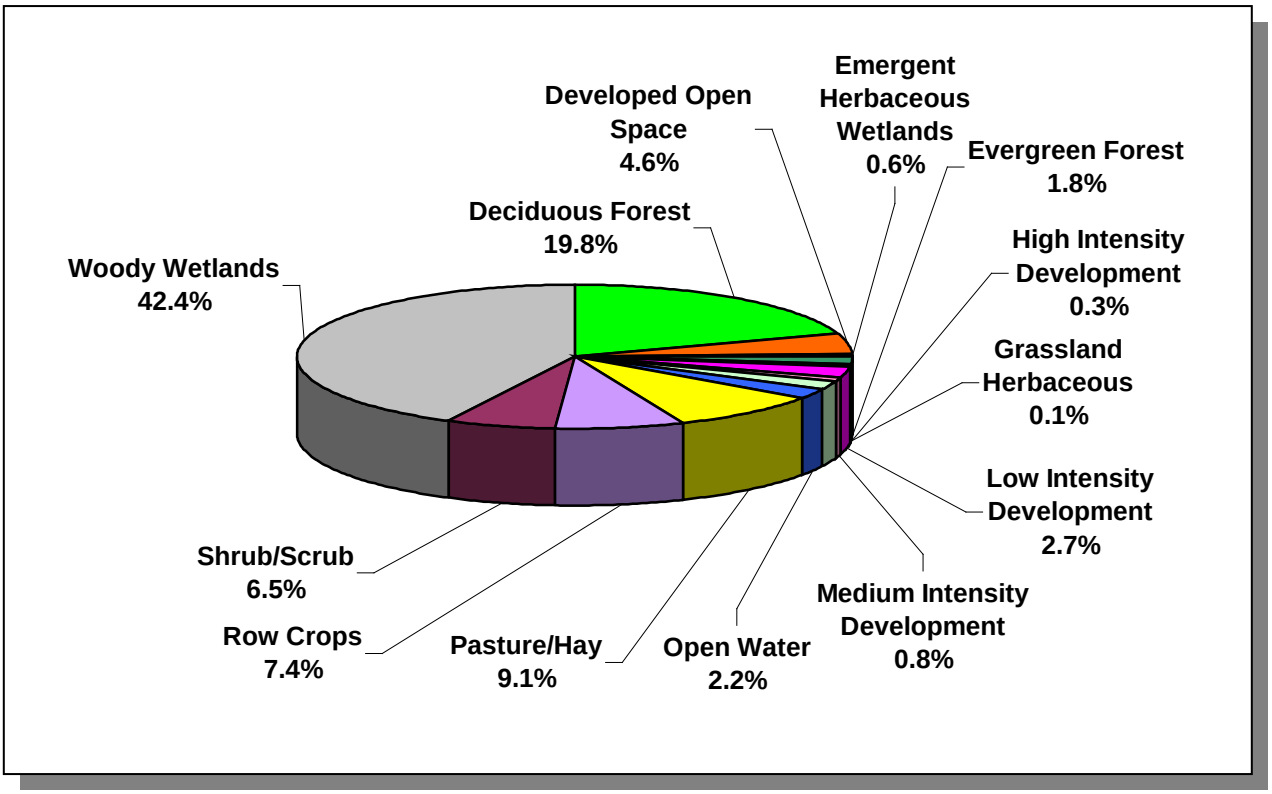

Figure 4-34. Land Use Distribution in Subwatershed 080102080105. *More information is provided in Appendix IV.*

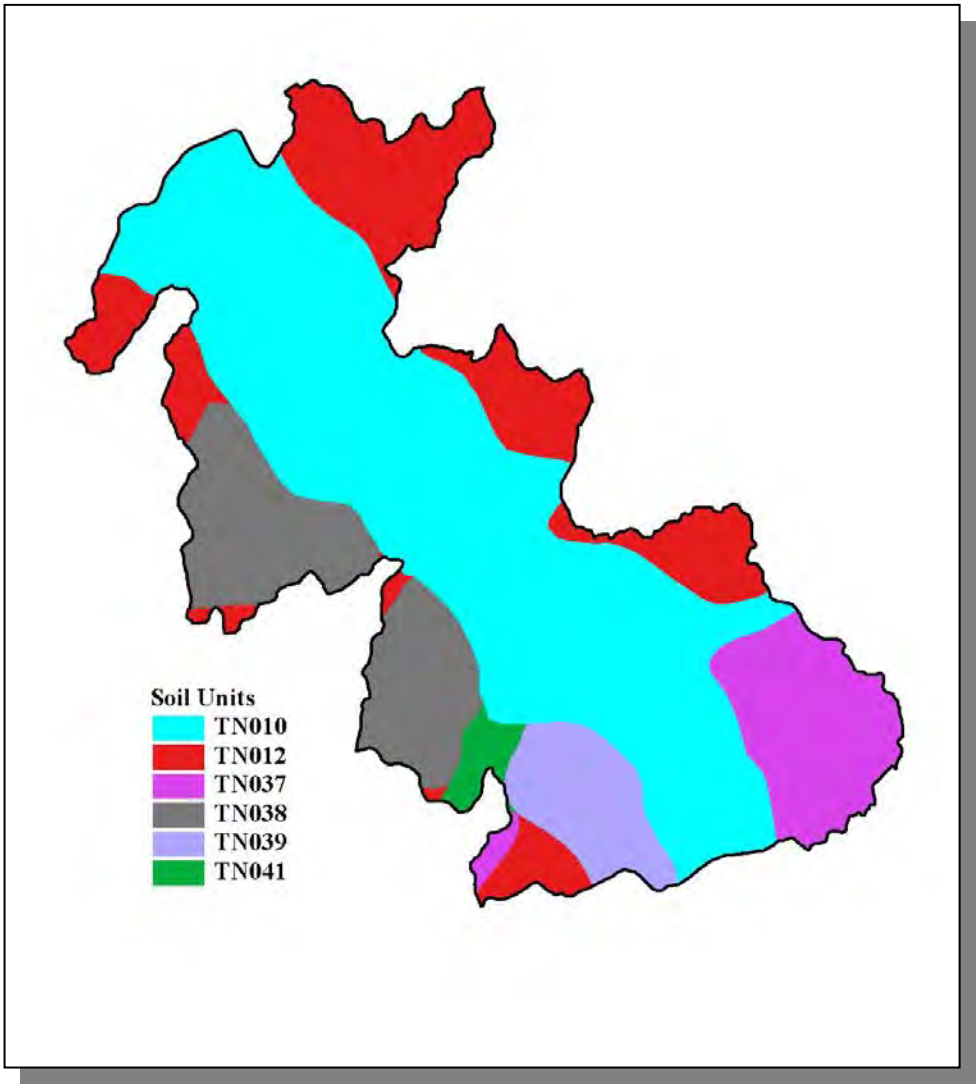

Figure 4-35. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080105.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN010	81.00	C	1.33	5.11	Silty Loam	0.44
TN012	1.00	C	2.52	5.13	Silty Loam	0.39
TN037	0.00	C	3.51	4.86	Sandy Loam	0.27
TN038	9.00	C	1.65	5.20	Silty Loam	0.46
TN039	24.00	C	1.35	5.20	Silty Loam	0.47
TN041	59.00	C	1.35	4.98	Silty Loam	0.34

Table 4-27. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080105. *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)
Hardeman	23,377	24,702	28,105	6.32	1,477	1,561	1,776	20.2

Table 4-28. Population Estimates in Subwatershed 080102080105.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Bolivar	Hardeman	5,969	2,098	1,915	161	22
Toone	Hardeman	279	102	69	33	0
Total		**6,248**	**2,200**	**1,984**	**194**	**22**

Table 4-29. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 080102080105.

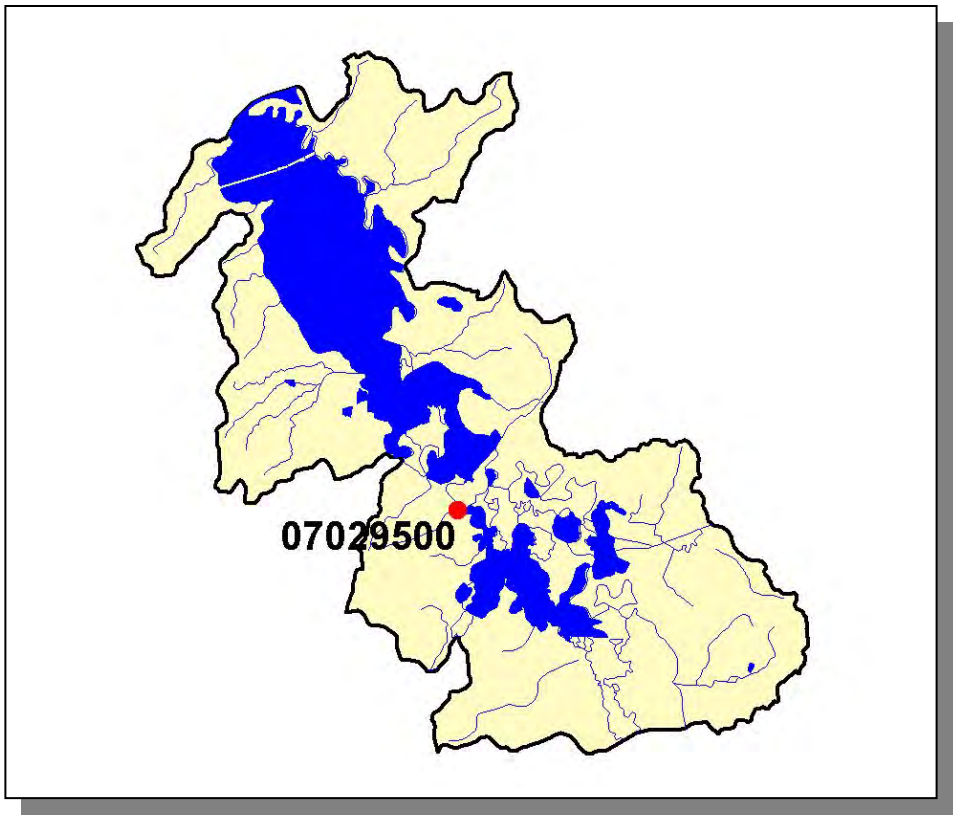

Figure 4-36. Location of Historical Streamflow Data Collection Sites in Subwatershed 080102080105. *More information is provided in Appendix IV.*

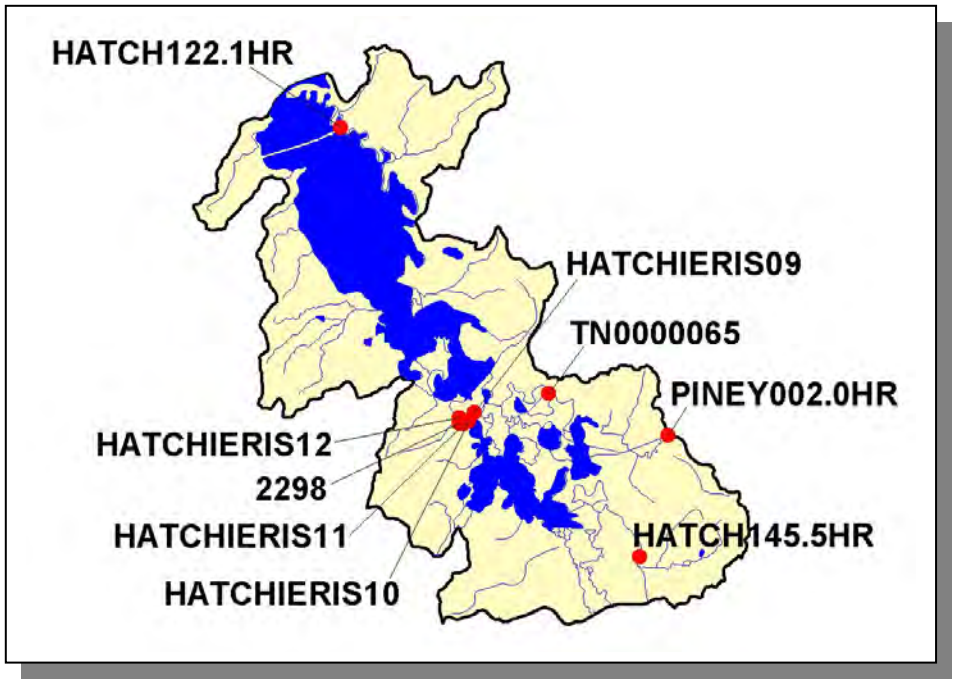

Figure 4-37. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 080102080105. *More information, including site names and locations, is provided in Appendix IV.*

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

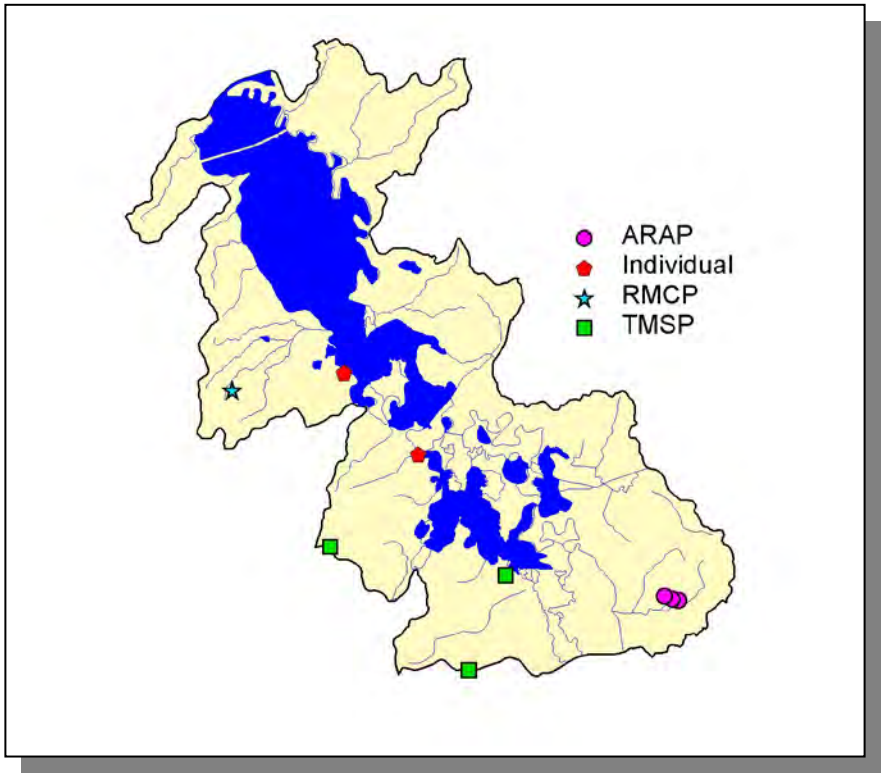

Figure 4-38. Location of Permits Issued in Subwatershed 080102080105. *More information, including the names of facilities, is provided in Appendix IV.*

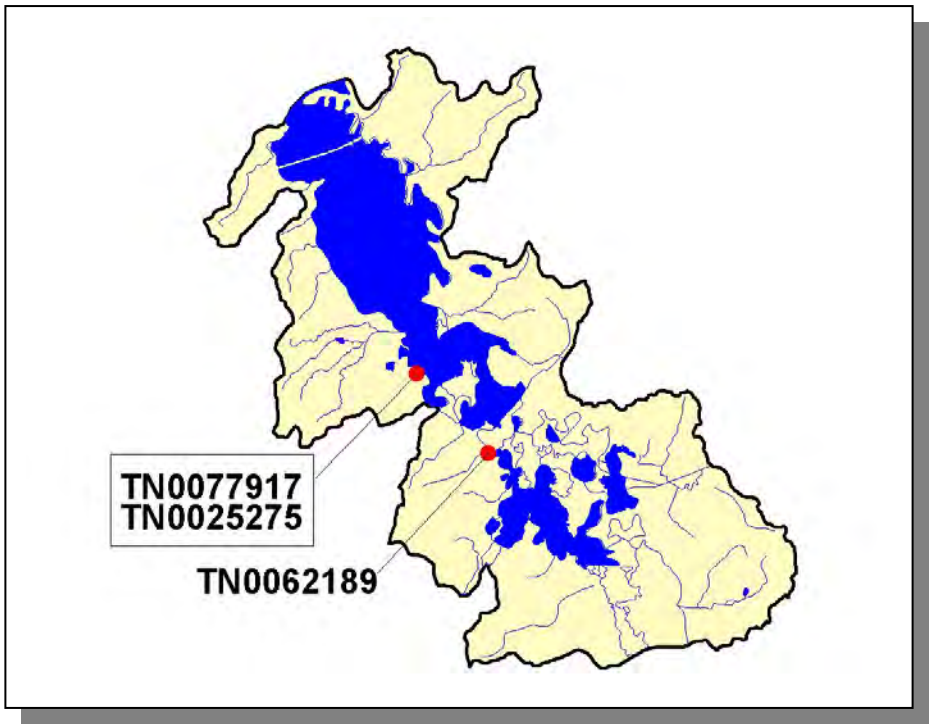

Figure 4-39. Location of Active NPDES Sites in Subwatershed 080102080105. *More information, including the names of facilities, is provided in Appendix IV.*

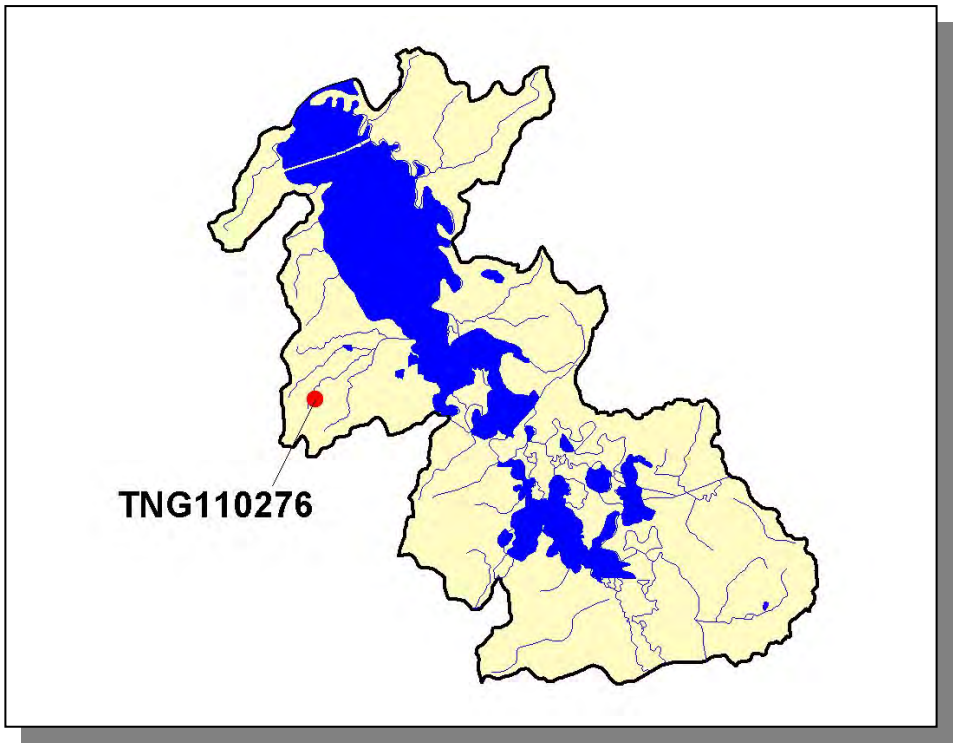

Figure 4-40. Location of Ready Mix Concrete Plants (RMCP) in Subwatershed 080102080105. *More information is provided in Appendix IV.*

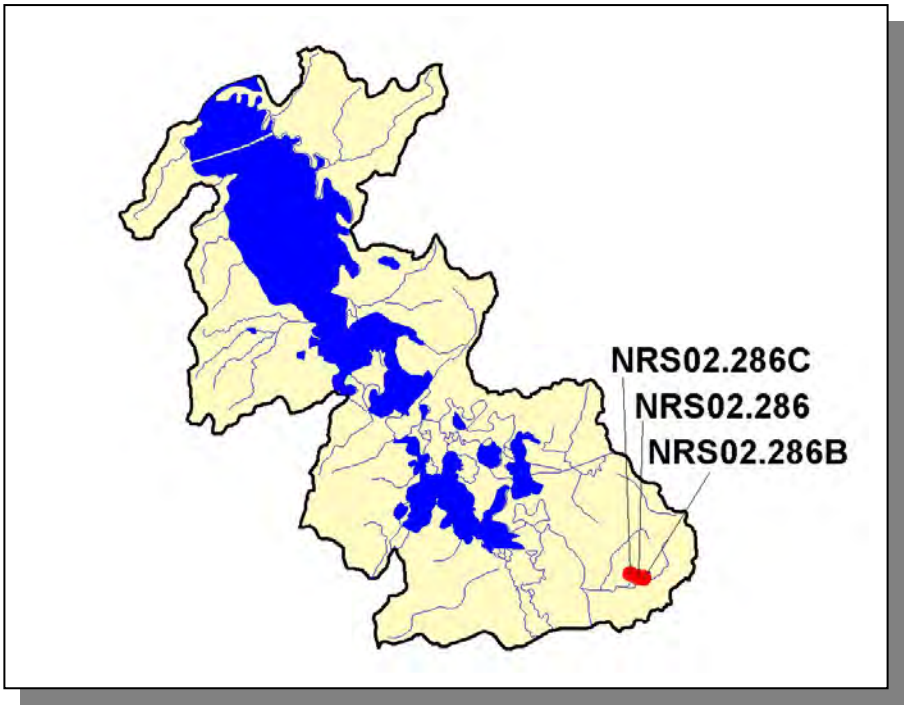

Figure 4-41. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 080102080105. *More information is provided in Appendix IV.*

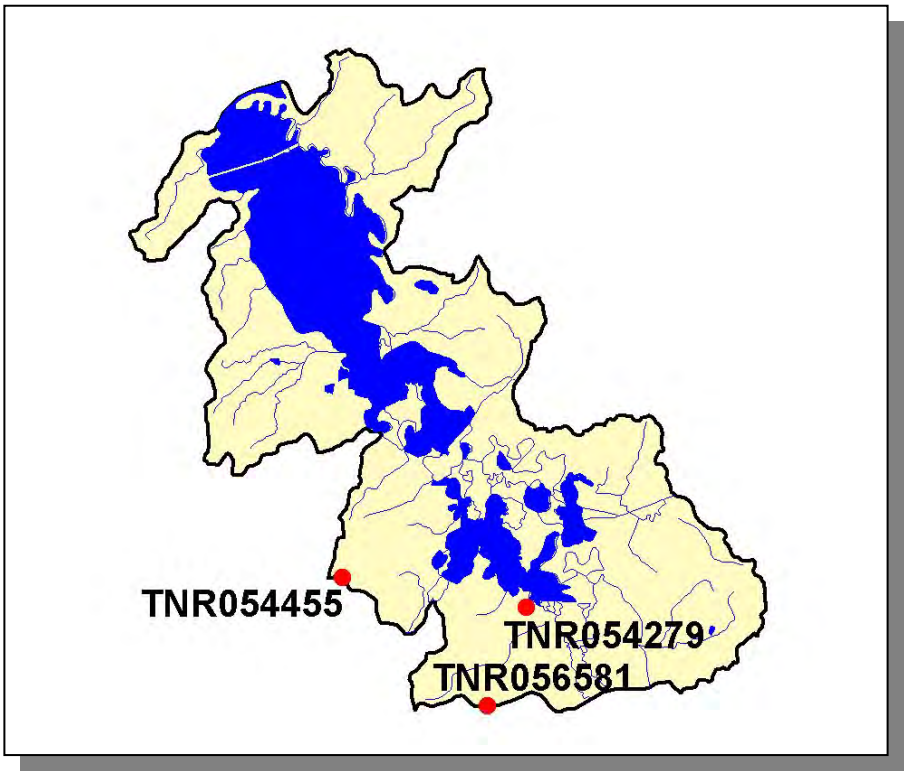

Figure 4-42. Location of TMSP Sites in Subwatershed 080102080105. *More information, including the names of facilities, is provided in Appendix IV.*

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

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
413	713	<5	<5	235	6

Table 4-30. Summary of Livestock Count Estimates in Subwatershed 080102080105. *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
Hardeman	9,184	15,877	62	28	5,221	144

Table 4-31. Summary of Livestock Count Estimates in Hardeman 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)
Hardeman	247.1	247.1	5.0	18.6

Table 4-32. Forest Acreage and Annual Removal Rates (1987-1994) in Hardeman County.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	1.23
Grass (Hayland)	0.39
Grass, Forbs, Legumes (Mixed Pasture)	1.06
Corn (Row Crops)	11.41
Cotton (Row Crops)	25.79
Sorghum (Row Crops)	3.04
Soybeans (Row Crops)	12.89
Wheat (Close-Grown Cropland)	15.03
Summer Fallow (Other Cropland)	6.11
Other Cropland not Planted	4.23
Conservation Reserve Program Lands	0.27
Farmsteads and Ranch Headquarters	0.97

Table 4-33. Annual Estimated Total Soil Loss in Subwatershed 080102080105.

4.2.A.vi. 080102080106 (Piney Creek).

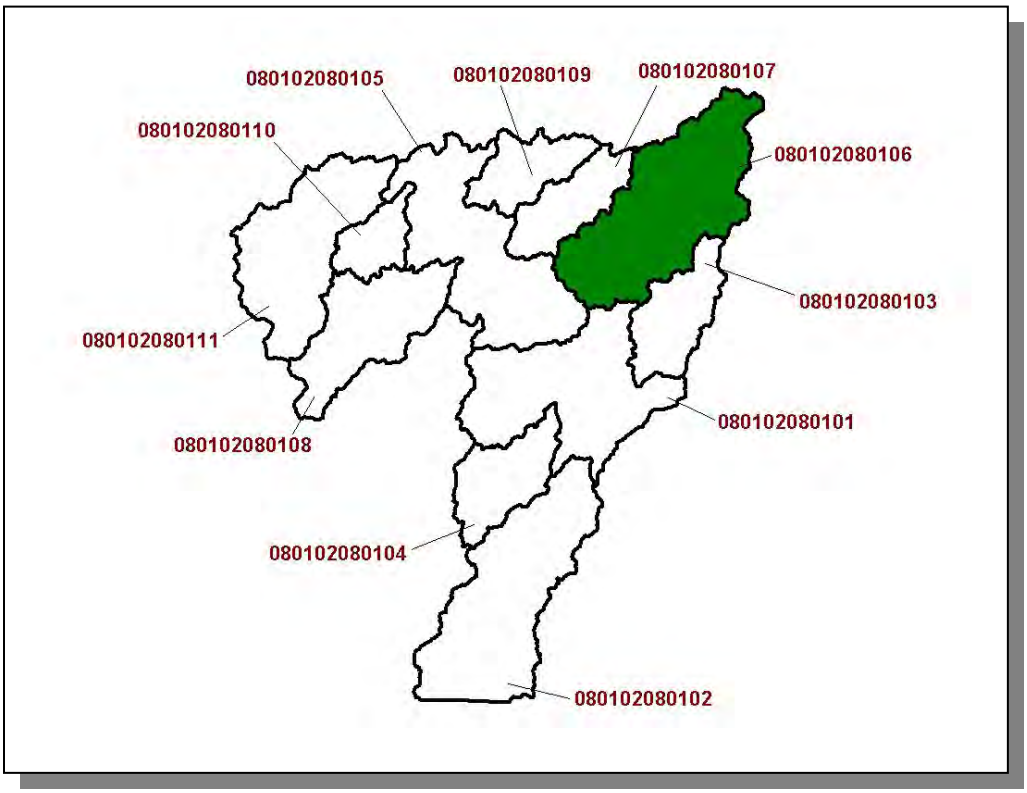

Figure 4-43. Location of Subwatershed 080102080106. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

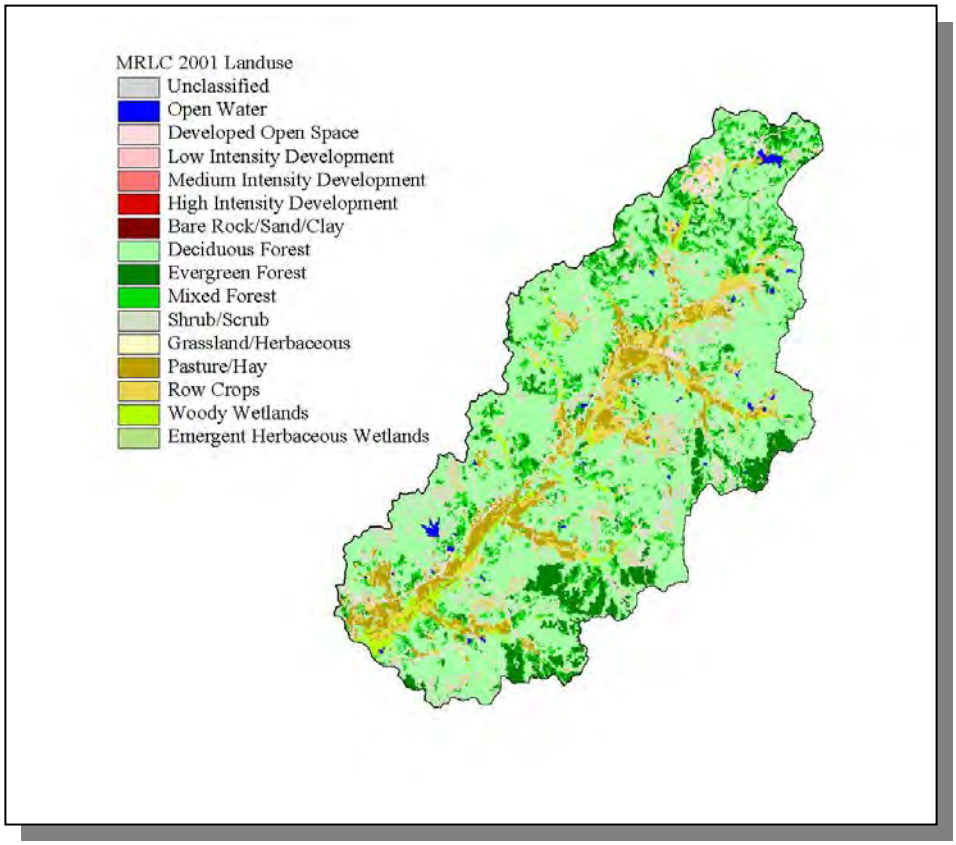

Figure 4-44. Illustration of Land Use Distribution in Subwatershed 080102080106.

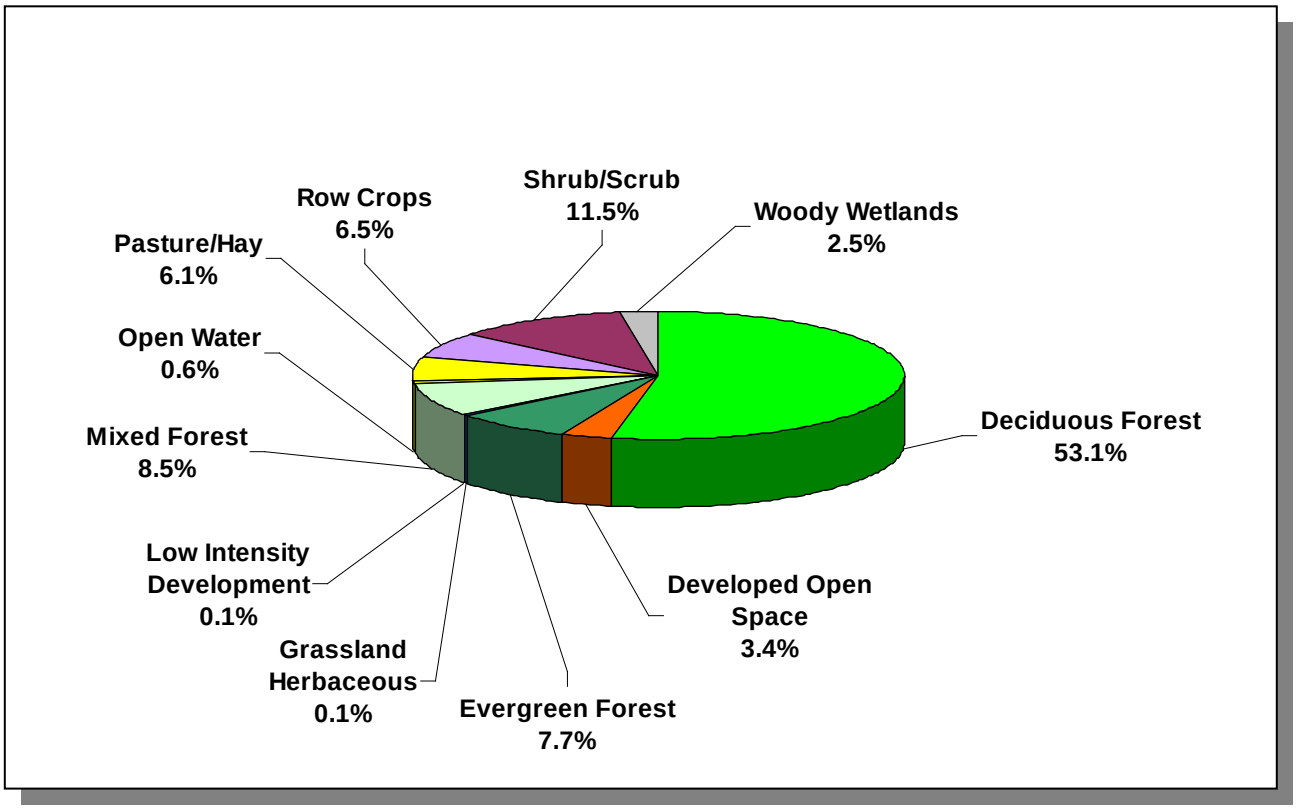

Figure 4-45. Land Use Distribution in Subwatershed 080102080106. *More information is provided in Appendix IV.*

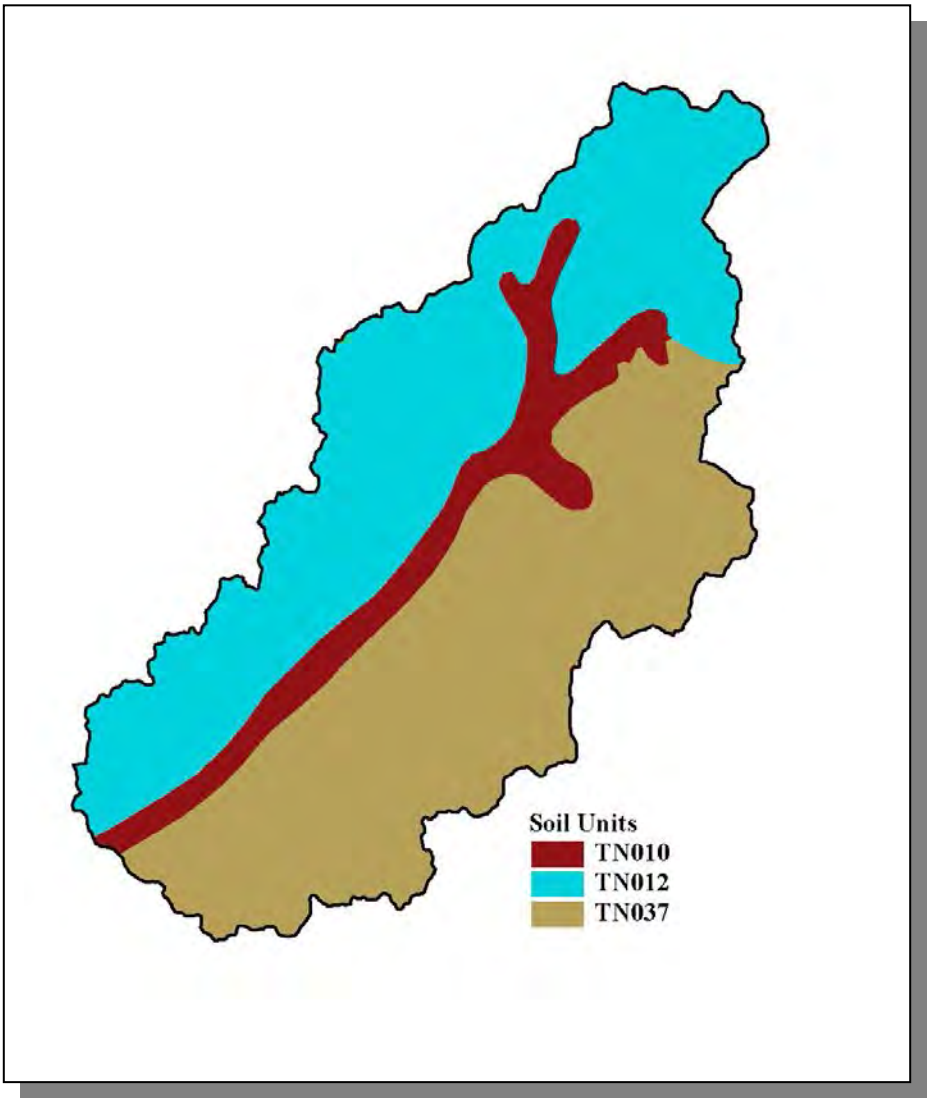

Figure 4-46. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080106.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN010	81.00	C	1.33	5.11	Silty Loam	0.44
TN012	1.00	C	2.52	5.13	Silty Loam	0.39
TN037	0.00	C	3.51	4.86	Sandy Loam	0.27

Table 4-34. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080106. *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)
Chester	12,819	14,469	15,540	4.89	627	708	760	21.2
Hardeman	23,377	24,702	28,105	4.86	1,136	1,201	1,366	20.2
Total	**36,196**	**39,171**	**43,645**		**1,763**	**1,909**	**2,126**	**20.6**

Table 4-35. Population Estimates in Subwatershed 080102080106.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Silerton	Hardeman	50	45	0	45	0

Table 4-36. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 080102080106.

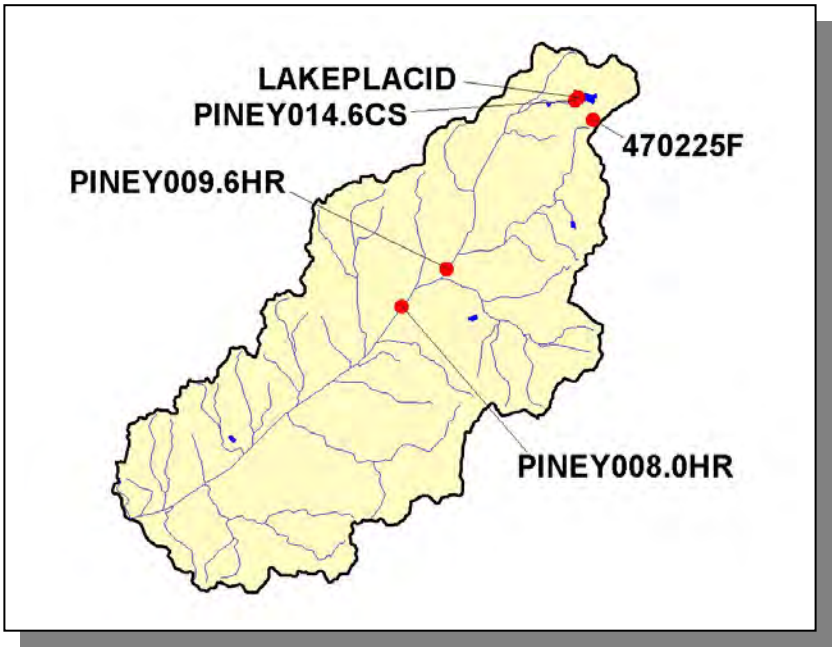

Figure 4-47. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 080102080106. *More information, including site names and locations, is provided in Appendix IV.*

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

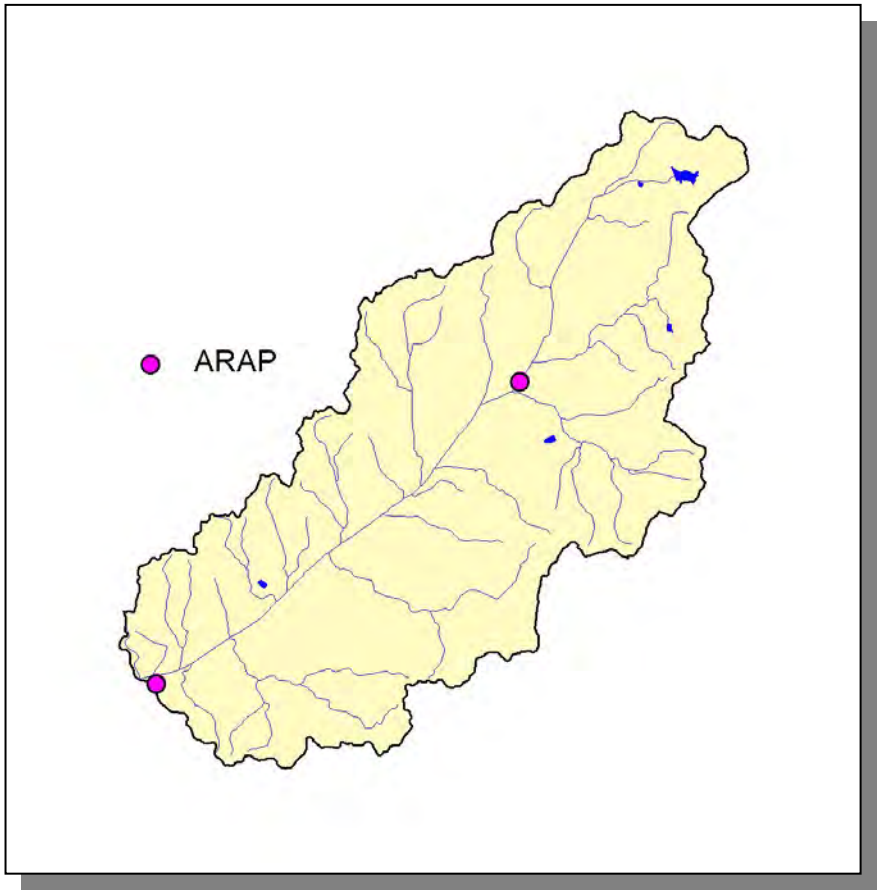

Figure 4-48. Location of Permits Issued in Subwatershed 080102080106. *More information, including the names of facilities, is provided in Appendix IV.*

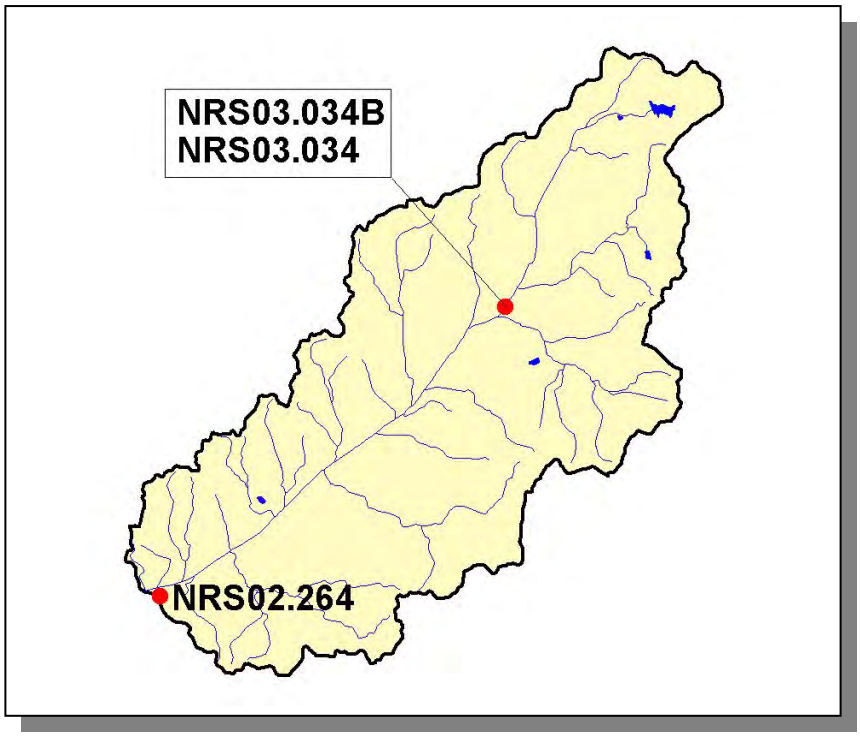

Figure 4-49. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 080102080106. *More information is provided in Appendix IV.*

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

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
196	656	<5	<5	158	<5

Table 4-37. Summary of Livestock Count Estimates in Subwatershed 080102080106. *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
Chester	0	9,108	0	14	1,331	0
Hardeman	9,184	15,877	62	28	5,221	144

Table 4-38. Summary of Livestock Count Estimates in Chester and Hardeman 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)
Chester	99.4	99.4	0.3	1.3
Hardeman	247.1	247.1	5.0	18.6

Table 4-39. Forest Acreage and Annual Removal Rates (1987-1994) in Chester and Hardeman Counties.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.96
Grass (Hayland)	0.36
Legumes, Grass (Hayland)	0.21
Grass, Forbs, Legumes (Mixed Pasture)	0.86
Corn (Row Crops)	10.98
Cotton (Row Crops)	23.94
Sorghum (Row Crops)	3.04
Soybeans (Row Crops)	10.84
Wheat (Close-Grown Cropland)	13.69
Other Vegetable and Truck Crops	28.15
Summer Fallow (Other Cropland)	6.11
Other Cropland not Planted	3.01
Conservation Reserve Program Lands	0.32
Farmsteads and Ranch Headquarters	0.70

Table 4-40. Annual Estimated Total Soil Loss in Subwatershed 080102080106.

4.2.A.vii. 080102080107 (Grays Creek).

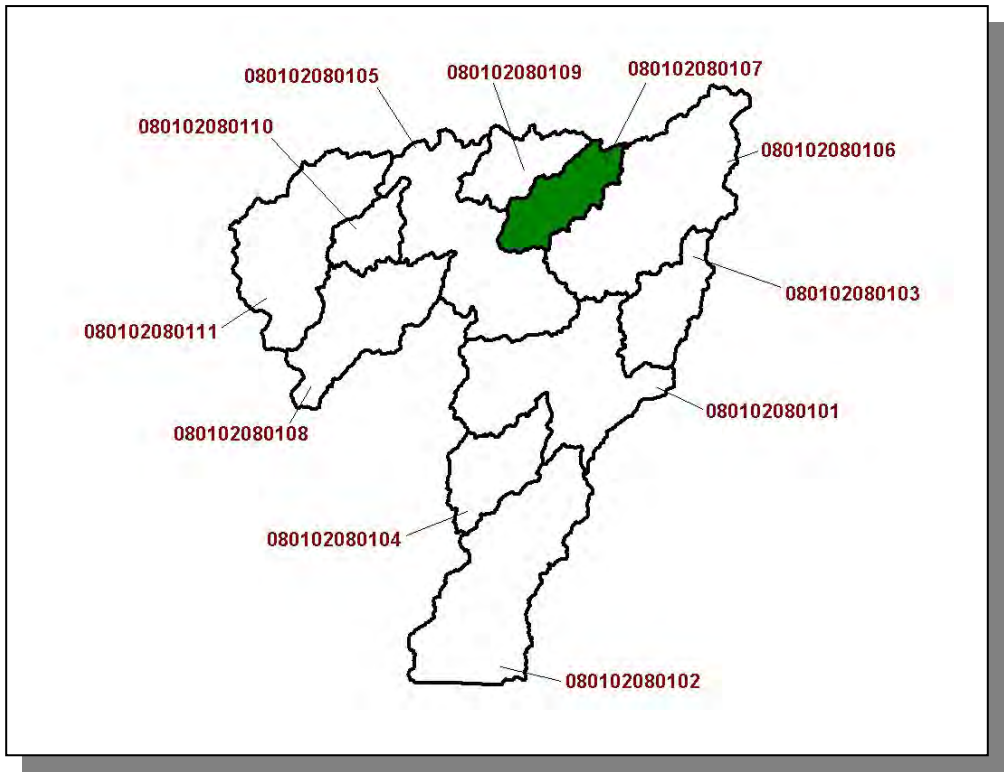

Figure 4-50. Location of Subwatershed 080102080107. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

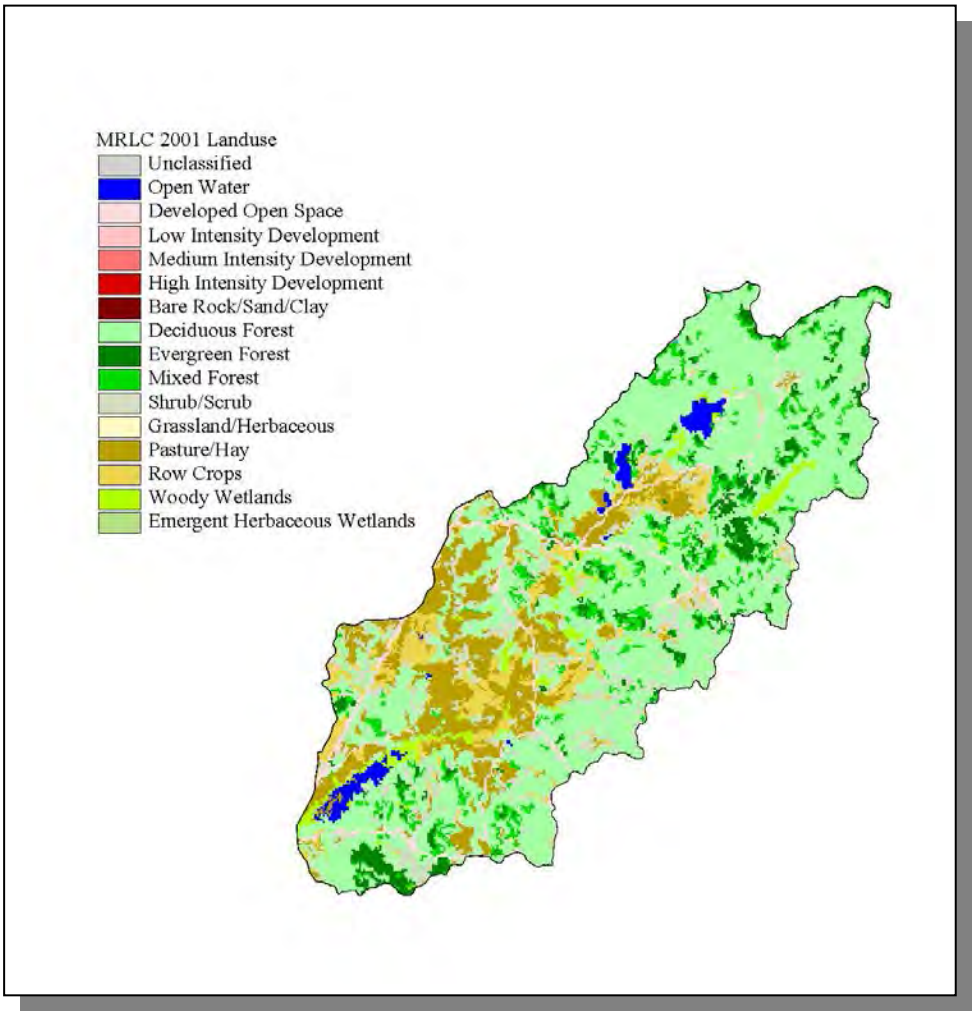

Figure 4-51. Illustration of Land Use Distribution in Subwatershed 080102080107.

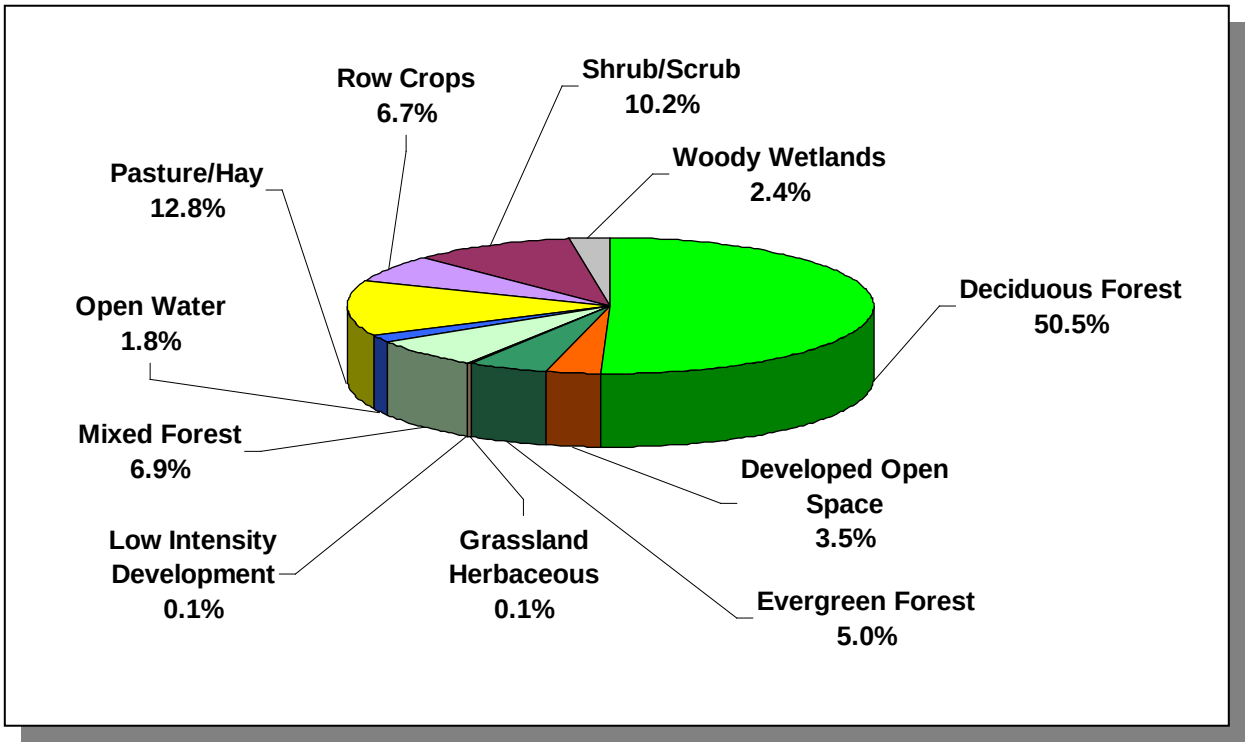

Figure 4-52. Land Use Distribution in Subwatershed 080102080107. *More information is provided in Appendix IV.*

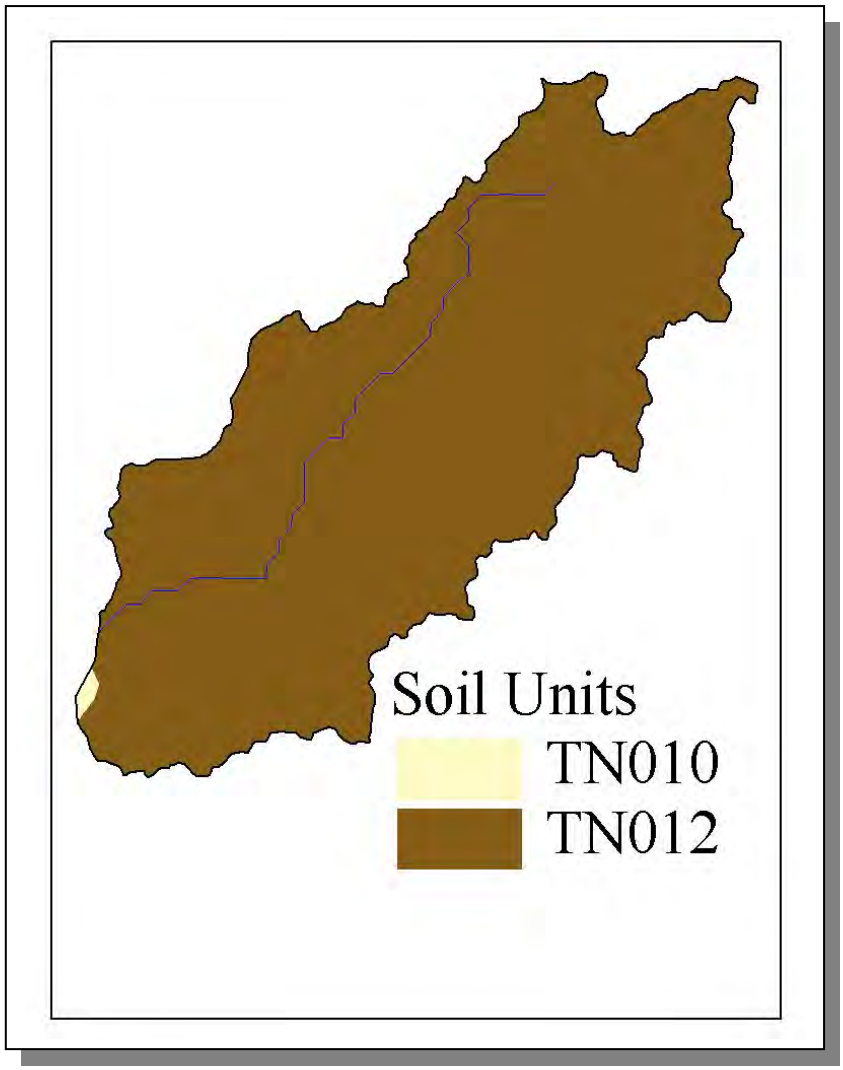

Figure 4-53. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080107.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN010	81.00	C	1.33	5.11	Silty Loam	0.44
TN012	1.00	C	2.52	5.13	Silty Loam	0.39

Table 4-41. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080107. *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)
Hardeman	23,377	24,702	28,105	2.17	508	537	611	20.3

Table 4-42. Population Estimates in Subwatershed 080102080107.

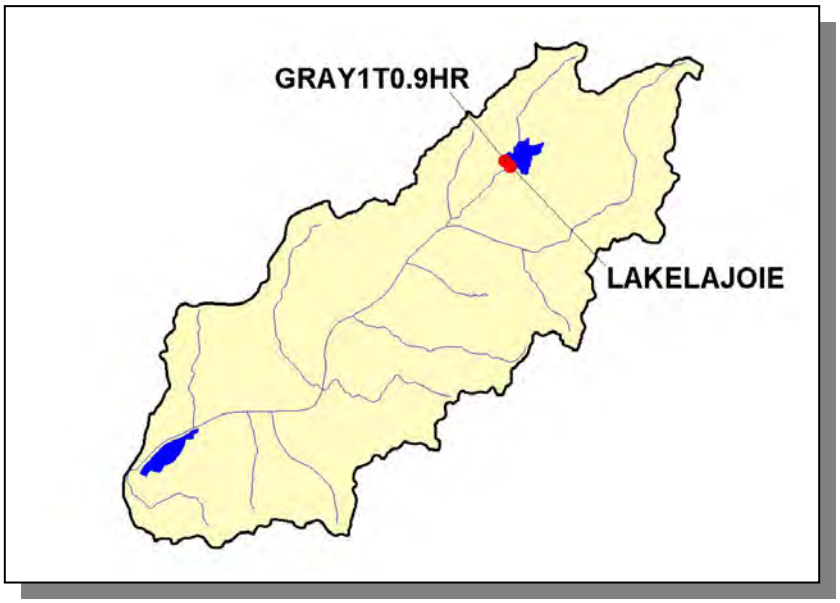

Figure 4-54. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 080102080107. *More information, including site names and locations, is provided in Appendix IV.*

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

There are no point source contributions in this subwatershed.

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

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
206	355	<5	<5	117	<5

Table 4-43. Summary of Livestock Count Estimates in Subwatershed 080102080107. *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
Hardeman	9,184	15,877	62	28	5,221	144

Table 4-44. Summary of Livestock Count Estimates in Hardeman 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)
Hardeman	247.1	247.1	5.0	18.6

Table 4-45. Forest Acreage and Annual Removal Rates (1987-1994) in Hardeman County.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	1.23
Grass (Hayland)	0.39
Grass, Forbs, Legumes (Mixed Pasture)	1.06
Corn (Row Crops)	11.41
Cotton (Row Crops)	25.79
Sorghum (Row Crops)	3.04
Soybeans (Row Crops)	12.89
Wheat (Close-Grown Cropland)	15.03
Summer Fallow (Other Cropland)	6.11
Other Cropland not Planted	4.23
Conservation Reserve Program Lands	0.27
Farmsteads and Ranch Headquarters	0.97

Table 4-46. Annual Estimated Total Soil Loss in Subwatershed 080102080107.

4.2.A.viii. 080102080108 (Pleasant Run Creek).

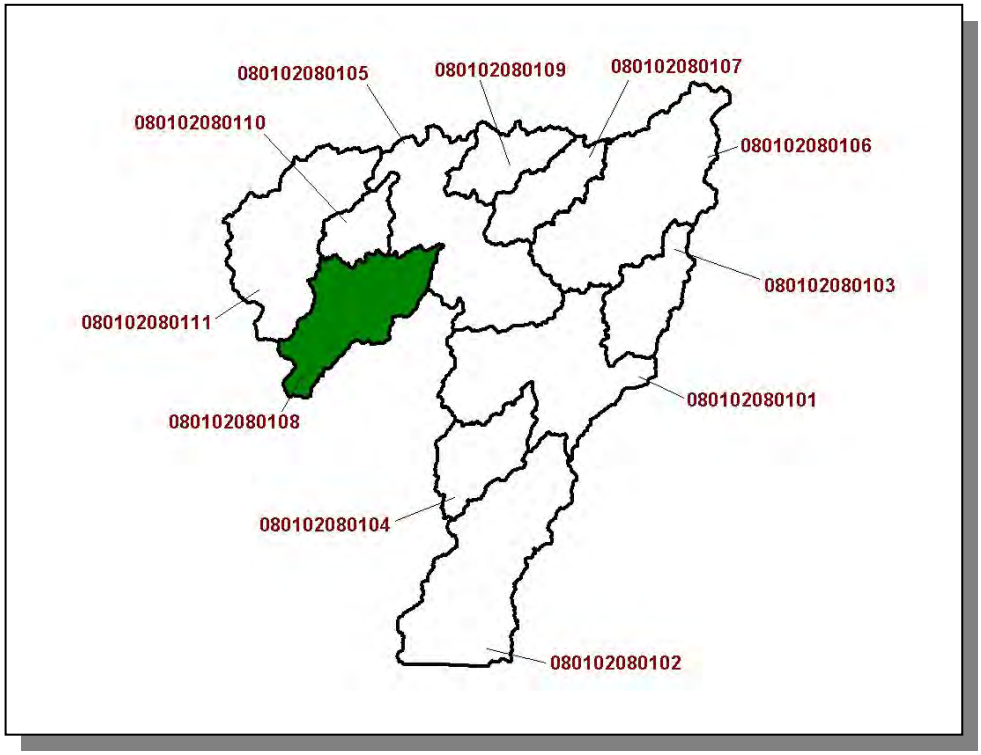

Figure 4-55. Location of Subwatershed 080102080108. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

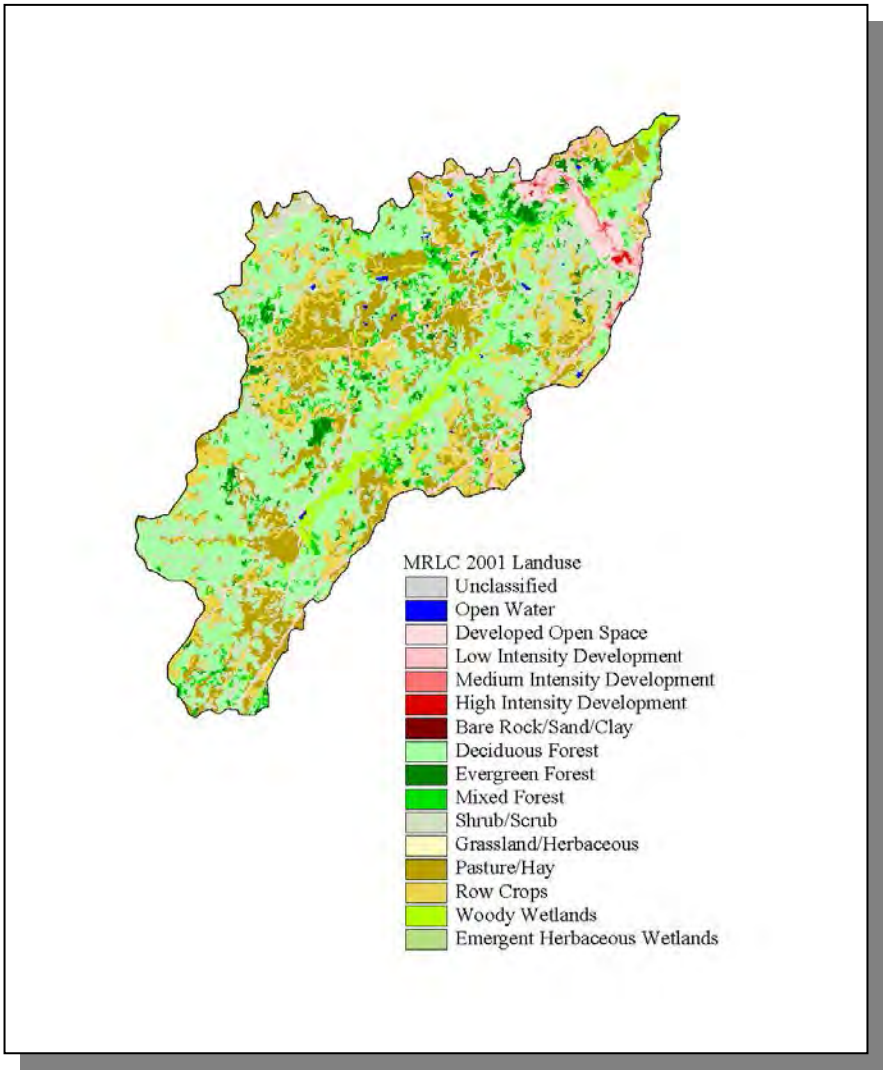

Figure 4-56. Illustration of Land Use Distribution in Subwatershed 080102080108.

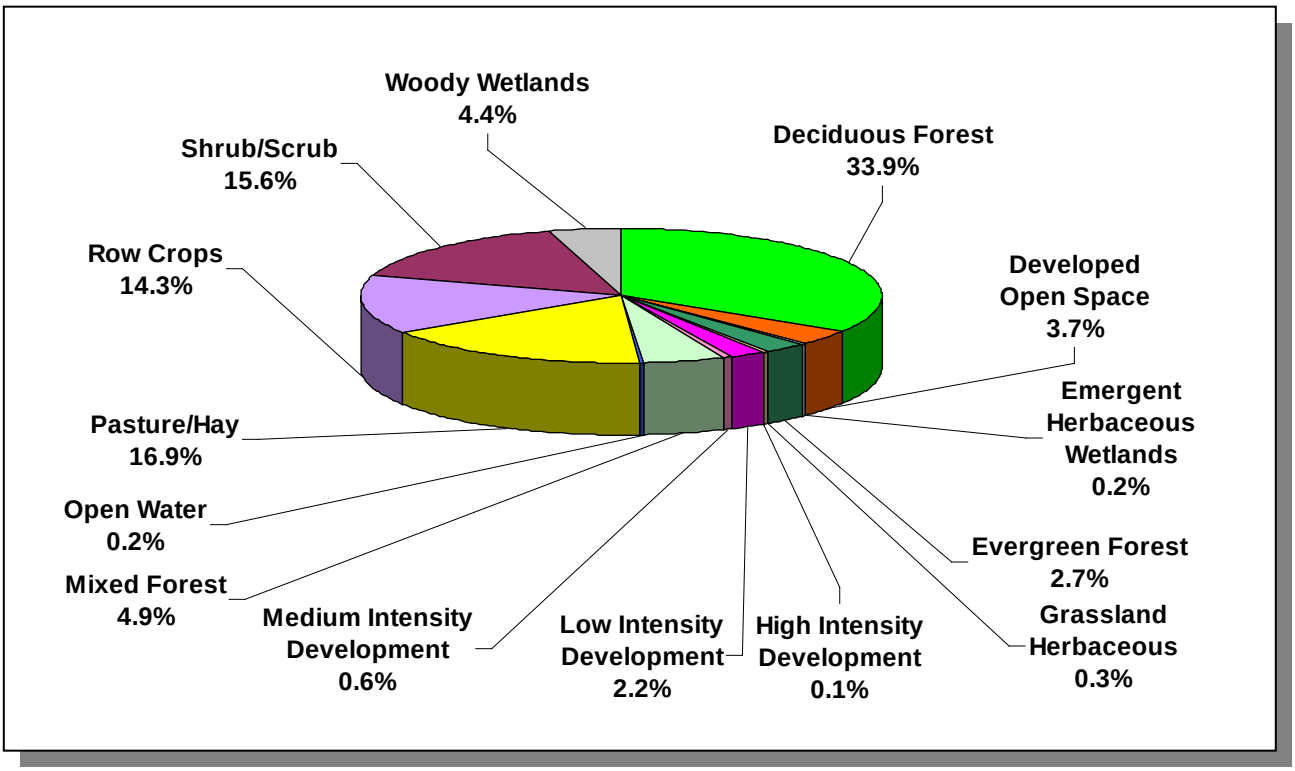

Figure 4-57. Land Use Distribution in Subwatershed 080102080108. *More information is provided in Appendix IV.*

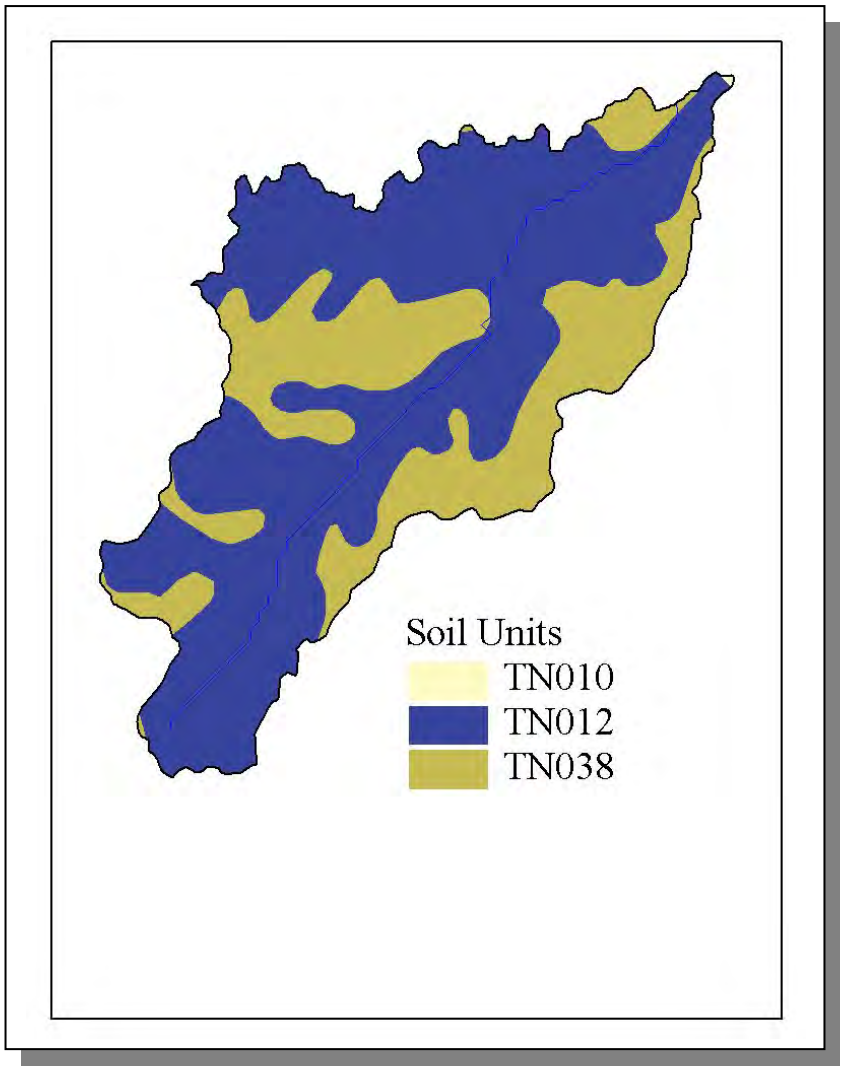

Figure 4-58. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080108.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN010	81.00	C	1.33	5.11	Silty Loam	0.44
TN012	1.00	C	2.52	5.13	Silty Loam	0.39
TN038	9.00	C	1.6	5.20	Silty Loam	0.46

Table 4-47. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080108. *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)
Hardeman	23,377	24,702	28,105	3.96	925	978	1,113	20.3

Table 4-48. Population Estimates in Subwatershed 080102080108.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Bolivar	Hardeman	5,969	2,098	1,915	161	22

Table 4-49. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 080102080108.

Figure 4-59. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 080102080108. *More information, including site names and locations, is provided in Appendix IV.*

4.2.A.viii.a. Point Source Contributions.

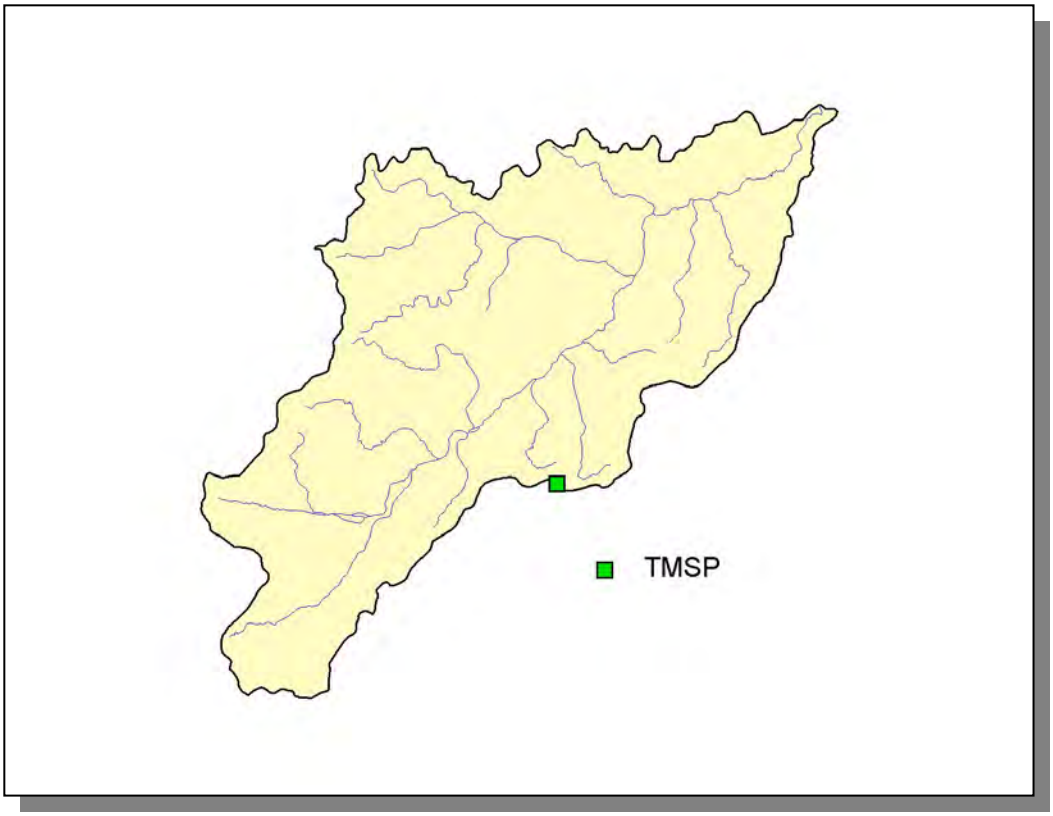

Figure 4-60. Location of Permits Issued in Subwatershed 080102080108. *More information, including the names of facilities, is provided in Appendix IV.*

Figure 4-61. Location of TMSP Sites in Subwatershed 080102080108. *More information, including the names of facilities, is provided in Appendix IV.*

4.2.A.viii.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
429	742	<5	<5	244	7

Table 4-50. Summary of Livestock Count Estimates in Subwatershed 080102080108. *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
Hardeman	9,184	15,877	62	28	5,221	144

Table 4-51. Summary of Livestock Count Estimates in Hardeman 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)
Hardeman	247.1	247.1	5.0	18.6

Table 4-52. Forest Acreage and Annual Removal Rates (1987-1994) in Hardeman County.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	1.23
Grass (Hayland)	0.39
Grass, Forbs, Legumes (Mixed Pasture)	1.06
Corn (Row Crops)	11.41
Cotton (Row Crops)	25.79
Sorghum (Row Crops)	3.04
Soybeans (Row Crops)	12.89
Wheat (Close-Grown Cropland)	15.03
Summer Fallow (Other Cropland)	6.11
Other Cropland not Planted	4.23
Conservation Reserve Program Lands	0.27
Farmsteads and Ranch Headquarters	0.97

Table 4-53. Annual Estimated Total Soil Loss in Subwatershed 080102080108.

4.2.A.ix. 080102080109 (Mill Creek).

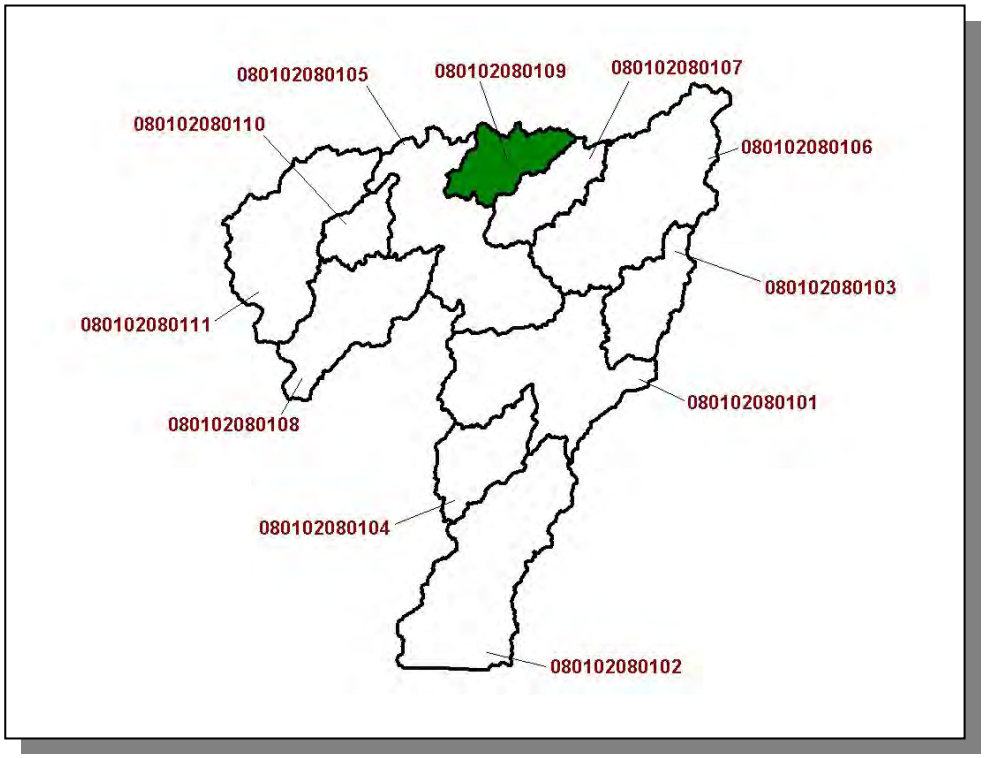

Figure 4-62. Location of Subwatershed 080102080109. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

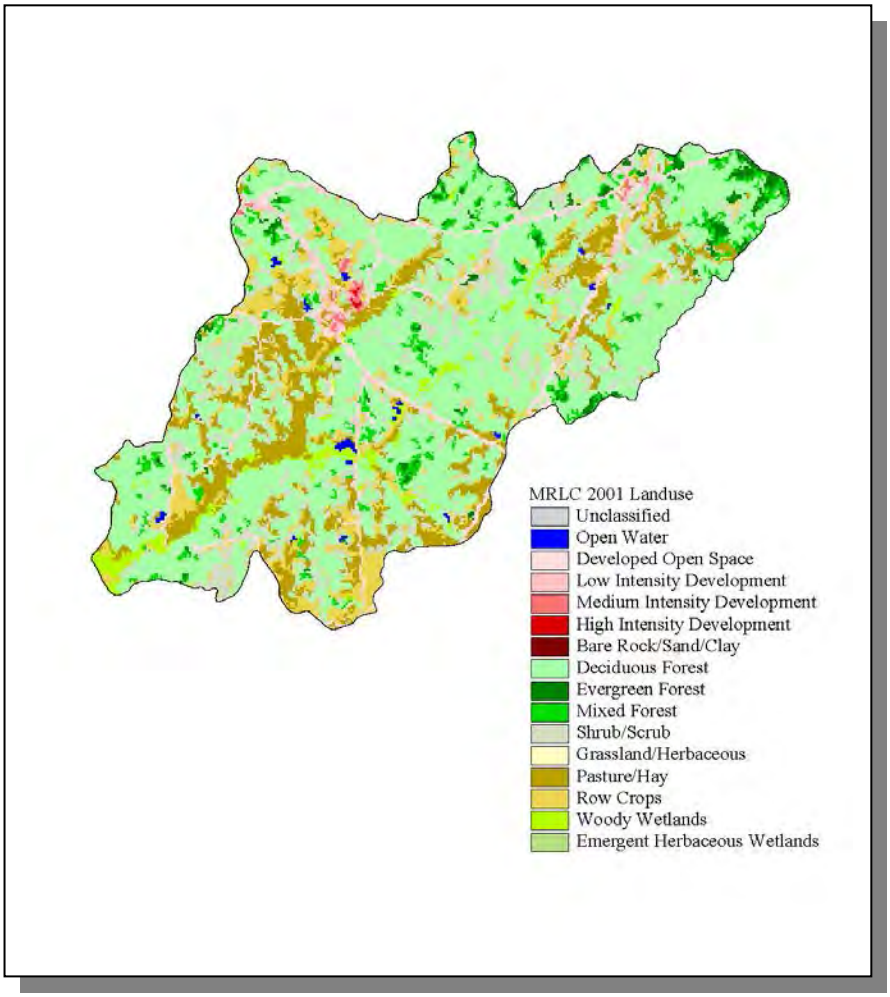

Figure 4-63. Illustration of Land Use Distribution in Subwatershed 080102080109.

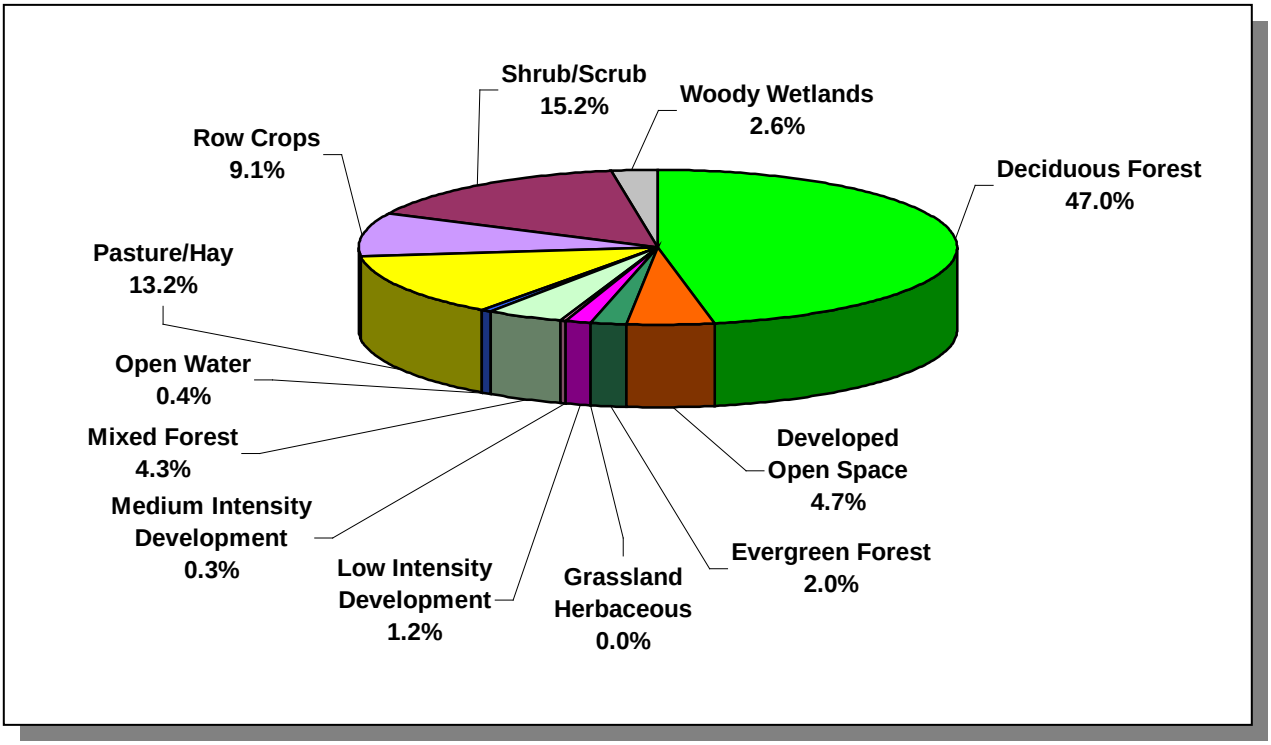

Figure 4-64. Land Use Distribution in Subwatershed 080102080109. *More information is provided in Appendix IV.*

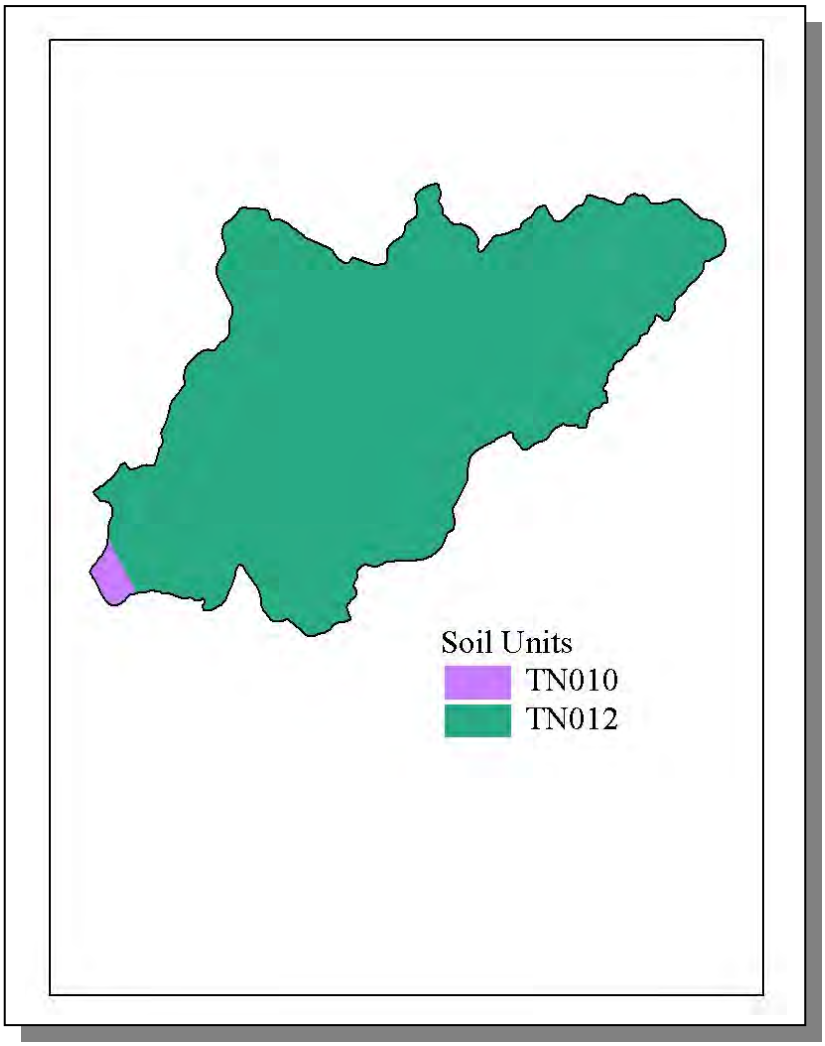

Figure 4-65. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080109.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN010	81.00	C	1.33	5.11	Silty Loam	0.44
TN012	1.00	C	2.52	5.13	Silty Loam	0.39

Table 4-54. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080109. *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)
Hardeman	23,377	24,702	28,105	1.93	452	478	544	20.4

Table 4-55. Population Estimates in Subwatershed 080102080109.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Toone	Hardeman	279	102	69	33	0

Table 4-56. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 080102080109.

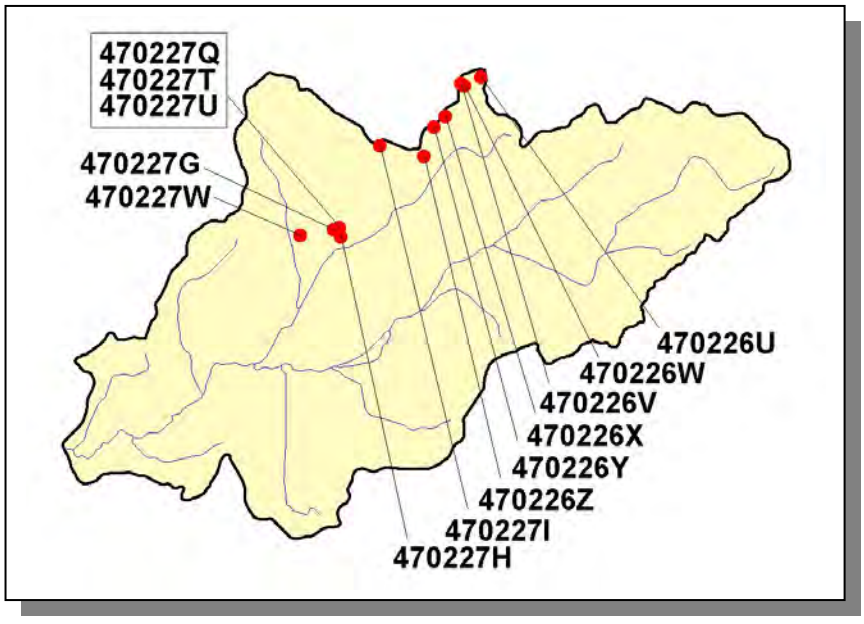

Figure 4-66. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 080102080109. *More information, including site names and locations, is provided in Appendix IV.*

4.2.A.ix.a. Point Source Contributions.

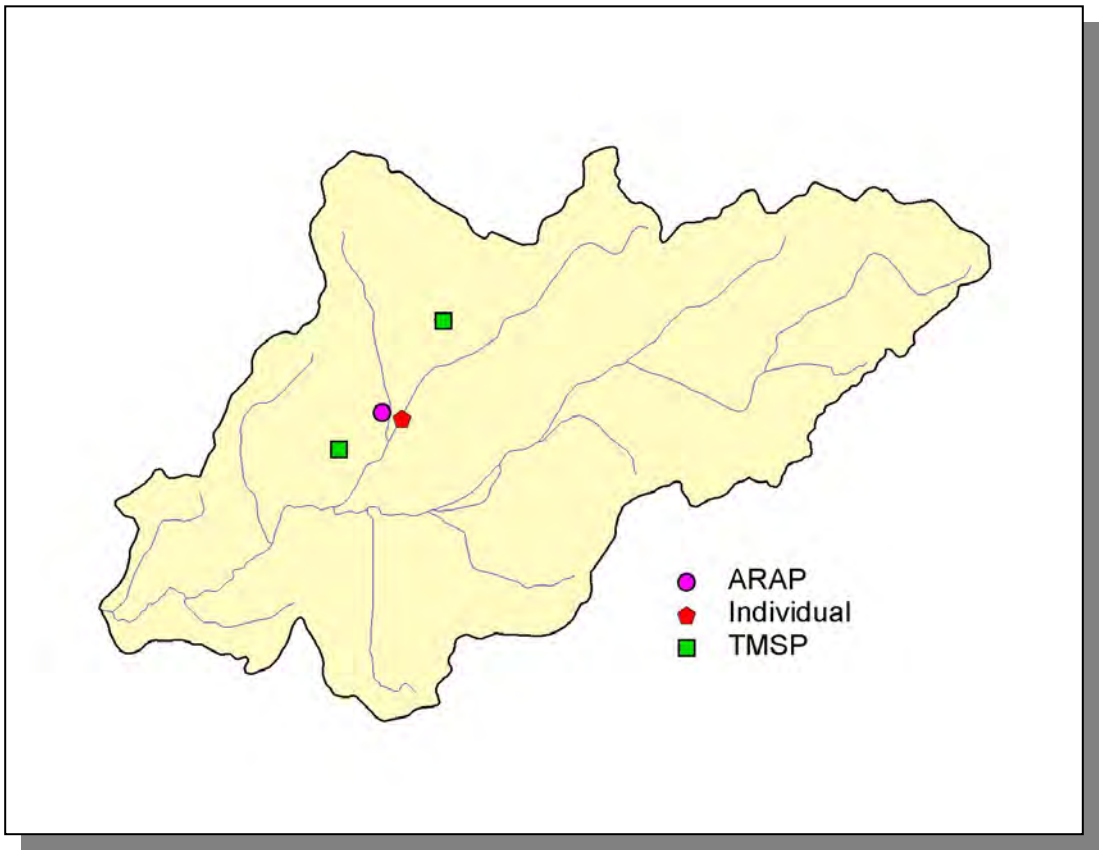

Figure 4-67. Location of Permits Issued in Subwatershed 080102080109. *More information, including the names of facilities, is provided in Appendix IV.*

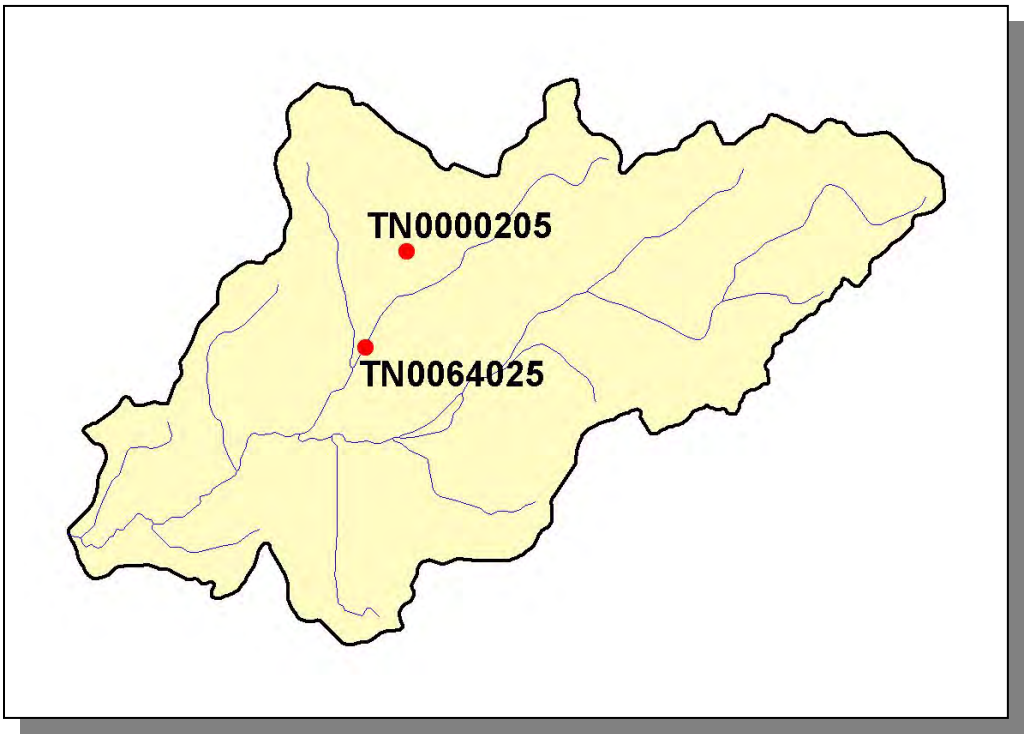

Figure 4-68. Location of Active NPDES Sites in Subwatershed 080102080109. *More information, including the names of facilities, is provided in Appendix IV.*

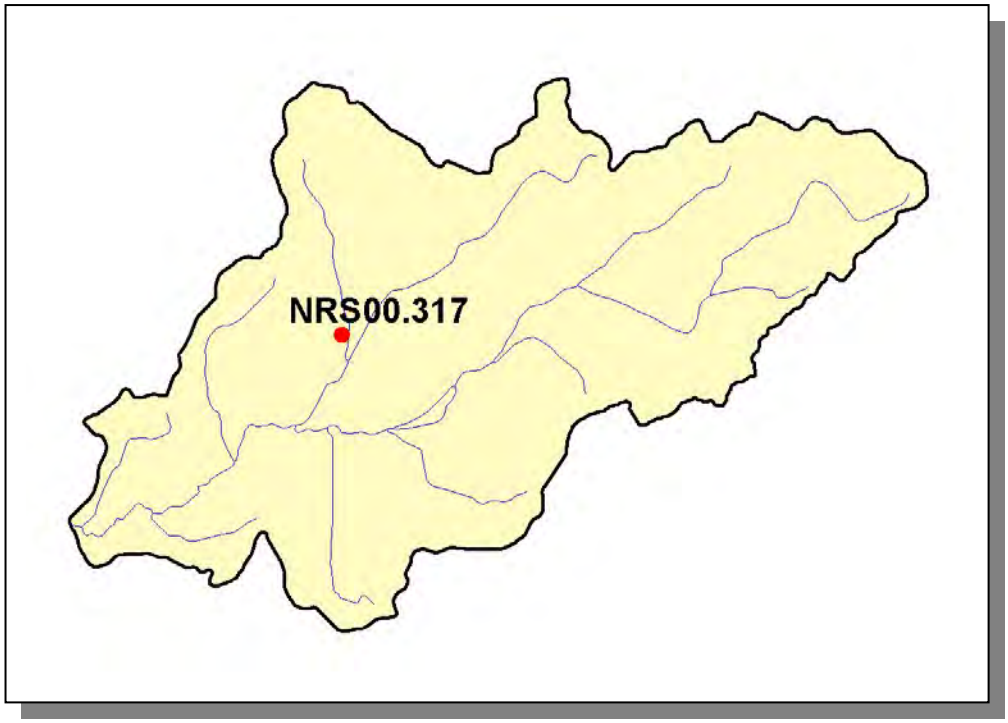

Figure 4-69. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 080102080109. *More information is provided in Appendix IV.*

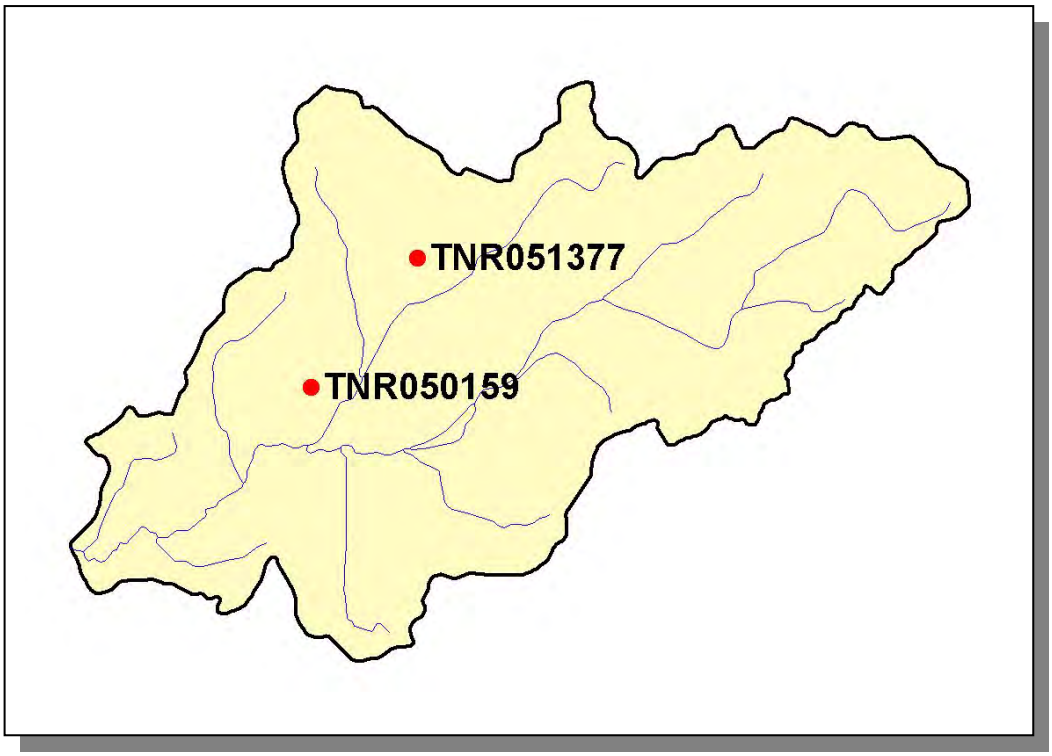

Figure 4-70. Location of TMSP Sites in Subwatershed 080102080109. *More information, including the names of facilities, is provided in Appendix IV.*

4.2.A.ix.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
176	305	<5	<5	100	<5

Table 4-57. Summary of Livestock Count Estimates in Subwatershed 080102080109. *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
Hardeman	9,184	15,877	62	28	5,221	144

Table 4-58. Summary of Livestock Count Estimates in Hardeman 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)
Hardeman	247.1	247.1	5.0	18.6

Table 4-59. Forest Acreage and Annual Removal Rates (1987-1994) in Hardeman County.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	1.23
Grass (Hayland)	0.39
Grass, Forbs, Legumes (Mixed Pasture)	1.06
Corn (Row Crops)	11.41
Cotton (Row Crops)	25.79
Sorghum (Row Crops)	3.04
Soybeans (Row Crops)	12.89
Wheat (Close-Grown Cropland)	15.03
Summer Fallow (Other Cropland)	6.11
Other Cropland not Planted	4.23
Conservation Reserve Program Lands	0.27
Farmsteads and Ranch Headquarters	0.97

Table 4-60. Annual Estimated Total Soil Loss in Subwatershed 080102080109.

