

Patsiliga Creek  
TMDL Implementation Plan  
Beaver Creek to Flint River, Butler  
Taylor County, Georgia  
HUC #031300051405

Prepared by  
Middle Flint Regional Development Center  
June 30, 2004  
Funded by  
Georgia Department of Community Affairs

Patsiliga Creek TMDL Implementation Plan  
Taylor County Georgia - Flint River Basin  
HUC # 031300051405

Background

The State of Georgia assesses water bodies for compliance with water quality standards criteria as required by the Federal Clean Water Act (CWA). Assessed water bodies are placed into one of three categories; supporting, partially supporting or not supporting their designated uses depending on water quality assessment results. These water bodies are placed on Georgia's 305(b) list as required by that section of the CWA that addresses the assessment process, and are published every two years in *Water Quality in Georgia*.

Some 305(b) partially supporting and not supporting water bodies are also assigned to Georgia's 303(d) list, named after the corresponding section of the CWA. Water bodies on the 303(d) list are required to have a Total Maximum Daily Load (TMDL) evaluation when samples exceed water quality standards for any of numerous contaminants. Patsiliga Creek in Taylor County was one of many in the Flint River basin found to be in violation of water quality standards for fecal coliform bacteria. The 303(d) listing encompasses the ±6 mile (impaired) segment of Patsiliga Creek from Beaver Creek to the Flint River, Butler. Based on analysis of water quality samples collected, the TMDL calls for a 34% reduction in the fecal coliform bacteria count; from 3.24E+12 to 2.13E+12.

The TMDL process establishes the allowable loading of pollutants or other quantifiable parameters for a water body based on the relationship between pollution sources and in-stream water quality conditions. This allows water quality-based controls to be developed to reduce pollution and restore and maintain water quality.

Water samples were collected by the Environmental Protection Division (EPD) of the Georgia Department of Natural Resources between February and December, inclusive, 2000, at trend monitoring station #11054651 on County Road 128 (Turner Road) approximately 3 miles northwest of downtown Reynolds.

Environmental Parameter

Fecal coliform bacteria are indicators of a potential public health risk, and not an actual cause of disease. They have been traditionally used by public health authorities to indicate health risk from a wide range of living organisms too small to see with the naked eye (microbes), and to set water quality standards for drinking water, shellfish consumption and water contact recreation.

Fecal coliform bacteria suggest the co-presence of bacterial pathogens (disease-causing microbes) which can cause dysentery, gastrointestinal illness, cholera, typhoid fever and staph infections. The actual risk of contracting a disease from a pathogen depends on a

host of factors, such as the method of exposure or transmission, pathogen concentration, incubation period and the age and health status of the infected party.

Fecal coliform are an imperfect indicator of water safety, and regulators debate whether other bacterial species are better indicators of potential health problems. The debate remains largely academic; however, as over 90% of states still rely on fecal coliform, in whole or in part, as their recreational water quality standard.<sup>1</sup>

The water safety standard used by the State of Georgia for fecal coliform bacteria is based on a 30-day geometric mean (at least four samples collected during a thirty day period at intervals of not less than twenty-four hours) of 200 cfu/100 ml for water samples collected during the six month period May through October, inclusive, and a 30-day geometric mean of 1,000 cfu/100 ml (with a maximum of 4,000 cfu/100 ml) for water samples collected during the months of November through April, inclusive.<sup>2</sup> The geometric mean is a statistical method used to adjust for great variability in sample values; a common occurrence with fecal coliform bacteria.

As data in the following table indicates, one of the four geometric means (305 cfu) exceeds applicable standards. Consequently, Patsiliga was classified as partially supporting the creek's designated use of fishing.

Patsiliga Creek Water Quality Sampling Data  
HUC 031300051405  
Monitoring Station 11054651

Sample Date 2000	Observed Fecal Coliform (counts/100 ml)	Geometric Mean (counts/100 ml)
February 24	50	40
March 2	50	
March 8	20	
March 14	50	
May 17	110	53
May 25	50	
May 31	20	
June 14	70	
July 27	80	305
August 3	490	
August 10	1300	
August 17	170	
November 8	490	137
November 15	330	
November 29	20	
December 7	110	

Source: Total Daily Maximum Daily Load Evaluation for Twenty-Eight Stream Segments in the Flint River Basin for Fecal Coliform, GA. DNR-EPD, January 2002

<sup>1</sup> Watershed Protection Techniques, vol..3, no.1, April, 1999

<sup>2</sup> coliform units/100 milliliters

It is well documented that fecal coliform bacteria counts typically increase immediately after rain events, in part because bacteria naturally occurring across the landscape are washed into surface waters. Static-state conditions (not influenced by rainfall) are preferred for collecting water samples used in water quality analysis.

