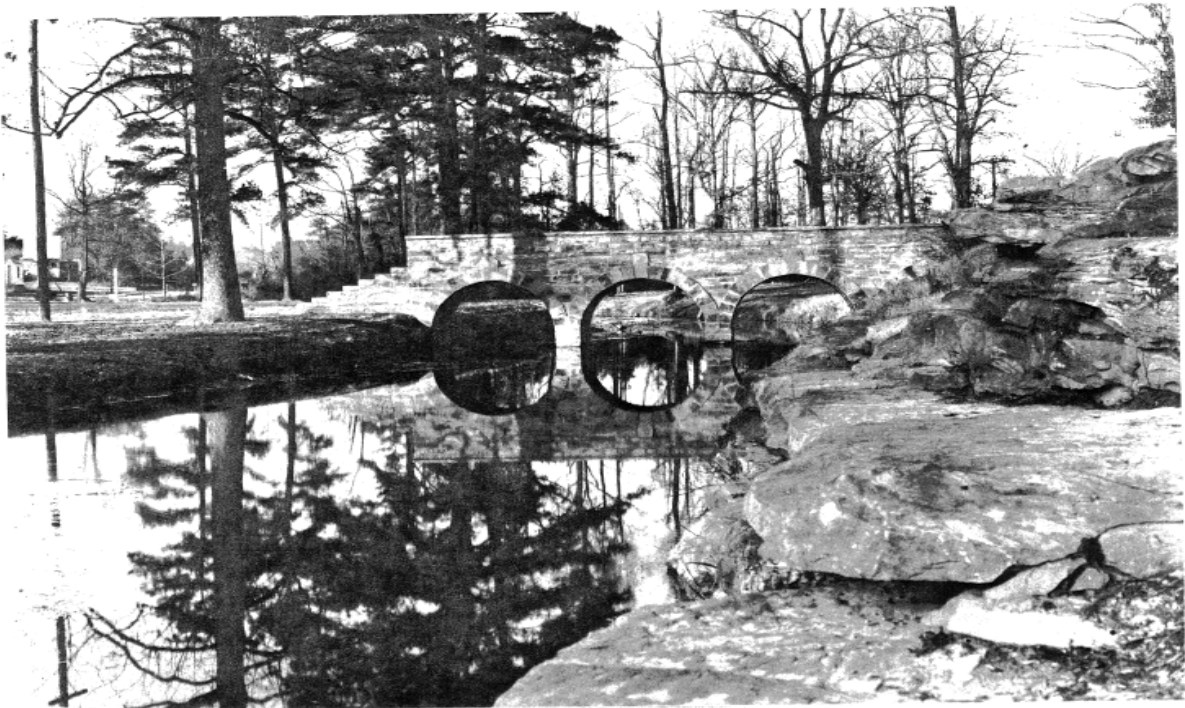


**TOWN CREEK**  
**CITY OF JASPER**  
**WALKER COUNTY, ALABAMA**

**Hydrologic Unit Code 031601090602**



1939 NYA PROJECT, JASPER TOWN COMMONS, STONE PEDESTRIAN BRIDGE

**This plan was prepared by  
Cawaco Resource Conservation & Development  
Council, Inc.  
with assistance from:**

**Black Warrior Clean Water Partnership**

**City of Jasper**

**Walker County Soil & Water Conservation District**

**Alabama Cooperative Extension System**

**Alabama Department of Environmental Management**

**North Carolina State University Cooperative Extension  
System**

# TABLE OF CONTENTS

<b>Introduction</b>		
	Purpose of Plan	<b>2</b>
	Overview of Report	<b>2</b>
<b>Watershed Description</b>		<b>4</b>
<b>Land Use</b>		<b>6</b>
<b>Environmental Importance</b>		<b>7</b>
<b>Cultural Resources</b>		<b>8</b>
<b>Data Summary</b>		<b>9</b>
<b>Statement of Impairment</b>		<b>11</b>
<b>Recommended Best Management Practices</b>		<b>12</b>
<b>Estimate of Pollutant Load and Load Reductions</b>		<b>14</b>
<b>Education Component Recommendations</b>		<b>16</b>
<b>Monitoring Component Recommendations</b>		<b>18</b>
<b>Estimates of Technical and Financial Assistance</b>		<b>19</b>
<b>Schedule of Implementation</b>		<b>22</b>

## APPENDIX

<b>APPENDIX</b>	<b>DESCRIPTION</b>
A	Level III Ecoregions of Alabama
B	Soil Survey of Walker County, Alabama
C	Alabama Natural Heritage Program-Definition of Heritage Ranks
D	Walker County Watershed Assessment-Urban Sediment Erosion by Sub-watershed

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# INTRODUCTION

The Town Creek Watershed Management Plan is based on the results of existing research and reporting by various public agencies, industries and private interest groups. The goal of this document is to summarize available resources in order to holistically define water quality issues. Emphasis is placed on the use of voluntary best management practices (BMPs), environmental education and awareness, and cooperative decision-making processes to attain stated objectives.

## **Purpose of Plan**

Watershed management fosters the coordinated implementation of programs to control point source discharges, reduce polluted runoff, and protect drinking water, as well as identified sensitive natural resources. The Plan moves toward this goal by recommending educational strategies and supporting existing programs that serve to reduce non-point source pollution.

It is the goal of this Plan to make recommendations which assist in bringing all water quality parameters within State water quality standards for Fish & Wildlife as identified in Chapter 335-6-10 of the Alabama Code. This Plan seeks to implement environmentally protective and economically realistic BMPs, where practicable and technologically feasible, in order to meet or exceed water quality standards. BMP types and numbers in this plan are recommendations - but are based on current land use practices, land cover, and watershed activities. Voluntary, incentive based approaches will be used to implement BMPs throughout the watershed. Providing opportunities for local stakeholder input and participation will continue to be a critical BMP implementation component.

## **Overview of Report**

This plan was developed to address EPA's nine (9) key elements for watershed management plans. Compliance for these requirements within this document is noted below. These requirements include:

- 1. (a) An identification of the causes and sources or groups of similar sources that will need to be controlled to achieve load reductions estimated in the watershed based protection plan. *Statement of Impairment (Pg 11)***
- 1. (b) Sources that need to be controlled should be identified at the significant subcategory level with estimates of the extent to which they are present in the watershed. *Statement of Impairment (Pg 11)***
- 2. Estimate of load reductions expected for the management measures described. *Estimate of Pollutant Load and Load Reductions (Pg 14)***

**3. A description of the management methods that will need to be implemented to achieve the load reductions estimated in #2, and an identification of the critical areas in which those measures will be needed to implement the plan.**

*Recommended Best Management Practices (Pg 12)*

**4. An estimate of the amounts of technical and financial assistance needed, associated costs, and/or the sources and authorities that will be relied upon, to implement the plan.** *Recommended Best Management Practices (Pg 12).*

**5. An information/education component that will be used to enhance public understanding of the project and encourage their early and continued participation in selecting, designing, and implementing the NPS management measures that will be implemented.** *Education Component Recommendations (Pg 16).*

**6. A schedule for implementing the NPS management measures identified in the plan that is reasonable expeditious.** *Schedule of Implementation (Pg 22)*

**7. Description of interim, measurable milestones for determining whether management measures or other control actions are being implemented.**

*Recommended Best Management Practices (Pg 12)*

**8. A set of criteria that can be used to determine whether pollutant loading reductions are being achieved over time and substantial progress is being made towards attaining water quality standards and, if not, the criteria for determining whether the watershed management plan needs to be revised.**

*Estimates of Pollutant Load and Load Reductions (Pg 14).*

**9. A monitoring component to evaluate the effectiveness of the implementation efforts over time, measured against the criteria established under item (8).** *Monitoring Component Recommendations (Pg 18).*

## WATERSHED DESCRIPTION

Town Creek is a perennial tributary of Cane Creek, which flows southeast to Mulberry Fork to Bankhead Lake and the Black Warrior River. The project is located within the 12-digit hydrologic unit code 031601090602 and is part of the Cane Creek Watershed, a subwatershed of the Mulberry Fork Watershed. It is located within the Southwestern Appalachians Ecoregion of Alabama (Appendix A). Elevations in the project area range from 300 to 320 feet above sea level. The area is in the Pottsville Formation (upper part), which consists of interbedded dark-gray shale, siltstone, medium-gray sandstone, and coal in cyclic sequences. Bedrock is found along the streambed throughout the project area. Onsite soils identified using USDA soil maps consist of the Townley-Urban land complex (Appendix B).