4.2.A.x. 080102080110 (Short Creek).

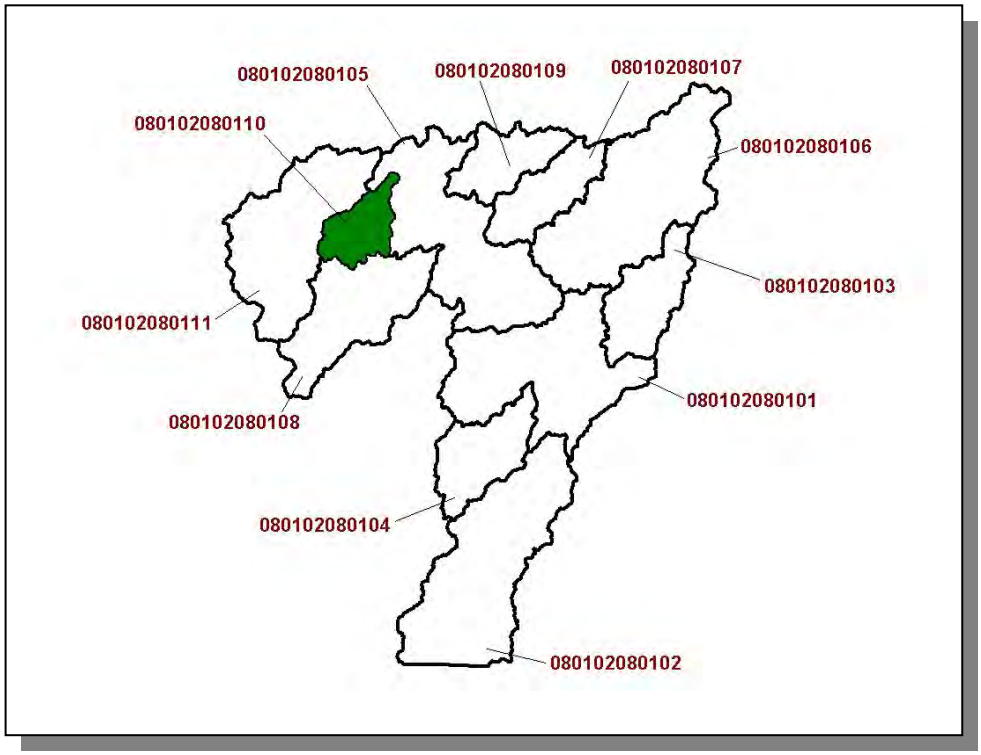

Figure 4-71. Location of Subwatershed 080102080110. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

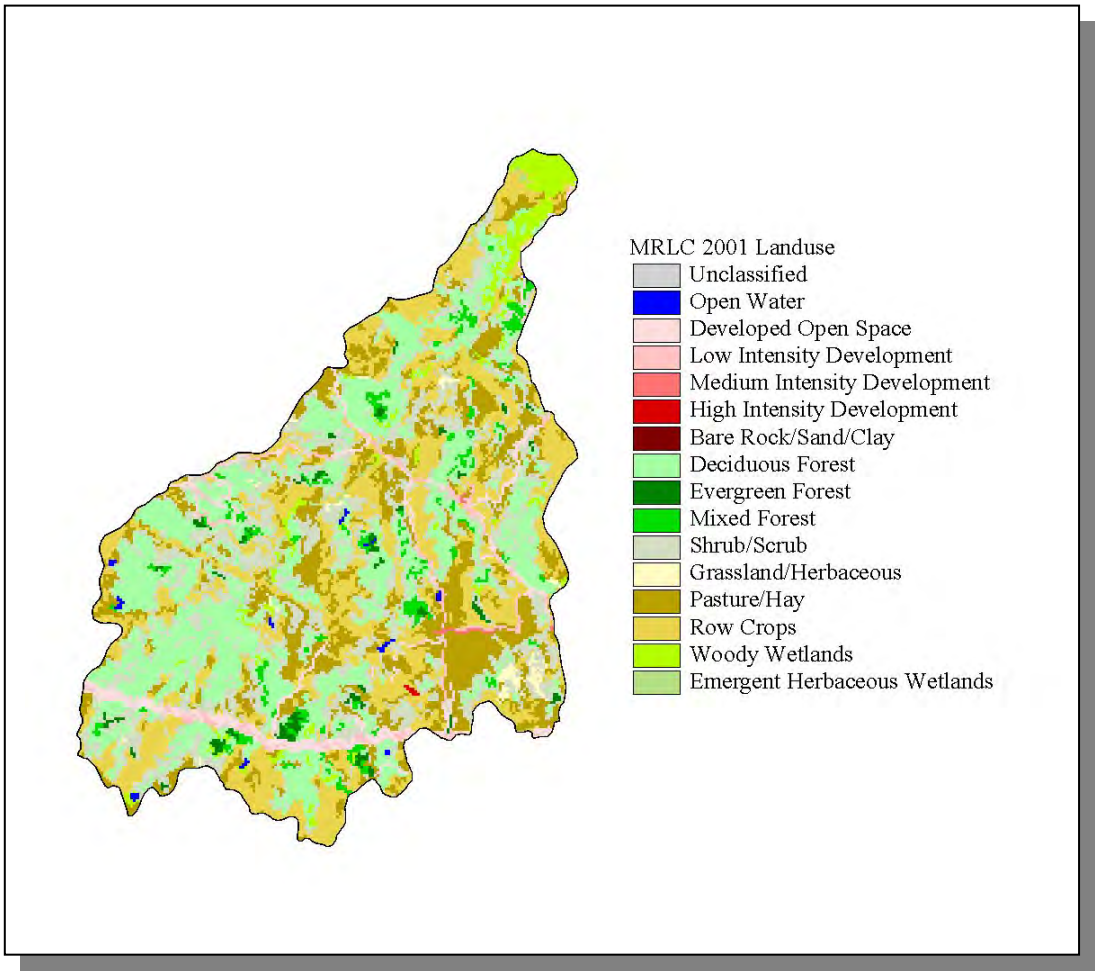

Figure 4-72. Illustration of Land Use Distribution in Subwatershed 080102080110.

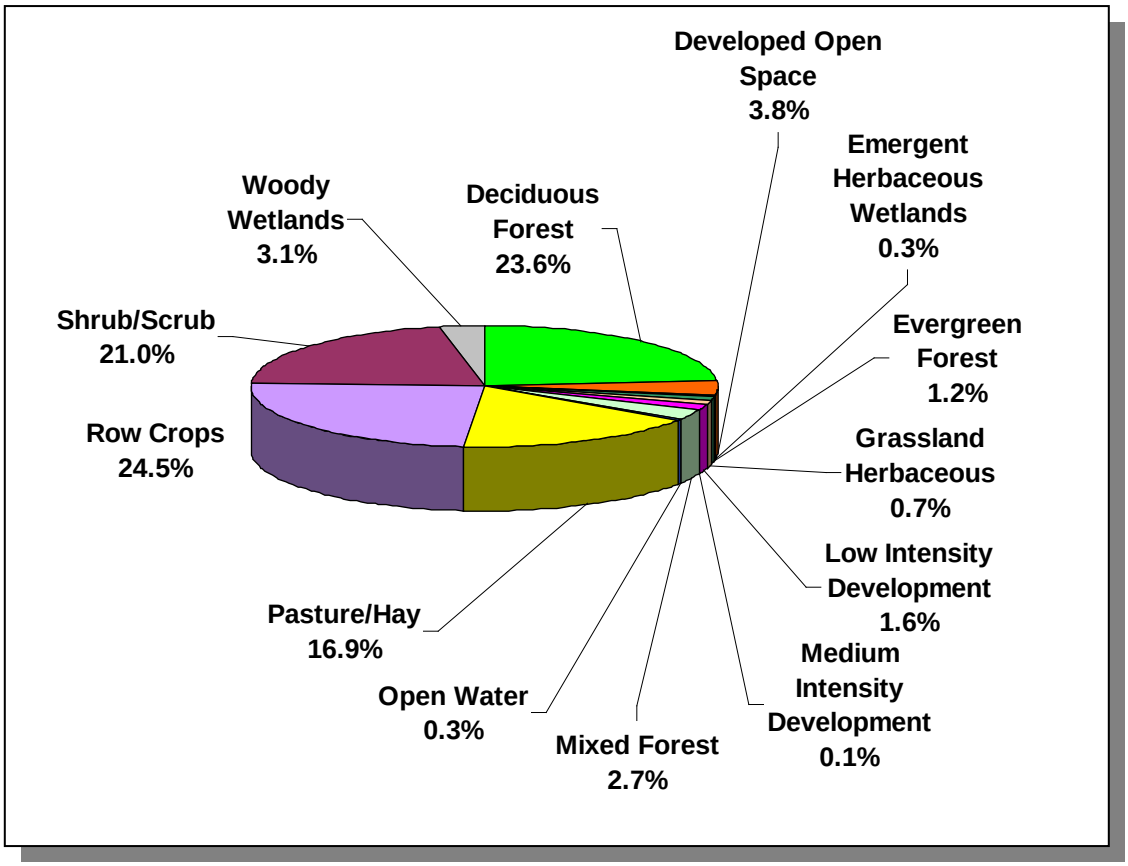

Figure 4-73. Land Use Distribution in Subwatershed 080102080110. *More information is provided in Appendix IV.*

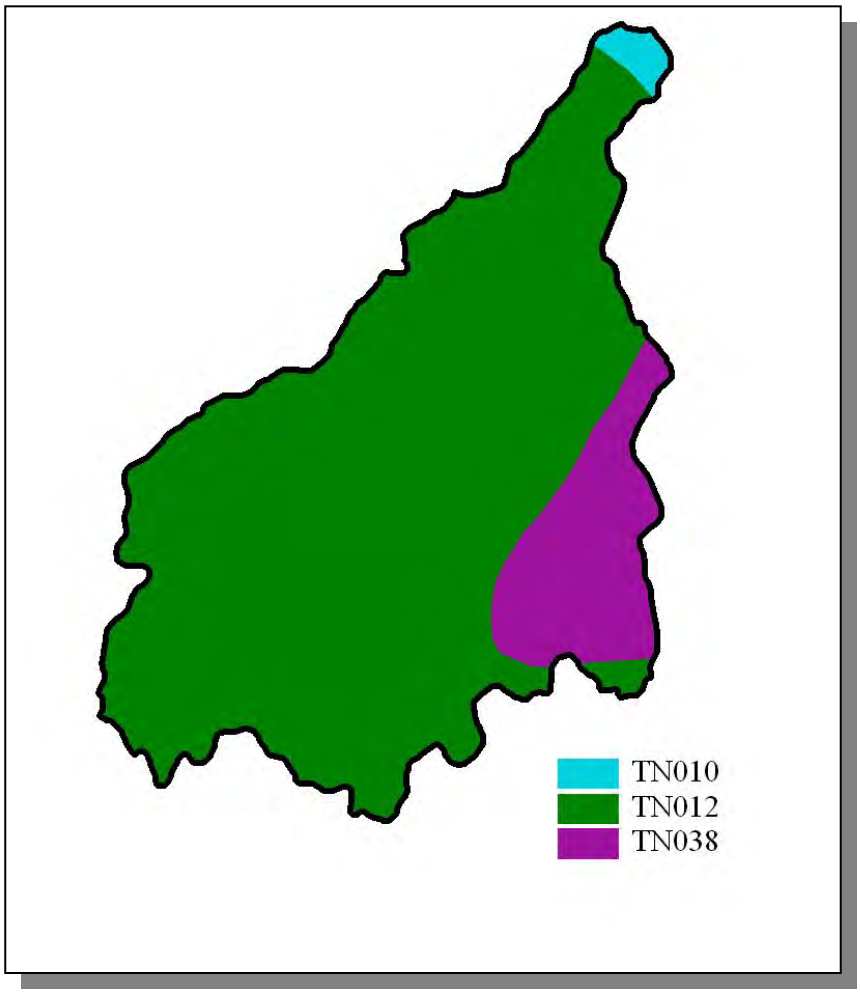

Figure 4-74. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080110.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN010	81.00	C	1.33	5.11	Silty Loam	0.44
TN012	1.00	C	2.52	5.13	Silty Loam	0.39
TN038	9.00	C	1.65	5.20	Silty Loam	0.46

Table 4-61. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080110. *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)
Hardeman	23,377	24,702	28,105	1.35	316	334	380	20.3

Table 4-62. Population Estimates in Subwatershed 080102080110.

Figure 4-75. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 080102080110. *More information, including site names and locations, is provided in Appendix IV.*

4.2.A.x.a. Point Source Contributions.

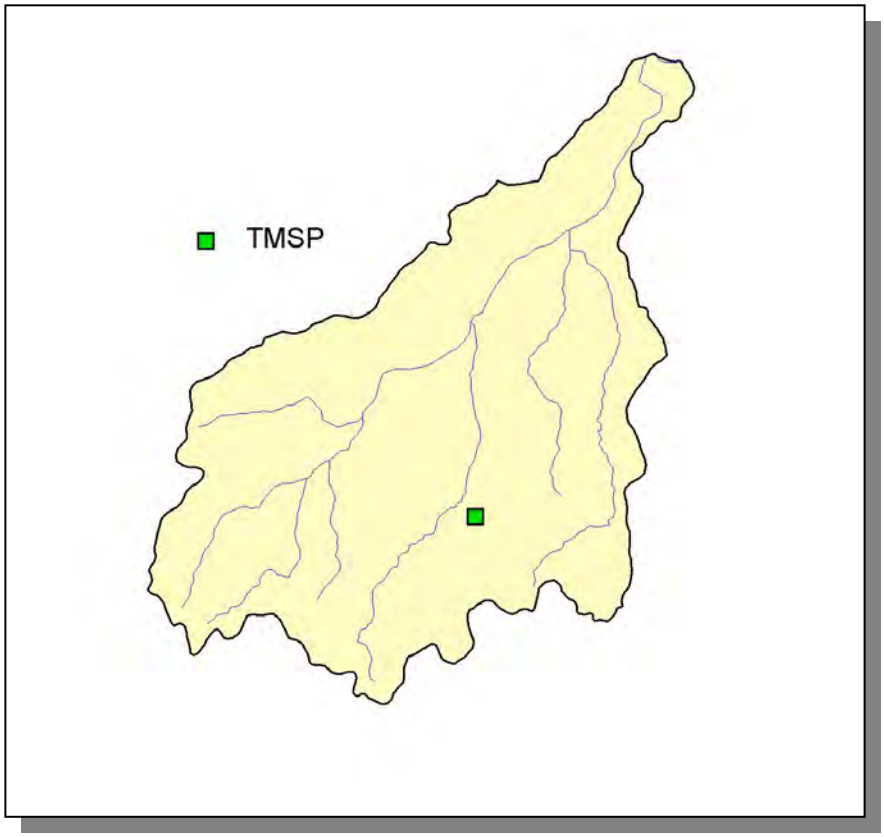

Figure 4-76. Location of Permits Issued in Subwatershed 0801020810. *More information, including the names of facilities, is provided in Appendix IV.*

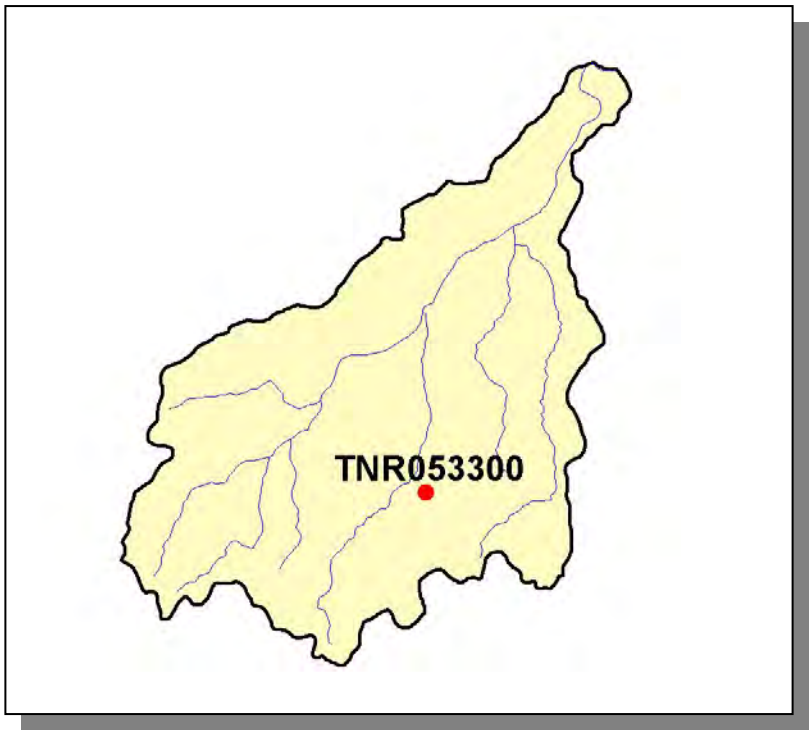

Figure 4-77. Location of TMSP Sites in Subwatershed 080102080110. *More information, including the names of facilities, is provided in Appendix IV.*

4.2.A.x.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS				
Beef Cow	Cattle	Milk Cow	Hogs	Sheep
160	276	<5	91	<5

Table 4-63. Summary of Livestock Count Estimates in Subwatershed 080102080110. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves.*

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Hardeman	9,184	15,877	62	28	5,221	144

Table 4-64. Summary of Livestock Count Estimates in Hardeman 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)
Hardeman	247.1	247.1	5.0	18.6

Table 4-65. Forest Acreage and Annual Removal Rates (1987-1994) in Hardeman County.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	1.23
Grass (Hayland)	0.39
Grass, Forbs, Legumes (Mixed Pasture)	1.06
Corn (Row Crops)	11.41
Cotton (Row Crops)	25.79
Sorghum (Row Crops)	3.04
Soybeans (Row Crops)	12.89
Wheat (Close-Grown Cropland)	15.03
Summer Fallow (Other Cropland)	6.11
Other Cropland not Planted	4.23
Conservation Reserve Program Lands	0.27
Farmsteads and Ranch Headquarters	0.97

Table 4-66. Annual Estimated Total Soil Loss in Subwatershed 080102080110.

4.2.A.xi. 080102080111 (Clear Creek).

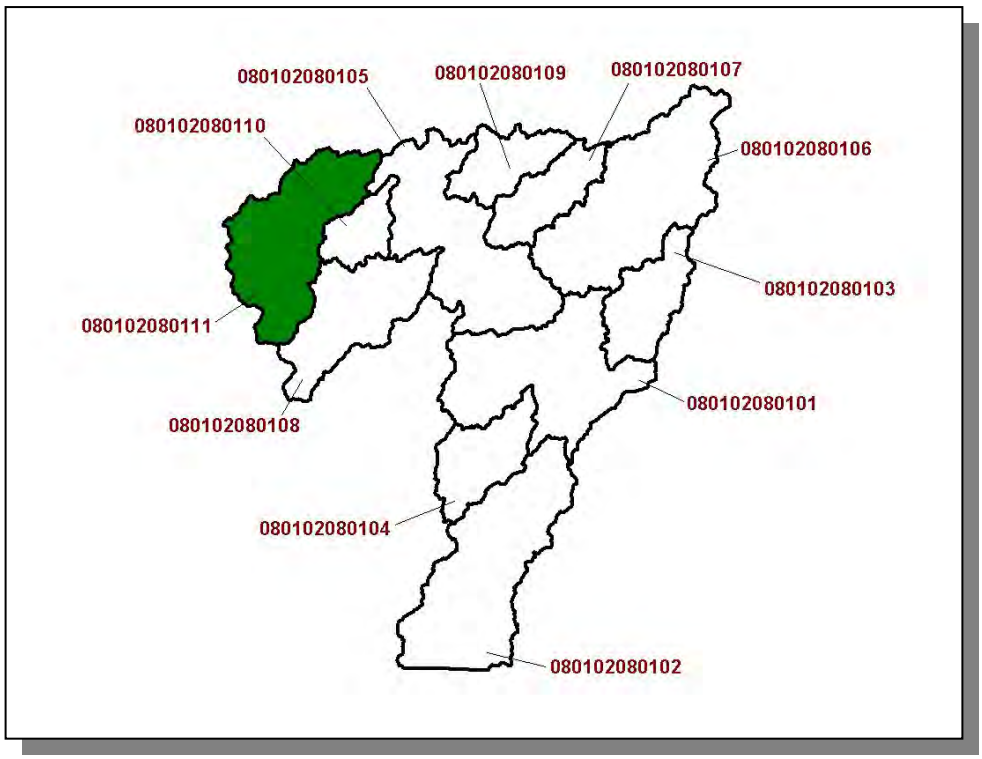

Figure 4-78. Location of Subwatershed 080102080111. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

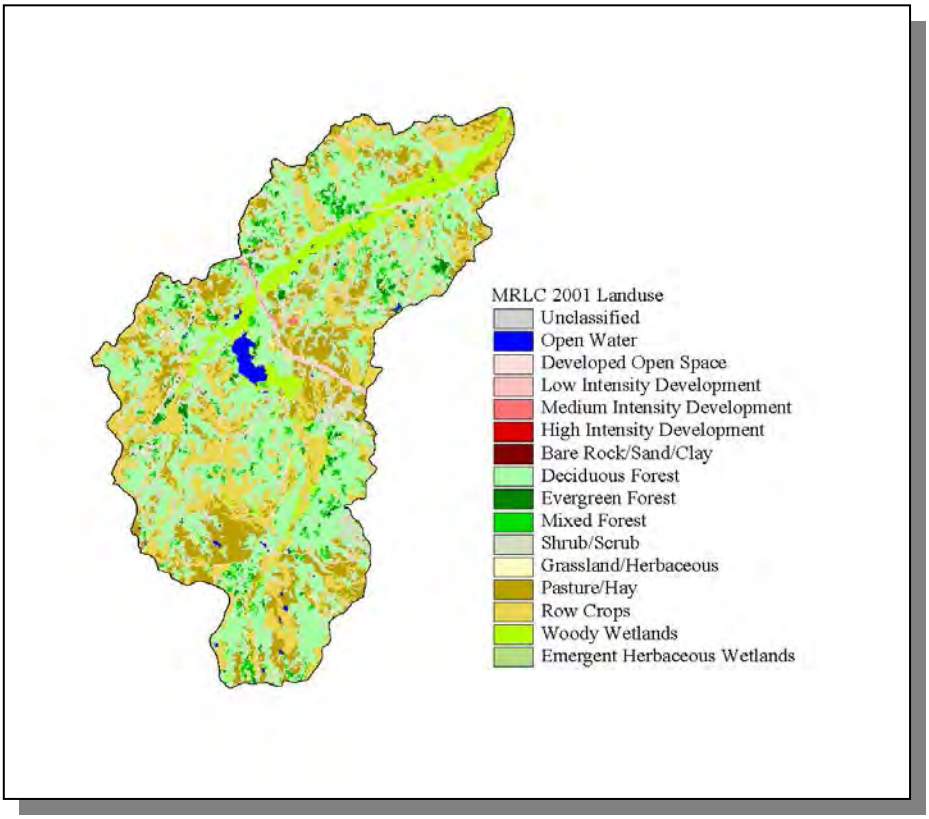

Figure 4-79. Illustration of Land Use Distribution in Subwatershed 080102080111.

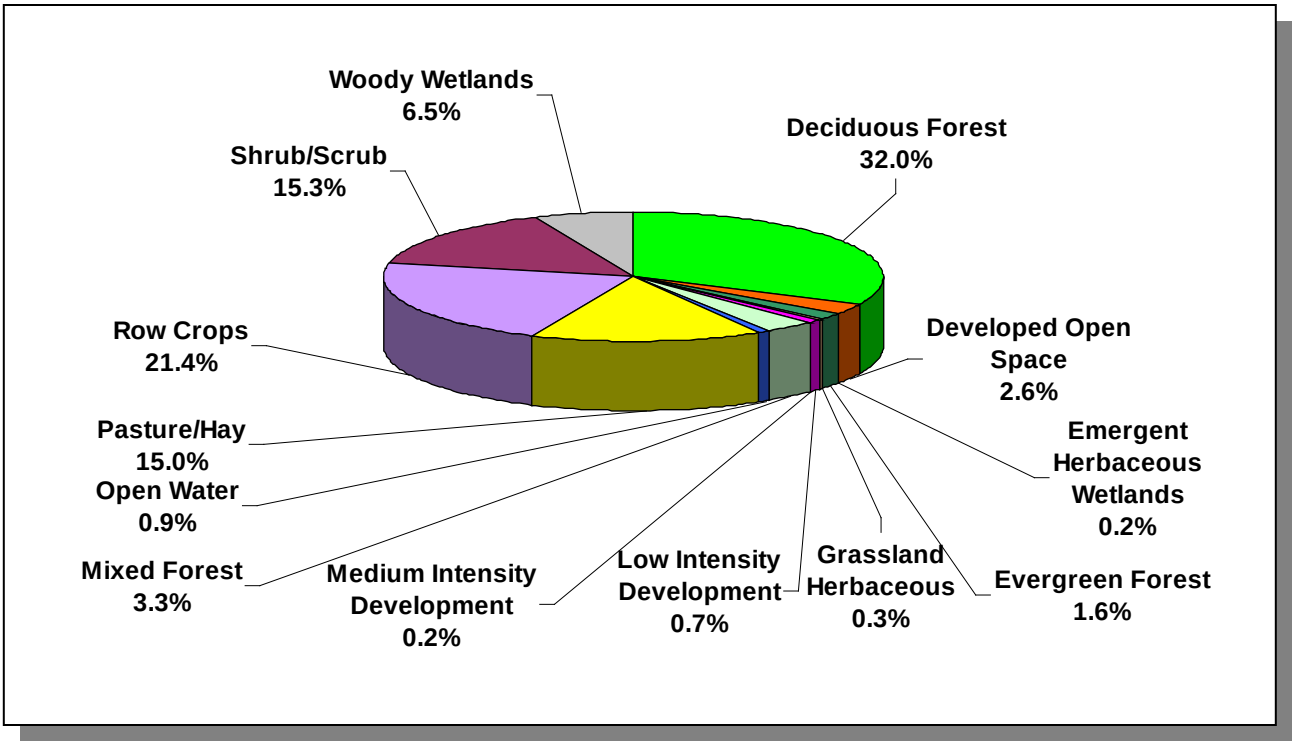

Figure 4-80. Land Use Distribution in Subwatershed 080102080111. *More information is provided in Appendix IV.*

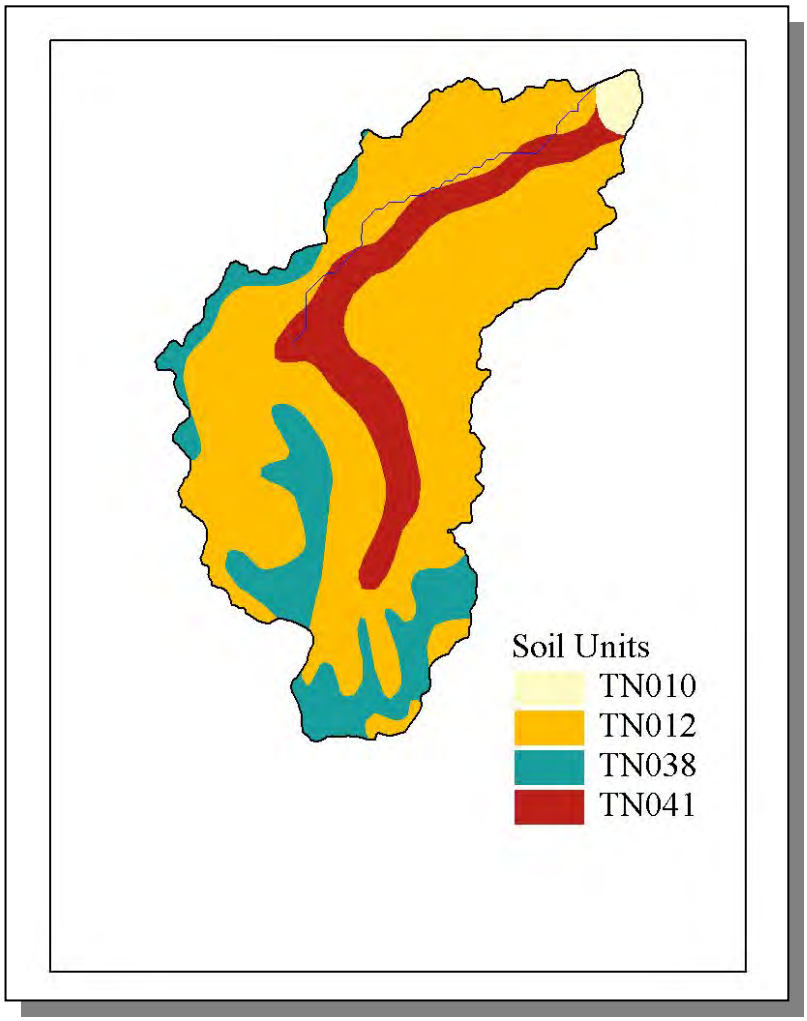

Figure 4-81. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080111.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN010	81.00	C	1.33	5.11	Silty Loam	0.44
TN012	1.00	C	2.52	5.13	Silty Loam	0.39
TN038	9.00	C	1.65	5.20	Silty Loam	0.46
TN041	59.00	C	1.35	4.98	Silty Loam	0.34

Table 4-67. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080111. *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)
Hardeman	23,377	24,702	28,105	5.27	1,231	1,301	1,480	20.2

Table 4-68. Population Estimates in Subwatershed 080102080111.

Figure 4-82. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 080102080111. *More information, including site names and locations, is provided in Appendix IV.*

4.2.A.xi.a. Point Source Contributions.

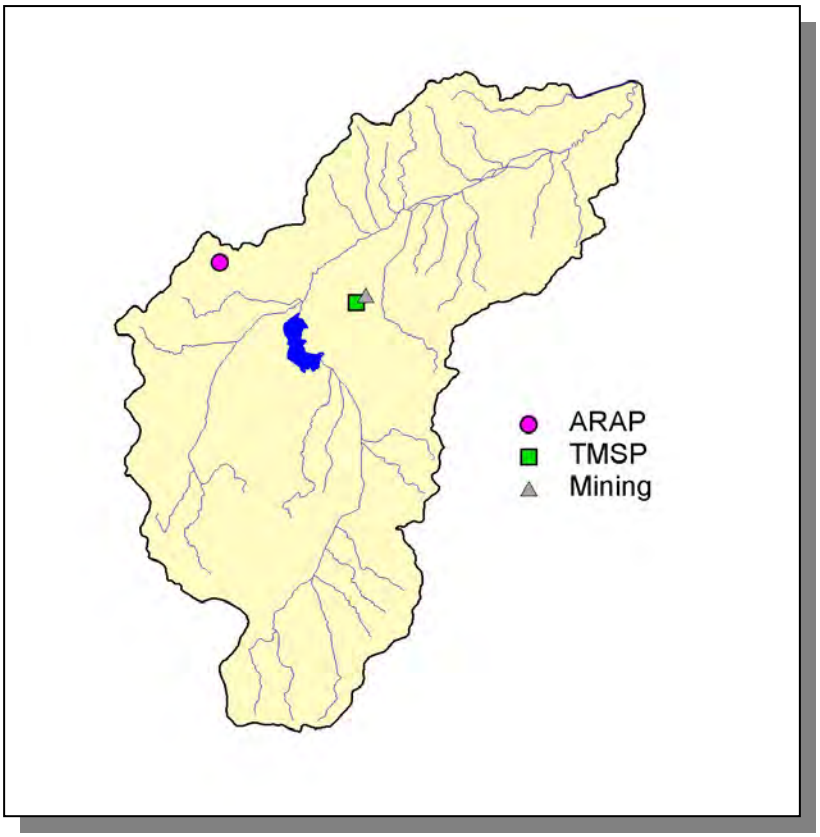

Figure 4-83. Location of Permits Issued in Subwatershed 080102080111. *More information, including the names of facilities, is provided in Appendix IV.*

Figure 4-84. Location of Active Mining Sites in Subwatershed 080102080111. *More information, including the names of mining operations, is provided in Appendix IV.*

Figure 4-85. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 080102080111. *More information is provided in Appendix IV.*

Figure 4-86. Location of TMSP Sites in Subwatershed 080102080111. *More information, including the names of facilities, is provided in Appendix IV.*

4.2.A.xi.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
604	1,044	<5	<5	343	9

Table 4-69. Summary of Livestock Count Estimates in Subwatershed 080102080111. *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
Hardeman	9,184	15,877	62	28	5,221	144

Table 4-70. Summary of Livestock Count Estimates in Hardeman 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)
Hardeman	247.1	247.1	5.0	18.6

Table 4-71. Forest Acreage and Annual Removal Rates (1987-1994) in Hardeman County.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	1.23
Grass (Hayland)	0.39
Grass, Forbs, Legumes (Mixed Pasture)	1.06
Corn (Row Crops)	11.41
Cotton (Row Crops)	25.79
Sorghum (Row Crops)	3.04
Soybeans (Row Crops)	12.89
Wheat (Close-Grown Cropland)	15.03
Other Cropland not Planted	4.23
Summer Fallow (Other Cropland)	6.11
Conservation Reserve Program Lands	0.27
Farmsteads and Ranch Headquarters	0.97

Table 4-72. Annual Estimated Total Soil Loss in Subwatershed 080102080111.

4.2.B. 0801020802.

Figure 4-87. Location of Subwatershed 0801020802. *All Hatchie River HUC-10 subwatershed boundaries in Tennessee are shown for reference.*

4.2.B.i. 080102080201 (Upper Spring Creek).

Figure 4-88. Location of Subwatershed 080102080201. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

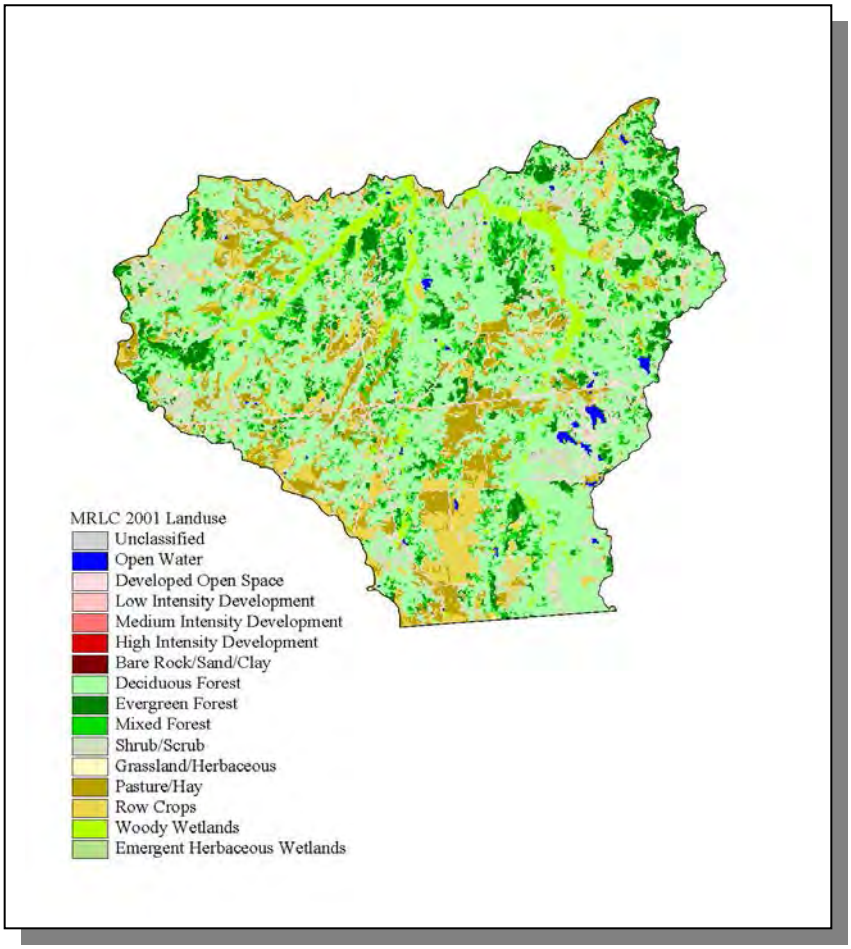

Figure 4-89. Illustration of Land Use Distribution in Subwatershed 080102080201.

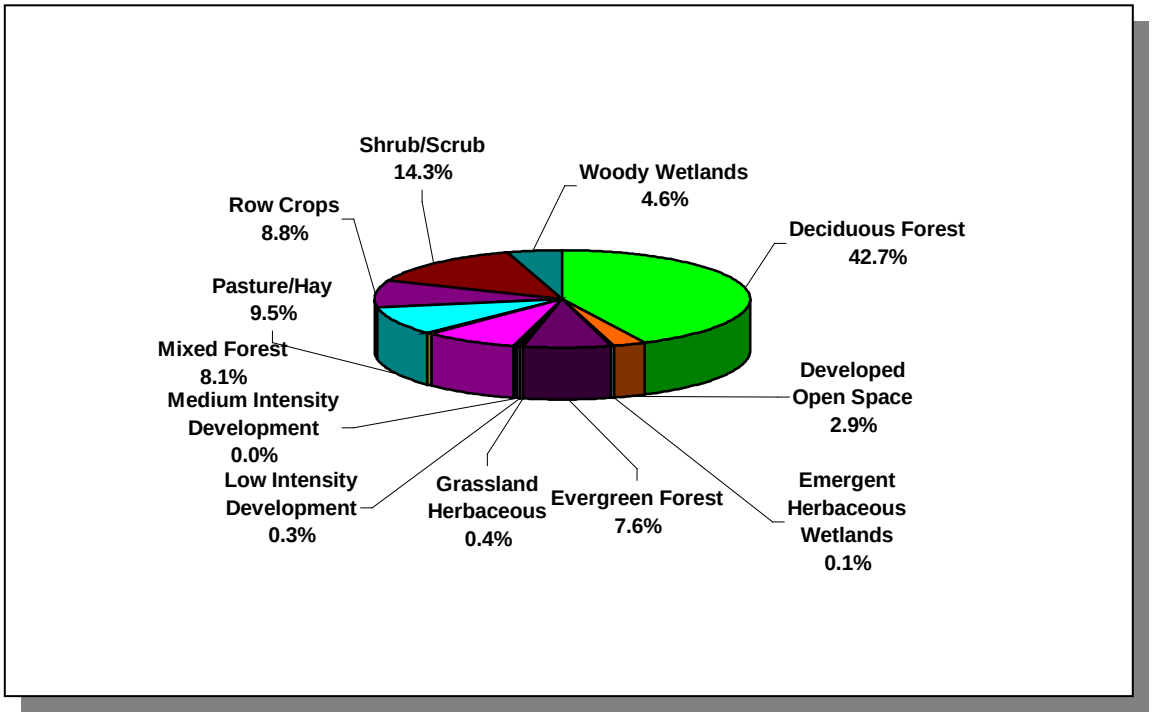

Figure 4-90. Land Use Distribution in Subwatershed 080102080201. *More information is provided in Appendix IV.*

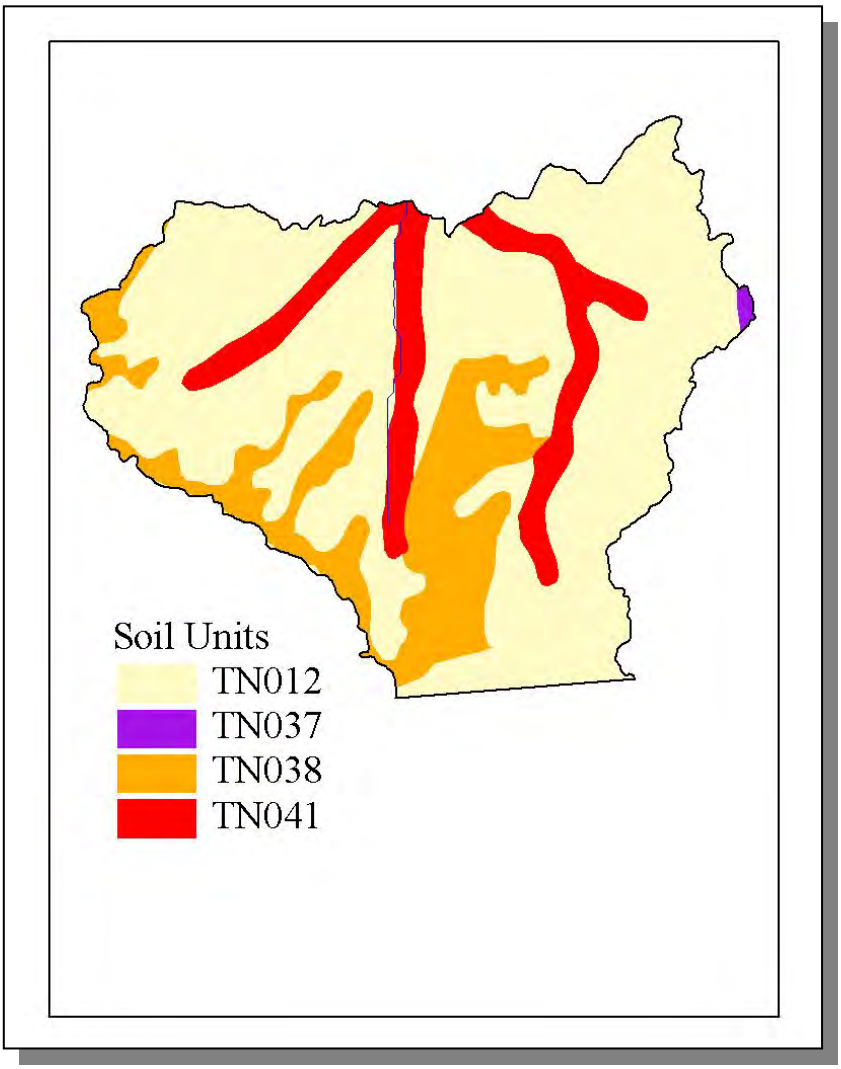

Figure 4-91. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080201.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN012	1.00	C	2.52	5.13	Silty Loam	0.39
TN037	0.00	C	3.51	4.86	Sandy Loam	0.27
TN038	9.00	C	1.65	5.20	Silty Loam	0.46

Table 4-73. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080201. *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)
Hardeman	23,377	24,702	28,105	9.11	2,130	2,250	2,560	20.2

Table 4-74. Population Estimates in Subwatershed 080102080201.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Saulsbury	Hardeman	133	75	6	62	7

Table 4-75. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 080102080201.

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

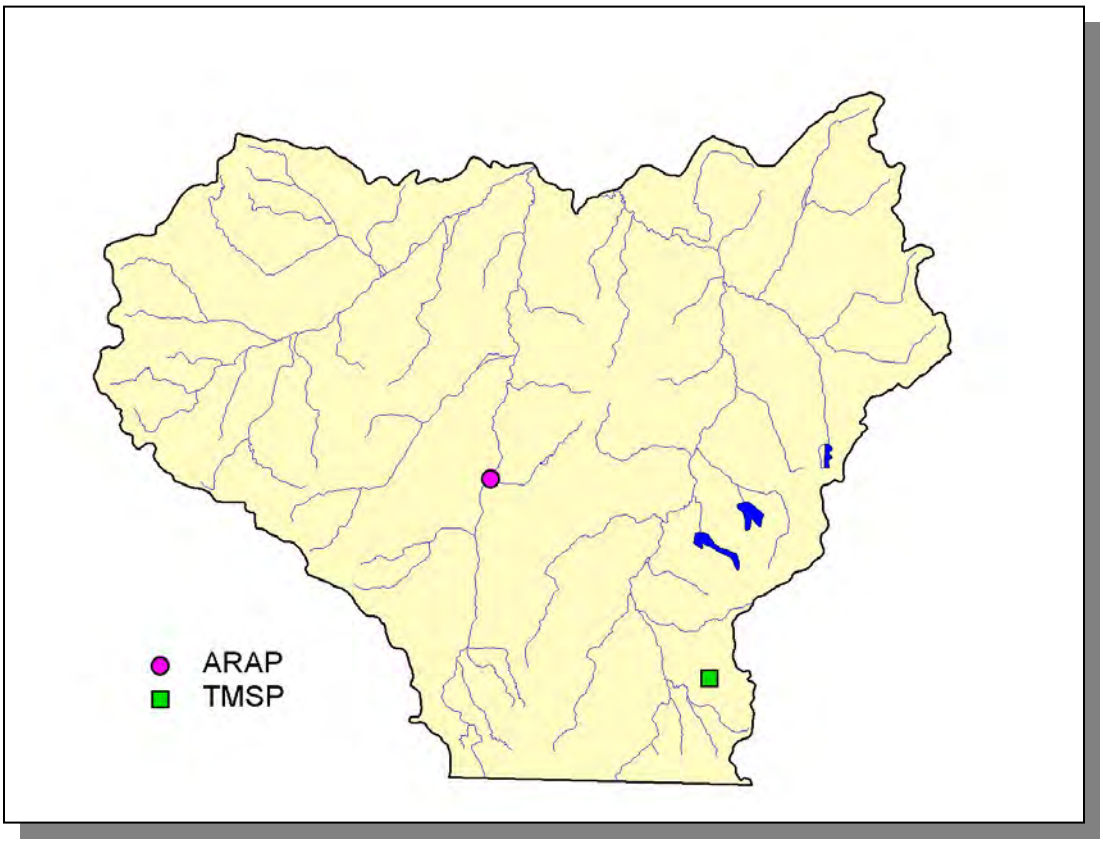

Figure 4-92. Location of Permits Issued in Subwatershed 080102080201. *More information, including the names of facilities, is provided in Appendix IV.*

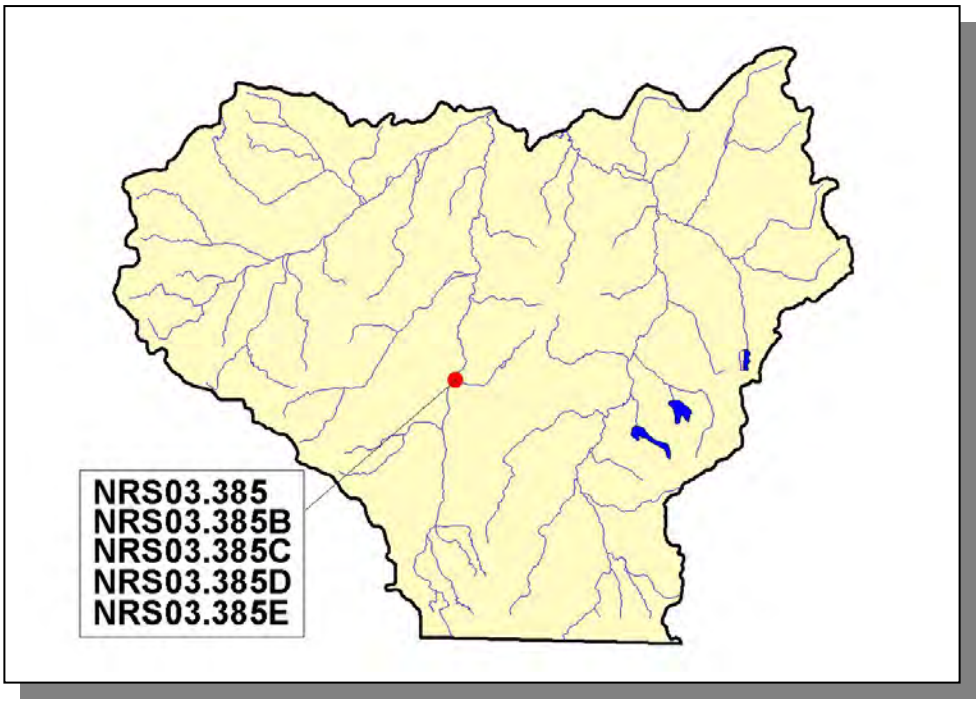

Figure 4-93. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 080102080201. *More information is provided in Appendix IV.*

Figure 4-94. Location of TMSP Sites in Subwatershed 080102080201. *More information, including the names of facilities, is provided in Appendix IV.*

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

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
574	987	<5	<5	309	9

Table 4-76. Summary of Livestock Count Estimates in Subwatershed 080102080201. *According 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
Benton	4,586	7,281	12	<5	47	0
Hardeman	9,184	15,877	62	28	5,221	144

Table 4-77. Summary of Livestock Count Estimates in Benton and Hardeman 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)
Benton	177.0	177.0	19.4	97.9
Hardeman	247.1	247.1	5.0	18.6

Table 4-78. Forest Acreage and Annual Removal Rates (1987-1994) in Benton and Hardeman Counties.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	1.23
Grass (Hayland)	0.61
Grass, Forbs, Legumes (Mixed Pasture)	1.06
Corn (Row Crops)	11.24
Cotton (Row Crops)	25.48
Sorghum (Row Crops)	3.04
Soybeans (Row Crops)	12.99
Wheat (Close-Grown Cropland)	15.03
Summer Fallow (Other Cropland)	6.11
Other Cropland not Planted	4.23
Conservation Reserve Program Lands	0.39
Farmsteads and Ranch Headquarters	0.96

Table 4-79. Annual Estimated Total Soil Loss in Subwatershed 080102080201.

4.2.B.ii. 080102080202 (Lower Spring Creek).

Figure 4-95. Location of Subwatershed 080102080202. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

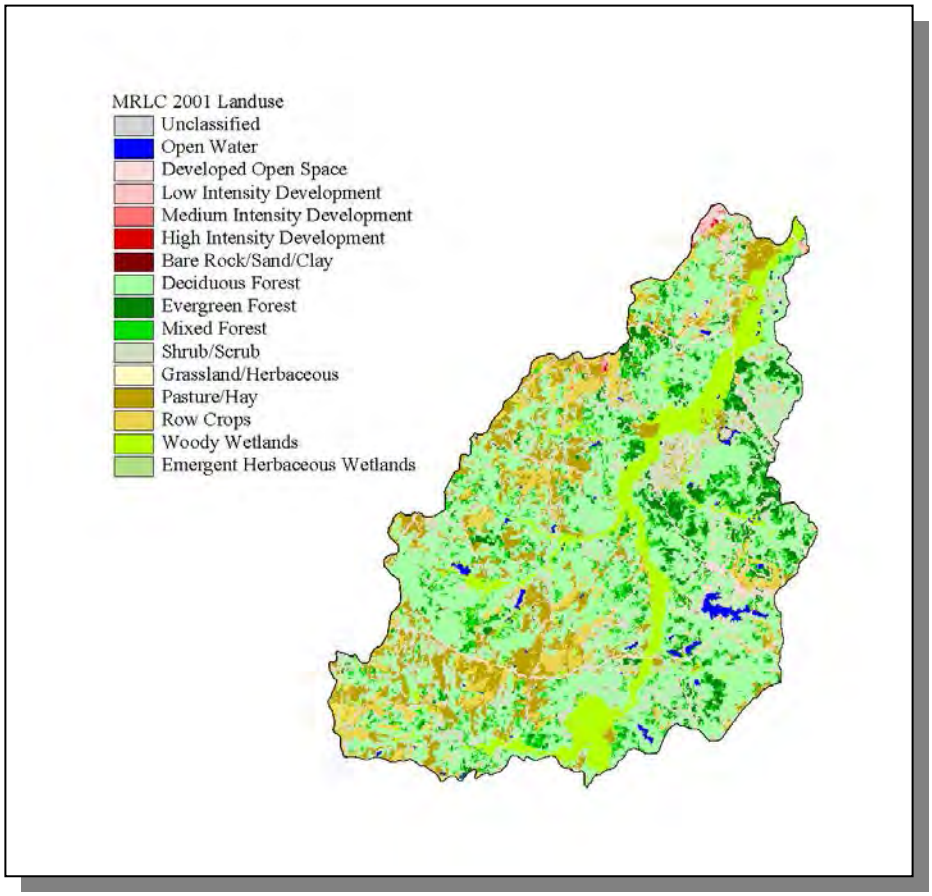

Figure 4-96. Illustration of Land Use Distribution in Subwatershed 080102080202.

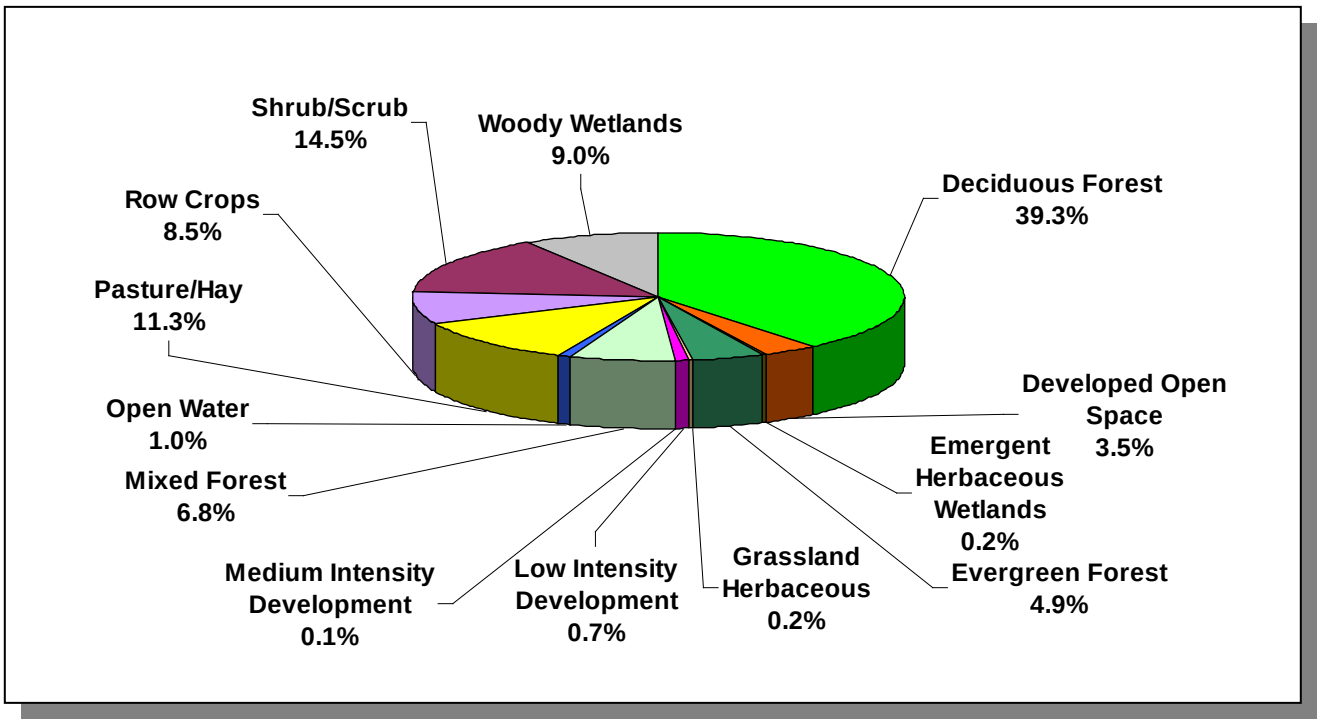

Figure 4-97. Land Use Distribution in Subwatershed 080102080202. *More information is provided in Appendix IV.*

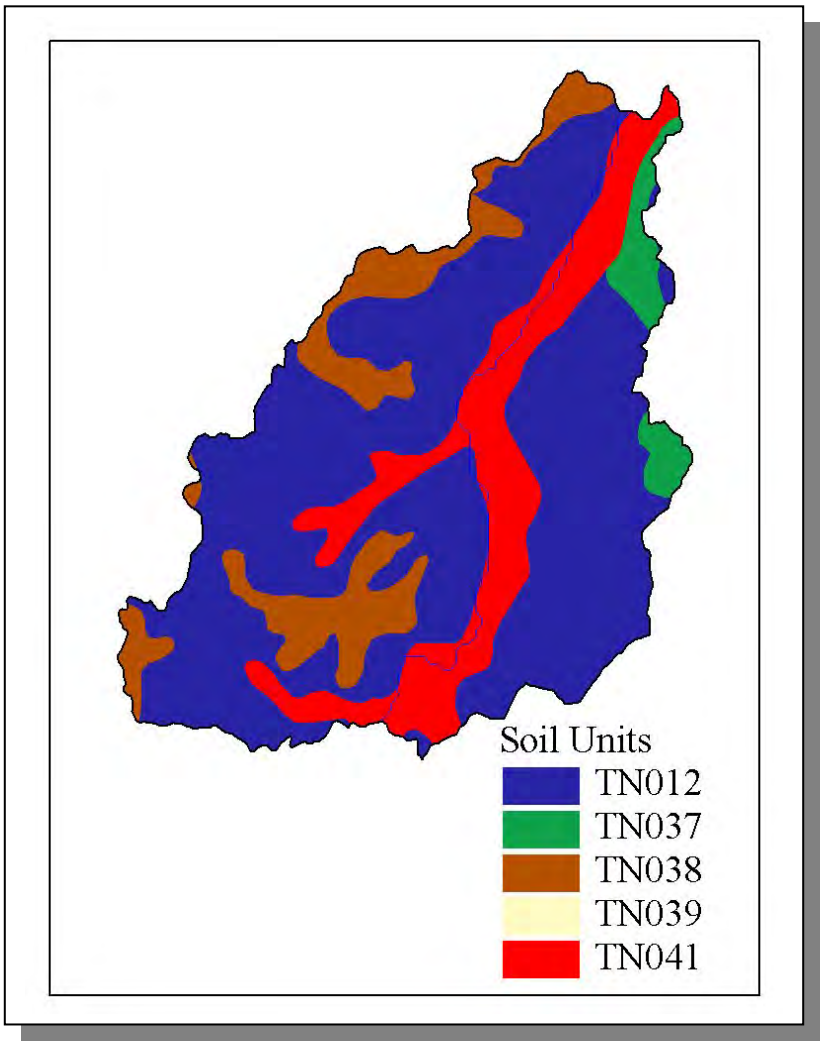

Figure 4-98. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080202.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN012	1.00	C	2.52	5.13	Silty Loam	0.39
TN037	0.00	C	3.51	4.86	Sandy Loam	0.27
TN038	9.00	C	1.65	5.20	Silty Loam	0.46
TN039	24.00	C	1.35	5.20	Silty Loam	0.47
TN041	59.00	C	1.35	4.98	Silty Loam	0.34

Table 4-80. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080202. *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)
Hardeman	23,377	24,702	28,105	8.58	2,005	2,118	2,410	20.2

Table 4-81. Population Estimates in Subwatershed 080102080202.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Bolivar	Nardeman	5,969	2,098	1,915	161	22

Table 4-82. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 080102080202.

Figure 4-99. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 080102080202. *More information, including site names and locations, is provided in Appendix IV.*

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

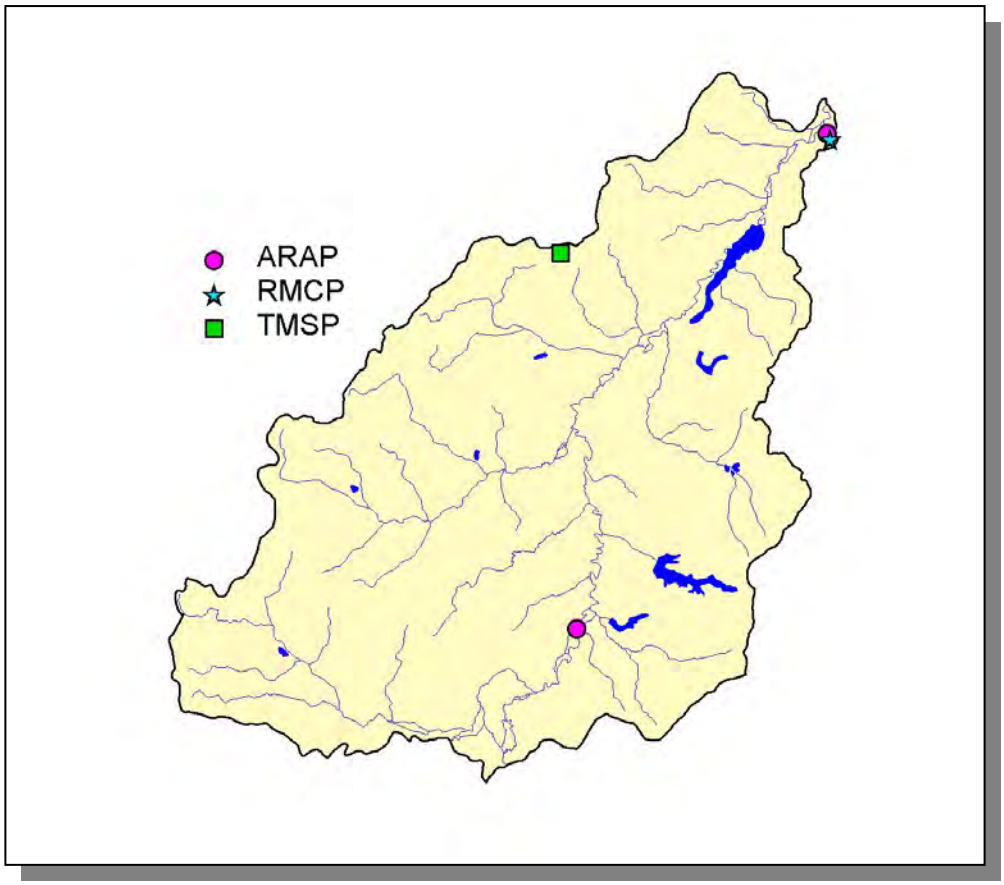

Figure 4-100. Location of Permits Issued in Subwatershed 080102080202. *More information, including the names of facilities, is provided in Appendix IV.*

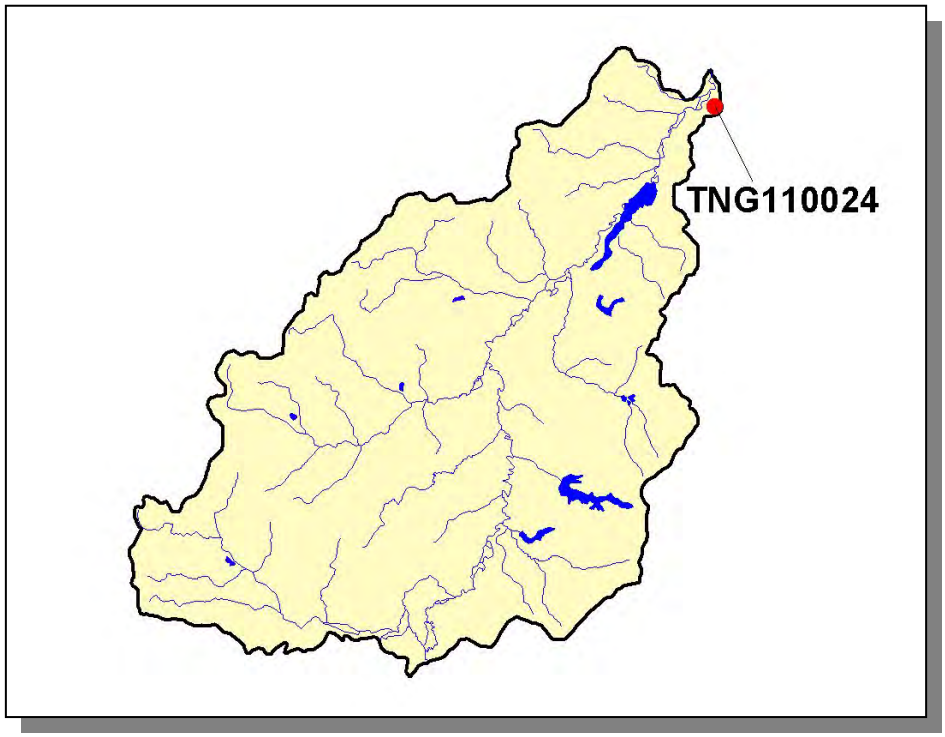

Figure 4-101. Location of Ready Mix Concrete Plants (RMCP) in Subwatershed 080102080202. *More information is provided in Appendix IV.*

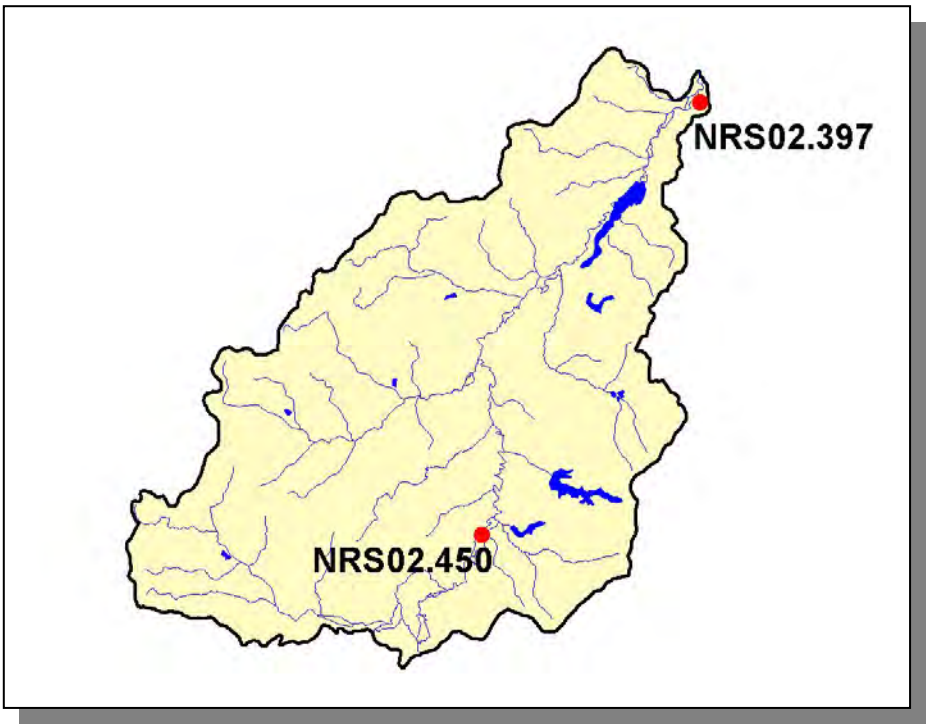

Figure 4-102. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 080102080202. *More information is provided in Appendix IV.*

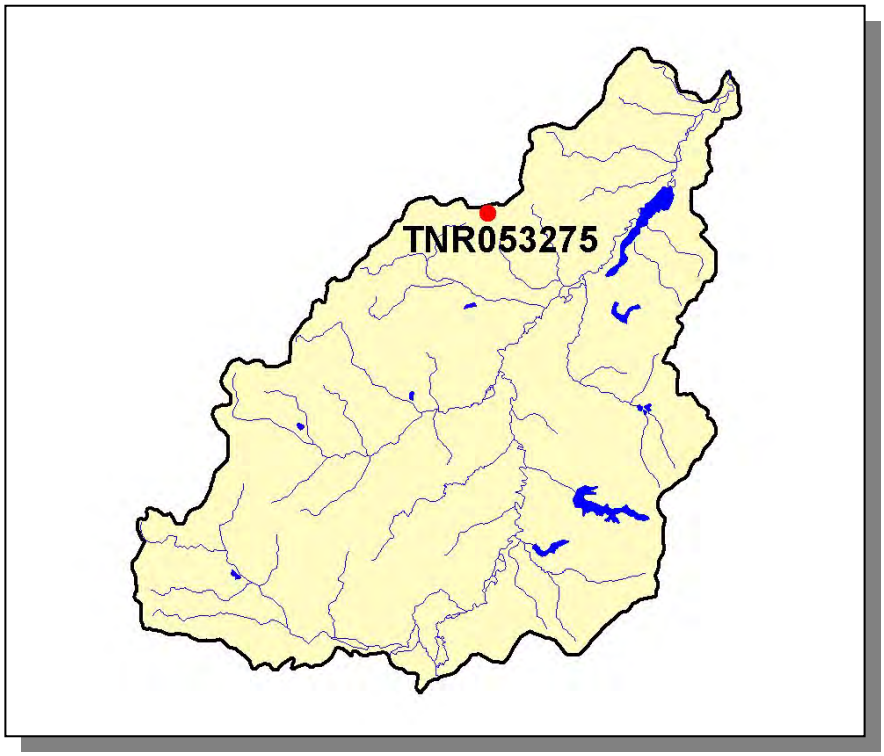

Figure 4-103. Location of TMSP Sites in Subwatershed 080102080202. *More information, including the names of facilities, is provided in Appendix IV.*

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

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
507	877	<5	<5	288	8

Table 4-83. Summary of Livestock Count Estimates in Subwatershed 080102080202. *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
Hardeman	9,184	15,877	62	28	5,221	144

Table 4-84. Summary of Livestock Count Estimates in Hardeman 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)
Hardeman	247.1	247.1	5.0	18.6

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

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	1.23
Grass (Hayland)	0.39
Grass, Forbs, Legumes (Mixed Pasture)	1.06
Corn (Row Crops)	11.41
Cotton (Row Crops)	25.79
Sorghum (Row Crops)	3.04
Soybeans (Row Crops)	12.89
Wheat (Close-Grown Cropland)	15.03
Summer Fallow (Other Cropland)	6.11
Other Cropland not Planted	4.23
Conservation Reserve Program Lands	0.27
Farmsteads and Ranch Headquarters	0.97

Table 4-86. Annual Estimated Total Soil Loss in Subwatershed 080102080202.

4.2.C. 0801020803.

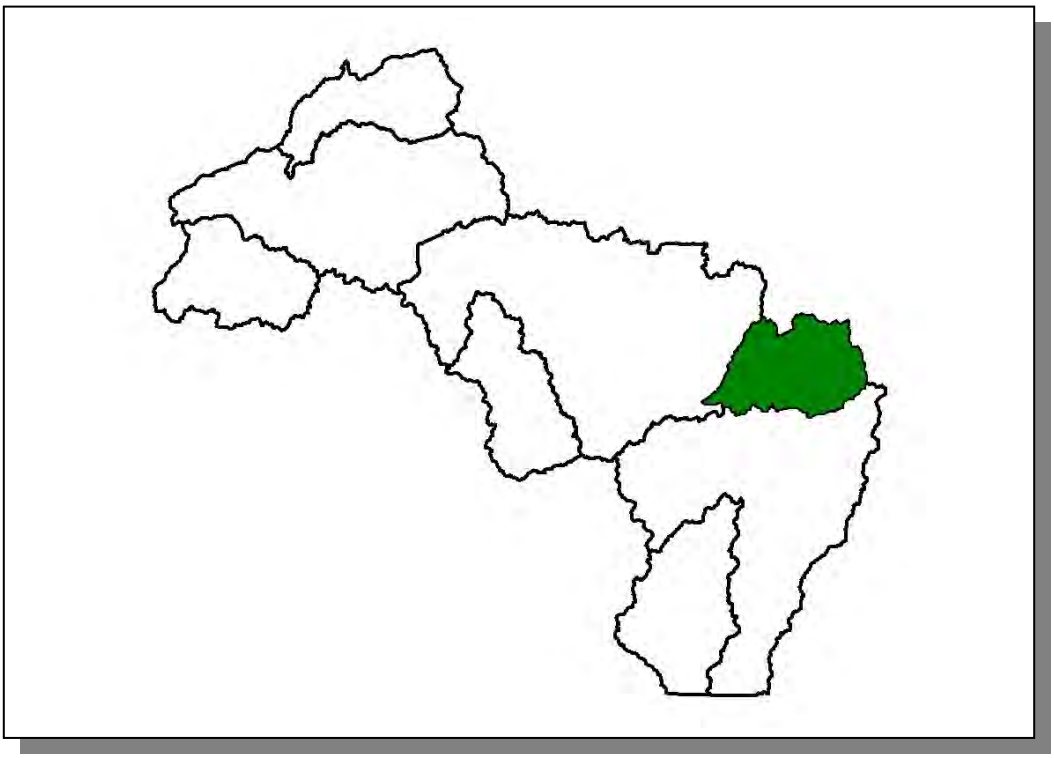

Figure 4-104. Location of Subwatershed 0801020803. *All Hatchie River HUC-10 subwatershed boundaries in Tennessee are shown for reference.*

4.2.C.i. 080102080301 (Lacy Creek).

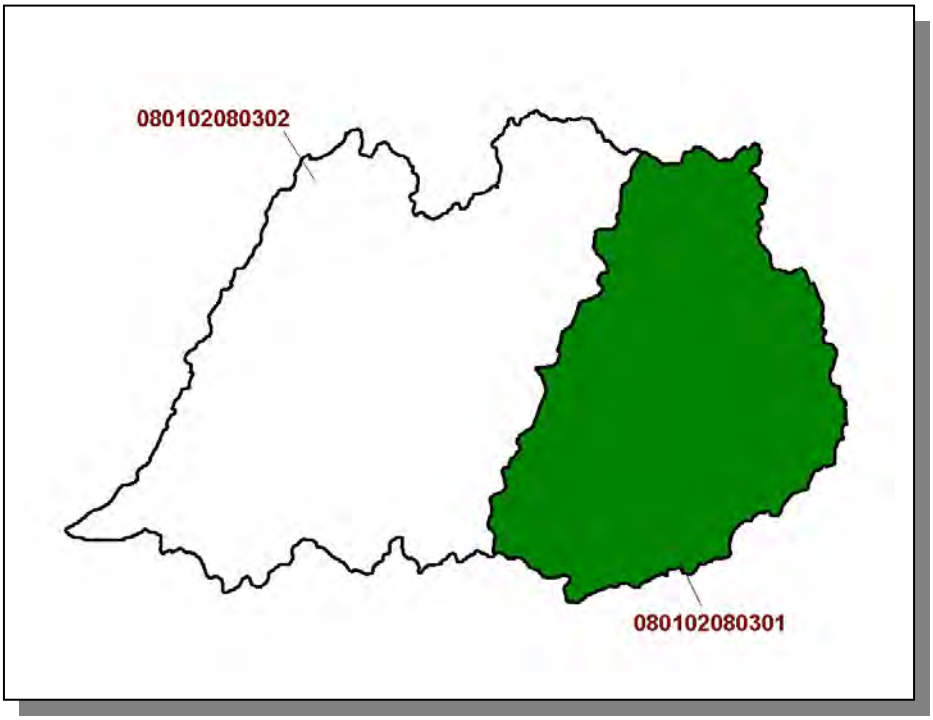

Figure 4-105. Location of Subwatershed 080102080301. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

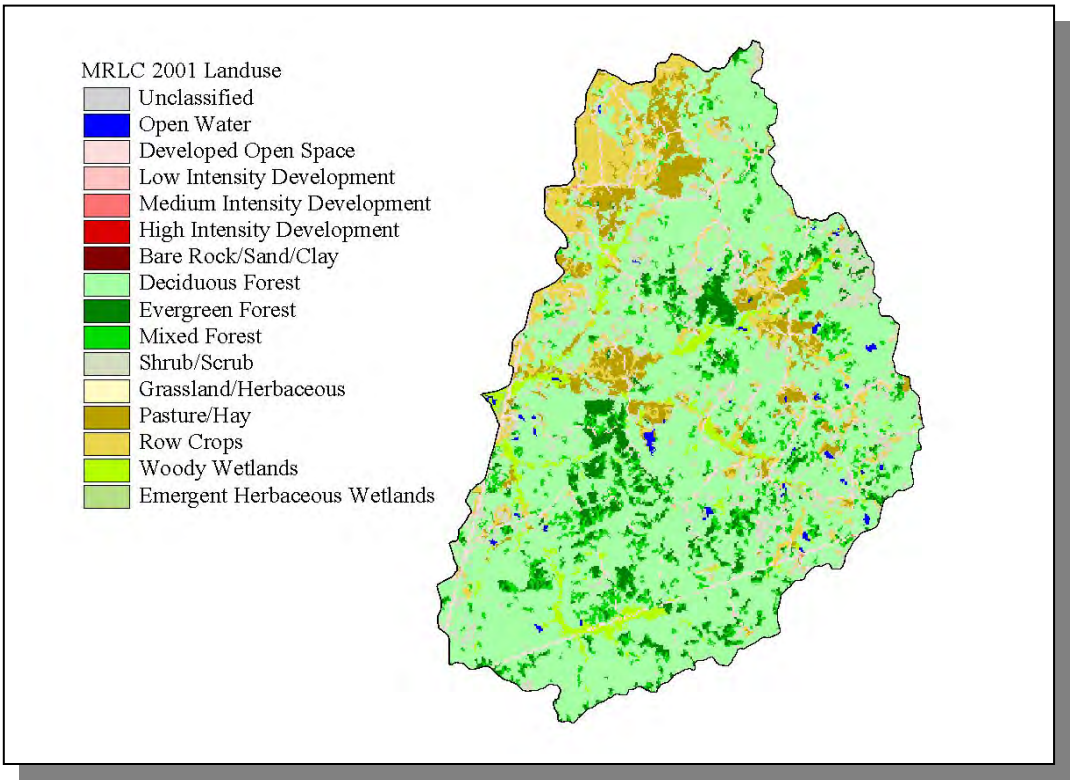

Figure 4-106. Illustration of Land Use Distribution in Subwatershed 080102080301.

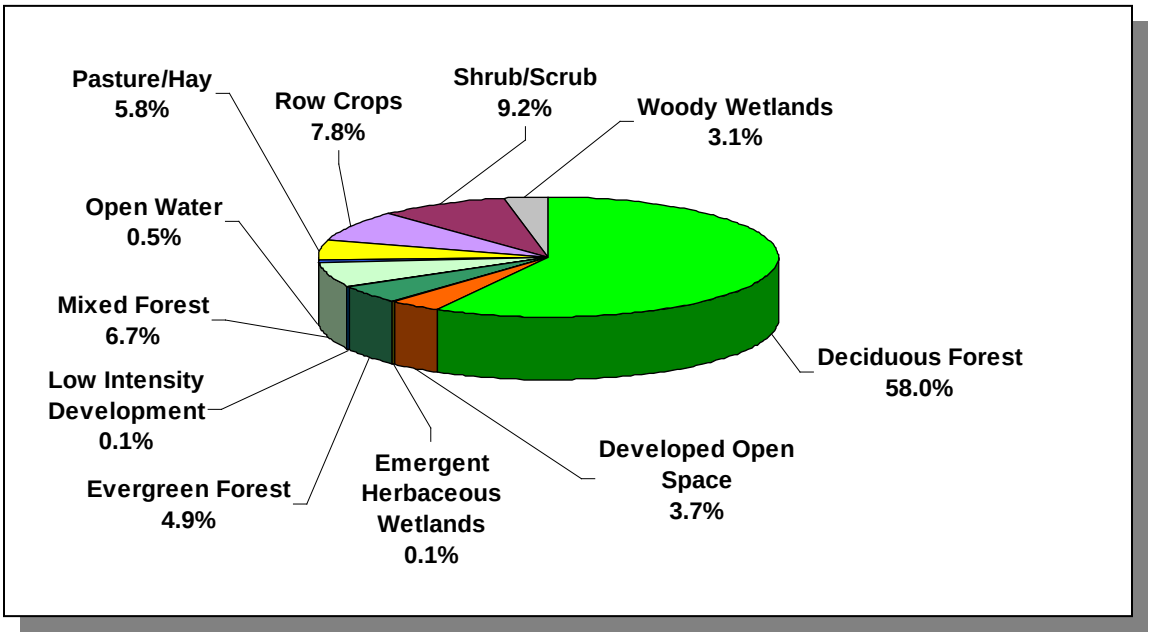

Figure 4-107. Land Use Distribution in Subwatershed 080102080301. *More information is provided in Appendix IV.*

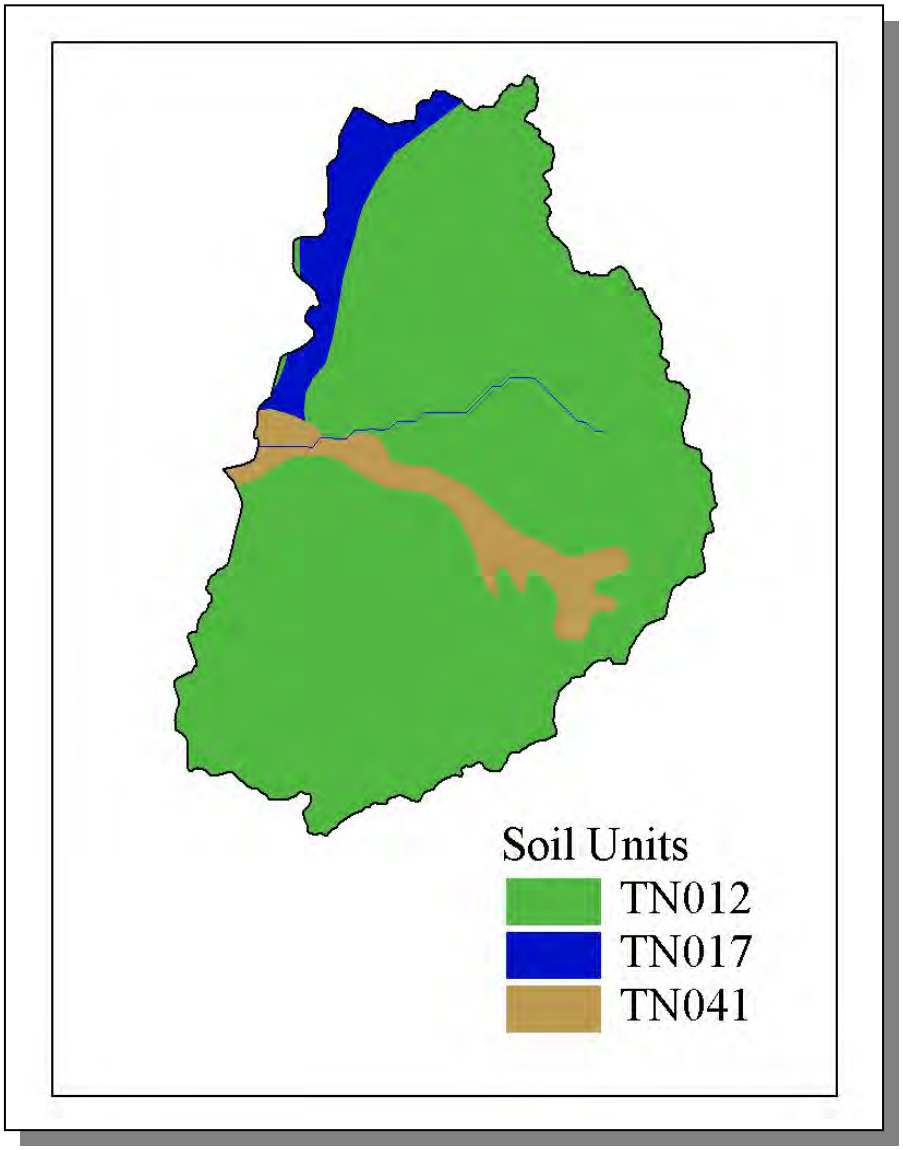

Figure 4-108. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080301.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN012	1.00	C	2.52	5.13	Silty Loam	0.39
TN017	0.00	B	1.81	5.26	Silty Loam	0.45
TN041	59.00	C	1.35	4.98	Silty Loam	0.34

Table 4-87. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080301. *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)
Chester	12,819	14,469	15,540	4.8	616	695	747	21.3
Hardeman	23,377	24,702	28,105	1.78	416	439	500	20.2
Madison	77,982	84,942	91,837	1.67	1,305	1,422	1,537	17.8
Total	**114,178**	**124,113**	**135,482**		**2,337**	**2,556**	**2,784**	**19.1**

Table 4-88. Population Estimates in Subwatershed 080102080301.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Medon	Madison	107	60	0	56	4

Table 4-89. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 080102080301.

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

Figure 4-109. Location of Permits Issued in Subwatershed 080102080301. *More information, including the names of facilities, is provided in Appendix IV.*

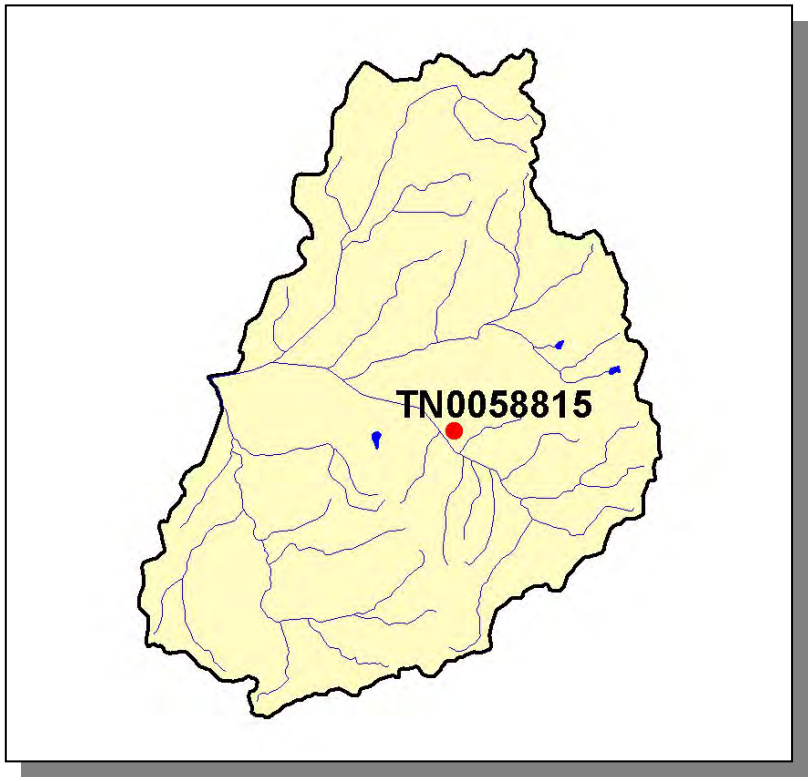

Figure 4-110. Location of Water Treatment Plants in Subwatershed 080102080301. *More information, including the names of facilities, is provided in Appendix IV.*

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

LIVESTOCK COUNTS				
Beef Cow	Cattle	Chickens (Layers)	Hogs	Sheep
51	730	<5	236	<5

Table 4-90. Summary of Livestock Count Estimates in Subwatershed 080102080301. *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
Chester	0	9,108	0	14	1,334	0
Hardeman	9,184	15,877	62	28	5,221	144
Madison	0	12,437	0	476	10,210	0

Table 4-91. Summary of Livestock Count Estimates in Chester, Hardeman, and Madison 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)
Chester	99.4	99.4	0.3	1.3
Hardeman	247.1	247.1	5.0	18.6
Madison	140.7	140.7	2.4	11.5

Table 4-92. Forest Acreage and Annual Removal Rates (1987-1994) in Chester, Hardeman, and Madison Counties.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.66
Grass (Hayland)	0.50
Legumes, Grass (Hayland)	0.21
Grass, Forbs, Legumes (Mixed Pasture)	1.41
Corn (Row Crops)	11.77
Cotton (Row Crops)	19.94
Sorghum (Row Crops)	3.04
Soybeans (Row Crops)	9.08
Wheat (Close-Grown Cropland)	10.20
All Other Close-Grown Cropland	0.47
Other Vegetable and Truck Crops	19.89
Summer fallow (Other Cropland)	6.11
Other Cropland not Planted	2.10
Conservation Reserve Program Lands	0.39
Other Land in Farms	0.08
Farmsteads and Ranch Headquarters	0.48

Table 4-93. Annual Estimated Total Soil Loss in Subwatershed 080102080301.

4.2.C.ii. 080102080302 (Clover Creek).

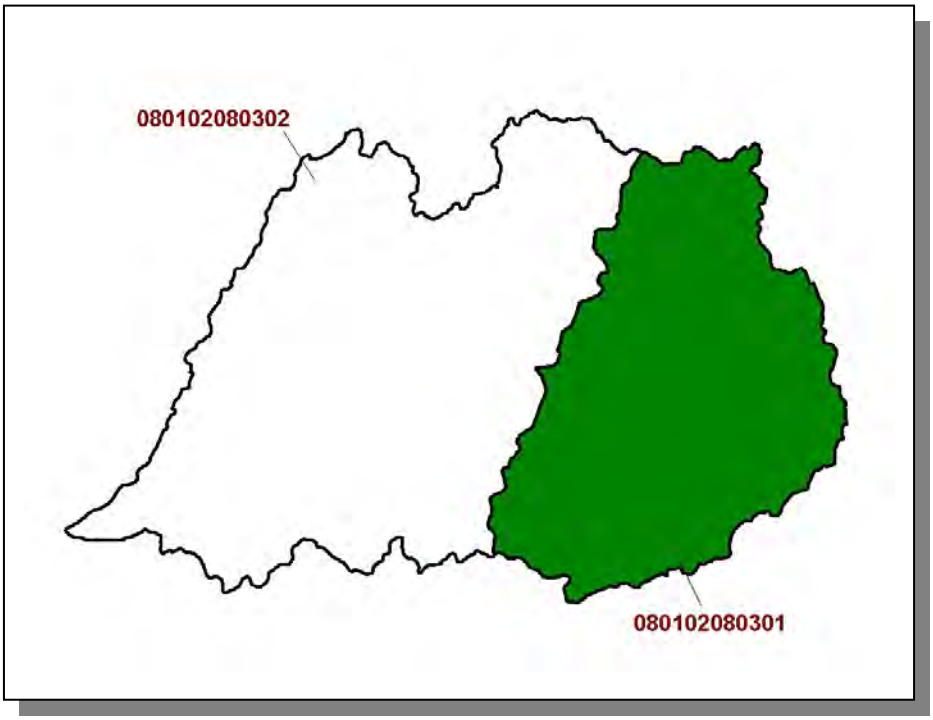

Figure 4-111. Location of Subwatershed 080102080302. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

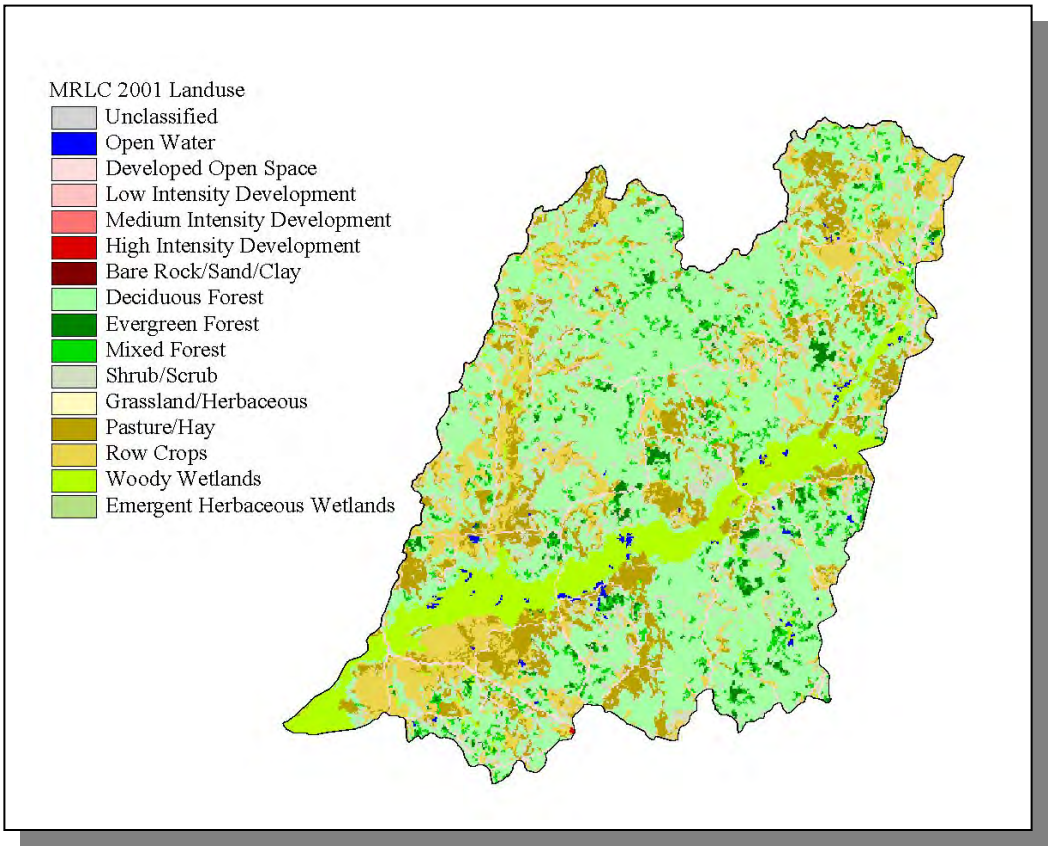

Figure 4-112. Illustration of Land Use Distribution in Subwatershed 080102080302.

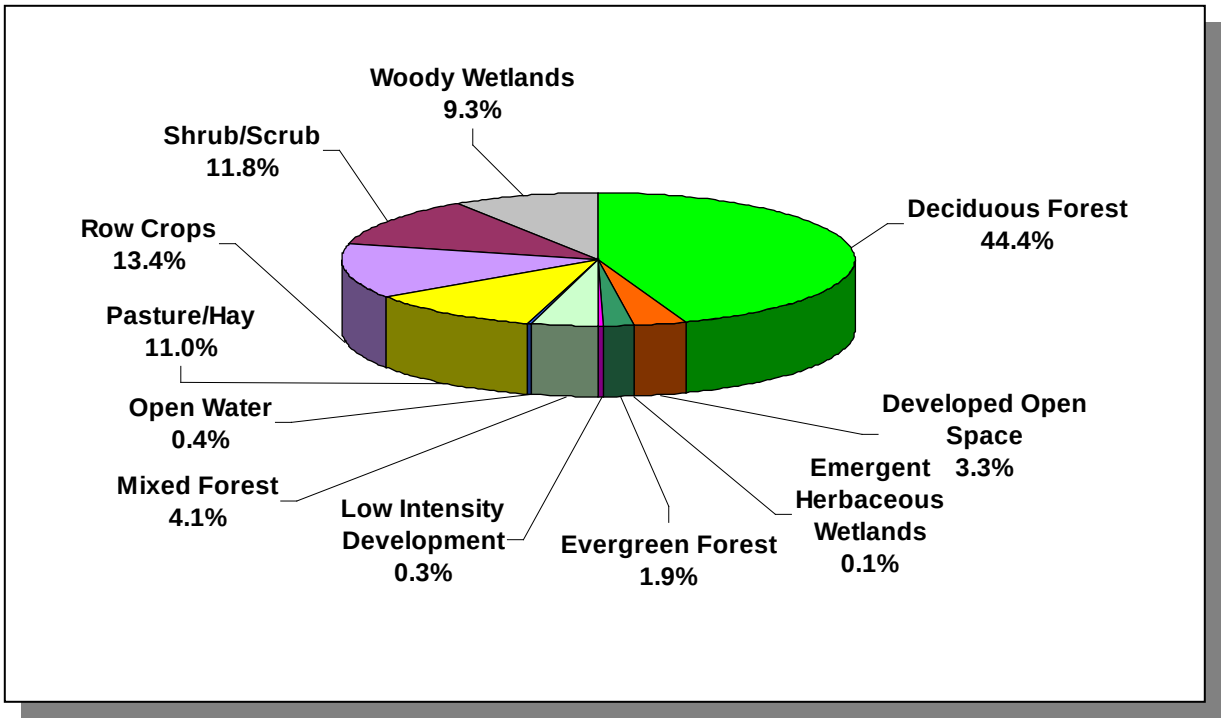

Figure 4-113. Land Use Distribution in Subwatershed 080102080302. *More information is provided in Appendix IV.*

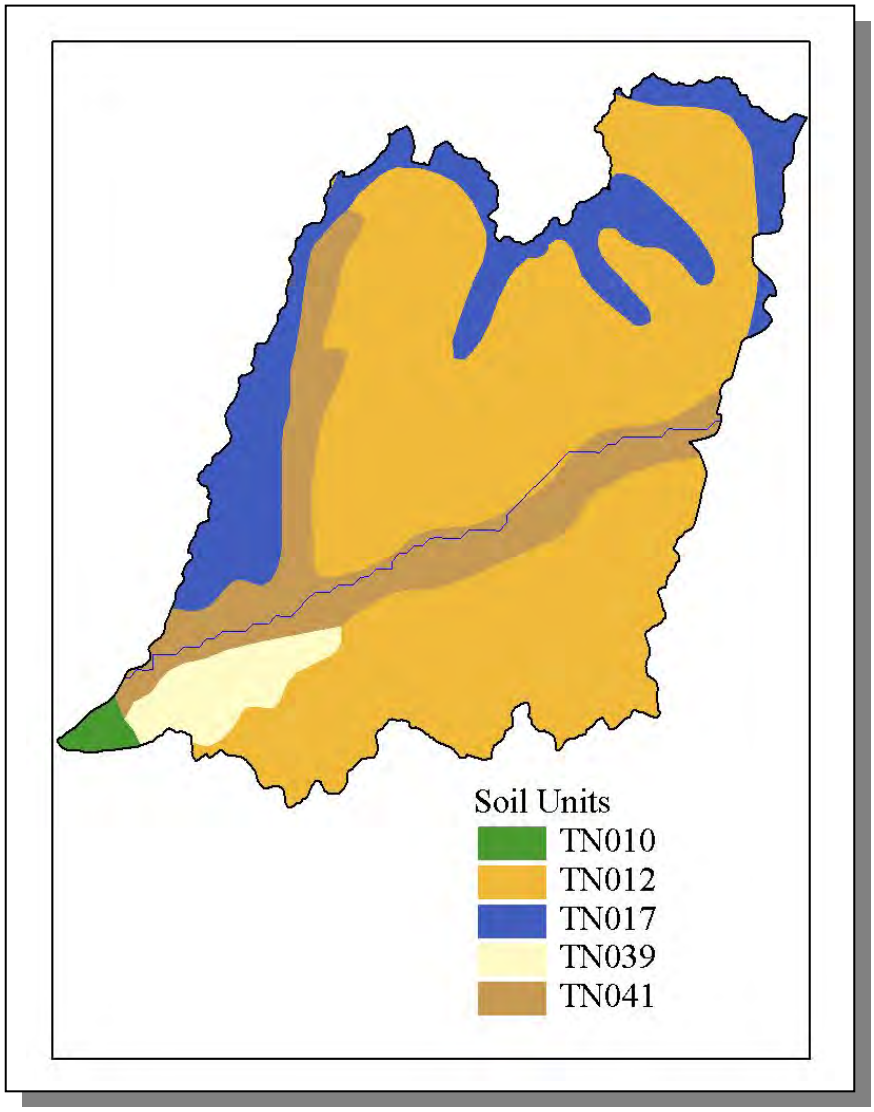

Figure 4-114. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080302.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN010	81.00	C	1.33	5.11	Silty Loam	0.44
TN012	1.00	C	2.52	5.13	Silty Loam	0.39
TN017	0.00	B	1.81	5.26	Silty Loam	0.45
TN039	24.00	C	1.35	5.20	Silty Loam	0.47
TN041	59.00	C	1.35	4.98	Silty Loam	0.34

Table 4-94. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080302. *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)
Hardeman	23,377	24,702	28,105	4.9	1,145	1,210	1,377	20.3
Madison	77,982	84,942	91,837	3.32	2,586	2,817	3,045	17.7
Total	**101,359**	**109,644**	**119,942**		**3,731**	**4,027**	**4,422**	**18.5**

Table 4-95. Population Estimates in Subwatershed 080102080302.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Medon	Hardeman	107	60	0	56	4
Toone	Hardeman	279	102	69	33	0
Total		**387**	**162**	**69**	**89**	**4**

Table 4-96. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 080102080302.