The highest bacterial count (1300) recorded on Patsiliga in 2000 was from a sample collected August 10. According to the Georgia Automated Environmental Monitoring Network reporting station nearest the collection site,<sup>3</sup> .01 inch of rain was recorded on August 10 and .45 inch was recorded on August 9. No rainfall was recorded any of the four preceding days (August 5-August 8). The next highest bacterial count (490) was collected on August 3 and November 8. Recorded rainfall July 31-August 3 was .26 inch, .78 inch, .02 inch and 0, respectively. No rainfall was recorded between November 5-November 8, inclusive. All of the low bacteria counts were collected during static-state conditions (the nearest rainfall was three days prior to sample collection).

### Watershed Description

The primary hydrologic unit (Hydrologic Unit Code #031300051405) is a watershed of approximately 18,000 acres. The water quality sampling site was located in the lower half of the watershed's main channel, which travels a distance of approximately seventeen creek miles. Through the use of computer modeling, the impaired segment was determined to extend from Beaver Creek, north of the sample site, to the Flint River.

The watershed has one main, unnamed tributary flowing from the eastern city limits of Butler; a distance of approximately eight creek miles. A portion of Butler's northeast quadrant constitutes the northern reach of this watershed. For present purposes this tributary will be referred to as "Suggs Mill" creek, in recognition of the larger of two mill ponds on this tributary.

An approximately ten acre mill pond (Fickling Mill) is located on the northern extremity of the primary watershed, approximately eight miles upstream of the sample site. Waters draining HUC #031300051403 flow through Fickling Mill.

A secondary hydrologic unit (HUC #031300051404) is formed by Beaver Creek. Covering a land area of approximately 10,000 acres, including most of the northern half of the City of Butler, the main channel is approximately nine miles long. This watershed charges Patsiliga at a point approximately 3.25 creek miles upstream of the sample site.

### Land Use

Statewide 66% of the land area is in forest; Taylor County's percentage has averaged 78 for over a decade.<sup>4</sup> A review of aerial photography indicates land cover throughout the affected watersheds differs little from the county average. The next most significant land use is conventional agriculture.

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<sup>3</sup> Fort Valley State University in Fort Valley, fourteen air miles east of the sample site

<sup>4</sup> Georgia County Guide

Neither of the referenced basins has experienced significant development in the past decade. The combined population of the primary and secondary HUCs is ±1,800: 1,000 in the primary HUC; 800 in the secondary HUC. Eight hundred of these reside in Butler and Reynolds. There are approximately 850 housing units throughout these watersheds; approximately 370 of which are in the two cities. There is not any significant concentration of development along the water's edge.

### Source Assessment

Pollution originates from two broad sources; point sources and nonpoint sources. A point source is defined as a discernable, confined, and discrete point or site from which pollutants are discharged into surface waters. Examples of point sources are municipal and industrial wastewater treatment plants. These sources have been addressed through the federal Clean Water Act National Pollutant Discharge Elimination System (NPDES) permit program and are not the subject of this implementation plan. The City of Reynolds does discharge from a NPDES regulated facility approximately four creek miles downstream of the monitoring site.

The second broad category of pollution is nonpoint sources. These are diffuse and generally involve accumulation of fecal coliform bacteria on land surfaces that wash off as a result of rain events. In general, nonpoint sources cannot be identified as discharging wastewater into a water body at a single location. Typical nonpoint sources of fecal coliform bacteria include:

#### Wildlife

#### Agricultural Livestock

#### Urban Development

Animal grazing/confinement

Leaking septic systems

Animal access to streams

Land application systems

Use of manure on crop/pasture

Landfills

Storm sewers

### Wildlife

The importance of wildlife as a source of fecal coliform bacteria in streams varies considerably, depending on the animal species and the numbers present in the watershed. Animals that spend a large portion of time in or around aquatic habitats are considered to be the most significant wildlife contributors of fecal coliform bacteria.