**Figure 1 Town Creek in relation to the Cane Creek Watershed**

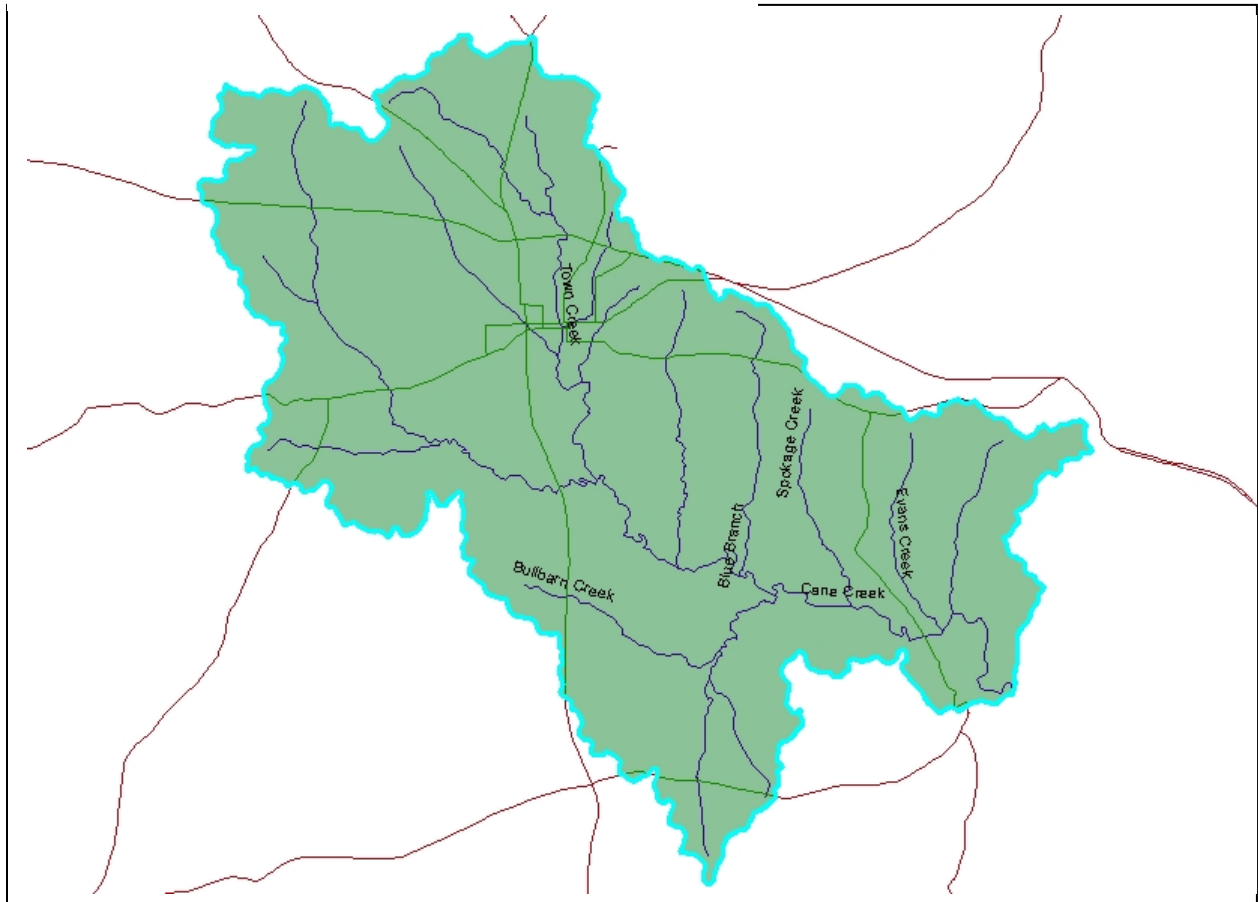
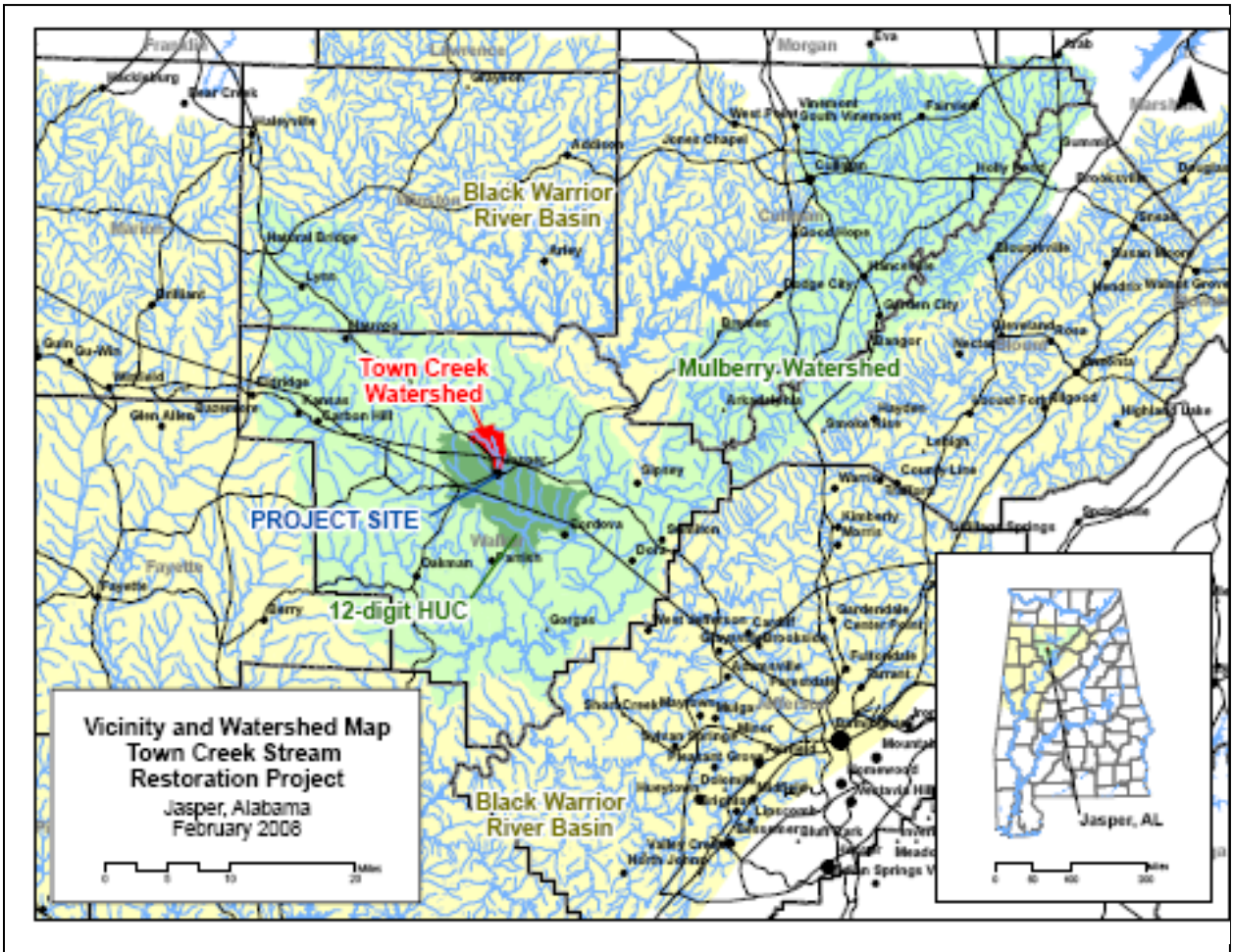


Figure 2 Watershed Map-Town Creek Watershed



The Town Creek Watershed has three main stream segments:

- Town Creek
- Doctor's Branch
- Tanyard Creek

**Figure 3 Town Creek, Tanyard Creek and Doctor's Branch**



## LAND USE

There is no existing land use data specifically available for the Town Creek Watershed. However, for the Cane Creek Watershed, land use data as reported by the Soil & Water Conservation Committee is as follows:<sup>1</sup>