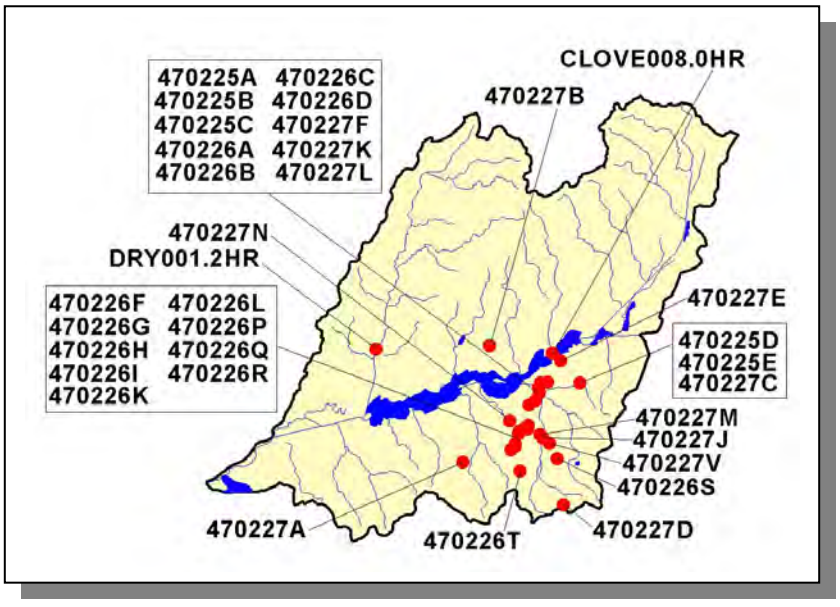

Figure 4-115. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 080102080302. *More information, including site names and locations, is provided in Appendix IV.*

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
510	1,179	<5	<5	534	8

Table 4-97. Summary of Livestock Count Estimates in Subwatershed 080102080302. *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
Hardeman	9,184	15,877	62	28	5,221	144
Madison	0	12,437	0	476	10,210	0

Table 4-98. Summary of Livestock Count Estimates in Hardeman and Madison 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)
Hardeman	247.1	247.1	5.0	18.6
Madison	140.7	140.7	2.4	11.5

Table 4-99. Forest Acreage and Annual Removal Rates (1987-1994) in Hardeman and Madison Counties.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.93
Grass (Hayland)	0.59
Grass, Forbs, Legumes (Mixed Pasture)	1.89
Corn (Row Crops)	12.64
Cotton (Row Crops)	21.13
Sorghum (Row Crops)	3.04
Soybeans (Row Crops)	11.35
Wheat (Close-Grown Cropland)	10.85
All Other Close-Grown Cropland	0.47
Other Vegetable and Truck Crops	7.81
Summer Fallow (Other Cropland)	6.11
Other Cropland not Planted	3.51
Conservation Reserve Program Lands	0.34
Other Land in Farms	0.08
Farmsteads and Ranch Headquarters	0.78

Table 4-100. Annual Estimated Total Soil Loss in Subwatershed 080102080302.

4.2.D. 0801020804.

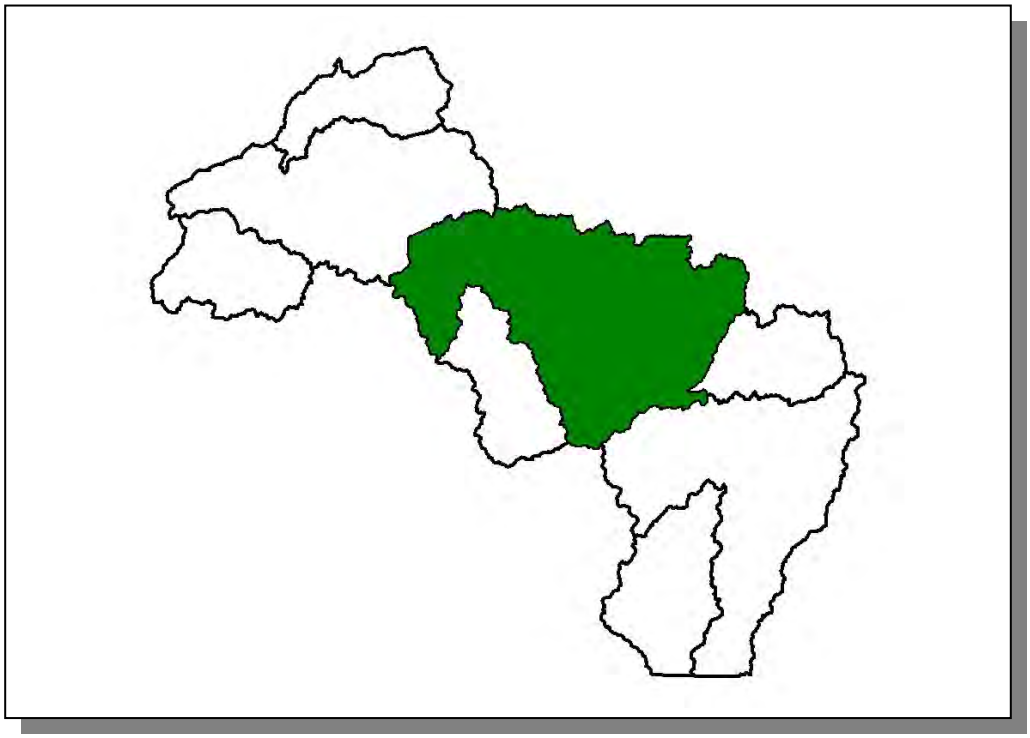

Figure 4-116. Location of Subwatershed 0801020804. *Hatchie River HUC-10 subwatershed boundaries in Tennessee are shown for reference.*

4.2.D.i. 080102080401 (Hatchie River).

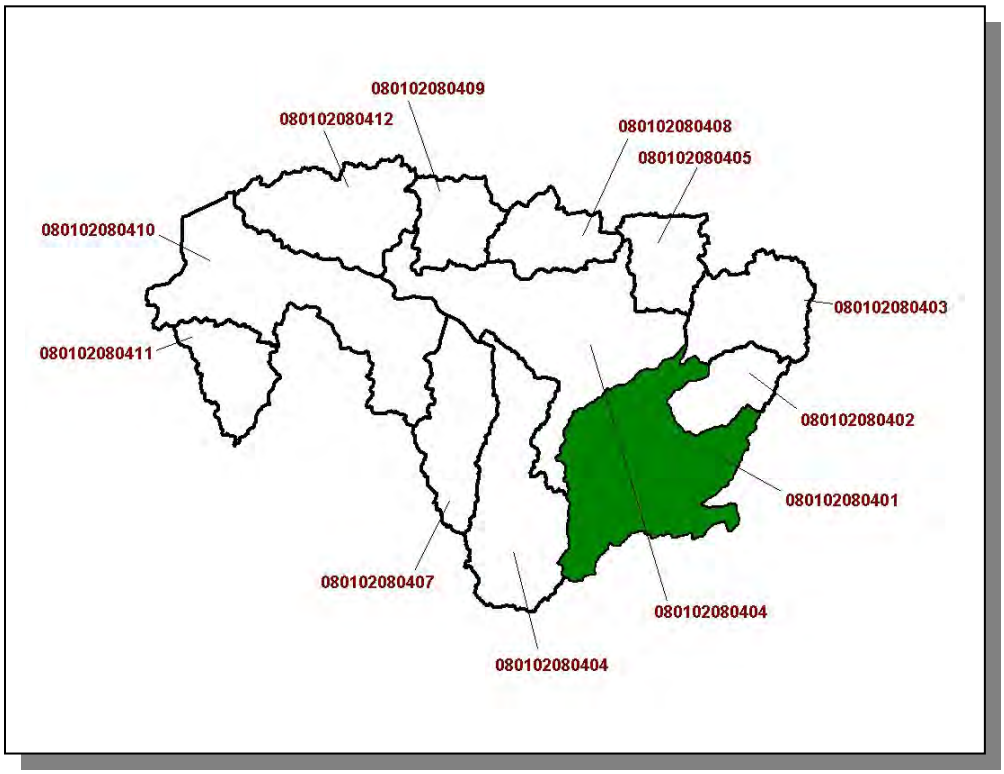

Figure 4-117. Location of Subwatershed 080102080401. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

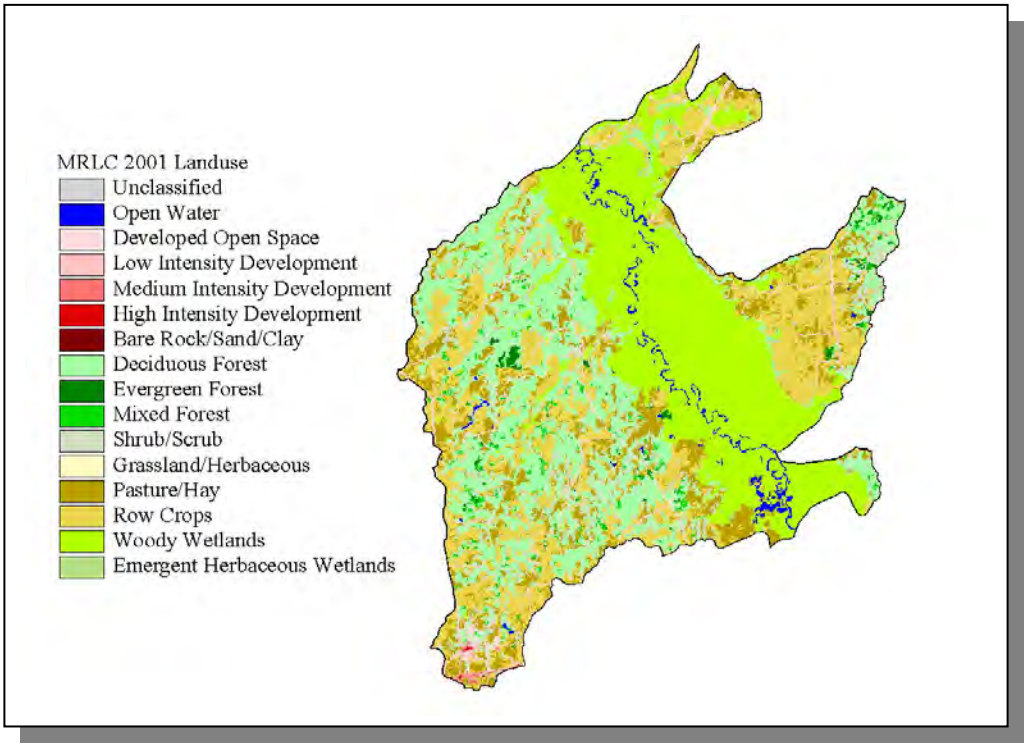

Figure 4-118. Illustration of Land Use Distribution in Subwatershed 080102080401.

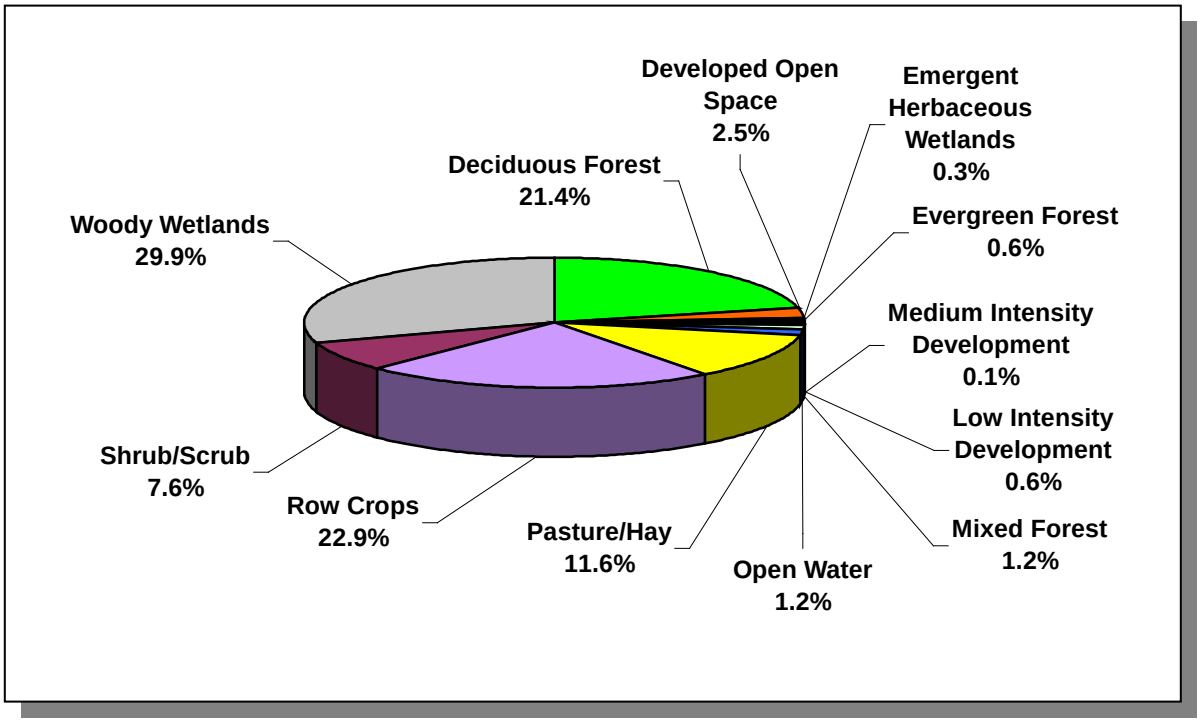

Figure 4-119. Land Use Distribution in Subwatershed 080102080401. *More information is provided in Appendix IV.*

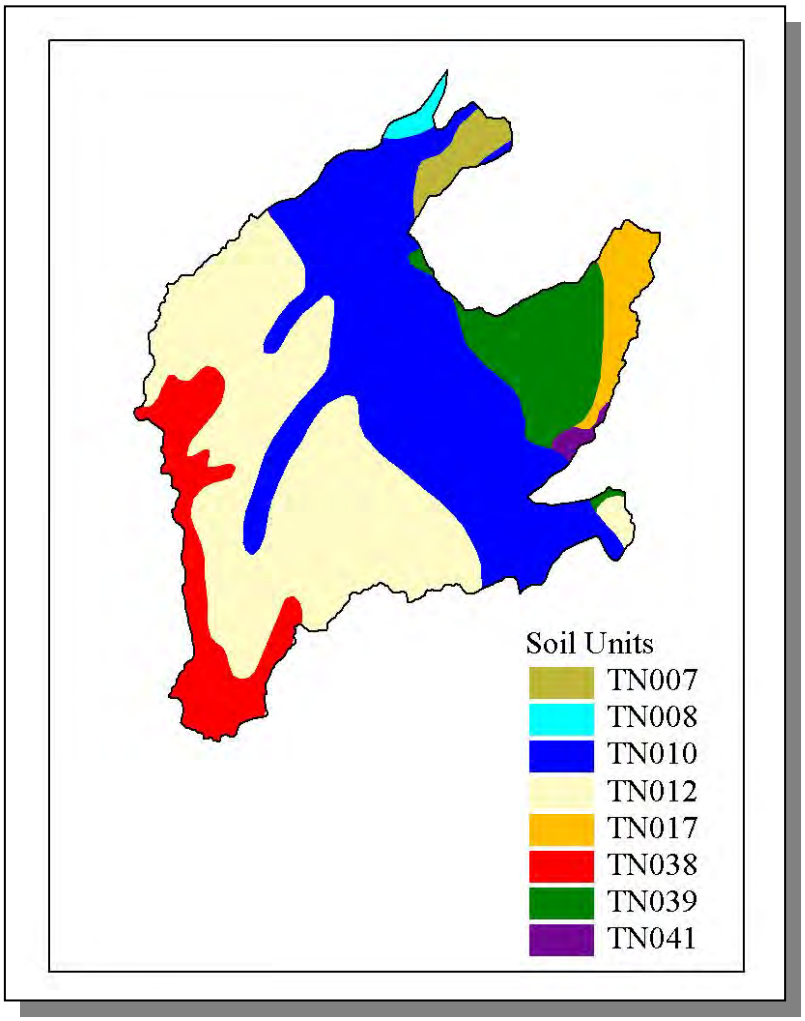

Figure 4-120. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080401.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN007	29.00	C	1.30	5.36	Silty Loam	0.48
TN008	2.00	C	1.38	5.20	Silty Loam	0.48
TN010	81.00	C	1.33	5.11	Silty Loam	0.44
TN012	1.00	C	2.52	5.13	Silty Loam	0.39
TN017	0.00	B	1.81	5.26	Silty Loam	0.45
TN038	9.00	C	1.65	5.20	Silty Loam	0.46
TN039	24.00	C	1.35	5.20	Silty Loam	0.47
TN041	59.00	C	1.35	4.98	Silty Loam	0.34

Table 4-101. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080401. *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)
Hardeman	23,377	24,702	28,105	7.52	1,758	1,857	2,113	20.2
Haywood	19,437	19,709	19,797	0.99	193	196	197	2.1
Madison	77,982	84,942	91,837	0.6	466	507	548	17.6
Total	**120,796**	**129,353**	**139,739**		**2,417**	**2,560**	**2,858**	**18.2**

Table 4-102. Population Estimates in Subwatershed 080102080401.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Whiteville	Hardeman	1,050	444	424	20	0

Table 4-103. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 080102080401.

Figure 4-121. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 080102080401. *More information, including site names and locations, is provided in Appendix IV.*

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

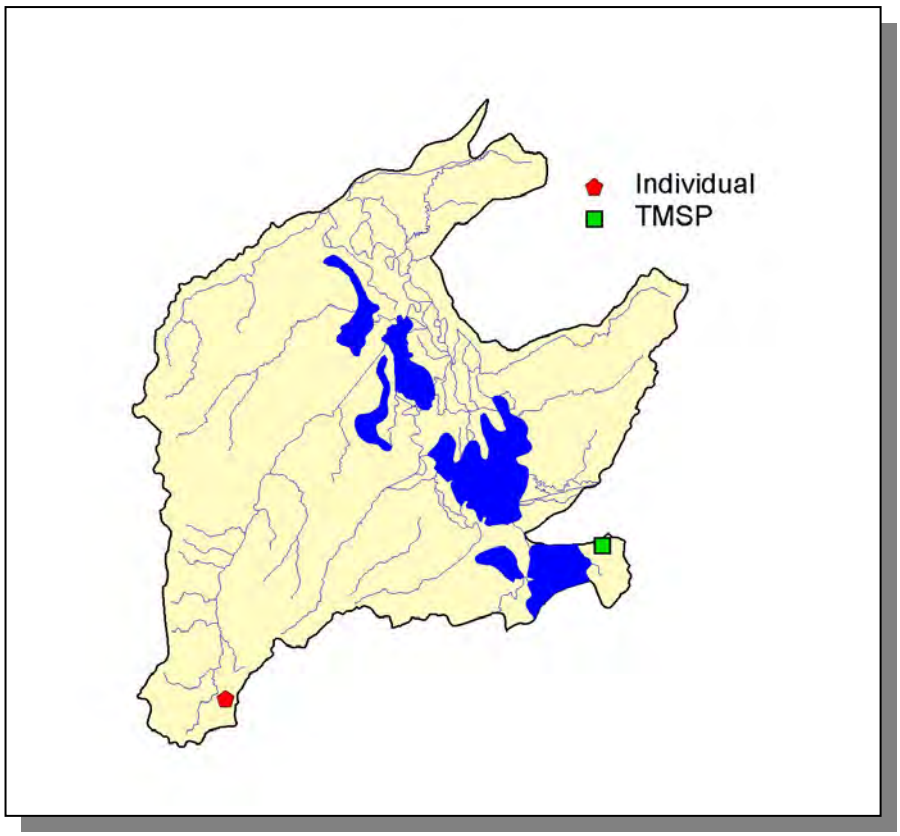

Figure 4-122. Location of Permits Issued in Subwatershed 080102080401. *More information, including the names of facilities, is provided in Appendix IV.*

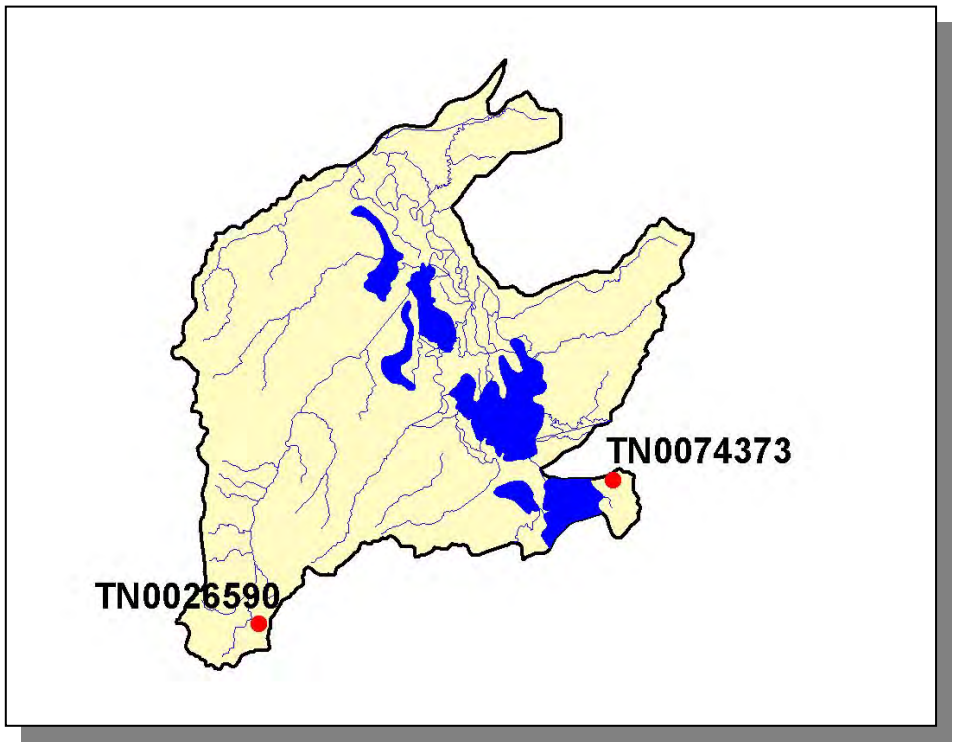

Figure 4-123. Location of Active NPDES Sites in Subwatershed 080102080401. *More information, including the names of facilities, is provided in Appendix IV.*

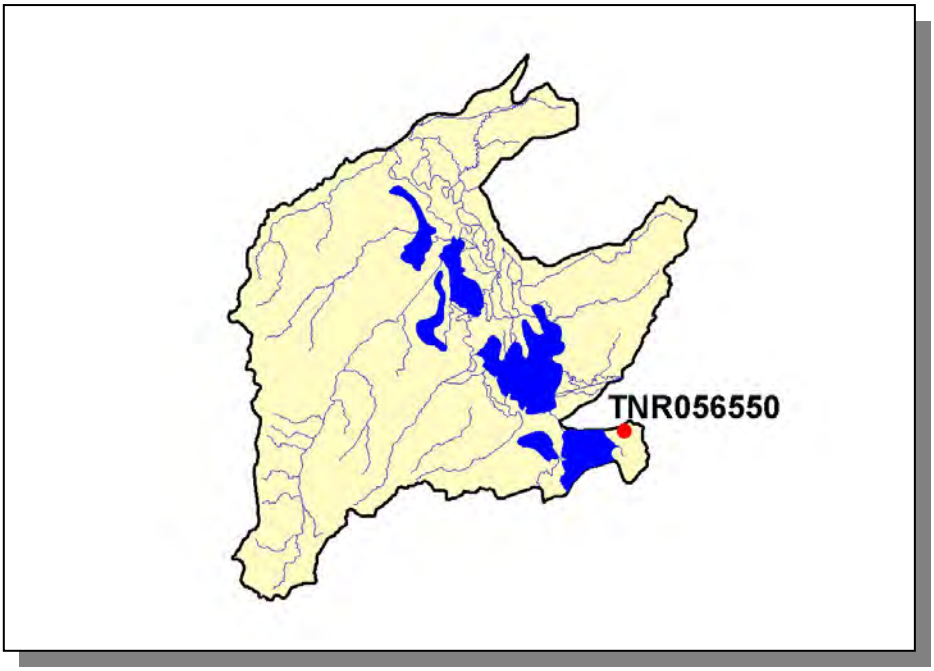

Figure 4-124. Location of TMSP Sites in Subwatershed 080102080401. *More information, including the names of facilities, is provided in Appendix IV.*

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 080102080401:

- TN0026590 (Whiteville STP) discharges to Hickory Creek @ RM 7.7

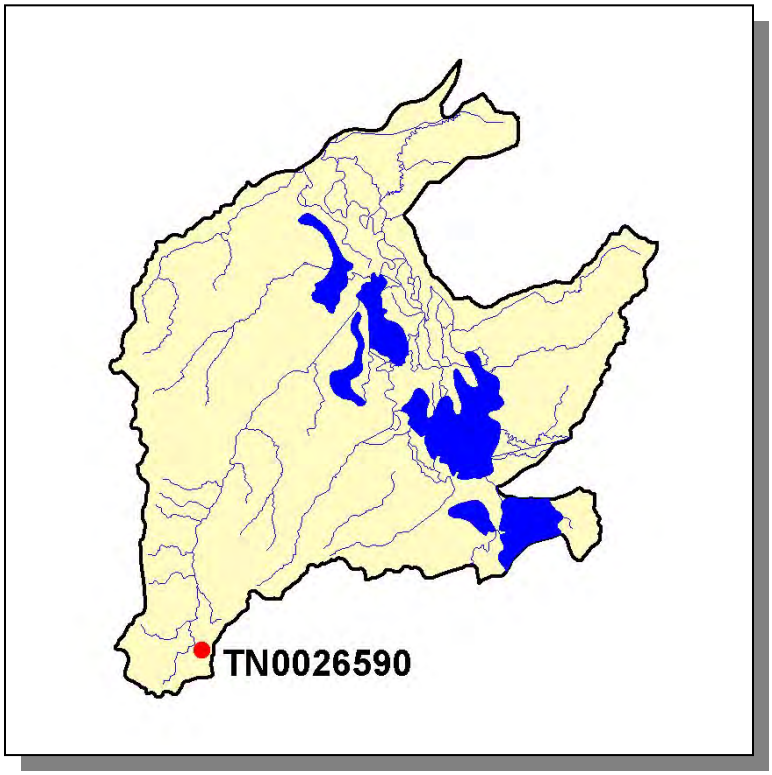

Figure 4-125. Location of NPDES Dischargers to Water Bodies Listed on the 2004 303(d) List in Subwatershed 080102080401. *More information, including the names of facilities, is provided in Appendix IV.*

PERMIT #	3Q2	1Q10	3Q10	3Q20	7Q10
TN0026590	0.07	na	0.06	0.05	0.05

Table 4-104. Receiving Stream Low Flow Information for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 080102080401. *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 #	NO_3	Zn	Cu	Ni	Mo	As	Se	Flow
TN0026590	X	X	X	X	X	X	X	X

Table 4-105. Monitoring Requirements for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 080102080401.

PERMIT #	WET	$CBOD_5$	NH_3	TRC	TSS	SETTLEABLE SOLIDS	DO	pH	Pb	Hg	Cd
TN0026590	X	X	X	X	X	X	X	X	X	X	X

Table 4-106. Inorganic Parameters Monitored for Daily Maximum Limits for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 080102080401.
WET, Whole Effluent Toxicity; $CBOD_5$, Carbonaceous Biochemical Oxygen Demand (5-Day); TRC, Total Residual Chlorine; TSS, Total Suspended Solids; DO, Dissolved Oxygen.

PERMIT #	*E. coli*	FECAL COLIFORM
TN0026590	X	X

Table 4-107. Bacteria Monitored for Daily Maximum Limits for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 080102080401.

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

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
978	1,810	7	<5	653	15

Table 4-108. Summary of Livestock Count Estimates in Subwatershed 080102080401. *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
Hardeman	9,184	15,877	62	28	5,221	144
Haywood	3,442	6,220	29	237	1,740	12
Madison	0	12,437	0	476	10,210	0

Table 4-109. Summary of Livestock Count Estimates in Hardeman, Haywood, and Madison 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)
Hardeman	247.1	247.1	5.0	18.6
Haywood	71.2	71.2	1.7	6.4
Madison	140.7	140.7	2.4	11.5

Table 4-110. Forest Acreage and Annual Removal Rates (1987-1994) in Hardeman, Haywood, and Madison Counties.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	1.13
Grass (Hayland)	0.72
Grass, Forbs, Legumes (Mixed Pasture)	1.12
Corn (Row Crops)	11.24
Cotton (Row Crops)	23.84
Sorghum (Row Crops)	3.14
Soybeans (Row Crops)	12.12
Wheat (Close-Grown Cropland)	14.31
Fruit (Horticultural)	0.76
All Other Close-Grown Cropland	2.08
Summer Fallow (Other Cropland)	6.11
Other Vegetable and Truck Crops	5.58
Other Cropland not Planted	3.81
Conservation Reserve Program Lands	0.34
Other Land in Farms	1.13
Farmsteads and Ranch Headquarters	0.90

Table 4-111. Annual Estimated Total Soil Loss in Subwatershed 080102080401.

4.2.D.ii. 080102080402 (Muddy Creek).

Figure 4-126. Location of Subwatershed 080102080402. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

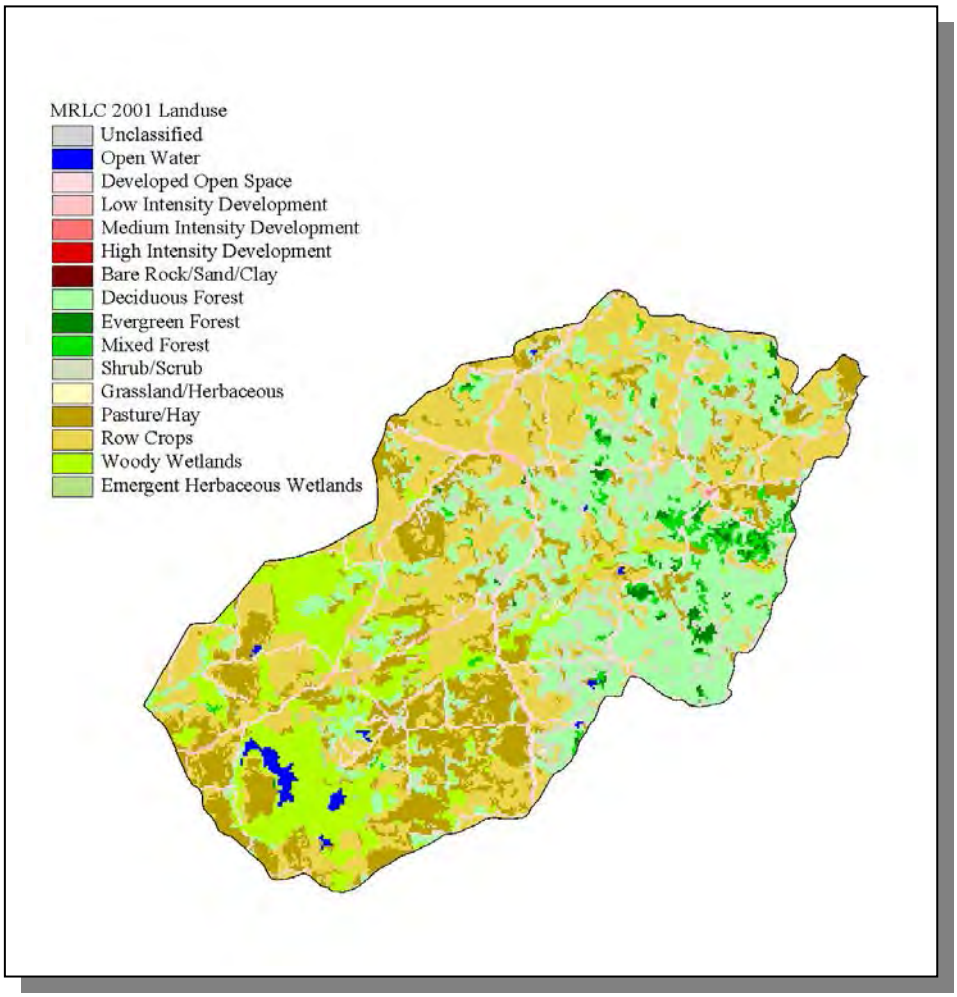

Figure 4-127. Illustration of Land Use Distribution in Subwatershed 080102080402.

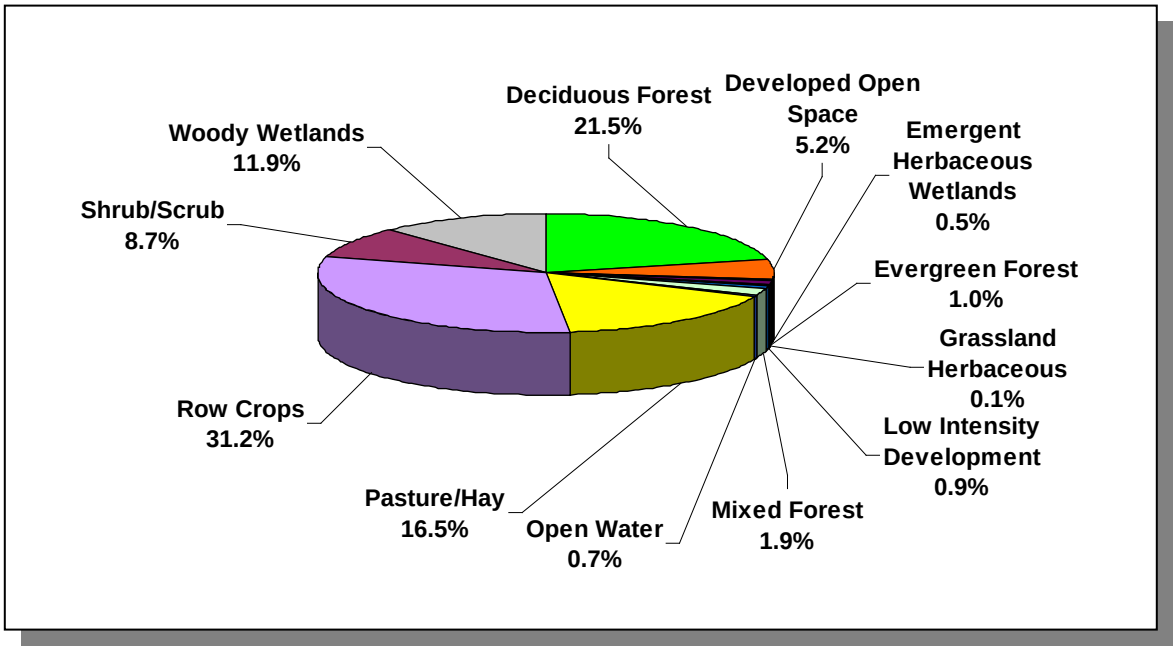

Figure 4-128. Land Use Distribution in Subwatershed 080102080402. *More information is provided in Appendix IV.*

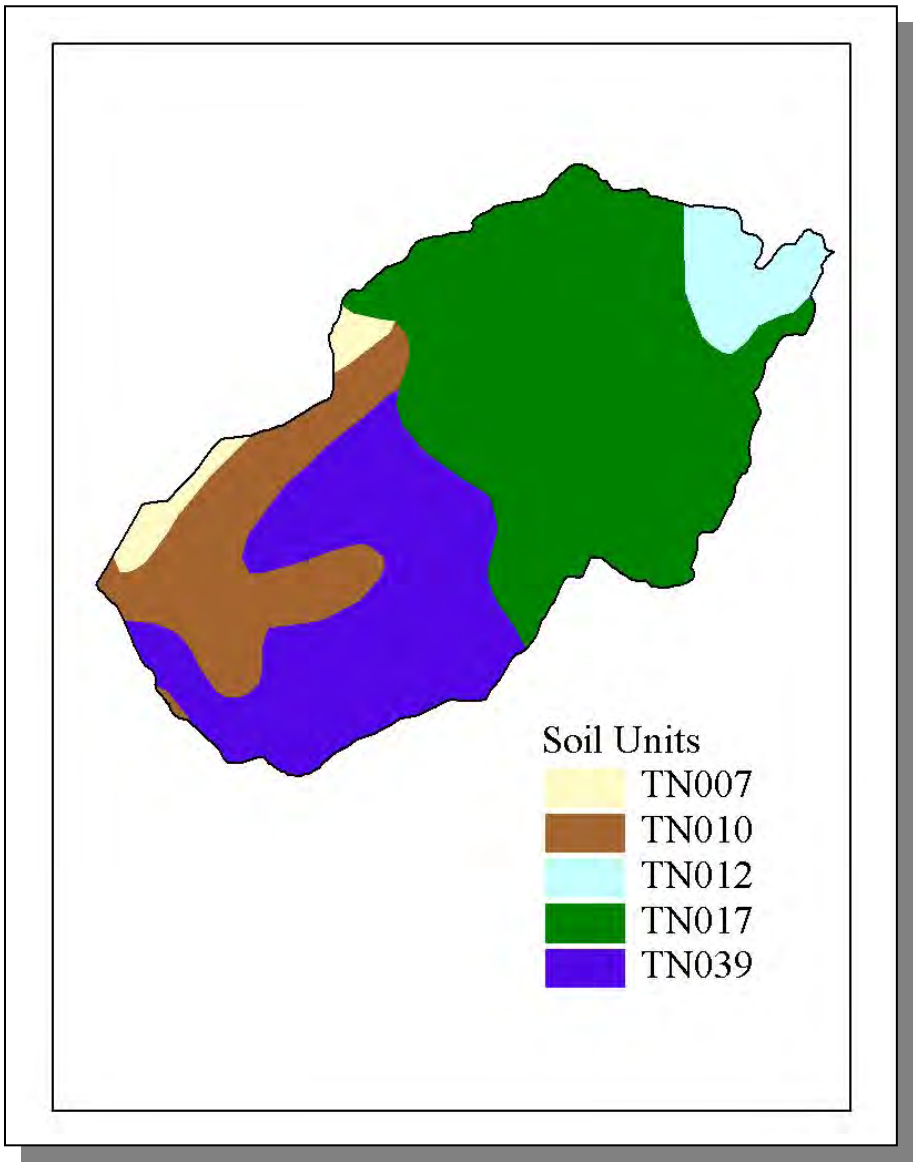

Figure 4-129. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080402.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN007	29.00	C	1.30	5.36	Silty Loam	0.48
TN010	81.00	C	1.33	5.11	Silty Loam	0.44
TN012	1.00	C	2.52	5.13	Silty Loam	0.39
TN017	0.00	B	1.81	5.26	Silty Loam	0.45
TN039	24.00	C	1.35	5.20	Silty Loam	0.47

Table 4-112. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080402. *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)
Hardeman	23,377	24,702	28,105	0.3	71	75	85	19.7
Madison	77,982	84,942	91,837	2.36	1,842	2,007	2,170	17.8
Total	**101,359**	**109,644**	**119,942**		**1,913**	**2,082**	**2,255**	**17.9**

Table 4-113. Population Estimates in Subwatershed 080102080402.

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

There are no point source contributions in this subwatershed.

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

LIVESTOCK COUNTS				
Beef Cow	Cattle	Chickens (Layers)	Hogs	Sheep
52	407	<5	290	<5

Table 4-114. Summary of Livestock Count Estimates in Subwatershed 080102080402. *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
Hardeman	9,184	15,877	62	28	5,221	144
Madison	0	12,437	0	476	12,210	0

Table 4-115. Summary of Livestock Count Estimates in Hardeman and Madison 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)
Hardeman	247.1	247.1	5.0	18.6
Madison	140.7	140.7	2.4	11.5

Table 4-116. Forest Acreage and Annual Removal Rates (1987-1994) in Hardeman and Madison Counties.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.52
Grass (Hayland)	0.88
Grass, Forbs, Legumes (Mixed Pasture)	3.04
Corn (Row Crops)	14.36
Cotton (Row Crops)	14.66
Sorghum (Row Crops)	3.04
Soybeans (Row Crops)	9.21
Wheat (Close-Grown Cropland)	5.05
All Other Close-Grown Cropland	0.47
Other Vegetable and Truck Crops	7.81
Summer Fallow (Other Cropland)	6.11
Other Cropland not Planted	2.50
Conservation Reserve Program Lands	0.44
Other Land in Farms	0.08
Farmsteads and Ranch Headquarters	0.52

Table 4-117. Annual Estimated Total Soil Loss in Subwatershed 080102080402.

4.2.D.iii. 080102080403 (Big Black Creek).

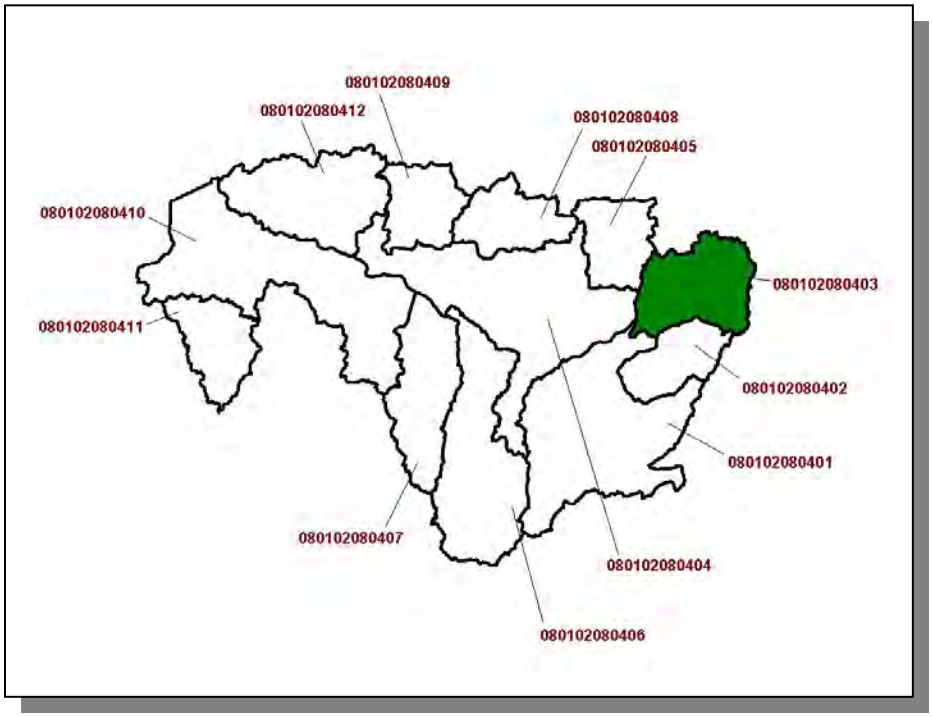

Figure 4-130. Location of Subwatershed 080102080403. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

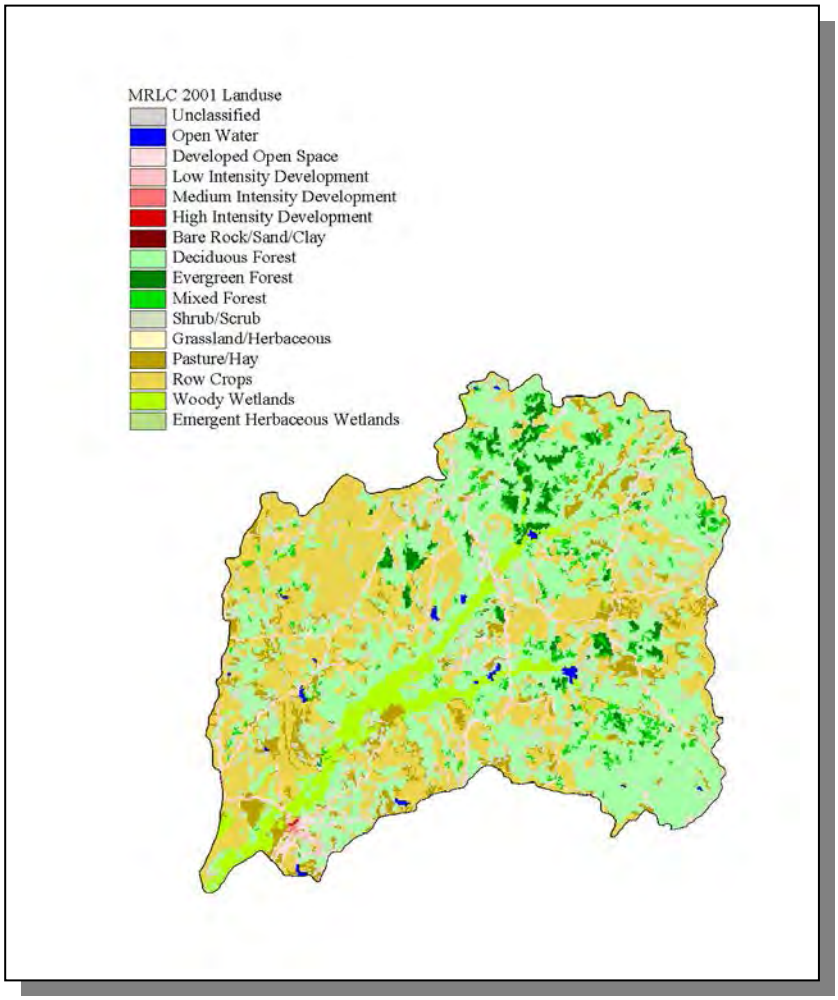

Figure 4-131. Illustration of Land Use Distribution in Subwatershed 080102080403.

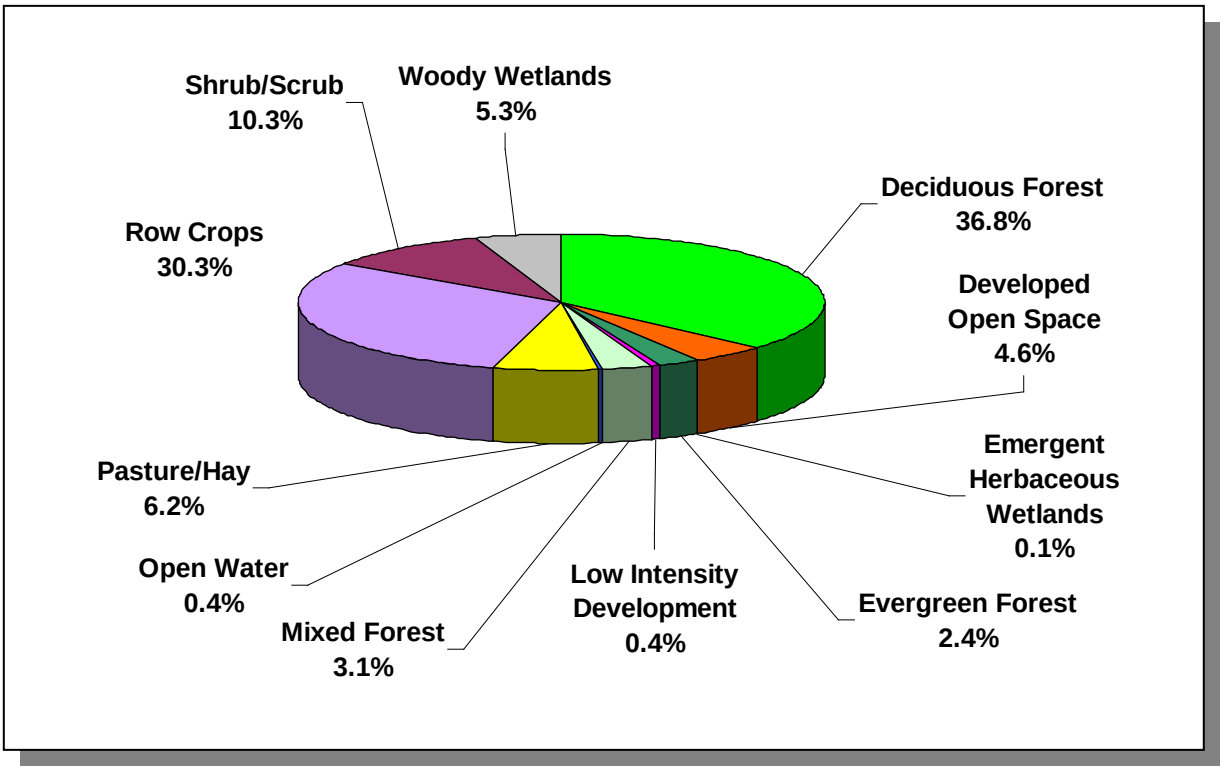

Figure 4-132. Land Use Distribution in Subwatershed 080102080403. *More information is provided in Appendix IV.*

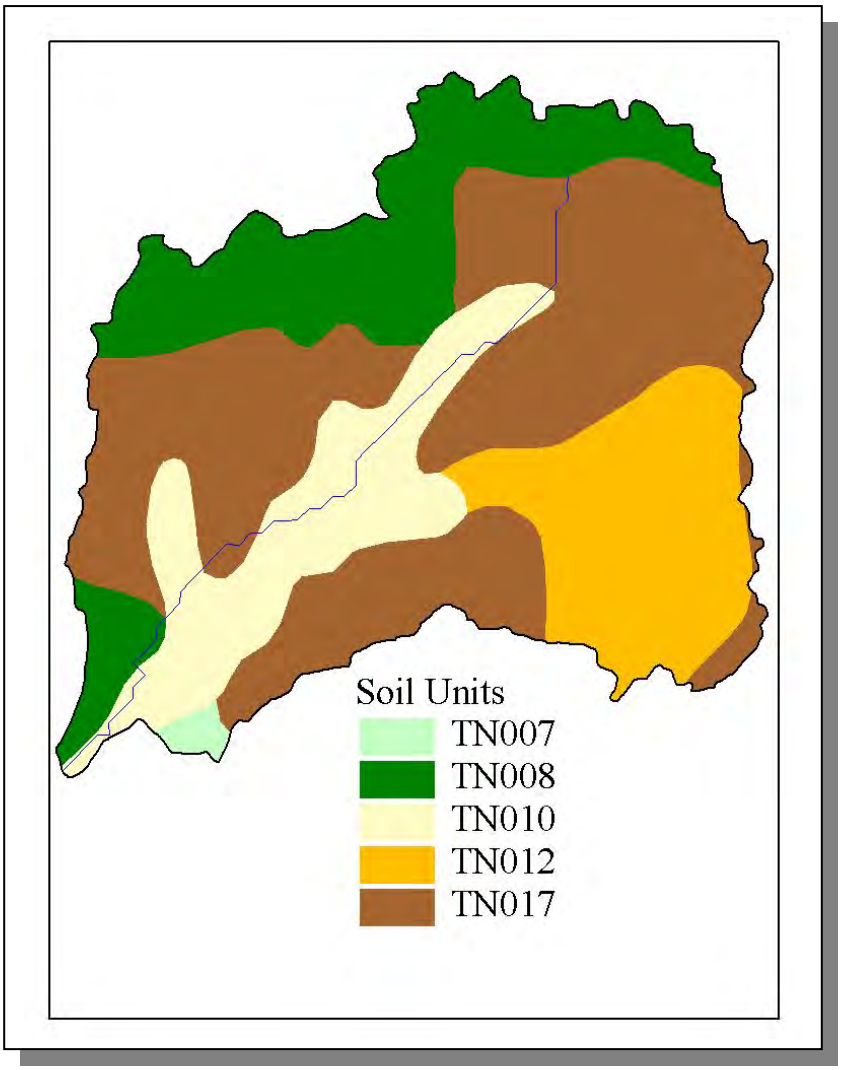

Figure 4-133. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080403.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN007	29.00	C	1.30	5.36	Silty Loam	0.48
TN008	2.00	C	1.38	5.20	Silty Loam	0.48
TN010	81.00	C	1.33	5.11	Silty Loam	0.44
TN012	1.00	C	2.52	5.13	Silty Loam	0.39
TN017	0.00	B	1.81	5.26	Silty Loam	0.45

Table 4-118. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080403. *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)
Madison	77,982	84,942	91,837	4.5	3,512	3,825	4,136	17.8

Table 4-119. Population Estimates in Subwatershed 080102080403.

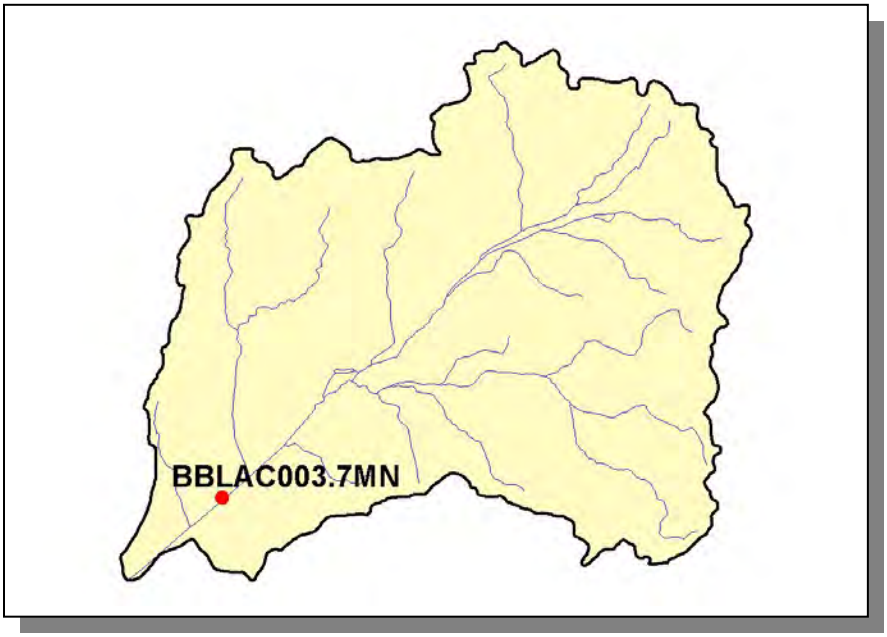

Figure 4-134. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 080102080403. *More information, including site names and locations, is provided in Appendix IV.*

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

There are no point source contributions in this subwatershed.

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

LIVESTOCK COUNTS	
Cattle	Hogs
337	277

Table 4-120. Summary of Livestock Count Estimates in Subwatershed 080102080403. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves.*

LIVESTOCK COUNTS			
County	Cattle	Chickens (Layers)	Hogs
Madison	12,437	476	10,210

Table 4-121. Summary of Livestock Count Estimates in Madison 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)
Madison	140.7	140.7	2.4	11.5

Table 4-122. Forest Acreage and Annual Removal Rates (1987-1994) in Madison County.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.41
Grass (Hayland)	0.95
Grass, Forbs, Legumes (Mixed Pasture)	3.34
Corn (Row Crops)	14.81
Cotton (Row Crops)	12.97
Soybeans (Row Crops)	8.65
Wheat (Close-Grown Cropland)	3.53
All Other Close-Grown Cropland	0.47
Other Vegetable and Truck Crops	7.81
Other Cropland not Planted	2.23
Conservation Reserve Program Lands	0.47
Other Land in Farms	0.08
Farmsteads and Ranch Headquarters	0.46

Table 4-123. Annual Estimated Total Soil Loss in Subwatershed 080102080403.

4.2.D.iv. 080102080404 (Hatchie River).

Figure 4-135. Location of Subwatershed 080102080404. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

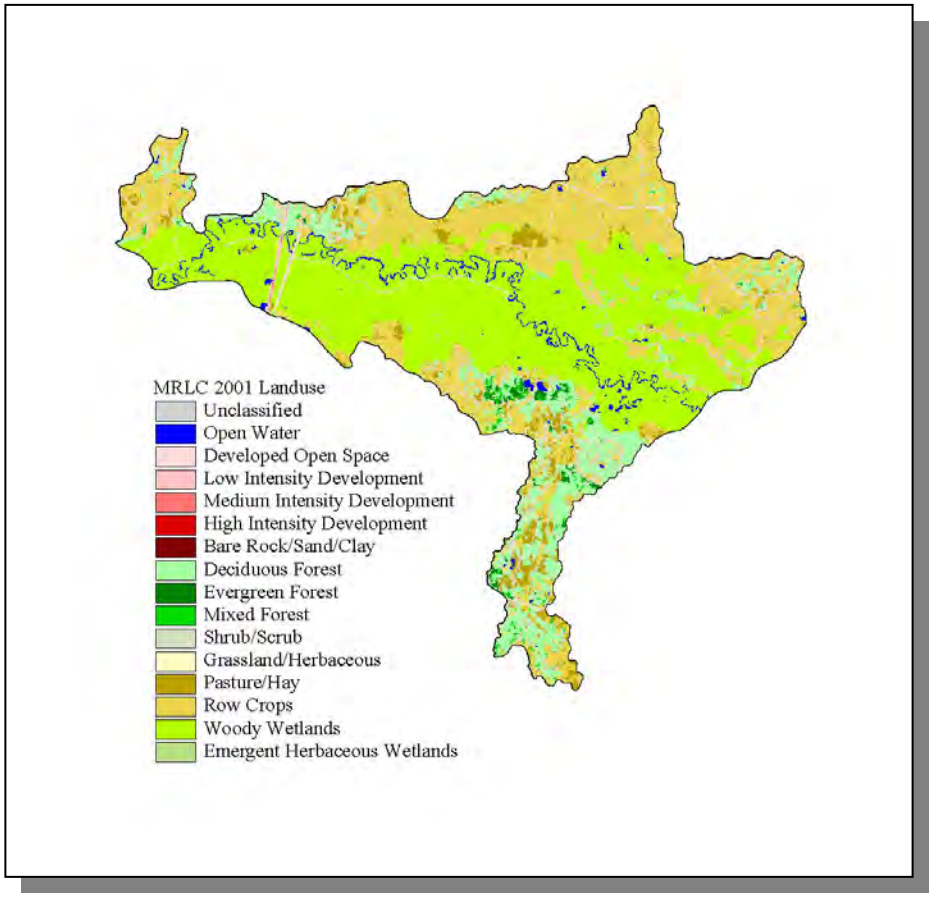

Figure 4-136. Illustration of Land Use Distribution in Subwatershed 080102080404.

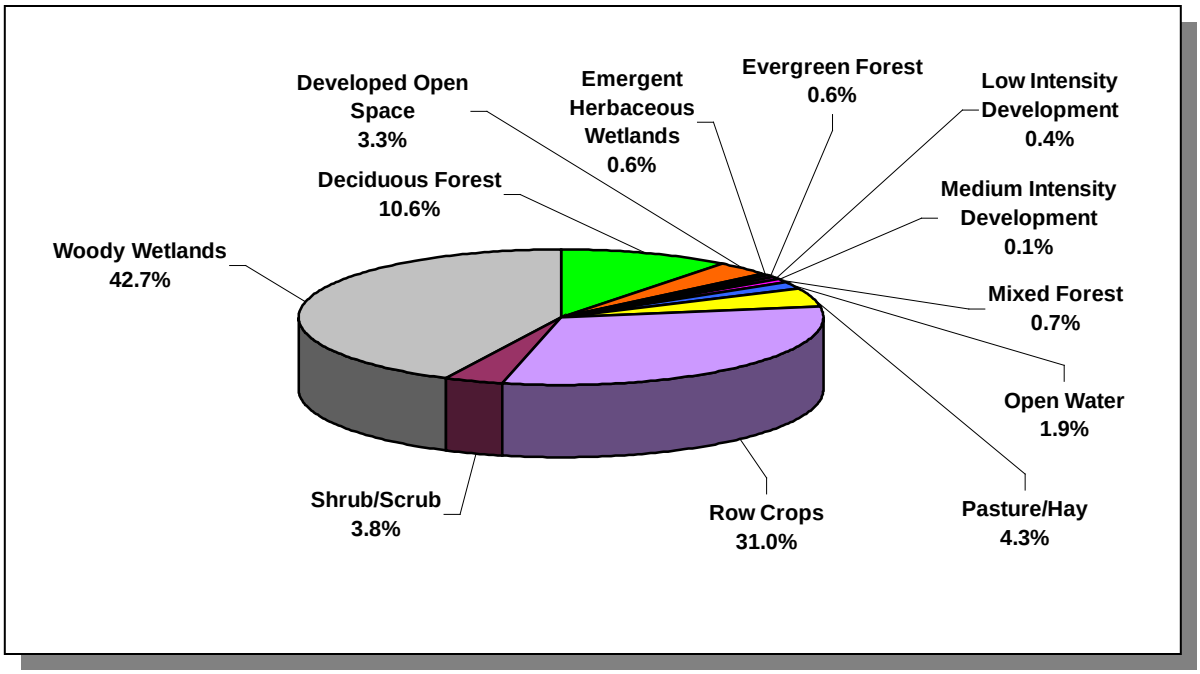

Figure 4-137. Land Use Distribution in Subwatershed 080102080404. *More information is provided in Appendix IV.*

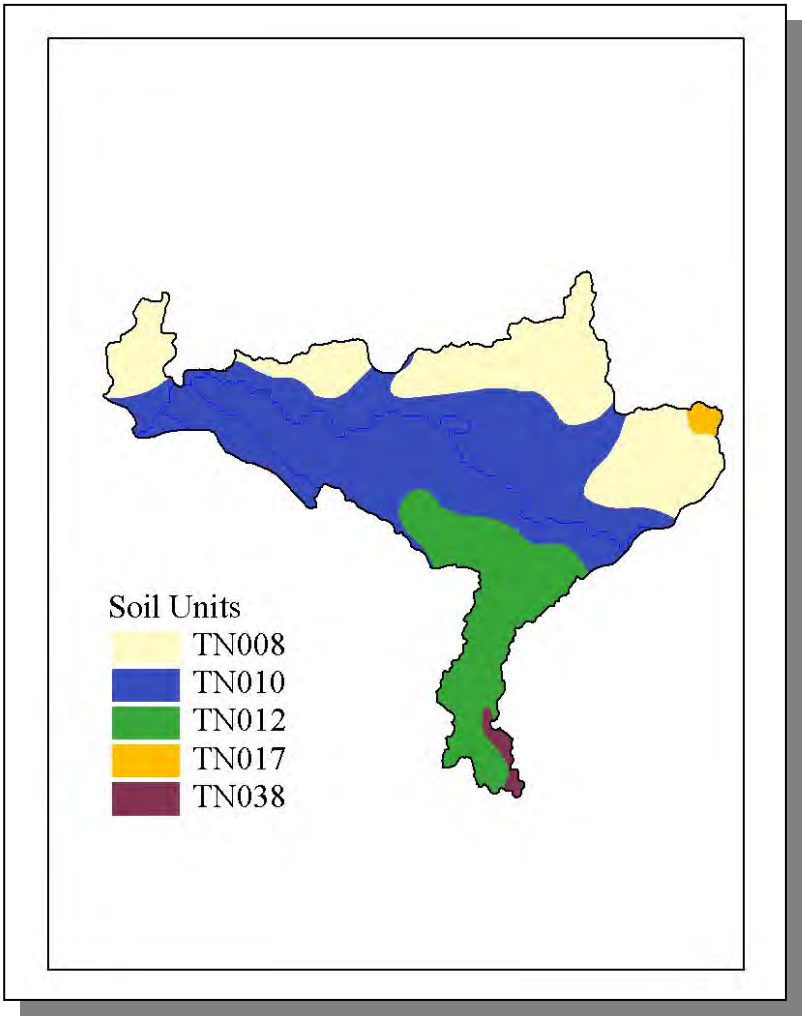

Figure 4-138. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080404.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN008	2.00	C	1.38	5.20	Silty Loam	0.48
TN010	81.00	C	1.33	5.11	Silty Loam	0.44
TN012	1.00	C	2.52	5.13	Silty Loam	0.39
TN017	0.00	B	1.81	5.26	Silty Loam	0.45
TN038	9.00	C	1.65	5.20	Silty Loam	0.46

Table 4-124. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080404. *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)
Hardeman	23,377	24,702	28,105	0.75	176	186	212	20.5
Haywood	19,437	19,709	19,797	10.59	2,058	2,087	2,096	1.8
Madison	77,982	84,942	91,837	0.36	278	303	327	17.6
Total	**120,796**	**129,353**	**139739**		**2,512**	**2,576**	**2,631**	**4.9**

Table 4-125. Population Estimates in Subwatershed 080102080404.

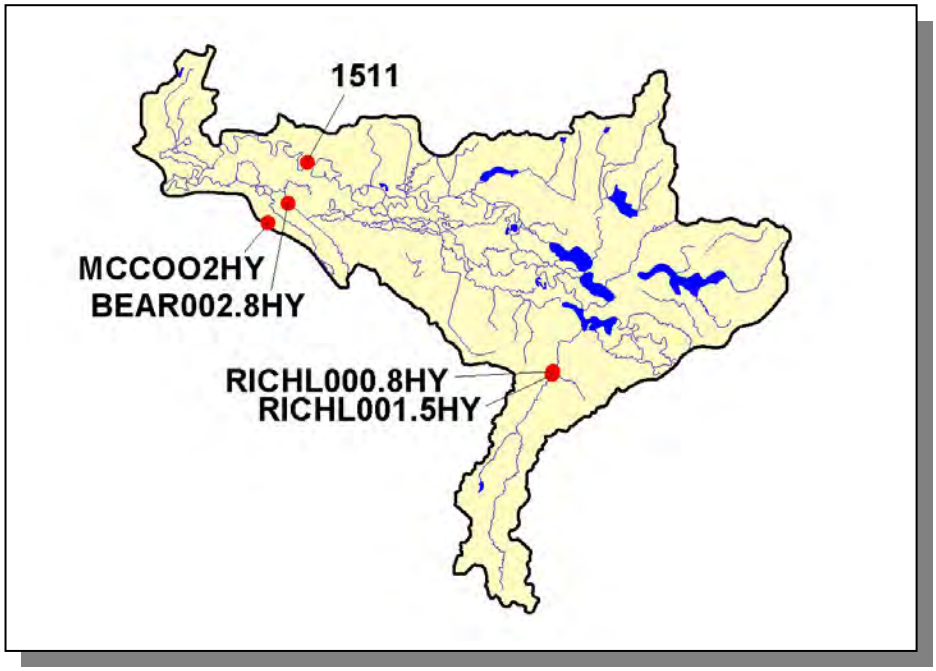

Figure 4-139. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 080102080404. *More information, including site names and locations, is provided in Appendix IV.*

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

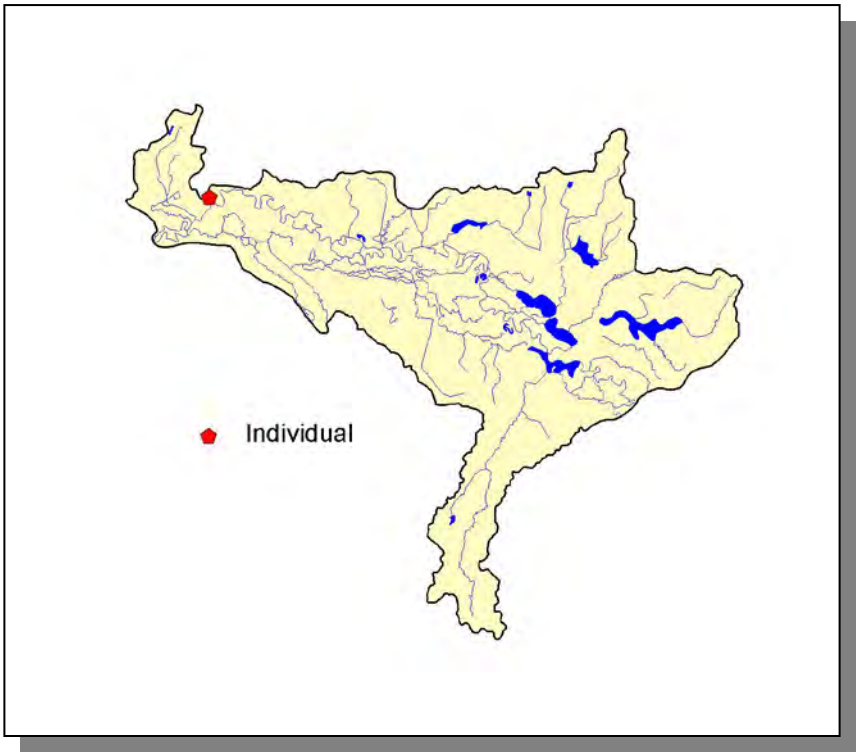

Figure 4-140. Location of Permits Issued in Subwatershed 080102080404. *More information, including the names of facilities, is provided in Appendix IV.*

Figure 4-141. Location of Active NPDES Sites in Subwatershed 080102080404. *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
356	671	<5	<5	215	<5

Table 4-126. Summary of Livestock Count Estimates in Subwatershed 080102080404. *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
Fayette	13,421	25,437	965	15	25,667	124
Hardeman	9,184	15,877	62	28	5,221	144
Haywood	3,442	6,220	29	237	1,740	12
Madison	0	12,437	0	476	10,210	0

Table 4-127. Summary of Livestock Count Estimates in Fayette, Hardeman, Haywood, and Madison 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)
Fayette	152.0	152.0	1.1	3.3
Hardeman	247.1	247.1	5.0	18.6
Haywood	71.2	71.2	1.7	6.4
Madison	140.7	140.7	2.4	11.5

Table 4-128. Forest Acreage and Annual Removal Rates (1987-1994) in Fayette, Hardeman, Haywood, and Madison Counties.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.73
Grass (Hayland)	3.35
Legumes, Grass (Hayland)	0.22
Legumes (Hayland)	0.16
Grass, Forbs, Legumes (Mixed Pasture)	0.45
Corn (Row Crops)	8.01
Cotton (Row Crops)	13.54
Sorghum (Row Crops)	3.94
Soybeans (Row Crops)	7.60
Wheat (Close-Grown Cropland)	11.73
All Other Close-Grown Cropland	2.99
Fruit (Horticultural)	0.76
Other Vegetable and Truck Crops	4.32
Summer Fallow (Other Cropland)	6.11
Other Cropland not Planted	1.16
Conservation Reserve Program Lands	0.85
Other Land in Farms	0.16
Farmsteads and Ranch Headquarters	0.63

Table 4-129. Annual Estimated Total Soil Loss in Subwatershed 080102080404.

4.2.D.v. 080102080405 (Jeffers Creek).

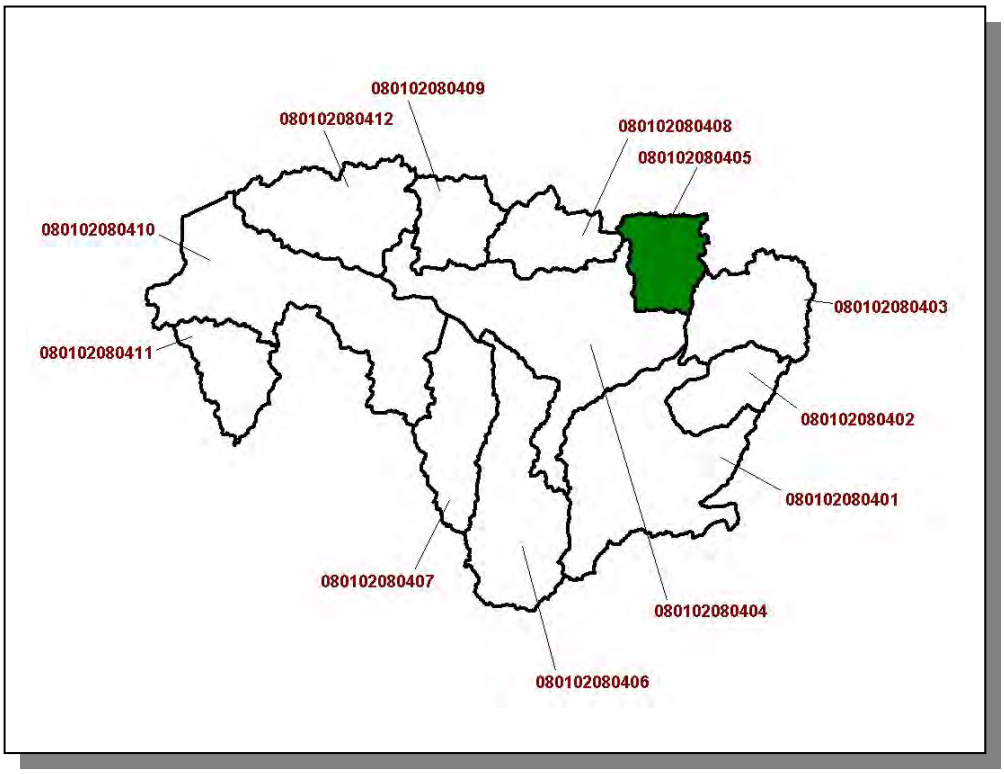

Figure 4-142. Location of Subwatershed 080102080405. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

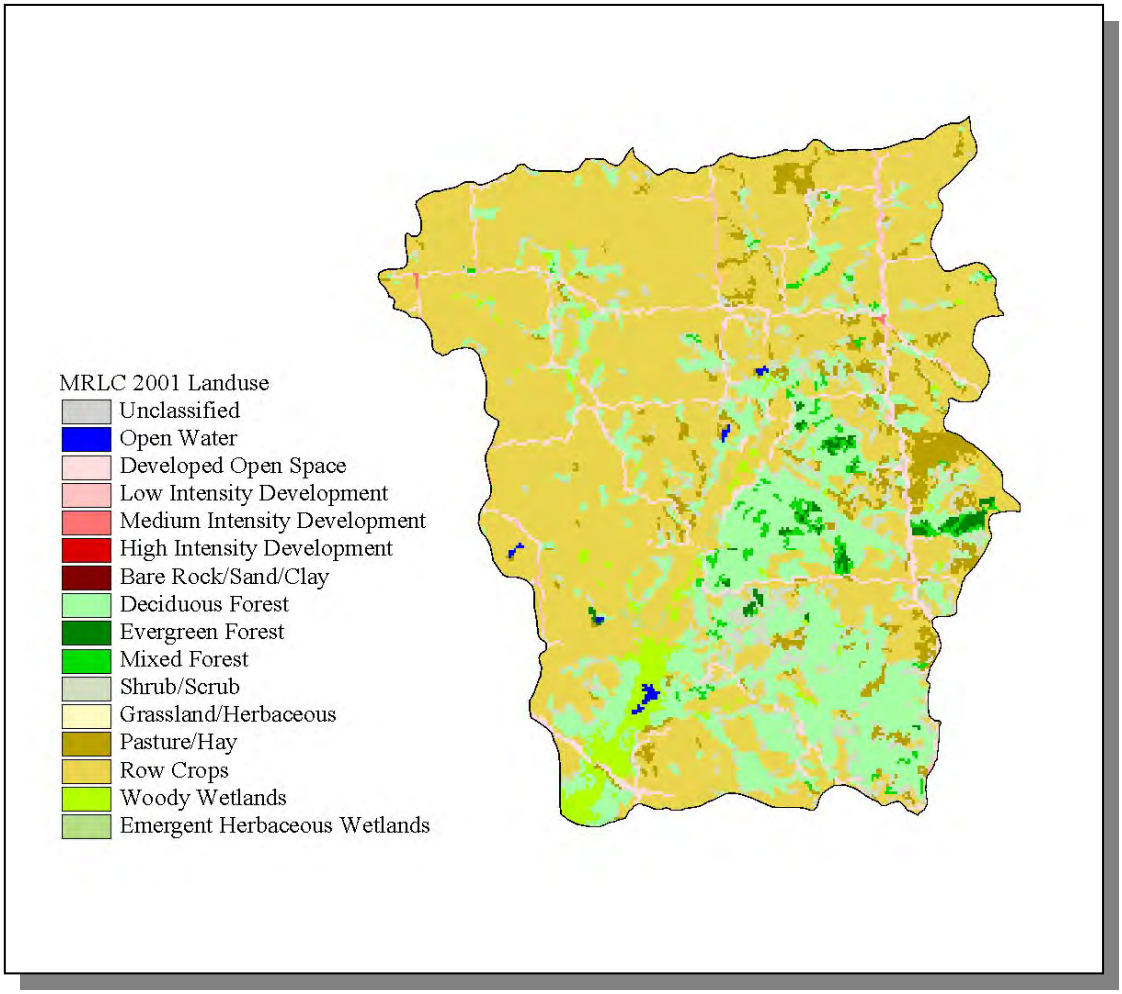

Figure 4-143. Illustration of Land Use Distribution in Subwatershed 080102080405.

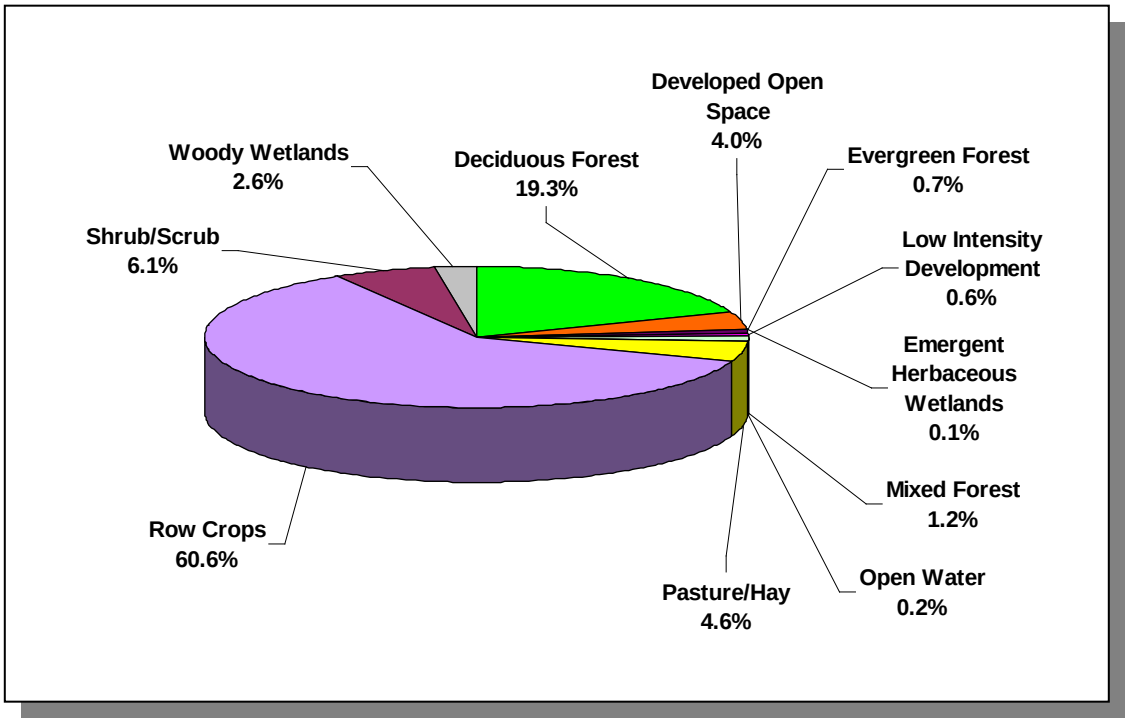

Figure 4-144. Land Use Distribution in Subwatershed 080102080405. *More information is provided in Appendix IV.*

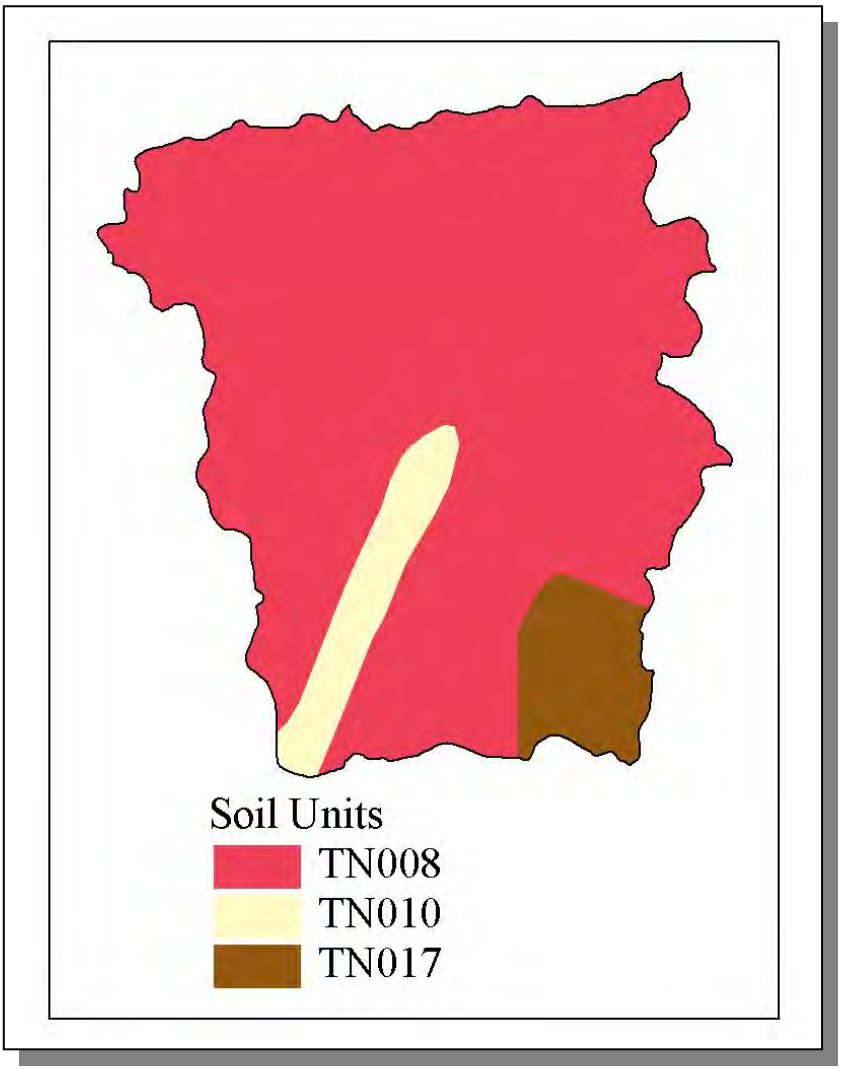

Figure 4-145. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080405.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN008	2.00	C	1.38	5.20	Silty Loam	0.48
TN010	81.00	C	1.33	5.11	Silty Loam	0.44
TN017	0.00	B	1.81	5.26	Silty Loam	0.45

Table 4-130. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080405. *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)
Haywood	19,437	19,709	19,797	1.76	343	347	349	1.7
Madison	77,982	84,942	91,837	1.19	931	1,014	1,097	17.8
Total	**97,419**	**104,651**	**111,634**		**1,274**	**1,361**	**1,446**	**13.5**

Table 4-131. Population Estimates in Subwatershed 080102080405.

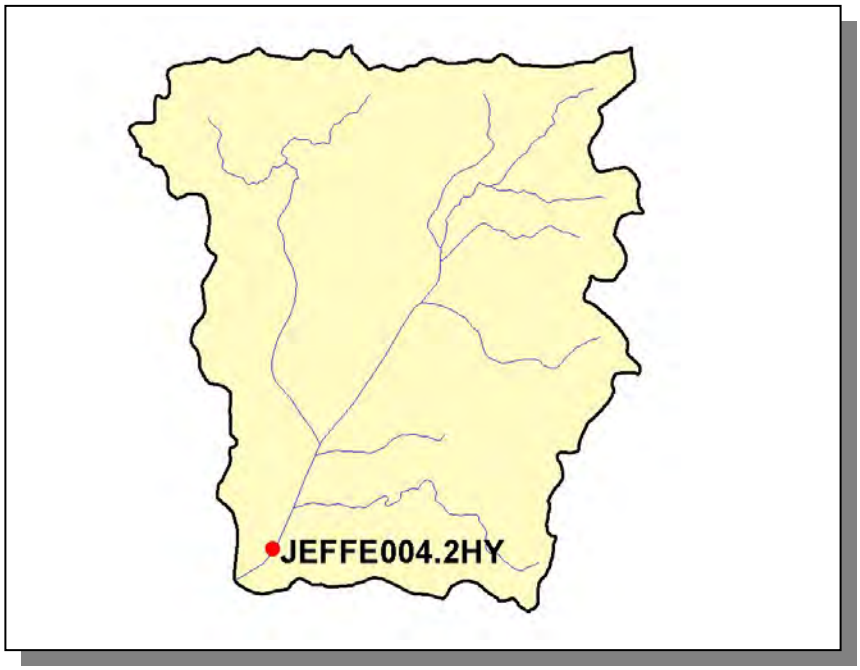

Figure 4-146. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 080102080405. *More information, including site names and locations, is provided in Appendix IV.*

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

There are no point source contributions in this subwatershed.

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

LIVESTOCK COUNTS		
Beef Cow	Cattle	Hogs
54	249	152

Table 4-132. Summary of Livestock Count Estimates in Subwatershed 080102080405. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves.*

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Haywood	3,442	6,220	29	237	1,740	12
Madison	0	12,437	0	476	10,210	0

Table 4-133. Summary of Livestock Count Estimates in Haywood and Madison 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)
Haywood	71.2	71.2	1.7	6.4
Madison	140.7	140.7	2.4	11.5

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

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.58
Grass (Hayland)	2.56
Grass, Forbs, Legumes (Mixed Pasture)	1.55
Corn (Row Crops)	10.50
Cotton (Row Crops)	12.69
Sorghum (Row Crops)	4.02
Soybeans (Row Crops)	7.74
Wheat (Close-Grown Cropland)	3.53
All Other Close-Grown Cropland	2.00
Fruit (Horticultural)	0.76
Other Vegetable and Truck Crops	5.69
Other Cropland not Planted	1.42
Conservation Reserve Program Lands	0.73
Other Land in Farms	0.13
Farmsteads and Ranch Headquarters	0.55

Table 4-135. Annual Estimated Total Soil Loss in Subwatershed 080102080405.

4.2.D.vi. 080102080406 (Bear Creek).

Figure 4-147. Location of Subwatershed 080102080406. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

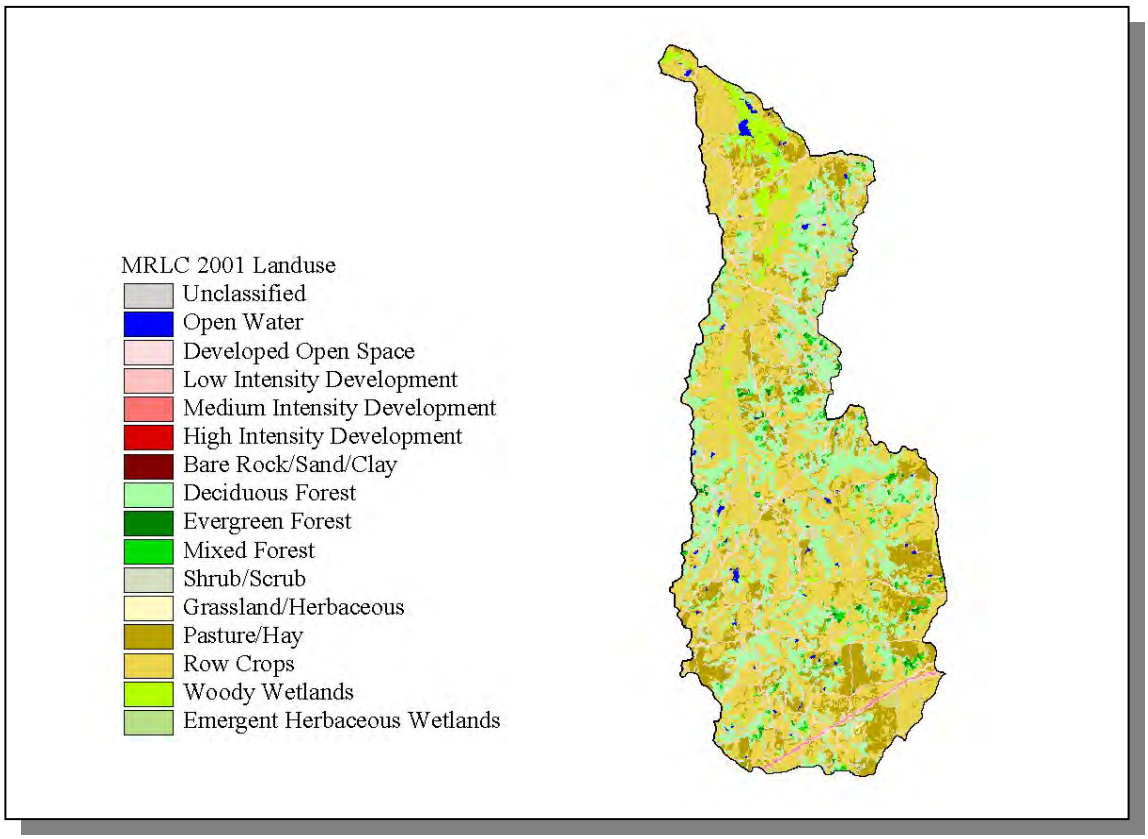

Figure 4-148. Illustration of Land Use Distribution in Subwatershed 080102080406.

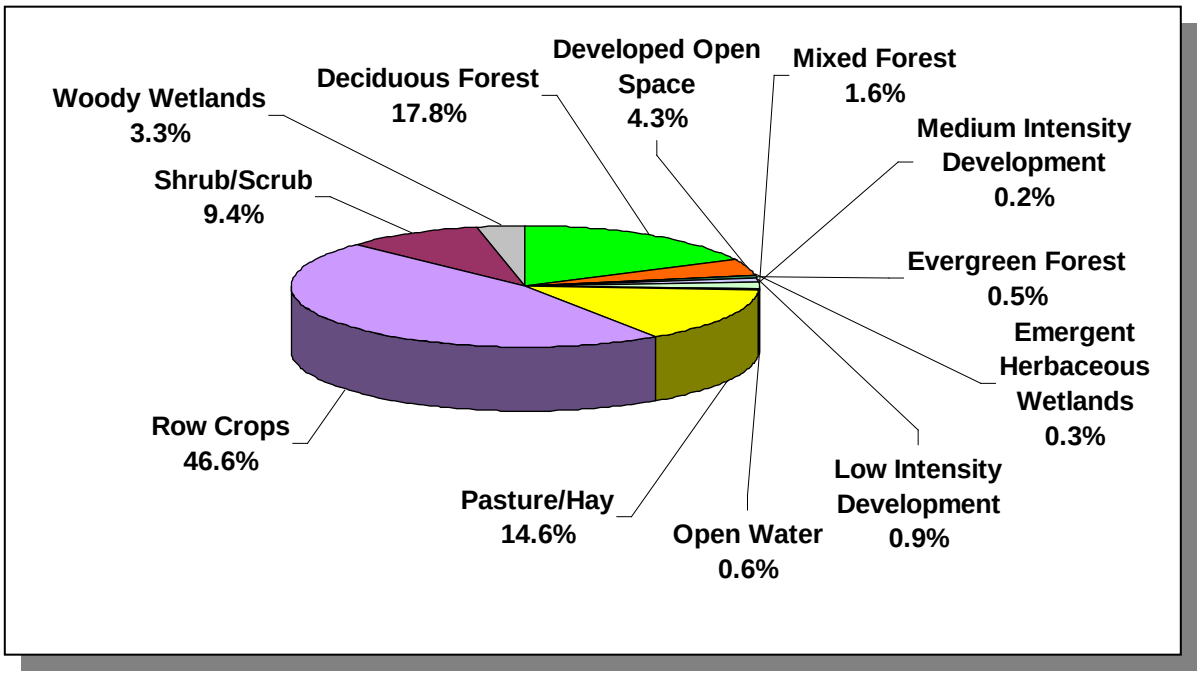

Figure 4-149. Land Use Distribution in Subwatershed 080102080406. *More information is provided in Appendix IV.*

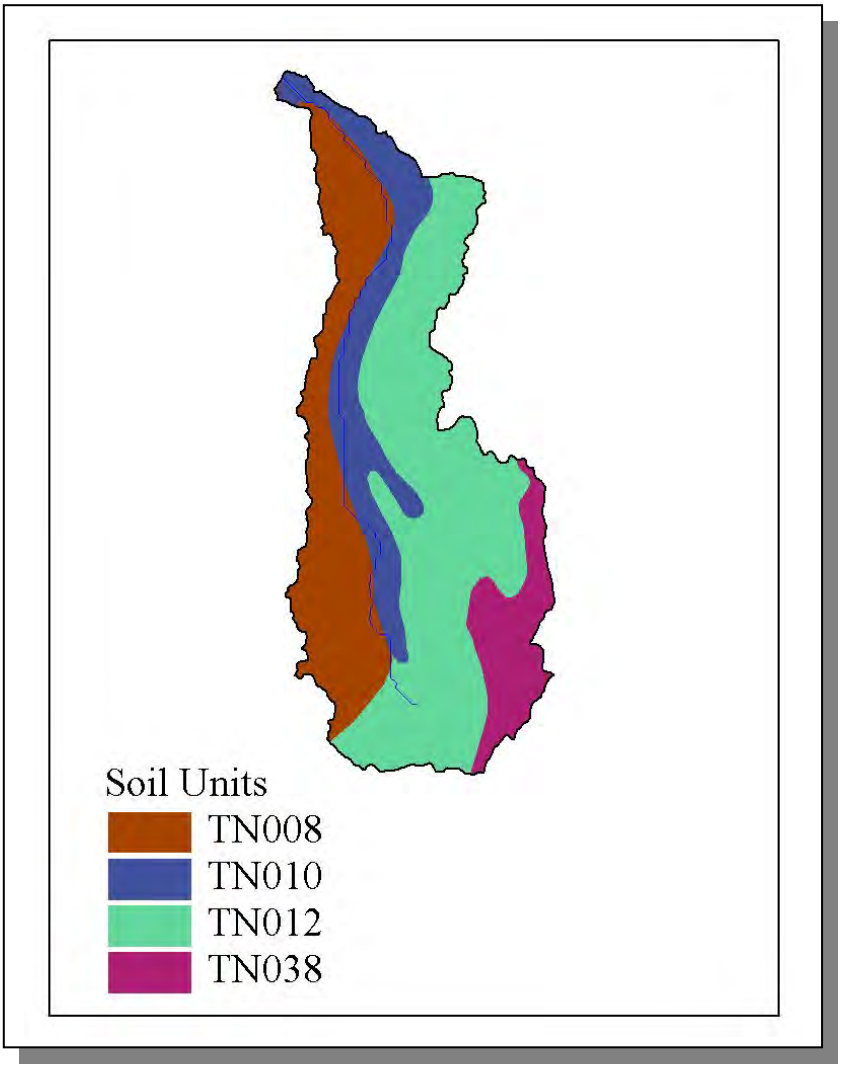

Figure 4-150. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080406.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN008	2.00	C	1.38	5.20	Silty Loam	0.48
TN010	81.00	C	1.33	5.11	Silty Loam	0.44
TN012	1.00	C	2.52	5.13	Silty Loam	0.39
TN038	9.00	C	1.65	5.20	Silty Loam	0.46

Table 4-136. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080406. *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)
Fayette	25,559	29,412	28,806	2.78	710	817	800	12.7
Hardeman	23,377	24,702	28,105	1.66	388	410	467	20.4
Haywood	19,437	19,709	19,797	2.31	449	456	458	2.0
Total	**68,373**	**73,823**	**76,708**		**1,547**	**1,683**	**1,725**	**11.5**

Table 4-137. Population Estimates in Subwatershed 080102080406.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Whiteville	Hardeman	1,050	444	424	20	0

Table 4-138. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 080102080406.

Figure 4-151. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 080102080406. *More information, including site names and locations, is provided in Appendix IV.*

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

There are no point source contributions in this subwatershed.

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

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
1,222	2,232	50	<5	1,530	13

Table 4-139. Summary of Livestock Count Estimates in Subwatershed 080102080406. *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
Fayette	13.421	25,437	965	15	25,667	124
Hardeman	9,184	15,877	62	28	5,221	144
Haywood	3,442	6,220	29	237	1,740	12

Table 4-140. Summary of Livestock Count Estimates in Fayette, Hardeman, and Haywood 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)
Fayette	152.0	152.0	1.1	3.3
Hardeman	247.1	247.1	5.0	18.6
Haywood	71.2	71.2	1.7	6.4

Table 4-141. Forest Acreage and Annual Removal Rates (1987-1994) in Fayette, Hardeman, and Haywood Counties.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.71
Grass (Hayland)	1.33
Legumes, Grass (Hayland)	0.22
Legumes (Hayland)	0.16
Grass, Forbs, Legumes (Mixed Pasture)	0.71
Corn (Row Crops)	13.98
Cotton (Row Crops)	14.36
Sorghum (Row Crops)	3.56
Soybeans (Row Crops)	9.83
Wheat (Close-Grown Cropland)	7.21
All Other Close-Grown Cropland	3.08
Fruit (Horticultural)	0.54
Other Vegetable and Truck Crops	4.20
Summer Fallow (Other Cropland)	6.11
Other Cropland not Planted	2.02
Conservation Reserve Program Lands	0.54
Other Land in Farms	0.16
Farmsteads and Ranch Headquarters	0.49

Table 4-142. Annual Estimated Total Soil Loss in Subwatershed 080102080406.

4.2.D.vii. 080102080407 (Poplar Creek).

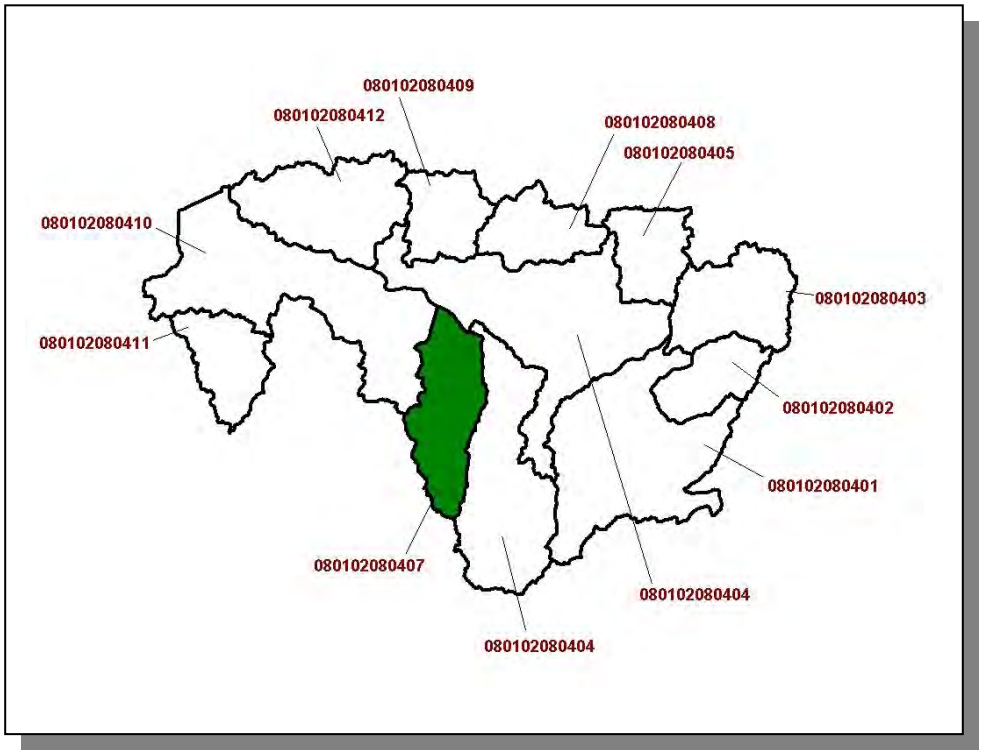

Figure 4-152. Location of Subwatershed 080102080407. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

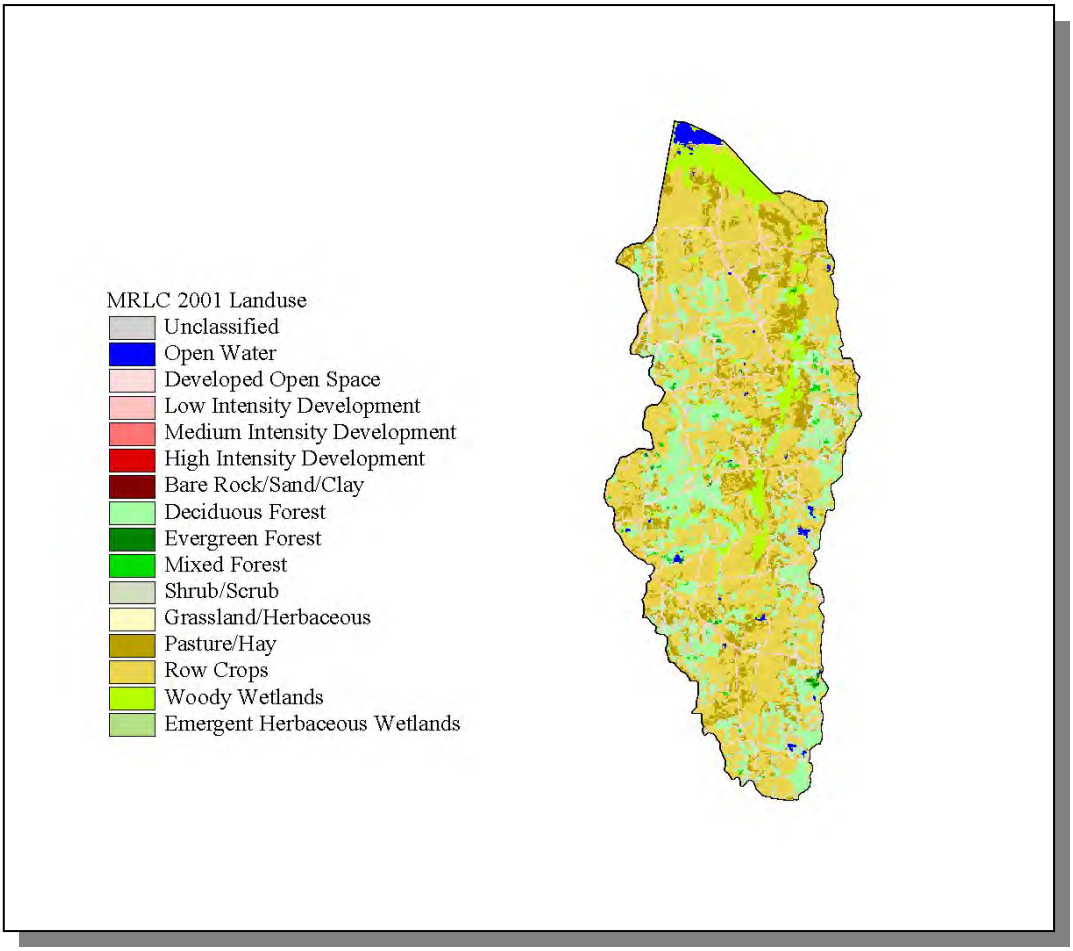

Figure 4-153. Illustration of Land Use Distribution in Subwatershed 080102080407.