A feral hog population of unknown size has been reported in the watershed, upstream of the previous monitoring point. The population is large enough that recreational hog hunts have been held in the watershed. Feral hogs are adaptable to almost any habitat, but prefer wooded areas close to water, a feature characteristic of Patsiliga Creek both upstream and downstream of the monitoring site. Lacking sweat glands they regulate body temperature by lying in water or mud, and cannot survive in hot climates without a plentiful supply of water. Their ability to thrive on a very diverse diet gives them a distinct survival advantage over other species. Because they are so prolific, adaptable, tenacious, and have no natural predators, it is difficult to control their population. Areas

elsewhere with significant feral hog populations have recorded high concentrations of fecal coliform bacteria

Although deer are generally considered to be one of the less significant contributors of fecal coliform bacteria, the feces they deposit on the land surface can result in the introduction of fecal coliform to streams during runoff (rain) events. It should be noted that considerable decomposition of the fecal matter should occur between rain events, resulting in a decrease in associated bacteria counts. This also holds true for other terrestrial mammals such as squirrel, rabbit and terrestrial birds.

The Department of Natural Resources 2000 Deer Census suggests a deer population of 50 per square mile. This equates to approximately 2200 deer in the combined watersheds, or one deer for every thirteen acres of land area.

Participants at the February 12, 2004, public meeting did not specifically mention the presence of a large deer population in the affected watersheds, but did make the statement that wildlife was widespread. Turkey and wood duck were mentioned as examples of wildlife present in the watershed in significant numbers. For their size, wood duck generate large quantities of fecal bacteria. It was also noted that a wildlife preserve was in development during the previous period of testing. This preserve is astride an unnamed tributary, referred to here as “Crowell Creek”, which flows into Patsiliga from the northeast, immediately upstream of the previous sampling site.

### Agricultural Livestock

Agricultural livestock are potential sources of fecal coliform bacteria whether on open pasture or in confinement. Cattle, sheep, horses, and goats grazing on pasture deposit feces onto land surfaces from where it can be transported to nearby streams during rain events. Livestock on open grazing often have direct access to streams that pass through pastures, and as such can impact water quality directly. Confined animal feeding operations (CAFO), such as beef cattle in feedlots, poultry houses and confined dairy cattle and swine, generate large quantities of fecal material within a limited area with potential for significant bacterial runoff.

According to agricultural statistics,<sup>5</sup> in 2000 there were 3,500 beef cattle in Taylor County. Such agricultural activity within the affected watersheds is rare. One small herd of approximately 100 head was reported to have been on open pasture at the time of sampling (and reportedly sold in late 2003). Any other “herds” which may have been present would have been very small, and most likely located nearer tributaries than main channels of the watersheds.

Agricultural data also reported the presence of 5.3 million poultry in 55 houses at the time. The only poultry houses identified in the affected watershed are located in the secondary watershed, approximately seven creek miles upstream of the monitoring station.

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<sup>5</sup> Georgia County Guide 2001

Participants at the public meeting reported poultry litter was applied to farm land during 2000. Unless the farmer applying litter to his land also raises poultry, the litter must be purchased just as any other soil enhancer, and like any other fertilizer it must be incorporated soon after application to achieve maximum benefit.

In recent years the poultry industry has been promoting the use of nutrient management planning; matching nutritional value of poultry litter with the nutritional needs at any given application site. This refinement to an existing best management practice further reduces the potential for bacterial runoff.

Agricultural statistics do not reflect the presence of any dairy cattle or swine in Taylor County for the period.

### Urban Development

For TMDL purposes, septic tanks are considered an “urban” development. After solids are trapped in a septic tank, wastewater is distributed through a subsurface drain field and allowed to percolate through the soil. If the septic system is properly located, installed and maintained, bacteria are effectively removed by filtering water through the soil profile. A large number of septic systems fail; however, when wastewater breaks out or passes through the soil profile without adequate treatment.

The causes of septic system failure are numerous; inadequate soils, poor design, siting, testing or inspection, hydraulic overloading, tree growth in the drain field, old age, and owner failure to clean the system. Among the factors officials should consider when investigating whether septic systems are likely to be a major bacteria source are age (systems older than twenty years) and small lots. The design life of most septic systems is 15-30 years, at which point major rehabilitation or replacement is often needed.