Land Use	Acres	%
Cropland	0	0%
Pastureland	4,600	11%
Forestland	28,236	69%
Urban	4,340	11%
Ponds & Lakes	242	1%
Mine Lands	2,190	5%
Other	1,225	3%

**Figure 4 Land Use within Cane Creek Watershed**

## ENVIRONMENTAL IMPORTANCE

According to the Alabama Natural Heritage Program, there are no rare, threatened, or endangered species known to occur within the area. Noted below are species known to occur in Walker County, and could potentially occur if suitable habitat exists.<sup>2</sup>

### Rare, Threatened & Endangered Species

#### Documented in Walker County, Alabama

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	State Priority <sup>1</sup>
<b>Amphibians</b>						
<i>See Appendix C for Explanation of Codes</i>						
Aneides aeneus	green salamander	G3G4	S3		SP	P2
Necturus alabamensis	Black Warrior waterdog 2	G2	S2	C		P2
<b>Fish</b>						
Notropis asperifrons	burrhead shiner	G4	S4			P5
Polyodon spathula	paddlefish	G4	S3		SP	P4
<b>Mussels</b>						
Hamiota altilis	fine-lined pocketbook 3	G2	S2	LT	SP	P2
Pleurobema perovatum	ovate clubshell 3	G1	S1	LE	SP	P1
Ptychobranthus greenii	triangular kidneyshell 3	G1	S1	LE	SP	P1
<b>Reptiles</b>						
Sternotherus depressus	flattened musk turtle 2	G2	S2	LT	SP	P2
<b>Vascular Plants</b>						
Carex brysonii	Bryson's sedge 2	G1	S1			
Huperzia porophila	rock clubmoss	G4	S1			
Marshallia mohrii	Mohr's Barbara's buttons	G3	S3	LT		
Platanthera lacera	green-fringed orchid	G5	S2			

**Figure 5 Rare, Threatened & Endangered Species Documented in Walker County, Alabama**

<sup>1</sup> Priority as identified in the State Wildlife Action Plan and its list of Species of Greatest Conservation Concern (for more information on SWAP, see <http://www.outdooralabama.com/research-mgmt/cwcs/> ).

<sup>2</sup> Alabama endemic.

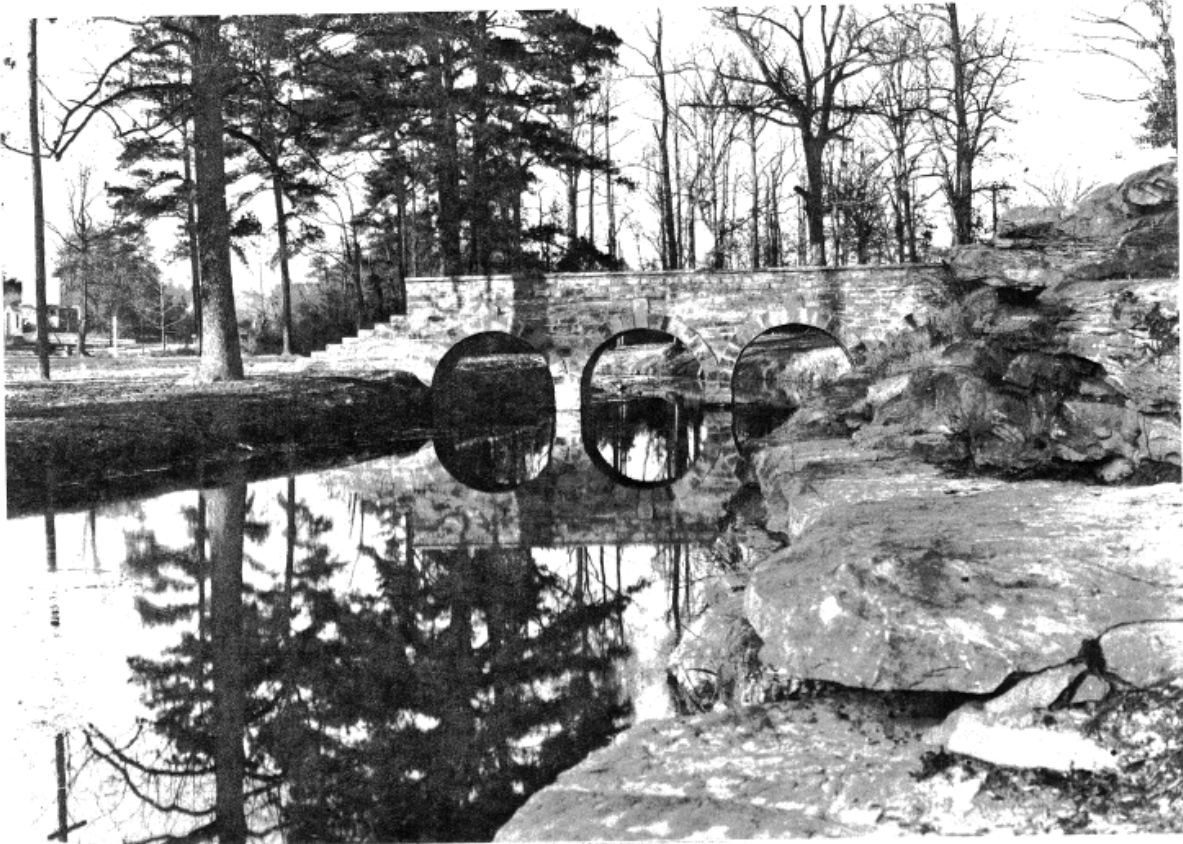
<sup>3</sup> No occurrence record in ALNHP database but the US Fish & Wildlife Service

(<http://www.fws.gov/daphne/es/specieslst.html#Walker>) lists this species as occurring in Walker County.

## CULTURAL RESOURCES

In 1939, the National Youth Organization (NYA) created the Jasper Town Commons. The Commons, constructed by the NYA included constructed a vaulted stone pedestrian bridge which crossed Town Creek north of 17<sup>th</sup> Street. A massive stone fireplace is still on the west hillside of the Creek.

On March 30, 1993, the US Army Corps of Engineers (Mobile District) published the *Conceptual Plan for a Portion of Town Creek in Jasper, Alabama*. The Mobile District's cultural resources staff contacted the Alabama State Historical Preservation Officer (SHPO) concerning the vaulted stone pedestrian bridge. The SHPO's staff indicated that this structure potentially is eligible for the National Register of Historic Places.



1939 NYA PROJECT, JASPER TOWN COMMONS, STONE PEDESTRIAN BRIDGE

**Figure 6 Historical Picture of NYA Pedestrian Bridge**

## **DATA SUMMARY**

### **NPDES DISCHARGES**

From a review of U.S. EPA's Envirofacts Warehouse ([www.epa.gov/enviro/index.html](http://www.epa.gov/enviro/index.html)) and ADEM's NPDES permit list, there is only one (1) NPDES discharge permit within the Town Creek Watershed. The permit is for the Jasper Waste Water Treatment Plant (Permit #AL0023418).

### **DATA AND STUDIES**

#### **Town and Cane Creek Water Quality Study**

In May of 1997, Discharges from the City of Jasper's Waste Water Treatment Plant was suspected of water quality impairment. As a result, EPA's Water Quality Standards Team conducted a review of the Use Attainability Analysis of Town and Cane Creek. Personnel from EPA Region 4's Science and Ecosystem Support Division conducted a limited water quality study for the purpose of developing a one dimensional steady state water quality model. The study contained the following components:

- Diurnal Dissolved Oxygen
- Community Metabolism
- Reaeration Rate Coefficients
- Diurnal Water Quality

#### **Alabama Watershed Assessment**

Soil & Water Conservation Districts, at the request of the Alabama Department of Environmental Management perform statewide nonpoint source watershed assessment in cooperation with the NRCS. The last State Nonpoint Source Watershed Assessment was made available in 1998 and is updated every five years.

The Walker County Watershed Assessment identified Cane Creek as a watershed with high urban erosion. (Appendix D)

#### **Geological Survey of Alabama Fish Survey**

In May of 2008, in conjunction with the Town Creek Revitalization Project, Geological Survey of Alabama performed a fish survey of the project area. Results of this survey are not available at the time of this writing.