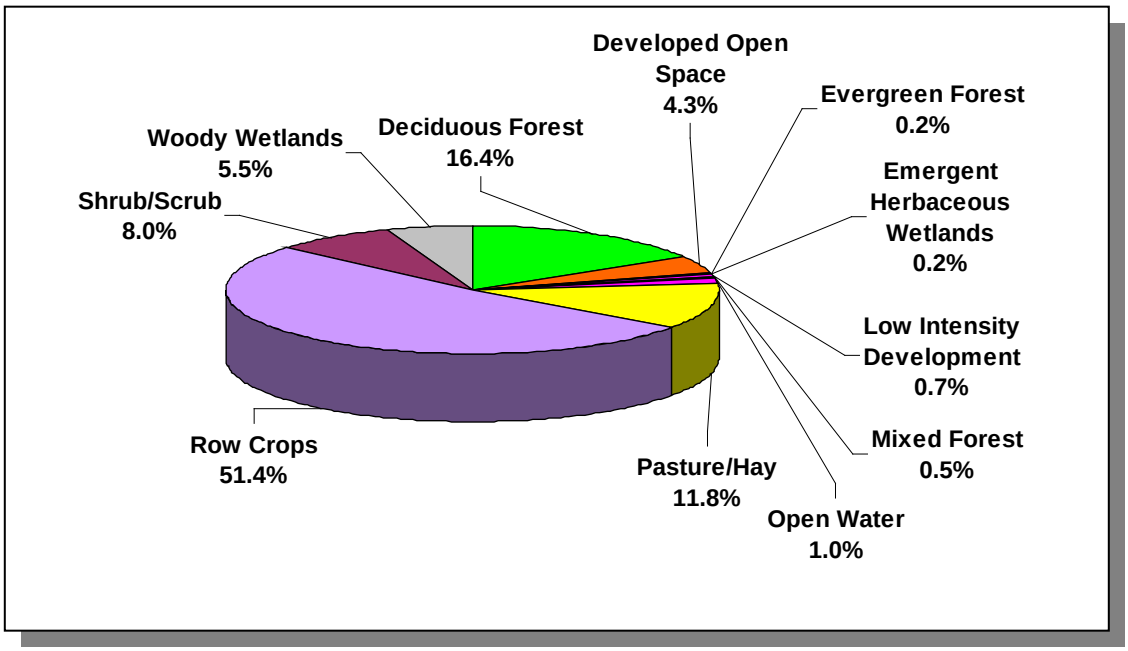

Figure 4-154. Land Use Distribution in Subwatershed 080102080407. *More information is provided in Appendix IV.*

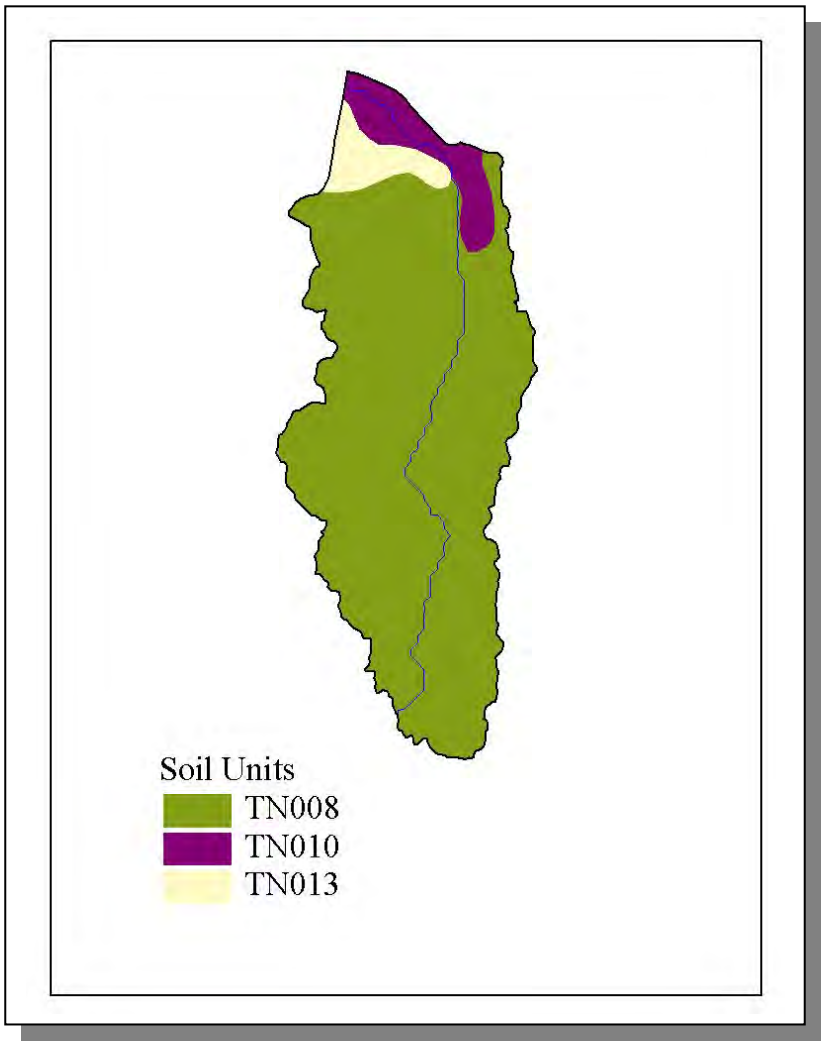

Figure 4-155. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080407.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN008	2.00	C	1.38	5.20	Silty Loam	0.48
TN010	81.00	C	1.33	5.11	Silty Loam	0.44
TN013	72.00	C	1.30	5.44	Silty Loam	0.46

Table 4-143. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080407. *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)
Fayette	25,559	29,412	28,806	1.11	283	325	318	12.4
Haywood	19,437	19,709	19,797	3.5	681	691	694	1.9
Total	**44,996**	**49,121**	**48,603**		**964**	**1,016**	**1,012**	**5.0**

Table 4-144. Population Estimates in Subwatershed 080102080407.

Figure 4-156. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 080102080407. *More information, including site names and locations, is provided in Appendix IV.*

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

There are no point source contributions in this subwatershed.

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

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
396	734	16	<5	486	<5

Table 4-145. Summary of Livestock Count Estimates in Subwatershed 080102080407. *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
Fayette	13,421	25,437	965	15	25,667	124
Haywood	3,442	6,220	29	237	1,740	12

Table 4-146. Summary of Livestock Count Estimates in Fayette and Haywood 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)
Fayette	152.0	152.0	1.1	3.3
Haywood	71.2	71.2	1.7	6.4

Table 4-147. Forest Acreage and Annual Removal Rates (1987-1994) in Fayette and Haywood Counties.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.62
Grass (Hayland)	2.72
Legumes, Grass (Hayland)	0.22
Legumes (Hayland)	0.16
Grass, Forbs, Legumes (Mixed Pasture)	0.43
Corn (Row Crops)	10.99
Cotton (Row Crops)	11.50
Sorghum (Row Crops)	4.02
Soybeans (Row Crops)	7.90
Wheat (Close-Grown Cropland)	2.75
All Other Close-Grown Cropland	3.08
Fruit (Horticultural)	0.65
Other Vegetable and Truck Crops	4.20
Other Cropland not Planted	1.04
Conservation Reserve Program Lands	0.78
Other Land in Farms	1.16
Farmsteads and Ranch Headquarters	0.47

Table 4-148. Annual Estimated Total Soil Loss in Subwatershed 080102080407.

4.2.D.viii. 080102080408 (Carter Creek).

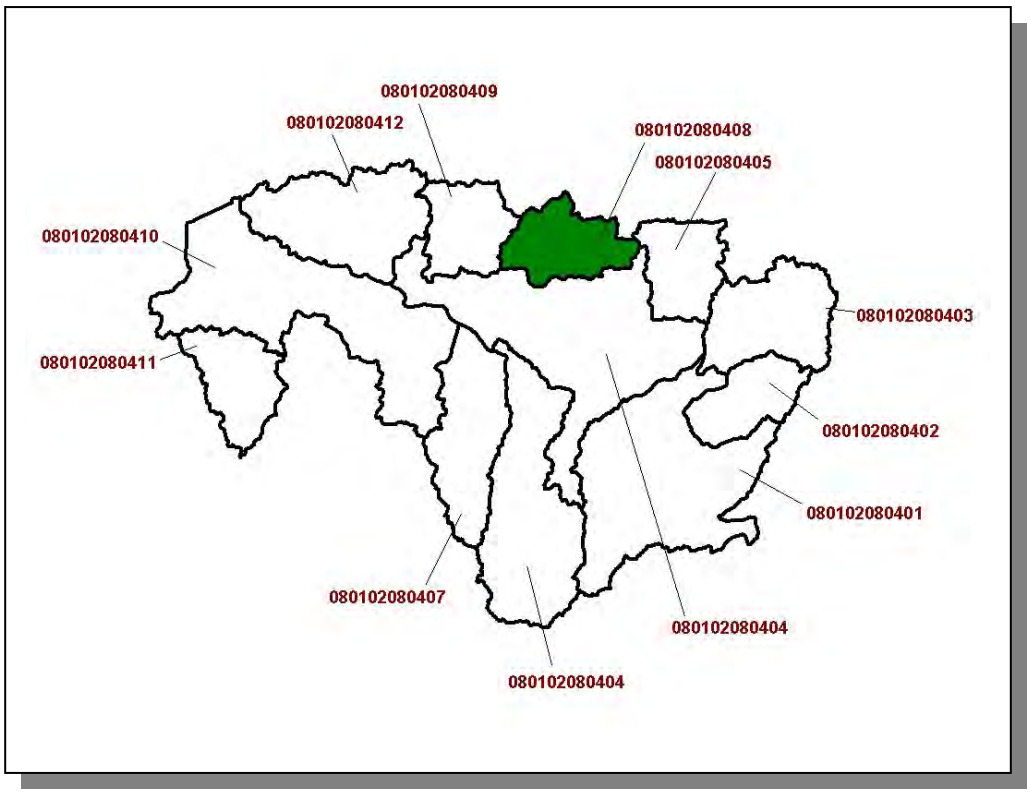

Figure 4-157. Location of Subwatershed 080102080408. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

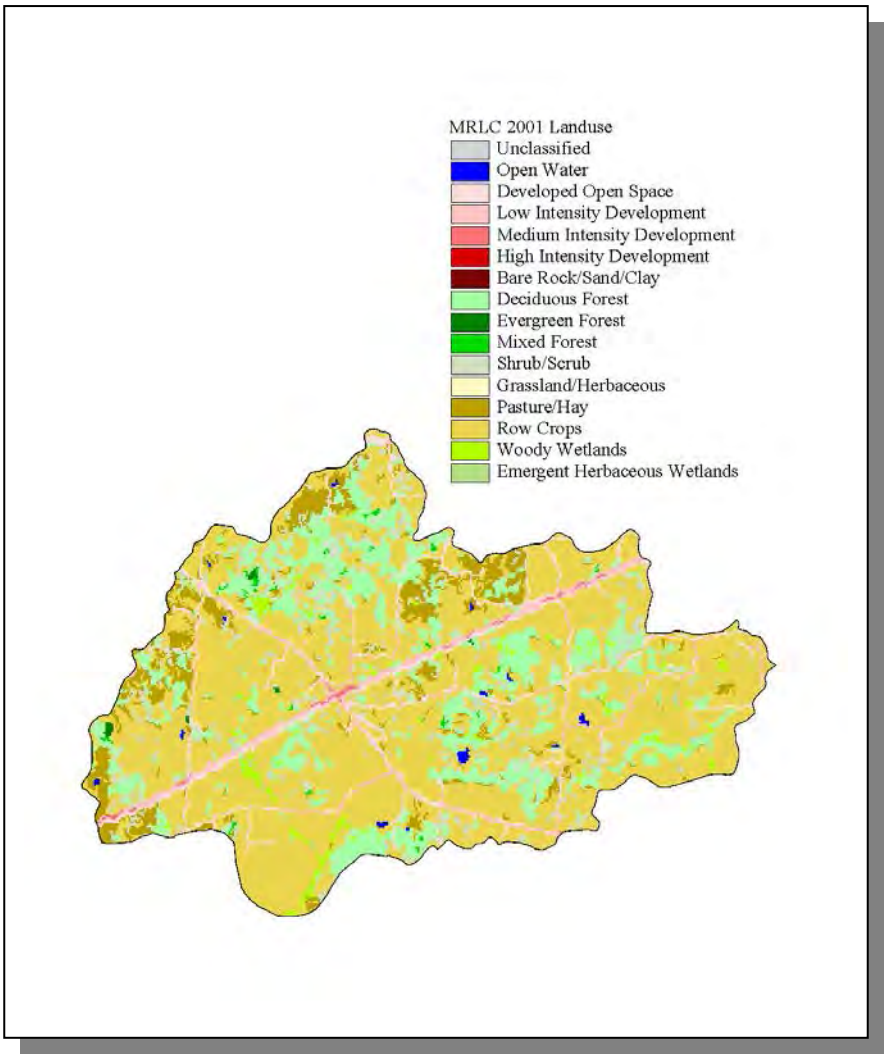

Figure 4-158. Illustration of Land Use Distribution in Subwatershed 080102080408.

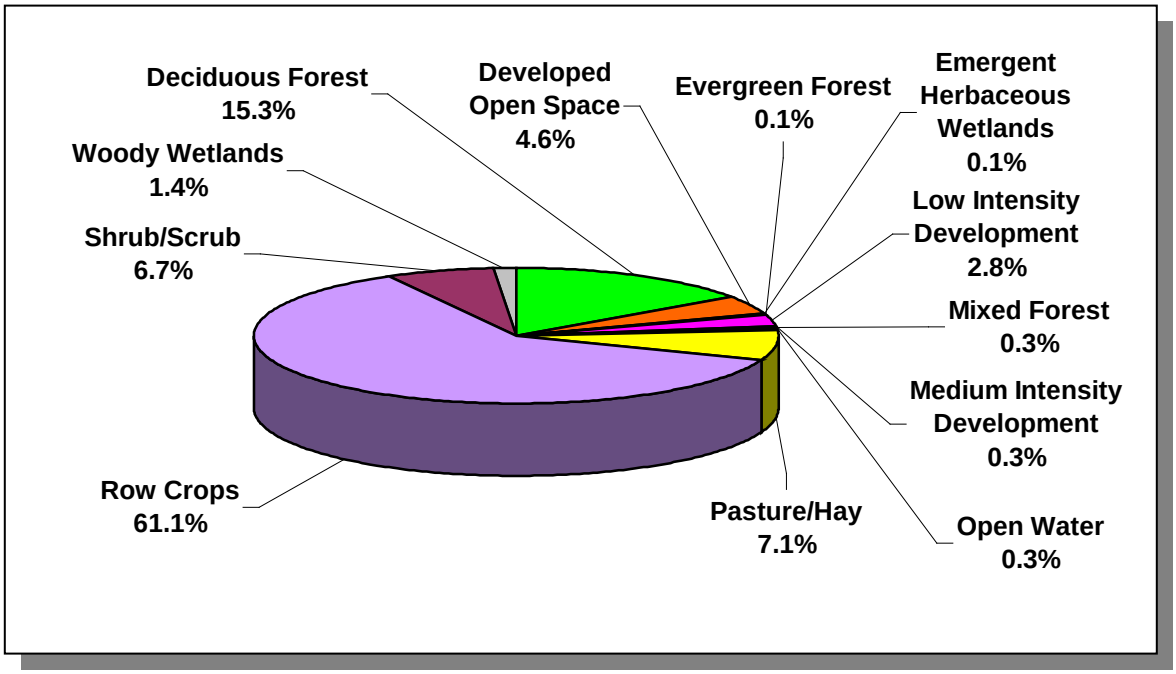

Figure 4-159. Land Use Distribution in Subwatershed 080102080408. *More information is provided in Appendix IV.*

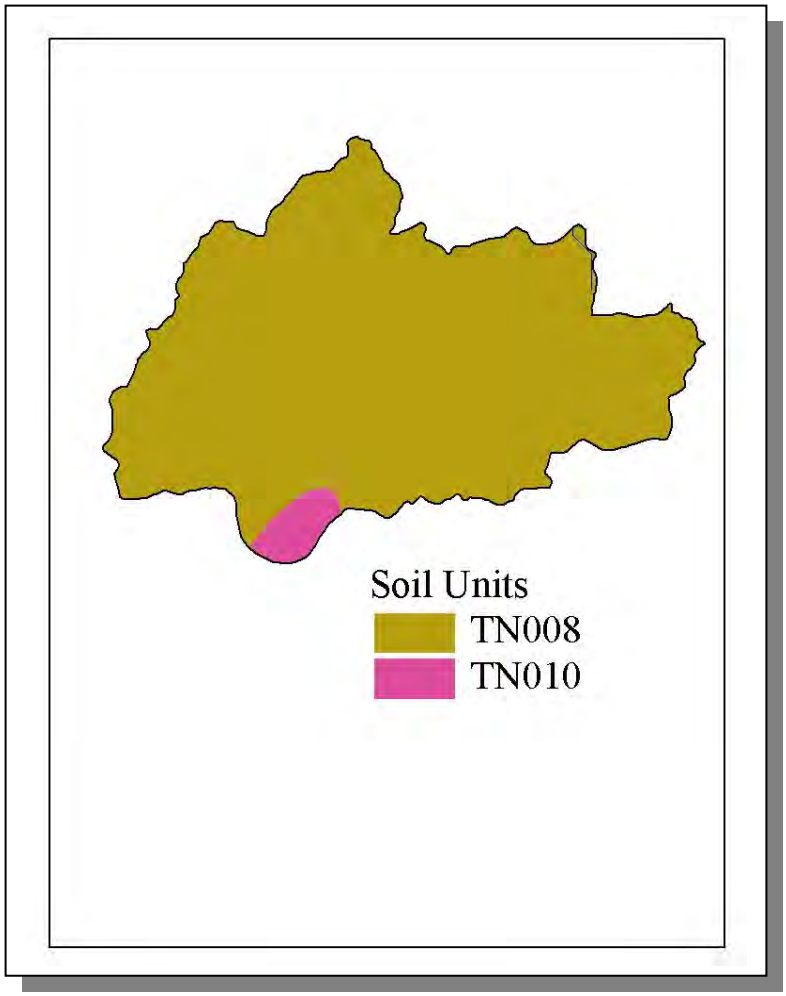

Figure 4-160. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080408.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN008	2.00	C	1.38	5.20	Silty Loam	0.48
TN010	81.00	C	1.33	5.11	Silty Loam	0.44

Table 4-149. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080408. *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)
Haywood	19,437	19,709	19,797	3.18	617	626	629	1.9

Table 4-150. Population Estimates in Subwatershed 080102080408.

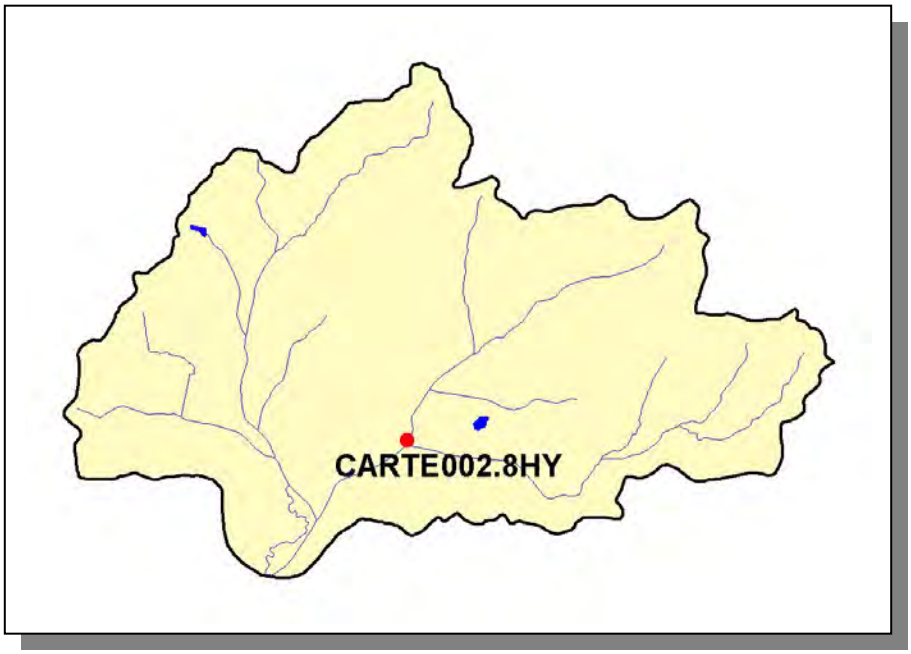

Figure 4-161. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 080102080408. *More information, including site names and locations, is provided in Appendix IV.*

4.2.D.viii.a. Point Source Contributions.

There are no point source contributions in this subwatershed.

4.2.D.viii.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS			
Beef Cow	Cattle	Milk Cow	Hogs
137	247	<5	69

Table 4-151. Summary of Livestock Count Estimates in Subwatershed 080102080408. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves.*

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Haywood	3,442	6,220	29	237	1,740	12

Table 4-152. Summary of Livestock Count Estimates in Haywood 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)
Haywood	71.2	71.2	1.7	6.4

Table 4-153. Forest Acreage and Annual Removal Rates (1987-1994) in Haywood County.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.70
Grass (Hayland)	3.69
Grass, Forbs, Legumes (Mixed Pasture)	0.30
Corn (Row Crops)	7.47
Cotton (Row Crops)	12.50
Sorghum (Row Crops)	4.02
Soybeans (Row Crops)	7.10
All Other Close-Grown Cropland	3.08
Fruit (Horticultural)	0.76
Other Vegetable and Truck Crops	4.20
Other Cropland not Planted	0.85
Conservation Reserve Program Lands	0.91
Other Land in Farms	0.16
Farmsteads and Ranch Headquarters	0.61

Table 4-154. Annual Estimated Total Soil Loss in Subwatershed 080102080408.

4.2.D.ix. 080102080409 (Sugar Creek).

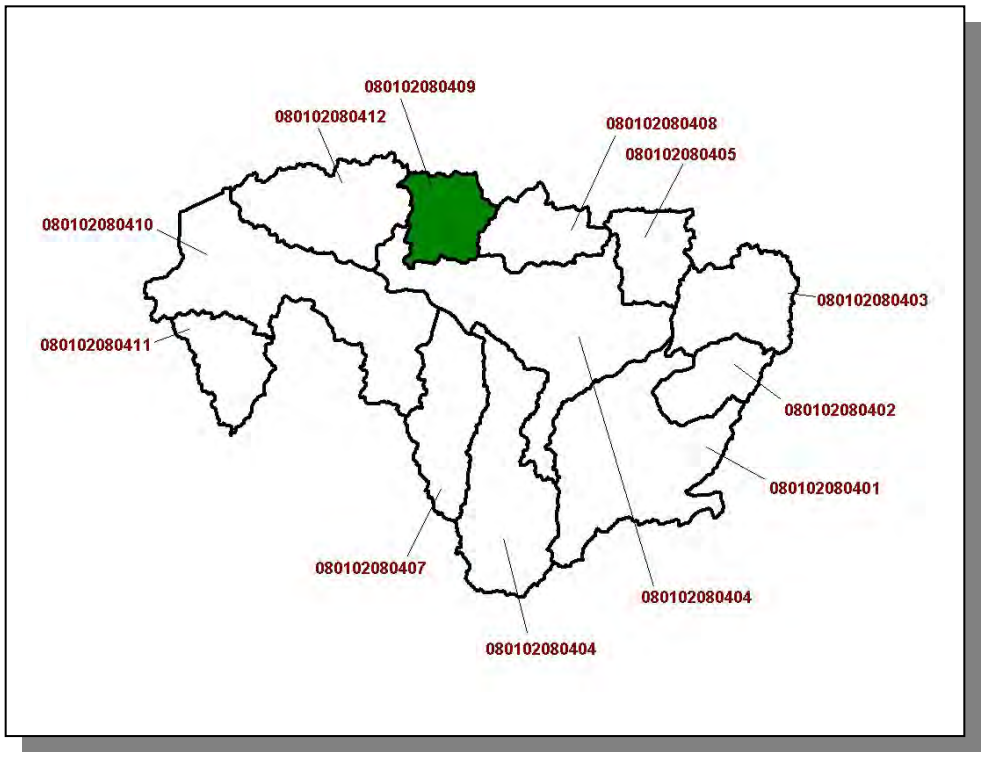

Figure 4-162. Location of Subwatershed 080102080409. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

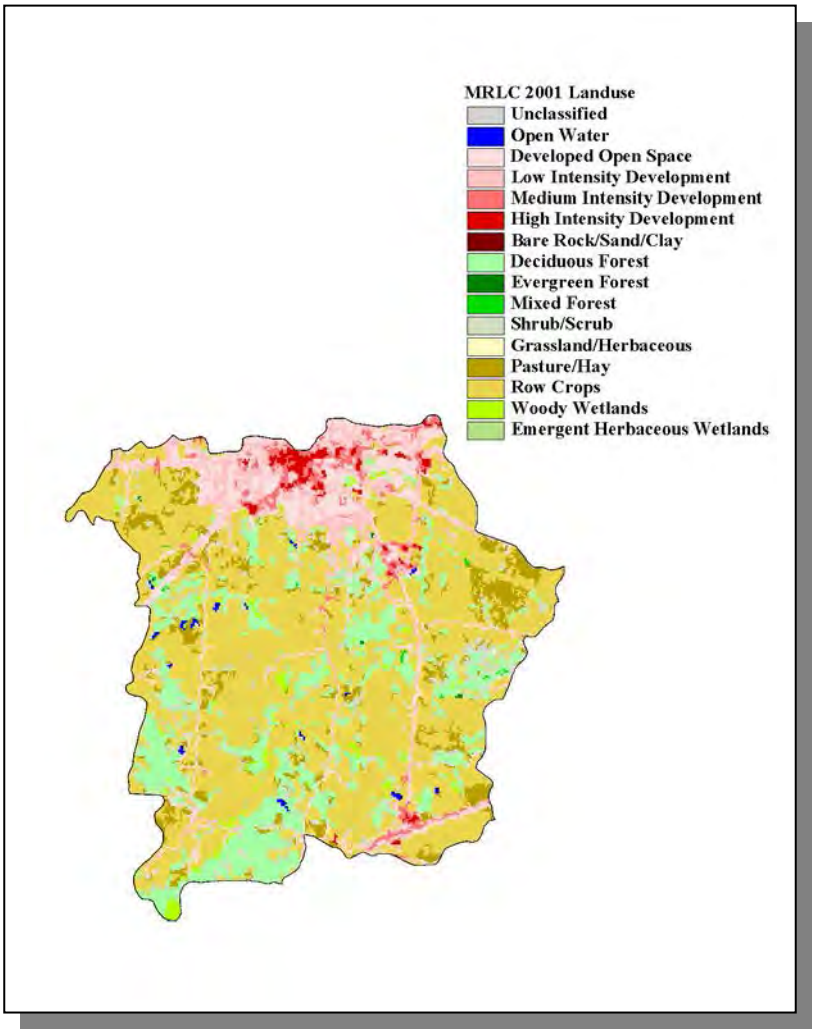

Figure 4-163. Illustration of Land Use Distribution in Subwatershed 080102080409.

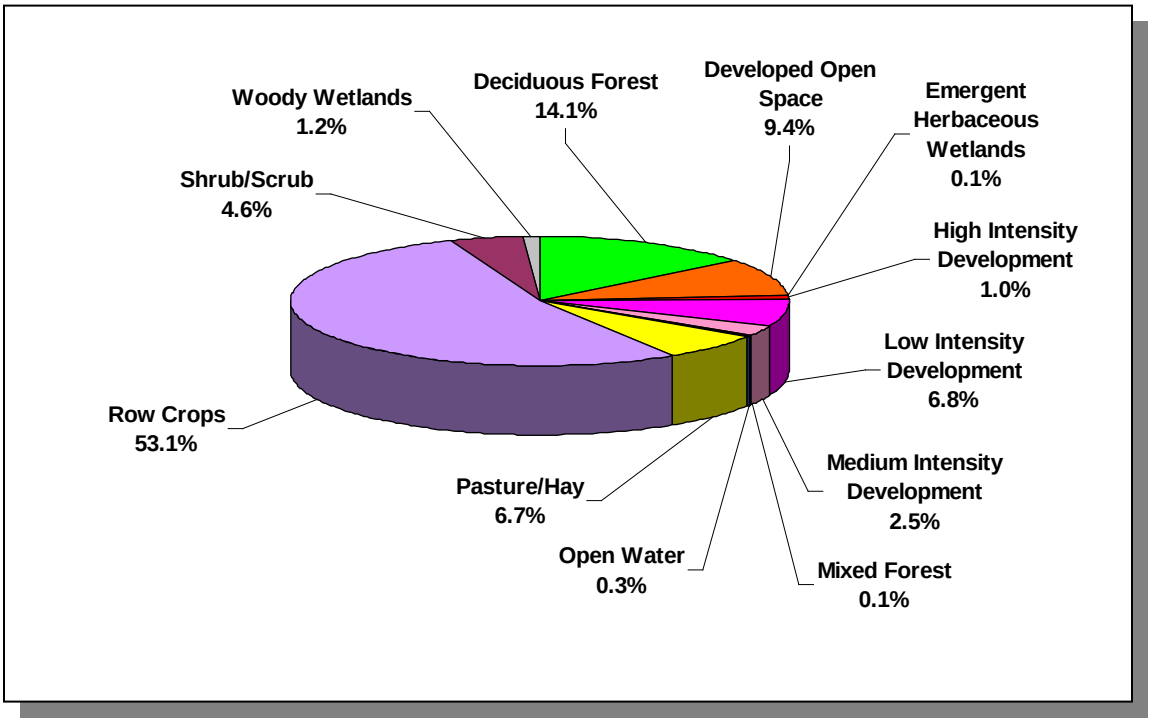

Figure 4-164. Land Use Distribution in Subwatershed 080102080409. *More information is provided in Appendix IV.*

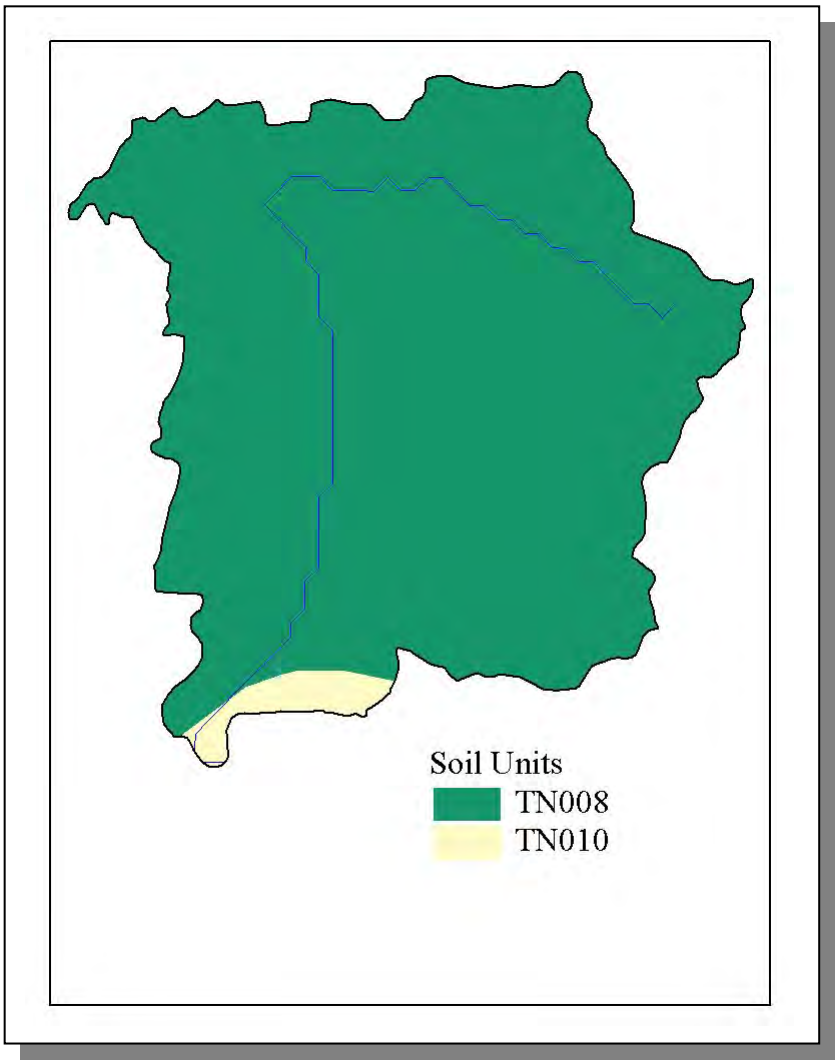

Figure 4-165. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080409.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN008	2.00	C	1.38	5.20	Silty Loam	0.48
TN010	81.00	C	1.33	5.11	Silty Loam	0.44

Table 4-155. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080409. *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)
Haywood	19,437	19,709	19,797	3.03	589	597	600	1.9

Table 4-156. Population Estimates in Subwatershed 080102080409.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Brownsville	Haywood	10,109	3,848	3,761	64	23

Table 4-157. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 080102080409.

Figure 4-166. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 080102080409. *More information, including site names and locations, is provided in Appendix IV.*

4.2.D.ix.a. Point Source Contributions.

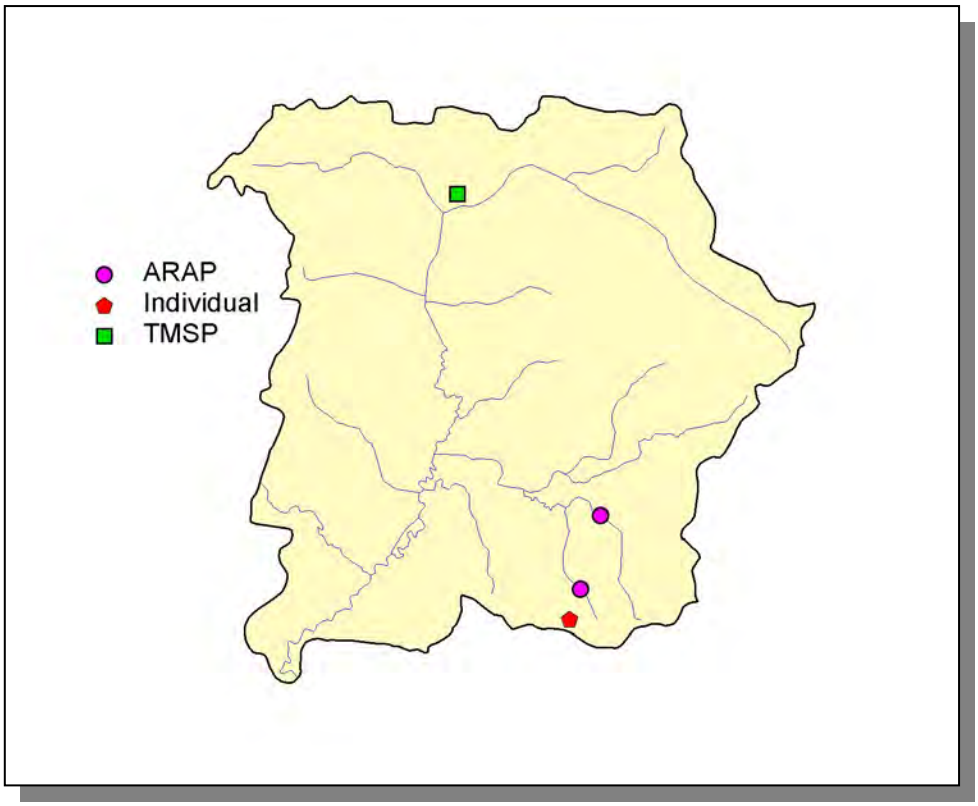

Figure 4-167. Location of Permits Issued in Subwatershed 080102080409. *More information, including the names of facilities, is provided in Appendix IV.*

Figure 4-168. Location of Active NPDES Sites in Subwatershed 080102080409. *More information, including the names of facilities, is provided in Appendix IV.*

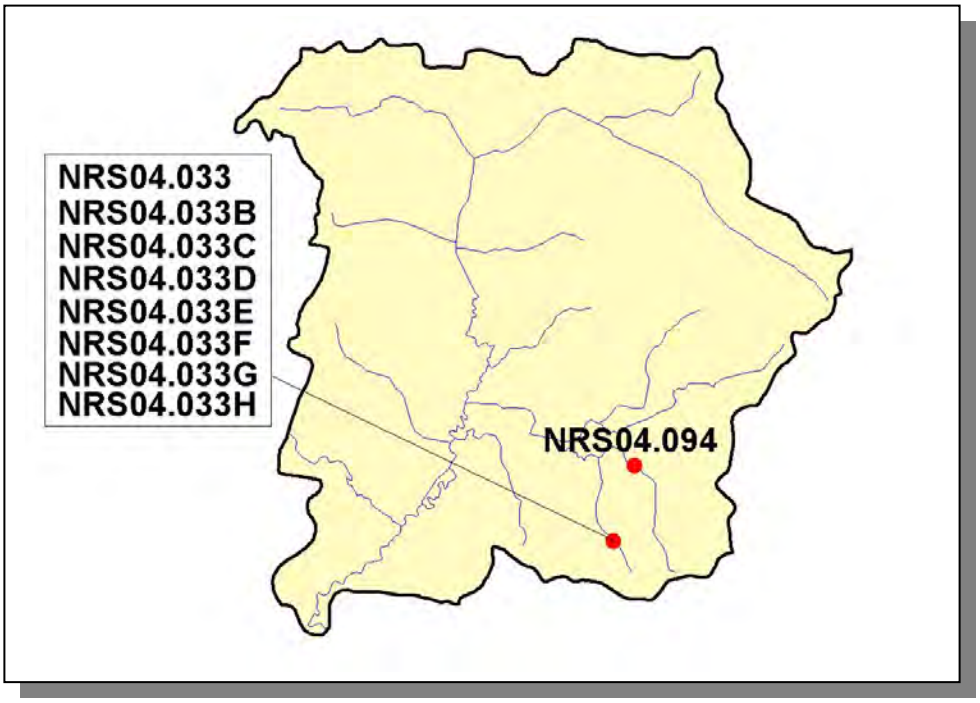

Figure 4-169. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 080102080409. *More information is provided in Appendix IV.*

Figure 4-170. Location of TMSP Sites in Subwatershed 080102080409. *More information, including the names of facilities, is provided in Appendix IV.*

4.2.D.ix.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS			
Beef Cow	Cattle	Milk Cow	Hogs
130	235	<5	66

Table 4-158. Summary of Livestock Count Estimates in Subwatershed 080102080409. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves.*

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Haywood	3,442	6,220	29	237	1,740	12

Table 4-159. Summary of Livestock Count Estimates in Haywood 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)
Haywood	71.2	71.2	1.7	6.4

Table 4-160. Forest Acreage and Annual Removal Rates (1987-1994) in Haywood County.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.70
Grass (Hayland)	3.69
Grass, Forbs, Legumes (Mixed Pasture)	0.30
Corn (Row Crops)	7.47
Cotton (Row Crops)	12.50
Sorghum (Row Crops)	4.02
Soybeans (Row Crops)	7.10
All Other Close-Grown Cropland	3.08
Fruit (Horticultural)	0.76
Other Vegetable and Truck Crops	4.20
Other Cropland not Planted	0.85
Conservation Reserve Program Lands	0.91
Other Land in Farms	0.16
Farmsteads and Ranch Headquarters	0.61

Table 4-161. Annual Estimated Total Soil Loss in Subwatershed 080102080409.

4.2.D.x. 080102080410 (Hatchie River).

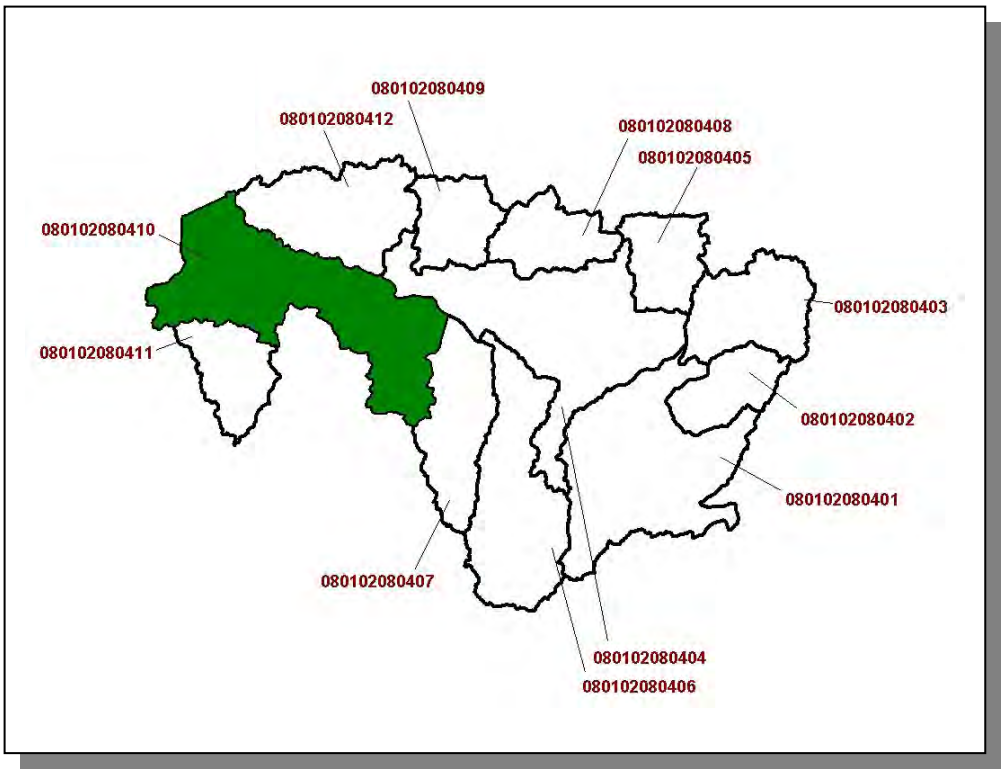

Figure 4-171. Location of Subwatershed 080102080410. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

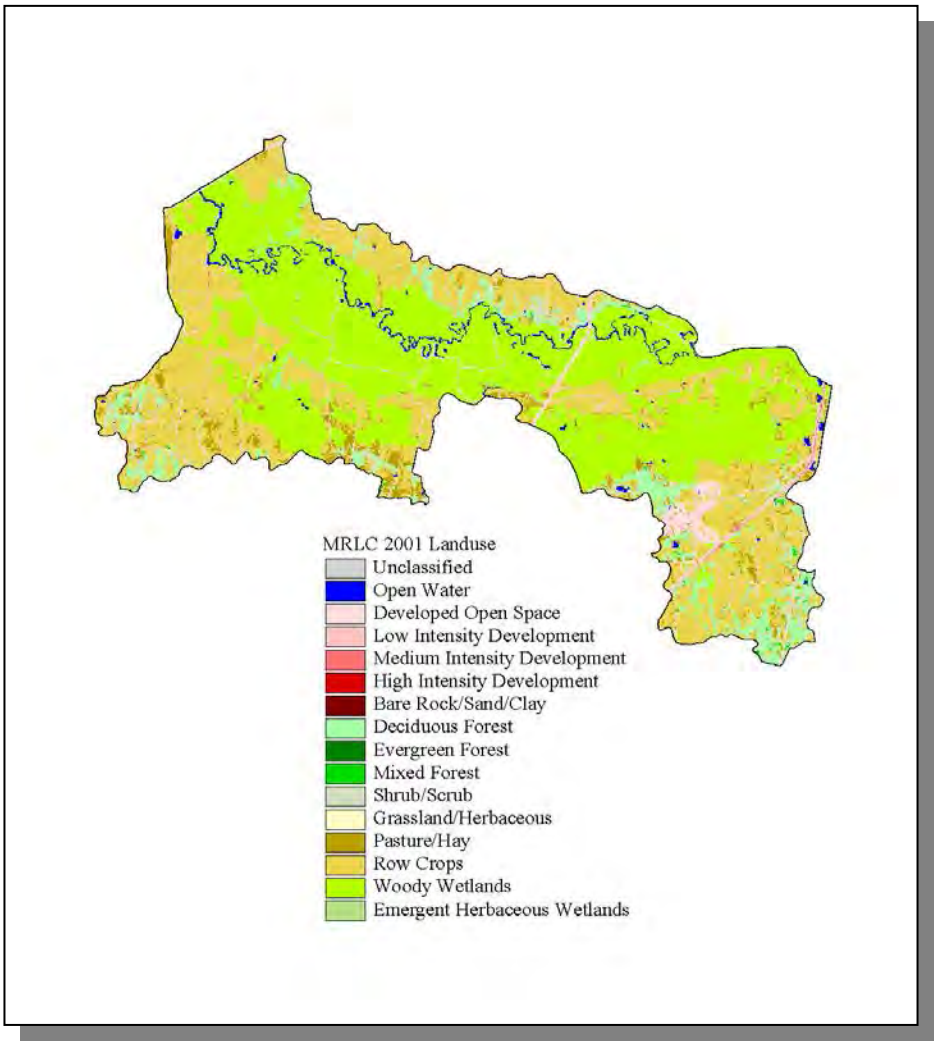

Figure 4-172. Illustration of Land Use Distribution in Subwatershed 080102080410.

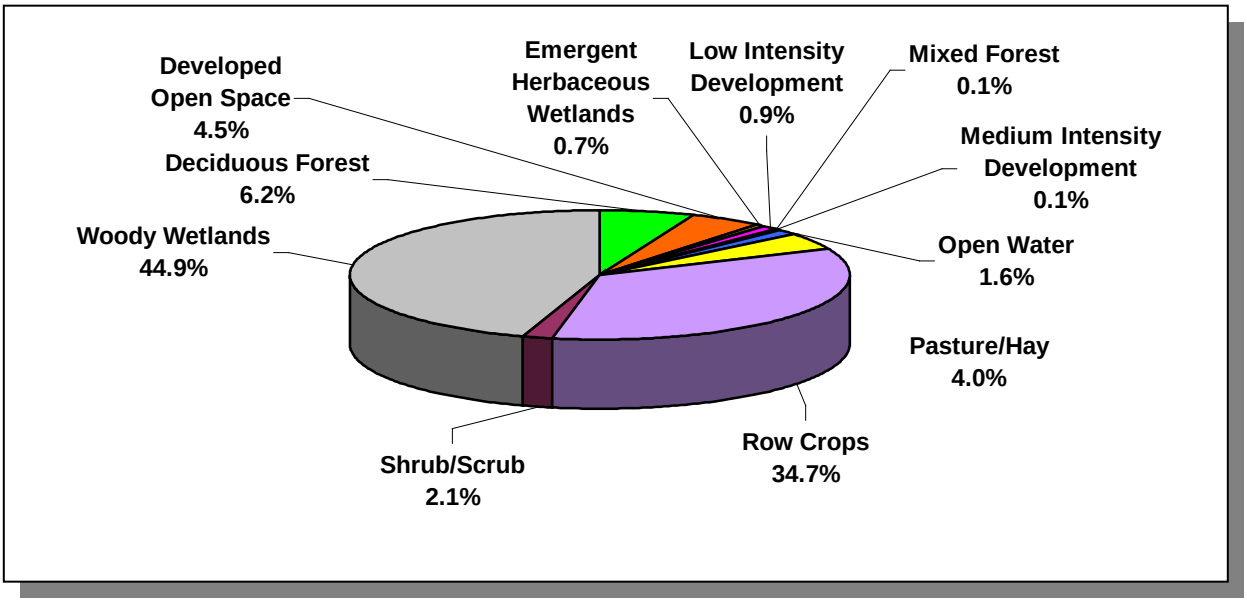

Figure 4-173. Land Use Distribution in Subwatershed 080102080410. *More information is provided in Appendix IV.*

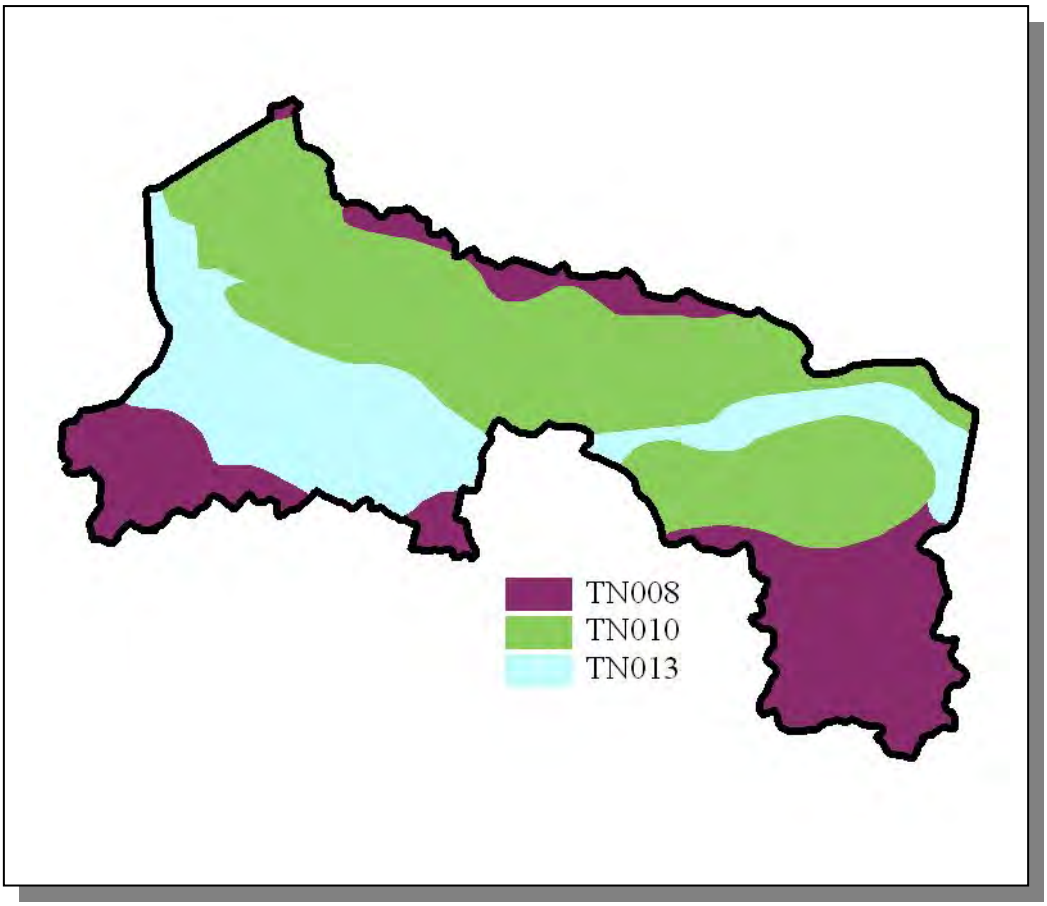

Figure 4-174. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080410.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN008	2.00	C	1.38	5.20	Silty Loam	0.48
TN010	81.00	C	1.33	5.11	Silty Loam	0.44
TN013	72.00	C	1.30	5.44	Silty Loam	0.46

Table 4-162. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080410. *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)
Haywood	19,437	19,709	19,787	9.68	1,881	1,907	1,915	1.8
Tipton	37,568	45,986	51,271	2.41	905	1,108	1,235	36.5
Total	**57,005**	**65,695**	**71,068**		**2,786**	**3,015**	**3,150**	**13.1**

Table 4-163. Population Estimates in Subwatershed 080102080410.

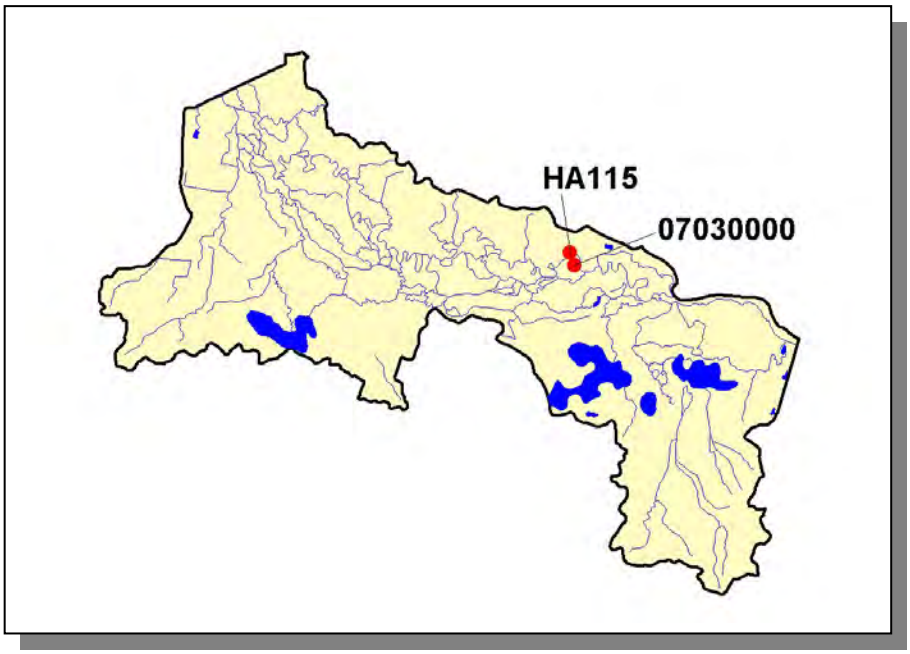

Figure 4-175. Location of Historical Streamflow Data Collection Sites in Subwatershed 080102080410. *More information is provided in Appendix IV.*

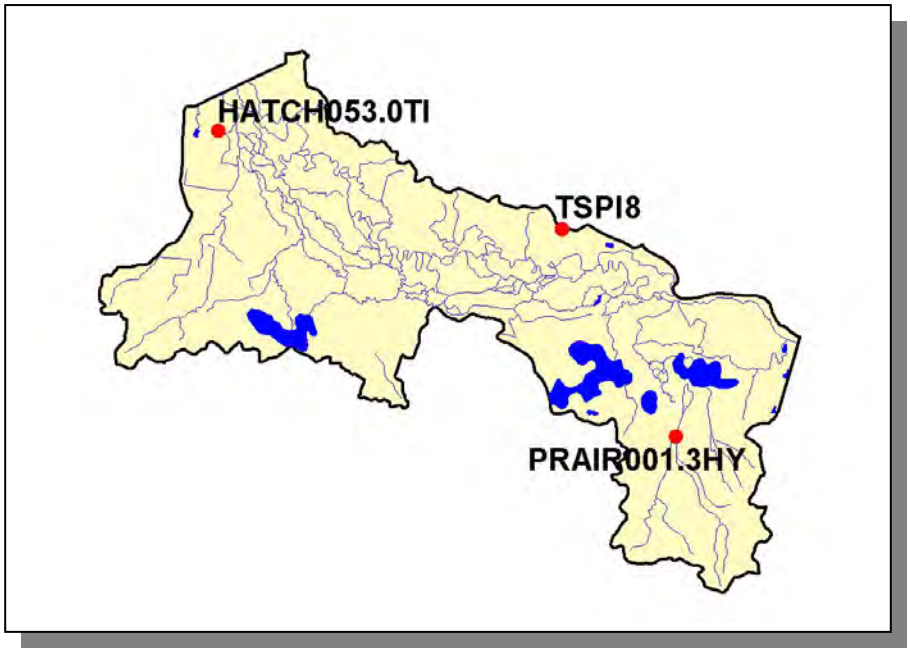

Figure 4-176. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 080102080410. *More information, including site names and locations, is provided in Appendix IV.*

4.2.D.x.a. Point Source Contributions.

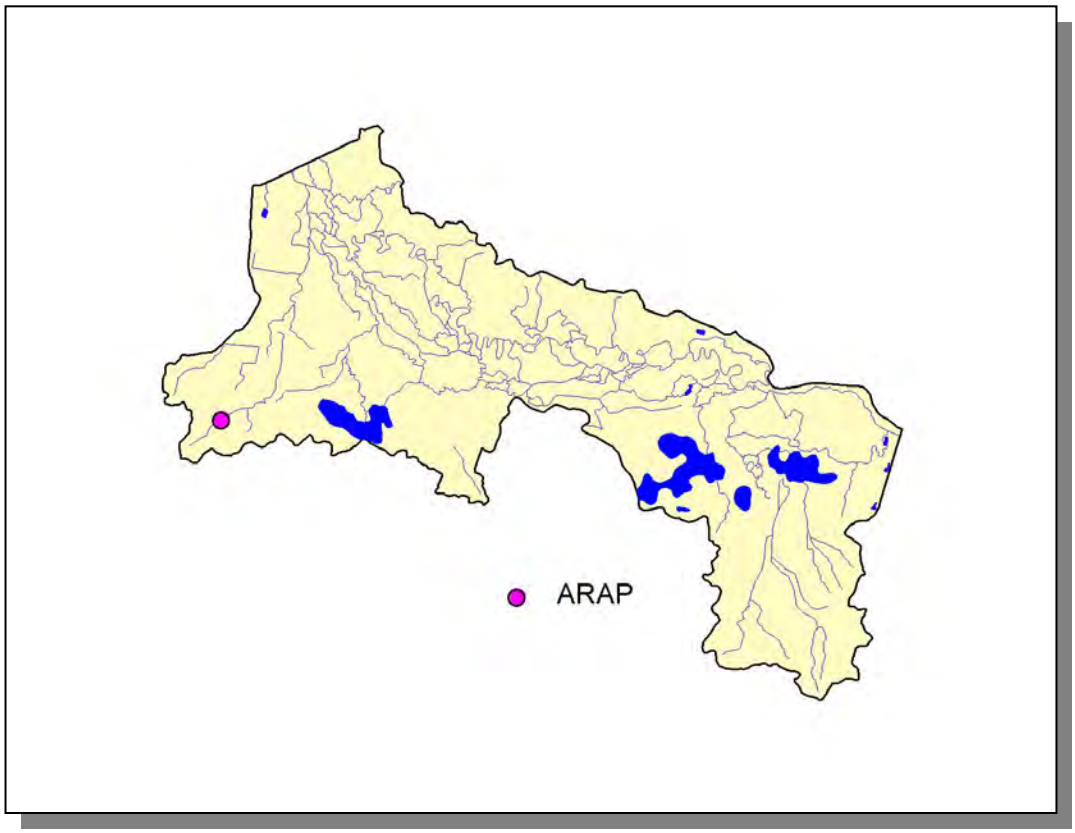

Figure 4-177. Location of Permits Issued in Subwatershed 0801020800410. *More information, including the names of facilities, is provided in Appendix IV.*

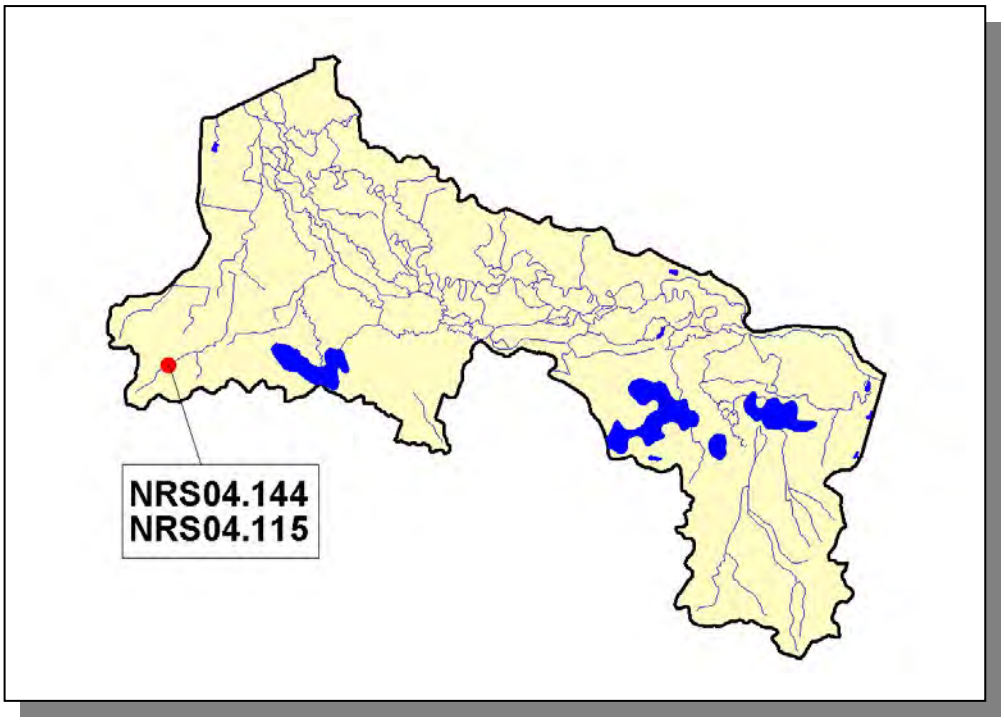

Figure 4-178. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 080102080410. *More information is provided in Appendix IV.*

4.2.D.x.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
323	584	<5	<5	116	<5

Table 4-164. Summary of Livestock Count Estimates in Subwatershed 080102080410. *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
Haywood	3,442	6,220	29	237	1,740	12
Tipton	5,422	9,796	14	334	251	86

Table 4-165. Summary of Livestock Count Estimates in Haywood and Tipton 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)
Haywood	71.2	71.2	1.7	6.4
Tipton	50.9	50.9	1.0	5.6

Table 4-166. Forest Acreage and Annual Removal Rates (1987-1994) in Haywood and Tipton Counties.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.72
Grass (Hayland)	3.42
Legumes (Hayland)	0.54
Grass, Forbs, Legumes (Mixed Pasture)	0.42
Corn (Row Crops)	7.47
Cotton (Row Crops)	13.18
Sorghum (Row Crops)	4.02
Soybeans (Row Crops)	9.06
All Other Close-Grown Cropland	3.08
Fruit (Horticultural)	0.76
Other Vegetable and Truck Crops	7.11
Other Cropland not Planted	0.75
Conservation Reserve Program Lands	0.93
Other Land in Farms	0.16
Farmsteads and Ranch Headquarters	0.62

Table 4-167. Annual Estimated Total Soil Loss in Subwatershed 080102080410.

4.2.D.xi. 080102080411 (Little Muddy Creek).

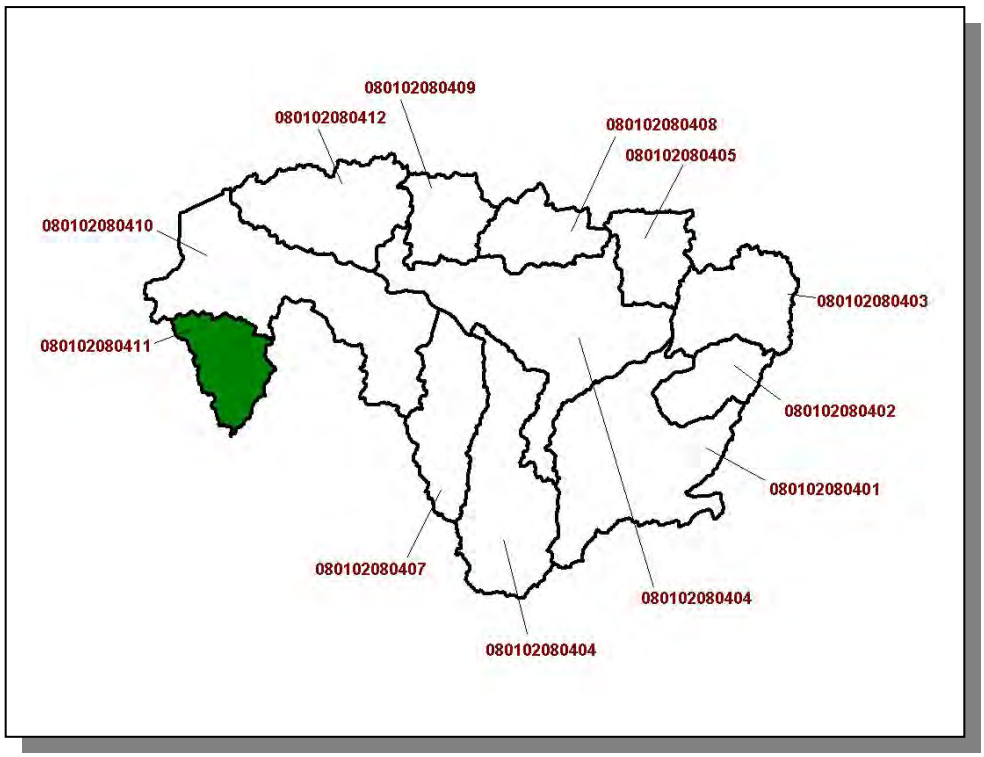

Figure 4-179. Location of Subwatershed 080102080411. *All Hatchie HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

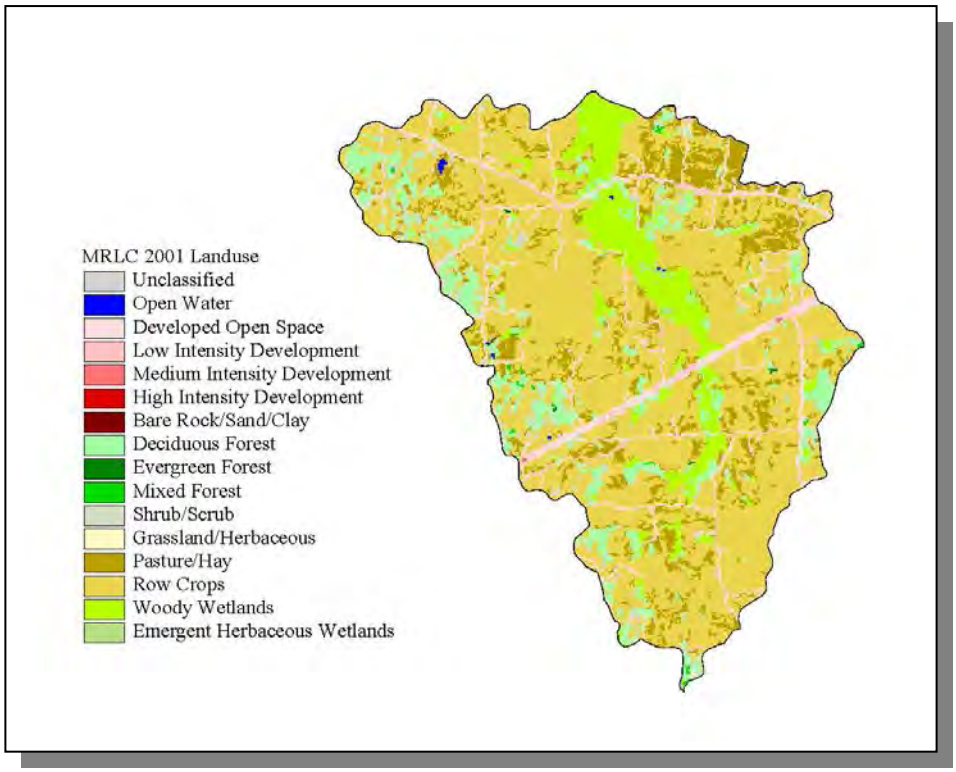

Figure 4-180. Illustration of Land Use Distribution in Subwatershed 080102080411.

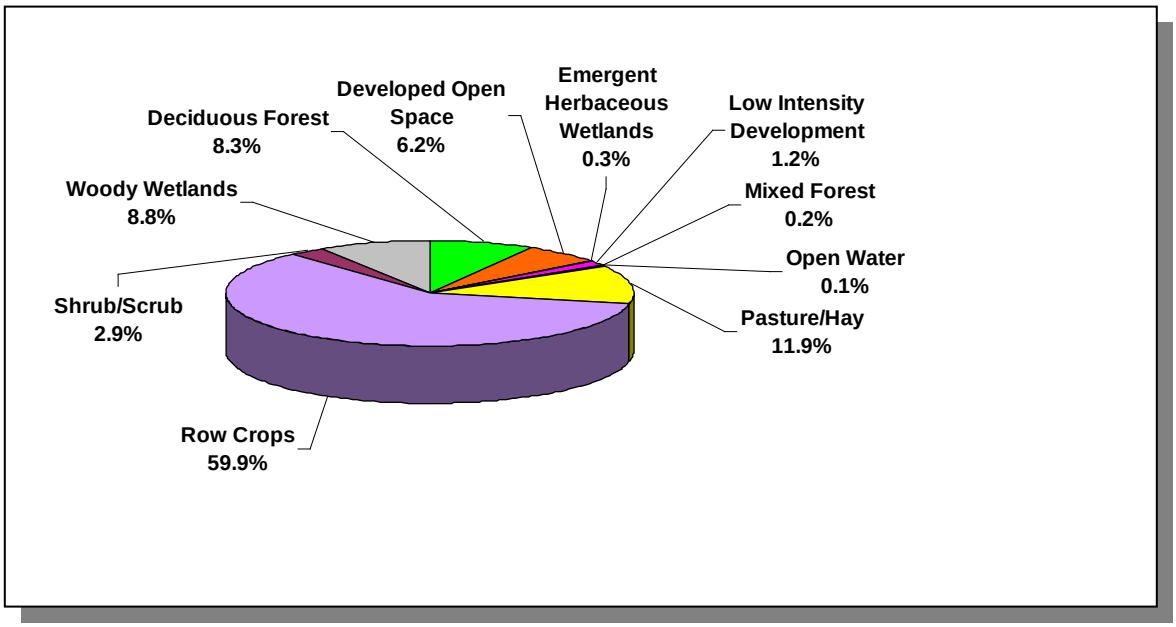

Figure 4-181. Land Use Distribution in Subwatershed 080102080411. *More information is provided in Appendix IV.*

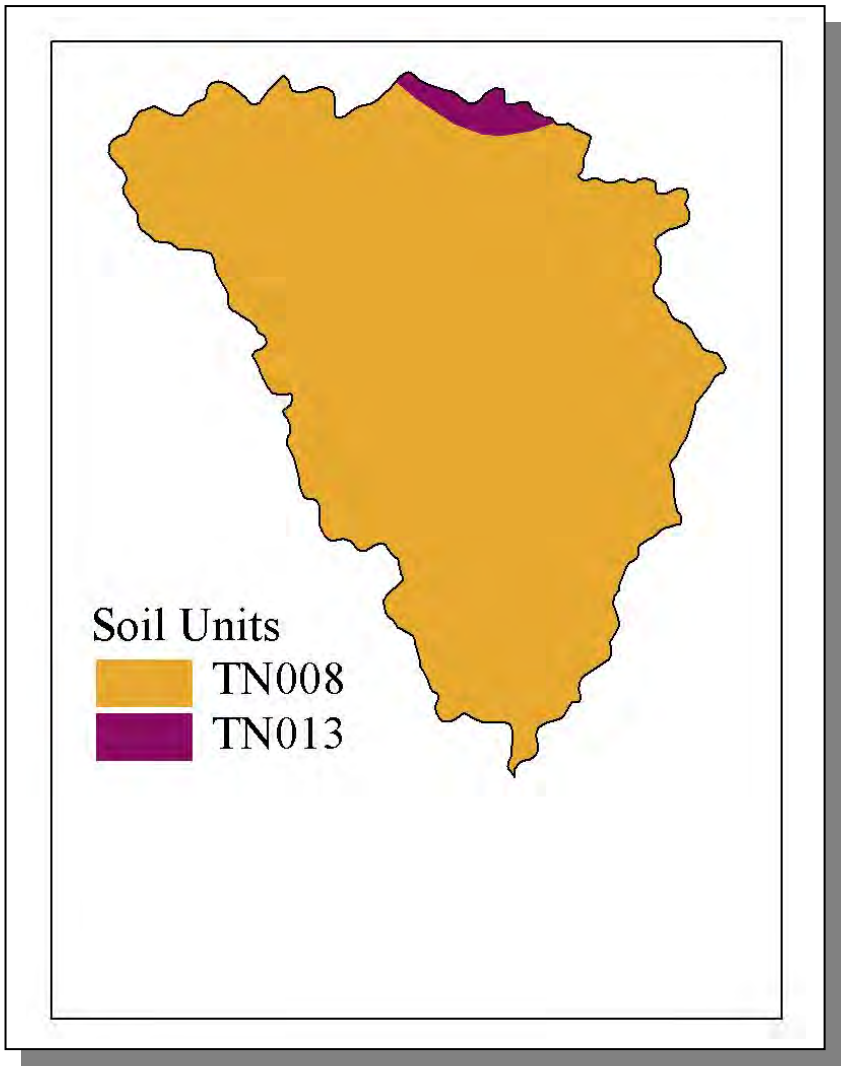

Figure 4-182. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080411.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN008	2.00	C	1.38	5.20	Silty Loam	0.48
TN013	72.00	C	1.30	5.44	Silty Loam	0.46

Table 4-168. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080411. *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)
Haywood	19,437	19,709	19,797	2.71	526	534	536	1.9
Tipton	37,568	45,986	51,271	0.66	247	302	336	36.0
Total	**57,005**	**65,695**	**71,068**		**773**	**836**	**872**	**12.8**

Table 4-169. Population Estimates in Subwatershed 080102080411.

Figure 4-183. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 080102080411. *More information, including site names and locations, is provided in Appendix IV.*

4.2.D.xi.a. Point Source Contributions.

There are no point source contributions in this subwatershed.

4.2.D.xi.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS				
Beef Cow	Cattle	Milk Cow	Hogs	Sheep
124	224	<5	44	<5

Table 4-170. Summary of Livestock Count Estimates in Subwatershed 080102080411. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves.*

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Fayette	13,421	25,437	965	15	25,667	124
Haywood	3,442	6,220	29	237	1,740	12
Tipton	5,422	9,796	14	334	251	86

Table 4-171. Summary of Livestock Count Estimates in Fayette, Haywood, and Tipton 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)
Fayette	152.0	152.0	1.1	3.3
Haywood	71.2	71.2	1.7	6.4
Tipton	50.9	50.9	1.0	5.6

Table 4-172. Forest Acreage and Annual Removal Rates (1987-1994) in Fayette, Haywood, and Tipton Counties.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.72
Grass (Hayland)	3.43
Legumes, Grass (Hayland)	0.22
Legumes (Hayland)	0.54
Grass, Forbs, Legumes (Mixed Pasture)	0.42
Corn (Row Crops)	7.48
Cotton (Row Crops)	13.17
Sorghum (Row Crops)	4.02
Soybeans (Row Crops)	9.01
Wheat (Close-Grown Cropland)	2.75
All Other Close-Grown Cropland	3.08
Other Vegetable and Truck Crops	7.04
Fruit (Horticultural)	0.76
Other Cropland not Planted	0.75
Conservation Reserve Program Lands	0.93
Other Land in Farms	0.16
Farmsteads and Ranch Headquarters	0.62

Table 4-173. Annual Estimated Total Soil Loss in Subwatershed 080102080411.

4.2.D.xii. 080102080412 (Cypress Creek).

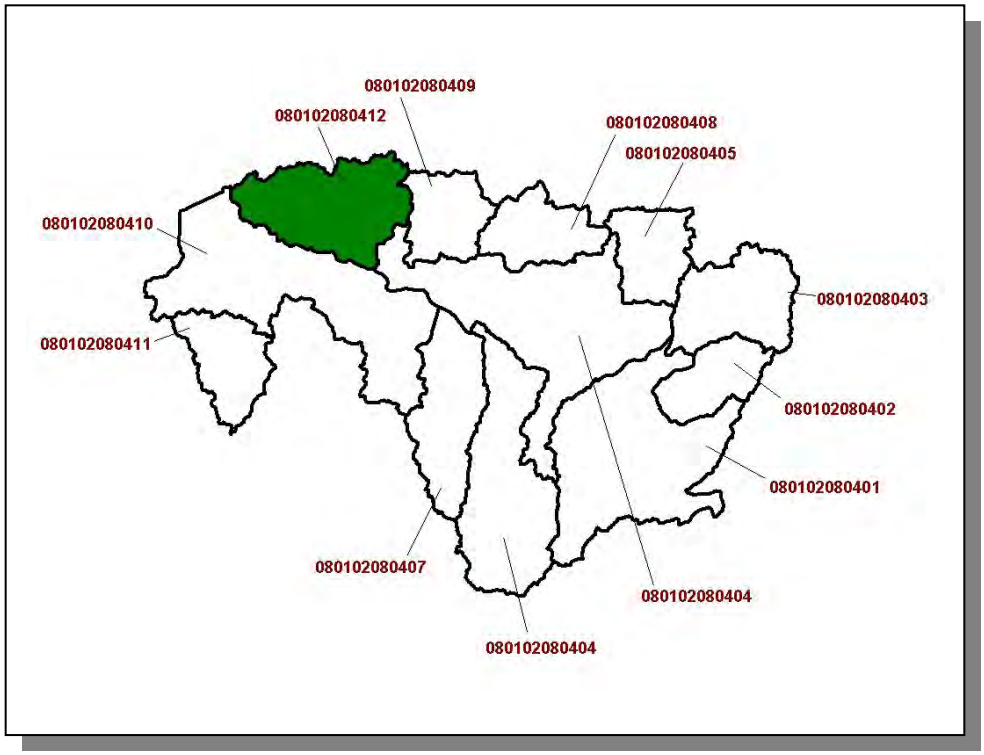

Figure 4-184. Location of Subwatershed 080102080412. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

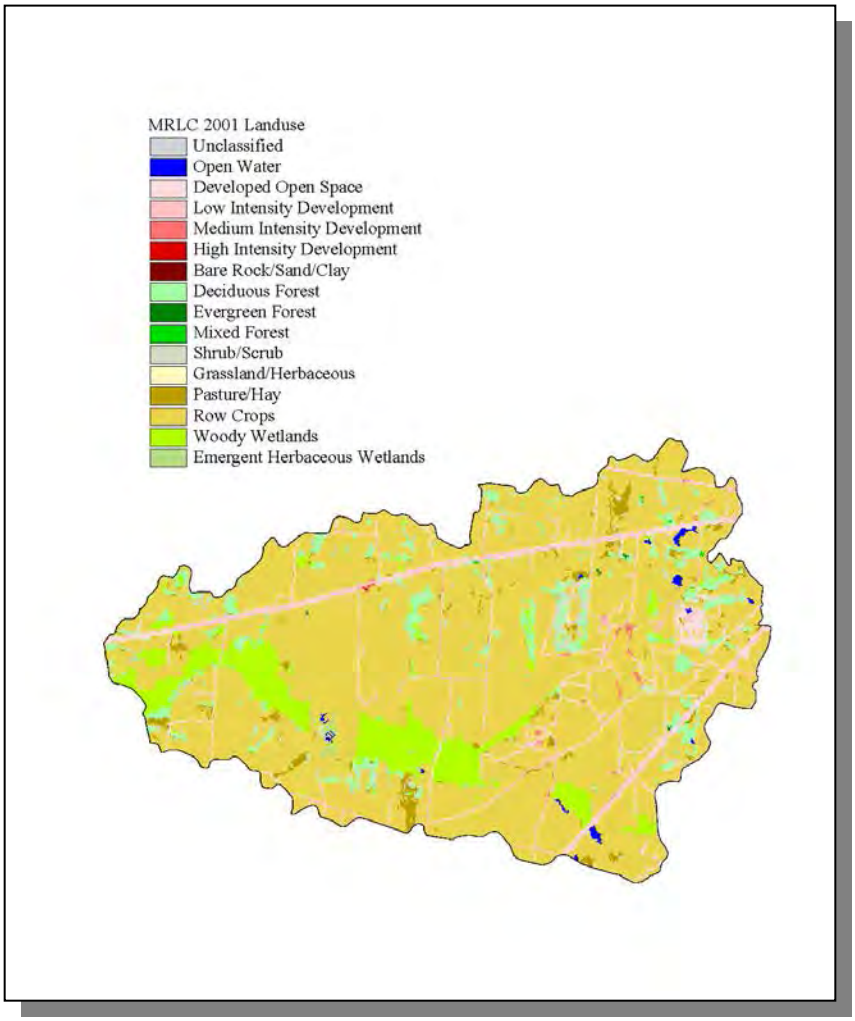

Figure 4-185. Illustration of Land Use Distribution in Subwatershed 080102080412.

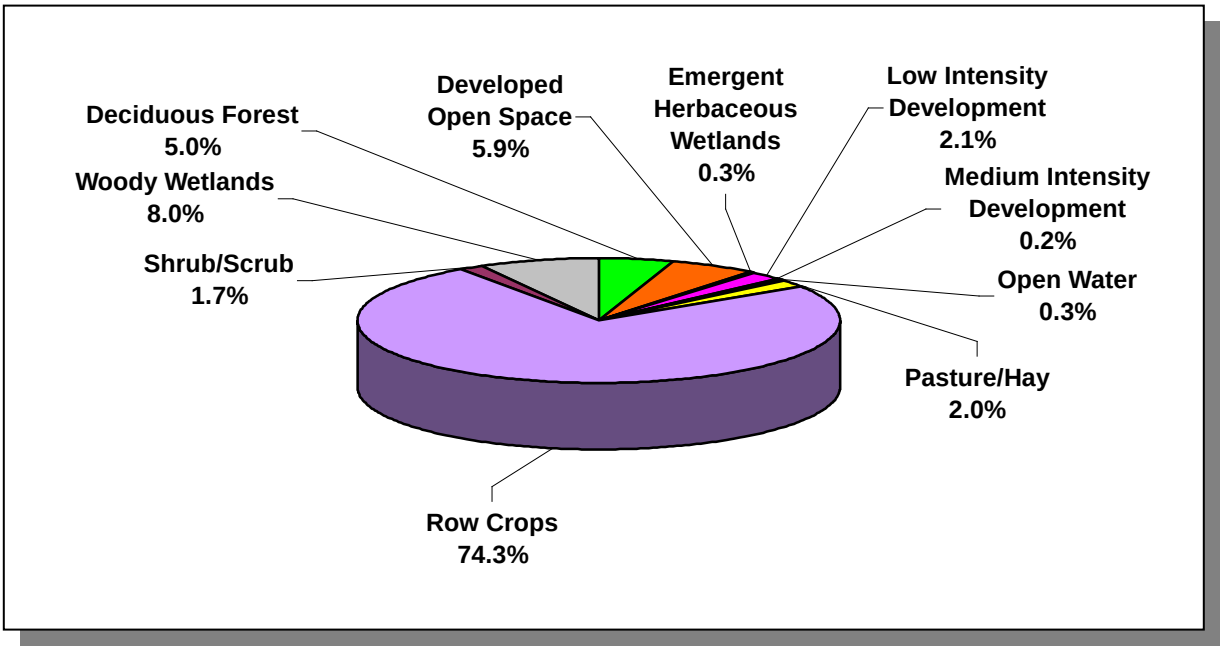

Figure 4-186. Land Use Distribution in Subwatershed 080102080412. *More information is provided in Appendix IV.*

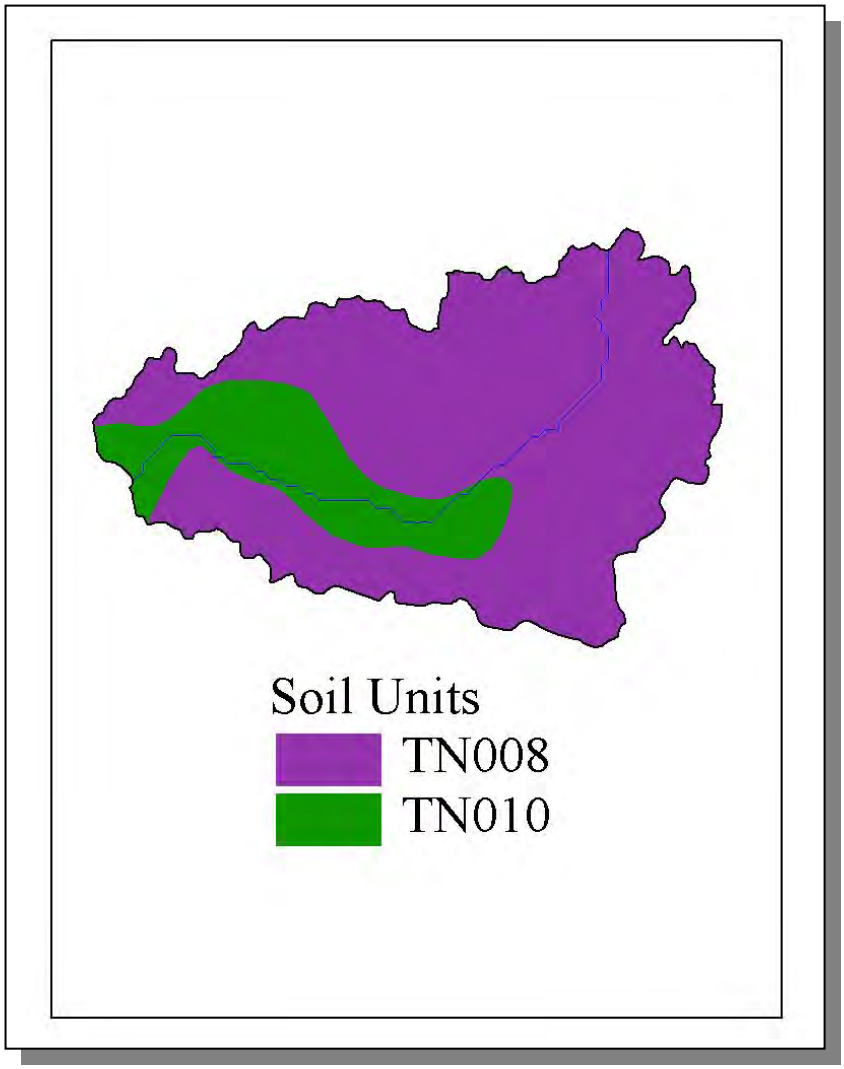

Figure 4-187. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080412.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN008	2.00	C	1.38	5.20	Silty Loam	0.48
TN010	81.00	C	1.33	5.11	Silty Loam	0.44

Table 4-174. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080412. *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)
Haywood	19,437	19,709	19,797	6.14	1,194	1,211	1,216	1.8

Table 4-175. Population Estimates in Subwatershed 080102080412.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Brownsville	Haywood	10,019	3,848	3,761	64	23

Table 4-176. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 080102080412.

Figure 4-188. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 080102080412. *More information, including site names and locations, is provided in Appendix IV.*

4.2.D.xii.a. Point Source Contributions.

There are no point source contributions in this subwatershed.

4.2.D.xii.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS				
Beef Cow	Cattle	Milk Cow	Hogs	Sheep
175	316	<5	88	<5

Table 4-177. Summary of Livestock Count Estimates in Subwatershed 080102080412. *According to the 1997 Census of Agriculture (http://www.agcensus.usda.gov/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves.*

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Haywood	3,442	6,220	29	237	1,740	12

Table 4-178. Summary of Livestock Count Estimates in Haywood 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)
Haywood	71.2	71.2	1.7	6.4

Table 4-179. Forest Acreage and Annual Removal Rates (1987-1994) in Haywood County.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.70
Grass (Hayland)	3.69
Grass, Forbs, Legumes (Mixed Pasture)	0.30
Corn (Row Crops)	7.47
Cotton (Row Crops)	12.50
Sorghum (Row Crops)	4.02
Soybeans (Row Crops)	7.10
All Other Close-Grown Cropland	3.08
Fruit (Horticultural)	0.76
Other Vegetable and Truck Crops	4.20
Other Cropland not Planted	0.85
Conservation Reserve Program Lands	0.91
Other Land in Farms	0.16
Farmsteads and Ranch Headquarters	0.61

Table 4-180. Annual Estimated Total Soil Loss in Subwatershed 080102080412.

4.2.E. 0801020805.

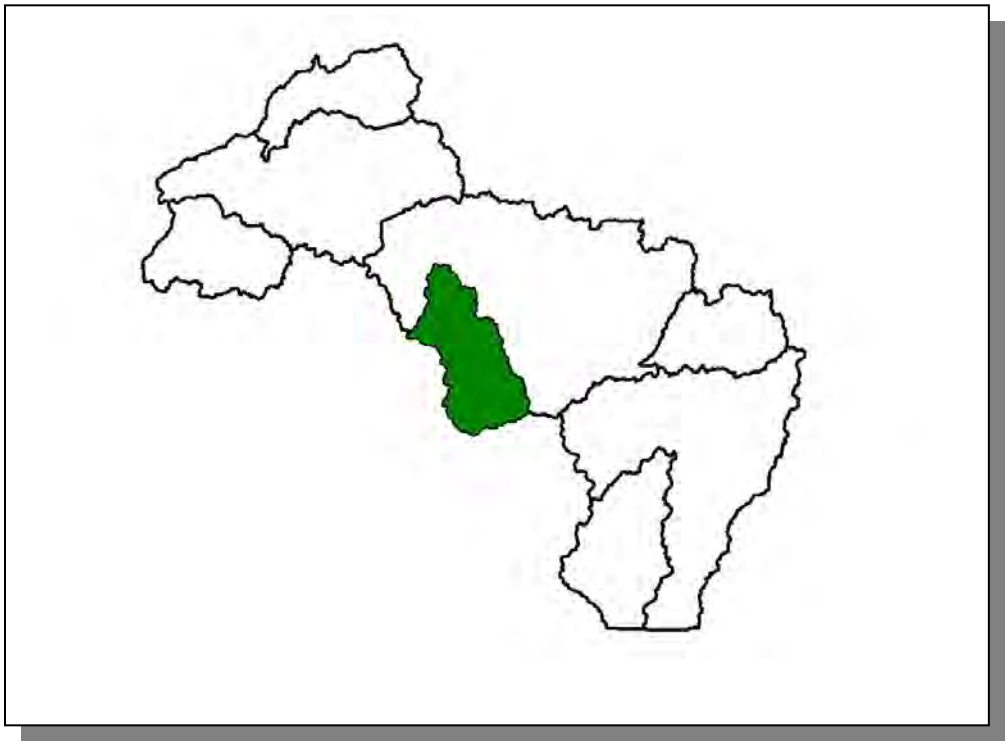

Figure 4-189. Location of Subwatershed 0801020805. *All Hatchie River HUC-10 subwatershed boundaries in Tennessee are shown for reference.*

4.2.E.i. 080102080501 (Upper Big Muddy Creek).

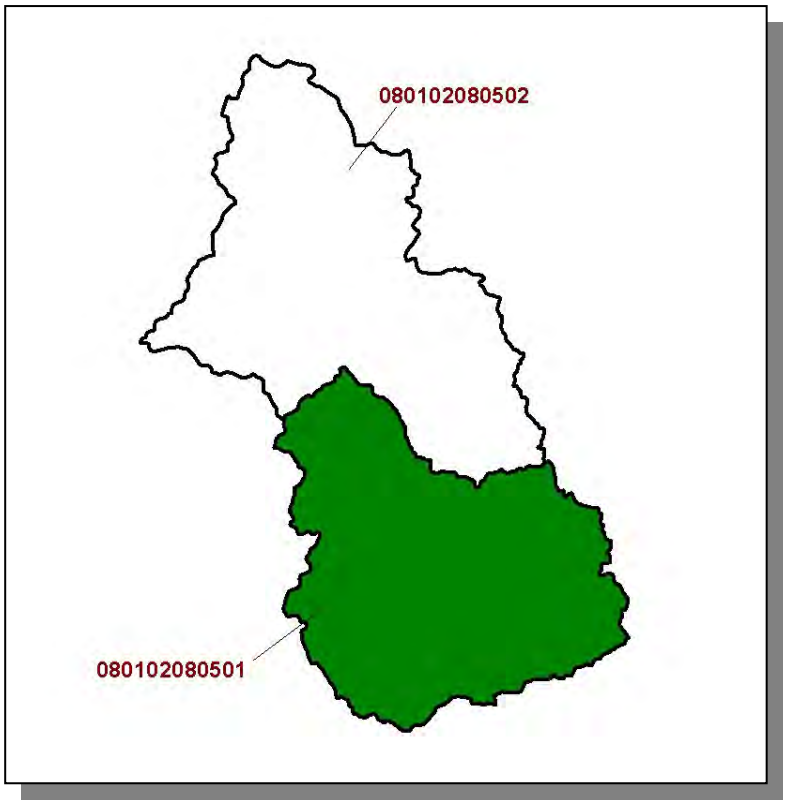

Figure 4-190. Location of Subwatershed 080102080501. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

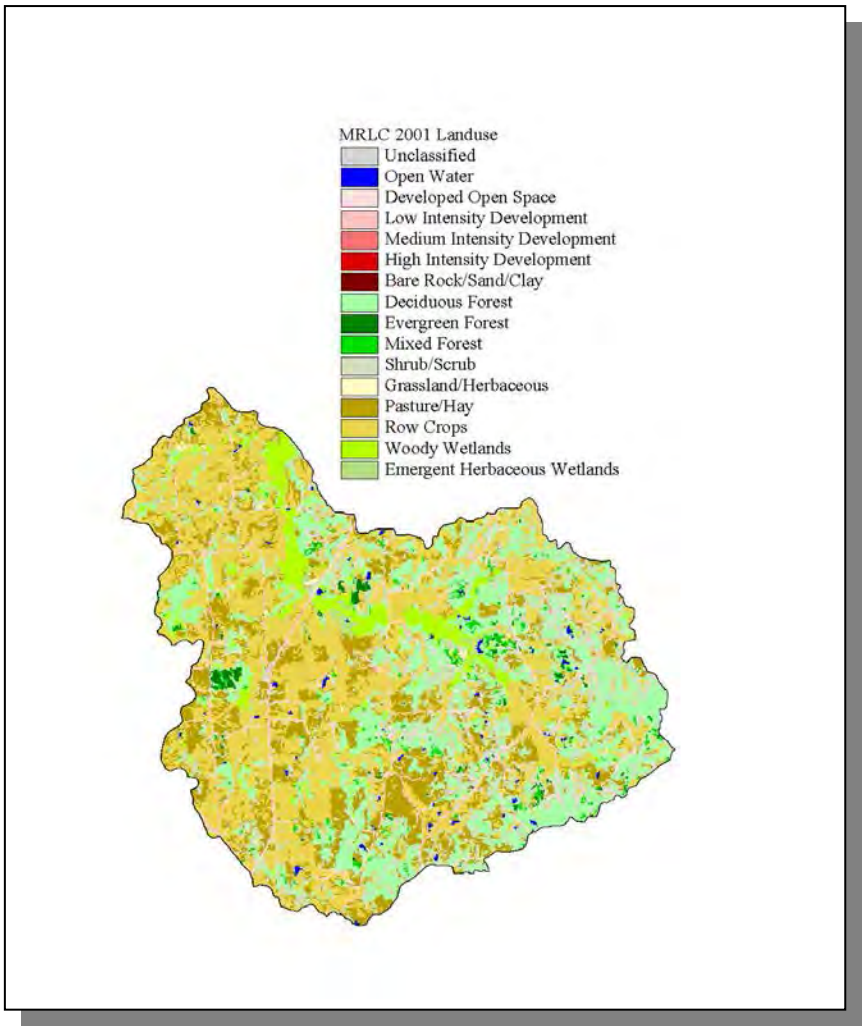

Figure 4-191. Illustration of Land Use Distribution in Subwatershed 080102080501.

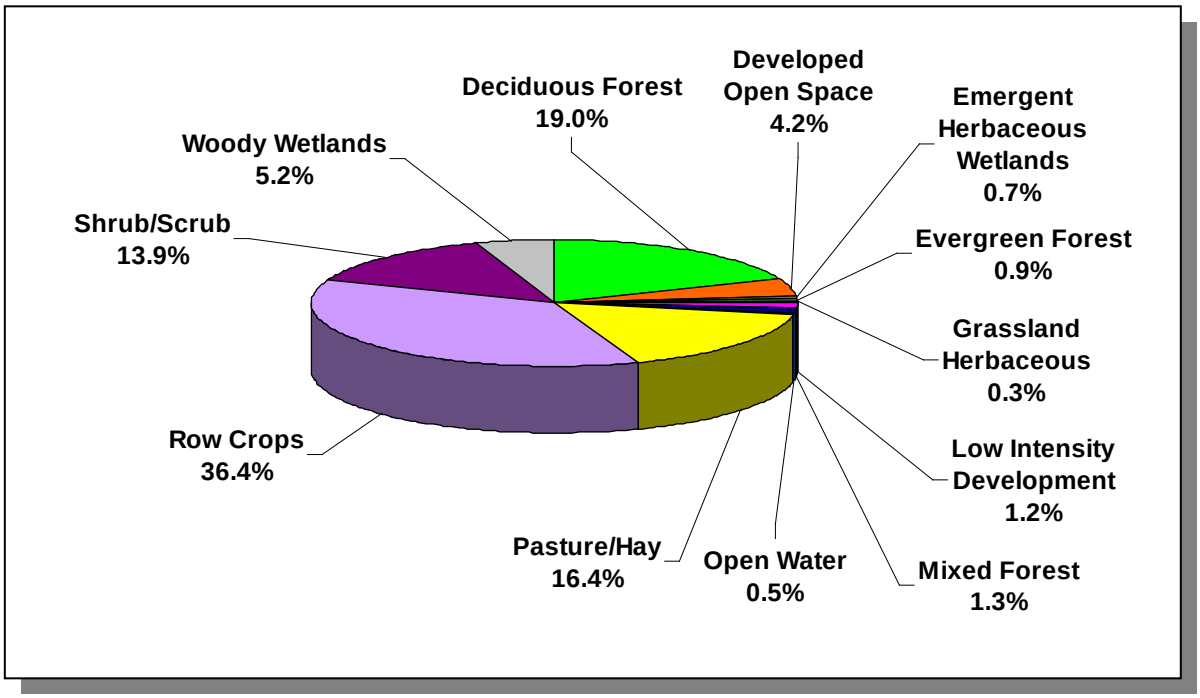

Figure 4-192. Land Use Distribution in Subwatershed 080102080501. *More information is provided in Appendix IV.*

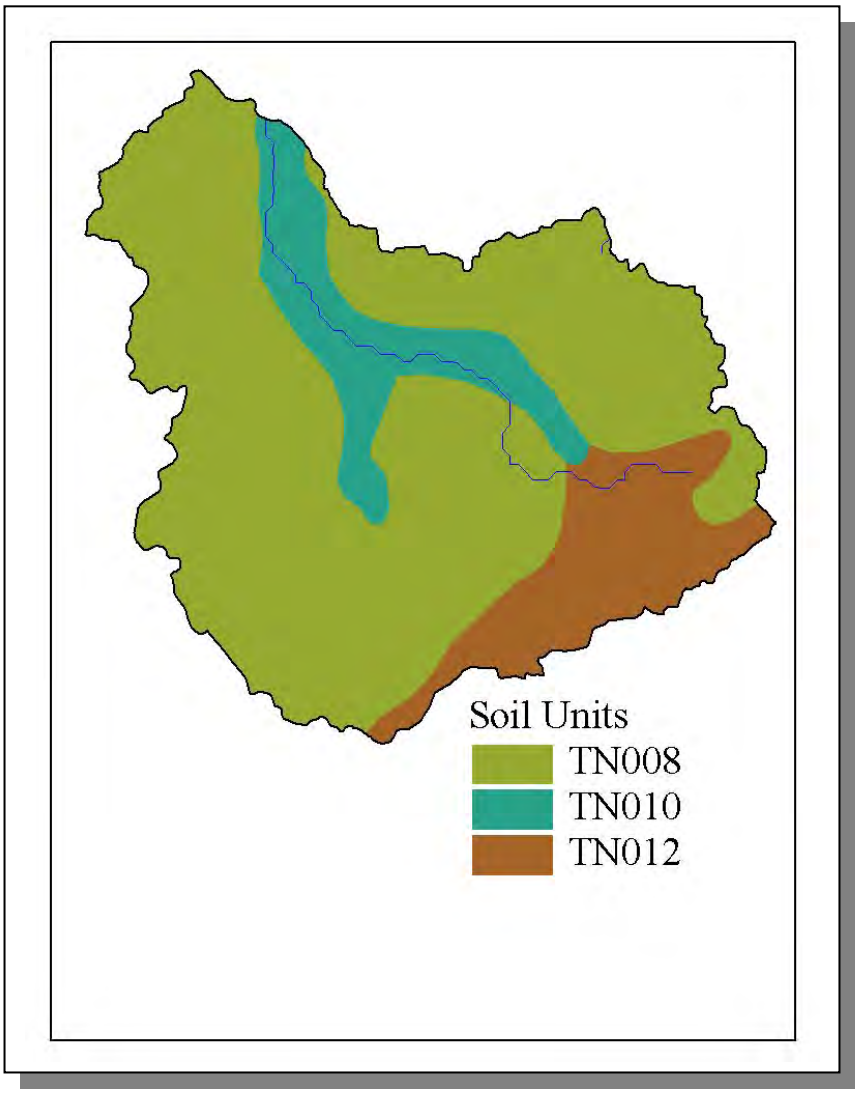

Figure 4-193. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080501.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN008	2.0	C	1.38	5.20	Silty Loam	0.48
TN010	81.00	C	1.33	5.11	Silty Loam	0.44
TN012	1.00	C	2.52	5.13	Silty Loam	0.39

Table 4-181. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080501. *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)
Fayette	25,559	29,412	28,806	6.82	1,742	2,005	1,964	12.7

Table 4-182. Population Estimates in Subwatershed 080102080501.