There are approximately 500 single-family housing units (with septic systems) in the unincorporated area of the watershed. The only concentration is a mobile home park, and it is not proximate to the creek. No problems with malfunctioning septic systems have been reported in the county. Dwellings in the Cities of Butler and Reynolds are serviced by municipal sanitary sewer systems.

### Land Application Systems

Many smaller communities use a land application system (LAS) for treatment/discharge of sanitary wastewater. These facilities are regulated through state-issued LAS permits to treat wastewater by land application and to have zero discharge. However, runoff during rain events may carry surface residual containing fecal coliform bacteria to nearby streams. The City of Butler maintains a land application system for wastewater treatment within the Big Whitewater Creek watershed. Runoff from this site does not flow into Patsiliga Creek.

## Landfills

Leachate from landfills may contain fecal coliform bacteria and may at some point discharge into surface waters. Sanitary (municipal) landfills are the most likely type of landfill to serve as a source of fecal coliform bacteria. These receive household wastes, animal manure, offal, hatchery and poultry processing plant wastes, dead animals, and other types of wastes. Older sanitary landfills were not lined and those that remain active operate as construction/demolition landfills. Newer sanitary landfills are lined with synthetic fabric and have leachate collection systems. All landfills, except inert landfills, are now required to install environmental monitoring systems for groundwater sampling.

A large commercial municipal landfill has been operating in west-central Taylor County since 1990. The hydrologic flow of groundwater from this site is several miles south of Patsiliga. The county operated an unlined sanitary landfill near the upper reach of the secondary watershed, approximately twelve miles upstream of the water sampling site. This facility closed around 1990, reducing the potential that it could be a contributor of fecal coliform bacteria detected in water quality samples taken in 2000.

## Storm Sewers

Municipalities typically collect storm water flow (runoff) via a storm sewer system, and discharge it through distinct outlet structures into creeks and streams. Documented sources of nonhuman fecal coliform in urban watersheds include dogs, cats, raccoons, rats, beaver, gulls, geese, pigeons. Dogs in particular appear to be a major source of coliform bacteria and other microbes, because of their population density, daily defecation rate, and pathogen infection rates.

The northern portion of the City of Butler is located on the extreme reach of the secondary watershed. The city's storm sewer system consists of a series of open ditches. The northeast quadrant of the City of Reynolds is located in the primary watershed. Its storm system is also a series of open ditches. Reynolds is approximately 1.5 miles downstream of the monitoring site.

## Stakeholder Involvement

Owners of land contiguous to the impaired segment of Patsiliga Creek were identified from courthouse tax records. Thirty-seven invitations were mailed to local government officials, president of the local Farm Bureau, health department and forestry officials, and agricultural experts from the County Extension Office and National Resources and Conservation Service, property owners and other stakeholders. Block ads were published in local newspapers inviting public participation in the development of this document. Fifteen attended the February 12, 2004 meeting.

The meeting opened with a viewing of the fifteen-minute videocassette tape, *Watershed Wisdom*, after which the purpose of the meeting was clearly explained. During the ninety

minute meeting participants shared their knowledge of land use in the watershed, possible contributing sources and suggested possible corrective measures.

### Potential Funding Sources

Georgia EPD

Watershed Assistance Grants

Volunteer Activities (Adopt-A-Stream)

Water Quality Cooperative Agreements

Non-point Source Implementation Grants (319)

Patsiliga Creek Water Quality Sampling/Monitoring Plan  
HUC 031300051405  
(refer to accompanying map)

Additional water sampling and analysis is proposed to help identify areas where efforts to locate possible contributors of fecal coliform loading are likely to be most beneficial. Additional sample collections are proposed for the following sites:

- Collection site A      Turner Road/County Road 128 – Site of monitoring station 11054651 where water quality samples were taken in 2000. Additional testing is proposed for use as a control to reference any changes over time. Three water courses converge immediately upstream of this site; an unnamed creek from the northeast, referred to here as “Crowell Creek” because of its proximity to Crowell Road, Patsiliga Creek, and the watershed’s primary tributary from the west, “Suggs Mill” Creek, flowing approximately eight creek miles from the City of Butler. Sites 1, 2 and 3 are proposed for the purpose of eliminating one or more of these waterways as possible contributors.
- Collection site 1      “Crowell” Tributary - Immediately upstream (northeast) of the original sampling site (site A) – This site is downstream of farmland believed to have been the application site of poultry litter during the time of the 2000 samples were collected. This site is also immediately downstream of the start-up site for a wildlife preserve. This small watershed drains through a small pond near the mouth of the tributary. Sampling will occur between the pond outfall and Patsiliga Creek. High counts at this location should be traceable to specific activity because the sub-basin is easily viewable.
- Collection site 2      Main Channel of Patsiliga Creek – The nearest accessible site immediately upstream of the original monitoring site. It has been selected because of the possibility of identifying/eliminating upstream Patsiliga as the direction from which the bacteria are entering the waterway. A feral hog population is directly upstream of this site. If high counts are recorded here, the next site for additional testing is approximately one creek mile upstream, accessible across private property and down an electric power line easement. The confluence of Patsiliga and Beaver (secondary HUC) Creeks is an additional 2.5 miles further upstream, and that point is approximately one-half mile from the nearest access point, Georgia Highway 208.

Collection site 3

“Suggs Mill” Creek - This proposed sample site is near the mouth of “Suggs Mill” Creek immediately upstream of its confluence with Patsiliga. This site is selected to identify/eliminate the main tributary of the primary watershed as the direction from which the bacteria are entering the waterway. Because of its proximity to the roadway, this site can be accessed from Turner Road. If high counts are recorded here, additional upstream sites are accessible from Suggs Mill Pond Road, New Providence Church Road, and South Oak Drive (private).

STATE OF GEORGIA

TMDL IMPLEMENTATION PLAN FOR: Patsiliga Creek  
(STREAM)

Fecal Coliform  
(PARAMETER)

RIVER BASIN: Flint (Middle Flint)  
PLAN DATE: June 30, 2004

Prepared by: <u>Gerald Mixon</u> <u>Middle Flint Regional Development Center</u>		Or Prepared By: _____					
Address: <u>228 West Lamar Street</u>		Address: _____					
City: <u>Americus</u> State: <u>GA</u>		City: _____ State: _____					
Zip: <u>31709</u> e-mail: <u>gmixon@middleflintrdc.org</u>		Zip: _____ e-mail: _____					
Date Submitted to EPD: <u>June 30, 2004</u>		Date Submitted to EPD: _____					
<p align="center">General Information</p> <p>Obtain this information from the TMDL document or other information. When completed, this document will be a self-contained report independent of the TMDL document.</p>		<p align="center">Significant Stakeholders</p> <p>Identify local governments, agricultural organizations or significant land holders, commercial forestry organizations, businesses and industries, and local organizations including environmental groups with a major interest in this water body.</p> <p align="right">Additional stakeholders identified on page 17.</p>					
TMDL ID (to be entered by EPD)		Name/Organization	Taylor County Board of Commissioners				
Water body name	Patsiliga Creek	Address	P. O. Box 278				
HUC basin name	Flint (Middle Flint)	City	Butler	State	GA	Zip	31006
HUC number	031300051405	Phone	478-862-3336			e-mail	
Primary county	Taylor	Name/Organization	Taylor County Extension Office				
Secondary county	-	Address	P.O. Box 397				
Primary RDC	Middle Flint	City	Butler	State	GA	Zip	31006
Secondary RDC	-	Phone	478-472-7588			e-mail	
Water body location	Beaver Creek to Flint River, Butler	Name/Organization	Taylor County Health Department				
		Address	P. O. Box 459				
Miles or area impacted	6 mile impaired segment	City	Butler	State	GA	Zip	31006
Parameter addressed in plan	Fecal coliform	Phone	478-472-8121			e-mail	
Water use classification	Fishing	Name/Organization	Taylor County Farm Bureau				
Degree of impairment	Partially supporting use X	Address	512 West Talbot				
	Not supporting use	City	Reynolds	State	GA	Zip	31076
Date TMDL approved by EPA	April 30, 2002	Phone	478-847-4180			e-mail	
Impairment due to	Point sources	Name/Organization	Taylor County Forestry Unit				
	Nonpoint sources X	Address	Route 2, Box 324				
	Both	City	Butler	State	GA	Zip	31006
Point source-Form A; Nonpoint source-Form B; Both-Form A+B+C		Phone	478-472-6129			e-mail	

FORM B

SUMMARY OF ALLOCATION MODEL RESULTS FROM TMDL DOCUMENT (existing load, target TMDL, and needed reduction)

EXISTING LOAD	TARGET TMDL	NEEDED REDUCTION
3.24E+12	2.13E+12	34.26%

I. IDENTIFY NONPOINT SOURCE CATEGORIES AND SUBCATEGORIES OR INDIVIDUAL SOURCES WHICH MUST BE CONTROLLED TO IMPLEMENT LOAD ALLOCATIONS:

List major nonpoint sources contributing to impairment, including those identified in TMDL document.