## Town Creek Revitalization Project

In October of 2007, Cawaco Resource Conservation & Development Council in support of the goals of the City of Jasper, received a CWA Section 319 Grant from the Alabama Department of Environmental Management for the Town Creek Revitalization Project. This project proposes to improve water quality and habitat quality in approximately 1100 linear feet of Town Creek as it flows through Downtown Jasper. The project will also serve as a demonstration of natural channel design and innovative storm water management specific to urban streams in the southeast. Additional benefits of this proposal are to improve the water quality of Town Creek in order to make a positive contribution to Cane Creek. It will also complement ongoing efforts by the City of Jasper to proactively address stream health and nonpoint source pollution concerns.

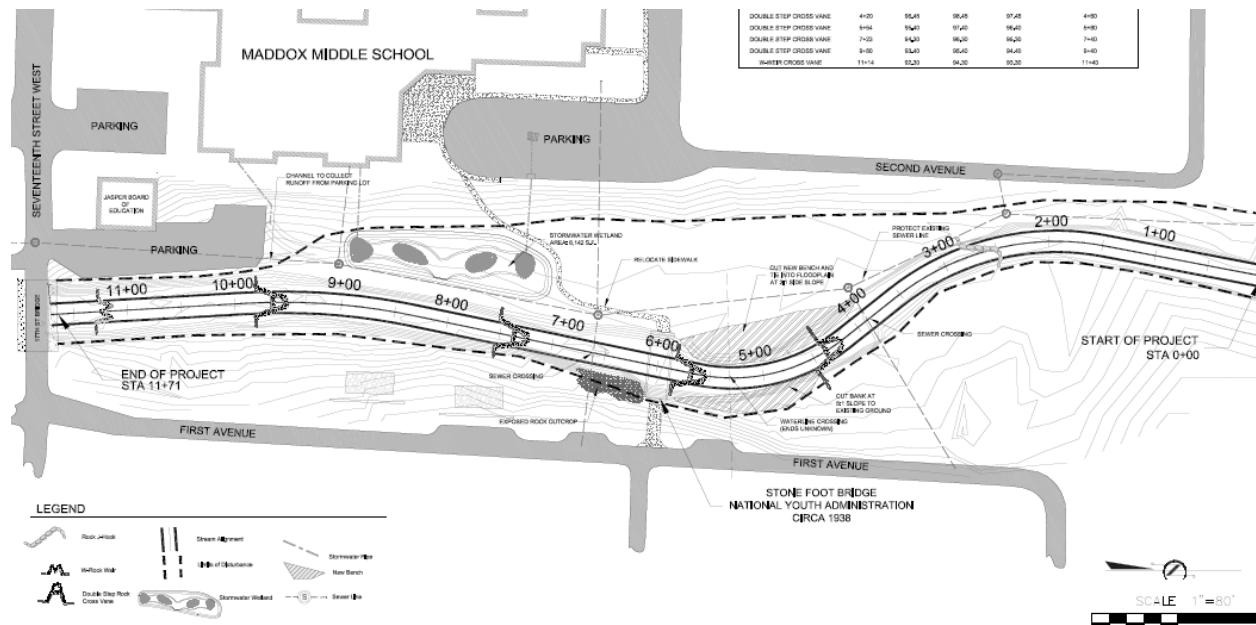


Figure 7 Conceptual Plan - Town Creek Revitalization Project

## STATEMENT OF IMPAIRMENT

In May of 2008, North Carolina State University Cooperative Extension System provided assistance in a revitalization project for Town Creek bordering Maddox Middle School. An initial site assessment revealed existing conditions of the stream reach were impaired due to streambank erosion, mid-channel sediment bars in areas of over-wide channel bottom, lack of deep-rooted native riparian vegetation on some streambanks, lack of in-stream habitats, and stormwater discharges from adjacent parking lots and streets.



**Figure 8 Current photo of NYA Pedestrian Bridge (2008)**

In the Conceptual Plan for a Portion of Town Creek in Jasper, Alabama, (US Army Corps of Engineers, March 30, 1993) stated:

“Fill on the west side creates a level play area (for the School) but causes a steep eroding creek bank about six to eight feet high... Conditions on the east side are more severe. Here, the fill did not create a significant level area but caused an extremely steep creek bank that is difficult to maintain. Banks on both sides are eroding into the creek. This erosion is accelerated by several storm water outlets which empty above the creek’s banks. A sanitary sewer main parallels the creek’s west bank. North of the pedestrian bridge, the sewer main, an exposed natural gas line and a water line cross the creek bed and act as small dams.”

## **RECOMMENDED BEST MANAGEMENT PRACTICES**

This watershed management plan seeks to implement environmentally protective and economically realistic BMPs, where practicable and technologically feasible, in order to meet or exceed watershed plan pollutant load reductions. BMP types and numbers in this plan are recommendations - but are based on current landuse practices, land cover, and watershed activities. Voluntary, incentive based approaches will be used to implement BMPs throughout the watershed. Providing opportunities for local stakeholder input and participation will continue to be a critical BMP implementation component of this watershed plan.

### **Stream Restoration Using Natural Channel Design**

Throughout the watershed, accelerated erosion in stream channels is evident. Natural channel design improves stream and floodplain functions through the creation of a stable stream dimension, pattern, and profile.

Stream restoration is the re-establishment of the general structure, function and self-sustaining behavior of the stream system that existed prior to disturbance. It is a holistic process that requires an understanding of all physical and biological components of the stream system and its watershed. Restoration includes a broad range of measures, including the removal of the watershed disturbances that are causing stream instability; installation of structures and planting of vegetation to protect streambanks and provide habitat; and the reshaping or replacement of unstable stream reaches into appropriately designed functional streams and associated floodplains.<sup>3</sup>

### **Stormwater Retrofit Techniques**

Stormwater retrofits help restore watersheds by providing stormwater treatment in locations where practices previously did not exist or were ineffective. They are typically installed within the stream corridor or upland areas to capture and treat stormwater runoff before it is delivered to receiving waters. Retrofits are the primary practice used to restore subwatersheds since they can remove pollutants, promote more natural hydrology and minimize stream channel erosion.<sup>4</sup>

Eight different stormwater treatment options can be used for retrofitting. Each treatment option differs greatly in its pollutant removal capability, hydrologic benefit and retrofit suitability.

<b>STORMWATER TREATMENT OPTIONS FOR RETROFITTING</b>	
<b>Stormwater Treatment Option</b>	<b>How it Works</b>
ST-1 Extended Detention	This option relies on 12 to 24 hour detention of stormwater runoff after each rain event within a pond, with portions of the pond drying out in between storm events. Extended detention (ED) allows pollutants to settle out, and if enough storage is available, can also provide downstream channel protection.
ST-2 Wet Ponds	Wet ponds consist of a permanent pool of standing water. Runoff from each new storm enters the pond and partially displaces pool water from previous storms. The pool also acts as a barrier to re-suspension of sediments and other pollutants removed during prior storms.
ST-3 Constructed Wetlands	Constructed wetlands are shallow depressions that receive stormwater for treatment. Runoff from each new storm displaces runoff from previous storms, and the residence time of several days to weeks allows multiple pollutant removal processes to operate.
ST-4 Bioretention	Bioretention is an innovative urban stormwater practice that uses native forest ecosystems and landscape processes to enhance stormwater quality. Bioretention areas capture sheet flow from impervious areas and treat the stormwater using a combination of microbial soil processes, infiltration, evapotranspiration, and plants.
ST-5 Filtering Practices	Filter practices function by filtering runoff through an engineered media and collecting treated runoff in an underdrain. The media may consist of sand, soil, compost, or a combination of these.
ST-6 Infiltration Practices	An infiltration trench is a rock-filled chamber with no outlet that receives stormwater runoff. Stormwater runoff passes through some combination of pretreatment measures, such as a swale or sediment basin, before entering the trench where it infiltrates into the soil.
ST-7 Swales	Swales are a series of engineered, vegetated, open channel practices that are designed to treat and attenuate stormwater runoff for a specified water quality volume.
ST-8 Other Retrofit Treatment	These on-site practices provide treatment of roof runoff using rain gardens, rain barrels, green roofs, cisterns, stormwater planters, dry wells, or permeable pavers.