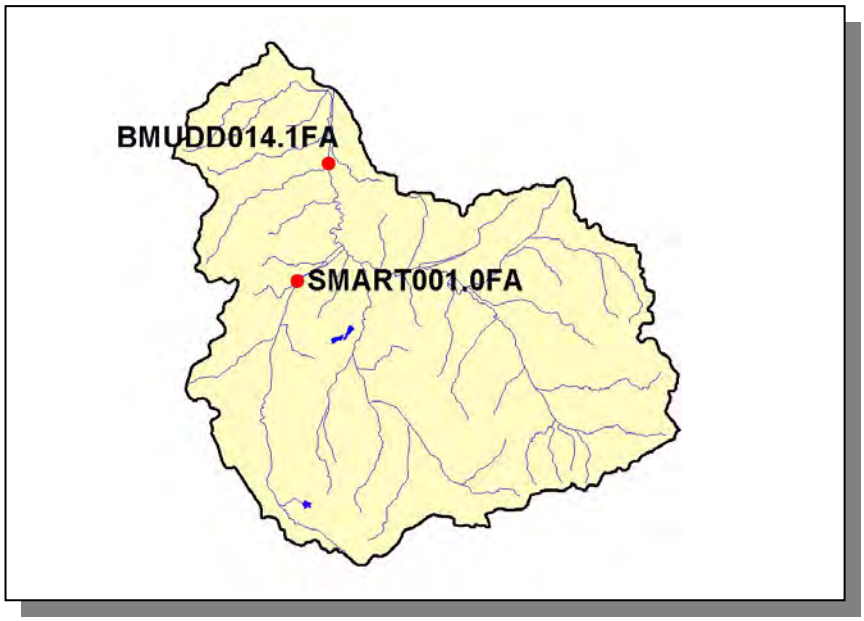

Figure 4-194. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 080102080501. *More information, including site names and locations, is provided in Appendix IV.*

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

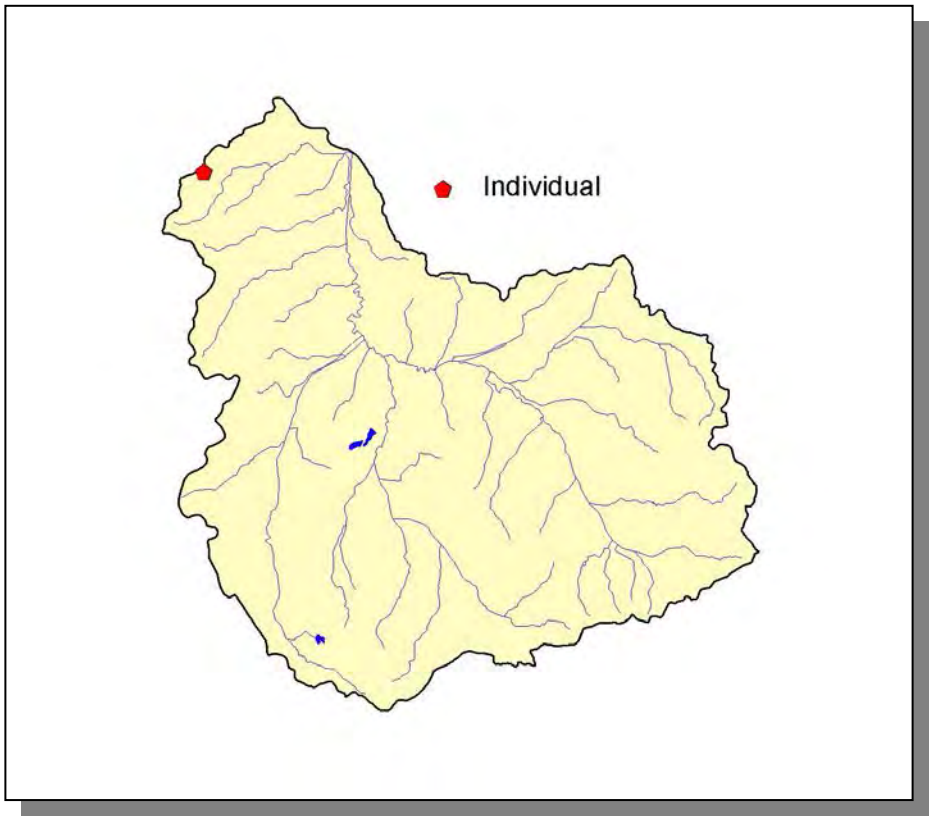

Figure 4-195. Location of Permits Issued in Subwatershed 080102080501. *More information, including the names of facilities, is provided in Appendix IV.*

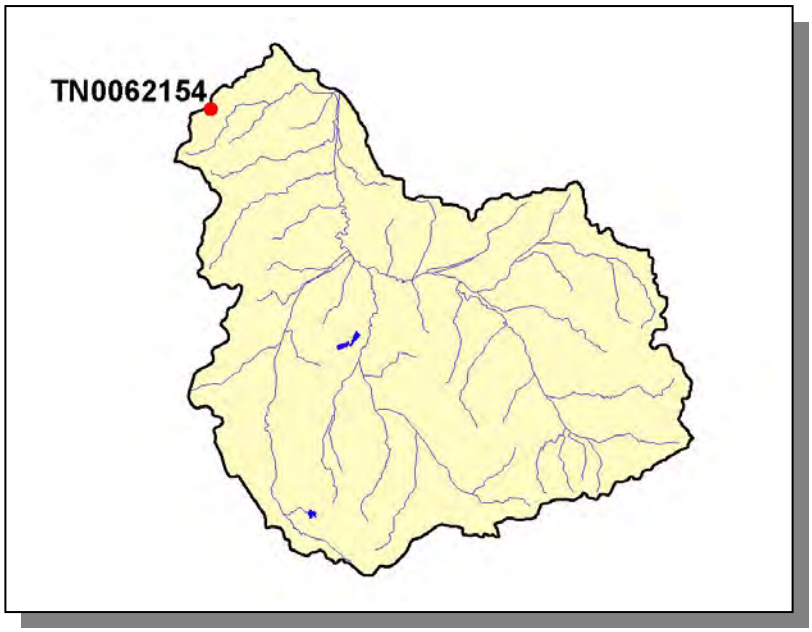

Figure 4-196. Location of Active NPDES Sites in Subwatershed 080102080501. *More information, including the names of facilities, is provided in Appendix IV.*

4.2.E.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 080102080501:

- TN0062154 (Stanton Lagoon) discharges to an unnamed tributary @ RM 0.4 to Big Muddy Creek @ RM 7.6

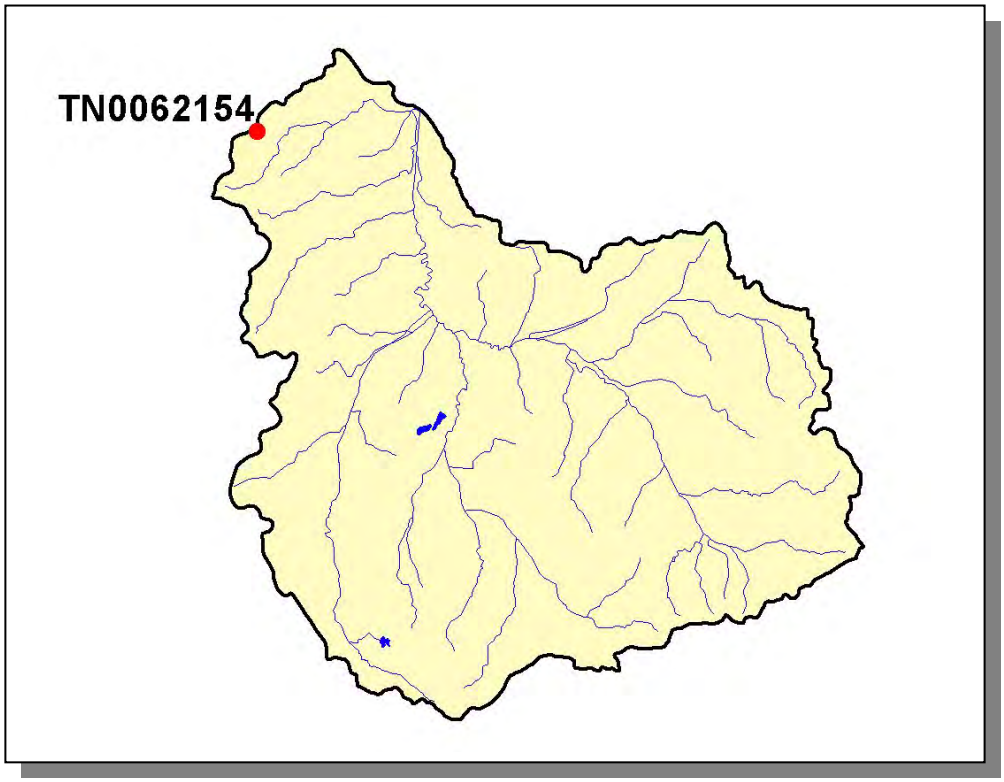

Figure 4-197. Location of NPDES Dischargers to Water Bodies Listed on the 2004 303(d) List in Subwatershed 080102080501. *More information, including the names of facilities, is provided in Appendix IV.*

PERMIT #	3Q2	1Q10	3Q10	3Q20	7Q10
TN0062154	0.01	na	0.00	0.00	0.00

Table 4-183. Receiving Stream Low Flow Information for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 080102080501. *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
TN0062154	X

Table 4-184. Monitoring Requirements for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 080102080501.

PERMIT #	$CBOD_5$	*E. coli*	FECAL COLIFORM	TRC	TSS	SETTLEABLE SOLIDS	DO	pH
TN0062154	X	X	X	X	X	X	X	X

Table 4-185. Inorganic Parameters Monitored for Daily Maximum Limits for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 080102080501. *$CBOD_5$, Carbonaceous Biochemical Oxygen Demand (5-Day); TRC, Total Residual Chlorine; TSS, Total Suspended Solids; DO, Dissolved Oxygen.*

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

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
1,137	2,155	82	<5	2,174	11

Table 4-186. Summary of Livestock Count Estimates in Subwatershed 080102080501. *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
Fayette	13,421	25,437	965	15	15,667	124

Table 4-187. Summary of Livestock Count Estimates in Fayette 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)
Fayette	152.0	152.0	1.1	3.3

Table 4-188. Forest Acreage and Annual Removal Rates (1987-1994) in Fayette County.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.43
Grass (Hayland)	0.33
Legumes, Grass (Hayland)	0.22
Legumes (Hayland)	0.16
Grass, Forbs, Legumes (Mixed Pasture)	0.76
Corn (Row Crops)	19.66
Cotton (Row Crops)	9.05
Soybeans (Row Crops)	9.86
Wheat (Close-Grown Cropland)	2.75
Fruits (Horticultural)	0.39
Other Cropland not Planted	1.50
Conservation Reserve Program Lands	0.45
Farmsteads and Ranch Headquarters	0.13

Table 4-189. Annual Estimated Total Soil Loss in Subwatershed 080102080501.

4.2.E.ii. 080102080502 (Lower Big Muddy Creek).

Figure 4-198. Location of Subwatershed 080102080502. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

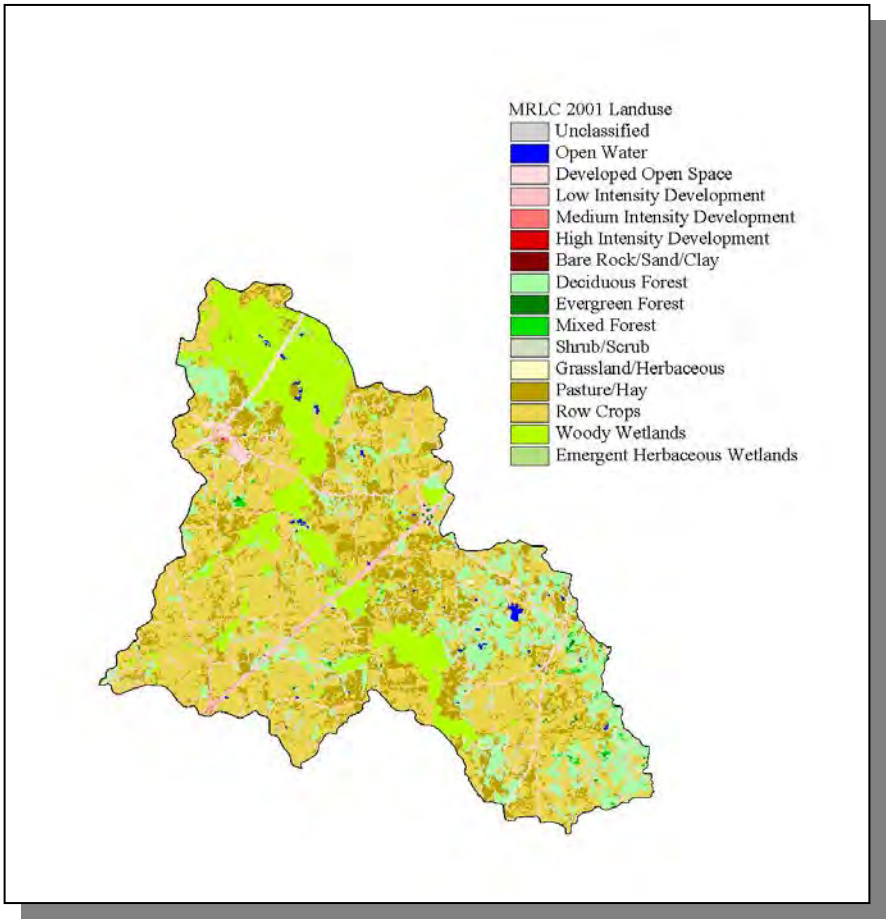

Figure 4-199. Illustration of Land Use Distribution in Subwatershed 080102080502.

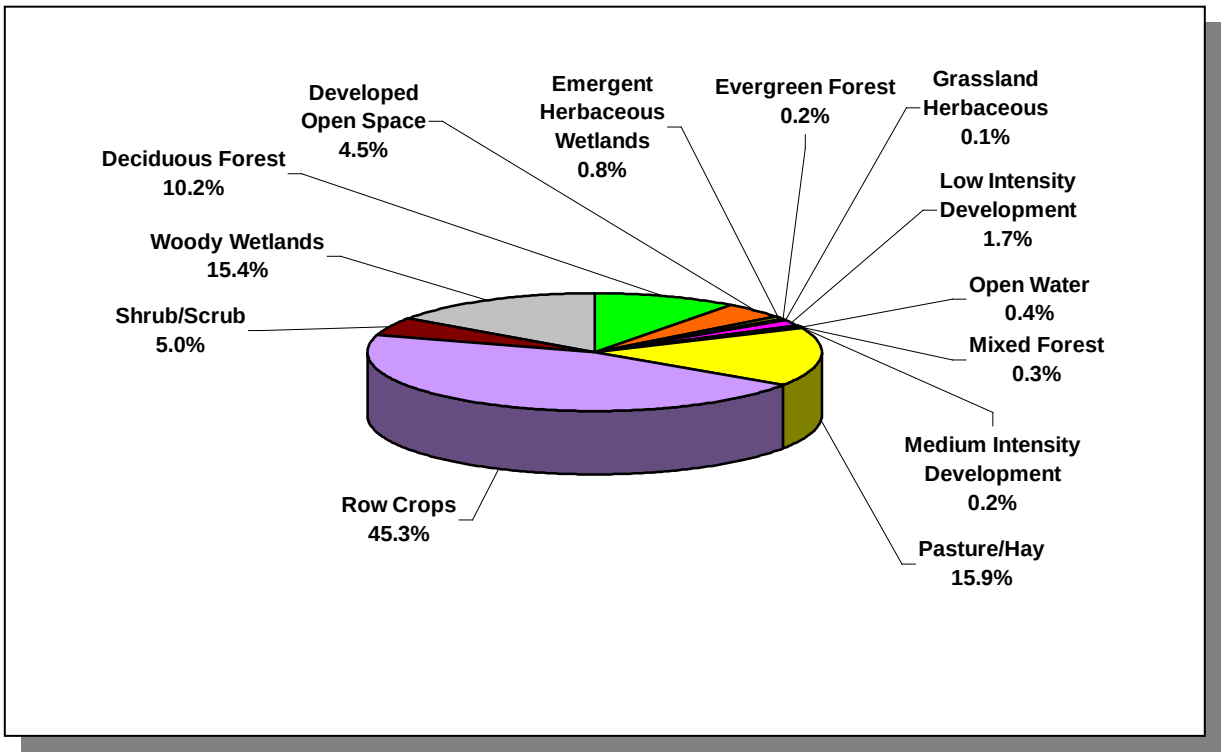

Figure 4-200. Land Use Distribution in Subwatershed 080102080502. *More information is provided in Appendix IV.*

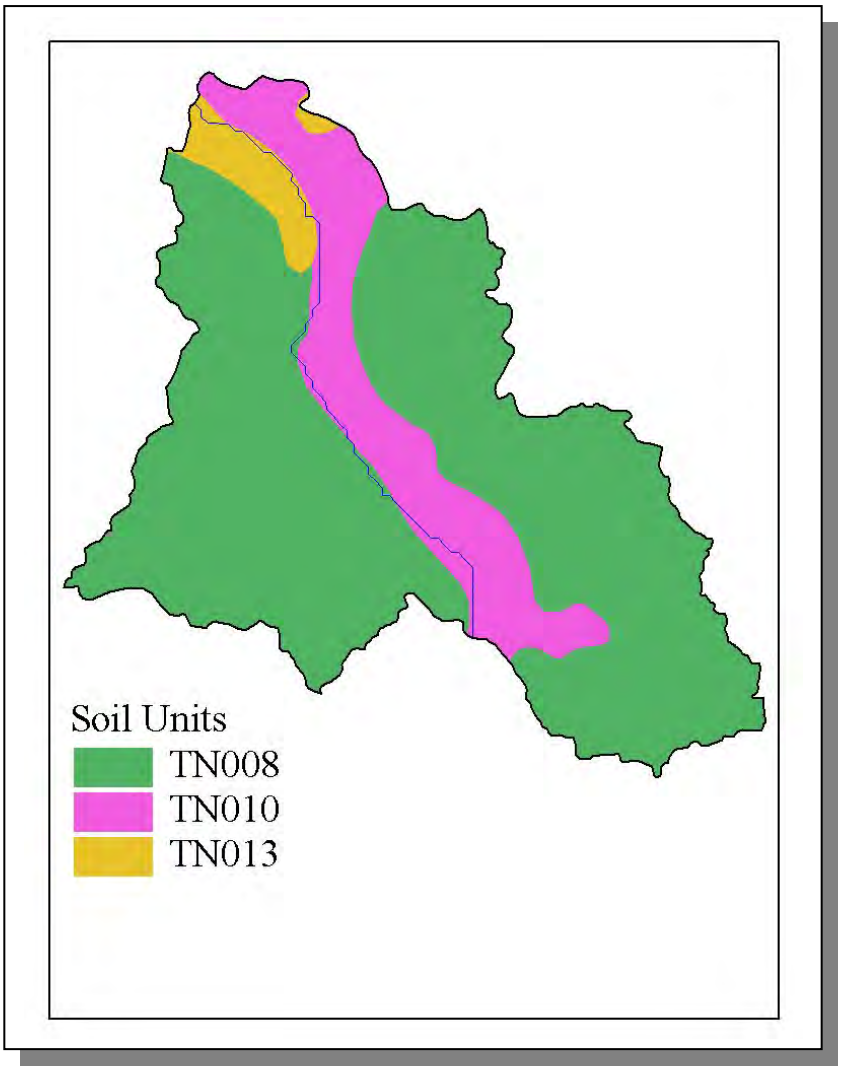

Figure 4-201. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080502.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN008	2.00	C	1.38	5.20	Silty Loam	0.48
TN010	81.00	C	1.33	5.11	Silty Loam	0.44
TN013	72.00	C	1.30	5.44	Silty Loam	0.46

Table 4-190. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080502. *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)
Fayette	25,559	29,412	28,806	2.28	582	670	656	12.7
Haywood	19,437	19,709	19,797	6.29	1,222	1,239	1,244	1.8
Total	**44,996**	**49,121**	**48,603**		**1,804**	**1,909**	**1,900**	**5.3**

Table 4-191. Population Estimates in Subwatershed 080102080502.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Stanton	Haywood	517	223	216	2	5

Table 4-192. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 080102080502.

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

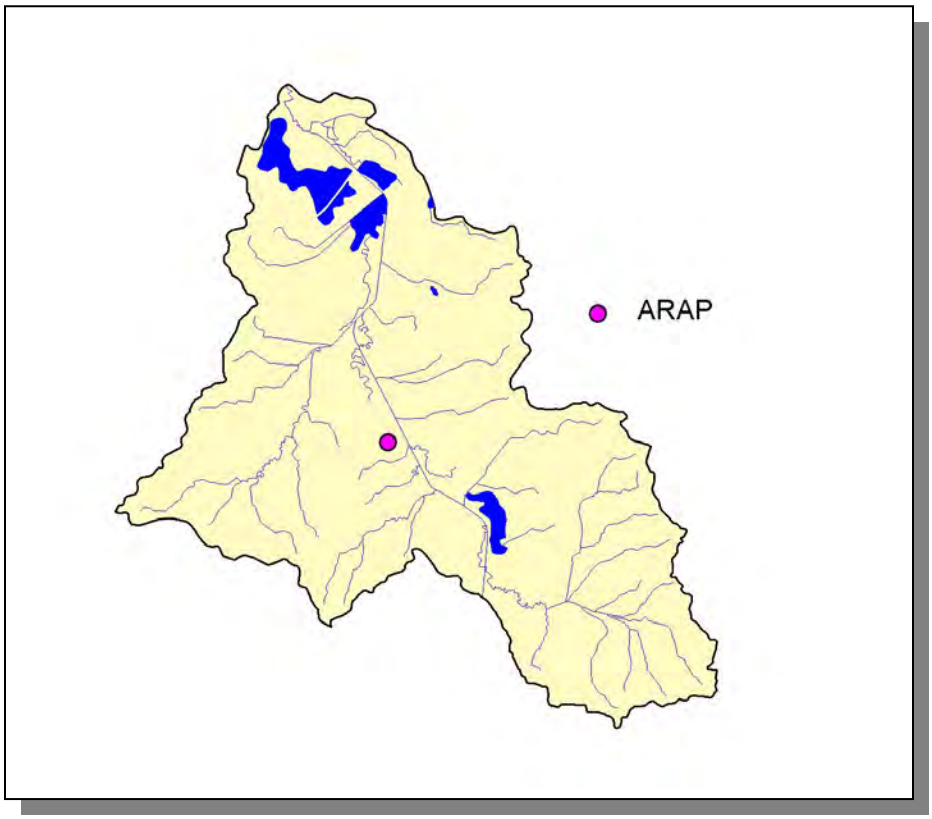

Figure 4-202. Location of Permits Issued in Subwatershed 080102080502. *More information, including the names of facilities, is provided in Appendix IV.*

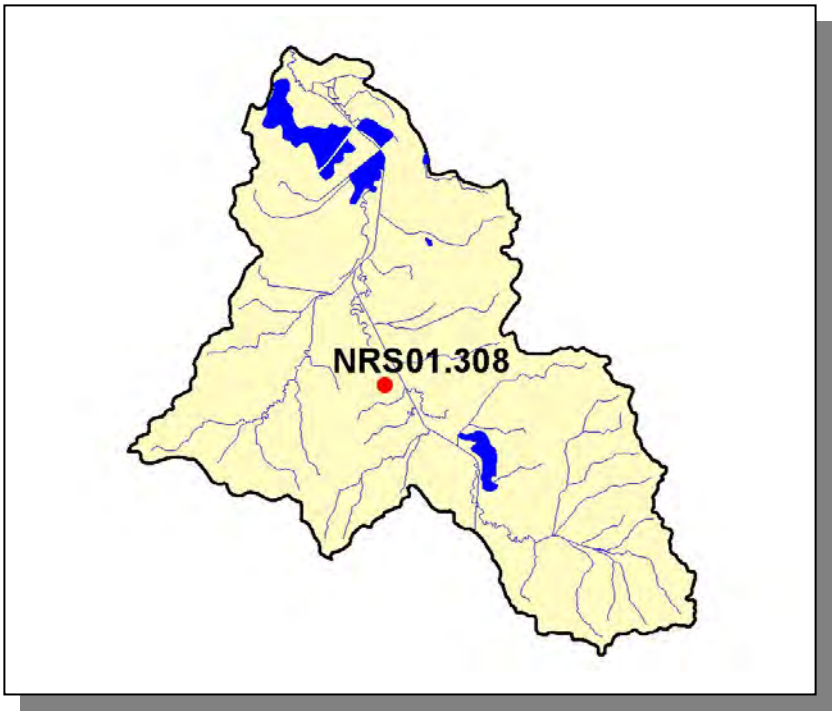

Figure 4-203. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 080102080502. *More information is provided in Appendix IV.*

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

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
549	1,023	27	<5	773	<5

Table 4-193. Summary of Livestock Count Estimates in Subwatershed 080102080502. *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
Fayette	13,421	25,437	965	15	25,667	124
Haywood	3,442	6,220	29	237	1,740	12

Table 4-194. Summary of Livestock Count Estimates in Fayette and Haywood 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)
Fayette	152.0	152.0	1.1	3.3
Haywood	71.2	71.2	1.7	6.4

Table 4-195. Forest Acreage and Annual Removal Rates (1987-1994) in Fayette and Haywood Counties.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.61
Grass (Hayland)	2.62
Legumes, Grass (Hayland)	0.22
Legumes (Hayland)	0.16
Grass, Forbs, Legumes (Mixed Pasture)	0.45
Corn (Row Crops)	11.35
Cotton (Row Crops)	11.40
Sorghum (Row Crops)	4.02
Soybeans (Row Crops)	7.98
Wheat (Close-Grown Cropland)	2.75
All Other Close-Grown Cropland	3.08
Fruit (Horticultural)	0.64
Other Vegetable and Truck Crops	4.20
Other Cropland not Planted	1.06
Conservation Reserve Program Lands	0.76
Other Land in Farms	0.16
Farmsteads and Ranch Headquarters	0.46

Table 4-196. Annual Estimated Total Soil Loss in Subwatershed 080102080502.

4.2.F. 0801020806

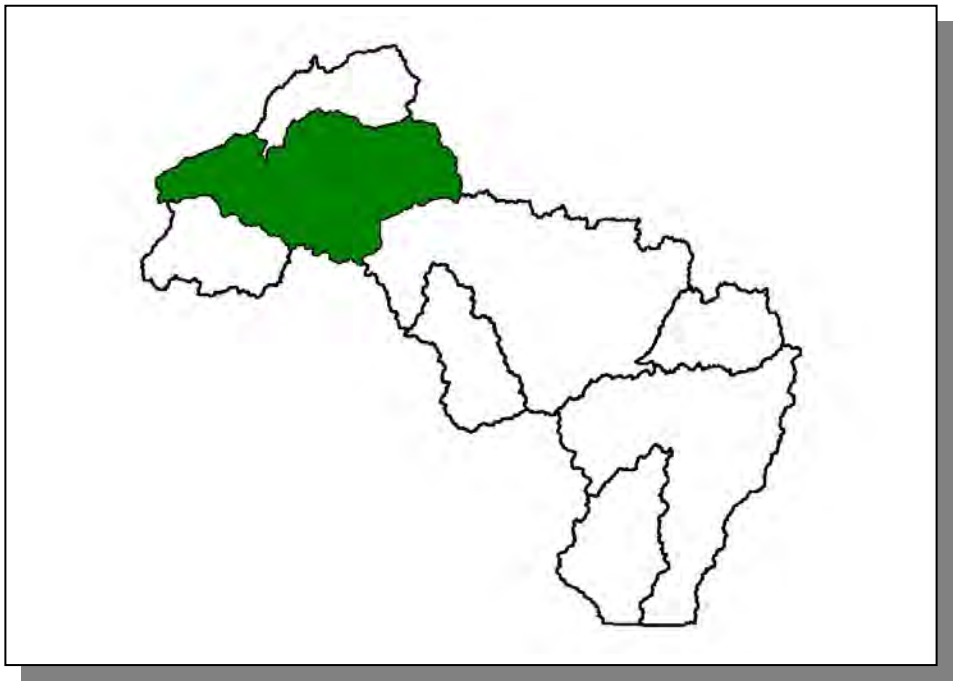

Figure 4-204. Location of Subwatershed 0801020806. *All Hatchie River HUC-10 subwatershed boundaries in Tennessee are shown for reference.*

4.2.F.i. 080102080601 (Hatchie River).

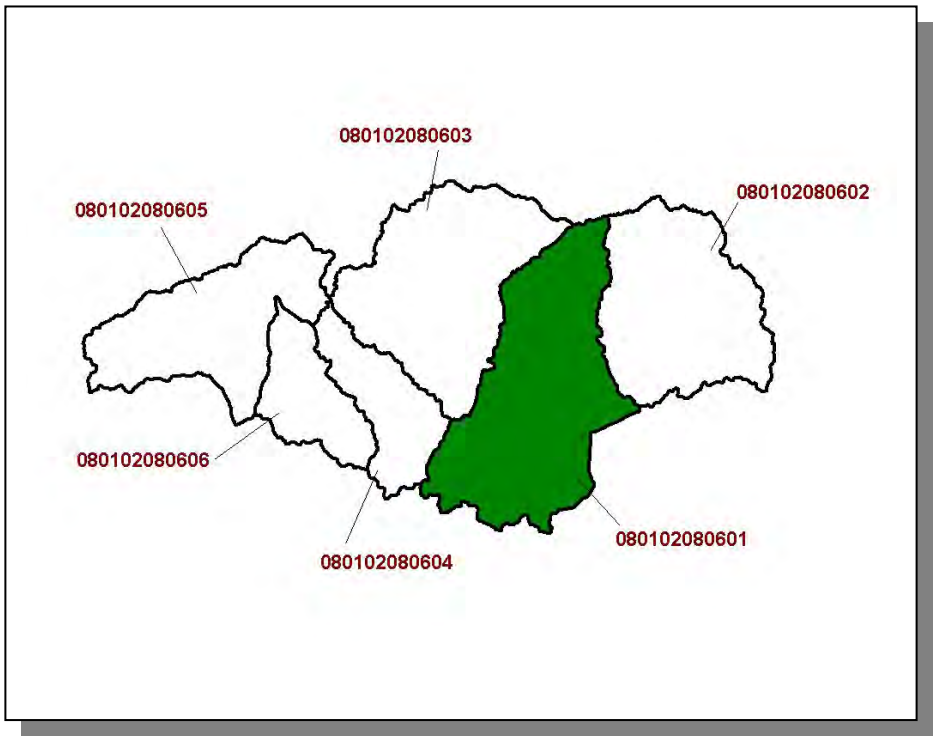

Figure 4-205. Location of Subwatershed 080102080601. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

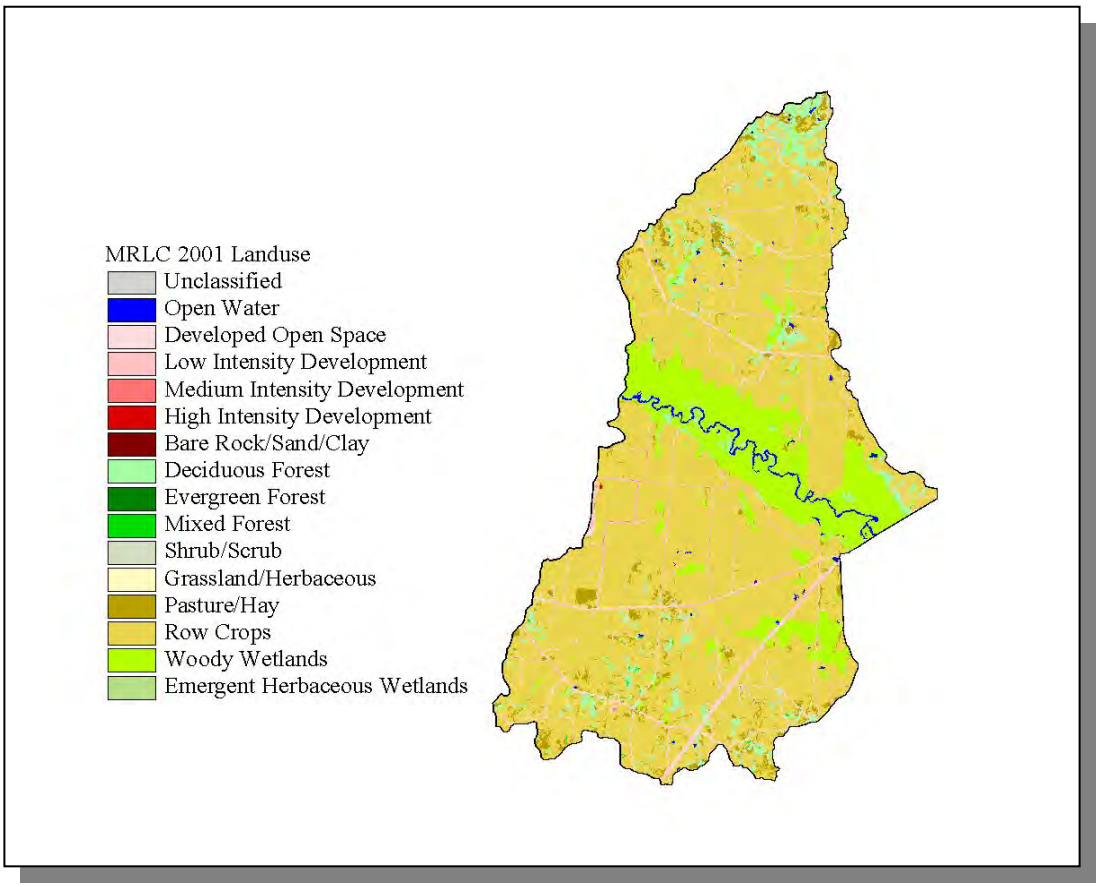

Figure 4-206. Illustration of Land Use Distribution in Subwatershed 080102080601.

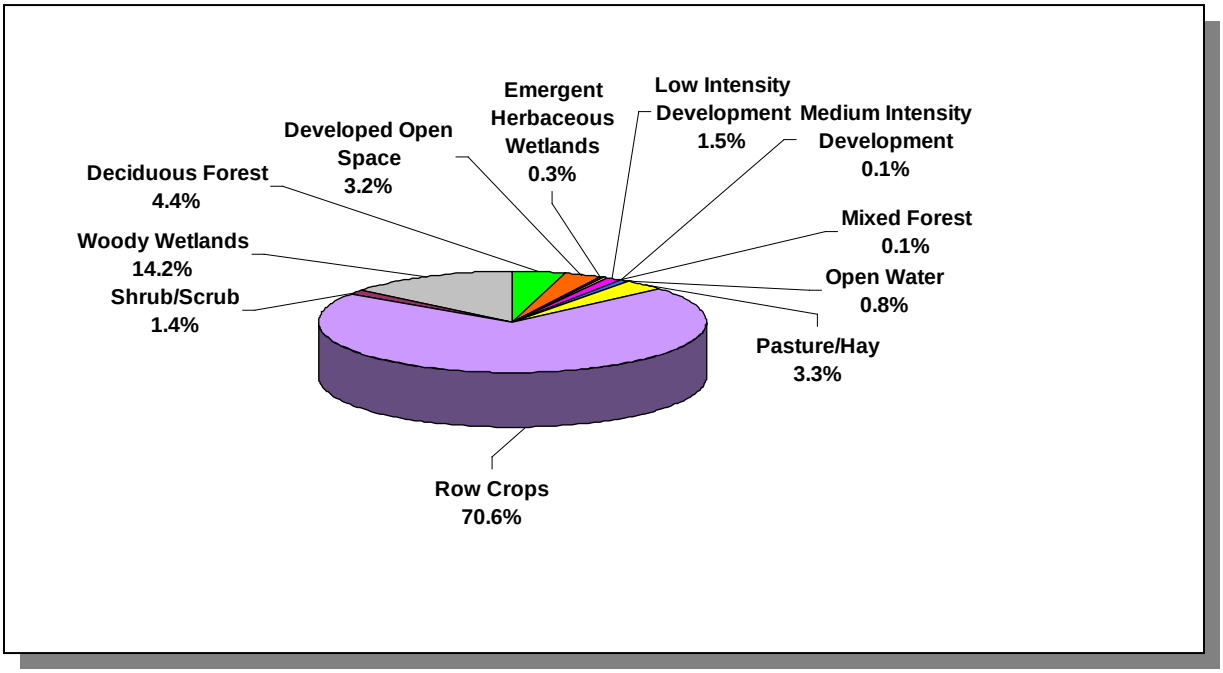

Figure 4-207. Land Use Distribution in Subwatershed 080102080601. *More information is provided in Appendix IV.*

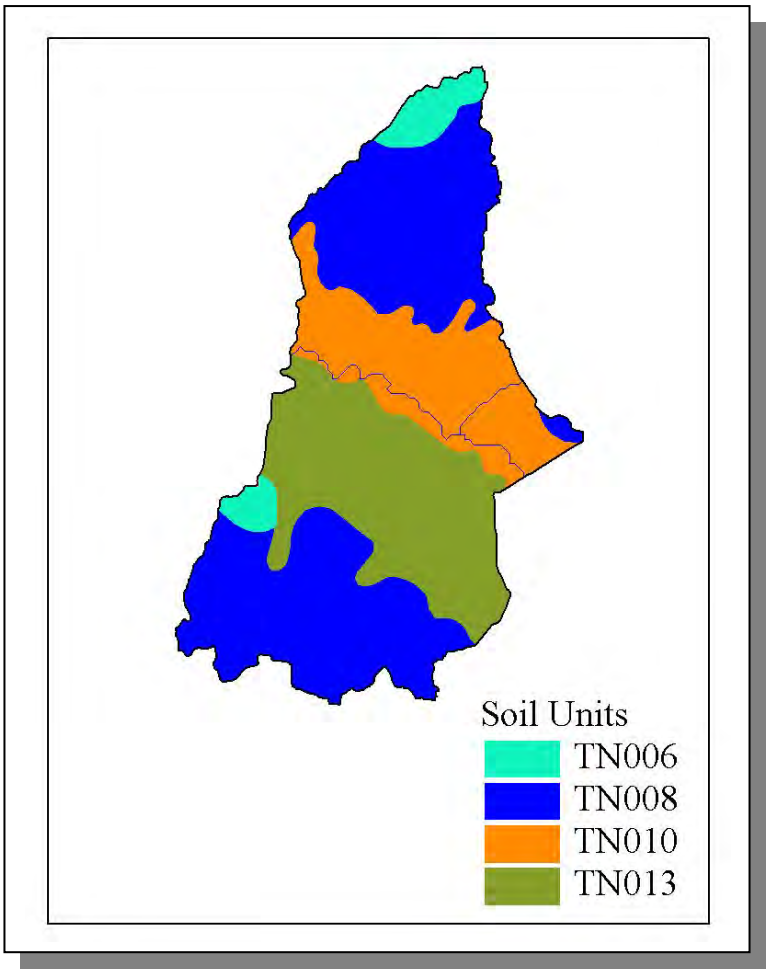

Figure 4-208. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080601.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN006	0.00	C	1.30	5.42	Silty Loam	0.48
TN008	2.00	C	1.38	5.20	Silty Loam	0.48
TN010	81.00	C	1.33	5.11	Silty Loam	0.44
TN013	72.00	C	1.30	5.44	Silty Loam	0.46

Table 4-197. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080601. *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)
Haywood	19,437	19,709	19,797	0.61	119	121	121	1.7
Lauderdale	23,491	24,128	27,101	4.96	1,165	1,197	1,344	15.4
Tipton	37,568	45,986	51,271	8.91	3,347	4,097	4,568	36.5
Total	**80,496**	**89,823**	**98,169**		**4,631**	**5,415**	**6,033**	**30.3**

Table 4-198. Population Estimates in Subwatershed 080102080601.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Covington	Tipton	7,487	2,920	2,717	203	0

Table 4-199. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 080102080601.

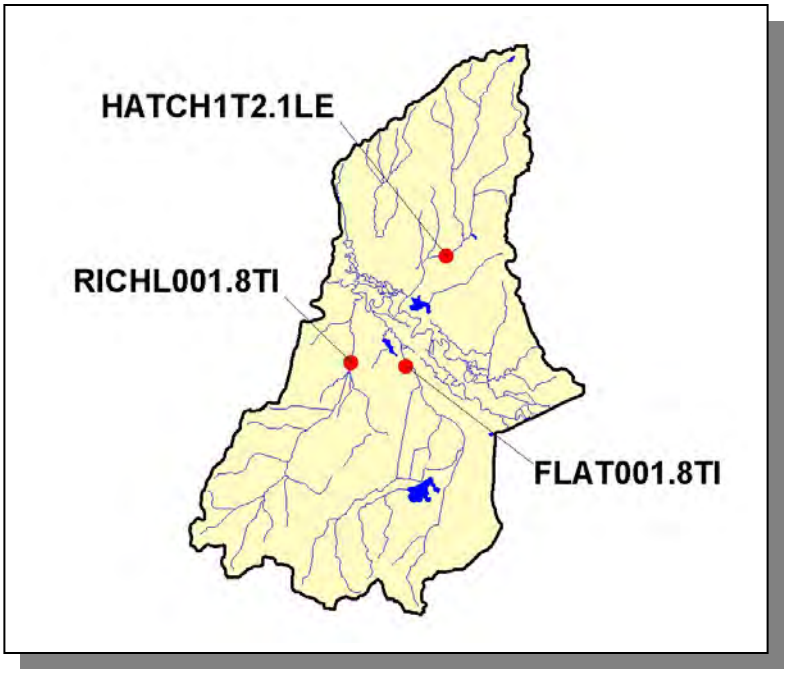

Figure 4-209. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 080102080601. *More information, including site names and locations, is provided in Appendix IV.*

4.2.F.i.a. Point Source Contributions.

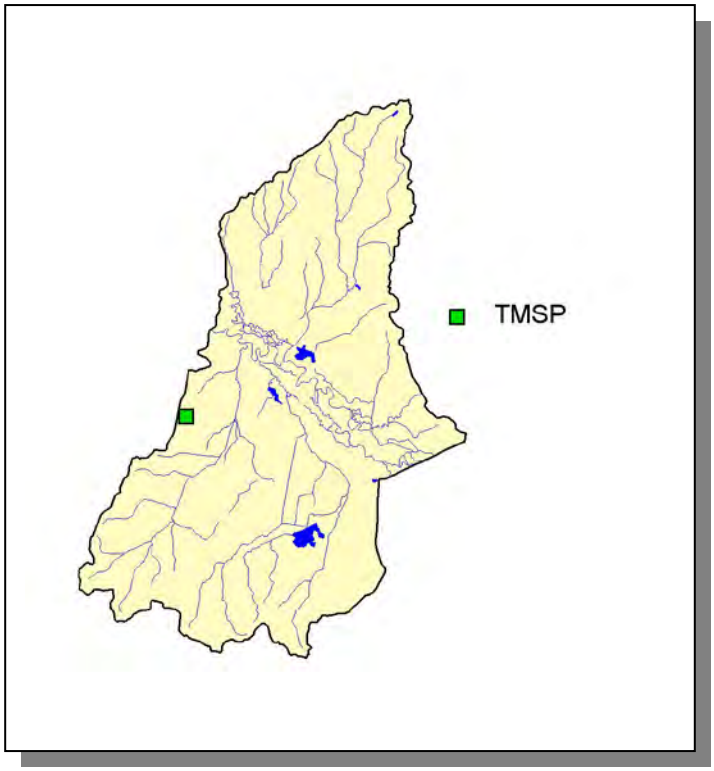

Figure 4-210. Location of Permits Issued in Subwatershed 080102080601. *More information, including the names of facilities, is provided in Appendix IV.*

Figure 4-211. Location of TMSP Sites in Subwatershed 080102080601. *More information, including the names of facilities, is provided in Appendix IV.*

4.2.F.i.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
497	1,485	<5	<5	183	9

Table 4-200. Summary of Livestock Count Estimates in Subwatershed 080102080601. *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
Haywood	3,442	6,220	29	237	1,740	12
Lauderdale	0	8,739	0	243	2,355	11
Tipton	5,422	9,796	14	334	251	86

Table 4-201. Summary of Livestock Count Estimates in Haywood, Lauderdale, and Tipton 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
Grass (Pastureland)	1.36
Grass (Hayland)	1.54
Legumes, Grass (Hayland)	0.58
Legumes (Hayland)	1.58
Grass, Forbs, Legumes (Mixed Pasture)	1.49
Corn (Row Crops)	13.91
Cotton (Row Crops)	15.26
Sorghum (Row Crops)	4.02
Soybeans (Row Crops)	16.24
Wheat (Close-Grown Cropland)	9.27
All Other Close-Grown Cropland	3.08
Fruit (Horticulture)	0.76
Other Vegetable and Truck Crops	14.19
Summer Fallow (Other Cropland)	8.70
Other Cropland not Planted	0.27
Conservation Reserve Program Lands	1.31
Other Land in Farms	0.06
Farmsteads and Ranch Headquarters	0.46

Table 4-202. Annual Estimated Total Soil Loss in Subwatershed 080102080601.

4.2.F.ii. 080102080602 (Lagoon Creek).

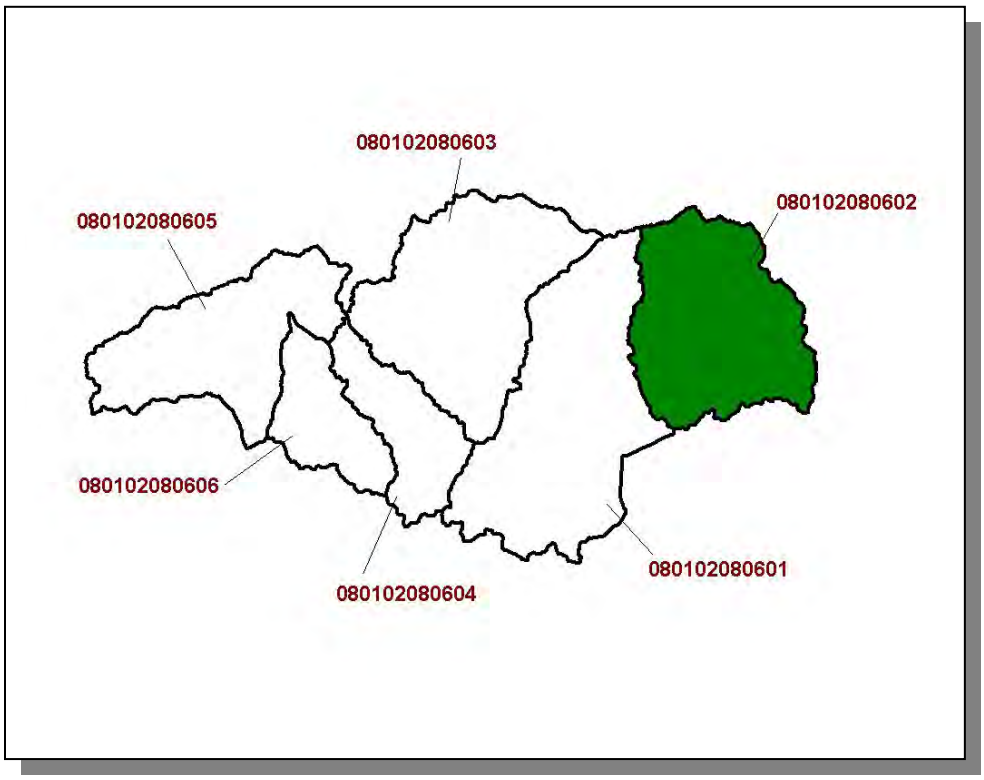

Figure 4-212. Location of Subwatershed 080102080602. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

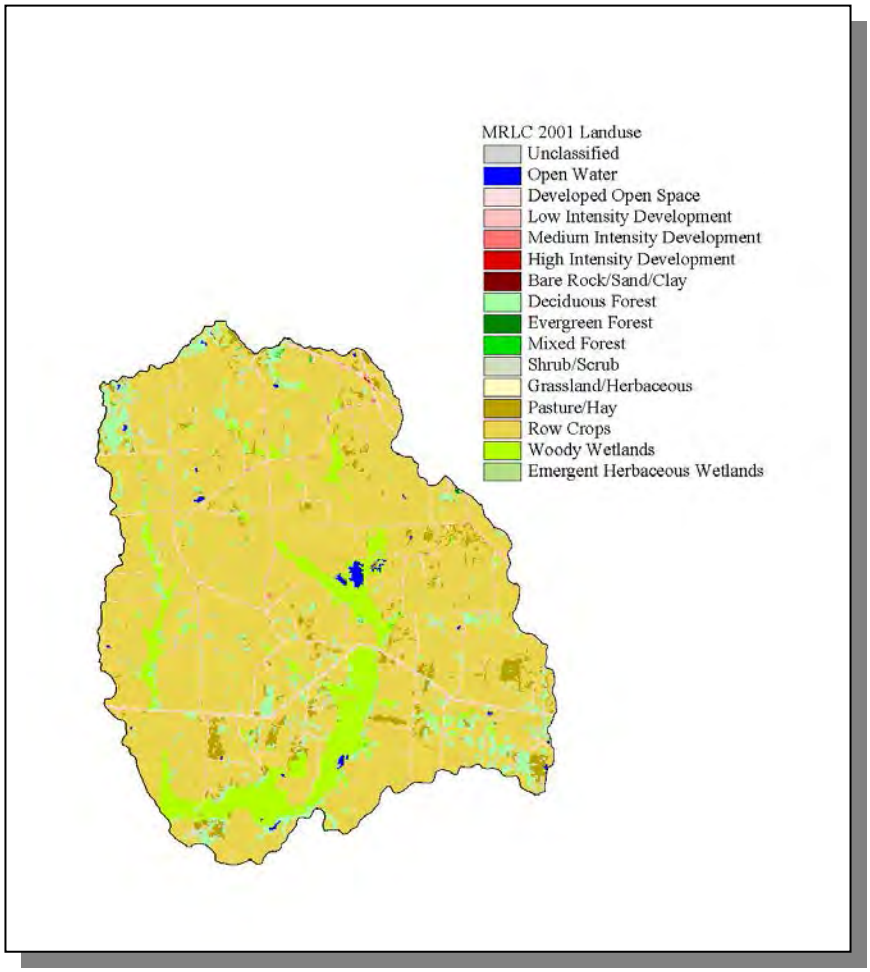

Figure 4-213. Illustration of Land Use Distribution in Subwatershed 080102080602.

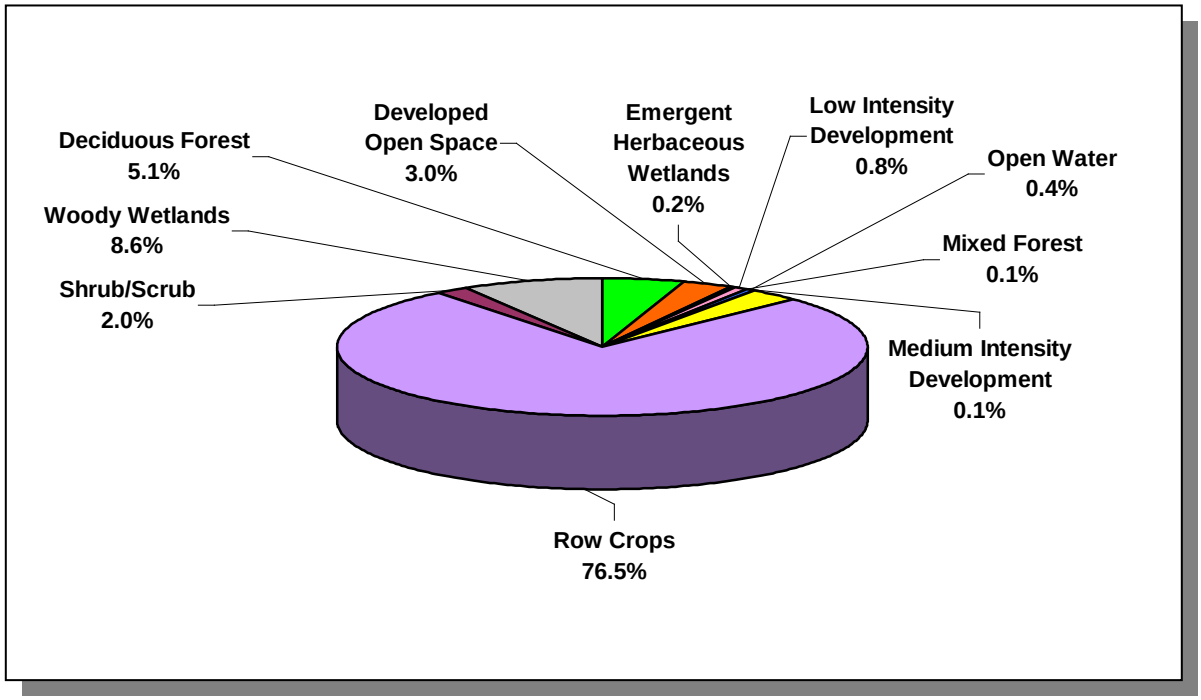

Figure 4-214. Land Use Distribution in Subwatershed 080102080602. *More information is provided in Appendix IV.*

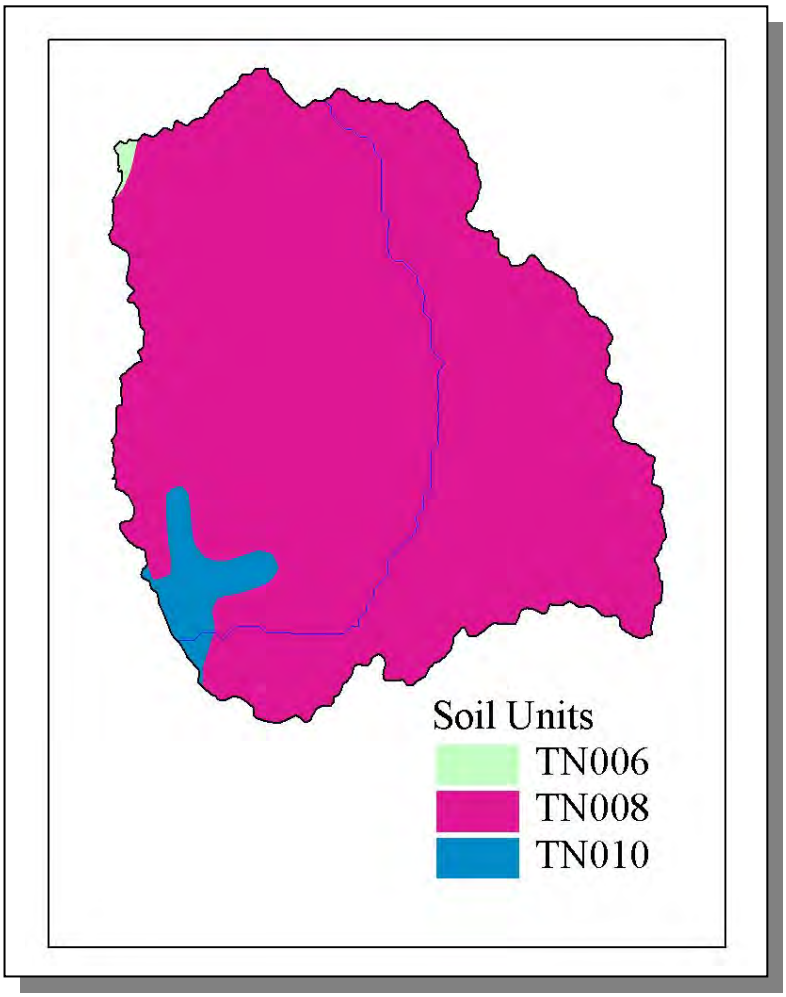

Figure 4-215. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080602.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN006	0.00	C	1.30	5.42	Silty Loam	0.48
TN008	2.00	C	1.38	5.20	Silty Loam	0.48
TN010	81.00	C	1.33	5.11	Silty Loam	0.44

Table 4-203. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080602. *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)
Haywood	19,437	19,709	19,797	7.5	1,458	1,478	1,485	1.9
Lauderdale	23,491	24,128	27,101	1.98	465	477	536	15.3
Total	**42,928**	**43,837**	**46,898**		**1,923**	**1,955**	**2,021**	**5.1**

Table 4-204. Population Estimates in Subwatershed 080102080602.

Figure 4-216. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 080102080602. *More information, including site names and locations, is provided in Appendix IV.*

4.2.F.ii.a. Point Source Contributions.

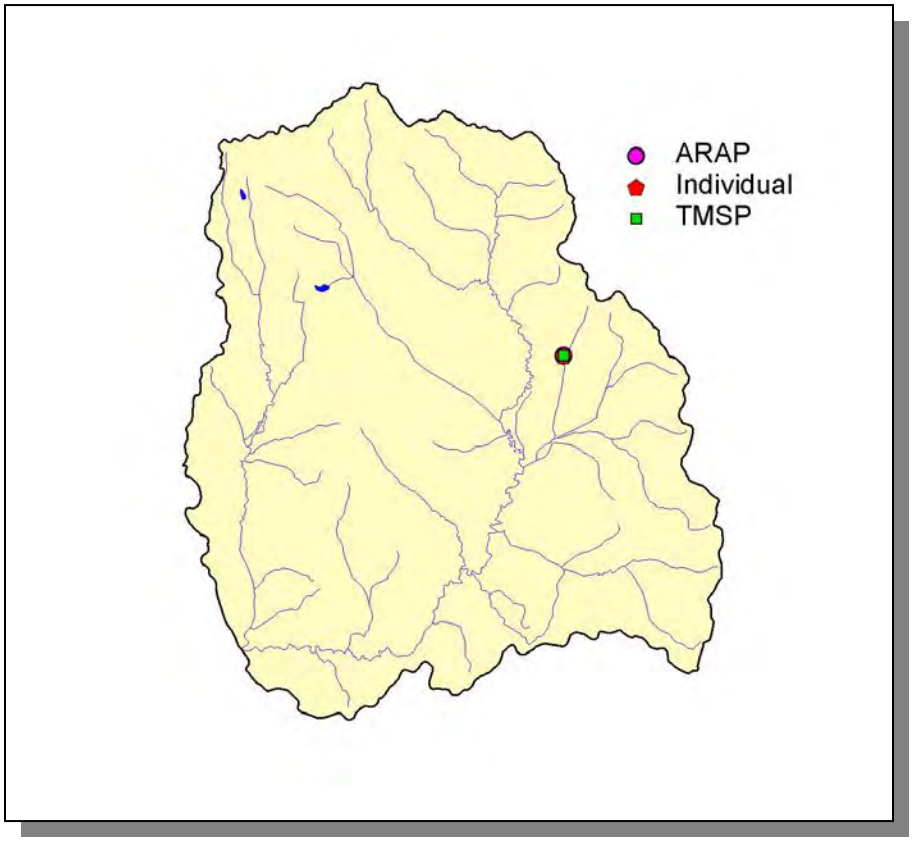

Figure 4-217. Location of Permits Issued in Subwatershed 080102080602. *More information, including the names of facilities, is provided in Appendix IV.*

Figure 4-218. Location of Active NPDES Sites in Subwatershed 080102080602. *More information, including the names of facilities, is provided in Appendix IV.*

Figure 4-219. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 080102080602. *More information is provided in Appendix IV.*

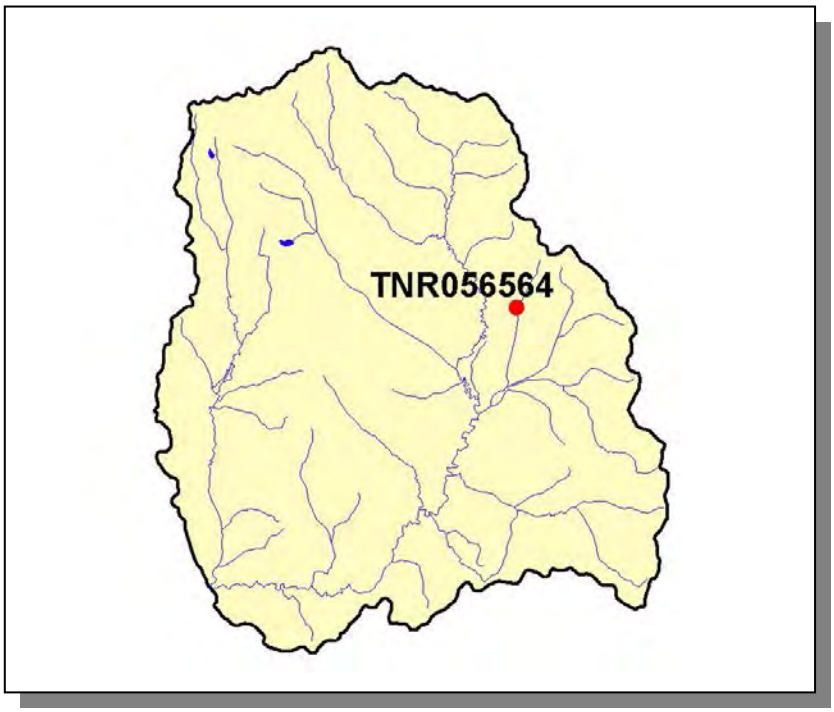

Figure 4-220. Location of TMSP Sites in Subwatershed 080102080602. *More information, including the names of facilities, is provided in Appendix IV.*

4.2.F.ii.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
264	755	<5	<5	208	<5

Table 4-205. Summary of Livestock Count Estimates in Subwatershed 080102080602. *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
Haywood	3,442	6,220	29	237	1,740	12
Lauderdale	0	8,739	0	243	2,355	11

Table 4-206. Summary of Livestock Count Estimates in Haywood and Lauderdale 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
Grass (Pastureland)	1.01
Grass (Hayland)	3.04
Legumes, Grass (Hayland)	0.58
Legumes (Hayland)	0.65
Grass, Forbs, Legumes (Mixed Pasture)	0.71
Corn (Row Crops)	8.90
Cotton (Row Crops)	12.70
Sorghum (Row Crops)	4.02
Soybeans (Row Crops)	8.35
Wheat (Close-Grown Cropland)	9.27
All Other Close-Grown Cropland	3.08
Fruit (Horticultural)	0.76
Other Vegetable and Truck Crops	4.16
Summer Fallow (Other Cropland)	8.70
Other Cropland not Planted	0.85
Conservation Reserve Program Lands	1.08
Other Land in Farms	0.14
Farmsteads and Ranch Headquarters	0.51

Table 4-207. Annual Estimated Total Soil Loss in Subwatershed 080102080602.

4.2.F.iii. 080102080603 (Hatchie River).

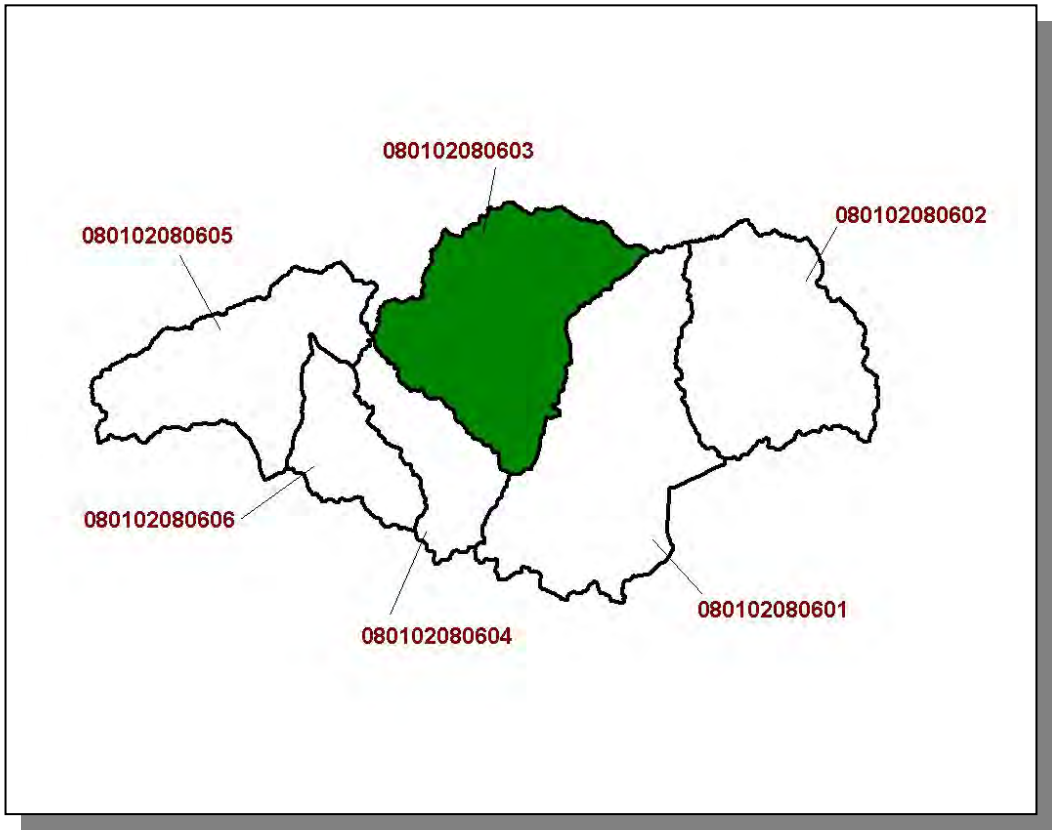

Figure 4-221. Location of Subwatershed 080102080603. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

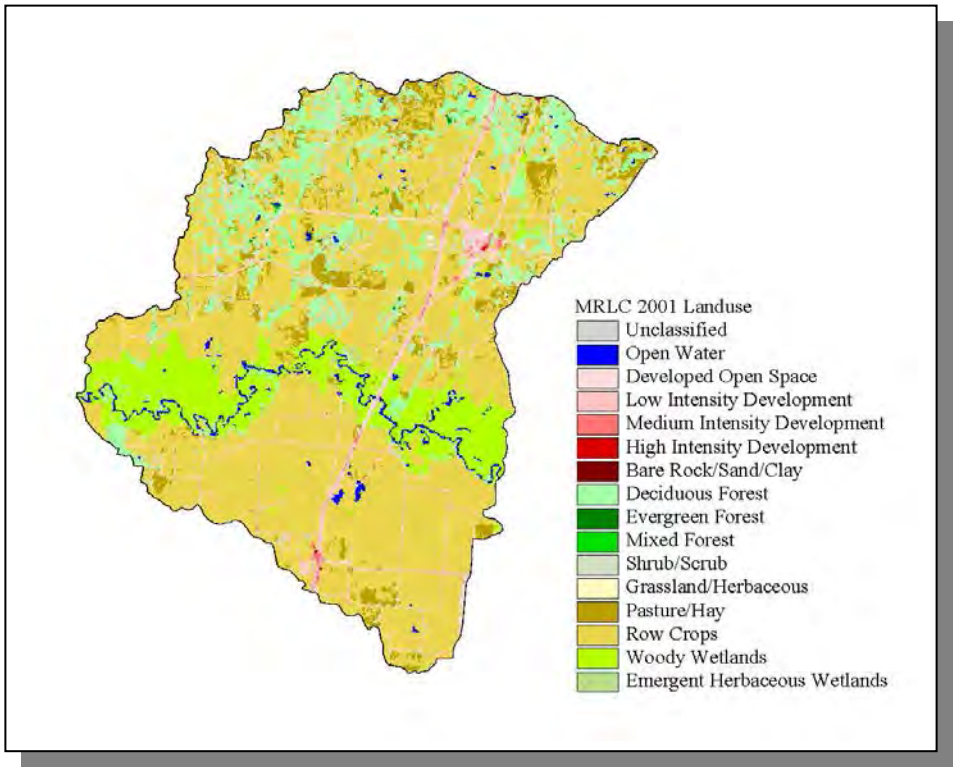

Figure 4-222. Illustration of Land Use Distribution in Subwatershed 080102080603.

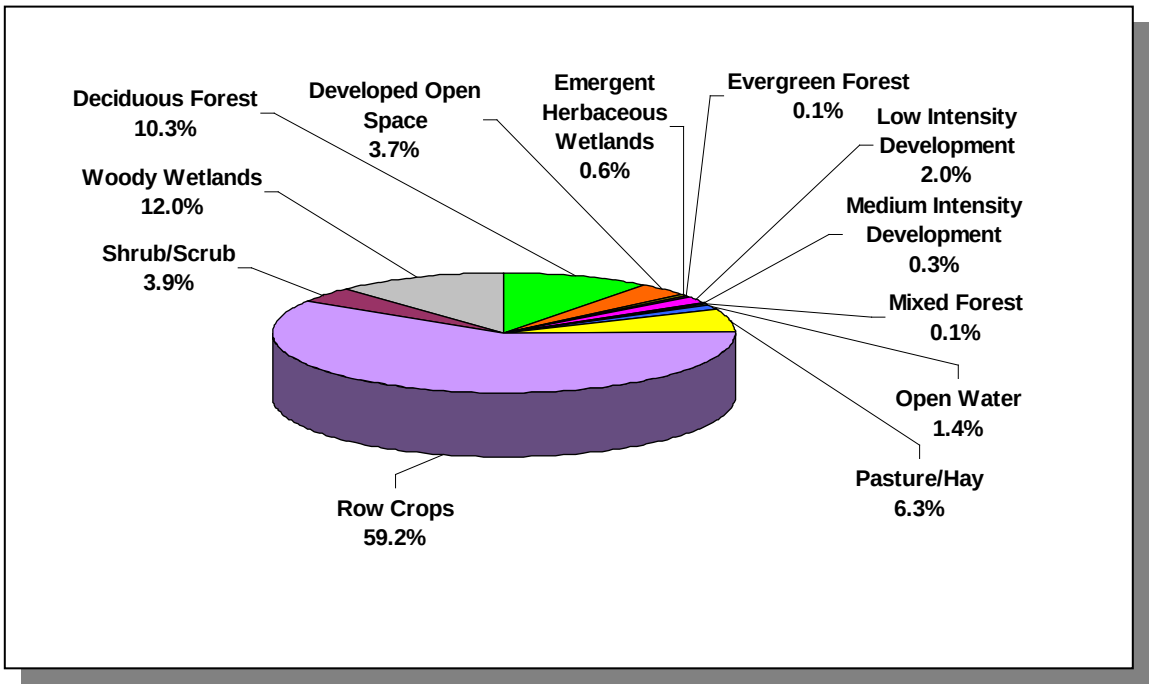

Figure 4-223. Land Use Distribution in Subwatershed 080102080603. *More information is provided in Appendix IV.*

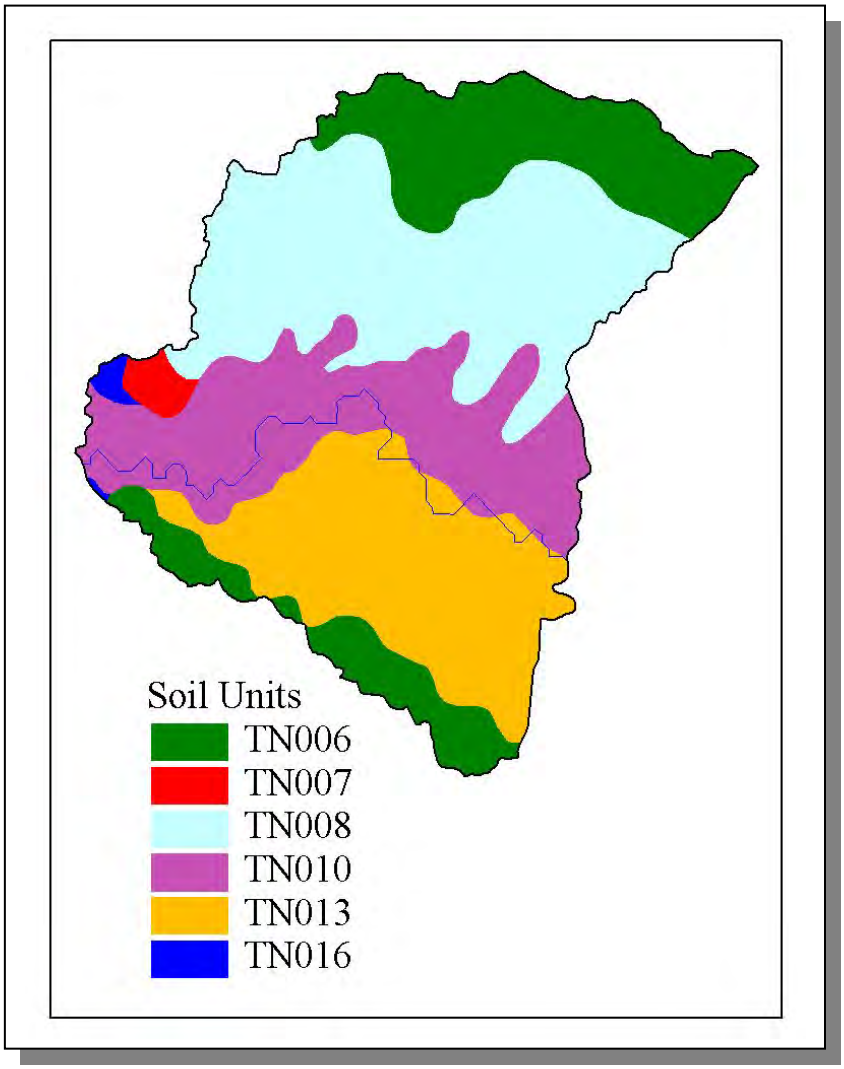

Figure 4-224. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080603.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN006	0.00	C	1.30	5.42	Silty Loam	0.48
TN007	29.00	C	1.30	5.36	Silty Loam	0.48
TN008	2.00	C	1.38	5.20	Silty Loam	0.48
TN010	81.00	C	1.33	5.11	Silty Loam	0.44
TN013	72.00	C	1.30	5.44	Silty Loam	0.46
TN016	0.00	C	1.30	6.47	Silty Loam	0.44

Table 4-208. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080603. *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)
Lauderdale	23,491	24,128	27,101	7.49	1,761	1,808	2.031	15.3
Tipton	37,568	45,986	51,271	4.35	1,634	2,000	2,230	36.5
Total	**61,059**	**70,114**	**78,372**		**3,395**	**3,808**	**4,261**	**25.5**

Table 4-209. Population Estimates in Subwatershed 080102080603

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Covington	Tipton	7,487	2,920	2,717	203	0
Henning	Lauderdale	815	324	295	21	8
Total		**8,302**	**3,264**	**3,012224**	**224**	**8**

Table 4-210. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 080102080603.

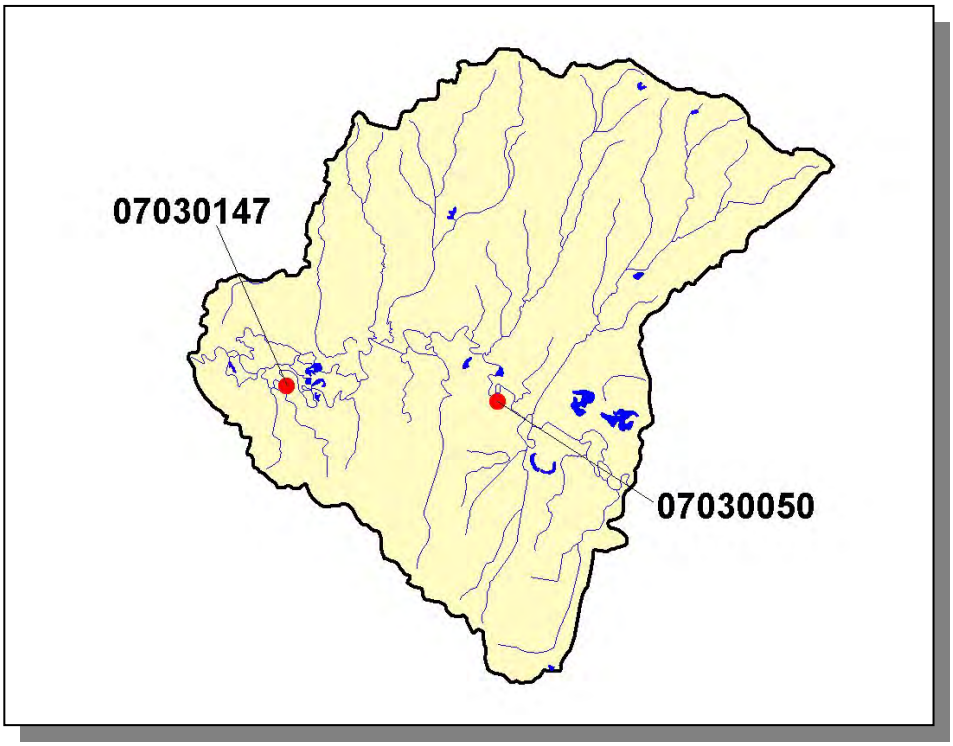

Figure 4-225. Location of Historical Streamflow Data Collection Sites in Subwatershed 080102080603. *More information is provided in Appendix IV.*

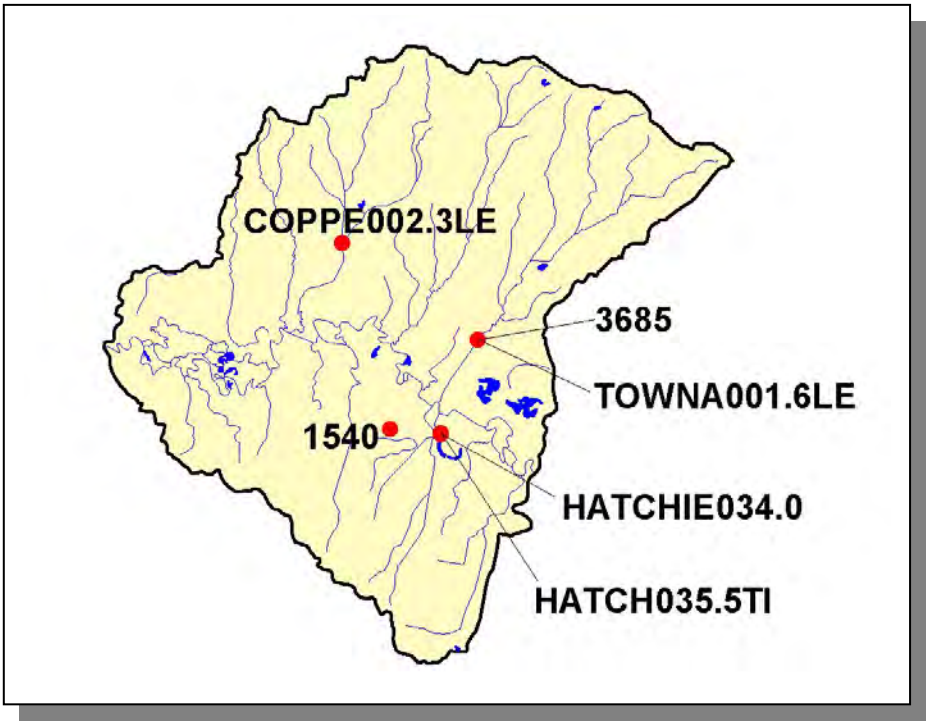

Figure 4-226. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 080102080603. *More information, including site names and locations, is provided in Appendix IV.*

4.2.F.iii.a. Point Source Contributions.

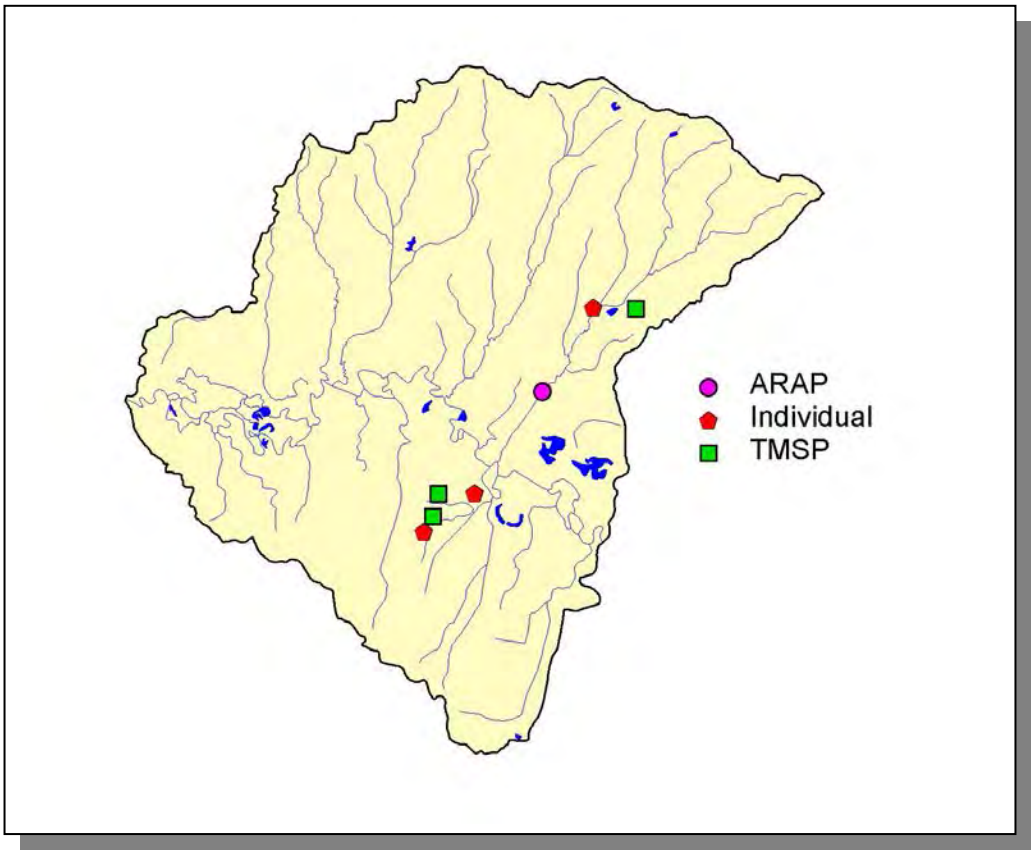

Figure 4-227. Location of Permits Issued in Subwatershed 080102080603. *More information, including the names of facilities, is provided in Appendix IV.*

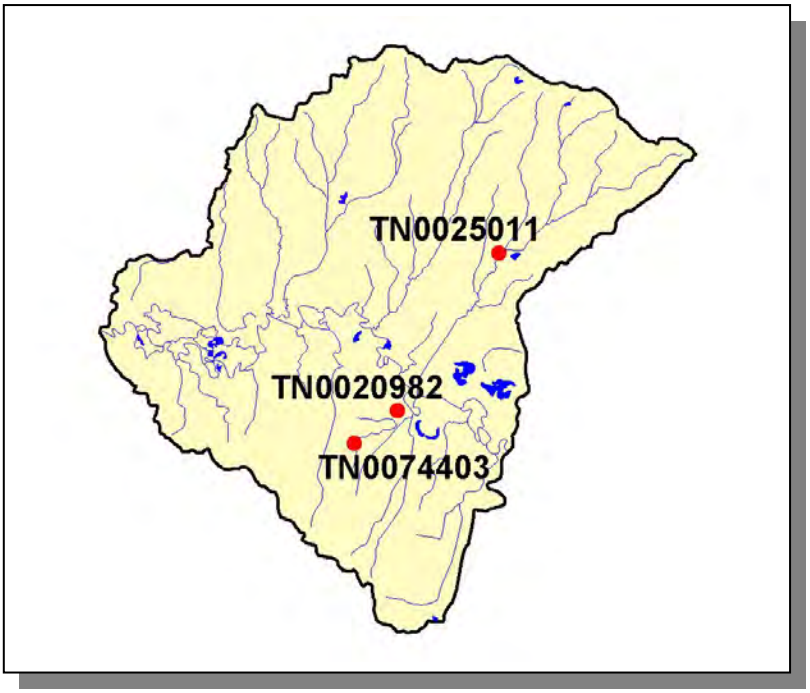

Figure 4-228. Location of Active NPDES Sites in Subwatershed 080102080603. *More information, including the names of facilities, is provided in Appendix IV.*

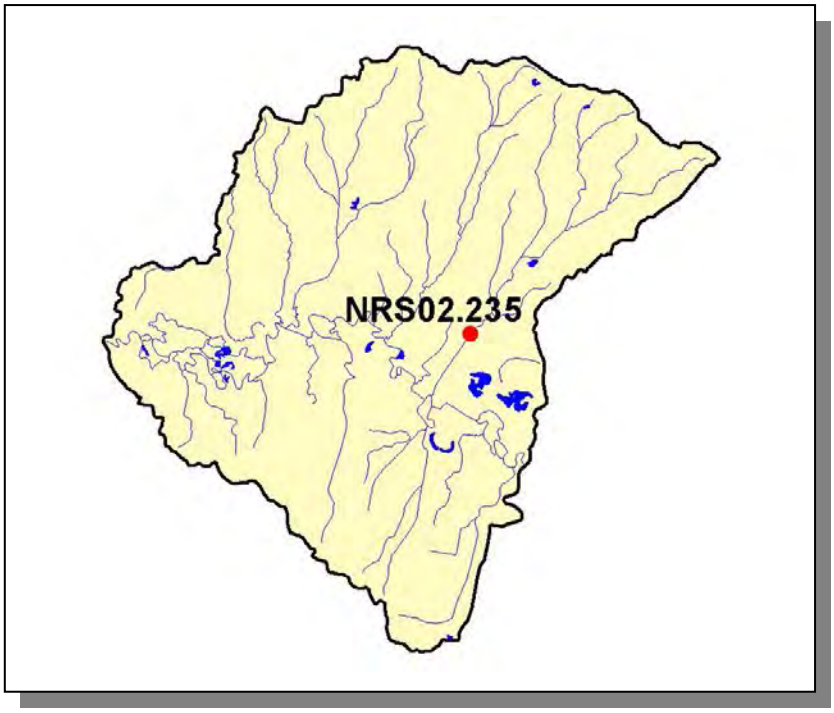

Figure 4-229. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 080102080603. *More information is provided in Appendix IV.*

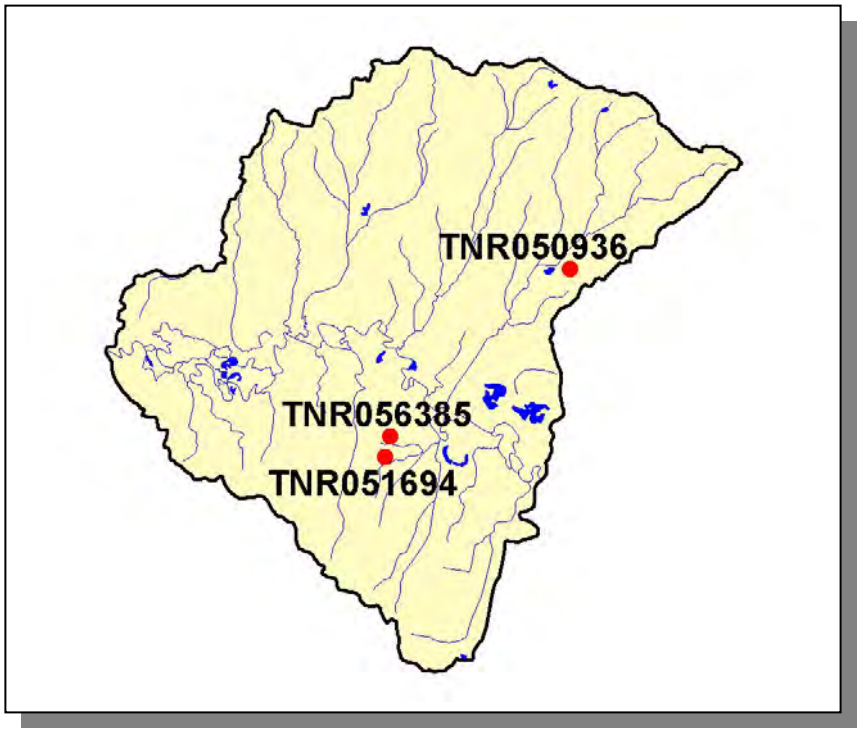

Figure 4-230. Location of TMSP Sites in Subwatershed 080102080603. *More information, including the names of facilities, is provided in Appendix IV.*

4.2.F.iii.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS				
Beef Cow	Cattle	Chickens (Layers)	Hogs	Sheep
164	1,397	<5	304	<5

Table 4-211. Summary of Livestock Count Estimates in Subwatershed 080102080603. *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
Lauderdale	0	8,739	0	243	2,355	11
Tipton	5,422	9,796	14	334	251	86

Table 4-212. Summary of Livestock Count Estimates in Lauderdale and Tipton 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
Grass (Pastureland)	1.78
Grass (Hayland)	0.95
Legumes, Grass (Hayland)	0.58
Legumes (Hayland)	0.61
Grass, Forbs, Legumes (Mixed Pasture)	1.93
Corn (Row Crops)	14.77
Cotton (Row Crops)	14.57
Soybeans (Row Crops)	15.28
Wheat (Close-Grown Cropland)	9.27
Other Vegetable and Truck Crops	9.91
Summer Fallow (Other Cropland)	8.70
Other Cropland not Planted	0.22
Conservation Reserve Program Lands	1.54
Other Land in Farms	0.05
Farmsteads and Ranch Headquarters	0.29

Table 4-213. Annual Estimated Total Soil Loss in Subwatershed 080102080603.

4.2.F.iv. 080102080604 (Town Creek).

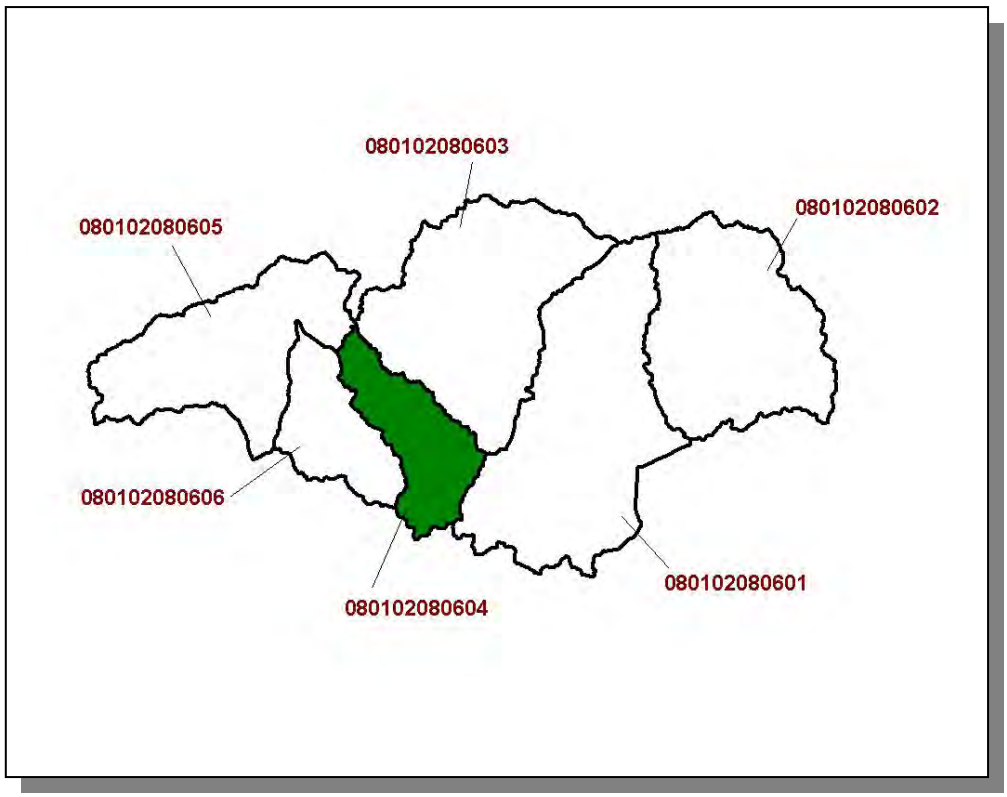

Figure 4-231. Location of Subwatershed 080102080604. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

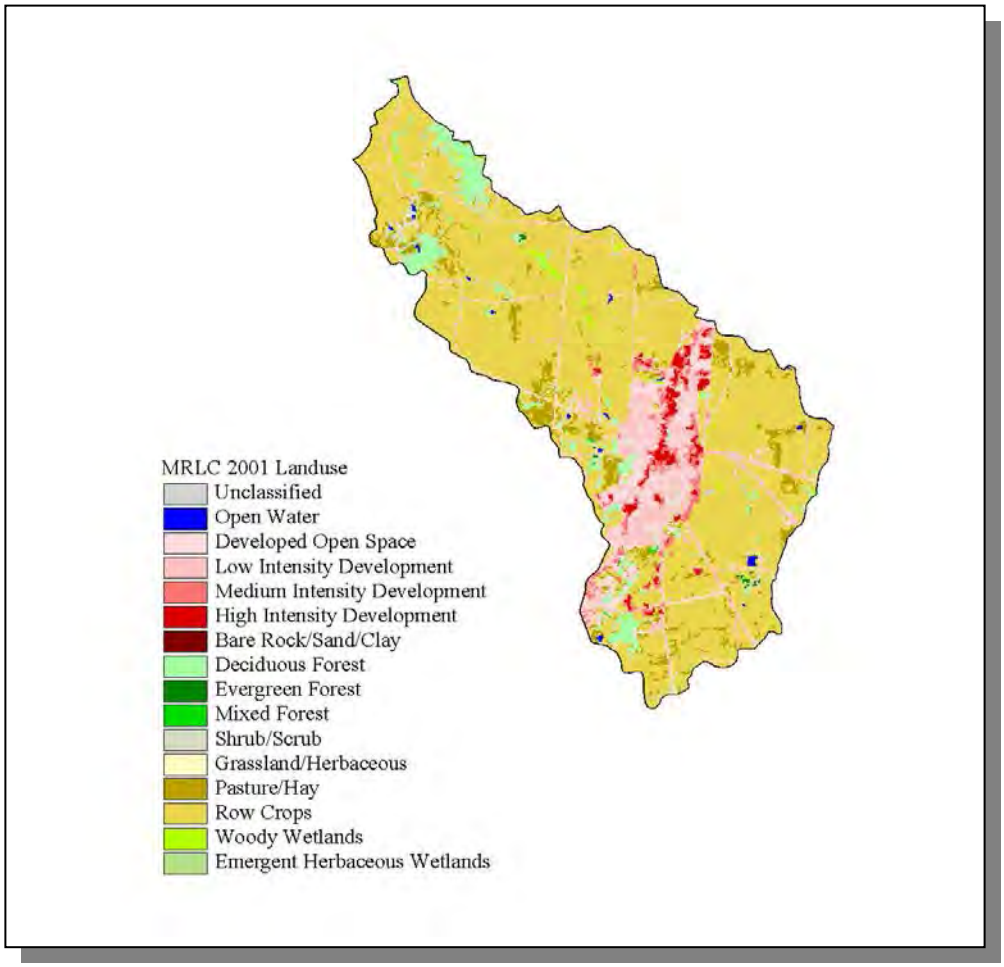

Figure 4-232. Illustration of Land Use Distribution in Subwatershed 080102080604.

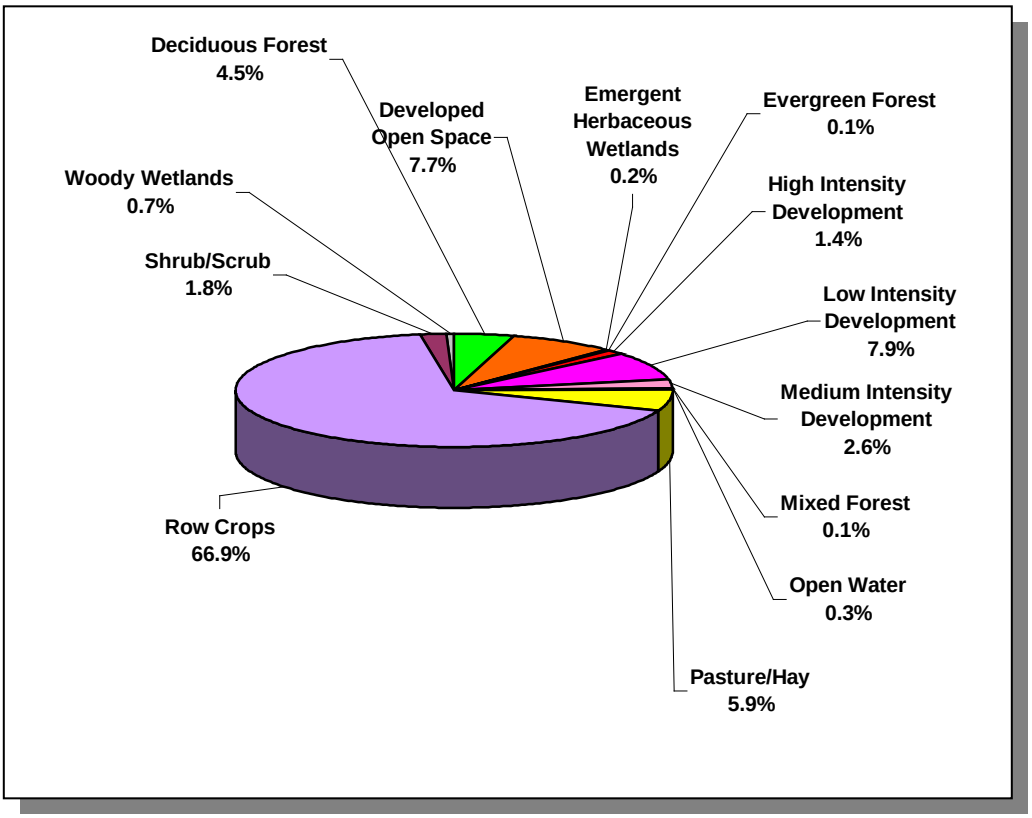

Figure 4-233. Land Use Distribution in Subwatershed 080102080604. *More information is provided in Appendix IV.*

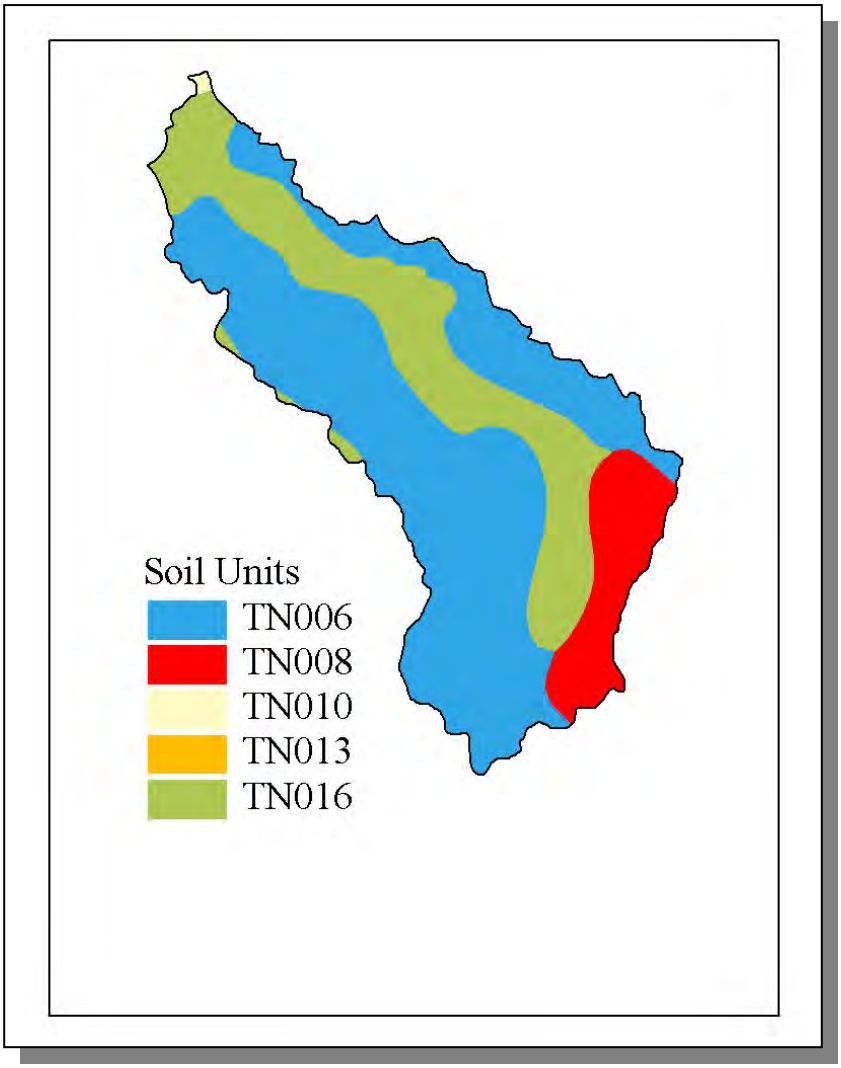

Figure 4-234. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080604.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN006	0.00	C	1.30	5.42	Silty Loam	0.48
TN008	2.00	C	1.38	5.20	Silty Loam	0.48
TN010	81.00	C	1.33	5.11	Silty Loam	0.44
TN013	72.00	C	1.30	5.44	Silty Loam	0.46
TN016	0.00	C	1.30	6.47	Silty Loam	0.44

Table 4-214. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080604. *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)
Tipton	37,568	45,986	51,271	4.84	1,818	2,225	2,481	36.5

Table 4-215. Population Estimates in Subwatershed 080102080604

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Covington	Tipton	7,487	2,920	2,717	203	0

Table 4-216. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 080102080604.