SOURCE	DESCRIPTION OF CONTRIBUTION TO IMPAIRMENT	RECOMMENDED LOAD REDUCTION (FROM TMDL)
None identified in TMDL document; none positively identified herein	Investigation at this point will focus on: (1) wildlife, and (2) BMPs related to the application of poultry litter to farmland.	34.26%* (required)

\* Total Maximum Daily Load Evaluation for Twenty-Eight Stream Segments in the Flint River Basin For Fecal Coliform; Fecal Loads and Required Fecal Load Reductions, June 2002, p. v, (Ga. DNR, January 2003).

II. DESCRIBE ANY REGULATORY OR VOLUNTARY ACTIONS INCLUDING MANAGEMENT MEASURES OR OTHER CONTROLS BY GOVERNMENTS OR INDIVIDUALS THAT WILL HELP ACHIEVE THE LOAD ALLOCATIONS IN THE TMDL:

Existing required regulatory actions

RESPONSIBLE GOVERNMENT, ORGANIZATION OR ENTITY	NAME OF REGULATION/ORDINANCE	DESCRIPTION	ENACTED OR PROJECTED DATE (mm/yy)	STATUS
Taylor County Health Dept.	State rules/regs. for on-site sewage management systems	Regulates installation of septic tanks	<01/98	active
Taylor County Board of Comm.	Zoning Ordinance	Regulates location of development in county	1998	active
Agriculture producers	Best Management Practices (BMP)	Maximizing production without causing deleterious effects on other resources	1990s	active
GA. EPD	Concentrated Animal Feeding Operations	Enforcement of wastewater treatment regulations applicable to feedlot operations	09/74	enforced as needed

Existing voluntary actions

RESPONSIBLE ORGANIZATION OR ENTITY	NAME OF ACTION	DESCRIPTION	ENACTED OR PROJECTED DATE (mm/yy)	STATUS
Landowners and hunters	Wild game hunting	Hunting feral hogs, deer, for recreational purposes	N/A	active
Poultry/agriculture producers	Nutrient Management Plans	Match nutritional value of poultry litter to nutritional need of farmland	2000	active
Cooperative Extension Service	Disseminate information	Consulting assistance and information on nonpoint-related impacts on water quality, water quality monitoring, analysis of nutrients and other constituents in animal waste, nutrient management planning	1914	active
Soil and Water Conservation District	Promote voluntary adoption of agricultural BMPs	Provide leadership in the protection, conservation, and improvement of soil, water and related resources	1937	active
USDA Natural Resources Conservation Service (NRCS)	Environmental Quality Incentives Program and other T/A	Develop standards and specifications regarding conservation practices, animal waste management systems, grazing activities, et. al. – implements state priorities	1997	active; needs additional funding
Farm Services Agency (FSA)	Water quality improvement practices (Conservation Reserve Program)	Administration of cost-sharing and incentive programs to improve environmental quality of farms. Funds targeted for high-priority watersheds with water quality problems.	1985	active
Resource Conservation and Development Council	Volunteer activism	Citizen activism in conservation of natural resources	1962	as needed

Additional recommended regulatory or other measures which should be implemented to reduce the loads of the TMDL parameter