**Figure 9 Center for Watershed Protection Storm Water Treatment Options for Retrofitting**

# ESTIMATES OF POLLUTANT LOAD AND LOAD REDUCTIONS

## STEPL Modeled NPS Pollutant Load Reduction

STEPL was used to calculate nutrient (nitrogen [N], phosphorus [P], and biological oxygen demand [BOD] ) and sediment loads in the Town Creek Watershed based on land use type. Load reductions as a result of implementing BMPs was also calculated using STEPL. The STEPL model has been widely applied and validated throughout the United States. It is approved by EPA as a tool for development of watershed management plans.

With recent advancements in technology, many watershed pollutant-loading assessments are being conducted by combining geographic information systems (GIS) and computer simulation models to predict NPS loadings. This ability helps stakeholders accurately predict the causes and sources of potential problems, and provides good estimates of nutrient/sediment loadings throughout the watershed. The STEPL model was used in the Town Creek Watershed to, a) identify and rank critical NPS impaired areas, b) predict nutrient (N and P) loadings from stream segments, and c) predict and evaluate the overall reduction efforts that on-the-ground best management practices (BMPs) may have on the watershed.

The STEPL watershed simulation reported values that represent the total amount or the weighted average of all hydrologic response units within the watershed. Two distinct land use management treatments (pre- and post-BMP placement and implementation) were used to evaluate the effectiveness of the proposed BMPs. Estimates of sediment, nitrogen, and phosphorus loadings were based on soil types, slopes, current land uses, land management practices, and weather.

The STEPL model was useful in predicting potential critical areas of NPS pollution. Results are presented below:

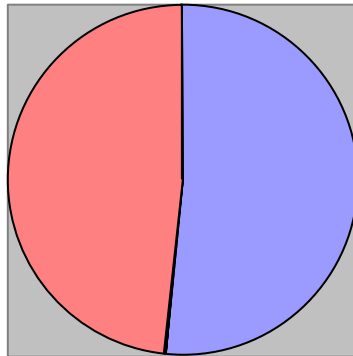
**Figure 10 TOTAL ESTIMATE D ANNUAL LOAD OF NUTRIENTS, PHOSPHORUS, AND SEDIMENT**

Watershed	N Load (no BMP)	P Load (no BMP)	BOD Load (no BMP)	Sediment Load (no BMP)
	lb/year	lb/year	lb/year	t/year
W1	26631.4	4430.5	100894.3	977.3
Total	26631.4	4430.5	100894.3	977.3

**Figure 11 TOTAL ESTIMATED NUTRIENTS, PHOSPHORUS, SEDIMENT OR OTHER LOAD REDUCTIONS EXPECTED AS A RESULT OF BMP IMPLEMENTATION**

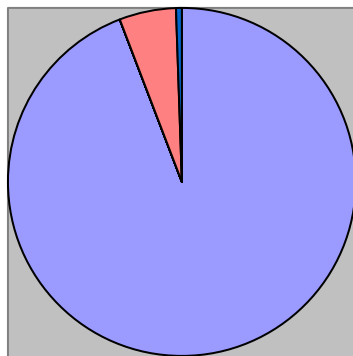
Pollutant Sources or Causes	Nitrogen Load Reduction Estimate	Phosphorus Load Reduction Estimate	Sediment Load Reduction Estimate
Hydrologic modification and urban runoff	2429.7 lb/year	671.5 lb/year	155.6 tons/year

Total Sediment Load by Land Uses (with BMP) (t/yr)



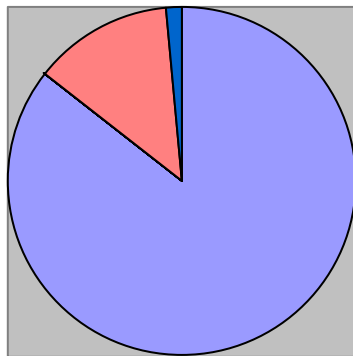
- Urban
- Cropland
- Pastureland
- Forest
- Feedlots
- User Defined
- Septic

Total N Load by Land Uses (with BMP) (lb/yr)



- Urban
- Cropland
- Pastureland
- Forest
- Feedlots
- User Defined
- Septic

Total P Load by Land Uses (with BMP) (lb/yr)



- Urban
- Cropland
- Pastureland
- Forest
- Feedlots
- User Defined
- Septic

# EDUCATION COMPONENT RECOMMENDATIONS

## **Alabama Nonpoint Source Management Program**

The Alabama Nonpoint Source Management Program promotes a cooperative partnership between federal and state agencies, environmentalists, academia, and citizen volunteers to implement voluntary management measures. These partnerships resolve nonpoint source problems affecting Alabama. Educational outreach, technology transfer and technical assistance are provided by academia (land-grant universities), USDA-Natural Resource Conservation Service, Alabama Soil & Water Conservation Committee, Resource Conservation & Development Councils, Alabama Cooperative Extension System, and ADEM.

Citizen volunteers provide water quality data through Alabama Water Watch and environmental and conservation organizations such as LEAF, Wildlaw, AWWA Citizen Advisory Committee, Alabama Environmental Council, Alabama Rivers Alliance, Alabama League of Environmental Action Voters, Black Warrior River Keeper, and Sierra Club report and inquire about environmental threats and problems.

Potential educational programs that may be used include:

Teach the Teacher Workshop (What's In Your Water?) Teachers receive six-hour CEUs for completing this training. The project entitled "What's in Your Water" is based on Legacy, Inc. and the Alabama Department of Environmental Management's (ADEM) "Alabama's Watersheds" poster. This poster focuses on water cycles, watersheds, and polluted run-off. All concepts are correlated to and build upon the Alabama Course of Study (COS) Standards for 5th grade science. In addition, concepts focus on social studies, language arts, and the personal connection between polluted run-off and water quality are emphasized.

During the hands-on activity, teachers build a watershed out of clay, add non-point source pollutants such as sediment (hot chocolate), fertilizer and pesticides (kool aid). Using a regular spray bottle to simulate rain, participants are able to see the effects of non-point source runoff.

### Business Partners for Clean Water

Business Partners for Clean Water is a program designed to give businesses the information they need to comply with water quality laws and to recognize businesses that take voluntary steps to protect local streams and lakes.

## **Soil & Water Conservation Districts**

Soil & Water Conservation Districts provide a wide variety of educational programs and outreach material. The District Board provides direction for local programs and ensures that the District staff fulfills its primary mission of working with landowners to install Best

Management Practices (BMPs) to control erosion, protect water quality, and provide other measures necessary to enhance and protect the environment.

Potential educational materials that may be used include BMP information and technical assistance.

### **Alabama Water Watch**

Alabama Water Watch is a program funded in part by the US EPA and ADEM Clean Water Act Section 319 grants. It has a proven record of collecting quality data through its network of highly motivated, trained, volunteer citizen monitors.

Volunteer training includes an introduction to watersheds, nonpoint source pollution and water quality parameters. The program has put protocols in place to monitor for six physical and chemical parameters: pH, temperature, hardness, alkalinity, dissolved oxygen (DO), and turbidity; coliform bacteria and E. coli; and stream health based on a simple citizen level macroinvertebrate stream assessment.

**Figure 12 AWW Citizen Water Quality Monitors**



## **MONITORING COMPONENT RECOMMENDATIONS**

### **A. Baseline Data**

Town Creek has no formal baseline data. It is recommended that Town Creek be added to ADEM's monitoring for the next *The Surface Water Quality Screening Assessment of the Cahaba and Black Warrior River Basins*.

Responsible Party: ADEM

Cooperators: None

Potential Funding Needs: \$36,000 (\$12,000 per year for 3 years)

Potential Funding Sources: EPA

Schedule: Next monitoring cycle.

### **B. Monitoring Criteria**

Monitoring criteria should meet ADEM and EPA protocol. All data gathered will be supplied to ADEM.

### **C. Volunteer Monitoring**

It is recommended that a volunteer monitor site (using EPA approved Alabama Water Watch Protocols) be set up at Maddox Middle School to develop cost-effective baseline information.

Responsible Party: Watershed Coordinator

Cooperators: Maddox Middle School, S&WCD, USDA/NRCS

Potential Funding Needs: \$1,200 per year

Potential Funding Sources: S&WCD, RC&D, Volunteer Funding

Schedule: Immediately and upon implementation.

## ESTIMATES OF TECHNICAL AND FINANCIAL ASSISTANCE

### **Engage SERWQAN to assist the City of Jasper in determining the support they most need to help protect their watersheds.**

The Southeastern Regional Water Quality Assistance Network (SERWQAN) represents a network of southeastern organizations that are committed to strengthening the capacity of communities to develop and successfully implement watershed protection efforts.