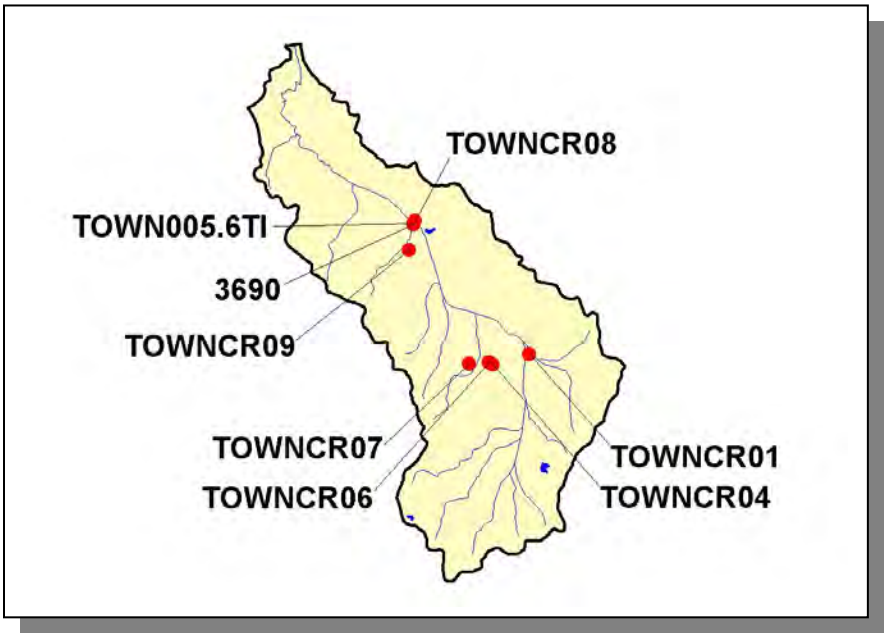

Figure 4-235. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 080102080604. *More information, including site names and locations, is provided in Appendix IV.*

4.2.F.iv.a. Point Source Contributions.

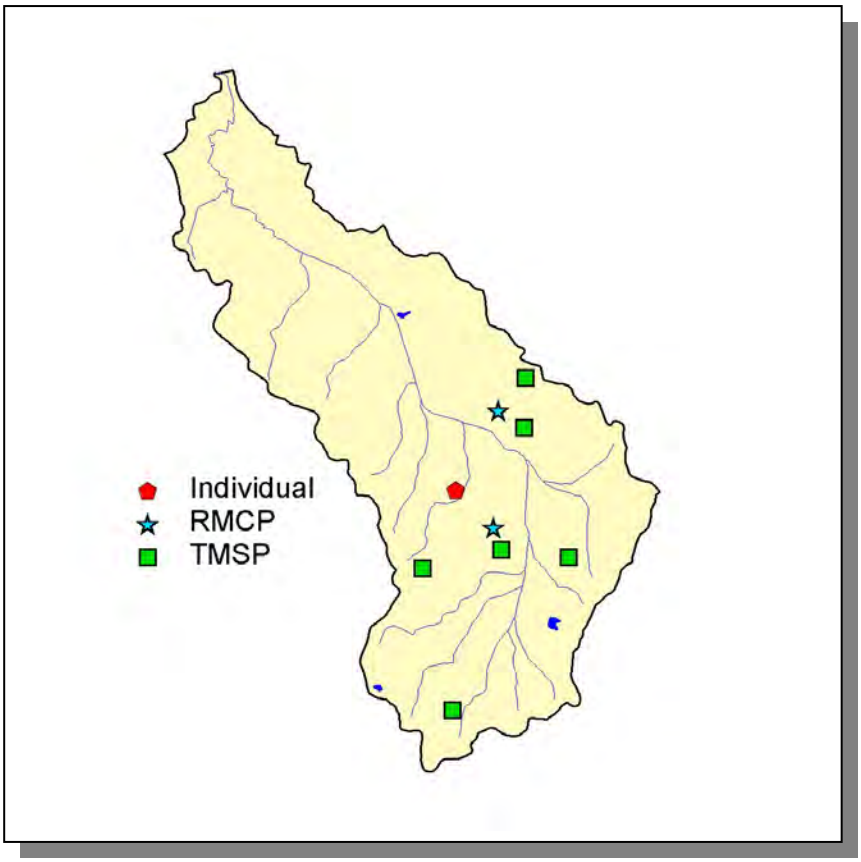

Figure 4-236. Location of Permits Issued in Subwatershed 080102080604. *More information, including the names of facilities, is provided in Appendix IV.*

Figure 4-237. Location of Active NPDES Sites in Subwatershed 080102080604. *More information, including the names of facilities, is provided in Appendix IV.*

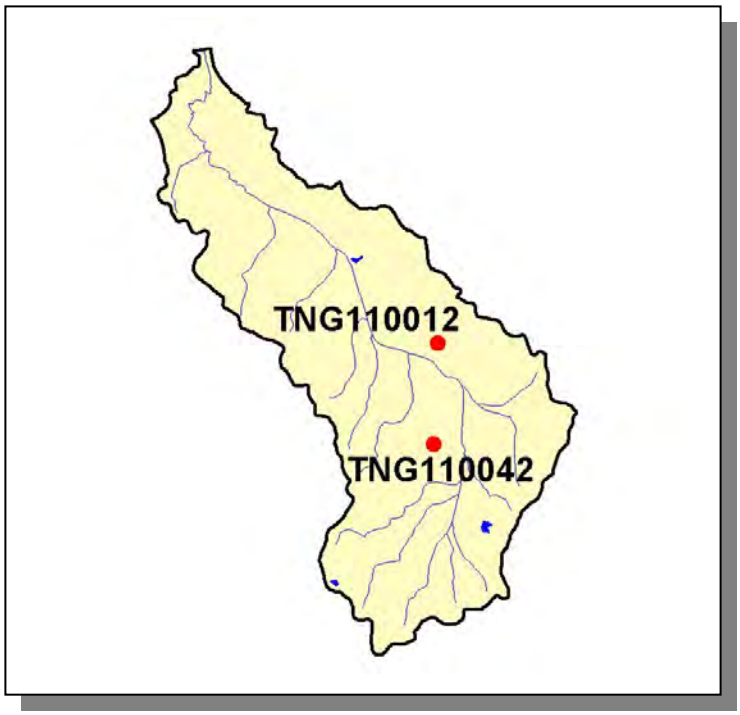

Figure 4-238. Location of Ready Mix Concrete Plants (RMCP) in Subwatershed 080102080604. *More information is provided in Appendix IV.*

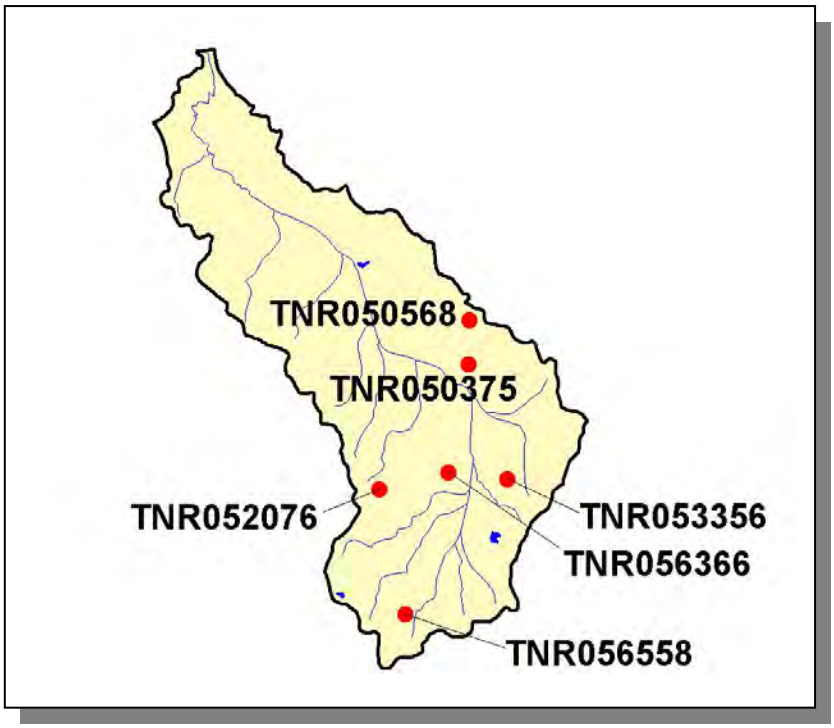

Figure 4-239. Location of TMSP Sites in Subwatershed 080102080604. *More information, including the names of facilities, is provided in Appendix IV.*

4.2.F.iv.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
328	593	<5	<5	15	5

Table 4-217. Summary of Livestock Count Estimates in Subwatershed 080102080604. *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
Tipton	5,422	9,796	14	334	251	86

Table 4-218. Summary of Livestock Count Estimates in Tipton 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)
Tipton	50.9	50.9	1.0	5.6

Table 4-219. Forest Acreage and Annual Removal Rates (1987-1994) in Tipton County.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.84
Grass (Hayland)	2.09
Legumes (Hayland)	0.54
Grass, Forbs, Legumes (Mixed Pasture)	1.01
Cotton (Row Crops)	16.59
Soybeans (Row Crops)	18.74
Other Vegetable and Truck Crops	21.48
Other Cropland not Planted	0.22
Conservation Reserve Program Lands	1.05
Farmsteads and Ranch Headquarters	0.69

Table 4-220. Annual Estimated Total Soil Loss in Subwatershed 080102080604.

4.2.F.v. 080102080605 (Hatchie River).

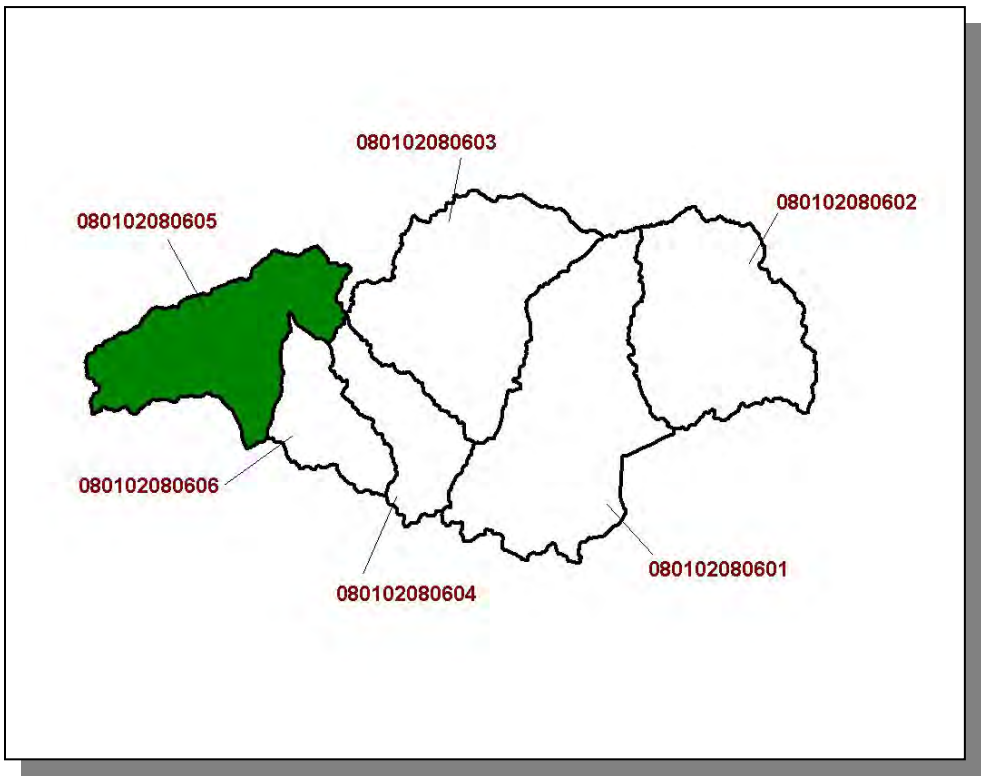

Figure 4-240. Location of Subwatershed 080102080605. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

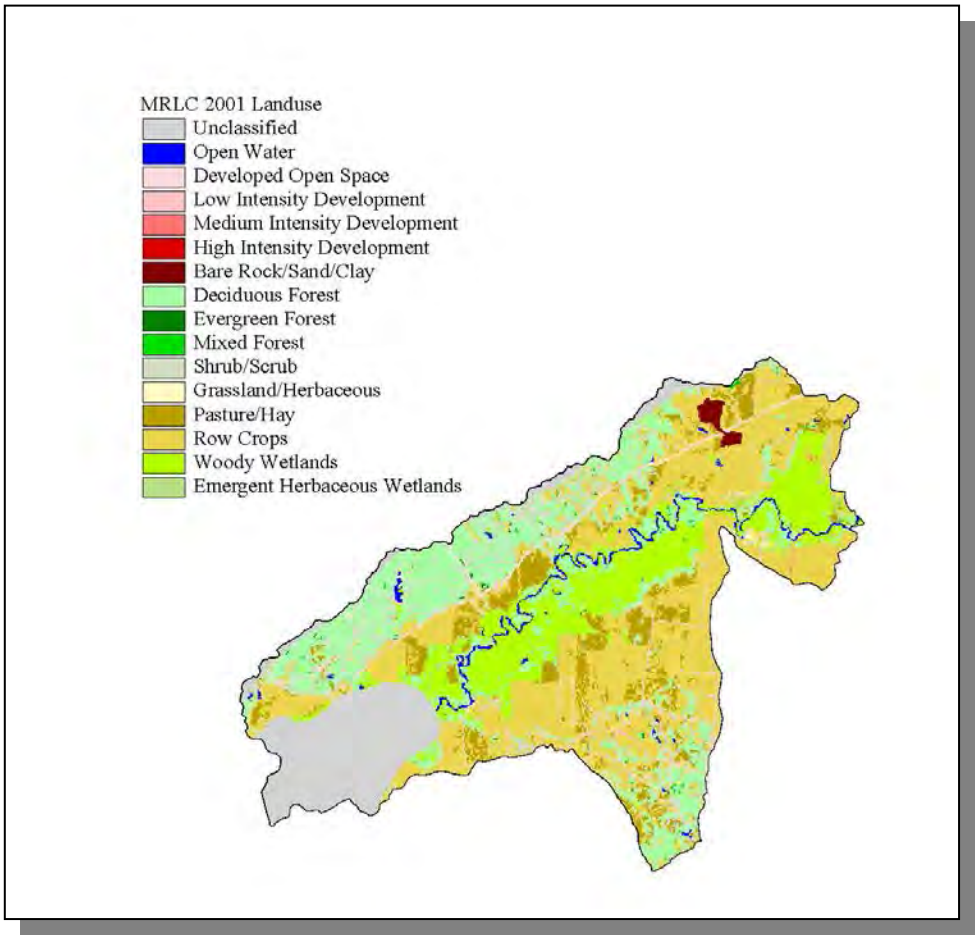

Figure 4-241. Illustration of Land Use Distribution in Subwatershed 080102080605.

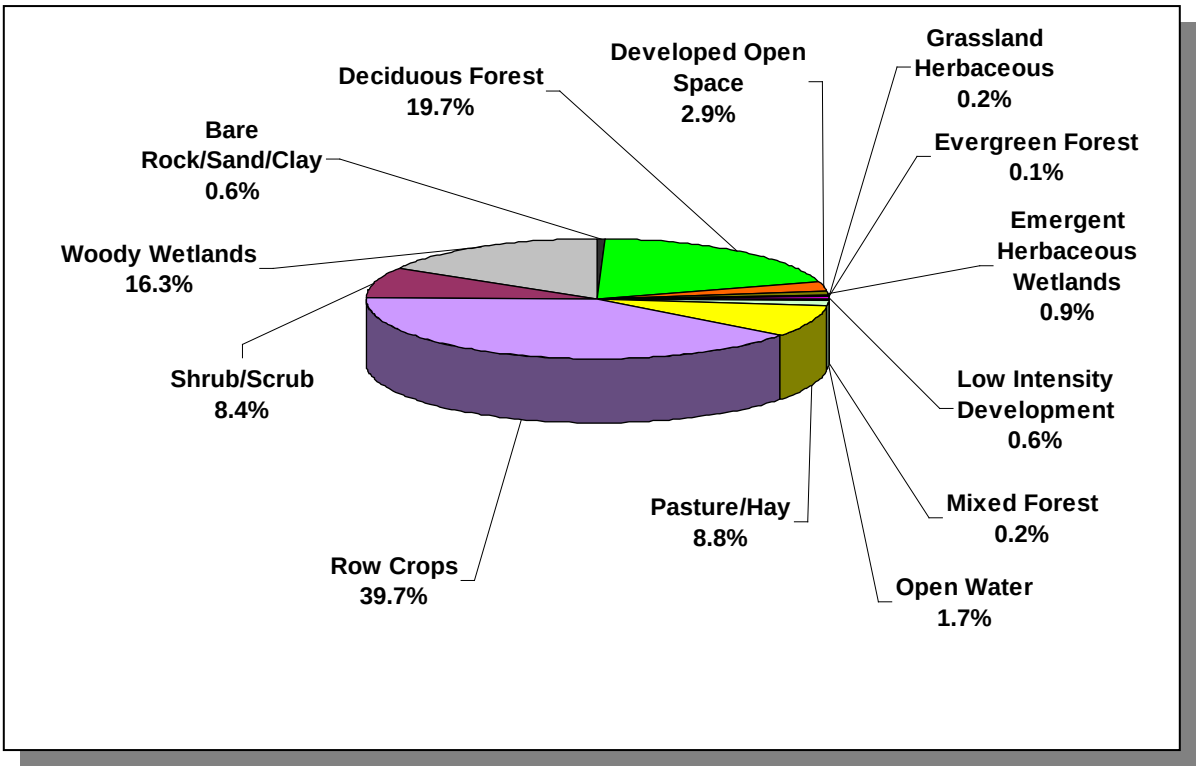

Figure 4-242. Land Use Distribution in Subwatershed 080102080605. *More information is provided in Appendix IV.*

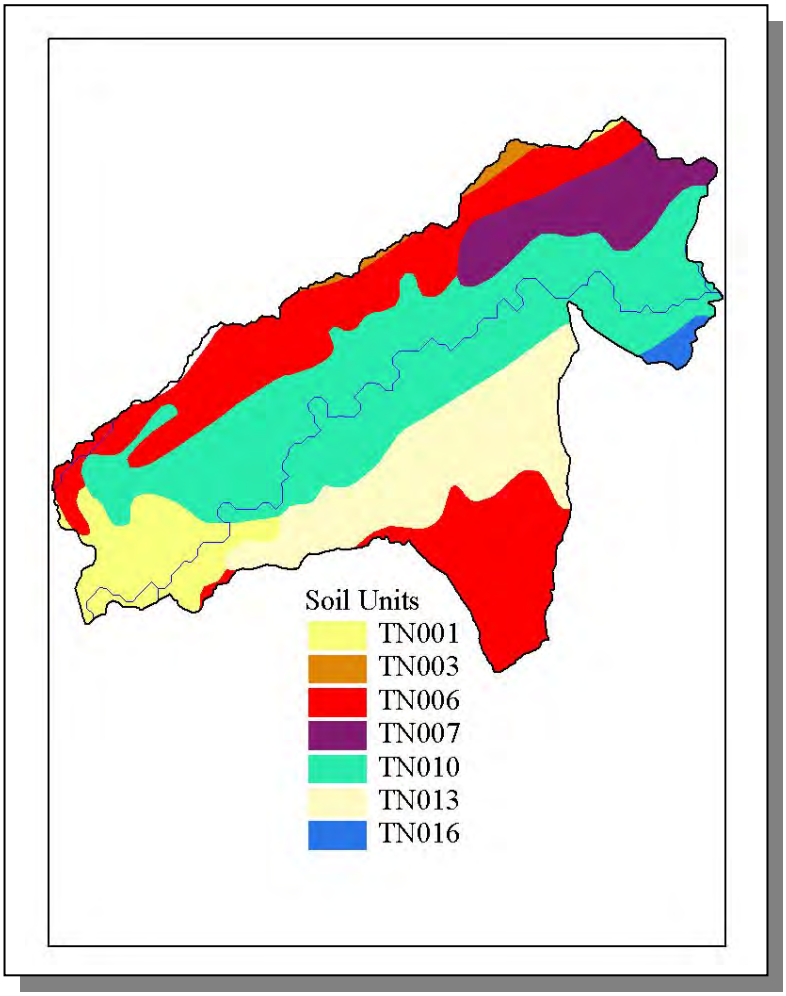

Figure 4-243. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080605.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN001	14.00	C	2.31	7.00	Silty Loam	0.33
TN003	62.00	C	0.50	6.65	Silty Clay	0.33
TN006	0.00	C	1.30	5.42	Silty Loam	0.48
TN007	29.00	C	1.30	5.36	Silty Loam	0.48
TN010	81.00	C	1.33	5.11	Silty Loam	0.44
TN013	72.00	C	1.30	5.44	Silty Loam	0.46
TN016	0.00	C	1.30	6.47	Silty Loam	0.44

Table 4-221. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080605. *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)
Lauderdale	23,491	24,128	27,101	4.77	1,120	1,151	1,292	15.4
Tipton	37,568	45,986	51,271	4.43	1,666	2,039	2,274	36.5
Total	**61,059**	**70,114**	**78,372**		**2,786**	**3,190**	**3,566**	**28.0**

Table 4-222. Population Estimates in Subwatershed 080102080605

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Burlison	Tipton	364	165	14	138	13
Garland	Tipton	181	77	13	59	5
Total		**545**	**242**	**27**	**197**	**18**

Table 4-223. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 080102080605.

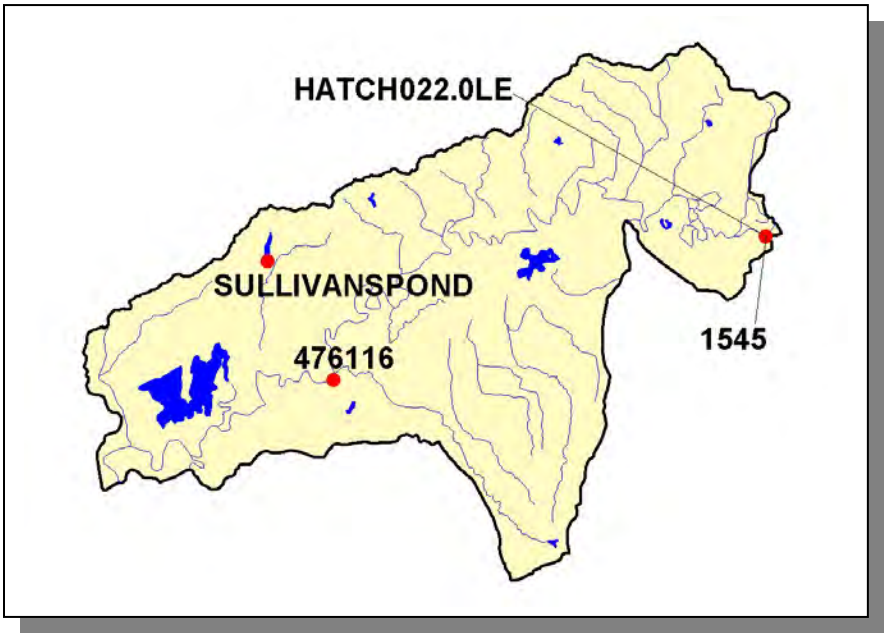

Figure 4-244. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 080102080605. *More information, including site names and locations, is provided in Appendix IV.*

4.2.F.v.a. Point Source Contributions.

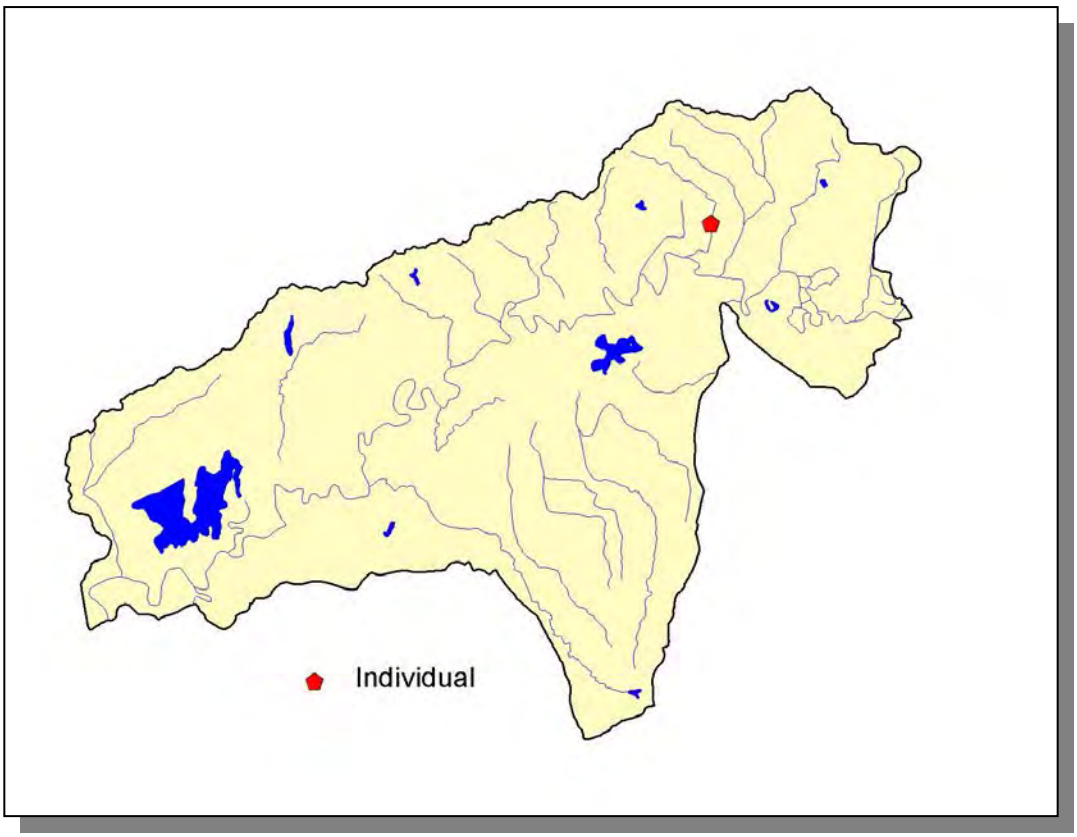

Figure 4-245. Location of Permits Issued in Subwatershed 080102080605. *More information, including the names of facilities, is provided in Appendix IV.*

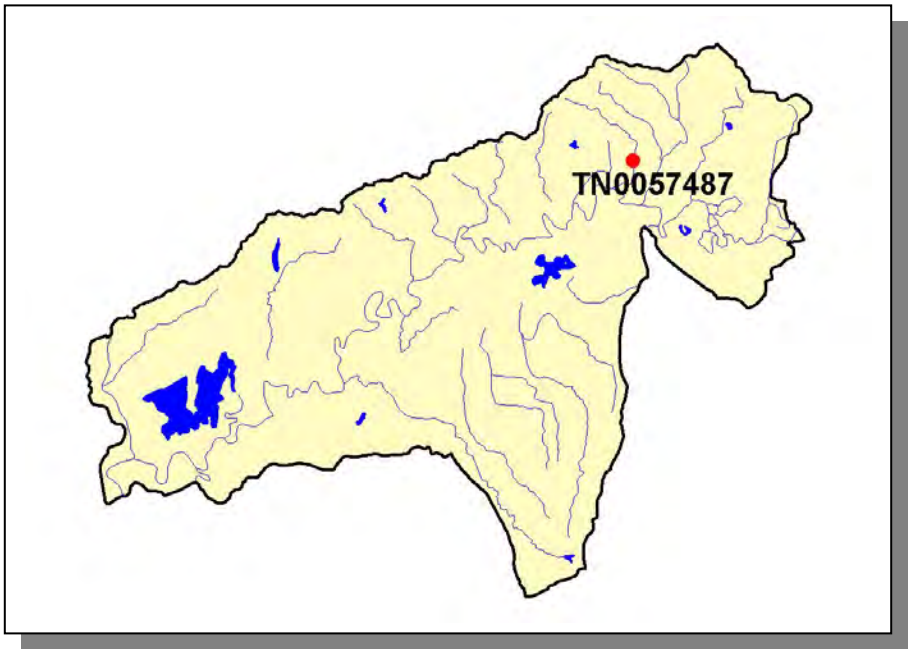

Figure 4-246. Location of Active NPDES Sites in Subwatershed 080102080605. *More information, including the names of facilities, is provided in Appendix IV.*

4.2.F.v.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS				
Beef Cow	Cattle	Chickens (Layers)	Hogs	Sheep
169	703	<5	115	<5

Table 4-224. Summary of Livestock Count Estimates in Subwatershed 080102080605. *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
Lauderdale	0	8,739	0	243	2,355	11
Tipton	5,422	9,796	14	334	251	86

Table 4-225. Summary of Livestock Count Estimates in Lauderdale and Tipton 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
Grass (Pastureland)	1.62
Grass (Hayland)	1.14
Legumes, Grass (Hayland)	0.58
Legumes (Hayland)	0.60
Grass, Forbs, Legumes (Mixed Pasture)	1.78
Corn (Row Crops)	14.77
Cotton (Row Crops)	14.91
Soybeans (Row Crops)	15.87
Wheat (Close-Grown Cropland)	9.27
Other Vegetable and Truck Crops	11.87
Summer Fallow (Other Cropland)	8.70
Other Cropland not Planted	0.22
Conservation Reserve Program Lands	1.45
Other Land in Farms	0.05
Farmsteads and Ranch Headquarters	0.36

Table 4-226. Annual Estimated Total Soil Loss in Subwatershed 080102080605.

4.2.F.vi. 080102080606 (Mathis Creek).

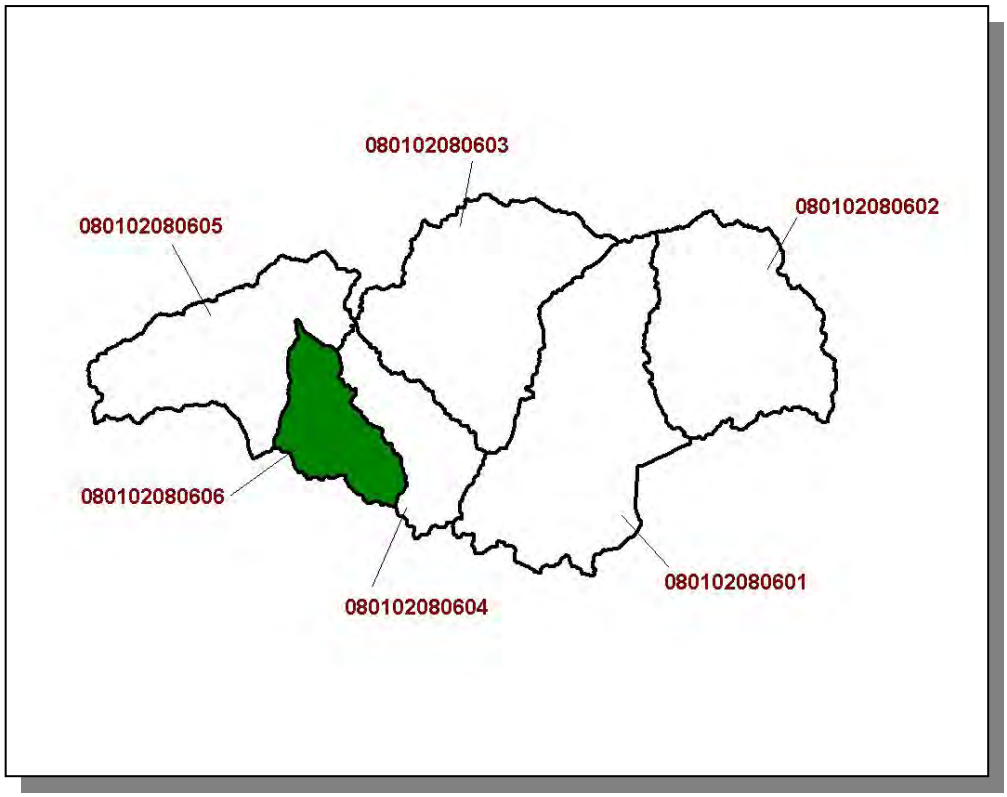

Figure 4-247. Location of Subwatershed 080102080606. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

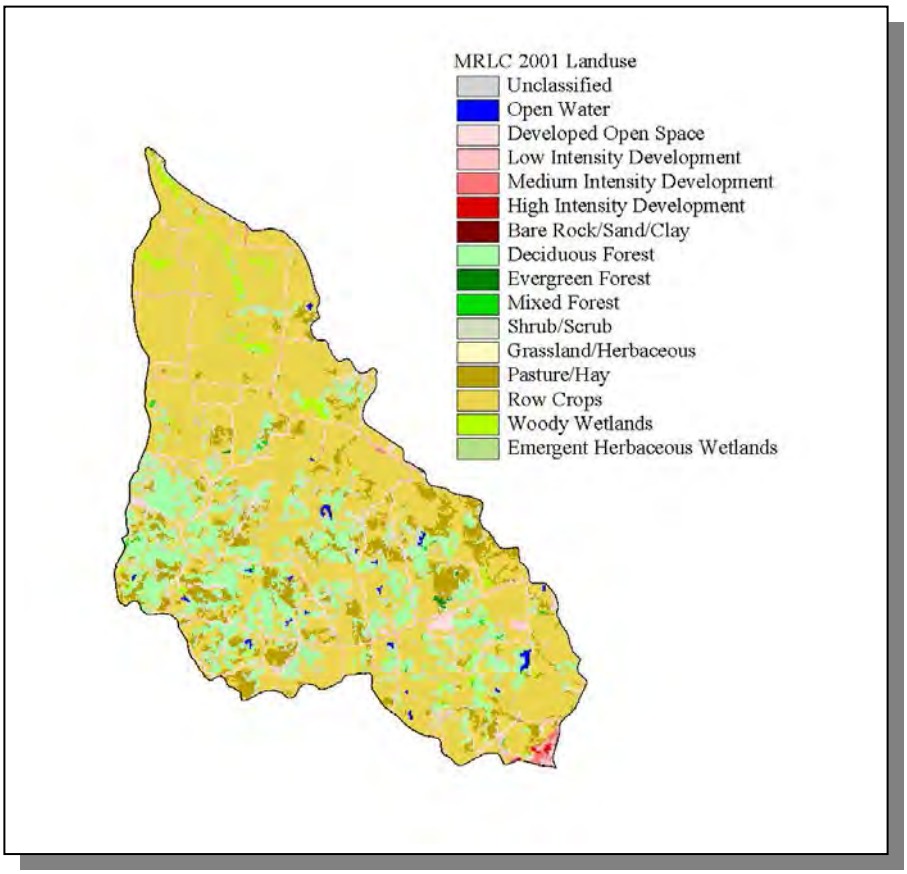

Figure 4-248. Illustration of Land Use Distribution in Subwatershed 080102080606.

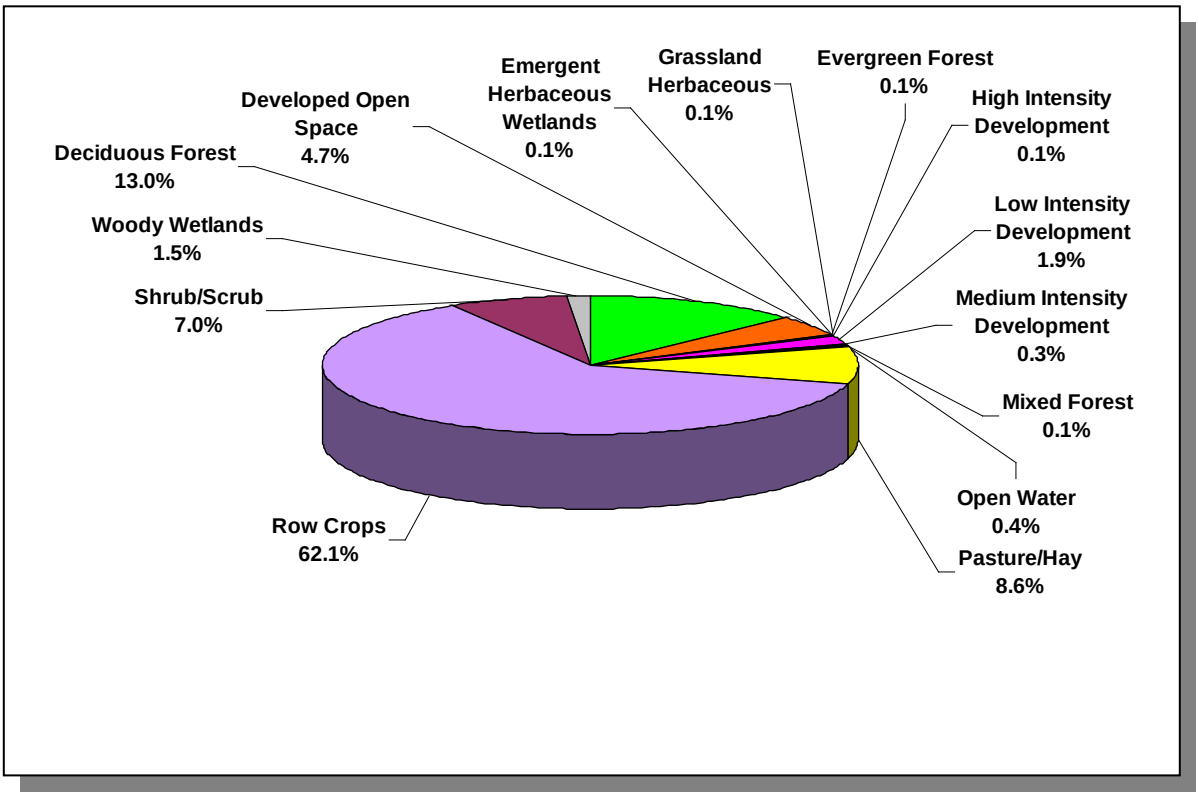

Figure 4-249. Land Use Distribution in Subwatershed 080102080606. *More information is provided in Appendix IV.*

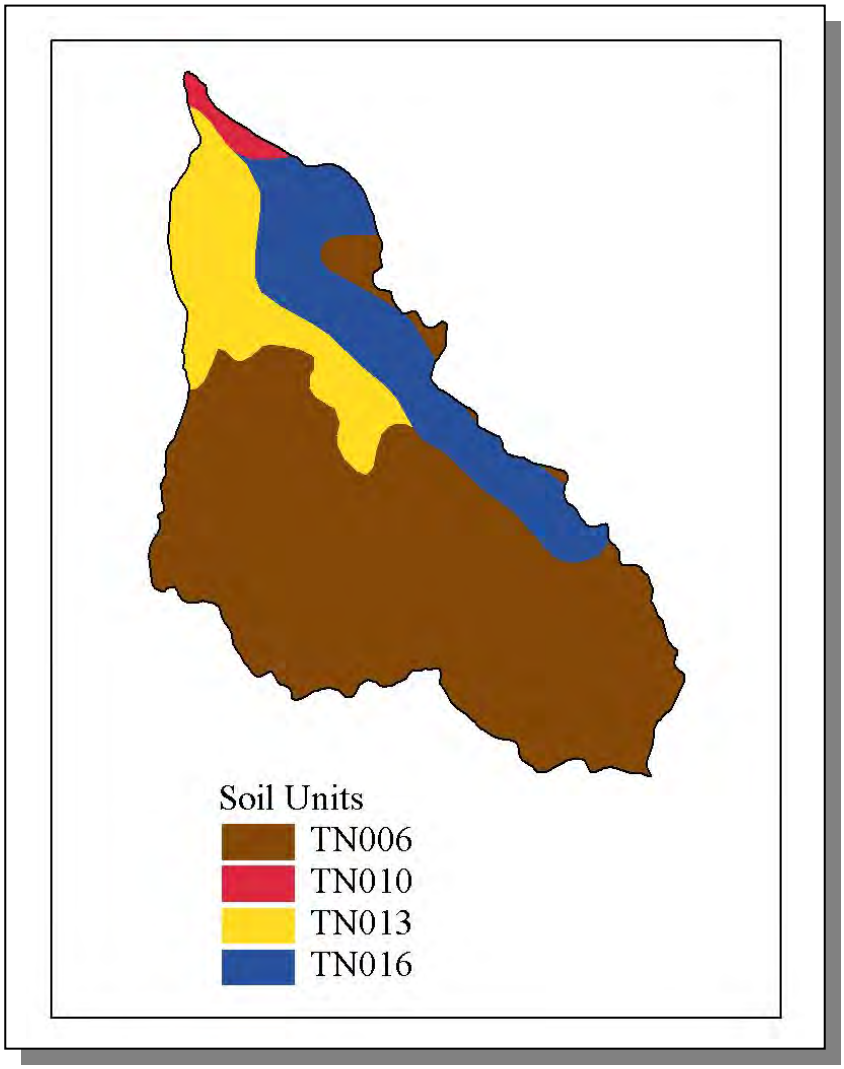

Figure 4-250. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080606.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN006	0.00	C	1.30	5.42	Silty Loam	0.48
TN010	81.00	C	1.33	5.11	Silty Loam	0.44
TN013	72.00	C	1.30	5.44	Silty Loam	0.46
TN016	0.00	C	1.30	6.47	Silty Loam	0.44

Table 4-227. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080606. *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)
Tipton	37,568	45,986	51,271	4.42	1,659	2,031	2,264	36.5

Table 4-228. Population Estimates in Subwatershed 080102080606

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Covington	Tipton	7,487	2,920	2,717	203	0
Garland	Tipton	181	77	13	59	5
Total		**7,668**	**7,997**	**2,730**	**262**	**5**

Table 4-229. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 080102080606.

4.2.F.vi.a. Point Source Contributions.

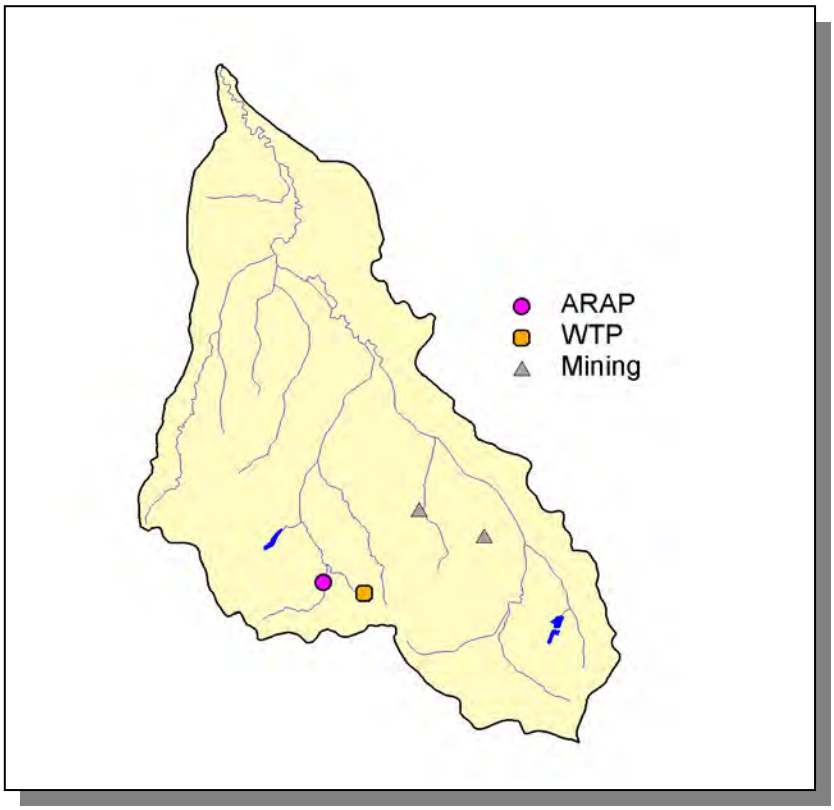

Figure 4-251. Location of Permits Issued in Subwatershed 080102080606. *More information, including the names of facilities, is provided in Appendix IV.*

Figure 4-252. Location of Active Mining Sites in Subwatershed 080102080606. *More information, including the names of mining operations, is provided in Appendix IV.*

Figure 4-253. Location of Water Treatment Plants in Subwatershed 080102080606. *More information, including the names of facilities, is provided in Appendix IV.*

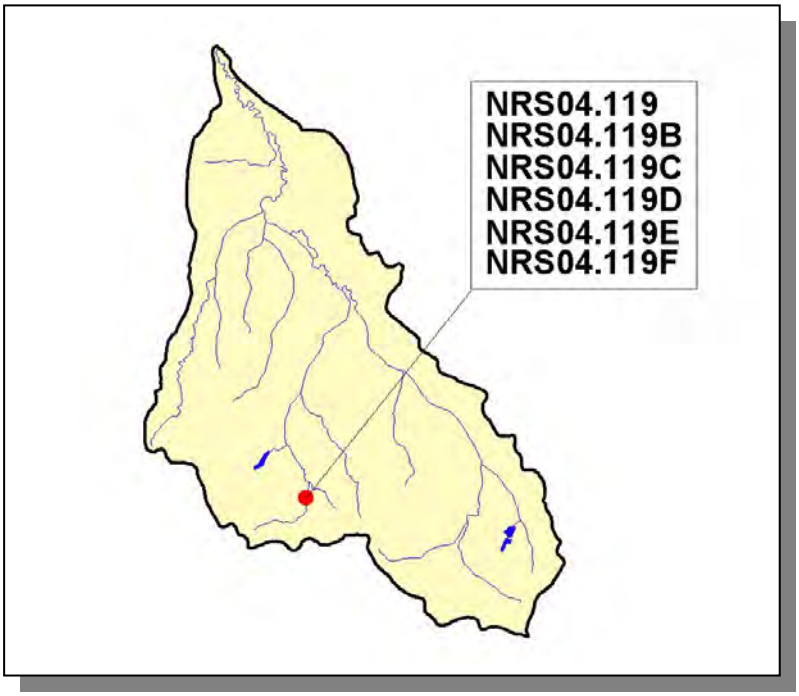

Figure 4-254. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 080102080606. *More information is provided in Appendix IV.*

4.2.F.vi.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
396	715	<5	<5	18	6

Table 4-230. Summary of Livestock Count Estimates in Subwatershed 080102080606. *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
Tipton	5,422	9,796	14	334	251	86

Table 4-231. Summary of Livestock Count Estimates in Tipton 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)
Tipton	50.9	50.9	1.0	5.6

Table 4-232. Forest Acreage and Annual Removal Rates (1987-1994) in Tipton County.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.84
Grass (Hayland)	2.09
Legumes (Hayland)	0.54
Grass, Forbs, Legumes (Mixed Pasture)	1.01
Cotton (Row Crops)	16.59
Soybeans (Row Crops)	18.74
Other Vegetable and Truck Crops	21.48
Other Cropland not Planted	0.22
Conservation Reserve Program Lands	1.05
Farmsteads and Ranch Headquarters	0.69

Table 4-233. Annual Estimated Total Soil Loss in Subwatershed 080102080606.

4.2.G. 0801020807.

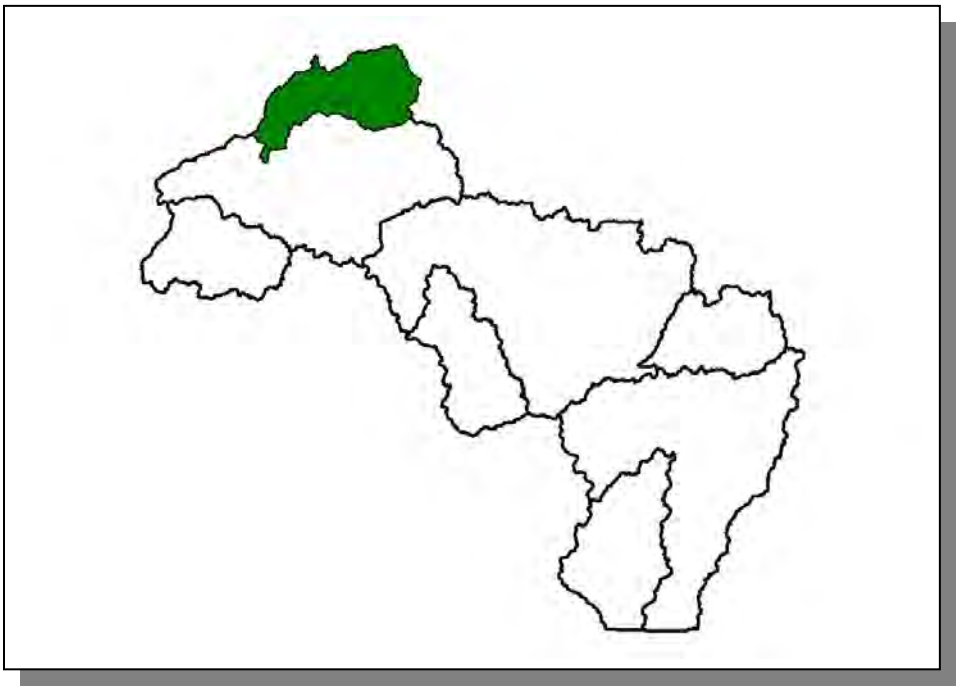

Figure 4-255. Location of Subwatershed 0801020807. *All Hatchie River HUC-10 subwatershed boundaries in Tennessee are shown for reference.*

4.2.G.i. 080102080701 (Upper Cane Creek).

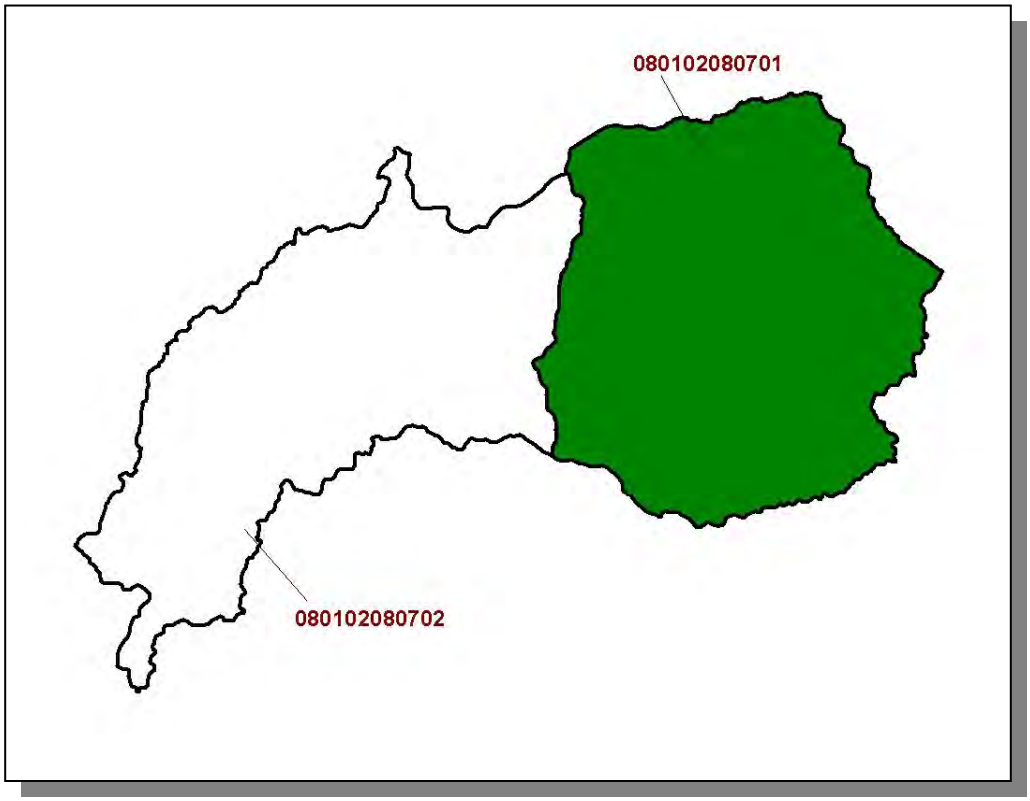

Figure 4-256. Location of Subwatershed 080102080701. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

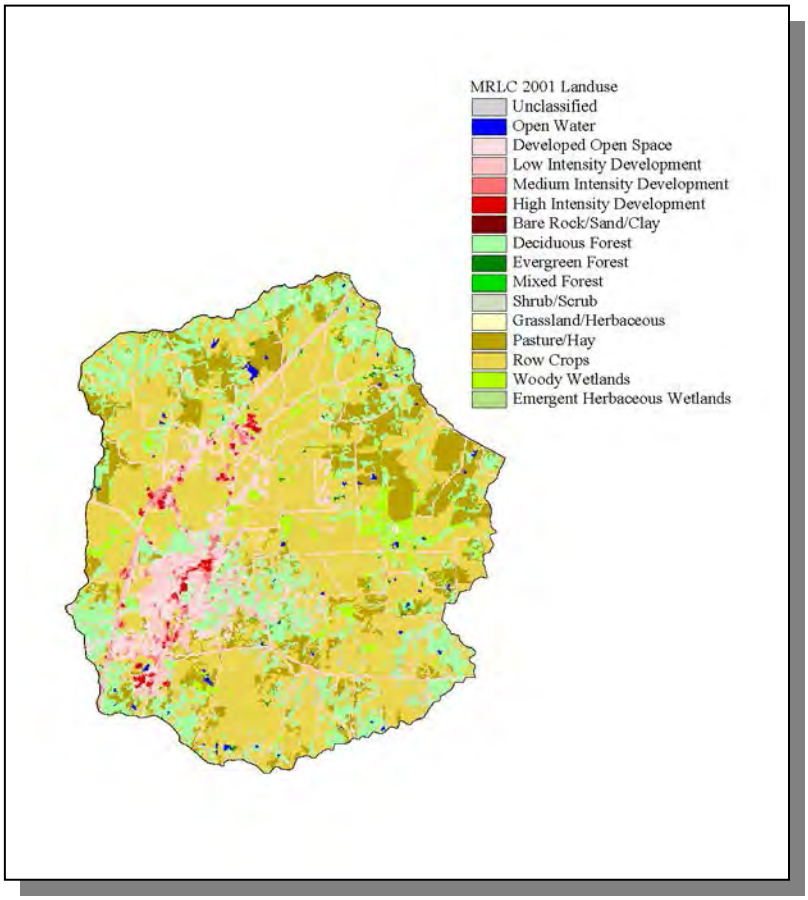

Figure 4-257. Illustration of Land Use Distribution in Subwatershed 080102080701.

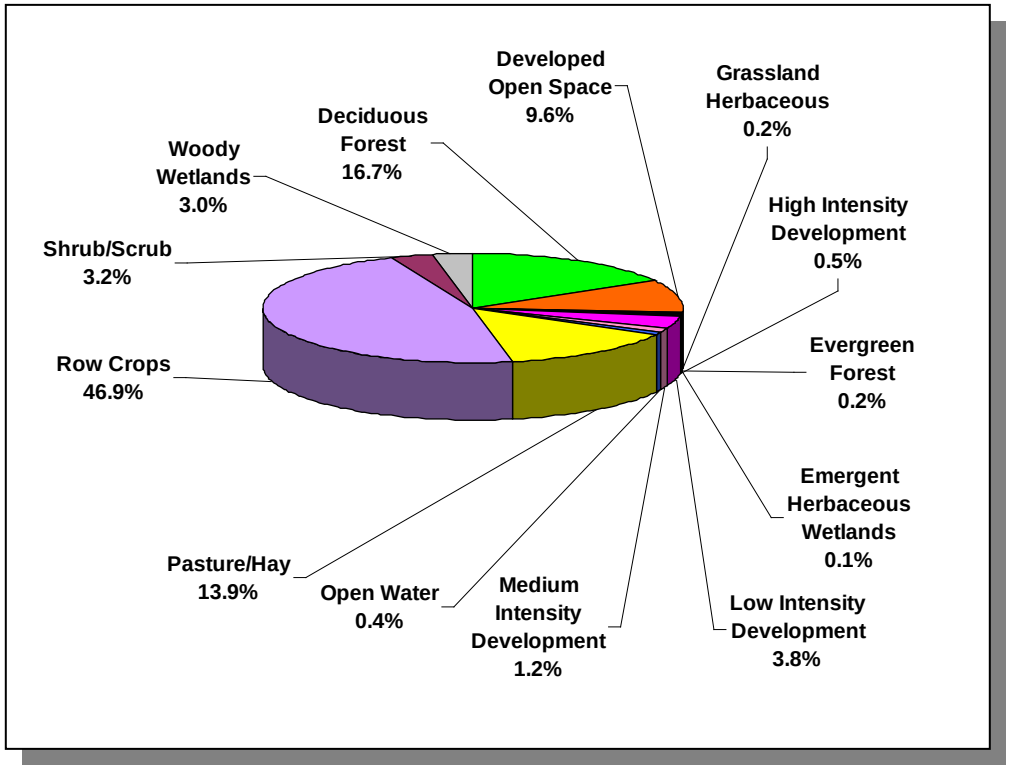

Figure 4-258. Land Use Distribution in Subwatershed 080102080701. *More information is provided in Appendix IV.*

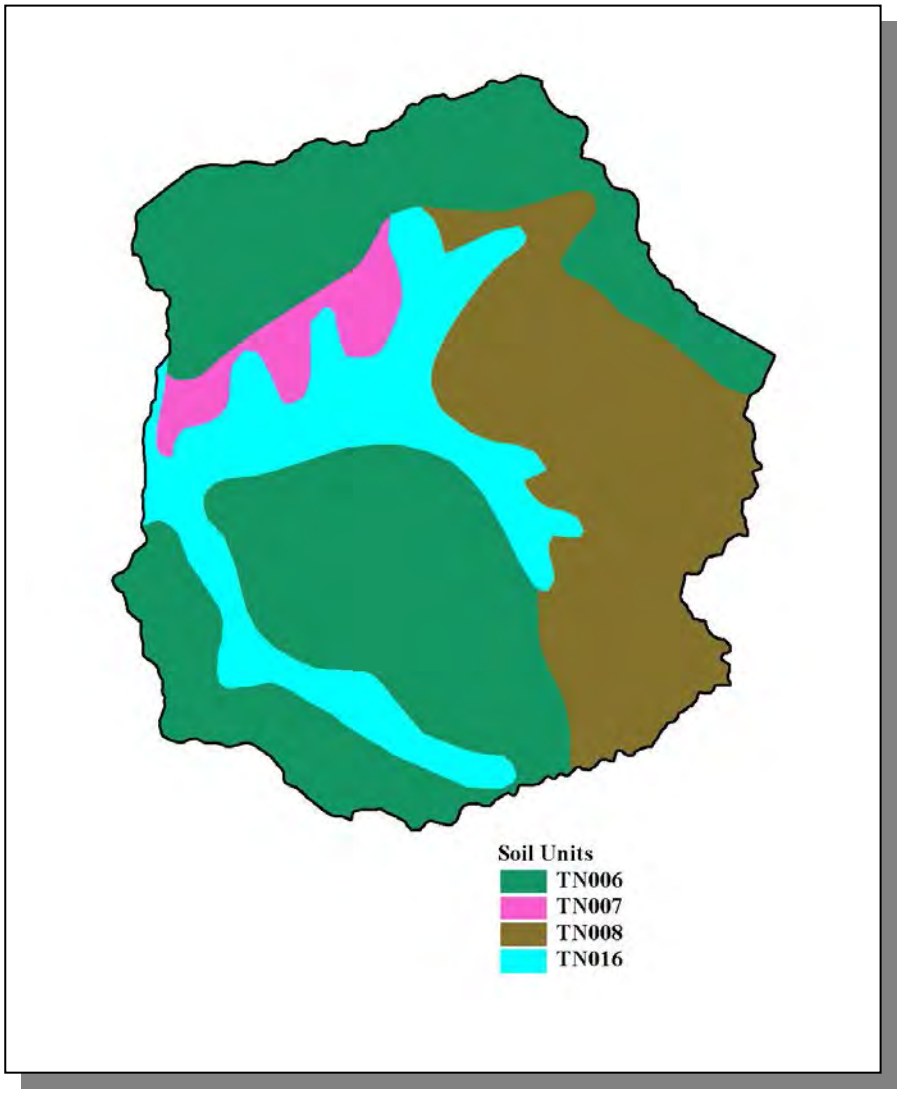

Figure 4-259. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080701.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN006	0.00	C	1.30	5.42	Silty Loam	0.48
TN007	29.00	C	1.30	5.36	Silty Loam	0.48
TN008	2.00	C	1.38	5.20	Silty Loam	0.48
TN016	0.00	C	1.30	6.47	Silty Loam	0.44

Table 4-234. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080701. *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)
Haywood	19,437	19,709	19,797	0.08	15	15	15	0.0
Lauderdale	23,491	24,128	27,101	9.07	2,130	2,188	2,457	15.4
Total	**42,928**	**43,837**	**46,898**		**2,145**	**2,203**	**2,472**	**15.2**

Table 4-235. Population Estimates in Subwatershed 080102080701.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Ripley	Lauderdale	6,188	2,490	2,420	51	19

Table 4-236. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 080102080701.

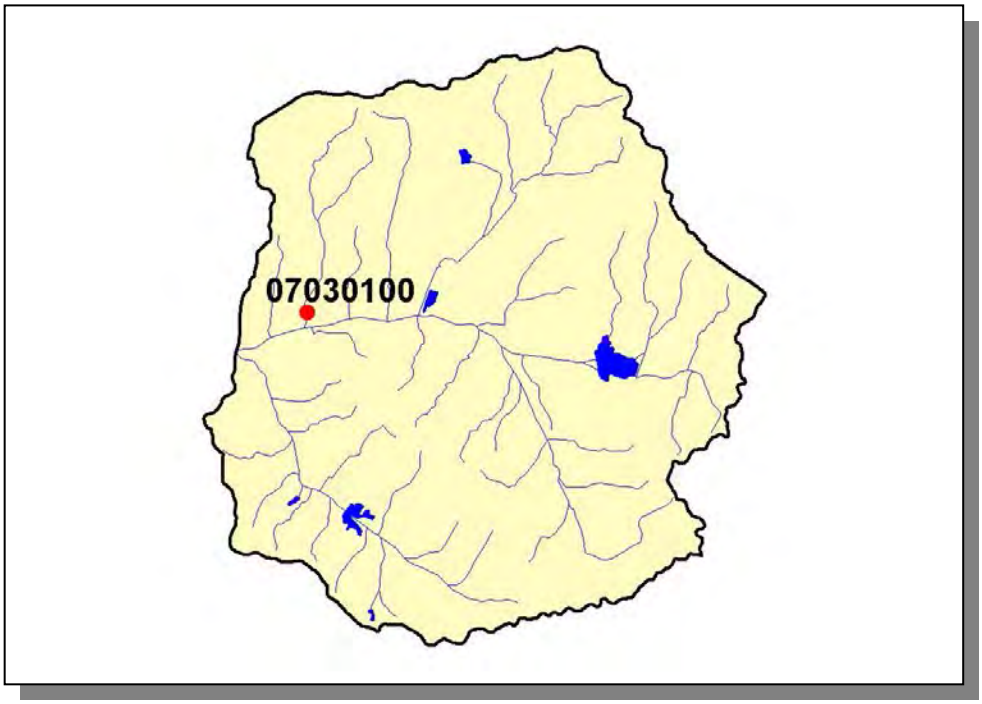

Figure 4-260. Location of Historical Streamflow Data Collection Sites in Subwatershed 080102080701. *More information is provided in Appendix IV.*

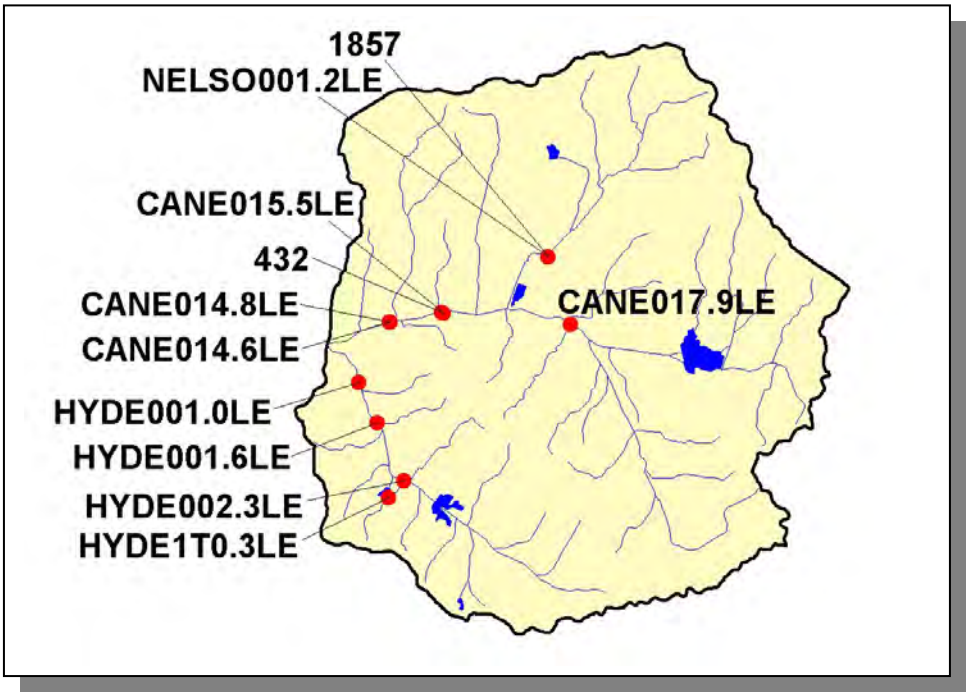

Figure 4-261. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 080102080701. *More information, including site names and locations, is provided in Appendix IV.*

4.2.G.i.a. Point Source Contributions.

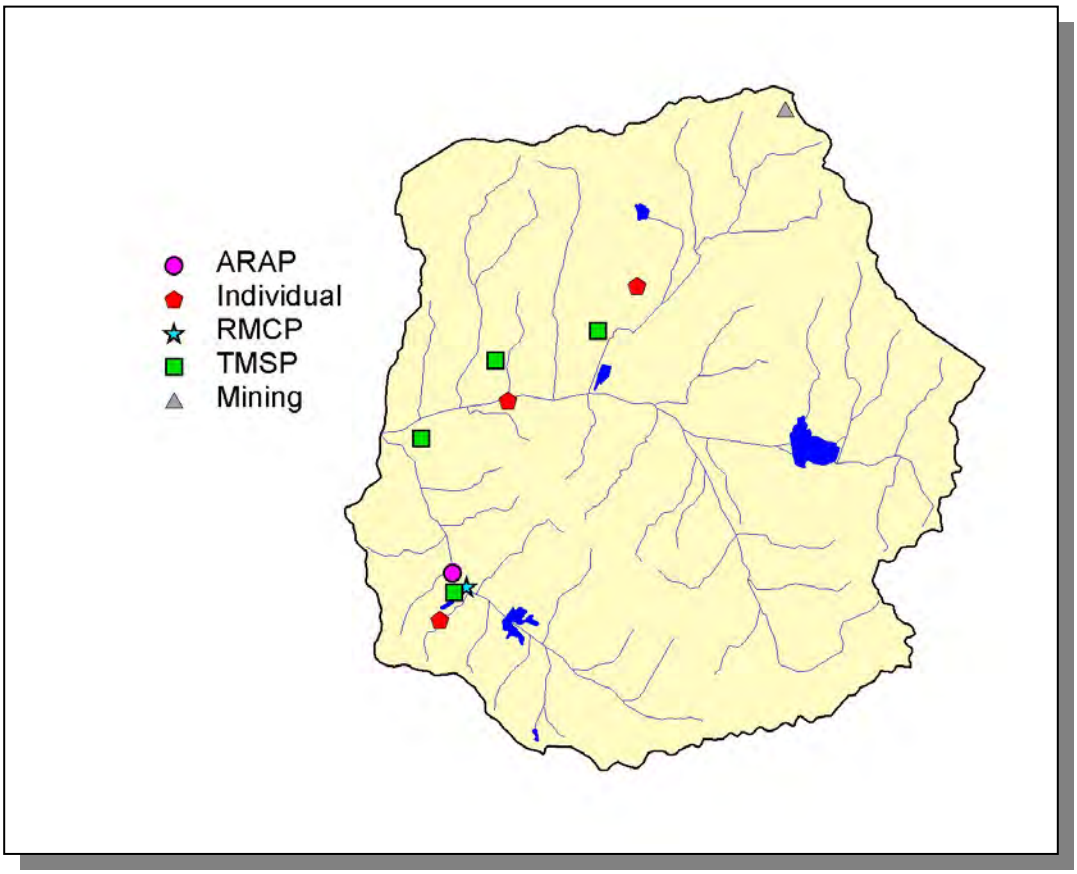

Figure 4-262. Location of Permits Issued in Subwatershed 080102080701. *More information, including the names of facilities, is provided in Appendix IV.*

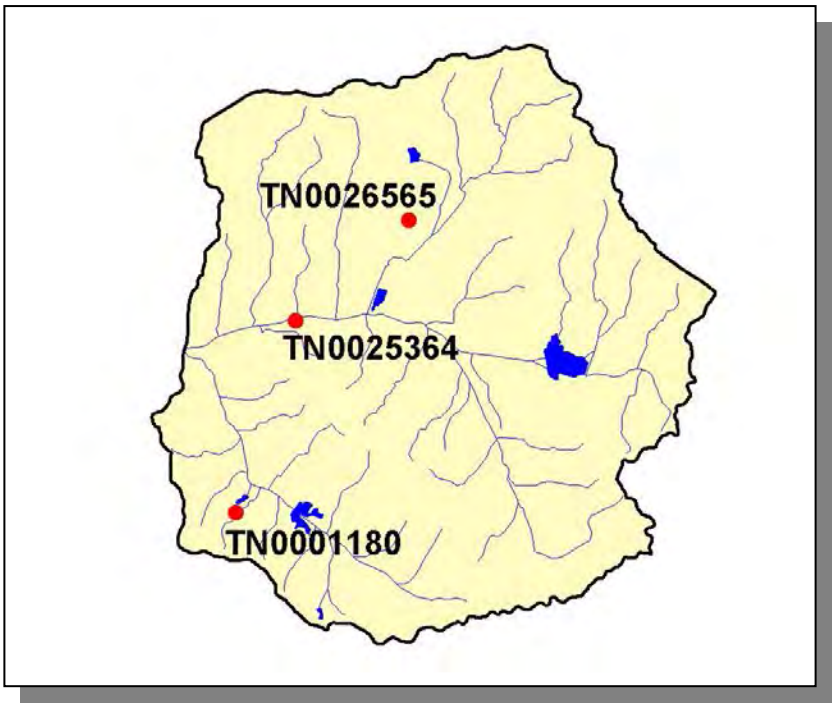

Figure 4-263. Location of Active NPDES Sites in Subwatershed 080102080701. *More information, including the names of facilities, is provided in Appendix IV.*

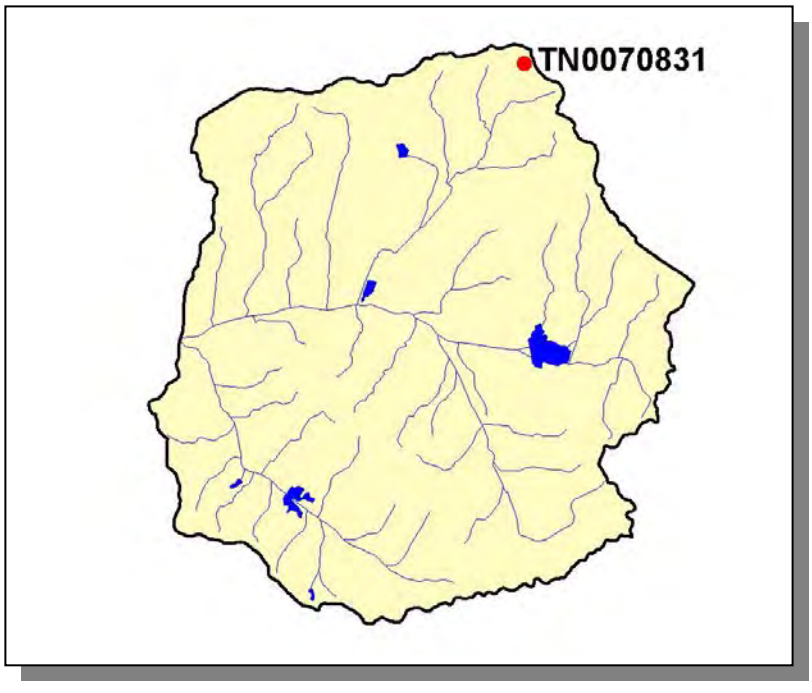

Figure 4-264. Location of Active Mining Sites in Subwatershed 080102080701. *More information, including the names of mining operations, is provided in Appendix IV.*

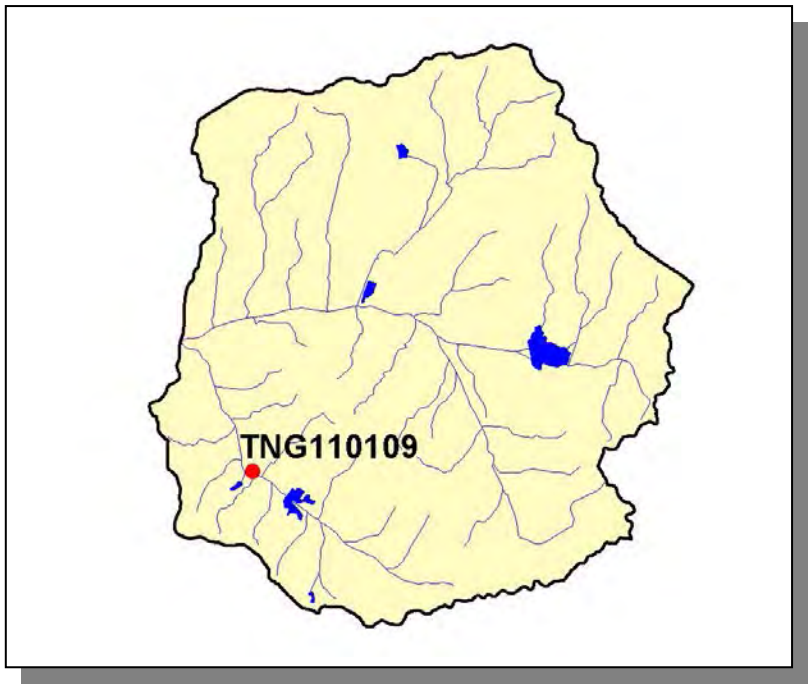

Figure 4-265. Location of Ready Mix Concrete Plants (RMCP) in Subwatershed 080102080701. *More information is provided in Appendix IV.*

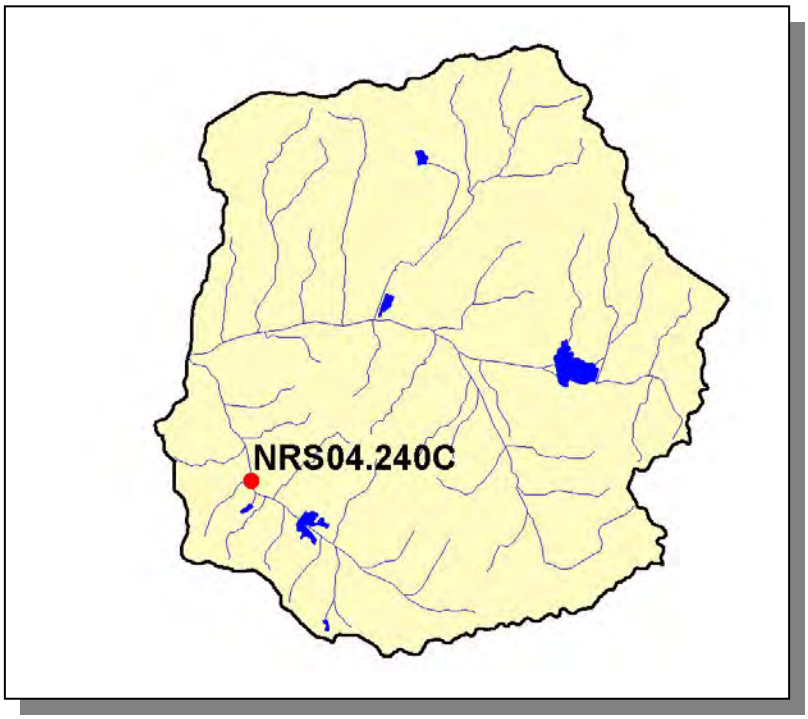

Figure 4-266. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 080102080701. *More information is provided in Appendix IV.*

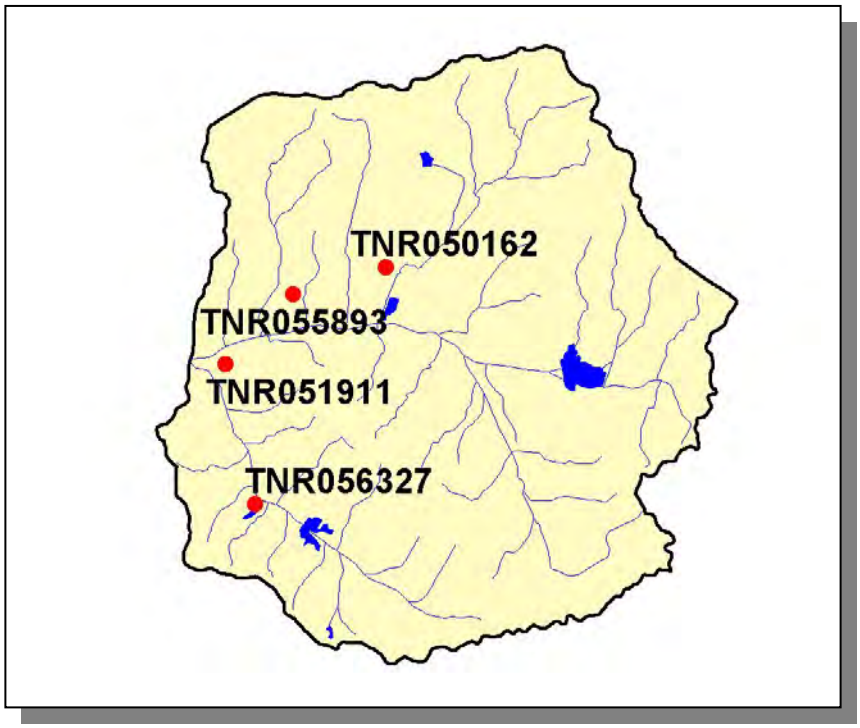

Figure 4-267. Location of TMSP Sites in Subwatershed 080102080701. *More information, including the names of facilities, is provided in Appendix IV.*

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

There are two NPDES facilities discharging to water bodies listed on the 2004 303(d) list in Subwatershed 080102080701:

- TN0001180 (Siegal-Robert Automotive) discharges to an unnamed tributary @ RM 0.6 to Hyde Creek @ RM 2.3
- TN0025364 (Ripley STP) discharges to Cane Creek @ RM 15.4

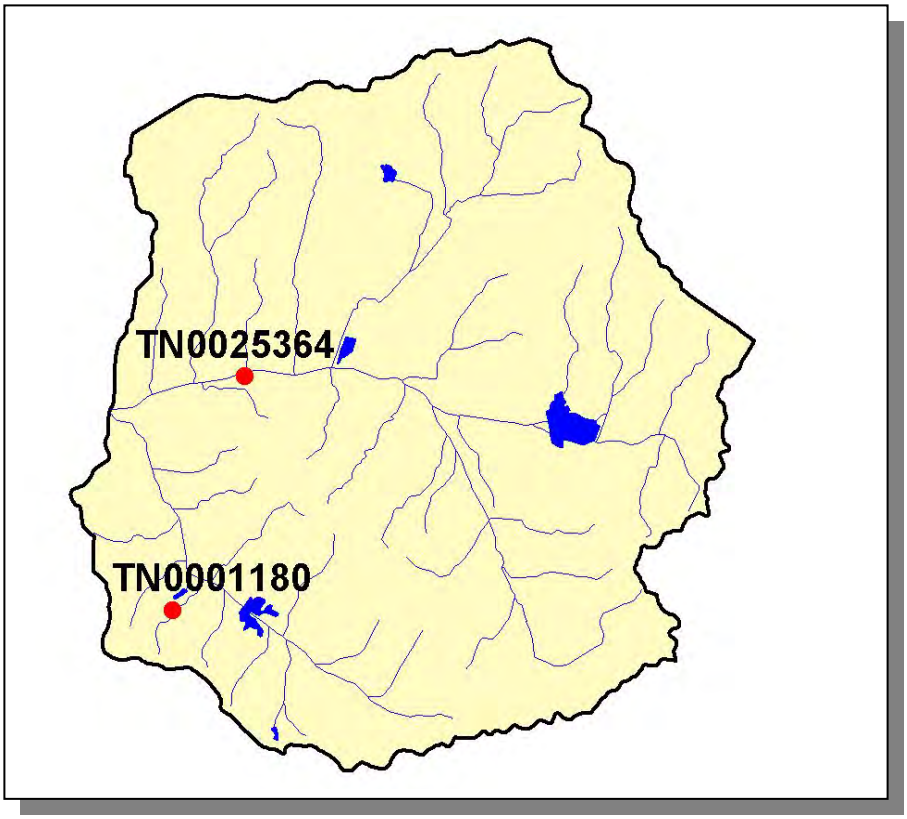

Figure 4-268. Location of NPDES Dischargers to Water Bodies Listed on the 2004 303(d) List in Subwatershed 080102080701. *More information, including the names of facilities, is provided in Appendix IV.*

PERMIT #	3Q2	1Q10	3Q10	3Q20	7Q10
TN0001180	0.01	na	0.00	0.00	0.00
TN0025364	0.01	na	0.00	0.00	0.00

Table 4-237. Receiving Stream Low Flow Information for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 080102080701. *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 #	NO_3	NO_2	Zn	Cu	Ni	Cd	Hg	Se	As	Mo	FLOW	TEMPERATURE
TN0001180	X	X									X	X
TN0025364	X		X	X	X	X	X	X	X	X	X	

Table 4-238. Monitoring Requirements for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 080102080701.

PERMIT #	WET	$CBOD_5$	NH_3	Se	Cl^-	HARDNESS	TSS	SETTLEABLE SOLIDS	CN	DO	pH
TN0001180	X	X		X	X	X	X		X	X	X
TN0025364	X	X	X				X	X		X	X

Table 4-239. Inorganic Parameters Monitored for Daily Maximum Limits for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 080102080701. *WET, Whole Effluent Toxicity; $CBOD_5$, Carbonaceous Biochemical Oxygen Demand (5-Day); TRC, Total Residual Chlorine; TSS, Total Suspended Solids; DO, Dissolved Oxygen.*

PERMIT #	Pb	Zn	Cr	Cu	Ni	Cd	Ag
TN0001180	X	X	X	X	X	X	X
TN0025364	X						

Table 4-240. Metals Monitored for Daily Maximum Limits for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 080102080701.

PERMIT #	*OIL and GREASE*
TN0025364	X

Table 4-241. Oil and Grease Monitored for Daily Maximum Limits for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 080102080701.

PERMIT #	*E. coli*	FECAL COLIFORM
TN0025364	X	X

Table 4-242. Bacteria Monitored for Daily Maximum Limits for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 080102080701.

4.2.G.i.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS				
Beef Cow	Cattle	Chickens (Layers)	Hogs	Sheep
4	1,636	<5	441	<5

Table 4-243. Summary of Livestock Count Estimates in Subwatershed 080102080701. *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
Haywood	3,442	6,220	29	237	1,740	12
Lauderdale	0	8,739	0	243	2,355	11

Table 4-244. Summary of Livestock Count Estimates in Haywood and Lauderdale 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
Grass (Pastureland)	2.25
Grass (Hayland)	0.40
Legumes, Grass (Hayland)	0.58
Legumes (Hayland)	0.65
Grass, Forbs, Legumes (Mixed Pasture)	2.38
Corn (Row Crops)	14.70
Cotton (Row Crops)	13.52
Sorghum (Row Crops)	4.02
Soybeans (Row Crops)	13.45
Wheat (Close-Grown Cropland)	9.27
All Other Close-Grown Cropland	3.08
Fruit (Horticultural)	0.76
Other Vegetable and Truck Crops	4.00
Summer Fallow (Other Cropland)	8.70
Other Cropland not Planted	0.85
Conservation Reserve Program Lands	1.78
Other Land in Farms	0.05
Farmsteads and Ranch Headquarters	0.09

Table 4-245. Annual Estimated Total Soil Loss in Subwatershed 080102080701.

4.2.G.ii. 080102080702 (Lower Cane Creek).

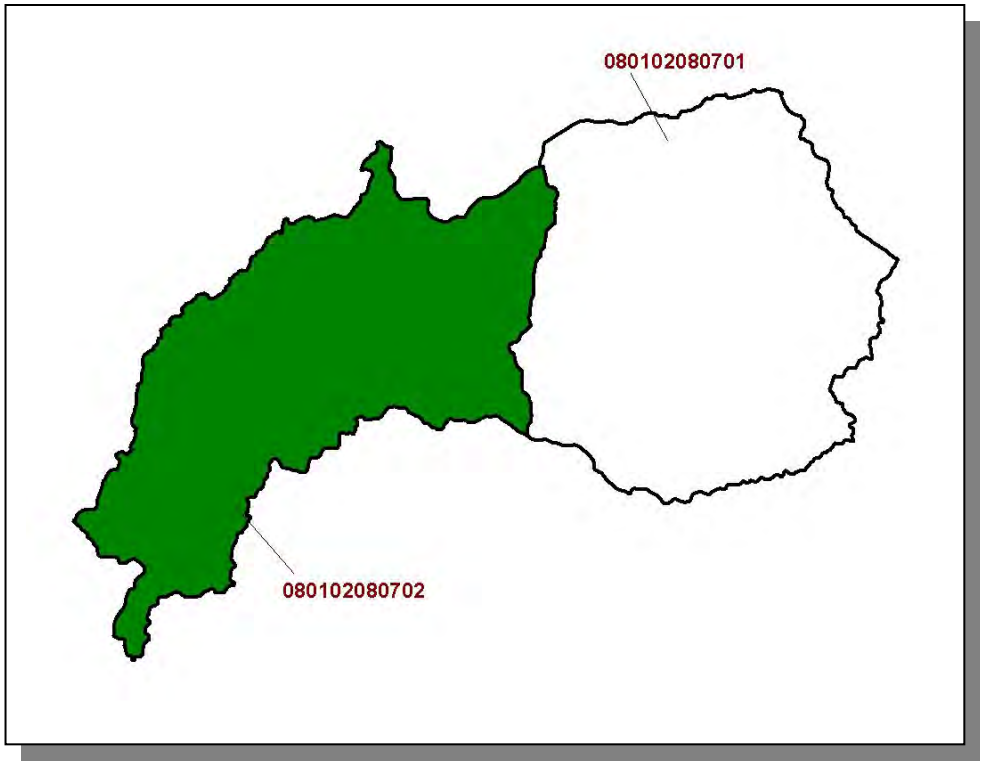

Figure 4-269. Location of Subwatershed 080102080702. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

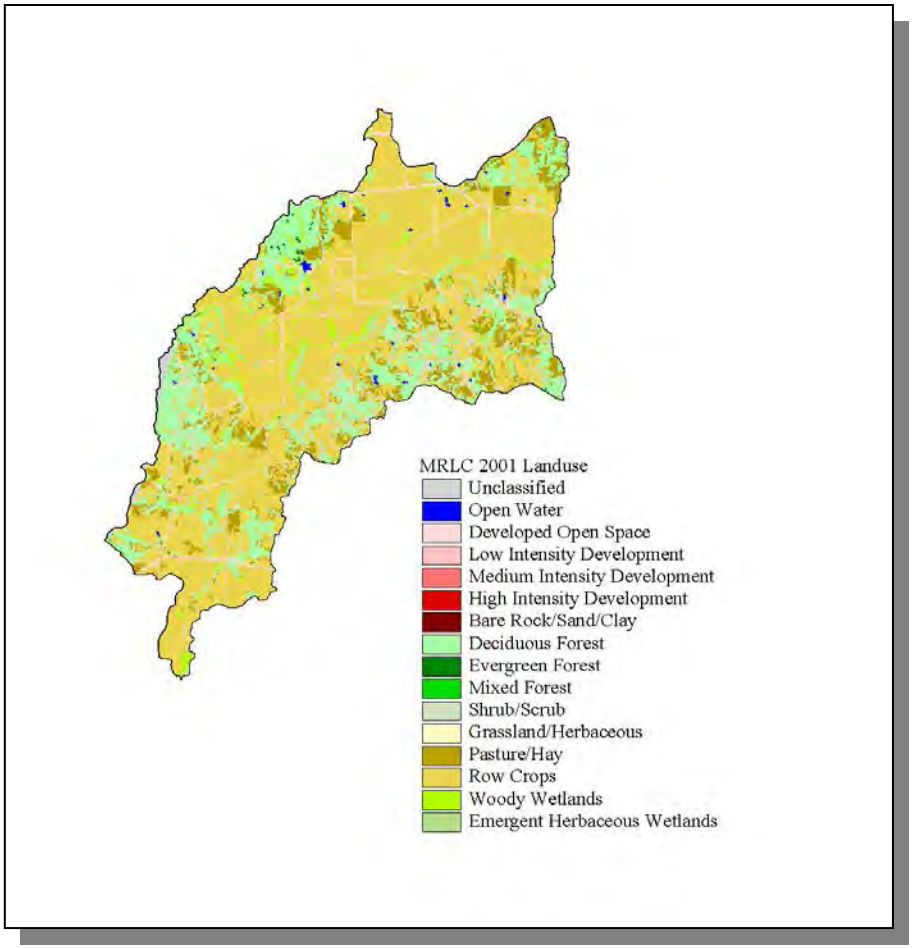

Figure 4-270. Illustration of Land Use Distribution in Subwatershed 080102080702.

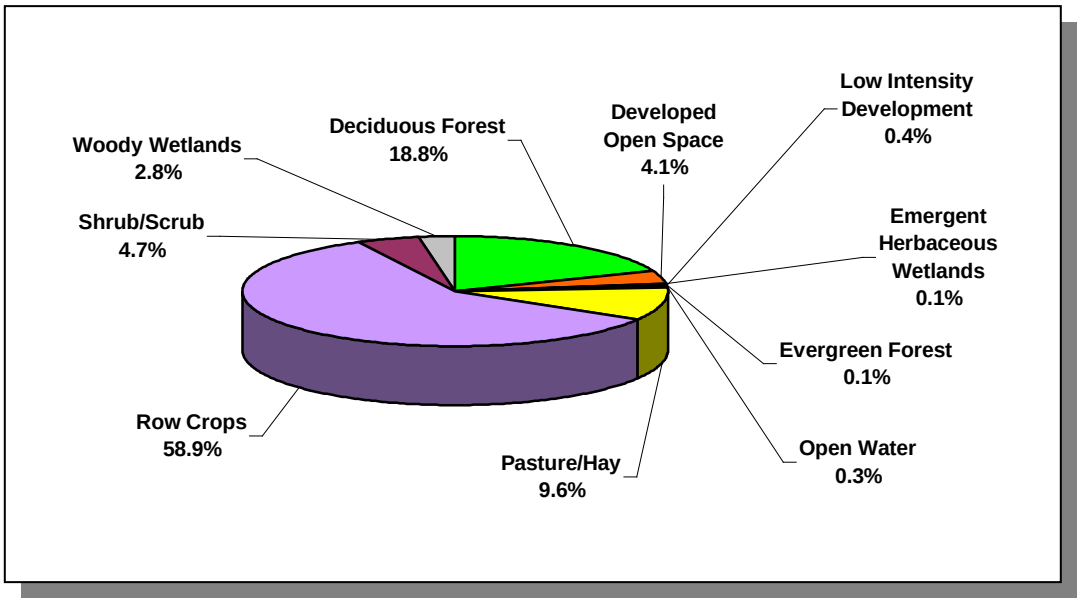

Figure 4-271. Land Use Distribution in Subwatershed 080102080702. *More information is provided in Appendix IV.*

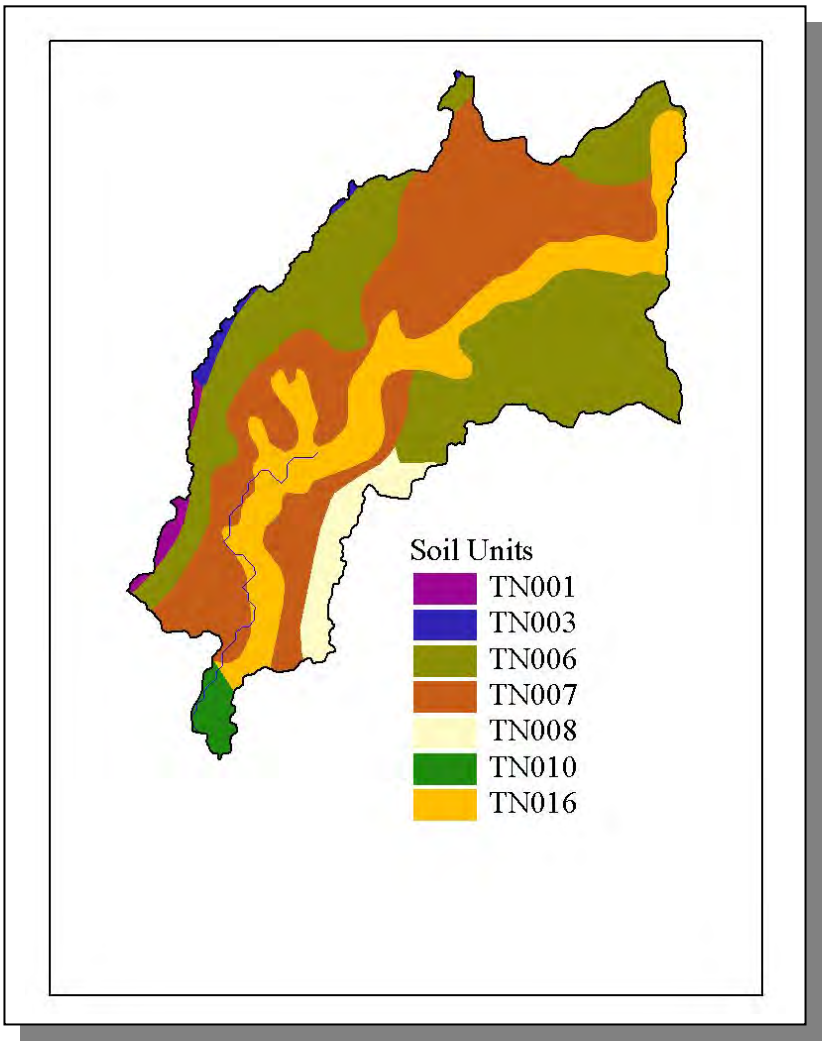

Figure 4-272. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080702.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN001	14.00	C	23.12	7.00	Silty Loam	0.33
TN003	62.00	C	0.50	6.65	Silty Clay	0.33
TN006	0.00	C	1.30	5.42	Silty Loam	0.48
TN007	29.00	C	1.30	5.36	Silty Loam	0.48
TN008	2.00	C	1.38	5.20	Silty Loam	0.48
TN010	81.00	C	1.33	5.11	Silty Loam	0.44
TN016	0.00	C	1.30	6.47	Silty Loam	0.44

Table 4-246. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080702. *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)
Lauderdale	23,491	24,128	27,101	8.23	1,932	1,985	2,229	15.4

Table 4-247. Population Estimates in Subwatershed 080102080702.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Ripley	Lauderdale	6,188	2,490	2,420	51	19

Table 4-248. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 080102080702.

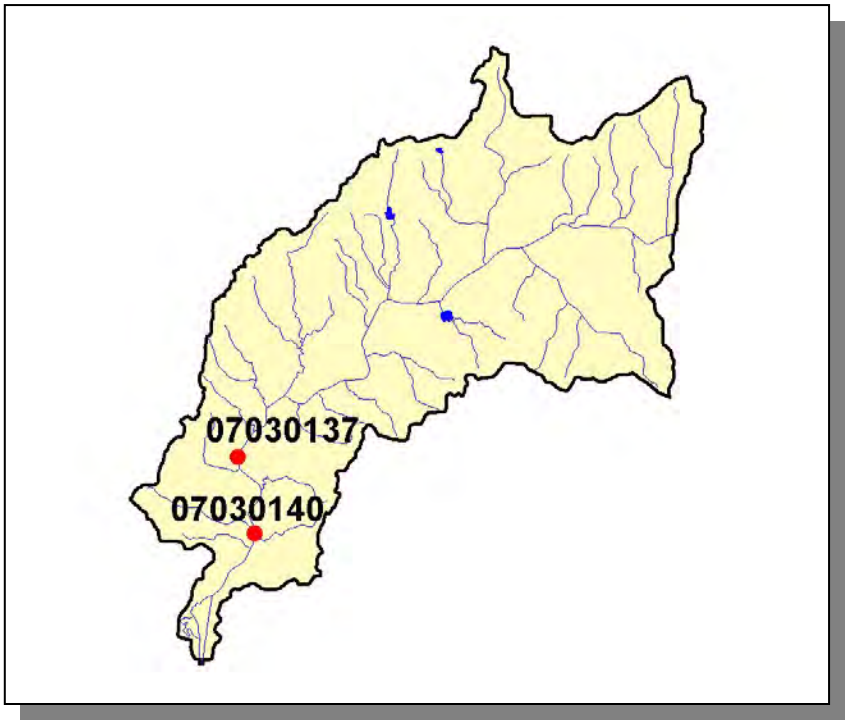

Figure 4-273. Location of Historical Streamflow Data Collection Sites in Subwatershed 080102080702. *More information is provided in Appendix IV.*

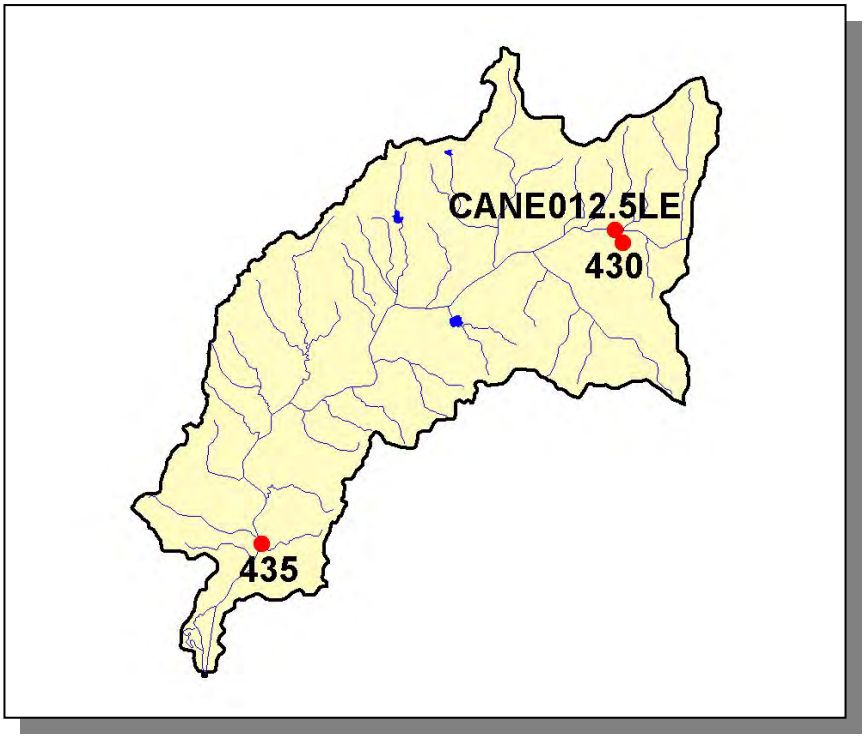

Figure 4-274. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 080102080702. *More information, including site names and locations, is provided in Appendix IV.*

4.2.G.ii.a. Point Source Contributions.