ENTITY/ORGANIZATION RESPONSIBLE	NAME OF PROPOSED REGULATION/ORDINANCE/ OTHER	DESCRIPTION	ENACTED OR PROJECTED DATE (mm/yy)	STATUS
Taylor County	Follow-up and (as needed) targeted water sampling and analysis	Follow-up testing at 2000 collection site, and based on findings, test targeted sites proximate to potential or suspected sites of contribution	Years 2-3	Pending plan approval and necessary funding
Concerned Citizens	Adopt-A-Stream	Stream monitoring and sampling	Year 2-3	Investigating program requirements
GA. DNR	Hunter education	Educate hunters of the environmental harm of disposing wild game carcass in waterways	Years 2-5	pending plan approval and funding
GA DNR	Wildlife survey	Survey impaired creek segment to determine whether wildlife are present in numbers sufficient to be major contributors to unsafe fecal coliform levels, and develop necessary plan to address any problems identified	Year 2-3	pending plan approval and funding
Cooperative Extension Service, et. al.	Spot-check BMP applications	Staff visits to selected sites to assess proper implementation of applicable BMPs	Year 1-2	pending plan approval and funding

III. SCHEDULE FOR IMPLEMENTING MANAGEMENT MEASURES OR OTHER CONTROL ACTIONS:

These must be implemented within five years of when the implementation plan is accepted by EPD.

IMPLEMENTATION ACTION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
Form stakeholders group	X	X			
Organize implementation work with stakeholders and local officials to identify remedial measures and potential funding sources	X	X	X		
Identify sources of TMDL parameter		X	X		
Develop management programs to control runoff including identification and implementation of BMPs (Phase I): as necessary, review effectiveness of BMP applications					
Agriculture		X	X		
Forestry	N/A				
Urban	N/A				
Mining	N/A				
Organize and implement education and outreach programs		X	X		
Detect and eliminate illicit discharges		X	X		
Evaluate additional management controls needed			X	X	
Monitor and evaluate results			X	X	
Reassess TMDL allocations				X	X
Provide periodic status reports on implementation of remedial activities			X	X	X
If needed, begin process for Phase II (next 5 years) and subsequent phases					X

IV. PROJECTED ATTAINMENT DATE AND BASIS FOR THAT PROJECTION:

The projected attainment date is 10 years from acceptance of the implementation plan by EPD.

V. MEASURABLE MILESTONES:

- Number of management controls and activities already implemented 11
- Number of management controls and activities proposed in five-year work program 5
- Number of management controls and activities actually implemented in five-year work period —
- Stream sampled to identify areas of concern refer to accompanying map

VI. MONITORING PLAN:

Describe previous or current sampling activities or other surveys to detect sources or to measure effectiveness of management measures or other controls.

ORGANIZATION	TIME FRAME	PARAMETERS	PURPOSE	STATUS
DNR-EPD Watershed Planning & Monitoring Program	Feb-Dec, 2000	Fecal Coliform	Basin Planning and Quality Assessment (TMDL Development)	completed

Describe any planned or proposed sampling activities or other surveys.

ORGANIZATION	TIME FRAME	PARAMETERS	PURPOSE	STATUS
Georgia Southwestern State University	2005-2006	Fecal Coliform	Strategic sampling to help identify contributors	pending funding
EPD	2005	Fecal Coliform	Basin Planning	scheduled
“Friends of Patsiliga” (Adopt-A-Stream)	2005-2007	Fecal Coliform	Water quality monitoring	Investigating program requirements

VII. CRITERIA TO DETERMINE WHETHER SUBSTANTIAL PROGRESS IS BEING MADE:

- % concentration or load change (monitoring program)  
34.26% reduction
- Categorical change in classification of the stream  
Delisting of the creek is the goal
- Regulatory controls or activities installed  
Four additional actions are proposed
- Best management practices installed  
Inventory of current BMP compliance is proposed, pending results of additional testing

Additional stakeholders continued from page 11:

B&B Properties Jonnie & Adel Bentley Carrie Elizabeth Cooper Charles Scott Edenfield Denvil Gish C. Marshall Hartman Kenneth J. Hartman Sybil D. Hortman	John Mims Thomas Neely Jeff Nelson David Payne III Zack Posey Jr. Reynolds Golf Club Gerald B. Saunders Jr., et. al. Philip D. Reece	Stacy V. Schultz Troy Windham Otis Mathis, Jr., Chairman Board of Comm. Lenda Taunton, County Manager Richard P. Turk, Mayor of Butler Julian Knight, Mayor of Reynolds Ray Jones, USDA District Conservationist Phil Porter, Georgia Forestry Drew Marczak-The Timber Co.
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**PATSILIGA CREEK (TAYLOR COUNTY)  
TMDL IMPLEMENTATION PLAN  
WATER QUALITY COLLECTION SITES**