The Network has received funding from the US Environmental Protection Agency to provide integrated assistance in a small number of communities and watersheds to help protect, maintain and restore water quality. The Network will work with community leaders, watershed organizations and other local stakeholders to develop skills and implement practical tools, (such as model ordinances and public process facilitation) to support watershed protection efforts. Assistance includes:

- Financial planning and assistance
- Water quality and watershed management
- Watershed planning and participation
- Project implementation

### **Maintain or improve water quality and hydrologic function within the watershed by restoring natural channel sinuosity and variable characteristics of natural channel streams.**

Natural stream functions and stability in many areas of the Southeastern USA are threatened by changes in watershed hydrology and land use. This results in unstable streams with poor habitat and water quality. Impacts include eroding streambanks, unsafe water supplies, reservoir siltation, impaired habitat, fish kills, and loss of floodplain function. Natural channel design uses engineering, geological, and biological principles to improve the hydrology, habitat, and aesthetics of a stream, considering current and future watershed conditions.

Potential Funding Sources: ADEM, EPA, USDA/NRCS, Soil & Water Conservation Districts, U.S. Fish & Wildlife Service, Foundations

Potential Partners:

- Walker County Soil & Water Conservation District
- Alabama Department of Environmental Management
- USDA/NRCS
- U.S. Fish & Wildlife Service

### **Identify potential sites for stormwater management facilities such as wet ponds, detention basins, offline storm water storage, and constructed wetlands.**

An evaluation should be performed to identify potential sites for stormwater facilities such as constructed wetlands. The economic, environmental, and social aspects should

be considered. A properly constructed stormwater wetland has a longer storage time, long flow paths, and increased biological treatment, therefore providing a pollutant treatment aspect to the basin.

Potential Funding Sources: ADEM, EPA, USDA/NRCS, Soil & Water Conservation Districts, U.S. Fish & Wildlife Service, Foundations

Potential Partners:

- County and City governments
- Soil & Water Conservation District
- USDA/NRCS
- U.S. Fish & Wildlife Service

**Demonstrate and encourage use of native and noninvasive exotic species in buffer zones.**

Riparian buffers have been shown to be effective in controlling nonpoint source pollution by removing nutrients, especially nitrogen and sediment (USDA, 1997). The streamside vegetated buffer filters nonpoint source pollutants from incoming runoff and provides habitat for a balanced, integrated, and adaptive community of riparian and aquatic organisms (Welsch, 1991). These filtering and habitat functions are often best provided by native vegetation such as trees and associated woodland or forest plants in the zone directly adjacent to the waterway.

Potential Funding Sources: ADEM, EPA, USDA/NRCS, Soil & Water Conservation Districts, U.S. Fish & Wildlife Service, Foundations

Potential Partners:

- Soil & Water Conservation District
- USDA/NRCS
- U.S. Fish & Wildlife Service

**Identify potential sites for stormwater management facilities such as wet ponds and constructed wetlands.**

An evaluation should be done to identify potential sites for stormwater retrofit facilities. Detention basins should exist or be developed to hold stormwater runoff before it enters the nearest water body. Typical stormwater basins are designed to control the peak rate of stormwater runoff, not the volume or quality. These basins can be retrofitted into stormwater wetlands, conventional wet ponds or a combined wetlands-pond system. A modified stormwater control facility has longer storage time, long flow paths and biological treatment, therefore providing a pollutant treatment aspect to the basin.

Responsible Parties: City of Jasper

Cooperators: City Engineers, County Planning Departments, Watershed Coordinator, ADEM, S&WCD

Potential Funding: City of Jasper, 319 funding, S&WCD

**Encourage municipalities to develop and implement stormwater management policies to control both the quantity and quality of stormwater runoff.**

Stormwater management policies should be updated to include provisions to reduce site runoff, maximize the use of natural drainage systems, and provide treatment to runoff before it enters water bodies. Municipalities should refer to the “How To” publication *Considerations for Stormwater and Urban Watershed Management: Developing a Program for Complying with Stormwater Phase II MS4 Permit Requirements and Beyond* developed by the Center for Environmental Research and Service, Troy State University. Public officials should be encouraged to attend the Nonpoint Source Education for Municipal and Elected Officials (NEMO) program to provide them the tools to develop effective stormwater policies or management plans.

**Evaluate current and future impervious cover limits and encourage developments with a minimal amount of impervious land cover.**

Studies have shown that the pollutant loadings in a watershed are directly related to the amount of impervious area in a watershed. Therefore, the best method of reducing runoff is to minimize the amount of impervious area on a site. Implementing practices such as smaller parking lots, narrower residential road widths, shorter driveways, cul-de-sac with islands and open-space planning can minimize the amount of impervious area. Creation of open space increases infiltration of stormwater into the ground resulting in decreased stormwater runoff. Open space also provides wildlife habitat and recreational space, thus increasing economic value. The amounts and locations of future impervious cover within the Watershed will be evaluated. Future growth should be encouraged in sub-watersheds that appear most capable of absorbing growth in impervious cover. For new subdivisions, municipalities should identify potential conservation or open space lands, both primary (un-buildable) and secondary (prime agricultural, streams, wetlands, historic/cultural areas, sensitive areas, etc.) and then locate house or development sites accordingly. Reduction in impervious areas should be balanced with the social and economic needs of residents and users.

Responsible Parties: City and County Ordinances

**Promote the use of stormwater drain stencils in residential and urban areas of the watershed.**

Storm drain stencils are Mylar, plastic or other durable cut outs of phrases such as “DUMP NO WASTE: DRAINS TO STREAMS.” These phrases are spray painted on the concrete storm drains found in many residential and commercial areas. Stenciling may also be used on bridges in rural areas. Storm drain stenciling is a great project for young children. Teachers, Scout leaders, and other civic and environmental organizations will be informed of the availability of stencils. The use of stencils can also be promoted through newspaper articles and other forms of recognition.

Responsible Parties: City School System

Cooperators: Middle and High Schools, Girl Scouts, Boy Scouts, Educators, Environmental Clubs

Potential Funding: Unknown

## **SCHEDULE OF IMPLEMENTATION**

This management plan supports watershed-partnering efforts. It seeks to identify nonpoint source (NPS) impairments and to implement economically feasible and environmentally protective management measures. This project provides “first step” recommendations for stakeholder awareness - particularly the role agencies, landowners, businesses, community, civic, watershed groups, and private citizens can participate watershed protection. The recommendations present reasonable and cost-effective management options that can be locally implemented and maintained. However, it is recognized that even after reasonable steps have been taken - it may require a number of years to achieve the management plan goal or for water quality improvements to be realized.

This plan is a critical component of federal, state, and local watershed protection efforts. It addresses effective and efficient mechanisms to obtain the greatest watershed benefits from limited amount of funding. The Schedule for Implementation in Figure 9.1 below is combined with a description of interim, measurable milestones. However, it is acknowledged that some activities and practices may change or be revised as the plan is implemented, as new or additional data and information is obtained, or funding becomes available.