There are no point source contributions in this subwatershed.

4.2.G.ii.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS			
Beef Cow	Chickens (Layers)	Hogs	Sheep
1,433	<5	386	<5

Table 4-249. Summary of Livestock Count Estimates in Subwatershed 080102080702. *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	Chickens (Layers)	Hogs	Sheep
Lauderdale	8,739	243	2,355	11

Table 4-250. Summary of Livestock Count Estimates in Lauderdale 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.*

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	2.27
Grass (Hayland)	0.37
Legumes, Grass (Hayland)	0.58
Legumes (Hayland)	0.65
Grass, Forbs, Legumes (Mixed Pasture)	2.40
Corn (Row Crops)	14.77
Cotton (Row Crops)	13.53
Soybeans (Row Crops)	13.51
Wheat (Close-Grown Cropland)	9.27
Other Vegetable and Truck Crops	4.00
Summer Fallow (Other Cropland)	8.70
Conservation Reserve Program Lands	1.79
Other Land in Farms	0.05
Farmsteads and Ranch Headquarters	0.09

Table 4-251. Annual Estimated Total Soil Loss in Subwatershed 080102080702.

4.2.H. 0801020808.

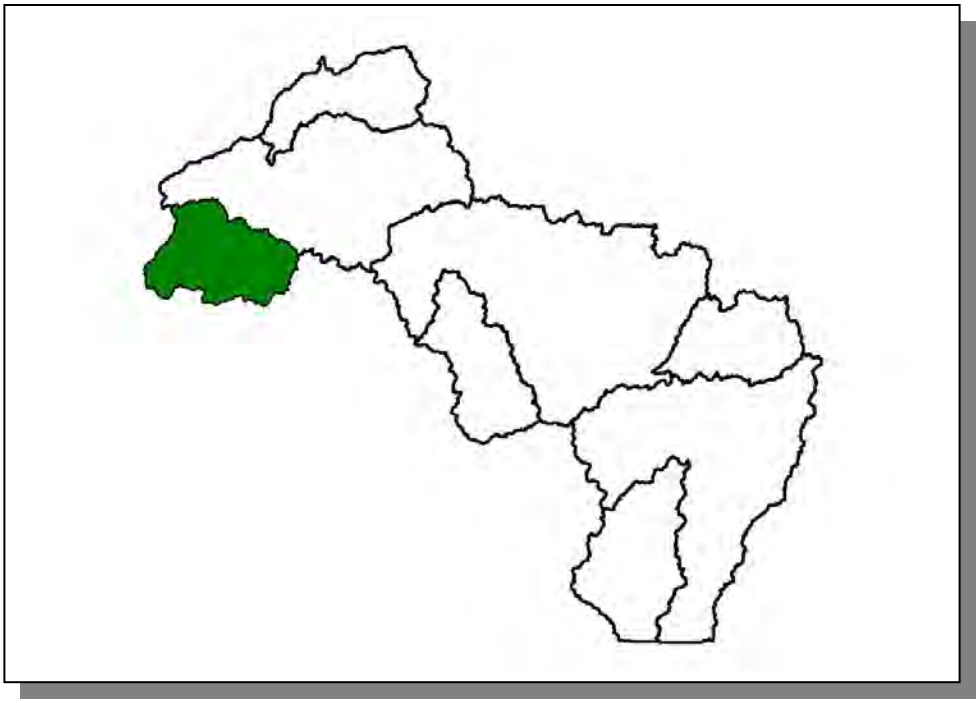

Figure 4-275. Location of Subwatershed 0801020808. *All Hatchie River HUC-10 subwatershed boundaries in Tennessee are shown for reference.*

4.2.H.i. 080102080801 (Upper Indian Creek).

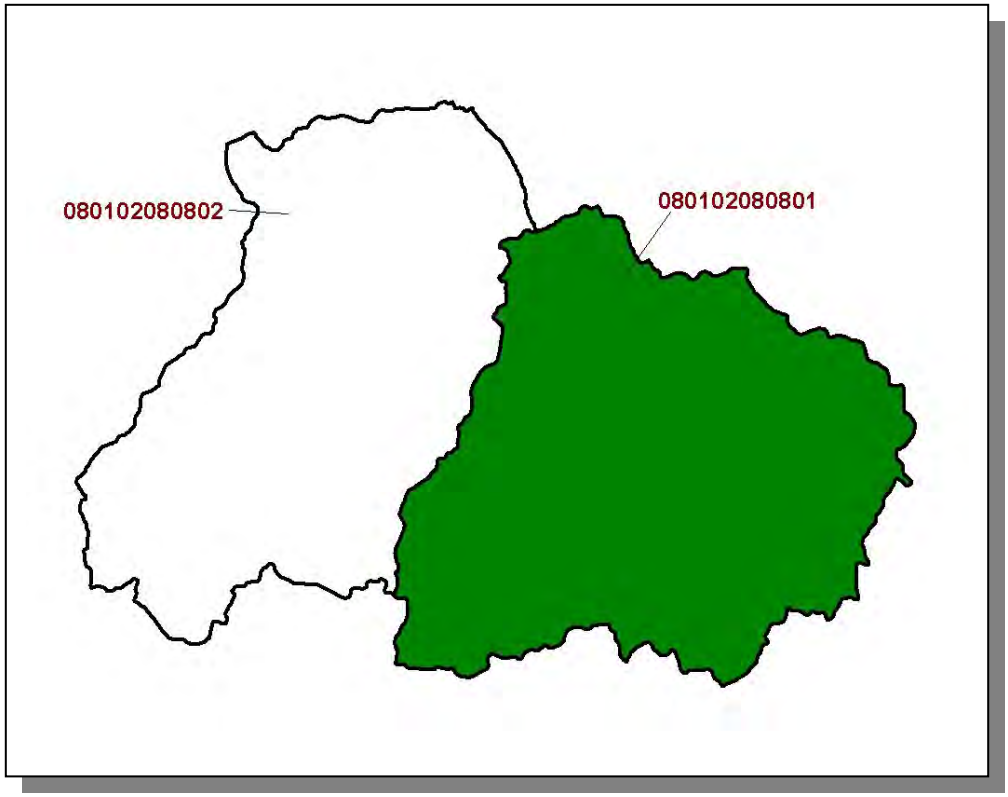

Figure 4-276. Location of Subwatershed 080102080801. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

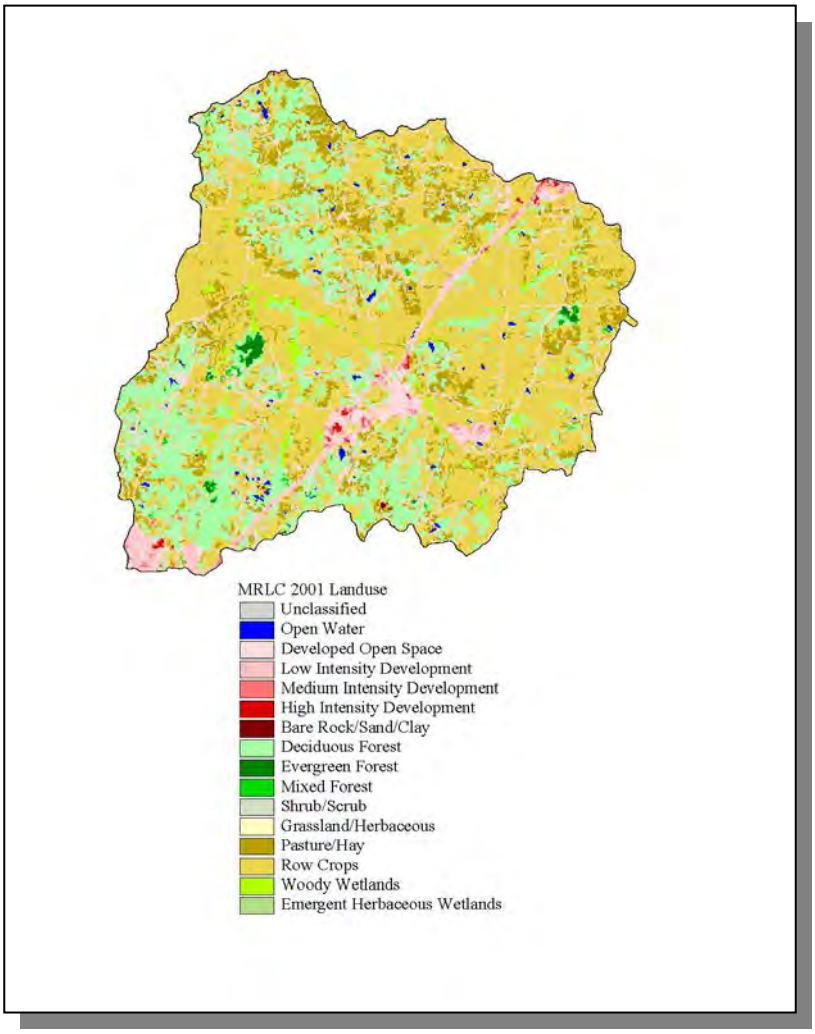

Figure 4-277. Illustration of Land Use Distribution in Subwatershed 080102080801.

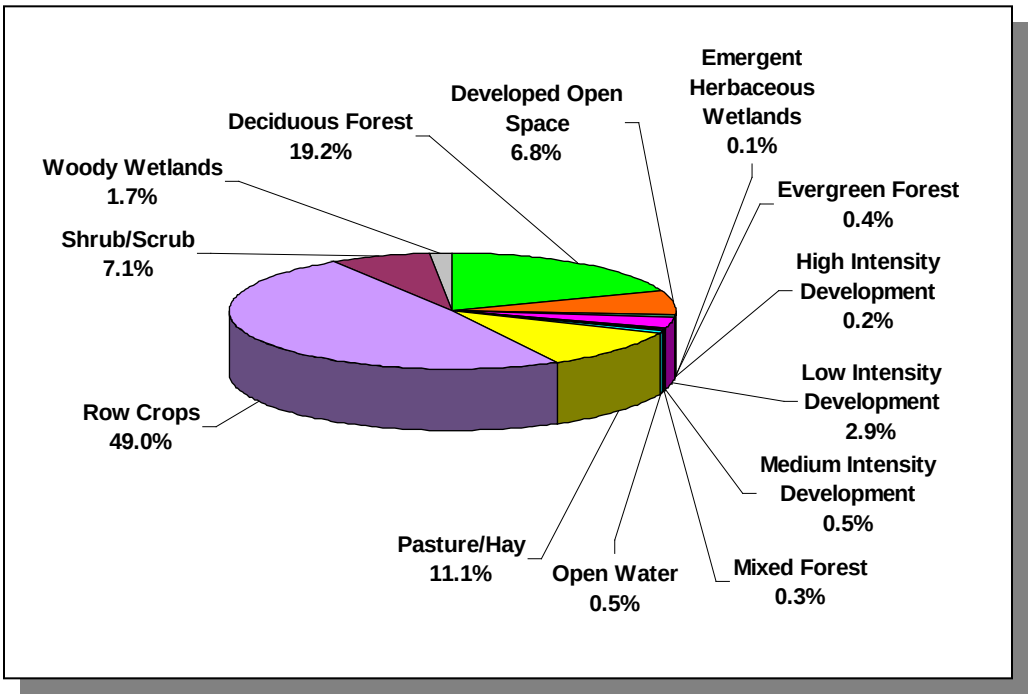

Figure 4-278. Land Use Distribution in Subwatershed 080102080801. *More information is provided in Appendix IV.*

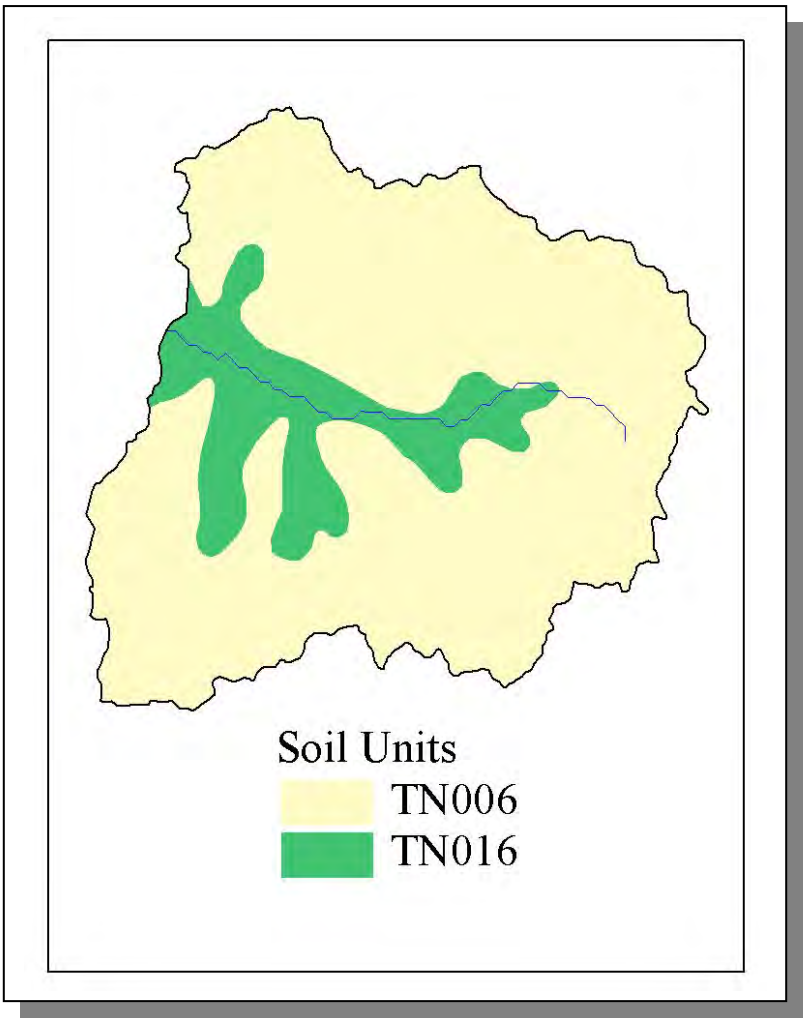

Figure 4-279. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080801.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN006	0.00	C	1.30	5.42	Silty Loam	0.48
TN016	0.00	C	1.30	6.47	Silty Loam	0.44

Table 4-252. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080801. *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)
Tipton	37,568	45,986	51,271	11.51	4,326	5,295	5,903	36.5

Table 4-253. Population Estimates in Subwatershed 080102080801

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Atoka	Tipton	648	280	110	169	1
Brighton	Tipton	742	330	35	288	7
Burlison	Tipton	364	165	14	138	13
Covington	Tipton	7,487	2,920	2,717	203	0
Garland	Tipton	181	77	13	59	5
Munford	Tipton	2,331	894	785	104	5
Total		**11,753**	**4,666**	**3,674**	**961**	**31**

Table 4-254. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 080102080801.

4.2.H.i.a. Point Source Contributions.

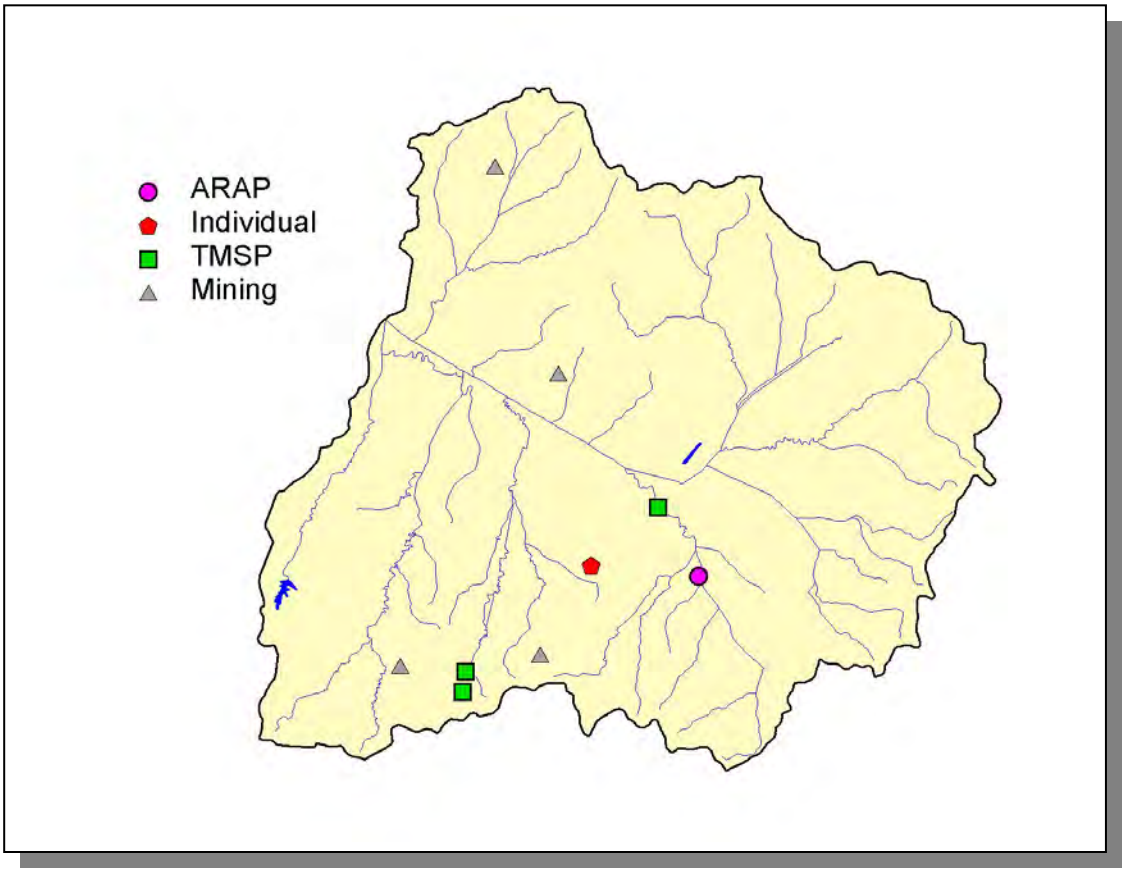

Figure 4-280. Location of Permits Issued in Subwatershed 080102080801. *More information, including the names of facilities, is provided in Appendix IV.*

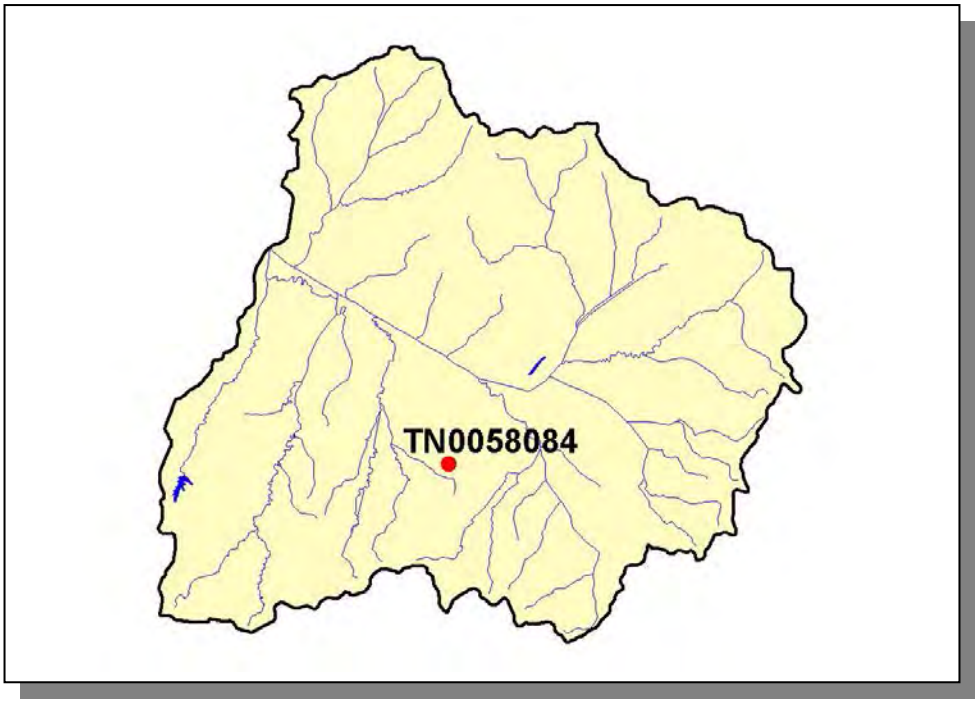

Figure 4-281. Location of Active NPDES Sites in Subwatershed 080102080801. *More information, including the names of facilities, is provided in Appendix IV.*

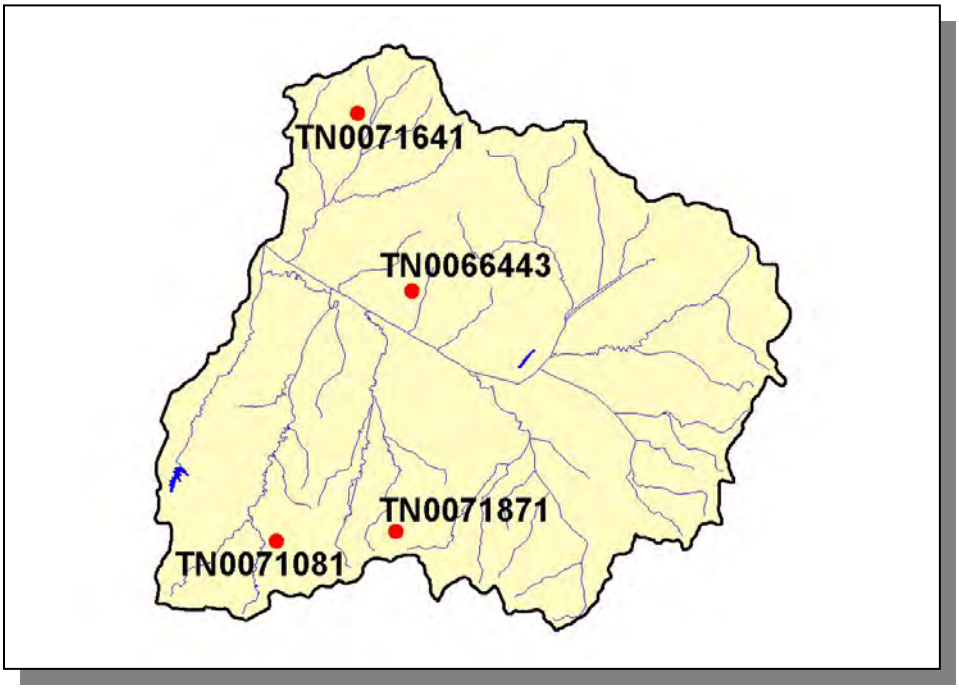

Figure 4-282. Location of Active Mining Sites in Subwatershed 080102080801. *More information, including the names of mining operations, is provided in Appendix IV.*

Figure 4-283. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 080102080801. *More information is provided in Appendix IV.*

Figure 4-284. Location of TMSP Sites in Subwatershed 080102080801. *More information, including the names of facilities, is provided in Appendix IV.*

4.2.H.i.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
810	1,463	<5	<5	37	13

Table 4-255. Summary of Livestock Count Estimates in Subwatershed 080102080801. *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
Tipton	5,422	9,796	14	334	251	86

Table 4-256. Summary of Livestock Count Estimates in Tipton 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)
Tipton	50.9	50.9	1.0	5.6

Table 4-257. Forest Acreage and Annual Removal Rates (1987-1994) in Tipton County.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.84
Grass (Hayland)	2.09
Legumes (Hayland)	0.54
Grass, Forbs, Legumes (Mixed Pasture)	1.01
Cotton (Row Crops)	16.59
Soybeans (Row Crops)	18.74
Other Vegetable and Truck Crops	21.48
Other Cropland not Planted	0.22
Conservation Reserve Program Lands	1.05
Farmsteads and Ranch Headquarters	0.69

Table 4-258. Annual Estimated Total Soil Loss in Subwatershed 080102080801.

4.2.H.ii. 080102080802 (Lower Indian Creek).

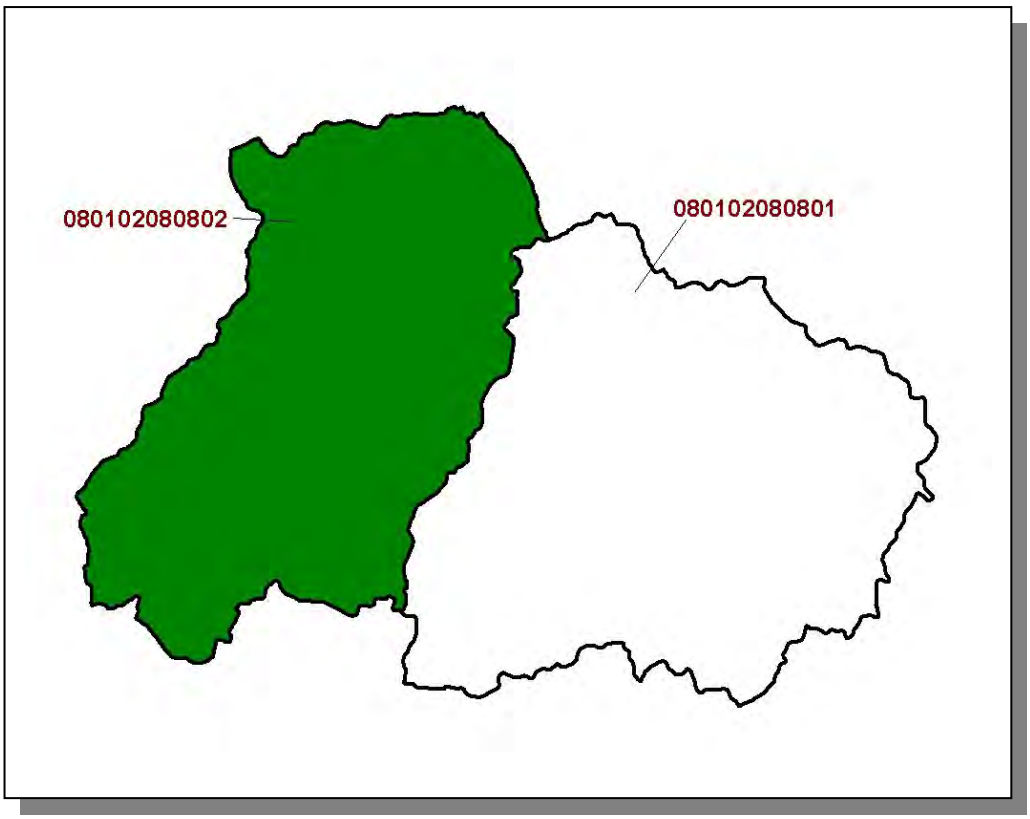

Figure 4-285. Location of Subwatershed 080102080802. *All HUC-12 subwatershed boundaries in Tennessee are shown for reference.*

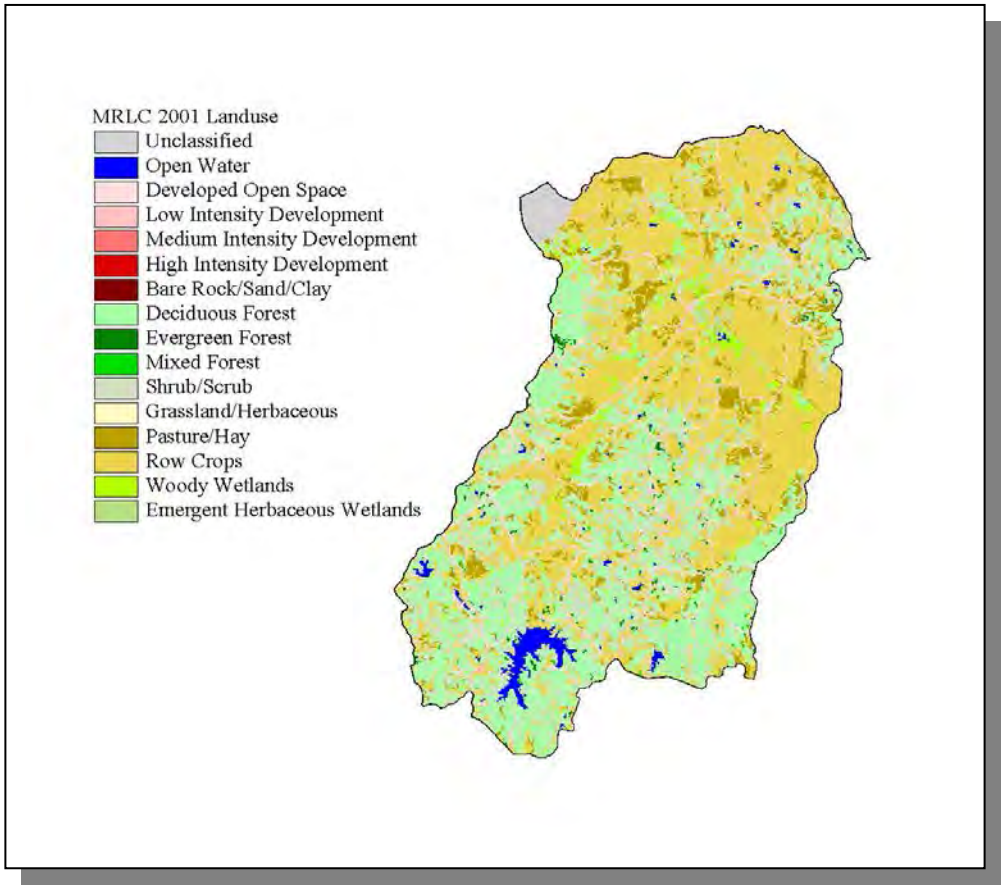

Figure 4-286. Illustration of Land Use Distribution in Subwatershed 080102080802.

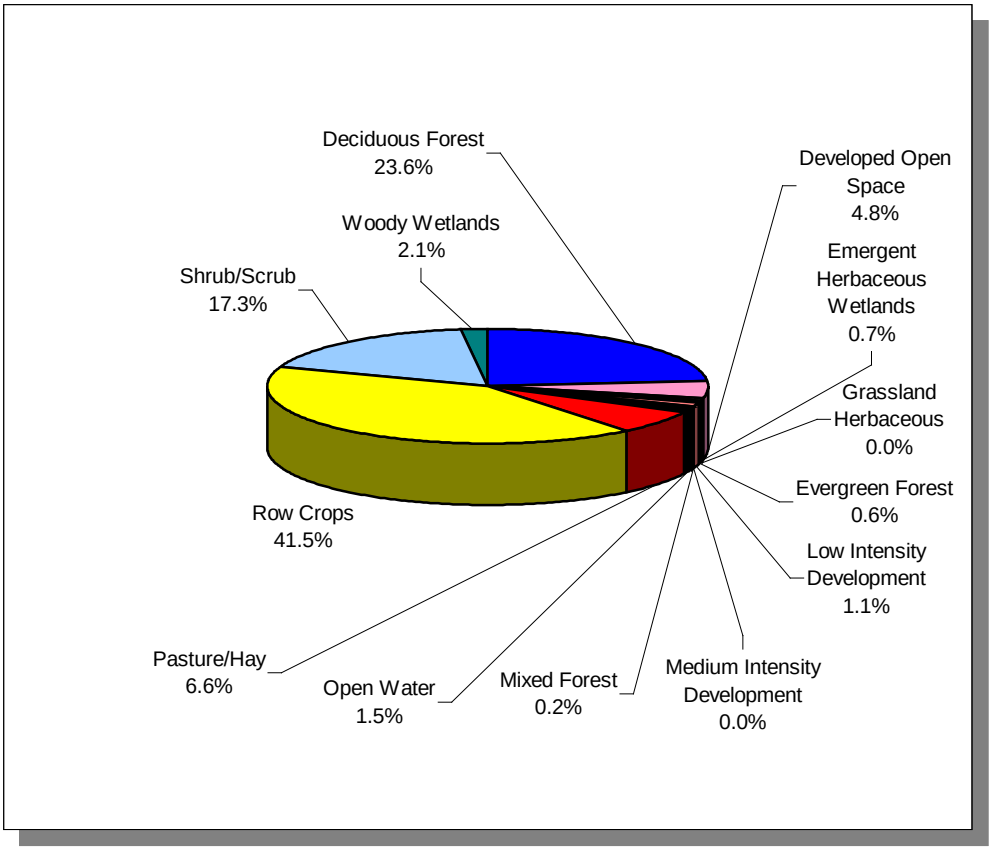

Figure 4-287. Land Use Distribution in Subwatershed 080102080802. *More information is provided in Appendix IV.*

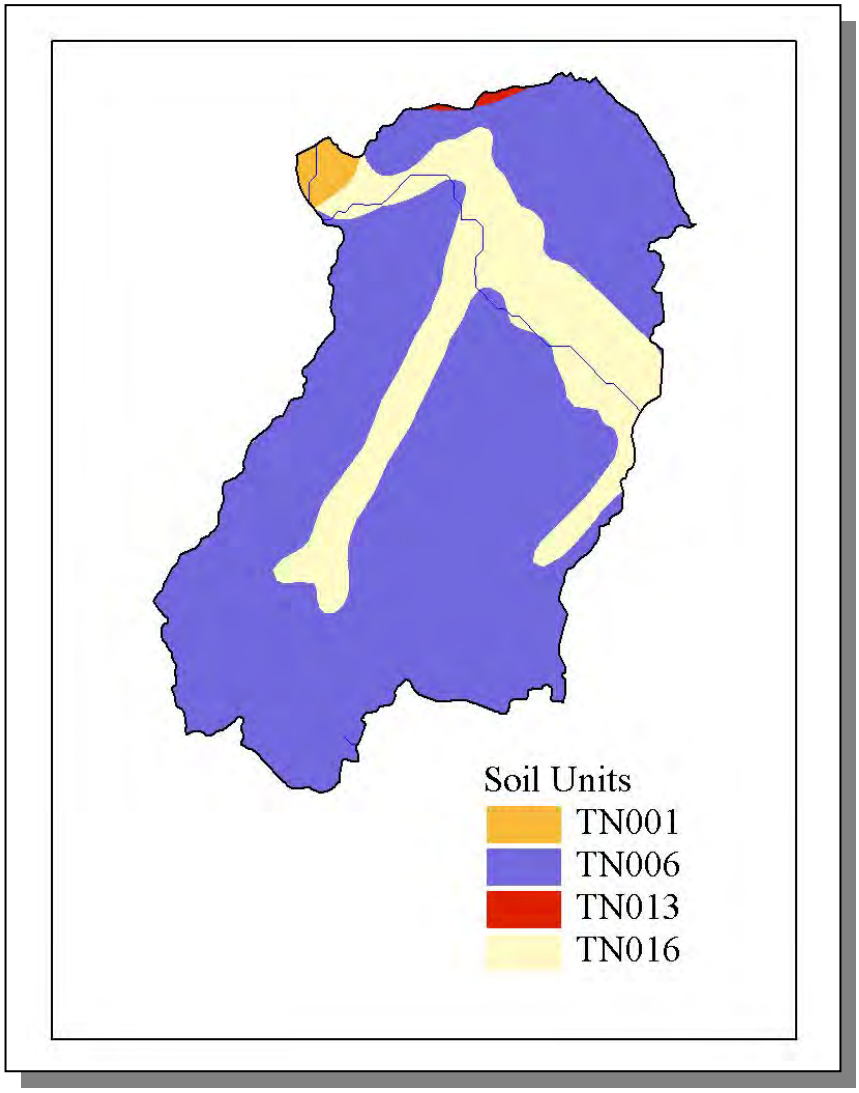

Figure 4-288. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080802.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN001	14.00	C	2.31	7.00	Silty Loam	0.33
TN006	0.00	C	1.30	5.42	Silty Loam	0.48
TN013	72.00	C	1.30	5.44	Silty Loam	0.46
TN016	0.00	C	1.30	6.47	Silty Loam	0.44

Table 4-259. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 080102080802. *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)
Tipton	37,568	45,986	51,271	10.15	3,811	4,666	5,202	36.5

Table 4-260. Population Estimates in Subwatershed 080102080802.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Burlison	Tipton	364	165	14	138	13
Gilt Edge	Tipton	453	177	0	173	4
Total		**817**	**342**	**14**	**311**	**17**

Table 4-261. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 080102080802.

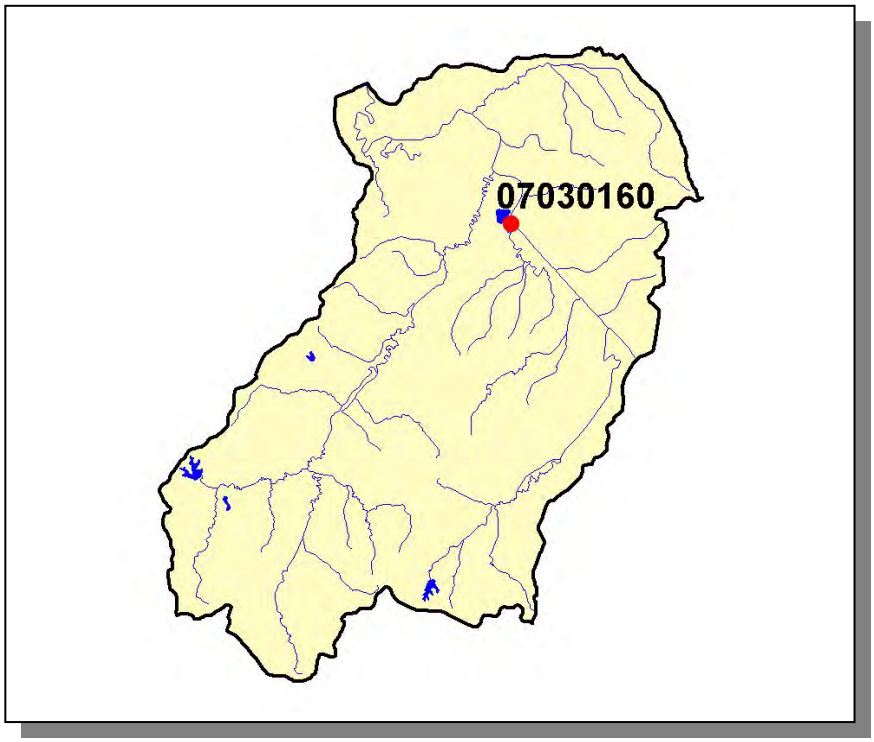


Figure 4-289. Location of Historical Streamflow Data Collection Sites in Subwatershed 080102080802. *More information is provided in Appendix IV.*

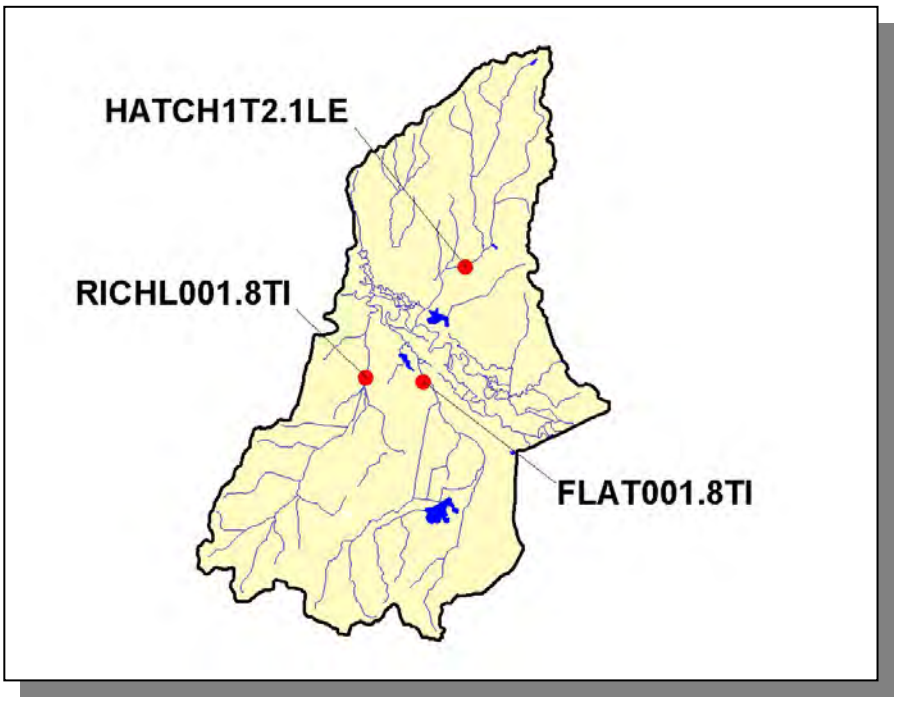


Figure 4-290. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 080102080802. *More information, including site names and locations, is provided in Appendix IV.*

4.2.H.ii.a. Point Source Contributions.

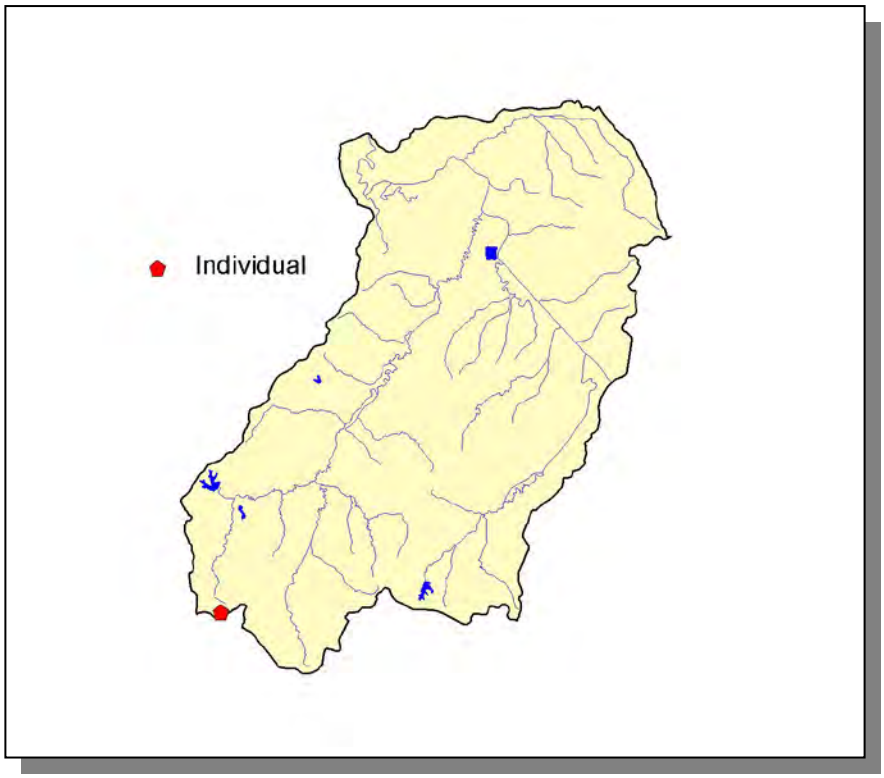


Figure 4-291. Location of Permits Issued in Subwatershed 080102080802. *More information, including the names of facilities, is provided in Appendix IV.*

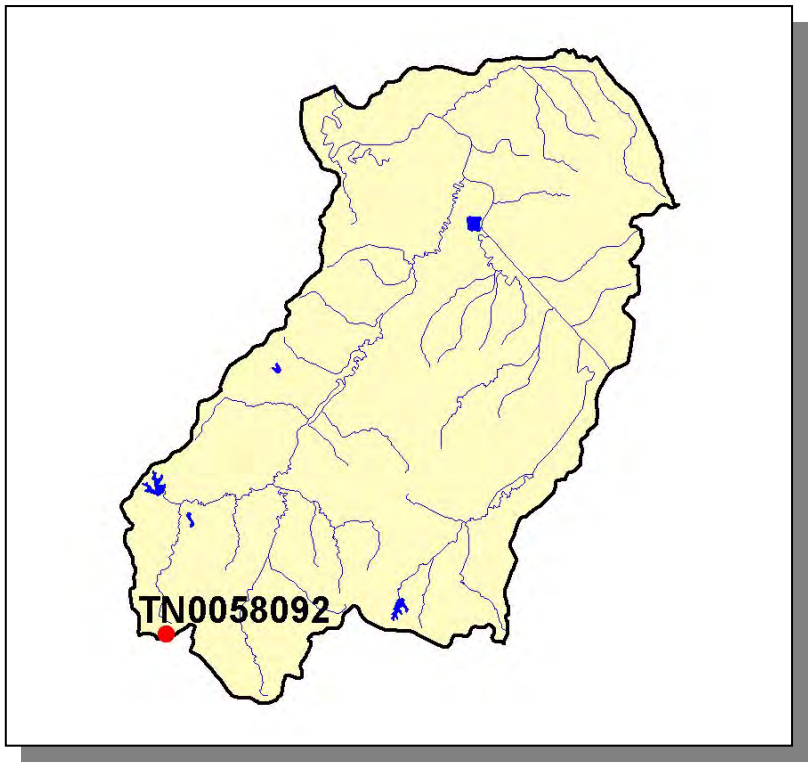


Figure 4-292. Location of Active NPDES Sites in Subwatershed 080102080802. *More information, including the names of facilities, is provided in Appendix IV.*

4.2.H.ii.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
659	1,191	<5	<5	31	10

Table 4-262. Summary of Livestock Count Estimates in Subwatershed 080102080802. *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
Tipton	5,422	9,796	14	334	251	86

Table 4-263. Summary of Livestock Count Estimates in Tipton 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)
Tipton	50.9	50.9	1.0	5.6

Table 4-264. Forest Acreage and Annual Removal Rates (1987-1994) in Tipton County.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.84
Grass (Hayland)	2.09
Legumes (Hayland)	0.54
Grass, Forbs, Legumes (Mixed Pasture)	1.01
Cotton (Row Crops)	16.59
Soybeans (Row Crops)	18.74
Other Vegetable and Truck Crops	21.48
Other Cropland not Planted	0.22
Conservation Reserve Program Lands	1.05
Farmsteads and Ranch Headquarters	0.69

Table 4-265. Annual Estimated Total Soil Loss in Subwatershed 080102080802.

CHAPTER 5

WATER QUALITY PARTNERSHIPS IN THE LOWER HATCHIE RIVER 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 Lower Hatchie River 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	74,880	484	
Erosion Control		35,410	
Irrigation Management		150	1
Nutrient Management		33,993	
Pest Management		32,885	67
Grazing / Forages	10,456	2,716	
Tree and Shrub Practices		9,042	
Tillage and Cropping		38,267	
Wildlife Habitat Management		9,216	
Water Supply	895		2

Table 5-1. Landowner Conservation Practices in Partnership with NRCS in the Tennessee Portion of the Lower Hatchie River 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 groundwater levels statewide, and analyzes the physical, chemical, and biologic characteristics of surface and groundwaters. 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 threatened bald eagle (*Haliaeetus leucocephalus*) occurs in the Lower Hatchie River Watershed. 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 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. Unites States Army Corps of Engineers-Memphis District. Memphis is one of six districts in the Mississippi Valley Division of the Corps of Engineers. The District's area of responsibility encompasses 25,000 square miles, portions of six states, 15 major drainage basins, and approximately 3 million citizens. Responsibilities also include maintaining a 355-mile, 9-feet deep, and 300-feet wide Mississippi River channel from Cairo, Illinois to the mouth of the White River in Arkansas.

The Memphis District serves the Nation by planning, designing, constructing and operating high quality and reasonably priced Civil Works water resource projects, primarily in the major mission areas of flood damage reduction, navigation, and environmental restoration and stewardship. The Corps' ongoing Civil Works responsibilities date back to the early 1800's when Congress authorized the removal of navigation hazards and obstacles in the early years of the nation's development. 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 Civil Works are provided through annual Energy and Water Appropriations Acts and through contributions from non-Federal entities for planning and /or construction of specific projects. All Civil Works projects involve a non-Federal, cost sharing sponsor.

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 resource projects for specific purposes and with specified spending limits. The CAP projects are implemented in a faster time frame, are limited in complexity, have Federal cost limits determined by the specific authority, are approved by the Division Commander, and do not need Congressional authorization.

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

Public Affairs Office (General Information): (901) 544-3348
Regulatory Branch: (901) 544-3473
Planning, Programs, and (901) 544- 0658
Project Management Branch:
Continuing Authorities Program: (901) 544-0798
Environmental Analysis Branch: (901) 544-3857

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.

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 Tennessee portion of the Lower Hatchie River 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

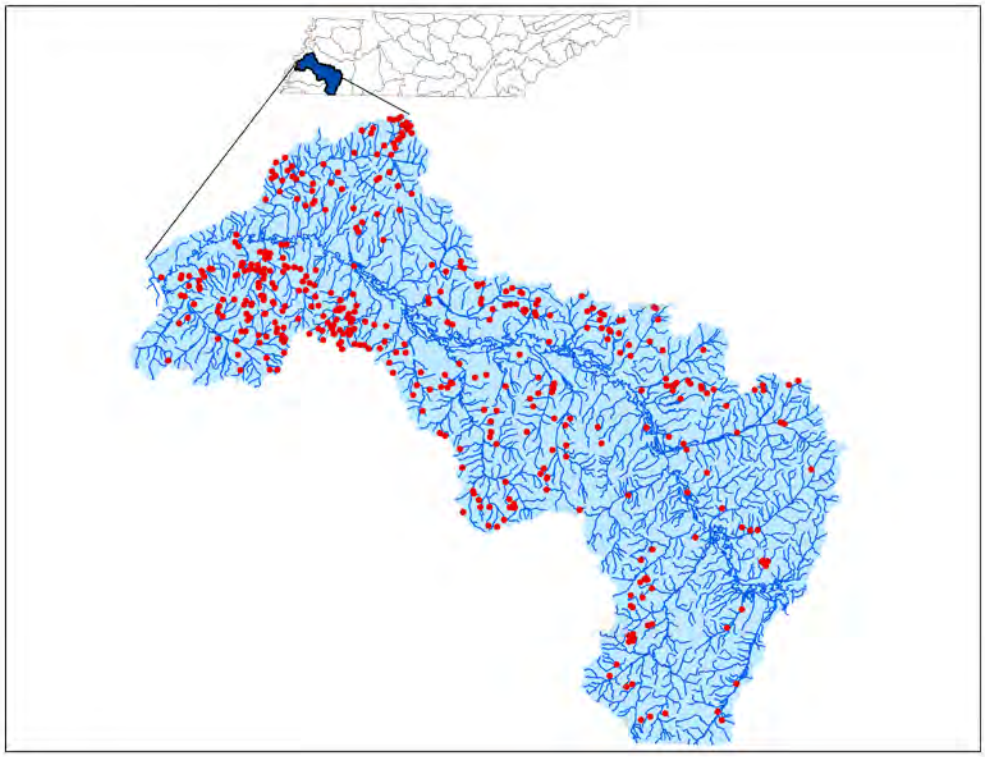


Figure 5-5. Location of BMPs installed from 1999 through 2005 in the Tennessee Portion of the Lower Hatchie River Watershed with Financial Assistance from the Tennessee Department of Agriculture's Nonpoint Source and Agricultural Resources Conservation Fund Grant Programs. *More information is provided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

5.3.D. West Tennessee River Basin Authority. The West Tennessee River Basin Authority, an agency of the Department of Environment and Conservation, is responsible for the preservation of the natural flow and function of rivers and streams in the Forked Deer, Obion and Hatchie River Basins. As a Water Quality Partner, the Basin Authority conducts a variety of activities directly related to the conservation of resources in these river basins. In carrying out its mission the Basin Authority:

- Pursues and implements meandering stream and river restoration projects, with the goal of restoring natural floodplain dynamics and the associated riverine ecosystems.
- Implements watershed level projects designed to reduce the volume of sediment entering streams, and rivers. Excessive sedimentation can severely impair water quality as well as aquatic and floodplain habitats.
- Performs environmentally sensitive removal of logjams and obstructions to flow in streams and rivers, resulting in the preservation of environmental and economic resources.
- Maintains 120 Flood Control and Sediment Retention Structures, designed to increase flood storage capacity and to improve water quality through removal of suspended sediments.
- In support of its work, receives donations of Conservation Easements on Bottomland Hardwood Timber and other Wetlands. To date, over 23 square miles have been donated to the Basin Authority by private landowners.
- Maintains several large Bank Stabilization Projects, designed to prevent severe bank erosion. Where feasible, the Basin Authority utilizes bioengineering techniques to stabilize river banks, while, at the same time, reestablishing the riparian corridor.
- Maintains several Grade Control Structures designed to prevent further vertical degradation of altered streams and rivers. These structures, not only protect vital infrastructure, but help prevent the release of large volumes of sediment.

Through its efforts, the West Tennessee River Basin Authority will remain a strong advocate for the conservation and sustainable utilization of the resources within the Hatchie, Obion and Forked Deer River Basins.

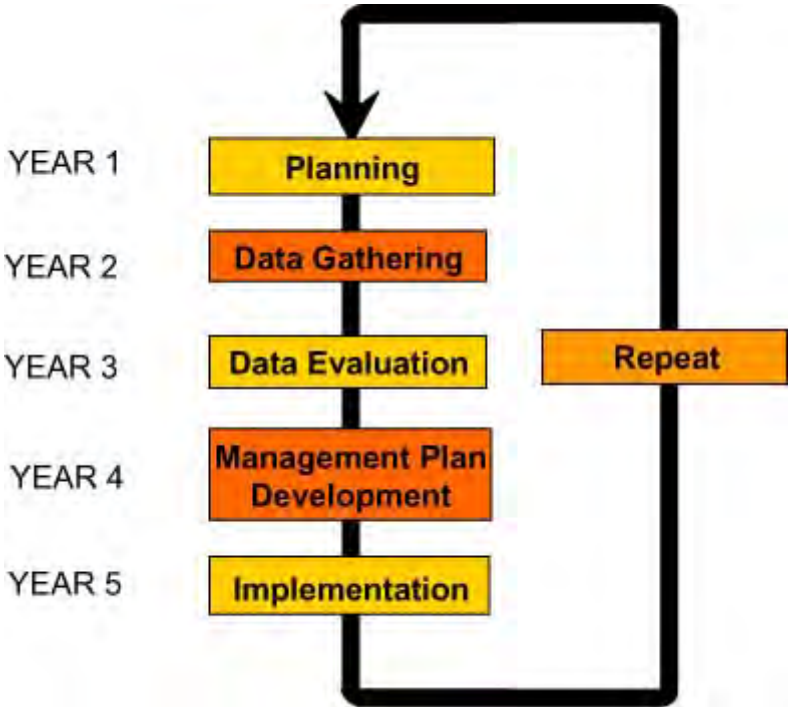
The West Tennessee River Basin Authority office is located at 3628 East End Drive in Humboldt, Tennessee. For additional information or assistance, call 731/784-8173.

5.3.E. Mississippi Department of Environmental Quality (MDEQ) - Basin Management Approach. The purpose of Mississippi's Basin Management Approach is to foster stewardship of Mississippi's water resources through collaborative watershed planning, education, protection and restoration initiatives. Over 50 state and federal agencies and stakeholder organizations are working together with local watershed teams to implement the Basin Management Approach.

How Does It Work?

There are ten major drainage basins in Mississippi. Teams of water resources experts from state and federal agencies and stakeholder organizations work together in each basin. A Basin Coordinator from MDEQ leads each team. The role of each team is to take its basin through a five-step process known as the Basin Management Cycle. The cycle involves planning, data gathering, data evaluation, management plan development and implementation of the plan. The cycle is repeated every five years.

Basin Management Cycle



The Lower Hatchie River watershed in Mississippi's is in the North Independent Streams basin. Basin Management Approach planning activities are scheduled to begin in the North Independent Streams Basin in 2007.

What are the Benefits of Participating in Mississippi's Basin Management Approach?

- The approach identifies and targets our greatest water quality problems and focuses efforts and funding on solving them.
- The approach provides more opportunities for direct involvement by you and other Mississippians in developing and implementing solutions to our water quality problems.
- The approach creates a more direct pathway for you and other basin stakeholders to access available technical assistance and funding resources.
- The approach lessens the need for future environmental regulation.
- The approach increases the likelihood of good quality water resources for future generations.

How Can You Participate?

Successfully managing water resources requires the input of all citizens in a basin - from homeowners to farmers to businesses to local officials. Mississippi's Basin Management Approach provides opportunities for all to participate in decision-making efforts and in shaping the future of water quality. Remember, this is your basin. Take ownership of it and join the effort to protect its water resources.

There are several ways you can participate in the Basin Management Approach.

- Participate in local stakeholder meetings.
- Join a local watershed group or start one of your own.
- Contact your Basin Coordinator about water quality concerns and how you can get involved.

For more information on water quality or the basin management approach in the Lower Hatchie River Watershed, visit Mississippi's Basin Management website or contact the Basin Management Section Chief.

http://www.deq.state.ms.us/MDEQ.nsf/page/WMB_Basin_Management_Approach

Richard B. Ingram
Chief, Basin Management Section
Watershed Management Branch
Missippi Department of Environmental Quality
P.O. Box 10385
Jackson, MS 39289-0385
601-961-5078 (office)
Richard_Ingram@deq.state.ms.us (e-mail)

5.4. LOCAL INITIATIVES.

5.4.A. Friends of West TN Refuges. The Friends of West TN Refuges is a non-profit organization designed to help the refuges of Tennessee through fundraising and volunteer work. Their mission is to promote and enhance the integrity of the West Tennessee National Wildlife Refuges through activities that advance public understanding, awareness, appreciation, and enjoyment of the natural environment. Their goals are to support refuge activities and events, increase awareness of West Tennessee Refuges, educate the public about The U.S. Fish & Wildlife Service's mission, and to increase fundraising to support refuge programs. They have achieved funding for our Backyard Habitat, Junior Ranger Program, water delivery systems, and 3 observation towers.

Contact : Dick Preston (901) 837-3360

5.4.B. The Nature Conservancy. The Hatchie River in Tennessee is remarkable as the longest free-flowing tributary of the lower Mississippi River, and contains the largest forested floodplain in Tennessee. Because it has remained unimpounded and unchannelized, the natural flood processes that drive the ecosystem are intact, sustaining the river and wetland habitats that support a rich ecological diversity. The river is home to at least 100 fish and 34 mussel species. With 11 species of catfishes, the Hatchie probably contains more species of catfishes than any other river in North America. Aside from their rarity, the floodplain forest communities of the Hatchie are home to 250 species of birds that nest in the cypress, tupelo, and other bottomland species. An additional 300 migratory species pass through these forests annually.

Sedimentation, contaminants, altered forest structure and hydrology as well as habitat fragmentation are all threatening the viability of the Hatchie. Heavy sediment loads flow into the Hatchie from extensive deposits found in most of the river's 36 tributaries.

The Nature Conservancy, through its satellite office in Brownsville, has created a five-year plan designed to reduce sediment flows to the river and protect important bottomland forest habitat. Support from the Save Wild Tennessee Campaign will help the West Tennessee staff:

- Launch a pioneering tributary restoration project throughout the Lower Hatchie River Watershed as well as in watersheds throughout West Tennessee.
- Work with U.S. Fish and Wildlife Service to more than double the size of the Lower Hatchie National Wildlife Refuge in Tipton and Lauderdale Counties.
- Conduct aggressive species monitoring for mussel populations, the alligator snapping turtle and the northern madtom.

For more information please visit:
http://www.nature.org/wherewework/northamerica/states/tennessee/preserves/art10171.html

Or contact:

Monica Pope
mpope@tnc.org

Additionally, in 2005, TNC assisted the the Tennessee Wildlife Resources Agency in developing the Tennessee State Wildlife Action Plan (SWAP), formerly known as the Comprehensive Wildlife Conservation Strategy (CWCS). 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.C. Hatchie River Conservancy. The Hatchie River Conservancy is a grass roots organization dedicated to preserve the Hatchie River, Tennessee's longest state scenic river. The Conservancy has adopted a Mission Statement: "To restore, preserve, and enhance the utilization of the Hatchie River and its floodplains."

The Goals of the Hatchie River Conservancy are to:

- Aid and support The Nature Conservancy, Tennessee Wildlife Resources Agency, and other conservation groups in their efforts to restore and preserve the Hatchie River for future generations.
- Provide public access and recreational areas on the Hatchie River for low impact nature and recreational activities.
- Promote and encourage the use of the Hatchie River for low impact recreational activities, education, and science.

For more information about the Hatchie River Conservancy, please contact Don Dempsey at don-dempsey@comcast.net or Jac Belet at cacb@belet.com.

5.4.D. The Chickasaw-Shiloh Resource Conservation and Development (RC&D) Council. The Chickasaw Shiloh RC&D Council was authorized for operation on April 28, 1976. Since that time the Council has assisted the citizens of our area develop and implement a wide array of projects totaling over $50,000,000. These works of improvement would not have been possible without the cooperation of the citizens of our area, local, state and federal agencies and organizations.

The Chickasaw-Shiloh RC&D area covers 4,768 square miles or 3,051,520 acres. The area includes Chester, Decatur, Fayette, Hardeman, Hardin, Haywood, Henderson, McNairy and Madison Counties, Tennessee. The western boundary of the area adjoins Shelby County, Tennessee, the largest and most heavily populated county in Tennessee.

Issues of water quality due to excessive erosion are common throughout the area. The Council has assisted numerous groups and agencies carry out watershed plans to improve the water quality of the area. The Council has received over $1,000,000 through grants and then distributed to landowners to implement best management practices.

CHAPTER 6

RESTORATION STRATEGIES IN THE LOWER HATCHIE RIVER 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 Tennessee portion of the Lower Hatchie River Watershed.

6.2. COMMENTS FROM PUBLIC MEETINGS. Watershed meetings are open to the public, and most meetings were represented by citizens who live in the watershed, NPDES 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 Lower Hatchie River Watershed public meeting was held jointly with the Upper Hatchie Watershed on September 16, 1999 at the Brownsville Utility Building. 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

- Garbage, especially trash in the stream
- Growth restrictions due to efforts directed at clean water
- Fish safe to eat
- Changes in hydrology seen in the last fifteen years
- Sediment in the Hatchie River from Mississippi
- Accelerated timber harvests due to fear of timber loss where floodplain is standing water (due to hydrological modification)

6.2.B. Year 3 Public Meeting. The second Lower Hatchie River Watershed public meeting was held jointly with the Upper Hatchie Watershed December 6, 2001 at The Nature Conservancy Office in Brownsville. 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

- Poor logging practices along the Hatchie lead to increases in sediment load
- Increased pesticides in water from poor agricultural practices
- Hatchie River has less water than it did 50 years ago (pools are shallower due to more sediment)
- Tree tops left in the river after timber harvesting capture sediment so the river is filling in
- Increased frequency of cutting timber early to avoid dead timber after flooding

6.2.C. Year 5 Public Meeting. The third scheduled Lower Hatchie River Watershed public meeting was held October 11, 2007 at the City Hall in Bolivar. The meeting was held jointly with the Upper Hatchie River Watershed and featured nine educational components:

- Overview of watershed approach flash video
- Benthic macroinvertebrate specimens and interpretation
- SmartBoard™ with interactive GIS maps
- "Is Your Stream Healthy" self-guided slide show
- "Why We Do Biological Sampling" self-guided slide show
- Water supply and ground water protection educational display
- Water quality and land use maps
- The Nature Conservancy educational display
- Hatchie River Conservancy educational display

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

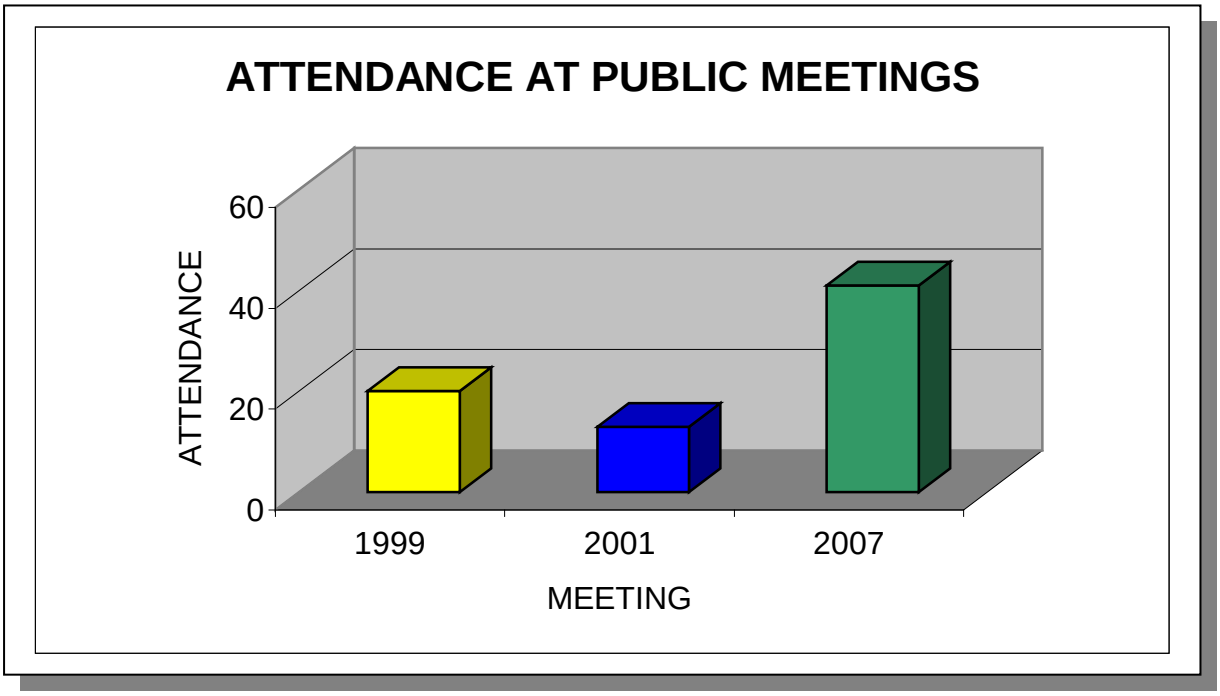


Figure 6-1. Attendance at the Lower Hatchie River and Upper Hatchie River Watersheds Joint Public Meetings. *Attendance numbers do not include TDEC personnel.*

Figure 6-2. Jackson Environmental Field Office Manager Pat Patrick Brings the Watershed Meeting to Order.

Figure 6-3. The SmartBoard™ is an Effective Interactive Tool to Teach Citizens About the Power of GIS.

Figure 6-4. Local Groups, Like the Hatchie River Conservancy, Have an Opportunity to Talk About Their Work with Citizens at the Watershed Meeting.

Figure 6-5. Displays by NGOs, Like The Nature Conservancy, Attract Interest at the Watershed Meeting.

6.3. APPROACHES USED.

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

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

Approved TMDL:

Cane Creek. TMDL for total copper for Cane Creek subwatershed from River Mile 17.9 to the confluence with the Hatchie River in Lauderdale County. Approved August 25, 1999.
http://www.state.tn.us/environment/wpc/tmdl/approvedtmdl/cncrcu05.pdf

TMDLs are prioritized for development based on many factors.

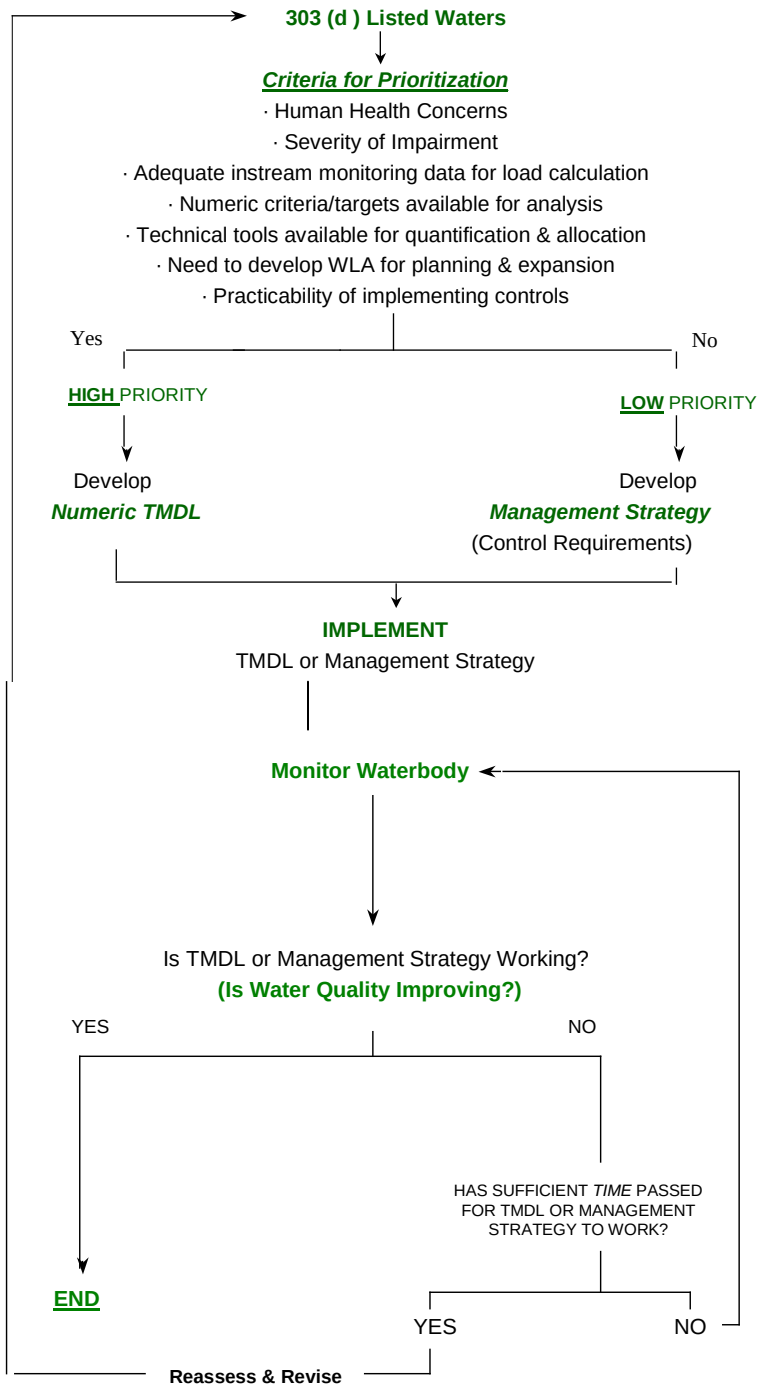


Figure 6-6. Prioritization Scheme for TMDL Development.

6.3.B. Nonpoint Sources

Common nonpoint sources of pollution in the Lower Hatchie River 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 Lower Hatchie River 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. Examples of streams impaired by sediment and land development in the Lower Hatchie River Watershed are Sugar Creek and Hyde Creek.

Beginning in 2003, the state began requiring some municipalities to obtain coverage under a permit designed to address nonpoint runoff issues: the General NPDES Municipal Separate Storm Sewer System Permit, commonly known as MS4. This permit requires the holder to develop a comprehensive storm water management program, including the adoption of local regulatory ordinances, regular inspection of construction sites and other discharges into their storm sewers, and a variety of educational, mapping, and monitoring activities. The state audits and oversees these local MS4 programs.

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

6.3.B.i.b. From Channel and/or Bank Erosion. Many streams within the Lower Hatchie River 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 stream channels in this watershed, although none severely enough to cause a loss of use impairment at this time.

Several agencies such as The Nature Conservancy, the NRCS and the 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 like Richland Creek, Cypress Creek, Sugar Creek, Cane Creek and headwater streams in the Hatchie system could benefit from these types of projects.

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

Voluntary Activities

- Re-establish bank vegetation (Flat Creek, Richland Creek, Sugar Creek, Cane Creek).
- Establish off-channel watering areas for livestock by moving watering troughs and feeders back from stream banks (Catron Creek), or at least limit cattle access to restricted areas with armored bank entry.
- Limit cattle access to streams and bank vegetation.

Regulatory Strategies

- Increase efforts in the Master Logger program to recognize impaired streams and require more effective management practices.
- 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 (Flat Creek, Richland Creek, Indian Creek, Nelson Creek, Cane 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 (Hickory Creek).

Additional Strategies

- Better community planning and MS4 oversight for the impacts of development on small streams, especially development in growing areas (Sugar Creek, Town Creek, Myron Creek).

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.

Silviculture is an important industry within the Lower Hatchie River Watershed. Clear Cutting is often used in the uplands along headwater streams. In these areas, proper BMPs are necessary to protect steep slopes and to avoid numerous stream crossings. In the bottomland along the Hatchie River, treetops left in the channel induce flooding and channel relocation. The Master Logger Program has made significant improvements in logging operations.

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 any type of vegetated buffers along tributaries of the Hatchie River is a problem in some areas of the watershed, due both to agricultural and residential/commercial land uses. Impacted streams that could benefit from the establishment of more extensive riparian buffer zones include Flat Creek, Richland Creek, Town Creek, Nelson Creek, Cane Creek, and Cypress Creek.

6.3.B.i.d. From Point Sources. Several permitted discharges within the Hatchie River discharge suspended solids under the conditions of an NPDES permit and are reviewed during the watershed cycle for reissuance. A few will also have limits on settleable solids. Those facilities with solids restrictions are Ripley Lagoon, Bolivar Waste Water Treatment Plant, Westover Lagoon, Moutan Clay Plant and mine pits, Covington Waste Water Treatment Plant, and Brownsville Waste Water Treatment Plant.

6.3.B.ii. Pathogen Contamination.

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

Permits issued by the Division of Water Pollution Control regulate discharges from point sources and require adequate control for these sources. Individual homes are required to have subsurface, on-site treatment (i.e., septic tank and field lines) if public sewers are not available. The Division of Ground Water Protection within the Jackson Environmental Field Office and delegated county health departments (Madison and Shelby Counties) 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, seven stream systems in the Tennessee portion of the Lower Hatchie River Watershed are known to have excessive pathogen contamination. Hyde Creek, Nelson Creek, and Cane Creek are impacted by urban areas, with contributions of bacterial contamination possibly coming from storm water runoff, sewage collection system leaks, or treatment plant operation failures. The city of Ripley is in the process of constructing a new wastewater treatment system with the discharge moved from Cane Creek to the Mississippi River. Many streams in agricultural watersheds show elevated bacterial levels, like the upper reach of Nelson Creek, Flat Creek, and Catron Creek, and Richland Creek. Catron Creek may also have a contribution from a Concentrated Animal Feeding Operation (CAFO).

Some measures that may be necessary to control pathogens are:

Voluntary Activities

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

Regulatory Strategies

- Strengthen enforcement of regulations governing on-site wastewater treatment.
- Determine timely and appropriate enforcement for non-complying sewage treatment plants, large and small, and their collection systems.
- Identify Concentrated Animal Feeding Operations not currently permitted.

- Review the pathogen limits in discharge permits to determine the need for further restriction.

Additional Strategies

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

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

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

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

Some sources of nutrients can be addressed by:

Voluntary Activities

- Educate homeowners and lawn care companies in the proper application of fertilizers.
- Encourage landowners, developers, and builders to leave stream buffer zones. Streamside vegetation can filter out many nutrients and other pollutants before they reach the stream. These riparian buffers are also vital along livestock pastures. Examples of streams that could benefit are Flat Creek, Richland Creek, and Town Creek.
- Use grassed drainage ways that can remove fertilizer before it enters streams (Flat Creek, Richland Creek, Lagoon Creek, Cane Creek, Cypress Creek).
- 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.
- Use native plants for landscaping since they don't require as much fertilizer and water.

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 (Prairie Creek).
- Discourage impoundments. Ponds and lakes do not aerate water. *Note: Permits may be required for any work on a stream, including impoundments.*

Regulatory Strategies

- Strengthen enforcement of regulations governing on-site wastewater treatment.
- Impose more stringent permit limits for nutrients discharged from sewage treatment plants.
- Impose timely and appropriate enforcement for noncomplying sewage treatment plants, large and small, and their collection systems.
- Identify Concentrated Animal Feeding Operations (CAFO) not currently permitted.
- Identify any Animal Feeding Operations (AFO) that contribute to stream impacts and declare them as a CAFO requiring a permit.
- Require nutrient management plans for all golf courses.

Additional Strategies

- Encourage TDA- and NRCS-sponsored educational programs targeted to agricultural landowners and aimed at better nutrient management, as well as information on technology-based application tools.
- Support and train local MS4 programs within municipalities to deal with storm water pollution issues and require additional storm runoff quality control measures. Portions of Brownsville, an MS4, drains to Sugar Creek. As Brownsville implements its MS4 program, improvements in Sugar Creek will be expected.

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 Tennessee portion of the Lower Hatchie River Watershed, a relatively small number of streams are damaged by storm water runoff from industrial facilities or urban areas. More stringent inspection and regulation of permitted industrial facilities, and local storm water quality initiatives and regulations, could help reduce the amount of contaminated runoff reaching state waters. Examples of streams that could benefit from these measures include the many small, urbanized tributaries in the Ripley Area.

The City of Ripley's new treatment facility and outfall to the Mississippi River will allow two industries to connect to the sewer and remove their industrial wastewater discharges from Old Nelson Creek, Hyde Creek, and Cane Creek.

Past disposal practices can continue to impact groundwater and slowly feed into surface water. The Vesicol Corporation disposed of pesticide residue in a landfill near Teague in northern Hardeman County during the 1960's. A clay cap was constructed over the burial trenches to minimize infiltration and purge wells with treatment of contaminated groundwater were installed. The groundwater pumping and treatment has recently been found to be ineffective and it predicted that a plume of contaminated groundwater would continue to enter Pugh and Clover Creeks. It has not been determined if the concentrations will be sufficient to impact aquatic life. The Environmental Protection Agency and TDEC's Division of Remediation continue to oversee the company's efforts to contain the contamination.

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

Some of these problems can be addressed by:

Voluntary Activities

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

Regulatory Strategies

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

6.3.B.v. Habitat Alteration.

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

Recent clean out and maintenance of a portion of Town Creek has resulted in loss of habitat. Creeks that flow through agricultural fields such as Flat Creek and Richland Creek are also commonly cleaned out in hopes of preventing field flooding. However, this process removes any habitat that may have existed.

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

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

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

6.4.A. Municipal Permits

TN0062367 Brownsville STP

Discharger rating: Major
City: Brownsville
County: Haywood
EFO Name: Jackson
Issuance Date: 5/1/05
Expiration Date: 3/31/09
Receiving Stream(s): Hatchie River at mile 76.3
HUC-12: 080102080404
Effluent Summary: Treated municipal wastewater from Outfall 001
Treatment system: Waste Activated Sludge (WAS) to dual trickling filter to lagoon system

Segment	TN08010208001_2000
Name	Hatchie River
Size	88.8
Unit	Miles
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 6-1. Stream Segment Information for Brownsville STP.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
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	DMax Load	Daily	Continuous	Influent (Raw Sewage)
Flow	All Year		MGD	MAvg Load	Daily	Continuous	Influent (Raw Sewage)
Flow	All Year		MGD	MAvg Load	Daily	Continuous	Effluent
IC25 7day Ceriodaphnia dubia	All Year	1	Percent	DMin Conc	Quarterly	Composite	Effluent
IC25 7day Fathead Minnows	All Year	1	Percent	DMin Conc	Quarterly	Composite	Effluent
Settleable Solids	All Year	1	mL/L	DMax Conc	Weekdays	Grab	Effluent
TRC	All Year	1.7	mg/L	DMax Conc	Weekdays	Grab	Effluent
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 Brownsville STP.

Compliance History:
The following numbers of exceedences were noted in PCS:

1 Bypass
13 Biological Oxygen Demand

Comments:
9/24/07 Pretreatment Compliance Inspection (PCI): In compliance.

The purpose of the PCI was to evaluate the status of Brownsville's pretreatment program and to provide any assistance as requested by the pretreatment coordinator. The following comments are based on that inspection:

1. The city and MTD/Cub Cadet must test for TTO or supply the necessary TTO certification statement. You noted that the upcoming test this week will be analyzed for TTO.
2. LASCO Fittings did not certify their self-monitoring reports. All permitted industries must certify their self-monitoring reports.
3. The city must follow its Enforcement Response Plan. The city needs to enforce the requirements for 24-hour notification of violation and the subsequent 30 day follow up sampling.
4. During our inspection of MTD/Cub Cadet, we found a carboy of concentrated floor cleaner near a floor drain that leads to the sewer. We also discovered carboys and drums of caustic and acid sitting side by side with no secondary containment. I asked Mr. David Dunning, MTD Environmental and Safety Manager, to provide separate secondary containment for the floor cleaner, caustics, and acid and he was agreeable. The caustics and acid in particular must not have the same secondary containment. The city should determine the need for secondary containment during each of its annual inspections at each industry. The city should verify installation of secondary containment at MTD in about six weeks.

9/22/06 Reconnaissance Inspection:

Brownsville trickling filter has not begun discharging again. Flow has been diverted to the lagoon. Some influent is being circulated across the trickling filter media to establish a growth on the rocks before the plant is restored to service. The flow is then recirculated to the head of the plant.

In addition to replacing the center column on the trickling filter, repairs have been made to the concrete walls and a new arm installed. The generator was out of service but being repaired. A lot of cleaning and painting was being done.

TN0025011 Henning-Lagoon

Discharger rating: Minor
City: Henning
County: Lauderdale
EFO Name: Jackson
Issuance Date: 6/1/05
Expiration Date: 11/30/09
Receiving Stream(s): Alston Creek at mile 3.6 to Hatchie River at mile 35.2
HUC-12: 080102080603
Effluent Summary: Treated domestic wastewater from Outfall 001
Treatment system: Lagoon and spray irrigation system

Segment	TN08010208001_0999
Name	Misc Tribs to Hatchie River
Size	319.3
Unit	Miles
First Year on 303(d) List	-
Designated Uses	Recreation (Not Assessed), Irrigation (Not Assessed), Livestock Watering and Wildlife (Not Assessed), Fish and Aquatic Life (Not Assessed)
Causes	N/A
Sources	N/A

Table 6-3. Stream Segment Information for Henning-Lagoon.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
Ammonia as N (Total)	All Year	7.5	mg/L	DMax Conc	Weekly	Grab	Effluent
Ammonia as N (Total)	All Year	4	mg/L	MAvg Conc	Weekly	Grab	Effluent
CBOD % Removal	All Year	65	Percent	MAvg % Removal	Weekly	Calculated	% Removal
CBOD5	All Year	40	mg/L	DMax Conc	Weekly	Grab	Effluent
CBOD5	All Year	30	mg/L	MAvg Conc	Weekly	Grab	Effluent
D.O.	All Year	1	mg/L	DMin Conc	Weekdays	Grab	Effluent
E. coli	All Year	941	#/100mL	MAvg Ari Mean	Weekly	Grab	Effluent
E. coli	All Year	126	#/100mL	MAvg Geo Mean	Weekly	Grab	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	Effluent
Flow	All Year		MGD	MAvg Load	Daily	Continuous	Instream Monitoring
Flow	All Year		MGD	MAvg Load	Daily	Continuous	Influent (Raw Sewage)
Flow	All Year		MGD	DMax Load	Daily	Continuous	Instream Monitoring
Settleable Solids	All Year	1	mL/L	DMax Conc	Weekly	Grab	Effluent
TRC	All Year	0.1	mg/L	DMax Conc	Weekdays	Grab	Effluent
TSS	All Year	120	mg/L	DMax Conc	Weekly	Grab	Effluent
TSS	All Year	100	mg/L	MAvg Conc	Weekly	Grab	Effluent
pH	All Year	10	SU	DMax Conc	Weekdays	Grab	Effluent
pH	All Year	6	SU	DMin Conc	Weekdays	Grab	Effluent

Table 6-4. Permit Limits for Henning-Lagoon.

Compliance History:
The following numbers of exceedences were noted in PCS:

2 Total Suspended Solids
9 Escherichia coli
2 Carbonaceous Oxygen Demand
4 Ammonia
2 Carbonaceous Biological Oxygen Demand

Comments:
10/10/07 Technical Assistance Visit and file review.

The division measured flow in Alston Creek. There was not enough flow in the creek to warrant using a meter so we measured the depth of water going over Henning's weir. It was about 0.1 MGD, not enough for Henning to discharge.

Henning has installed an elbow in the discharge line so the pipe will stay full and the new flow meter will operate correctly. The division spoke to Cordell by phone the next morning and told him what we found. We told him there should be a splash pad for the outfall that the pipe work should be covered and the bank stabilized.

TN0041874 Hooper Quick Stop

Discharger rating: Minor
City: Brownsville
County: Haywood
EFO Name: Jackson
Issuance Date: 8/1/04
Expiration Date: 5/28/09
Receiving Stream(s): Mile 0.9 of an unnamed tributary which enters Sugar Branch at mile 1.6
HUC-12: 080102080409
Effluent Summary: Treated domestic wastewater from Outfall 001
Treatment system: Extended aeration

Segment	TN08010208031_0100
Name	Sugar Branch
Size	7.9
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 6-5. Stream Segment Information for Hooper Quick Stop.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
Ammonia as N (Total)	All Year	10	mg/L	DMax Conc	Monthly	Grab	Effluent
Ammonia as N (Total)	All Year	5	mg/L	MAvg Conc	Monthly	Grab	Effluent
BOD5	All Year	20	mg/L	DMax Conc	Monthly	Grab	Effluent
BOD5	All Year	10	mg/L	MAvg Conc	Monthly	Grab	Effluent
D.O.	All Year	5	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
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	0.5	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	6.5	SU	DMin Conc	2/Week	Grab	Effluent

Table 6-6. Permit Limits for Hooper Quick Stop.

Comments:
None

TN0062154 Stanton Lagoon

Discharger rating: Minor
City: Stanton
County: Lagoon
EFO Name: Jackson
Issuance Date: 10/1/04
Expiration Date: 8/31/09
Receiving Stream(s): Wetland area drainage canal at mile 0.4 to Big Muddy Creek at mile 5.6
HUC-12: 080102080501
Effluent Summary: Treated domestic wastewater from Outfall 001
Treatment system: Lagoon

Segment	TN08010208007_1000
Name	Big Muddy Creek
Size	7.5
Unit	Miles
First Year on 303(d) List	2004
Designated Uses	Recreation (Not Assessed), Irrigation (Supporting), Livestock Watering and Wildlife (Supporting), Fish and Aquatic Life (Non-Supporting)
Causes	Physical substrate habitat alterations
Sources	Channelization

Table 6-7. Stream Segment Information for Stanton Lagoon.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
BOD % removal	All Year	65	Percent	MAvg % Removal	Weekly	Calculated	%Removal
BOD5	All Year	45	mg/L	DMax Conc	Weekly	Grab	Effluent
BOD5	All Year		MGD	DMax Conc	Weekly	Composite	Influent (Raw Sewage)
BOD5	All Year	120	mg/L	DMax Load	Weekly	Grab	Effluent
BOD5	All Year		MGD	MAvg Conc	Weekly	Composite	Influent (Raw Sewage)
BOD5	All Year	40	mg/L	WAvg Conc	Weekly	Grab	Effluent
BOD5	All Year	96	mg/L	WAvg Load	Weekly	Grab	Effluent
BOD5	All Year	72	mg/L	MAvg Load	Weekly	Grab	Effluent
BOD5	All Year	30	mg/L	MAvg 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	Continuous	Effluent
Flow	All Year		MGD	MAvg Load	Daily	Continuous	Effluent
Settleable Solids	All Year	1	mL/L	DMax Conc	Weekly	Grab	Effluent
TRC	All Year	0.5	mg/L	DMax Conc	Weekdays	Grab	Effluent
TSS	All Year	120	mg/L	DMax Conc	Weekly	Grab	Effluent
TSS	All Year	288	mg/L	DMax Load	Weekly	Grab	Effluent
TSS	All Year	100	mg/L	MAvg Conc	Weekly	Grab	Effluent
TSS	All Year	110	mg/L	WAvg Conc	Weekly	Grab	Effluent
TSS	All Year	264	mg/L	WAvg Load	Weekly	Grab	Effluent
TSS	All Year	240	mg/L	MAvg Load	Weekly	Grab	Effluent
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 Stanton Lagoon.

Compliance History:
The following numbers of exceedences were noted in PCS:

1 Overflow
1 Bypass
13 Total Suspended Solids
15 Fecal Coliform
14 Escherichia coli
4 Settleable Solids
4 Total Chlorine
17 Biological Oxygen Demand
1 Dissolved Oxygen

Enforcement:
5/21/04 Director's Order #04-015D: City did not apply for NPDES reissuance.

Comments:
None.

TN0064025 Toone STP

Discharger rating: Minor
City: Toone
County: Hardeman
EFO Name: Jackson
Issuance Date: 8/1/04
Expiration Date: 6/30/09
Receiving Stream(s): Pugh Creek Mile 0.8
HUC-12: 080102080109
Effluent Summary: Treated municipal wastewater from Outfall 001
Treatment system: Lagoon system

Segment	TN08010208066_0100
Name	Pugh Creek
Size	4.8
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 6-9. Stream Segment Information for Toone STP.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
Ammonia as N (Total)	Summer	15	mg/L	DMax Conc	2/Month	Grab	Effluent
Ammonia as N (Total)	Summer	4	lb/day	DMax Load	2/Month	Grab	Effluent
Ammonia as N (Total)	Summer	2	lb/day	MAvg Load	2/Month	Grab	Effluent
Ammonia as N (Total)	Summer	7	mg/L	MAvg Conc	2/Month	Grab	Effluent
Ammonia as N (Total)	Winter	25	mg/L	DMax Conc	2/Month	Grab	Effluent
Ammonia as N (Total)	Winter	4	lb/day	MAvg Load	2/Month	Grab	Effluent
Ammonia as N (Total)	Winter	15	mg/L	MAvg Conc	2/Month	Grab	Effluent
Ammonia as N (Total)	Winter	6	lb/day	DMax Load	2/Month	Grab	Effluent
CBOD % Removal	All Year	65	Percent	MAvg % Removal	Weekly	Calculated	% Removal
CBOD5	All Year	16	lb/day	WAvg Load	Weekly	Grab	Effluent
CBOD5	All Year	70	mg/L	DMax Conc	7/Month	Grab	Effluent
CBOD5	All Year	11	lb/day	MAvg Load	7/Month	Grab	Effluent
CBOD5	All Year	65	mg/L	WAvg Conc	7/Month	Grab	Effluent
CBOD5	All Year	45	mg/L	MAvg Conc	7/Month	Grab	Effluent
CBOD5	All Year	18	lb/day	DMax Load	7/Month	Grab	Effluent
D.O.	All Year	6	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	Weekdays	Instantaneous	Influent (Raw Sewage)
Flow	All Year		MGD	MAvg Load	Weekdays	Instantaneous	Effluent
Settleable Solids	All Year	1	mL/L	DMax Conc	Weekly	Grab	Effluent
TRC	All Year	0.11	mg/L	DMax Conc	Weekdays	Grab	Effluent
TSS	All Year	120	mg/L	DMax Conc	Weekly	Grab	Effluent
TSS	All Year	30	lb/day	DMax Load	Weekly	Grab	Effluent
TSS	All Year	100	mg/L	MAvg Conc	Weekly	Grab	Effluent
TSS	All Year	110	mg/L	WAvg Conc	Weekly	Grab	Effluent
TSS	All Year	28	lb/day	WAvg Load	Weekly	Grab	Effluent
TSS	All Year	11	lb/day	MAvg Load	Weekly	Grab	Effluent
pH	All Year	9	SU	DMax Conc	Weekdays	Grab	Effluent
pH	All Year	6	SU	DMin Conc	Weekdays	Grab	Effluent

Table 6-10. Permit Limits for Toone STP.

Compliance History:
The following numbers of exceedences were noted in PCS:

2 Dissolved Oxygen
1 Carbonaceous Biological Oxygen Demand

Comments:
8/7/07 Compliance Evaluation Inspection
Comments from inspection:

1. Grass and weeds have been allowed to grow too high on the dike, especially near the water. A short, well-maintained growth of grass discourages rodent activity which can weaken the dike and makes it possible to find and correct erosion problems before they become severe. A good job is being done controlling vegetation on the fence but a better job must be done of keeping the grass mowed around the lagoon.

2. The pump station, laboratory, and lab records were inspected and found to be in good condition.

TN0057487 West Tennessee State Penitentiary

Discharger rating: Minor
City: Henning
County: Lauderdale
EFO Name: Jackson
Issuance Date: 11/1/04
Expiration Date: 9/30/09
Receiving Stream(s): Hatchie River at mile 18.4
HUC-12: 080102080605
Effluent Summary: Treated domestic wastewater from Outfall 001
Treatment system: Lagoon system

Segment	TN08010208001_2000
Name	Hatchie River
Size	88.8
Unit	Miles
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 6-11. Stream Segment Information for West Tennessee State Penitentiary.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
Ammonia as N (Total)	All Year	10	mg/L	DMax Conc	Weekly	Grab	Effluent
Ammonia as N (Total)	All Year	48	lb/day	DMax Load	Weekly	Grab	Effluent
Ammonia as N (Total)	All Year	24	lb/day	MAvg Load	Weekly	Grab	Effluent
Ammonia as N (Total)	All Year	5	mg/L	MAvg Conc	Weekly	Grab	Effluent
Ammonia as N (Total)	All Year	36	lb/day	WAvg Load	Weekly	Grab	Effluent
Ammonia as N (Total)	All Year	7.5	mg/L	WAvg Conc	Weekly	Grab	Effluent
CBOD % Removal	All Year	65	Percent	MAvg % Removal	Weekly	Calculated	% Removal
CBOD5	All Year	40	mg/L	DMax Conc	Weekly	Grab	Effluent
CBOD5	All Year	169	lb/day	WAvg Load	Weekly	Grab	Effluent
CBOD5	All Year	193	lb/day	DMax Load	Weekly	Grab	Effluent
CBOD5	All Year	25	mg/L	MAvg Conc	Weekly	Grab	Effluent
CBOD5	All Year	35	mg/L	WAvg Conc	Weekly	Grab	Effluent
CBOD5	All Year	121	lb/day	MAvg Load	Weekly	Grab	Effluent
D.O.	All Year	5	mg/L	DMin Conc	Weekdays	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	Instantaneous	Effluent
Flow	All Year		MGD	MAvg Load	Daily	Instantaneous	Effluent
Flow	All Year		MGD	MAvg Load	Daily	Instantaneous	Influent (Raw Sewage)
Flow	All Year		MGD	DMax Load	Daily	Instantaneous	Influent (Raw Sewage)
Settleable Solids	All Year	1	mL/L	DMax Conc	Weekdays	Composite	Effluent
TRC	All Year	2	mg/L	DMax Conc	Weekdays	Grab	Effluent
TSS	All Year	120	mg/L	DMax Conc	Weekly	Grab	Effluent
TSS	All Year	581	lb/day	DMax Load	Weekly	Grab	Effluent
TSS	All Year	100	mg/L	MAvg Conc	Weekly	Grab	Effluent
TSS	All Year	110	mg/L	WAvg Conc	Weekly	Grab	Effluent
TSS	All Year	532	lb/day	WAvg Load	Weekly	Grab	Effluent
TSS	All Year	484	lb/day	MAvg Load	Weekly	Grab	Effluent
pH	All Year	9	SU	DMax Conc	Weekdays	Grab	Effluent
pH	All Year	6	SU	DMin Conc	Weekdays	Grab	Effluent

Tables 6-12a-b. Permit Limits for West Tennessee State Penitentiary.

Comments:
12/11/06 Reconnaissance Inspection:
All four aerators were repaired and working until one went out in November 2006. A rebuilt aerator motor is on hand ready to be installed. Since last visit, a new comminutor and comminutor controls have been installed, new influent lift station pump controls and electronics have been installed, the three influent pumps have been configured to alternate correctly, and the auger has been repaired and is working correctly.

TN0026590 Whiteville STP

Discharger rating: Major
City: Whiteville
County: Hardeman
EFO Name: Jackson
Issuance Date: 12/1/04
Expiration Date: 5/31/09
Receiving Stream(s): Hickory Creek at mile 7.7
HUC-12: 080102080401
Effluent Summary: Treated municipal wastewater from Outfall 001
Treatment system: Lagoon system

Segment	TN08010208001_1600
Name	Hickory Creek
Size	25.5
Unit	Miles
First Year on 303(d) List	2004
Designated Uses	Fish and Aquatic Life (Non-Supporting), Recreation (Not Assessed), Irrigation (Supporting), Livestock Watering and Wildlife (Supporting)
Causes	Sedimentation/Siltation, Physical substrate habitat alterations
Sources	Channelization

Table 6-13. Stream Segment Information for Whiteville STP.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
Ammonia as N (Total)	Summer	3	mg/L	DMax Conc	3/Week	Composite	Effluent
Ammonia as N (Total)	Summer	1.5	mg/L	MAvg Conc	3/Week	Composite	Effluent
Ammonia as N (Total)	Summer	2.2	mg/L	WAvg Conc	3/Week	Composite	Effluent
Ammonia as N (Total)	Summer	13	lb/day	MAvg Load	3/Week	Composite	Effluent
Ammonia as N (Total)	Summer	18	lb/day	WAvg Load	3/Week	Composite	Effluent
Ammonia as N (Total)	Winter	8	mg/L	DMax Conc	3/Week	Composite	Effluent
Ammonia as N (Total)	Winter	6	mg/L	WAvg Conc	3/Week	Composite	Effluent
Ammonia as N (Total)	Winter	50	lb/day	WAvg Load	3/Week	Composite	Effluent
Ammonia as N (Total)	Winter	30	lb/day	MAvg Load	3/Week	Composite	Effluent
Ammonia as N (Total)	Winter	3.6	mg/L	MAvg Conc	3/Week	Composite	Effluent
Bypass of Treatment (occurrences)	All Year		Occurrences/Month	MAvg Load	Continuous	Visual	Wet Weather
CBOD % Removal	All Year	85	Percent	MAvg % Removal	Monthly	Calculated	% Removal
CBOD % Removal	All Year	40	Percent	DMin % Removal	3/Week	Calculated	% Removal
CBOD5	All Year		mg/L	DMax Conc	3/Week	Composite	Influent (Raw Sewage)
CBOD5	All Year		mg/L	MAvg Conc	3/Week	Composite	Influent (Raw Sewage)
CBOD5	Summer	20	mg/L	DMax Conc	3/Week	Composite	Effluent
CBOD5	Summer	10	mg/L	MAvg Conc	3/Week	Composite	Effluent
CBOD5	Summer	83	lb/day	MAvg Load	3/Week	Composite	Effluent
CBOD5	Summer	15	mg/L	WAvg Conc	3/Week	Composite	Effluent
CBOD5	Summer	125	lb/day	WAvg Load	3/Week	Composite	Effluent
CBOD5	Winter	40	mg/L	DMax Conc	3/Week	Composite	Effluent
CBOD5	Winter	25	mg/L	MAvg Conc	3/Week	Composite	Effluent
CBOD5	Winter	292	lb/day	WAvg Load	3/Week	Composite	Effluent
CBOD5	Winter	35	mg/L	WAvg Conc	3/Week	Composite	Effluent
CBOD5	Winter	208	lb/day	MAvg Load	3/Week	Composite	Effluent
Cadmium Dissolved (as Cd)	All Year	0.009	mg/L	DMax Conc	Quarterly	Composite	Effluent
Cadmium Dissolved (as Cd)	All Year	0.0038	mg/L	MAvg Conc	Quarterly	Composite	Effluent
D.O.	All Year	6	mg/L	DMin Conc	Weekdays	Grab	Effluent
E. coli	All Year	941	#/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	DMax Load	Daily	Continuous	Influent (Raw Sewage)
Flow	All Year		MGD	MAvg Load	Daily	Continuous	Influent (Raw Sewage)
Flow	All Year		MGD	MAvg Load	Daily	Continuous	Effluent
Hg (T)	All Year	0.0002	mg/L	MAvg Conc	Quarterly	Composite	Effluent

Table 6-14a.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
IC25 7day Ceriodaphnia dubia	All Year	83	Percent	MAvg Min	Quarterly	Composite	Effluent
IC25 7day Fathead Minnows	All Year	83	Percent	MAvg Min	Quarterly	Composite	Effluent
Lead Dissolved (as Pb)	All Year	0.0085	mg/L	MAvg Conc	Quarterly	Composite	Effluent
Overflow Use Occurrences	All Year		Occurrences/Month	MAvg Load	Continuous	Visual	Wet Weather
Overflow Use Occurrences	All Year		Occurrences/Month	MAvg Load	Continuous	Visual	Non Wet Weather
Settleable Solids	All Year	1	mL/L	DMax Conc	3/Week	Composite	Effluent
TRC	All Year	0.04	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	250	lb/day	MAvg Load	3/Week	Composite	Effluent
TSS	All Year	334	lb/day	WAvg 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 % Removal	All Year	85	Percent	MAvg Min	Monthly	Calculated	% Removal
TSS % Removal	All Year	40	Percent	DMin % 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 6-14b.