Figure 13

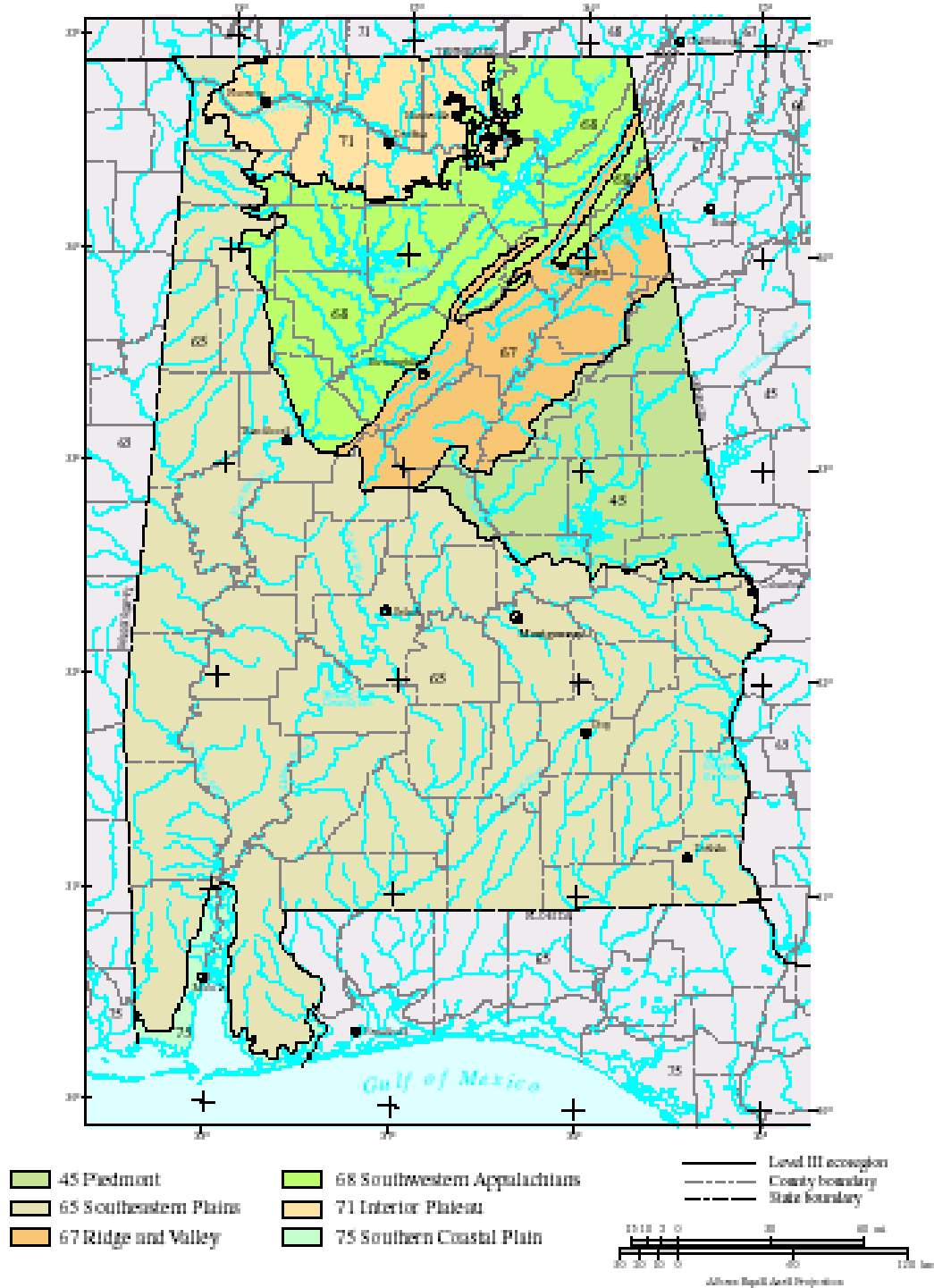
## TOWN CREEK WATERSHED MANAGEMENT PLAN SCHEDULE OF IMPLEMENTATION

		YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
<b>Plan Implementation</b>						
1	Engage SERWQAN for assistance	❖				
2	Identify and prioritize stream channels needing support	❖				
3	Identify and map stormwater outfalls		❖	❖		
4	Identify appropriate BMPs to address nonpoint source runoff			❖	❖	❖
5	Identify and prioritize stormwater retrofit areas					
6	Identify streambank areas that can be improved through the use of native vegetation.			❖		
<b>Education Component</b>						
1	Utilize Alabama Water Watch training in local schools	❖				
2	Utilize the Storm Drain Stenciling Program in urban areas			❖		
3	Host one (1) NEMO Workshop		❖			
4	Provide education regarding Natural Channel Design	❖				

# **APPENDIX**

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**Level III Ecoregions of Alabama**

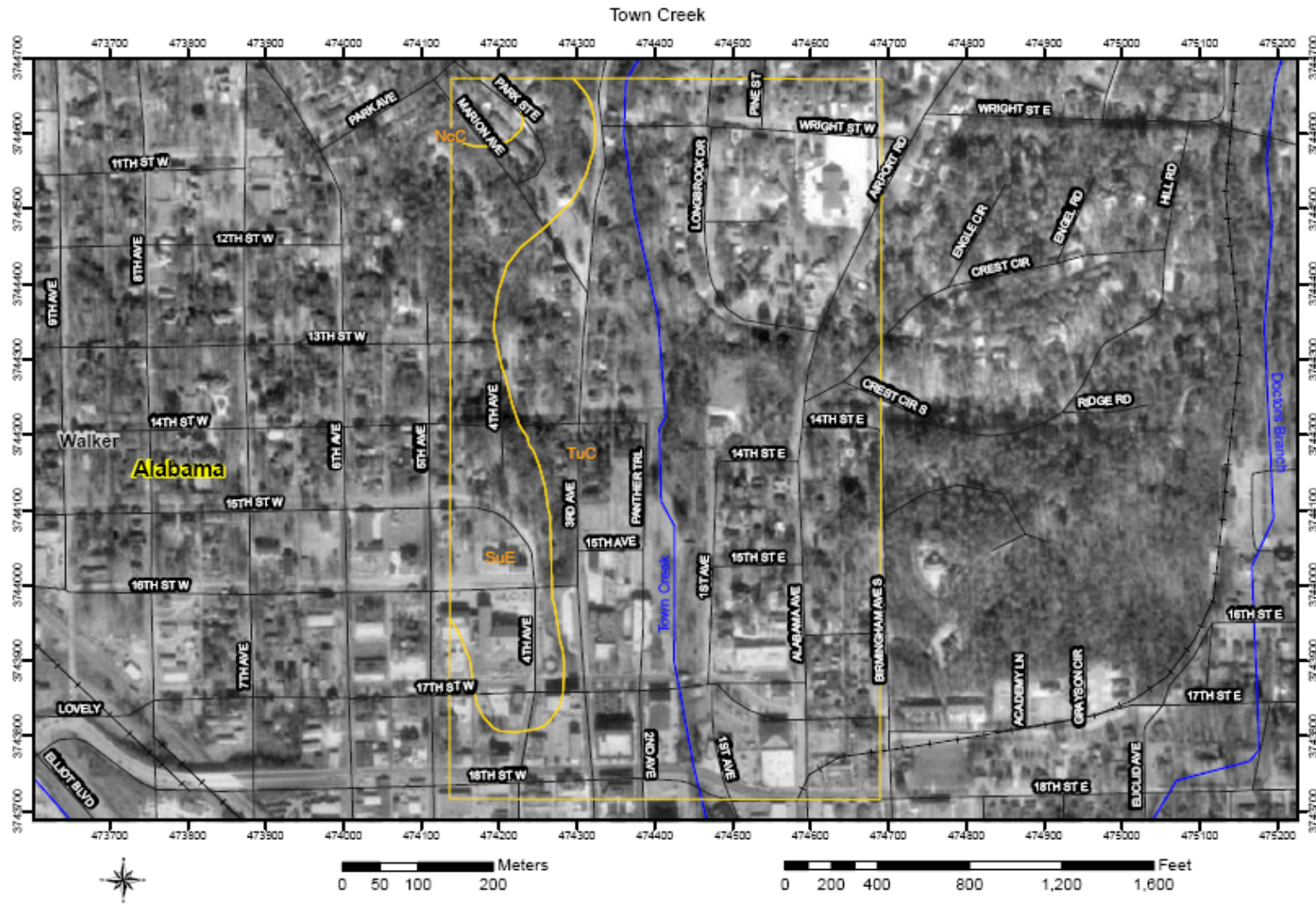


source: Alabama Department of Environmental Management  
<http://www.adem.state.al.us/FieldOps/Monitoring/01LevIIIEco.pdf>

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# APPENDIX B

## SOIL SURVEY OF WALKER COUNTY, ALABAMA



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# APPENDIX C (1 of 2)

## Definition of Heritage Ranks

The Alabama Natural Heritage Program uses the Heritage ranking system developed by NatureServe. Each species is assigned two ranks; one representing its range-wide or global status (G rank), and one representing its status in the state (S rank). Species with a rank of 1 are most critically imperiled; those with a rank of 5 are most secure. Rank numbers may be combined when there is uncertainty over the status, but ranges cannot skip more than one rank (e.g., an element may be given a G-rank of G2G3, indicating global status is somewhere between imperiled and vulnerable).