Tables 6-14a-b. Permit Limits for Whiteville STP.

Compliance History:
The following numbers of exceedences were noted in PCS:

13 Overflows
81 Bypasses
2 Carbonaceous Biological Oxygen Demand
1 pH
1 Ammonia
1 Carbonaceous Oxygen Demand
2 Suspended Solids % Removal

Comments:
None.

TN0058084 Brighton School

Discharger rating: Minor
City: Brighton
County: Tipton
EFO Name: Memphis
Issuance Date: 6/1/04
Expiration Date: 3/30/09
Receiving Stream(s): Mile 1.1 of an unnamed tributary to mile 0.8 of another unnamed tributary to Myron Creek at mile 1.6
HUC-12: 080102080801
Effluent Summary: Treated domestic wastewater from Outfall 001
Treatment system: Lagoon system

Segment	TN08010208002_0400
Name	Myron Creek
Size	11.8
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 6-15. Stream Segment Information for Brighton School.

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	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
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	6.5	SU	DMin Conc	2/Week	Grab	Effluent

Table 6-16. Permit Limits for Brighton School.

Comments:
None.

TN0020982 Covington STP

Discharger rating: Major
City: Covington
County: Tipton
EFO Name: Memphis
Issuance Date: 5/1/05
Expiration Date: 3/31/09
Receiving Stream(s): Hatchie River at mile 35.2
HUC-12: 080102080603
Effluent Summary: Treated municipal wastewater from Outfall 001
Treatment system: Waste Activated Sludge (WAS) to aerobic digester to thickener to land application

Segment	TN08010208001_2000
Name	Hatchie River
Size	88.8
Unit	Miles
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 6-17. Stream Segment Information for Covington 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		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	906	lb/day	MAvg Load	3/Week	Composite	Effluent
BOD5	All Year	1208	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)
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)
IC25 7day Ceriodaphnia dubia	All Year	1.8	Percent	DMin Conc	See Permit	Composite	Effluent
IC25 7day Fathead Minnows	All Year	1.8	Percent	DMin Conc	See Permit	Composite	Effluent
Overflow Use Occurrences	All Year		Occurrences/Month	MAvg Load	Continuous	Visual	Wet Weather
Overflow Use Occurrences	All Year		Occurrences/Month	MAvg Load	Continuous	Visual	Non Wet Weather
Settleable Solids	All Year	1	mL/L	DMax Conc	Weekdays	Grab	Effluent
TRC	All Year	0.97	mg/L	DMax Conc	Weekdays	Grab	Effluent
TSS	All Year	45	mg/L	DMax Conc	3/Week	Composite	Effluent
TSS	All Year	1208	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	906	lb/day	MAvg 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 6-18. Permit Limits for Covington STP.

Compliance History:
The following numbers of exceedences were noted in PCS:

2 Biological Oxygen Demand
2 Settleable Solids
5 Total Chlorine
3 Fecal coliform
1 Total Suspended Solids
1 Escherichia coli

Comments:
8/30/07 Compliance Evaluation Inspection: The overall appearance of the treatment facility is good. The equipment is well maintained and the grounds are well kept. All the influent and sludge return pumps are operable. At the time of the inspection, one of the three screw influent pumps was in operation. The overflow weirs from the clarifiers were clean. They are cleaned weekly to prevent algae and solids accumulation. Testing of the emergency generator is performed on a routine schedule. The Covington STP had no exceedences of its permit limits for the period January 2006 through December 2006. The chlorination system was working properly and the housing was neat and clean. BOD composite samples are collected before chlorination to avoid seeding the sample. The effluent in the discharge ditch was clear. The flow at the discharge to the unnamed tributary was 1.9 MGD. The odor at the plant was minimal and the sign was in place at the point of discharge at the Hatchie River.

TN0058092 Drummonds School

Discharger rating: Minor
City: Drummonds
County: Tipton
EFO Name: Memphis
Issuance Date: 6/1/04
Expiration Date: 4/30/09
Receiving Stream(s): Hurricane Creek at mile 10.4
HUC-12: 080102080802
Effluent Summary: Treated domestic wastewater from Outfall 001
Treatment system: Lagoon system

Segment	TN08010208002_0800
Name	Hurricane Creek
Size	26.3
Unit	Miles
First Year on 303(d) List	-
Designated Uses	Irrigation (Not Assessed), Livestock Watering and Wildlife (Not Assessed), Recreation (Not Assessed), Fish and Aquatic Life (Not Assessed)
Causes	N/A
Sources	N/A

Table 6-19. Stream Segment Information for Drummonds School.

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	25	mg/L	DMax Conc	2/Month	Grab	Effluent
CBOD5	All Year	15	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
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	6.5	SU	DMin Conc	2/Week	Grab	Effluent

Table 6-20. Permit Limits for Drummonds School.

Comments:
None.

6.4.B. Industrial Permits

TN0026565 Siegel-Robert Automotive Ripley, North

Discharger rating: Major
City: Ripley
County: Lauderdale
EFO Name: Jackson
Issuance Date: 9/1/06
Expiration Date: 8/31/09
Receiving Stream(s): Unnamed tributary at mile 0.6 to the old channel of Nelson Creek at mile 1.0 to Cane Creek at mile 16.5
HUC-12: 080102080701
Effluent Summary: Treated industrial wastewater (via Internal Monitoring Point 01A), noncontact cooling water and storm water runoff from Outfall 001, and storm water runoff from Outfall SW1
Treatment system: Chrome evaporation, chrome reduction, mixing, neutralization, chemical precipitation, flocculation, sedimentation, activated sludge, sedimentation, and final aeration.

Segment	TN08010208034_0200
Name	Nelson Creek
Size	10.6
Unit	Miles
First Year on 303(d) List	2006
Designated Uses	Livestock Watering and Wildlife (Supporting), Fish and Aquatic Life (Non-Supporting), Recreation (Supporting), Irrigation (Supporting)
Causes	Physical substrate habitat alterations
Sources	Channelization

Table 6-21. Stream Segment Information for Siegel-Robert Automotive Ripley, North.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
Ag (T)	All Year	0.017	mg/L	DMax Conc	Monthly	Composite	Effluent
Ag (T)	All Year	0.017	mg/L	MAvg Conc	Monthly	Composite	Effluent
Ammonia as N (Total)	Summer	1	mg/L	DMax Conc	Weekdays	Grab	Effluent
Ammonia as N (Total)	Summer	0.5	mg/L	MAvg Conc	Weekdays	Grab	Effluent
Ammonia as N (Total)	Winter	2	mg/L	DMax Conc	Weekdays	Grab	Effluent
Ammonia as N (Total)	Winter	1	mg/L	MAvg Conc	Weekdays	Grab	Effluent
CBOD5	Summer	20	mg/L	DMax Conc	3/Week	Grab	Effluent
CBOD5	Summer	10	mg/L	MAvg Conc	3/Week	Grab	Effluent
CBOD5	Winter	25	mg/L	DMax Conc	3/Week	Grab	Effluent
CBOD5	Winter	15	mg/L	MAvg Conc	3/Week	Grab	Effluent
Cd (T)	All Year	0.008	mg/L	DMax Conc	Monthly	Composite	Effluent
Cd (T)	All Year	0.008	mg/L	MAvg Conc	Monthly	Composite	Effluent
Chromium, Hexavalent (ug/L as Cr)	All Year	0.016	mg/L	DMax Conc	2/Month	Composite	Effluent
Chromium, Hexavalent (ug/L as Cr)	All Year	0.011	mg/L	MAvg Conc	2/Month	Composite	Effluent
Cr (T)	All Year	2.8	mg/L	DMax Conc	Monthly	Composite	Effluent
Cr (T)	All Year	0.1	mg/L	MAvg Conc	Monthly	Composite	Effluent
Cu (T)	All Year	0.198	mg/L	DMax Conc	2/Week	Composite	Effluent
Cu (T)	All Year	0.122	mg/L	MAvg Conc	2/Week	Composite	Effluent
Cyanide, Total (CN-)	All Year	0.022	mg/L	DMax Conc	Monthly	Grab	Effluent
Cyanide, Total (CN-)	All Year	0.005	mg/L	MAvg Conc	Monthly	Grab	Effluent
D.O.	All Year	6	mg/L	DMin Conc	Weekdays	Grab	Effluent
Flow	All Year		MGD	DMax Load	Daily	Continuous	Effluent
Flow	All Year		MGD	MAvg Load	Daily	Continuous	Effluent
Hardness Total (as CaCO3)	All Year	250	mg/L	DMin Conc	Daily	Grab	Effluent
IC25 7day Ceriodaphnia Dubia	All Year	100	Percent	DMin Conc	Semi-annually	Composite	Effluent
IC25 7day Fathead Minnows	All Year	100	Percent	DMin Conc	Semi-annually	Composite	Effluent
Ni (T)	All Year	0.6	mg/L	DMax Conc	2/Month	Composite	Effluent
Ni (T)	All Year	0.34	mg/L	MAvg Conc	2/Month	Composite	Effluent
Nitrite + Nitrate Total (as N)	All Year		mg/L	DMax Conc	Weekdays	Composite	Effluent
Nitrite + Nitrate Total (as N)	All Year		mg/L	MAvg Conc	Weekdays	Composite	Effluent
Nitrite + Nitrate Total (as N)	All Year	1.28	mg/L	DMax Conc	Weekdays	Composite	Effluent
Nitrite + Nitrate Total (as N)	All Year		mg/L	MAvg Conc	Weekdays	Composite	Effluent
Oil and Grease (Freon EM)	All Year	31.6	mg/L	DMax Conc	Monthly	Grab	Effluent
Oil and Grease (Freon EM)	All Year	17.2	mg/L	MAvg Conc	Monthly	Grab	Effluent
Pb (T)	All Year	0.262	mg/L	DMax Conc	Monthly	Composite	Effluent
Pb (T)	All Year	0.037	mg/L	MAvg Conc	Monthly	Composite	Effluent
Se (T)	All Year	0.01	mg/L	DMax Conc	Monthly	Composite	Effluent
Se (T)	All Year	0.005	mg/L	MAvg Conc	Monthly	Composite	Effluent
TRC	All Year	0.019	mg/L	DMax Conc	Weekdays	Grab	Effluent
TRC	All Year	0.011	mg/L	MAvg Conc	Weekdays	Grab	Effluent
TSS	All Year	48.9	mg/L	DMax Conc	Weekdays	Composite	Effluent
TSS	All Year	30.4	mg/L	MAvg Conc	Weekdays	Composite	Effluent

Table 6-23a.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
Temperature (°C)	All Year		°C	DMax Conc	2/Month	Grab	Effluent
Zn (T)	All Year	0.254	mg/L	DMax Conc	Monthly	Composite	Effluent
Zn (T)	All Year	0.254	mg/L	MAvg Conc	Monthly	Composite	Effluent
pH	All Year	9	SU	DMax Conc	Weekdays	Grab	Effluent
pH	All Year	6.5	SU	DMin Conc	Weekdays	Grab	Effluent

Table 6-23b.

Tables 6-23a-b. Permit Limits for Siegel-Robert Automotive Ripley, North.

Compliance History:
The following numbers of exceedences were noted in PCS:

2 Ammonia
1 Selenium
1 Total Suspended Solids

Comments:
Injection molding, decorative chrome plating, painting and assembly of plastic parts for automotive industry; modification to extend compliance schedule due to problems with sanitary sewer connection project.

TN0001180 Siegel-Robert Automotive Ripley, South

Discharger rating: Major
City: Ripley
County: Lauderdale
EFO Name: Jackson
Issuance Date: 9/1/06
Expiration Date: 8/31/09
Receiving Stream(s): Unnamed tributary at approximate mile 0.6 to Hyde Creek at mile 2.3 to Cane Creek at mile 13.9 (Outfalls 001, SW1 and SW2)
HUC-12: 080102080701
Effluent Summary: Treated industrial wastewater (via Internal Monitoring Point 01A), noncontact cooling water and storm water runoff from Outfall 001, and storm water runoff from Outfalls SW1 and SW2
Treatment system: Chrome evaporation, chrome reduction, mixing, carbon adsorption, neutralization, chemical precipitation, flocculation, sedimentation, activated sludge, sedimentation, and final aeration.

Segment	TN08010208034_0310
Name	Unnamed Trib to Hyde Creek
Size	1.2
Unit	Miles
First Year on 303(d) List	1990
Designated Uses	Fish and Aquatic Life (Non-Supporting), Recreation (Not Assessed), Irrigation (Supporting), Livestock Watering and Wildlife (Supporting)
Causes	Nitrates
Sources	Industrial Point Source Discharge

Table 6-24. Stream Segment Information for Siegel-Robert Automotive Ripley, South.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
Ag (T)	All Year	0.017	mg/L	DMax Conc	Monthly	Composite	Effluent
Ag (T)	All Year	0.017	mg/L	MAvg Conc	Monthly	Composite	Effluent
Ammonia as N (Total)	Summer	1	mg/L	DMax Conc	Weekdays	Grab	Effluent
Ammonia as N (Total)	Summer	0.5	mg/L	MAvg Conc	Weekdays	Grab	Effluent
Ammonia as N (Total)	Winter	2	mg/L	DMax Conc	Weekdays	Grab	Effluent
Ammonia as N (Total)	Winter	1	mg/L	MAvg Conc	Weekdays	Grab	Effluent
CBOD5	Summer	20	mg/L	DMax Conc	3/Week	Grab	Effluent
CBOD5	Summer	10	mg/L	MAvg Conc	3/Week	Grab	Effluent
CBOD5	Winter	25	mg/L	DMax Conc	3/Week	Grab	Effluent
CBOD5	Winter	15	mg/L	MAvg Conc	3/Week	Grab	Effluent
Cd (T)	All Year	0.008	mg/L	DMax Conc	Monthly	Composite	Effluent
Cd (T)	All Year	0.008	mg/L	MAvg Conc	Monthly	Composite	Effluent
Chromium, Hexavalent (ug/L as Cr)	All Year	0.016	mg/L	DMax Conc	2/Month	Composite	Effluent
Chromium, Hexavalent (ug/L as Cr)	All Year	0.011	mg/L	MAvg Conc	2/Month	Composite	Effluent
Cr (T)	All Year	2.8	mg/L	DMax Conc	Monthly	Composite	Effluent
Cr (T)	All Year	0.1	mg/L	MAvg Conc	Monthly	Composite	Effluent
Cu (T)	All Year	0.239	mg/L	DMax Conc	2/Week	Composite	Effluent
Cu (T)	All Year	0.147	mg/L	MAvg Conc	2/Week	Composite	Effluent
Cyanide, Total (CN-)	All Year	0.022	mg/L	DMax Conc	Monthly	Grab	Effluent
Cyanide, Total (CN-)	All Year	0.005	mg/L	MAvg Conc	Monthly	Grab	Effluent
D.O.	All Year	6	mg/L	DMin Conc	Weekdays	Grab	Effluent
Flow	All Year		MGD	DMax Load	Daily	Continuous	Effluent
Flow	All Year		MGD	MAvg Load	Daily	Continuous	Effluent
Hardness Total (as CaCO3)	All Year	250	mg/L	DMin Conc	Daily	Grab	Effluent
IC25 7day Ceriodaphnia Dubia	All Year	100	Percent	DMin Conc	Semi-annually	Composite	Effluent
IC25 7day Fathead Minnows	All Year	100	Percent	DMin Conc	Semi-annually	Composite	Effluent
Ni (T)	All Year	0.6	mg/L	DMax Conc	2/Month	Composite	Effluent
Ni (T)	All Year	0.34	mg/L	MAvg Conc	2/Month	Composite	Effluent
Nitrite + Nitrate Total (as N)	All Year		mg/L	DMax Conc	Weekdays	Composite	Effluent
Nitrite + Nitrate Total (as N)	All Year		mg/L	MAvg Conc	Weekdays	Composite	Effluent
Nitrite + Nitrate Total (as N)	All Year	3.93	mg/L	DMax Conc	Weekdays	Composite	Effluent
Nitrite + Nitrate Total (as N)	All Year		mg/L	MAvg Conc	Weekdays	Composite	Effluent
Oil and Grease (Freon EM)	All Year	24	mg/L	DMax Conc	Monthly	Grab	Effluent
Oil and Grease (Freon EM)	All Year	13.9	mg/L	MAvg Conc	Monthly	Grab	Effluent
Pb (T)	All Year	0.243	mg/L	DMax Conc	Monthly	Composite	Effluent
Pb (T)	All Year	0.037	mg/L	MAvg Conc	Monthly	Composite	Effluent
Se (T)	All Year	0.01	mg/L	DMax Conc	Monthly	Composite	Effluent
Se (T)	All Year	0.005	mg/L	MAvg Conc	Monthly	Composite	Effluent
TRC	All Year	0.019	mg/L	DMax Conc	Weekdays	Grab	Effluent
TRC	All Year	0.011	mg/L	MAvg Conc	Weekdays	Grab	Effluent
TSS	All Year	44.9	mg/L	DMax Conc	2/Month	Composite	Effluent
TSS	All Year	30.2	mg/L	MAvg Conc	2/Month	Composite	Effluent

Table 6-25a.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
Temperature (°C)	All Year		°C	DMax Conc	2/Month	Grab	Effluent
Zn (T)	All Year	0.254	mg/L	DMax Conc	Monthly	Composite	Effluent
Zn (T)	All Year	0.254	mg/L	MAvg Conc	Monthly	Composite	Effluent
pH	All Year	9	SU	DMax Conc	Weekdays	Grab	Effluent
pH	All Year	6.5	SU	DMin Conc	Weekdays	Grab	Effluent
pH	All Year	6.5	SU	DMin Conc	Weekdays	Grab	Effluent

Table 6-25b.

Tables 6-25a-b. Permit Limits for Siegel-Robert Automotive Ripley, South.

Comments:
Injection molding, decorative chrome plating, painting and assembly of plastic and zinc diecast automotive parts; modification to extend compliance schedule due to problems with sanitary sewer connection project.

TN0000205 Kilgore Flares Company, LLC.

Discharger rating: Minor
City: Toone
County: Hardeman
EFO Name: Jackson
Issuance Date: 11/1/04
Expiration Date: 9/29/09
Receiving Stream(s): Pugh Creek at mile 1.3 (Outfalls 001 and 002)
HUC-12: 080102080109
Effluent Summary: Sanitary wastewater, wash-down water and process wastewater from Outfall 001 and non-contact cooling water from Outfall 002
Treatment system: Lagoon

Segment	TN08010208066_0100
Name	Pugh Creek
Size	4.8
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 6-26. Stream Segment Information for Kilgore Flares Company, LLC.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
Ammonia as N (Total)	All Year	2	mg/L	DMax Conc	2/Month	Grab	Effluent
Ammonia as N (Total)	All Year	1	mg/L	MAvg Conc	2/Month	Grab	Effluent
CBOD5	All Year	30	mg/L	DMax Conc	2/Month	Grab	Effluent
CBOD5	All Year	15	mg/L	MAvg Conc	2/Month	Grab	Effluent
D.O.	All Year	6	mg/L	DMin Conc	2/Month	Grab	Effluent
E. coli	All Year	126	#/100mL	MAvg Conc	2/Month	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	2/Month	Instantaneous	Effluent
Flow	All Year		MGD	MAvg Load	2/Month	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	15	mg/L	MAvg Conc	2/Month	Grab	Effluent
TSS	All Year	40	mg/L	DMax Conc	2/Month	Grab	Effluent
TSS	All Year	40	mg/L	MAvg Conc	2/Month	Grab	Effluent
pH	All Year	9	SU	DMax Conc	2/Month	Grab	Effluent
pH	All Year	6.5	SU	DMin Conc	2/Month	Grab	Effluent

Table 6-27. Permit Limits for Kilgore Flares Company, LLC.

Compliance History:
The following numbers of exceedences were noted in PCS:

1 pH

Comments:
Production of pyrotechnic distress signals (emergency flares), location markers, decoy flares, etc.

3/5/07 Compliance Evaluation Inspection-Comments from report: It is apparent that much has been done at the main facility to control the potential for runoff from the various points where hazardous materials are stored. During discussion and tour, the addition of a new production area at the main plant was discussed. The necessary paperwork is being prepared to obtain coverage under the general NPDES permit for construction storm water. It was further stated that the new line will be totally self-contained, much like the phosphorus area, and it should not contribute to the contamination of any storm water that falls in this area. The measures that have been taken to stabilize the burning ground area and control the runoff from the various burning pans, such as terraces and berms, appear to have been successful. Some black residue was noted in the immediate vicinity of the burning pans; however, any of this residue that has runoff from these areas appears to have been contained in the various berms and terraces. The main storm water pond appeared to be clear of this black residue. The diligent efforts to clean up the ash and residue around the pans and to remove any residue collected behind the terraces and berms should continue.

TN0075906 TVA Lagoon Creek Combustion Turbines

Discharger rating: Minor
City: Brownsville
County: Haywood
EFO Name: Jackson
Issuance Date: 11/1/04
Expiration Date: 9/29/09
Receiving Stream(s): Wet weather conveyance to unnamed tributary at mile 1.8 to Lagoon Creek at mile 10.2
HUC-12: 080102080602
Effluent Summary: Off-spec rinse water and trailer drain and demineralizer storage water overflow drain from Outfall 001
Treatment system: None

Segment	TN08010208033_0999
Name	Misc Tribs to Lagoon Creek
Size	52.4
Unit	Miles
First Year on 303(d) List	-
Designated Uses	Livestock Watering and Wildlife (Not Assessed), Irrigation (Not Assessed), Fish and Aquatic Life (Not Assessed), Recreation (Not Assessed)
Causes	N/A
Sources	N/A

Table 6-28. Stream Segment Information for TVA Lagoon Creek Combustion Turbines.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
48hr LC50: Ceriodaphnia dubia	All Year	100	Percent	DMin Conc	Annually	Grab	Effluent
48hr LC50: Fathead Minnows	All Year	100	Percent	DMin Conc	Annually	Grab	Effluent
Floating Solids Or Visible Foam-Visual	All Year		YES=1 NO=0	DMax Conc	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	6.5	SU	DMin Conc	Monthly	Grab	Effluent

Table 6-29. Permit Limits for TVA Lagoon Creek Combustion Turbines.

Comments:
8 simple-cycle combustion turbines (12 in 2002) burning natural gas or No. 2 fuel, 880 MW of electricity in 2001, and 1,390 MW in 2002

12/7/05 Compliance Evaluation Inspection:
No significant problems noted. Failed biomonitoring in March 2005 when they sampled from end of pipe. They were allowed to resample further downstream in the ditch before it left the property, which allowed some mineral uptake. Retest April 2005 passed. Flows for 2005 are about 20 times higher than on permit application.

TN0074403 Conopco, Inc. d/b/a Slim Fast Foods Company

Discharger rating: Minor
City: Covington
County: Tipton
EFO Name: Memphis
Issuance Date: 2/1/07
Expiration Date: 1/30/10
Receiving Stream(s): Wet weather conveyance into wetlands to unnamed tributary to the Hatchie River at mile 34.0
HUC-12: 080102080603
Effluent Summary: Noncontact cooling water through Outfall 001
Treatment system: None

Segment	TN08010208001_0999
Name	Misc Tribs to Hatchie River
Size	319.3
Unit	Miles
First Year on 303(d) List	-
Designated Uses	Recreation (Not Assessed), Irrigation (Not Assessed), Livestock Watering and Wildlife (Not Assessed), Fish and Aquatic Life (Not Assessed)
Causes	N/A
Sources	N/A

Table 6-30. Stream Segment Information for Conopco, Inc. d/b/a Slim Fast Foods Company.

PARAMETER	SEASON	LIMIT	UNITS	SAMPLE DESIGNATOR	MONITORING FREQUENCY	SAMPLE TYPE	MONITORING LOCATION
Fe (T)	All Year		mg/L	DMax Conc	Monthly	Grab	Effluent
Flow	All Year		MGD	DMax Load	Bi-monthly	Instantaneous	Effluent
Flow	All Year		MGD	MAvg Load	Bi-monthly	Instantaneous	Effluent
IC25 7day Ceriodaphnia dubia	All Year	100	Percent	DMin Conc	Annually	Composite	Effluent
IC25 7day Fathead Minnows	All Year	100	Percent	DMin Conc	Annually	Composite	Effluent
Oil and Grease (Freon EM)	All Year	15	mg/L	DMax Conc	Bi-monthly	Grab	Effluent
Oil and Grease (Freon EM)	All Year	10	mg/L	MAvg Conc	Bi-monthly	Grab	Effluent
TRC	All Year		mg/L	DMax Conc	Monthly	Grab	Effluent
TRC	All Year		mg/L	MAvg Conc	Monthly	Grab	Effluent
Temperature (°C)	All Year		°C	MAvg Conc	Bi-monthly	Grab	Effluent
Temperature Diff. Downstrm & Upstrm (°C)	All Year		°C/Hour	MAvg Conc	Bi-monthly	Grab	Effluent
pH	All Year	9	SU	DMax Conc	Bi-monthly	Grab	Effluent
pH	All Year	6	SU	DMin Conc	Bi-monthly	Grab	Effluent

Table 6-31. Permit Limits for Conopco, Inc. d/b/a Slim Fast Foods Company.

Compliance History:
The following numbers of exceedences were noted in PCS:

1 pH

Comments:
Modification of monitoring frequency - Manufacture and canning of diet ready-to-drink products.

TN0000655 Turner Holdings, LLC-Covington

Discharger rating: Minor
City: Covington
County: Tipton
EFO Name: Memphis
Issuance Date: 7/1/05
Expiration Date: 5/31/09
Receiving Stream(s): Unnamed tributary to Town Creek at mile 4.3
HUC-12: 080102080604
Effluent Summary: Non-contact cooling water through Outfall 001
Treatment system: None

Segment	TN08010208896_0999
Name	Misc Tribs to Town Creek
Size	20.9
Unit	Miles
First Year on 303(d) List	-
Designated Uses	Recreation (Not Assessed), Irrigation (Not Assessed), Fish and Aquatic Life (Not Assessed), Livestock Watering and Wildlife (Not Assessed)
Causes	N/A
Sources	N/A

Table 6-32. Stream Segment Information for Turner Holdings, LLC-Covington.

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

Table 6-33. Permit Limits for Turner Holdings, LLC-Covington.

Comments:
Ice Cream and Frozen Desserts

APPENDIX II

ID	NAME	HAZARD	ID	NAME	HAZARD
127002	Hico Creek	2	357042	Oakland Acres	L
127004	Tignor's Lake	L	357043	Daniels	0
127005	King	0	357044	No. Fork Forked Deer	L
247012	Denson Lake	3	357045	Bethea	3
247021	Scenic Lake	3	357046	Ferry	L
247025	Johnson	L	387001	Hugh Hodges	B
247031	Sand Creek #1	L	387004	Duffy	L
247040	Mustin #1	L	387005	Freels	F
247049	Rattle & Snap #18	L	387006	New Lake	F
357001	Hayes	2	387007	Little Lake	L
357002	Porters Creek #6	2	387014	Melton	L
357003	Cub Creek #3	3	387016	Cannon Lake #3	L
357005	Indian Creek #8	3	387017	Jernigan Lake	L
357006	Porters Creek #16	L	387018	Massey	L
357007	Landis	2	387019	Stokely	F
357008	Porters Creek #3	3	387022	Pennel	0
357009	Porters Creek #5	3	387027	Pearson Creek	3
357012	Indian Creek #7	2	497001	Tiger Tail	2
357013	Roger's Springs	2	497002	Smith	1
357014	Whiteville Lake	L	497003	Cane Creek # 3	2
357015	Ben Henry	3	497004	Cane Creek # 9	3
357016	Porters Creek #9	3	497005	Cane Creek #14a	1
357017	Porters Creek #4	3	497006	Cane Creek # 22	3
357018	Cub Creek #1	2	497007	Cane Creek #19	S
357019	Pioneer #5	2	497008	Irvin	H
357020	Cub Creek #2a	2	497009	Fort Pillow	L
357022	Indian Creek #4	2	497010	Smith	1
357024	Porters Creek #8	2	497011	Dunavant	2
357025	Grand Valley #1	2	497015	Pressnell	L
357026	Grand Valley #2	2	497016	Owen	L
357027	Muddy Creek #21	3	577015	Fern Lake	0
357028	Spring	1	577050	Take It Easy	L
357029	Candlewood	1	577052	Parks	L
357030	Woodrun	1	847002	Pristine Lake	B
357034	Cub Creek Tree Farm	S	847003	Gin House Lake	3
357035	Lake Hardeman	L	847004	Glenview Lake	0
357037	Sammons	3	847005	Witherington	S

Table A2-1a.

ID	NAME	HAZARD	ID	NAME	HAZARD
357038	Spring Creek Ranch	3	847010	Reed Lake #2	H
357039	Spring Creek Ranch	2	847013	Ray's Lake	B
357040	Dupont Retention Basin	H	847014	Demery's Lake	L
357041	TN Consolidated Coal	L	847016	Lake Ellen	L
847018	Diamond Grove	2			

Table A2-1b

Table A2-1a-b. Inventoried Dams in the Tennessee Portion of the Lower Hatchie River Watershed. *Hazard Codes: (H, 1), High; (S, 2), Significant; (L, 3), Low; B, Breached; 0, Too small to regulate; F, Federally owned or operated. TDEC only regulates dams indicated by a numeric hazard score.*

LAND COVER/LAND USE	ACRES	% OF WATERSHED
Bare Rock/Sand/Clay	160	0.0
Deciduous Forest	212,946	23.0
Developed Open Space	38,209	4.1
Emergent Herbaceous Wetland	3,562	0.4
Evergreen Forest	19,331	2.1
Grassland/Herbaceous	884	0.1
High Intensity Development	666	0.1
Low Intensity Development	11,783	1.3
Medium Intensity Development	2,189	0.2
Mixed Forest	22,464	2.4
Open Water	8,438	0.9
Pasture/Hay	88,461	9.6
Row Crops	325,365	35.2
Shrub/Scrub	75,686	8.2
Woody Wetlands	113,960	12.3
Total	**924,105**	**100.0**

Table A2-2. Land Use Distribution in the Tennessee Portion of the Lower Hatchie River 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)	
Southeastern Plains and Hills (65e)	Blunt Creek (65E04)	TWV-KY Lake	06040005
	Griffen Creek (65E06)	NF Forked Deer	08010204
	Harris Creek (65E08)	SF Forked Deer	08010205
	Marshall Creek (65E10)	Hatchie River	08010208
	West Fork Spring Creek (65E11)	Hatchie River	08010208
Northern Mississippi Alluvial Plain (73a)	Cold Creek (73A01)	Mississippi River	08010100
	Middle Fork Forked Deer River (73A02)	MF Forked Deer	08010206
	Cold Creek (73A03)	Mississippi River	08010100
	Bayou du Chien (73A04)	NF Obion River	08010202
Bluff Hills (74a)	Sugar Creek (74A06)	Mississippi River	08010100
	Paw Paw Creek (74A08)	NF Obion River	08010202
Loess Plains (74b)	Terrapin Creek (74B01)	NF Obion River	08010202
	Powell Creek (74B04)	NF Obion River	08010202
	Wolf River (74B12)	Wolf River	08010210

Table A2-3. Ecoregion Monitoring Sites in Ecoregions 65e, 73a, 74a, and 74b.

CODE	NAME	AGENCY	AGENCY ID
8	TDEC/DNA Grays Creek Site	TDEC/DNA	S.USTNHP 799
94	TDEC/DNA Clover Lakes Site	TDEC/DNA	S.USSERO1 1462
126	TDEC/DNA Hatchie National Wildlife Refuge Site	TDEC/DNA	M.USTNHP 227
136	TDEC/DNA Hatchie State Scenic River Site	TDEC/DNA	
334	TDOT SR 19 To SR 76 Mitigation/Permit Site	TDOT	
343	TDOT SR 15 Mitigation/Permit Site	TDOT	
344	TDOT SR 15 Mitigation/Permit Site	TDOT	
345	TDOT SR 15 Mitigation/Permit Site	TDOT	
346	TDOT SR 15 Mitigation/Permit Site	TDOT	
347	TDOT SR 15 Mitigation/Permit Site	TDOT	
348	TDOT SR 15 Mitigation/Permit Site	TDOT	
349	TDOT SR 15 Mitigation/Permit Site	TDOT	
350	TDOT SR 15 Mitigation/Permit Site	TDOT	
378	TDOT Bishop Road Mitigation Site	TDOT	
466	TDEC/WPC Hatchie River WPC Permit/Mitigation Site	TDEC/WPC	
866	USFWS Larry S. Guinn WRP Site	USFWS	Tract 959, Farm 1836
869	USFWS Monty Mcwilliams WRP Site	USFWS	Tract 1046, Farm 2384
872	USFWS Alan Moss WRP Site	USFWS	Tract 797, Farm 1964
886	USFWS David Hillhouse WRP Site	USFWS	Tract 1104, Farm 1691
887	USFWS W. Whitehurst WRP Site	USFWS	Tract 7172, Farm 2951
904	USFWS Douglas Howell WRP Site	USFWS	Tract 1194, Farm 2951
905	USFWS Cypress Lakes WRP Site	USFWS	Tract 7685, Farm 2909
906	USFWS Dunavant TN Properties WRP Site	USFWS	Tract 7686, Farm 2910
907	USFWS Donald J. Stalling FMHA Site	USFWS	
1133	Brad Bingham Thesis: Site 1 Turnpike Quad	USFWS	Bingham-Turnpike.1
1134	Brad Bingham Thesis: Site 2 Turnpike Quad	USFWS	Bingham-Turnpike 2
1135	Brad Bingham Thesis: Site 3 Turnpike Quad	USFWS	Bingham-Turnpike.3
1136	Brad Bingham Thesis: Site 4 Turnpike Quad	USFWS	Bingham-Turnpike.4
1137	Brad Bingham Thesis: Site 5 Turnpike Quad	USFWS	Bingham-Turnpike.5
1138	Brad Bingham Thesis: Site 6 Turnpike Quad	USFWS	Bingham-Turnpike.6
1139	Brad Bingham Thesis: Site 7 Turnpike Quad	USFWS	Bingham-Turnpike.7
1140	Brad Bingham Thesis: Site 8 Turnpike Quad	USFWS	Bingham-Turnpike.8
1141	Brad Bingham Thesis: Site 9 Turnpike Quad	USFWS	Bingham-Turnpike.9
1142	Brad Bingham Thesis: Site 10 Turnpike Quad	USFWS	Bingham-Turnpike.10
1143	Brad Bingham Thesis: Site 11 Turnpike Quad	USFWS	Bingham-Turnpike.11
1144	Brad Bingham Thesis: Site 12 Turnpike Quad	USFWS	Bingham-Turnpike.12
1145	Brad Bingham Thesis: Site 13 Turnpike Quad	USFWS	Bingham-Turnpike.13
1146	Brad Bingham Thesis: Site 14 Turnpike Quad	USFWS	Bingham-Turnpike.14
1147	Brad Bingham Thesis: Site 15 Turnpike Quad	USFWS	Bingham-Turnpike.15
1148	Brad Bingham Thesis: Site 16 Turnpike Quad	USFWS	Bingham-Turnpike.16
1149	Brad Bingham Thesis: Site 17 Turnpike Quad	USFWS	Bingham-Turnpike.17
1150	Brad Bingham Thesis: Site 18 Turnpike Quad	USFWS	Bingham-Turnpike.18
1151	Brad Bingham Thesis: Site 19 Turnpike Quad	USFWS	Bingham-Turnpike.19

Table A2-4a.

CODE	NAME	AGENCY	AGENCY ID
1152	Brad Bingham Thesis: Site 20 Turnpike Quad	USFWS	Bingham-Turnpike.20
1153	Brad Bingham Thesis: Site 21 Turnpike Quad	USFWS	Bingham-Turnpike.21
1154	Brad Bingham Thesis: Site 22 Turnpike Quad	USFWS	Bingham-Turnpike.22
1155	Brad Bingham Thesis: Site 23 Turnpike Quad	USFWS	Bingham-Turnpike.23
1156	Brad Bingham Thesis: Site 24 Turnpike Quad	USFWS	Bingham-Turnpike.24
1157	Brad Bingham Thesis: Site 25 Turnpike Quad	USFWS	Bingham-Turnpike.25
1158	Brad Bingham Thesis: Site 26 Turnpike Quad	USFWS	Bingham-Turnpike.26
1159	Brad Bingham Thesis: Site 27 Turnpike Quad	USFWS	Bingham-Turnpike.27
1160	Brad Bingham Thesis: Site 28 Turnpike Quad	USFWS	Bingham-Turnpike.28
1161	Brad Bingham Thesis: Site 29 Turnpike Quad	USFWS	Bingham-Turnpike.29
1162	Brad Bingham Thesis: Site 30 Turnpike Quad	USFWS	Bingham-Turnpike.30
1163	Brad Bingham Thesis: Site 31 Turnpike Quad	USFWS	Bingham-Turnpike.31
1164	Brad Bingham Thesis: Site 32 Turnpike Quad	USFWS	Bingham-Turnpike.32
1165	Brad Bingham Thesis: Site 33 Turnpike Quad	USFWS	Bingham-Turnpike.33
1166	Brad Bingham Thesis: Site 34 Turnpike Quad	USFWS	Bingham-Turnpike.34
1167	Brad Bingham Thesis: Site 35 Turnpike Quad	USFWS	Bingham-Turnpike.35
1168	Brad Bingham Thesis: Site 36 Turnpike Quad	USFWS	Bingham-Turnpike.36
1169	Brad Bingham Thesis: Site 37 Turnpike Quad	USFWS	Bingham-Turnpike.37
1170	Brad Bingham Thesis: Site 38 Turnpike Quad	USFWS	Bingham-Turnpike.38
1171	Brad Bingham Thesis: Site 39 Turnpike Quad	USFWS	Bingham-Turnpike.39
1172	Brad Bingham Thesis: Site 40 Turnpike Quad	USFWS	Bingham-Turnpike.40
1173	Brad Bingham Thesis: Site 41 Turnpike Quad	USFWS	Bingham-Turnpike.41
1174	Brad Bingham Thesis: Site 42 Turnpike Quad	USFWS	Bingham-Turnpike.42
1175	Brad Bingham Thesis: Site 43 Turnpike Quad	USFWS	Bingham-Turnpike.43
1248	TWRA Pirtle Pond Bottoms Site	TWRA	
1264	USACOE Cane Creek-4 [Td] Site	USACOE-Memphis	
1265	USACOE Cane Creek 95-002 [Tf] Site	USACOE-Memphis	
1266	USACOE Cane Creek/Lateral-3(Tn)-3-Td Site	USACOE-Memphis	
1286	USACOE Hatchie River-4a (Td) Site	USACOE-Memphis	
1287	Usacoe Hatchie River-60 Site	USACOE-Memphis	
1288	USACOE Hatchie River 94-000 [Ts] Site	USACOE-Memphis	
1289	USACOE Hatchie River 94-005 [Ts] Site	USACOE-Memphis	
1290	USACOE Hatchie River 95-008 [Ts] Site	USACOE-Memphis	
1291	USACOE Hatchie River 95-011 [Ts] Site	USACOE-Memphis	
1293	USACOE Hatchie River 96-000 [Td] Site	USACOE-Memphis	
1294	USACOE Hatchie River/Hamer Creek Site	USACOE-Memphis	
1297	USACOE Hyde Creek-1-Td Site	USACOE-Memphis	
1317	USACOE Loosahatchie River 96-003 [Td] Site	USACOE-Memphis	
1344	USACOE Mississippi River/Cold Creek Chute-3 Site	USACOE-Memphis	
1571	USACOE Hatchie River/Porters Creek-59 Site	USACOE-Memphis	
1572	USACOE Hatchie River-60-Td Site	USACOE-Memphis	
1573	USACOE Hatchie River/Poplar Creek-64 9tf0 Site	USACOE-Memphis	
1575	USACOE Spring Creek 95-000 [Tf] Site	USACOE-Memphis	

Table A2-4b.

CODE	NAME	AGENCY	AGENCY ID
1576	USACOE Hatchie River 95-011 (Jts) Site	USACOE-Memphis	
1577	USACOE Short Creek-1 Site	USACOE-Memphis	
1578	USACOE Spring Creek-2 Site	USACOE-Memphis	
1579	USACOE Spring Creek-1 Site	USACOE-Memphis	
1580	USACOE Spring Creek-3 Site	USACOE-Memphis	
1581	USACOE Spring Creek-5 Site	USACOE-Memphis	
1582	USACOE Piney Creek-1 Site	USACOE-Memphis	
1583	USACOE Hatchie River-20 Site	USACOE-Memphis	
1584	USACOE Hatchie River-22 Site	USACOE-Memphis	
1585	USACOE Hatchie River-23 Site	USACOE-Memphis	
1586	USACOE Hatchie River-24 Site	USACOE-Memphis	
1587	USACOE Hatchie River-25 Site	USACOE-Memphis	
1588	USACOE Hatchie River-27 Site	USACOE-Memphis	
1589	USACOE Hatchie River-31 Site	USACOE-Memphis	
1590	USACOE Hatchie River-33 Site	USACOE-Memphis	
1592	USACOE Hatchie River/Spring Creek-39 Site	USACOE-Memphis	
1595	USACOE Hatchie River/Big Muddy Creek-44 Site	USACOE-Memphis	
1596	USACOE Hatchie River-Poplar Creek-47 Site	USACOE-Memphis	
1598	USACOE Hatchie River-45 Site	USACOE-Memphis	
1599	USACOE Hatchie River-1 Site	USACOE-Memphis	
1600	USACOE Hatchie River-4 Site	USACOE-Memphis	
1601	USACOE Hatchie River-5 Site	USACOE-Memphis	
1602	USACOE Hatchie River-1 Site	USACOE-Memphis	
1603	USACOE Hatchie River-9 Site	USACOE-Memphis	
1604	USACOE Hatchie River-13 Site	USACOE-Memphis	
1605	USACOE Hatchie River-15 Site	USACOE-Memphis	
1606	USACOE Hatchie River-17 Site	USACOE-Memphis	
1607	USACOE Hatchie River-18 Site	USACOE-Memphis	
1608	USACOE Hatchie River-19 Site	USACOE-Memphis	
1674	USACOE Cypress Creek-1 Site	USACOE-Memphis	
1843	TDEC/WPC Isolated Wetlands S. of Wolf River Permit	TDEC/WPC	96.045
1848	NRCS Site	NRCS State Office	
1858	NRCS Site	NRCS State Office	
1864	NRCS Site	NRCS State Office	
1865	NRCS Site	NRCS State Office	
1867	NRCS Site	NRCS State Office	
1881	TWRA Chickasaw Site	TWRA	
1882	TWRA Chickasaw Site	TWRA	
2029	TWRA Whiteville Lake Site	TWRA	
2031	TWRA Whiteville Lake Site	TWRA	
2062	TWRA Grays Creek Site	TWRA	
2130	TWRA Grays Creek Site	TWRA	
2371	TWRA Loosahatchie River Site	TWRA	

Table A2-4c.

CODE	NAME	AGENCY	AGENCY ID
2588	TWRA Site	TWRA	
2601	TWRA Whiteville Lake Site	TWRA	
2677	NRCS Site	NRCS State Office	
2685	NRCS Site	NRCS State Office	
2774	Chickasaw State Park Golf Course Mitigation Site	USFWS	

Table A2-4d.

Table A2-4a-d. Wetland Sites in the Lower Hatchie River 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; USFWS, US Fish and Wildlife Service; TWRA, Tennessee Wildlife Resources Agency; NRCS, Natural Resources Conservation Service.* ***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)
Bear Creek	TN08010208011_1000	10.7
Big Muddy Creek	TN08010208007_2000	17.2
Cane Creek	TN08010208034_4000	4.6
Carter Branch	TN08010208001_1100	9.4
Clear Creek	TN08010208015_1000	13.9
Clover Creek	TN08010208029_1000	22.1
East Fork Spring Creek	TN08010208019_0400	29.4
Hatchie River	TN08010208001_1000	6.6
Hatchie River	TN08010208001_2000	88.8
Hatchie River	TN08010208001_3000	49.5
Indian Creek	TN08010208002_1000	12.1
Marshall Creek	TN08010208019_0610	10.5
Nelson Creek	TN08010208034_0200	10.6
Piney Creek	TN08010208027_1000	14.9
Pleasant Run	TN08010208017_1000	11.9
Porters Creek	TN08010208024_1000	28.4
Prairie Creek	TN08010208009_0410	4.7
Spring Creek	TN08010208019_1000	24.6
Town Creek	TN08010208896_1000	11.3
West Fork Spring Creek	TN08010208019_0500	36.6

Table A3-1. Streams Fully Supporting Fish and Aquatic Life Designated Use in the Tennessee Portion of the Lower Hatchie River Watershed.

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Bear Creek	TN08010208011_2000	7.9
Big Muddy Creek	TN08010208007_1000	7.5
Cane Creek	TN08010208034_3000	1.0
Cane Creek	TN08010208034_1000	14.1
Cane Creek	TN08010208034_2000	4.5
Carter Creek	TN080102081866_1000	6.4
Cub Creek	TN08010208001_0800	26.4
Cypress Creek	TN08010208032_1000	19.2
East Fork Hurricane Creek	TN08010208002_0810	11.1
Flat Creek	TN08010208056_1000	8.1
Hickory Creek	TN08010208001_1600	25.5
Hyde Creek	TN08010208034_0300	5.7
Lagoon Creek	TN08010208033_1000	19.3
Richland Creek	TN08010208072_1000	11.0
Short Creek	TN08010208001_1300	19.2
Sugar Creek	TN08010208031_1000	10.5
Unnamed Trib to Hyde Creek	TN08010208034_0310	1.2
Wade Creek	TN08010208001_0600	27.4

Table A3-2. Streams Not Supporting Fish and Aquatic Life Designated Use in the Tennessee Portion of the Lower Hatchie River Watershed.

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Adkinson Creek	TN08010208002_0600	4.2
Big Black Creek	TN08010208030_1000	6.7
Big Black Creek	TN08010208030_2000	5.3
Big Ditch Branch	TN08010208009_0300	5.0
Boar Creek	TN08010208001_0100	5.7
Cane Branch	TN08010208002_0500	14.5
Cane Creek	TN08010208073_0100	5.6
Cash Creek	TN08010208019_0520	15.1
Catron Creek	TN08010208007_0200	17.2
Click Branch	TN08010208019_0300	3.0
Copper Springs Creek	TN08010208001_0200	13.9
Cypress Creek	TN08010208029_0400	22.0
Dog Trail Creek	TN08010208001_0610	5.6
Dry Branch	TN08010208001_0400	4.6
Dry Branch	TN08010208001_1200	7.2
Dry Branch	TN08010208019_0511	6.8
Dry Branch	TN08010208024_0500	4.4
Dry Creek	TN08010208029_0100	22.1
Fortune Branch	TN08010208019_0320	4.2

Table A3-3a.

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Gamble Branch	TN08010208001_1500	6.0
Gaylor Creek	TN08010208027_0100	6.2
Grays Creek	TN08010208028_1000	10.0
Greasy Creek	TN08010208027_0400	5.5
Groggins Creek	TN08010208002_0700	10.6
Hatchel Creek	TN08010208002_0300	14.8
Hayes Branch	TN08010208001_0500	11.9
Hodges Creek	TN08010208002_0100	10.0
Hurricane Creek	TN08010208002_0800	26.3
Indian Creek	TN08010208002_2000	8.5
Jeffers Creek	TN08010208062_1000	10.8
Jeter Creek	TN08010208009_0400	8.5
Kellyham Branch	TN08010208019_0310	5.0
Lacy Creek	TN08010208029_0300	10.3
Lane Branch	TN08010208001_0900	9.5
Little Creek	TN08010208011_0100	23.6
Little Muddy Creek	TN08010208946_1000	14.5
Little Piney Creek	TN08010208027_0300	7.0
London Creek	TN08010208009_0100	6.9
Mathis Creek	TN08010208065_1000	11.3
May Branch	TN08010208001_1400	3.3
Mill Creek	TN08010208066_1000	7.5
Misc Tribs to Bear Creek	TN08010208011_0999	32.4
Misc Tribs to Big Black Creek	TN08010208030_0999	14.7
Misc Tribs to Big Muddy Creek	TN08010208007_0999	104.6
Misc Tribs to Cane Creek	TN08010208034_0999	106.6
Misc Tribs to Carter Creek	TN080102081866_0999	6.0
Misc Tribs to Clear Creek	TN08010208015_0999	30.2
Misc Tribs to Clover Creek	TN08010208029_0999	62.8
Misc Tribs to Cypress Creek	TN08010208032_0999	29.2
Misc Tribs to Flat Creek	TN08010208056_0999	18.3
Misc Tribs to Grays Creek	TN08010208028_0999	18.4
Misc Tribs to Hatchie River	TN08010208001_0999	319.3
Misc Tribs to Hyde Creek	TN08010208034_0399	13.3
Misc Tribs to Indian Creek	TN08010208002_0999	53.9
Misc Tribs to Lagoon Creek	TN08010208033_0999	52.4
Misc tribs to Little Muddy Creek	TN08010208946_0999	22.2
Misc Tribs to Mathis Creek	TN08010208065_0999	16.4
Misc Tribs to Mill Creek	TN08010208066_0999	11.7
Misc Tribs to Mississippi River	TN08010100001_0999	38.5
Misc Tribs to Piney Creek	TN08010208027_0999	52.4
Misc Tribs to Poplar Creek	TN08010208009_0999	23.1
Misc Tribs to Porters Creek	TN08010208024_0999	38.2

Table A3-3b.

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Misc Tribs to Richland Creek	TN08010208073_0999	12.4
Misc Tribs to Spring Creek	TN08010208019_0999	34.9
Misc Tribs to Sugar Creek	TN08010208031_0999	10.8
Misc Tribs to Town Creek	TN08010208896_0999	20.9
Moore Branch	TN08010208024_0100	4.5
Morris Branch	TN08010208009_0200	2.5
Muddy Creek	TN08010208001_0310	9.8
Myron Creek	TN08010208002_0400	11.8
Oak Dain Creek	TN08010208015_0100	23.8
Pennycost Creek	TN08010208001_0300	13.9
Pinner Creek	TN08010208001_1610	7.8
Potters Creek	TN08010208017_0100	10.2
Price Branch	TN08010208007_0100	22.3
Pugh Creek	TN08010208029_0500	10.3
Pugh Creek	TN08010208066_0100	4.8
Rice Branch	TN08010208062_0200	10.5
Robertson Branch	TN08010208024_0300	4.6
Rocky Branch	TN08010208065_0100	7.0
Sandy Creek	TN08010208029_0200	21.4
Saulsbury Creek	TN08010208019_0510	23.1
Smart Creek	TN08010208007_0300	11.9
Smith Branch	TN08010208002_0200	7.9
Snow Creek	TN08010208019_0600	7.5
Sour Branch	TN08010208027_0200	2.4
Stewart Branch	TN08010208024_0400	7.9
Sugar Branch	TN08010208031_0100	7.9
Thompson Creek	TN08010208024_0200	7.8
Towhead Branch	TN08010208001_0700	4.0
Turkey Branch	TN08010208030_0100	5.6
Unnamed Trib to Carter Creek	TN080102081866_0100	11.3
Unnamed Trib to Carter Creek	TN080102081866_0200	6.7
Welcome Ussery Creek	TN08010208019_0100	7.3

Table A3-3c.

Table A3-3a-c. Streams Not Assessed for Fish and Aquatic Life Designated Use in the Tennessee Portion of the Lower Hatchie River Watershed.

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Cane Creek	TN08010208034_4000	4.6
Hatchie River	TN08010208001_1000	6.6
Hatchie River	TN08010208001_2000	88.8
Hatchie River	TN08010208001_3000	49.5
Indian Creek	TN08010208002_1000	12.1
Marshall Creek	TN08010208019_0610	10.5
Nelson Creek	TN08010208034_0200	10.6
Porters Creek	TN08010208024_1000	28.4
Town Creek	TN08010208896_1000	11.3
West Fork Spring Creek	TN08010208019_0500	36.6

Table A3-4. Streams Fully Supporting Recreation Designated Use in the Tennessee Portion of the Lower Hatchie River Watershed.

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Cane Creek	TN08010208034_3000	1.0
Cane Creek	TN08010208034_2000	4.5
Flat Creek	TN08010208056_1000	8.1
Hyde Creek	TN08010208034_0300	5.7
Richland Creek	TN08010208073_1000	11.0

Table A3-5. Streams Not Supporting Recreation Designated Use in the Tennessee Portion of the Lower Hatchie River Watershed.

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Adkinson Creek	TN08010208002_0600	4.2
Bear Creek	TN08010208011_1000	10.7
Bear Creek	TN08010208011_2000	7.9
Big Black Creek	TN08010208030_1000	6.7
Big Black Creek	TN08010208030_2000	5.3
Big Ditch Branch	TN08010208009_0300	5.0
Big Muddy Creek	TN08010208007_1000	7.5
Big Muddy Creek	TN08010208007_2000	17.2
Boar Creek	TN08010208001_0100	5.7
Browns Creek	TN08010208062_0100	5.3
Cane Branch	TN08010208002_0500	14.5
Cane Creek	TN08010208034_1000	14.1
Cane Creek	TN08010208073_0100	5.6
Carter Branch	TN08010208001_1100	9.4
Carter Creek	TN080102081866_1000	6.4
Cash Creek	TN08010208019_0520	15.1

Table A3-6a.

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Catron Creek	TN08010208007_0200	17.2
Chisholm Creek	TN08010208030_0200	13.5
Clear Creek	TN08010208015_1000	13.9
Click Branch	TN08010208019_0300	3.0
Clover Creek	TN08010208029_1000	22.1
Clover Creek	TN08010208029_1000	22.1
Copper Springs Creek	TN08010208001_0200	13.9
Covington Branch	TN08010208019_0200	4.2
Cub Creek	TN08010208001_0800	26.4
Cypress Creek	TN08010208029_0400	22.0
Cypress Creek	TN08010208032_1000	19.2
Dog Trail Creek	TN08010208001_0610	5.6
Dry Branch	TN08010208001_0400	4.6
Dry Branch	TN08010208001_1200	7.2
Dry Branch	TN08010208019_0511	6.8
Dry Branch	TN08010208024_0500	4.4
Dry Creek	TN08010208029_0100	22.1
East Fork Hurricane Creek	TN08010208002_0810	11.1
East Fork Spring Creek	TN08010208019_0400	29.4
Fortune Branch	TN08010208019_0320	4.2
Gamble Branch	TN08010208001_1500	6.0
Gaylor Creek	TN08010208027_0100	6.2
Grays Creek	TN08010208028_1000	10.0
Greasy Creek	TN08010208027_0400	5.5
Groggins Creek	TN08010208002_0700	10.6
Hamer Creek	TN08010208019_0700	6.9
Hatchel Creek	TN08010208002_0300	14.8
Hayes Branch	TN08010208001_0500	11.9
Hickory Creek	TN08010208001_1600	25.5
Hodges Creek	TN08010208002_0100	10.0
Hurricane Creek	TN08010208002_0800	26.3
Indian Creek	TN08010208002_2000	8.5
Jeffers Creek	TN08010208062_1000	10.8
Jeter Creek	TN08010208009_0400	8.5
Kellyham Branch	TN08010208019_0310	5.0
Lacy Creek	TN08010208029_0300	10.3
Lagoon Creek	TN08010208033_1000	19.3
Lane Branch	TN08010208001_0900	9.5
Little Creek	TN08010208011_0100	23.6
Little Muddy Creek	TN08010208946_1000	14.5
Little Piney Creek	TN08010208027_0300	7.0
London Creek	TN08010208009_0100	6.9

Table A3-6b.

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Mathis Creek	TN08010208065_1000	11.3
May Branch	TN08010208001_1400	3.3
Mill Creek	TN08010208066_1000	7.5
Misc Tribs to Bear Creek	TN08010208011_0999	32.4
Misc Tribs to Big Black Creek	TN08010208030_0999	14.7
Misc Tribs to Big Muddy Creek	TN08010208007_0999	104.6
Misc Tribs to Cane Creek	TN08010208034_0999	106.6
Misc Tribs to Carter Creek	TN080102081866_0999	6.0
Misc Tribs to Clear Creek	TN08010208015_0999	30.2
Misc Tribs to Clover Creek	TN08010208029_0999	62.8
Misc Tribs to Cypress Creek	TN08010208032_0999	29.2
Misc Tribs to Flat Creek	TN08010208056_0999	18.3
Misc Tribs to Grays Creek	TN08010208028_0999	18.4
Misc Tribs to Hatchie River	TN08010208001_0999	319.3
Misc Tribs to Hyde Creek	TN08010208034_0399	13.3
Misc Tribs to Indian Creek	TN08010208002_0999	53.9
Misc Tribs to Lagoon Creek	TN08010208033_0999	52.4
Misc Tribs to Little Muddy Creek	TN08010208946_0999	22.2
Misc Tribs to Mathis Creek	TN08010208065_0999	16.4
Misc Tribs to Mill Creek	TN08010208066_0999	11.7
Misc Tribs to Piney Creek	TN08010208027_0999	52.4
Misc Tribs to Pleasant Run	TN08010208017_0999	23.4
Misc Tribs to Poplar Creek	TN08010208009_0999	23.1
Misc Tribs to Porters Creek	TN08010208024_0999	38.2
Misc Tribs to Richland Creek	TN08010208073_0999	12.4
Misc Tribs to Spring Creek	TN08010208019_0999	34.9
Misc Tribs to Sugar Creek	TN08010208031_0999	10.8
Misc Tribs to Town Creek	TN08010208896_0999	20.9
Moore Branch	TN08010208024_0100	4.5
Morris Branch	TN08010208009_0200	2.5
Muddy Creek	TN08010208001_0310	9.8
Myron Creek	TN08010208002_0400	11.8
Oak Dain Creek	TN08010208015_0100	23.8
Pennycost Creek	TN08010208001_0300	13.9
Pinner Creek	TN08010208001_1610	7.8
Pleasant Run	TN08010208017_1000	11.9
Poplar Creek	TN08010208009_1000	17.8
Potters Creek	TN08010208017_0100	10.2
Prairie Creek	TN08010208009_0410	4.7
Price Branch	TN08010208007_0100	22.3
Pugh Creek	TN08010208029_0500	10.3
Pugh Creek	TN08010208066_0100	4.8
Rice Branch	TN08010208062_0200	10.5

Table A3-6c.

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Richland Creek	TN08010208072_1000	11.0
Robertson Branch	TN08010208024_0300	4.6
Rocky Branch	TN08010208065_0100	7.0
Sandy Creek	TN08010208029_0200	21.4
Saulsbury Creek	TN08010208019_0510	23.1
Short Creek	TN08010208001_1300	19.2
Smart Creek	TN08010208007_0300	11.9
Smith Branch	TN08010208002_0200	7.9
Snow Creek	TN08010208019_0600	7.5
Sour Branch	TN08010208027_0200	2.4
Spring Creek	TN08010208019_1000	24.6
Stewart Branch	TN08010208024_0400	7.9
Sugar Branch	TN08010208031_0100	7.9
Sugar Creek	TN08010208031_1000	10.5
Thompson Creek	TN08010208024_0200	7.8
Towhead Branch	TN08010208001_0700	4.0
Turkey Branch	TN08010208030_0100	5.6
Unnamed Trib to Carter Creek	TN080102081866_0100	11.3
Unnamed Trib to Hyde Creek	TN08010208034_0310	1.2
Wade Creek	TN08010208001_0600	27.4
Welcome Ussery Creek	TN08010208019_0100	7.3

Table A3-6d.

Table A3-6a-d. Streams Not Assessed for Recreation Designated Use in the Tennessee Portion of the Lower Hatchie River Watershed.

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Adkinson Creek	TN08010208002_0600	4.2
Bear Creek	TN08010208011_1000	10.7
Bear Creek	TN08010208011_2000	7.9
Big Black Creek	TN08010208030_1000	6.7
Big Black Creek	TN08010208030_2000	5.3
Big Ditch Branch	TN08010208009_0300	5.0
Big Muddy Creek	TN08010208007_1000	7.5
Big Muddy Creek	TN08010208007_2000	17.2
Boar Creek	TN08010208001_0100	5.7
Browns Creek	TN08010208062_0100	5.3
Camp Creek	TN08010208033_0100	20.2
Cane Creek	TN08010208034_3000	1.0
Cane Branch	TN08010208002_0500	14.5
Cane Creek	TN08010208034_1000	14.1
Cane Creek	TN08010208034_2000	4.5
Cane Creek	TN08010208034_4000	4.6
Cane Creek	TN08010208073_0100	5.6
Carter Creek	TN080102081866_1000	6.4
Cash Creek	TN08010208019_0520	15.1
Chisholm Creek	TN08010208030_0200	13.5
Clear Creek	TN08010208015_1000	13.9
Click Branch	TN08010208019_0300	3.0
Clover Creek	TN08010208029_1000	22.1
Copper Springs Creek	TN08010208001_0200	13.9
Covington Branch	TN08010208019_0200	4.2
Cub Creek	TN08010208001_0800	26.4
Cypress Creek	TN08010208029_0400	22.0
Cypress Creek	TN08010208032_1000	19.2
Dog Trail Creek	TN08010208001_0610	5.6
Dry Branch	TN08010208001_0400	4.6
Dry Branch	TN08010208001_1200	7.2
Dry Branch	TN08010208019_0511	6.8
Dry Branch	TN08010208024_0500	4.4
Dry Creek	TN08010208029_0100	22.1
East Fork Hurricane Creek	TN08010208002_0810	11.1
East Fork Spring Creek	TN08010208019_0400	29.4
Flat Creek	TN08010208056_1000	8.1
Fortune Branch	TN08010208019_0320	4.2
Gamble Branch	TN08010208001_1500	6.0
Gaylor Creek	TN08010208027_0100	6.2
Grays Creek	TN08010208028_1000	10.0
Greasy Creek	TN08010208027_0400	5.5
Groggins Creek	TN08010208002_0700	10.6
Hamer Creek	TN08010208019_0700	6.9
Hatchel Creek	TN08010208002_0300	14.8

Table A3-7a

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Hatchie River	TN08010208001_1000	6.6
Hatchie River	TN08010208001_2000	88.8
Hatchie River	TN08010208001_3000	49.5
Hayes Branch	TN08010208001_0500	11.9
Hickory Creek	TN08010208001_1600	25.5
Hodges Creek	TN08010208002_0100	10.0
Hurricane Creek	TN08010208002_0800	26.3
Hyde Creek	TN08010208034_0300	5.7
Indian Creek	TN08010208002_1000	12.1
Indian Creek	TN08010208002_2000	8.5
Jeffers Creek	TN08010208062_1000	10.8
Jeter Creek	TN08010208009_0400	8.5
Kellyham Branch	TN08010208019_0310	5.0
Lacy Creek	TN08010208029_0300	10.3
Lagoon Creek	TN08010208033_1000	19.3
Lane Branch	TN08010208001_0900	9.5
Little Creek	TN08010208011_0100	23.6
Little Muddy Creek	TN08010208946_1000	14.5
Little Piney Creek	TN08010208027_0300	7.0
London Creek	TN08010208009_0100	6.9
Marshall Creek	TN08010208019_0610	10.5
Mathis Creek	TN08010208065_1000	11.3
May Branch	TN08010208001_1400	3.3
Mill Creek	TN08010208066_1000	7.5
Misc Tribs to Cypress Creek	TN08010208032_0999	29.2
Misc tribs to Bear Creek	TN08010208011_0999	32.4
Misc Tribs to Big Black Creek	TN08010208030_0999	14.7
Misc Tribs to Big Muddy Creek	TN08010208007_0999	104.6
Misc Tribs to Cane Creek	TN08010208034_0999	106.6
Misc Tribs to Carter Creek	TN080102081866_0999	6.0
Misc Tribs to Clear Creek	TN08010208015_0999	30.2
Misc Tribs to Clover Creek	TN08010208029_0999	62.8
Misc Tribs to Flat Creek	TN08010208056_0999	18.3
Misc Tribs to Grays Creek	TN08010208028_0999	18.4
Misc Tribs to Hatchie River	TN08010208001_0999	319.3
Misc Tribs to Hyde Creek	TN08010208034_0399	13.3
Misc Tribs to Indian Creek	TN08010208002_0999	53.9
Misc Tribs to Lagoon Creek	TN08010208033_0999	52.4
Misc Tribs to Mill Creek	TN08010208066_0999	11.7
Misc Tribs to Mississippi River	TN08010100001_0999	38.5
Misc Tribs to Piney Creek	TN08010208027_0999	52.4
Misc Tribs to Pleasant Run	TN08010208017_0999	23.4
Misc Tribs to Poplar Creek	TN08010208009_0999	23.1
Misc Tribs to Porters Creek	TN08010208024_0999	38.2
Misc Tribs to Richland Creek	TN08010208073_0999	12.4

Table A3-7b

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Misc Tribs to Spring Creek	TN08010208019_0999	34.9
Misc Tribs to Sugar Creek	TN08010208031_0999	10.8
Misc Tribs to Town Creek	TN08010208896_0999	20.9
Moore Branch	TN08010208024_0100	4.5
Morris Branch	TN08010208009_0200	2.5
Muddy Creek	TN08010208001_0310	9.8
Myron Creek	TN08010208002_0400	11.8
Nelson Creek	TN08010208034_0200	10.6
Oak Dain Creek	TN08010208015_0100	23.8
Pennycost Creek	TN08010208001_0300	13.9
Piney Creek	TN08010208027_1000	14.9
Pinner Creek	TN08010208001_1610	7.80
Poplar Creek	TN08010208009_1000	17.8
Porters Creek	TN08010208024_1000	28.4
Potters Creek	TN08010208017_0100	10.2
Prairie Creek	TN08010208009_0410	4.7
Price Branch	TN08010208007_0100	22.3
Pugh Creek	TN08010208066_0100	4.8
Pugh Creek	TN08010208029_0500	10.3
Rice Branch	TN08010208062_0200	10.5
Richland Creek	TN08010208072_1000	11.0
Robertson Branch	TN08010208024_0300	4.6
Rocky Branch	TN08010208065_0100	7.0
Sandy Creek	TN08010208029_0200	21.4
Saulsbury Creek	TN08010208019_0510	23.1
Short Creek	TN08010208001_1300	19.2
Smart Creek	TN08010208007_0300	11.9
Smith Branch	TN08010208002_0200	7.9
Snow Creek	TN08010208019_0600	7.5
Sour Branch	TN08010208027_0200	2.4
Spring Creek	TN08010208019_1000	24.6
Sugar Branch	TN08010208031_0100	7.9
Sugar Creek	TN08010208031_1000	10.5
Thompson Creek	TN08010208024_0200	7.8
Towhead Branch	TN08010208001_0700	4.0
Town Creek	TN08010208896_1000	11.3
Turkey Branch	TN08010208030_0100	5.6
Unnamed Trib to Carter Creek	TN080102081866_0200	6.7
Unnamed Trib to Carter Creek	TN080102081866_0100	11.3
Unnamed Trib to Hyde Creek	TN08010208034_0310	1.2
Wade Creek	TN08010208001_0600	27.4
Welcome Ussery Creek	TN08010208019_0100	7.3
West Fork Spring Creek	TN08010208019_0500	36.6

Table A3-7c

Table A3-7a-c. Stream Impairment Due to Habitat Alteration in the Tennessee Portion of the Lower Hatchie River Watershed.

APPENDIX IV

LAND USE/LAND COVER	AREAS IN HUC-12 SUBWATERSHEDS (ACRES)				
	0101	0102	0103	0104	0105
Deciduous Forest	6,401	10,935	4,996	3,671	5,347
Developed Open Space	595	861	262	347	1,249
Emergent Herbaceous Wetlands	366	259	55	47	153
Evergreen Forest	1,451	2,283	1,520	1.222	480
Grassland/Herbaceous	33	96	7	7	16
High Intensity Development			2		75
Low Intensity Development	84	136	45	57	724
Medium Intensity Development		4	12		209
Mixed Forest	1,342	2,162	811	780	496
Open Water	519	513	11	235	605
Pasture/Hay	4,788	3,722	541	1,690	2,442
Row Crops	2,653	2,161	889	869	1,991
Shrub/Scrub	2,269	4,265	896	1,157	1,755
Woody Wetlands	6,307	1,997	442	314	11,437
Total	**26,807**	**29,393**	**10,490**	**10,396**	**26,976**

Table A4-1a.

LAND USE/LAND COVER	AREAS IN HUC-12 SUBWATERSHEDS (ACRES)				
	0106	0107	0108	0109	0110
Bare Rock/Sand/Clay	1				
Deciduous Forest	15,781	4,684	5,726	3,881	1,363
Developed Open Space	1,008	321	632	387	221
Emergent Herbaceous Wetlands	9	4	36	2	15
Evergreen Forest	2,297	466	449	163	72
Grassland/Herbaceous	23	6	52	2	39
High Intensity Development			21	4	2
Low Intensity Development	18	10	366	96	95
Medium Intensity Development	5		98	28	8
Mixed Forest	2,530	642	836	354	155
Open Water	173	165	38	33	15
Pasture/Hay	1,826	1,192	2,855	1,087	975
Row Crops	1,920	622	2,412	753	1,415
Shrub/Scrub	3,407	945	2,636	1,258	1,212
Woody Wetlands	731	220	749	216	179
Total	**29,729**	**9,279**	**16,905**	**8,263**	**5,767**

Table A4-1b.

LAND USE/LAND COVER	AREAS IN HUC-12 SUBWATERSHEDS (ACRES)				
	0111	0201	0202	0301	0302
Deciduous Forest	7,202	16,993	14,378	13,000	14,587
Developed Open Space	580	1,157	1,274	835	1,080
Emergent Herbaceous Wetlands	42	56	81	32	36
Evergreen Forest	349	3,040	1,789	1,094	617
Grassland/Herbaceous	71	141	55	4	9
High Intensity Development		1	10		4
Low Intensity Development	161	124	266	17	109
Medium Intensity Development	35	8	49	3	2
Mixed Forest	747	3,219	2,496	1,505	1,332
Open Water	208	240	364	111	143
Pasture/Hay	3,375	3,796	4,140	1,298	3,603
Row Crops	4,821	3,497	3,097	1,754	4,402
Shrub/Scrub	3,447	5,706	5,318	2,072	3,883
Woody Wetlands	1,455	1,845	3,301	699	3,039
Total	**22,492**	**39,823**	**36,617**	**22,425**	**32,846**

Table A4-1c.

LAND USE/LAND COVER	AREAS IN HUC-12 SUBWATERSHEDS (ACRES)				
	0401	0402	0403	0404	0405
Deciduous Forest	8,059	2,101	5,960	4,391	2,011
Developed Open Space	942	506	746	1,381	419
Emergent Herbaceous Wetlands	98	53	19	237	13
Evergreen Forest	241	98	388	235	69
Grassland/Herbaceous	9	6	6	4	
High Intensity Development	10		2	1	
Low Intensity Development	216	92	65	172	58
Medium Intensity Development	55	1	6	26	3
Mixed Forest	467	186	501	292	125
Open Water	453	68	63	773	18
Pasture/Hay	4,387	1,614	1,005	1,784	479
Row Crops	8,628	3,051	4,914	12,811	6,326
Shrub/Scrub	2,884	847	1,672	1,584	638
Woody Wetlands	11,264	1,168	856	17,647	273
Total	**37,713**	**9,791**	**16,203**	**41,338**	**10,431**

Table A4-1d.

LAND USE/LAND COVER	AREAS IN HUC-12 SUBWATERSHEDS (ACRES)				
	0406	0407	0408	0409	0410
Deciduous Forest	4,896	2,803	1,688	1,489	2,513
Developed Open Space	1,174	745	503	986	1,833
Emergent Herbaceous Wetlands	79	39	11	7	276
Evergreen Forest	143	28	14	4	5
Grassland/Herbaceous	13	2	1	1	3
High Intensity Development				105	2
Low Intensity Development	251	116	304	713	380
Medium Intensity Development	50	4	32	268	57
Mixed Forest	428	90	34	12	54
Open Water	166	168	28	30	648
Pasture/Hay	4,010	2,024	782	707	1,626
Row Crops	12,836	8,802	6,743	5,597	14,045
Shrub/Scrub	2,589	1,374	744	487	853
Woody Wetlands	922	937	158	129	18,147
Total	**27,556**	**17,132**	**11,042**	**10,533**	**40,444**

Table A4-1e.

LAND USE/LAND COVER	AREAS IN HUC-12 SUBWATERSHEDS (ACRES)				
	0411	0412	0501	0502	0601
Deciduous Forest	930	1,066	5,791	3,273	1,883
Developed Open Space	700	1,254	1,284	1,446	1,394
Emergent Herbaceous Wetlands	37	69	205	264	130
Evergreen Forest	5	6	262	49	5
Grassland/Herbaceous	2	4	96	38	7
High Intensity Development		2		1	3
Low Intensity Development	139	447	369	551	647
Medium Intensity Development	4	47	4	50	31
Mixed Forest	20	8	389	105	32
Open Water	10	67	150	121	358
Pasture/Hay	1,339	438	4,991	5,106	1,439
Row Crops	6,752	15,880	11,107	14,519	30,494
Shrub/Scrub	332	364	4,249	1,591	614
Woody Wetlands	995	1,715	1,600	4,935	6,128
Total	**11,266**	**21,364**	**30,496**	**32,050**	**43,165**

Table A4-1f.

LAND USE/LAND COVER	AREAS IN HUC-12 SUBWATERSHEDS (ACRES)				
	0602	0603	0604	0605	0606
Bare Rock/Sand/Clay				149	
Deciduous Forest	1,645	3,752	617	4,792	1,625
Developed Open Space	980	1,331	1,057	701	590
Emergent Herbaceous Wetlands	66	205	25	213	15
Evergreen Forest	4	25	18	23	11
Grassland/Herbaceous	2	11		42	7
High Intensity Development	2	7	195		8
Low Intensity Development	267	733	1,073	134	231
Medium Intensity Development	20	119	353	10	42
Mixed Forest	18	35	8	57	18
Open Water	126	512	39	409	50
Pasture/Hay	1,027	2,273	809	2,151	1,070
Row Crops	24,813	21,482	9,131	9,659	7,742
Shrub/Scrub	659	1,430	244	2,037	878
Woody Wetlands	2,793	4,372	89	3,956	182
Total	**32,422**	**36,288**	**13,660**	**24,333**	**12,468**

Table A4-1g.

LAND USE/LAND COVER	AREAS IN HUC-12 SUBWATERSHEDS (ACRES)			
	0701	0702	0801	0802
Bare Rock/Sand/Clay			9	
Deciduous Forest	4,897	4,913	6,241	6,668
Developed Open Space	2,819	1,062	2,203	1,347
Emergent Herbaceous Wetlands	43	32	43	191
Evergreen Forest	54	36	144	173
Grassland/Herbaceous	44	9	7	11
High Intensity Development	160		50	
Low Intensity Development	1,127	107	956	325
Medium Intensity Development	362	7	174	4
Mixed Forest	14	13	105	45
Open Water	129	82	168	425
Pasture/Hay	4,064	2,517	3,618	1,871
Row Crops	13,734	15,403	15,915	11,725
Shrub/Scrub	948	1,239	2,309	4,894
Woody Wetlands	890	728	561	586
Total	**29,284**	**26,148**	**32,504**	**28,267**

Table A4-1h.

Tables A4-1a-h. Land Use Distribution in the Lower Hatchie River 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					
7029500	0801020801	Hatchie River	1480.00	2490.8	59300.0	80.0	188.1	120.8	122.4	126.3	111.0
7030000	0801020804	Hatchie River	1975.00	2954.4	56400.0	217.0	na	na	na	258.0	238.0
7030050	0801020806	Hatchie River	2308.00	3280.2	55700.0	180.0	na	na	na	na	na
7030100	0801020807	Cane Creek	33.90	44.1	2610.0	0.1	na	na	na	na	na

Table A4-3. Stream Flow Data from USGS Gaging Stations in the Lower Hatchie River 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	CARTE001.1HR	Carter Branch @ RM 1.1	080102080101
TDECWPC	PORTE004.4HR	Porters Creek @ RM 4.4	080102080101
TDECWPC	HUDSO000.3HR	Hudson Branch @ RM 0.3	080102080102
TDECWPC	PORTE014.0HR	Porters Creek @ RM 14.0	080102080102
TDECWPC	STEWA003.4HR	Stewart Branch @ RM 3.4	080102080102
TDECWPC	WADE002.2HR	Wade Creek @ RM 2.2	080102080103
TDECWPC	CUB001.5HR	Cub Creek @ RM 1.5	080102080104
TDECWPC	CUB2T0.3HR	UT to Cub Creek @ RM 0.3	080102080104
TDECWPC	HATCH122.1HR	Hatchie River @ RM 122.1	080102080105
TDECWPC	HATCH145.5HR	Hatchie River @ RM 145.5	080102080105
TDECWPC	PINEY002.0HR	Piney Creek @ RM 2.0	080102080105
TDECWPC	SPRIN004.0HR	Spring Creek @ RM 4.0	080102080105
TDECWPC	PINEY008.0HR	Piney Creek @ RM 8.0	080102080106
TDECWPC	PINEY009.6HR	Piney Creek @ RM 9.6	080102080106
TDECWPC	PINEY014.6CS	Piney Creek @ RM 14.6	080102080106
TDECWPC	GRAY1T0.9HR	UT to Gray's Creek @ RM 0.9	080102080107
TDECWPC	PLRUN001.0HR	Pleasant Run Creek @ RM 1.0	080102080108
TDECWPC	SHORT004.7HR	Short Creek @ RM 4.7	080102080110
TDECWPC	CLEAR003.4HR	Clear Creek @ RM 3.4	080102080111
TDECWPC	ODAIN000.3HR	Oak Dain Creek @ RM 0.3	080102080111
TDECWPC	ECO65E11	West Fork Spring Creek @ RM 1.7	080102080201
TDECWPC	EFSPR002.2HR	East Fork Spring Creek @ RM 2.2	080102080201
TDECWPC	EFSPR1T0.5HR	UT to East Fork Spring @ RM 0.5	080102080201
TDECWPC	ECO65E10	Marshall Creek @ RM 2.2	080102080202
TDECWPC	CLOVE008.0HR	Clover Creek (South Old Channel) @ RM 8.0	080102080302
TDECWPC	CLOVE1C8.0HR	Clover Creek @ RM 8.0	080102080302
TDECWPC	DRY001.2HR	Dry Creek @ RM 1.2	080102080302
TDECWPC	HICKO001.7HR	Hickory Creek @ RM 1.7	080102080401
TDECWPC	PENNY000.7MN	Pennycost Creek @ RM 0.7	080102080401
TDECWPC	BBLAC003.7MN	Big Black Creek @ RM 3.7	080102080403
TDECWPC	BEAR002.8HY	Bear Creek @ RM 2.8	080102080404
TDECWPC	MCCOO2HY	McCool Lake #2 (Large Lake)	080102080404
TDECWPC	RICHL000.8HY	Richland Creek @ RM 0.8	080102080404
TDECWPC	RICHL001.5HY	Richland Creek @ RM 1.5	080102080404
TDECWPC	JEFFE004.2HY	Jeffers Creek @ RM 4.2	080102080405
TDECWPC	BEAR008.6HY	Bear Creek @ RM 8.6	080102080406
TDECWPC	BEAR009.6FA	Bear Creek @ RM 9.6	080102080406
TDECWPC	BEAR008.0HY	Bear Creek @ RM 8.0	080102080407
TDECWPC	POPLA003.8HY	Poplar Creek @ RM 3.8	080102080407
TDECWPC	POPLA006.9HY	Poplar Creek @ RM 6.9	080102080407
TDECWPC	CARTE002.8HY	Carter Creek @ RM 2.8	080102080408

Table A4-4a.

AGENCY	STATION	LOCATION	HUC-12
TDECWPC	SUGAR001.5HY	Sugar Creek @ RM 1.5	080102080409
TDECWPC	HATCH053.0TI	Hatchie River @ RM 53.0	080102080410
TDECWPC	PRAIR001.3HY	Prairie Creek @ RM 1.3	080102080410
TDECWPC	LMUDD006.7HY	Little Muddy Creek @ RM 6.7	080102080411
TDECWPC	CYPRE004.3HY	Cypress Creek @ RM 4.3	080102080412
TDECWPC	BMUDD014.1FA	Big Muddy Creek @ RM 14.1	080102080501
TDECWPC	SMART001.0FA	Smart Creek @ RM 1.0	080102080501
TDECWPC	BMUDD004.3HY	Big Muddy Creek @ RM 4.3	080102080502
TDECWPC	BMUDD007.0HY	Big Muddy Creek @ RM 7.0	080102080502
TDECWPC	POPLA011.4FA	Poplar Creek @ 11.4	080102080502
TDECWPC	FLAT001.8TI	Flat Creek @ RM 1.8	080102080601
TDECWPC	HATCH1T2.1LE	UT to Hatchie River @ RM 2.1	080102080601
TDECWPC	RICHL001.8TI	Richland Creek @ RM 1.8	080102080601
TDECWPC	CAMP001.8LE	Camp Creek @ RM 1.8	080102080602
TDECWPC	LAGOO002.8LE	Lagoon Creek @ RM 2.8	080102080602
TDECWPC	LAGOO009.8HY	Lagoon Creek@ RM 9.8	080102080602
TDECWPC	COPPE002.3LE	Copper Springs Creek @ RM 2.3	080102080603
TDECWPC	HATCH035.5TI	Hatchie River @ RM 35.5	080102080603
TDECWPC	TOWNA001.6LE	Town-Alston Creek @ RM 1.6	080102080603
TDECWPC	TOWN005.6TI	Town Creek @ RM 5.6	080102080604
TDECWPC	HATCH022.0LE	Hatchie River @ RM 22.0	080102080605
TDECWPC	CANE014.6LE	Cane Creek @ RM 14.6	080102080701
TDECWPC	CANE014.8LE	Cane Creek @ RM 14.8	080102080701
TDECWPC	CANE015.5LE	Cane Creek @ RM 15.5	080102080701
TDECWPC	CANE017.9LE	Cane Creek @ RM 17.9	080102080701
TDECWPC	HYDE001.0LE	Hyde Creek @ 1.0	080102080701
TDECWPC	HYDE001.6LE	Hyde Creek @ RM 1.6	080102080701
TDECWPC	HYDE002.3LE	Hyde Creek @ RM 2.3	080102080701
TDECWPC	HYDE1T0.3LE	UT to Hyde Creek @ RM 0.3	080102080701
TDECWPC	NELSO001.2LE	Nelson Creek @ RM 1.2	080102080701
TDECWPC	CANE012.5LE	Cane Creek @ RM 12.5	080102080702
TDECWPC	HURRI008.3TI	Hurricane Creek @ RM 8.3	080102080802
TDECWPC	INDIA005.0TI	Indian Creek @ RM 5.0	080102080802

Table A4-4b.

Tables A4-4a-b. STORET Water Quality Monitoring Stations in the Lower Hatchie River 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
TN0025275	Bolivar Lagoon #2	4952	Sewerage System	Minor	Hatchie River @ RM 131.0	080102080105
TN0062189	Bolivar STP	4952	Sewerage System	Minor	Hatchie River @ RM 135.1	080102080105
TN0077917	Bolivar STP	4952	Sewerage System	Major	Hatchie River @ RM 131.0	080102080105
TN0000205	Kilgore Flares Company	2899	Chemicals and Chemicals Preparation	Minor	Pugh Creek @ RM 1.3	080102080109
TN0064025	Toone STP	4952	Sewerage System	Minor	Pugh Creek @ RM 0.8	080102080109
TN0026590	Whiteville STP	4952	Sewerage System	Major	Hickory Creek @ RM 7.7	080102080401
TN0074373	Miller Lumber Company	2421	Sawmill and Planing Mills	Minor	Clover River Creek @ RM 116.5	080102080401
TN0062367	Brownsville STP	4952	Sewerage System	Major	Hatchie River @ RM 76.3	080102080404
TN0041874	Hooper Quick Stop	4952	Sewerage System	Minor	UT @ RM 0.9 to Sugar Branch @ RM 1.6	080102080409
TN0062154	Stanton Lagoon	4952	Sewerage System	Minor	UT @ RM 0.4 to Big Muddy Creek @ RM 7.6	080102080501
TN0075906	TVA Lagoon Creek	4911	Electric Services	Minor	WWC to UT @ RM 1.8 to Lagoon Creek @ RM 10.2	080102080602
TN0020982	Covington STP	4952	Sewerage System	Major	Hatchie River @ RM 35.2	080102080603
TN0025011	Henning Lagoon	4952	Sewerage System	Minor	Alston Creek @ RM 3.6	080102080603
TN0074403	CONOPCO	2026	Fluid Milk	Minor	WWC to UT to Hatchie River @ RM 34.0	080102080603
TN0000655	Turner Holdings, LLC	2024	Ice Cream and Frozen Desserts	Minor	UT to Town Creek @ RM 4.3	080102080604
TN0057487	West Tennessee State Penitentiary	4952	Sewerage System	Minor	Hatchie River @ RM 18.4	080102080605
TN0001180	Siegel-Robert Automotive	3471	Electroplating, Plating, Polishing	Major	UT @ RM 0.6 to Hyde Creek @ RM 2.3	080102080701
TN0025364	Ripley STP	4952	Sewerage System	Major	Cane Creek @ RM 15.4	080102080701
TN0026565	Siegel-Robert Automotive	3471	Electroplating, Plating, Polishing	Major	UT @ RM 0.6 to Old Channel nelson Creek @ RM 1.0	080102080701
TN0058084	Brighton School	4952	Sewerage System	Minor	UT @ RM 1.1 to UT @ RM 0.8 to Myron Creek @ RM 1.6	080102080801
TN0058092	Drummonds School	4952	Sewerage System	Minor	Hurricane Creek @ RM 10.4	080102080802

Table A4-5. NPDES Permittees in the Lower Hatchie River Watershed. *SIC, Standard Industrial Classification; MADI, Major Discharge Indicator; UT, Unnamed Tributary; WWC, Wet Weather Conveyance.*

FACILITY NUMBER	PERMITEE	WATERBODY	HUC-12
TN0058815	Poplar Grove Utility District	Big Creek @ RM 22.1	080102080301
TN0054747	First Utility District of Tipton County	UT to Rocky Branch Creek	080102080606

Table A4-6. Water Treatment Plants in the Lower Hatchie River Watershed. *UT, Unnamed tributary.*

FACILITY NUMBER	PERMITEE	SIC	SIC NAME	WATERBODY	HUC-12
TN0071587	Standard Construction Co. (Hardeman Pit)	1442	Gravel Mining	UT to Clear Creek	080102080111
TN0072541	Memphis Stone and Gravel (Lopez Property)	1442	Gravel Mining	UT to Mathis Creek	080102080606
TN0079154	Delashmit Hauling (Jones Pit)	1442	Construction Sand and Gravel Mining	UT to Mathis Creek	080102080606
TN0070831	Ford Construction Company (Langley Pit #2)	1442	Gravel Mining	UT to Cane Creek	080102080701
TN0066443	Ruleman's Sand and Gravel (Allen Pit)	1442	Construction Sand Mining	UT to Indian Creek Canal	080102080801
TN0071081	Climer and Sons (McCullough Pit)	1442	Gravel Mining	Myron Creek, UT to Cane Creek	080102080801
TN0071641	Tipton County Gravel (Bradshaw Pit)	1442	Construction Sand and Gravel Mining	UT to Indian Creek	080102080801
TN0071871	R.L. Inman Trucking (Inman Pit #1)	1442	Gravel Mining	UT to Indian Creek	080102080801

Table A4-7. Active Permitted Mining Sites in the Lower Hatchie River Watershed. *SIC, Standard Industrial Classification; UT, Unnamed Tributary.*

FACILITY NUMBER	FACILITY NAME	WATERBODY	HUC-12
TNG110276	Ira C. Newton Company	UT @ RM 6.0 to Hatchie River @ RM 127	080102080105
TNG110024	Southern Concrete Products, Incorporated	WWC to Spring Creek	080102080202
TNG110012	Covington Redi-Mix	WWC to Town Creek	080102080604
TNG110042	McLillie Concrete	WWC to Town Creek	080102080604
TNG110109	Lauderdale Redi-Mix	UT to Hyde Creek	080102080701

Table A4-8. Ready Mix Concrete Plants in the Lower Hatchie River Watershed. *UT, Unnamed Tributary; WWC, Wet Weather Conveyance.*

LOG NUMBER	COUNTY	DESCRIPTION	WATERBODY	HUC-12
NRS02.286D	Hardeman		UT to Hayes Branch	080102080101
NRS02.286E	Hardeman		UT to Hayes Branch	080102080101
NRS02.286F	Hardeman		UT to Hayes Branch	080102080101
NRS02.286G	Hardeman		Hayes Branch	080102080101
NRS02.286H	Hardeman		UT to Hayes Branch	080102080101
NRS02.286I	Hardeman		UT to Hatchie River	080102080101
NRS02.286J	Hardeman		UT to Hatchie River	080102080101
NRS02.286K	Hardeman		UT to Hatchie River	080102080101
NRS03.236	Hardeman	Bridge and Approach	Cub Creek	080102080101
NRS02.434	Hardeman	Bridge Approaches	Dry Branch	080102080102
NRS02.434B	Hardeman		Porters Creek	080102080102
NRS02.286L	Hardeman		UT to Hatchie River	080102080103
NRS02.286	Hardeman		UT to Hatchie River	080102080105
NRS02.286B	Hardeman		UT to Hatchie River	080102080105
NRS02.286C	Hardeman		UT to Hatchie River	080102080105
NRS02.264	Hardeman	Concrete Dock	UT to Piney Creek	080102080106
NRS03.034	Hardeman	Bridge and Approach	UT to Piney Creek	080102080106
NRS03.034B	Hardeman	Bridge and Approach	Piney Creek	080102080106
NRS00.317	Hardeman		UT to Pugh Creek	080102080109
NRS02.145	Hardeman	Access Road	Isolated Wetland	080102080111
NRS03.385	Hardeman	Road Construction	Wetland	080102080201
NRS03.385B	Hardeman	Road Construction	Saulsbury Creek	080102080201
NRS03.385C	Hardeman	Road Construction	Wetland	080102080201
NRS03.385D	Hardeman	Road Construction	Wetland	080102080201
NRS03.385E	Hardeman	Road Construction	East Fork Spring Creek	080102080201
NRS02.397	Hardeman	Bridge Repair	Spring Creek	080102080202
NRS02.450	Hardeman	Bridge and Approach	Spring Creek and Wetland	080102080202
NRS04.033	Haywood	Road Construction	Sugar Branch	080102080409
NRS04.033B	Haywood	Road Construction	Sugar Branch	080102080409
NRS04.033C	Haywood	Road Construction	Sugar Branch	080102080409
NRS04.033D	Haywood	Road Construction	Sugar Branch	080102080409
NRS04.033E	Haywood	Road Construction	Sugar Branch	080102080409
NRS04.033F	Haywood	Road Construction	Sugar Branch	080102080409
NRS04.033G	Haywood	Road Construction	Sugar Branch	080102080409
NRS04.033H	Haywood	Road Construction	Sugar Branch	080102080409
NRS04.094	Haywood	Road Construction	Sugar Branch	080102080409
NRS04.115	Tipton	Bridge and Approach	UT to Little Muddy Creek	080102080410
NRS04.144	Tipton	Bridge and Approach	Unnamed Tributaries	080102080410
NRS01.222	Haywood	Natural Gas Pipeline	Carson Creek and Tributaries	080102080602
NRS01.308	Haywood	Bridge Repair	Big Muddy canal	080102080502
NRS02.235	Lauderdale	Bridge Replacement	Hatchie River	080102080603
NRS04.119	Tipton	Bridge and Approach	Rocky Branch	080102080606
NRS04.119B	Tipton	Bridge and Approach	Mathis Branch	080102080606
NRS04.119C	Tipton	Bridge and Approach	Rocky Branch	080102080606
NRS04.119D	Tipton	Bridge and Approach	Rocky Branch	080102080606
NRS04.119E	Tipton	Bridge and Approach	Mathis Branch	080102080606
NRS04.119F	Tipton	Bridge and Approach	Mathis Branch	080102080606
NRS04.240C	Lauderdale	Bridge Repair	Hyde Creek	080102080701
NRS02.402	Tipton	Bridge and Approach	UT to Brighton Creek	080102080801

Table A4-9. Individual ARAP Permits Issued January 2000 Through June 2004 in the Lower Hatchie River Watershed. *UT, Unnamed Tributary.*

FACILITY NUMBER	FACILITY NAME	SECTOR	RECEIVING STREAM	AREA*	HUC-12
TNR054280	Howell and Sons Lumber Co.	A	Carter Branch	15	080102080101
TNR051476	Spectrum Corp.-North Plant	D	Wade Creek	4	080102080103
TNR056530	Spectrum Corp.-Main Plant	D	Wade Creek	23.89	080102080103
TNR054279	W.D. Vandiver Sawmill	A	Hatchie River	5	080102080105
TNR054455	Bolivar Wood Products	A	Metro Storm Sewer	0.3761	080102080105
TNR056581	Granville Howell Sawmill	A	Dry Branch	10	080102080105
TNR050786	Bolivar Salvage Company	M	Pleasant Run Creek	6	080102080108
TNR050159	Kilgore Flares Company	C	UT to Pugh Creek	184	080102080109
TNR051377	Kilgore Flares Company	C	UT to Pugh Creek	215	080102080109
TNR053300	Bolivar Land Fill	L	UT to Short Creek	19.7	080102080110
TNR051427	Standard Construction Co.	D	WWC to Clear Creek	18.4	080102080111
TNR055032	Producers Mid-South Company	U, P	Hatchie River	25	080102080201
TNR053275	Whitehurst Field	S	UT to Pleasant Run Creek	0.5	080102080202
TNR056550	Miller Lumber Company	A	UT to Clover Creek @ RM 0.2	0.5	080102080401
TNR053911	L and R Sawmill	A	Sugar Creek	13.4	080102080409
TNR053203	Covington Municipal Airport	S	Flat Creek	134	080102080601
TNR056564	Lagoon Creek Combustion	AE	UT to Lagoon Creek	17	080102080602
TNR050936	Reelfoot Lumber Company	A	UT to Henning Stormwater	45	080102080603
TNR051694	QW Memphis Corporation	X	UT to Hatchie River	20.5	080102080603
TNR056385	Bowater Nuway, Inc.	B	UT to Hatchie River	6.73	080102080603
TNR050375	Charms Company	U	UT to Town Creek	2.6	080102080604
TNR050568	ITW Paslode	F	UT to Town Creek	6.5	080102080604
TNR052076	Baskin Auto Truck and Tractor	M	Mathis Creek and Hatchie River	60	080102080604
TNR053356	Umicore Bowden	N	Flat Creek	3.9	080102080604
TNR056366	Covington, TN Transfer	P	Town Creek	3	080102080604
TNR056558	A to Z Recycling	M	Smith Branch	3	080102080604
TNR050162	Marvin Windows of Tennessee	A	Nelson Creek	9.1	080102080701
TNR051911	White Salvage	N, P	Cane Creek	1.25	080102080701
TNR055893	Best-Wade Petroleum	P	Cane Creek	7	080102080701
TNR056327	TP Tool	F	UT @ RM 0.1 to Hyde Creek @ RM 2.1	1.5	080102080701
TNR053807	Conopco, Incorporated	U	UT to Hatchie Creek and Hatchie River	2	080102080801
TNR055960	A and A Auto Salvage	M		4.8	080102080801

Table A4-10. Active Permitted TMSP Facilities in Lower Hatchie River Watershed. *Area, acres of property associated with industrial activity; UT, Unnamed Tributary; WWC, Wet Weather Conveyance. Sector details may be found in Table A4-11.*

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 A4-11. 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					9
FY 2002	2		952	1200	47
FY 2003	2		201		370
FY 2004			13		54
FY 2005		72440	74		

Table A5-1a. Land Treatment Conservation Practices (Conservation Buffers), in Partnership with NRCS in the Tennessee Portion of the Lower Hatchie River 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	288181	13602
FY 2002	238994	14135
FY 2003	89521	7673
FY 2004		
FY 2005		

Table A5-1b. Erosion Control Conservation Practices, in Partnership with NRCS in the Tennessee Portion of the Lower Hatchie River Watershed. *Data are from Performance & Results Measurement System (PRMS) for each fiscal year reporting period (October 1 through September 30) from 2001 to 2005.*

Irrigation Management			
	Irrigation Mgmt. Systems (number)	Est. Water Conserved (acre inches)	Irrigation Mgmt. Systems (acres)
FY 2001	1	1	150
FY 2002			
FY 2003			
FY 2004			
FY 2005			

Table A5-1c. Irrigation Management Conservation Practices in Partnership with NRCS in the Tennessee Portion of the Lower Hatchie River 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		9057	9057
FY 2002	80	6792	6792
FY 2003		4329	4329
FY 2004	1220		1220
FY 2005	12515		12515

Table A5-d. Nutrient Management Conservation Practices in Partnership with NRCS in the Tennessee Portion of the Lower Hatchie River 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	67	6641
FY 2002		9147
FY 2003		3748
FY 2004		1174
FY 2005		12175

Table A5-1e. Pest Management Conservation Practices in Partnership with NRCS in the Tennessee Portion of the Lower Hatchie River 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	427			
FY 2002	232			
FY 2003	212			
FY 2004	241	10456		553
FY 2005	630		1	420

Table A5-1f. Grazing/Forages Conservation Practices in Partnership with NRCS in the Tennessee Portion of the Lower Hatchie River 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 Prepared for revegetation of Forest (acres)	Land Improved through Forest Stand improvement (acres)	Total Tree & Shrub Estab. (acres)	Forestland Re-established or improved (acres)	Use Exclusion (acres)
FY 2001		85	76	161	
FY 2002	44	461	245	706	
FY 2003			696	696	
FY 2004		32	164	196	3528
FY 2005			313	313	3398

Table A5-1g. Tree and Shrub Conservation Practices in Partnership with NRCS in the Tennessee Portion of the Lower Hatchie River 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)	Contour Farming (acres)	Cover Crop (acres)
FY 2001			9172			
FY 2002	6377	123	6500			
FY 2003	2521		2521			
FY 2004	172		172			
FY 2005	10307		10307	5868	1294	2433

Table A5-1h. Land Treatment Conservation Practices (Tillage and Cropping), in Partnership with NRCS in the Tennessee Portion of the Lower Hatchie River Watershed. *Data are from Performance & Results Measurement System (PRMS) for each fiscal year reporting period (October 1 through September 30) from 2001 to 2005.*

Wetlands	
	Wetlands Created or Restored (acres)
FY 2001	54
FY 2002	168
FY 2003	307
FY 2004	36
FY 2005	0

Table A5-1i. Wetland Conservation Practices in Partnership with NRCS in the Tennessee Portion of the Lower Hatchie River 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	1420	54	1474
FY 2002	1943	257	2200
FY 2003	2248	78	2326
FY 2004	1871		1871
FY 2005	1345		1345

Table A5-1j. Wildlife Habitat Management Conservation Practices in Partnership with NRCS in the Tennessee Portion of the Lower Hatchie River 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
BOLIVAR	06/29/04	$ 2,000,000
RIPLEY	02/12/04	$ 6,945,000

Table A5-2. Communities in the Tennessee Portion of the Lower Hatchie River Watershed that have received Clean Water State Revolving Fund Grants or Loans since the inception of the program.

PRACTICE	NRCS CODE	NUMBER OF BMPs
No-Till	329	1
Cover Crop	340	130
Critical Area Planting	342	2
Well Decommissioning	351	1
Dike	356	4
Diversion	362	12
Pond	378	11
Fence	382	2
Grade Stabilization Structure	410	72
Grassed Waterway	412	11
Pasture/Hay Planting	512	76
Pipeline	516	1
Heavy Use Area	561	3
Stream Crossing	576	1
Terrace	600	114
Water/Sediment Control Basin	638	45
Restoration and Management of Declining Habitats	643	1
Upland Wildlife Habitat Management	645	1
TOTAL BMPs	**-**	**488**

Table A5-3. Best Management Practices Installed by Tennessee Department of Agriculture and Partners in the Tennessee Portion of the Lower Hatchie River Watershed.