### Global Ranking System

- G1 Critically Imperiled – At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.
- G2 Imperiled – At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.
- G3 Vulnerable – At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.
- G4 Apparently Secure – Uncommon but not rare; some cause for long-term concern due to declines or other factors.
- G5 Secure – Common; widespread and abundant.
- GX Presumed Extinct (species) – Not located despite intensive searches and virtually no likelihood of rediscovery. Eliminated (ecological communities) – Eliminated throughout its range, with no restoration potential due to extinction of dominant or characteristic species.
- GH Of historical occurrence throughout its range. Possibly Extinct (species) – Missing; known from only historical occurrences but still some hope of rediscovery. Presumed Eliminated – (Historic, ecological communities)-Presumed eliminated throughout its range, with no or virtually no likelihood that it will be rediscovered, but with the potential for restoration, for example, American Chestnut Forest.
- GU Unrankable – Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

GNR Not ranked to date.

G#T# Intraspecific Taxon (trinomial) – The status of infraspecific taxa (subspecies or varieties) are indicated by a "T-rank" following the species' global rank. Rules for assigning T-ranks follow the same principles outlined above for global conservation status ranks. A T-rank cannot imply the subspecies or variety is more abundant than the species as a whole—for example, a G1T2 cannot occur. At this time, the T rank is not used for ecological communities.

SE An exotic established in Alabama.

### State Ranking System

- S1 Critically imperiled in Alabama because of extreme rarity (5 or fewer occurrences of very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extirpation from Alabama.
- S2 Imperiled in state because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extirpation from Alabama.
- S3 Rare or uncommon in Alabama (on the order of 21 to 100 occurrences).
- S4 Apparently secure in Alabama, with many occurrences.
- S5 Demonstrably secure in Alabama and essentially "ineradicable" under present conditions.
- SX Presumed Extirpated – Species or community is believed to be extirpated from Alabama. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.
- SH Historical (Possibly Extirpated) – Species or community occurred historically in Alabama, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20-40 years. A species or community could become SH without such a 20-40 year delay if the only known occurrences in a nation or state/province were destroyed or if it had been extensively and unsuccessfully looked for. The SH rank is reserved for species or communities for which some effort has been made to relocate occurrences, rather than simply using this status for all elements not known from verified extant occurrences.

SNR Unranked – State conservation status not yet assessed.

SA Accidental in Alabama, including species (usually birds or butterflies) recorded once or twice or only at very great intervals, hundreds or even thousands of miles outside their usual range; a few of these species may even have bred on the one or two occasions they were recorded.

SU Unrankable – Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

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## **Definitions of Federal and State Listed Species Status**

### **Federal - U.S. Fish and Wildlife Service**

Endangered Species (LE) - in danger of extinction throughout all or a significant portion of their range.

Threatened Species (LT) - likely to become an endangered species within the foreseeable future throughout all or a significant portion of their range.

Proposed Endangered (PE) - the species is proposed to be listed as endangered.

Proposed Threatened (PT) - the species is proposed to be listed as threatened.

Partial Status (PS) - an infraspecific taxon or population has federal status but the entire species does not-- status is in only a portion of the species range

Candidate (C) - Species for which the U.S. Fish and Wildlife Service has on file enough substantial information on biological vulnerability and threat(s) to support proposals to list them as endangered or threatened. Development and publication of proposed rules on Candidate taxa are anticipated, and USFWS encourages other agencies to give consideration to such taxa in environmental planning.

Special Concern (SC) - Species of concern.

Nonessential Experimental Population (XN) – Experimental reintroduced population

### **State - Alabama Department of Conservation and Natural Resources (ADCNR) - Wildlife & Freshwater Fisheries Division**

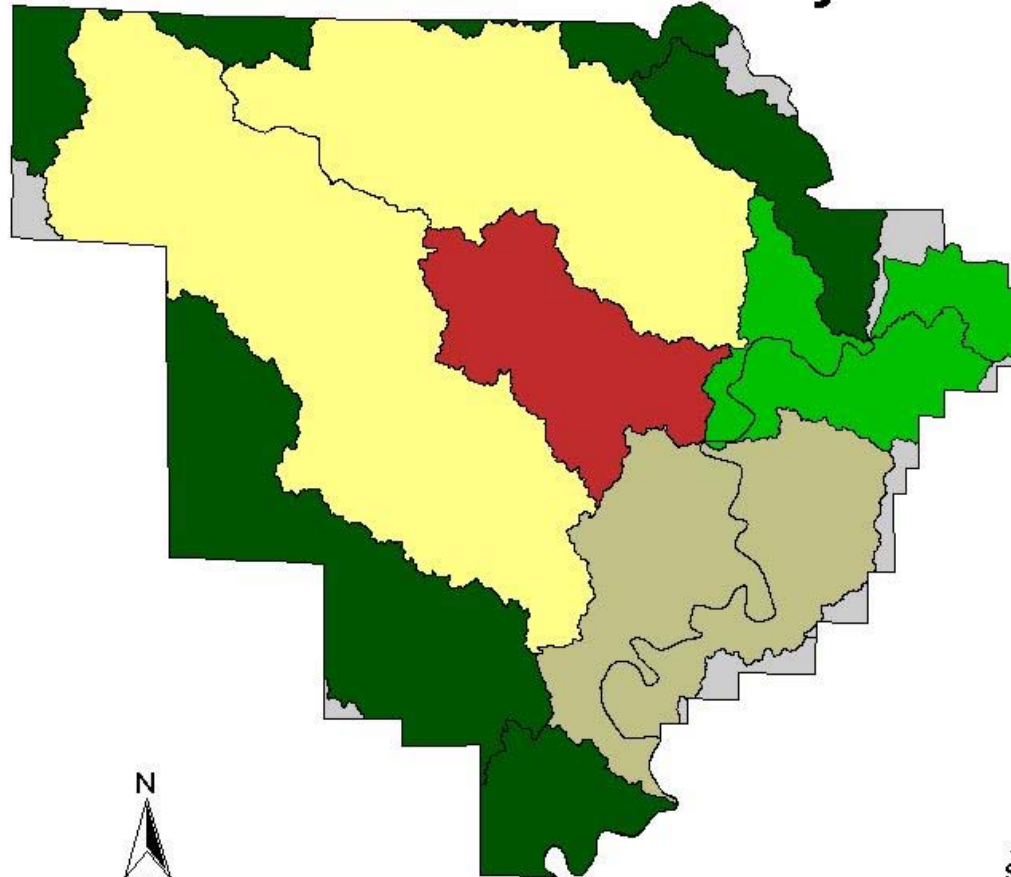
State Protected (SP) - Species with a state protected status are protected by the Nongame Species Regulation (Section 220-2-.92, page 86-88) and the Invertebrate Species Regulation (Section 220-2-.98, pages 82-83) of the *Alabama Regulations for 2006-2007 on Game, Fish, and Fur Bearing Animals*. Copies of these regulations may be obtained from the Division of Wildlife & Freshwater Fisheries, Alabama Department of Conservation & Natural Resources, 64 North Union Street, Montgomery, AL 36104. A digital version of these regulations is available online at <http://www.outdooralabama.com/hunting/regulations/2006-2007RegBook-Final.pdf>.

The Nongame Species Regulation (Section 220-2-.92, page 86-88) is available online at: <http://www.outdooralabama.com/watchable-wildlife/regulations/nongame.cfm>.

Partial State Protected (SP-P) – Species partially protected by regulations in the *Alabama Regulations for 2006-2007 on Game, Fish, and Fur Bearing Animals* through mechanisms such as size limits.

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## Walker County Watershed Assessment Urban Sediment - Erosion By Sub - Watershed



Cooperating Agencies:  
EPA-Section 319,  
ADEM, AACD, NRCS, SSWCC  
Source Data Collected in 1998

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## FOOTNOTES

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<sup>1</sup> Soil & Water Conservation Committee. *Alabama Watershed Assessment 1998*. [www.swcc.state.al.us](http://www.swcc.state.al.us).

<sup>2</sup> Stantec Engineering, Inc. Town Creek Revitalization US Army Corps of Engineers Section 404 Permit Application.

<sup>3</sup> North Carolina Stream Restoration Institute. *Stream Restoration: A Natural Channel Design Handbook*.

<sup>4</sup> Center for Watershed Protection. *Urban Stormwater Retrofit Practices Version 1.0*. August 2007.