2015

Kinchafoonee Creek Watershed Management Plan Year 2

Developed by:

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TABLE OF CONTENTS

1.0 SUMMARY
2.0 INTRODUCTION
3.0 SEGMENT AND WATERSHED DESCRIPTION
4.0 WATER QUALITY IMPAIRMENT AND TOTAL MAXIMUM DAILY LOADS (TMDLS)
5.0 VISUAL FIELD SURVEY
6.0 RANKING AND PRIORITIZING OF SIGNIFICANT SOURCES OF IMPAIRMENTS
7.0 IDENTIFICATION OF APPLICABLE EXISTING MANAGEMENT MEASURES
8.0 RECOMMENDATIONS FOR ADDITIONAL MANAGEMENT MEASURES
9.0 PARTNERSHIP ADVISORY COUNCIL AND PUBLIC INVOLVEMENT
10.0 SCHEDULE OF SEQUENTIAL MILESTONES
11.0 TARGETED MONITORING AND DATA
12.0 PLAN IMPLEMENTATION
13.0 PLAN APPENDICES
- **A. NINE (9) – KEY ELEMENT SUMMARY**
- **B. KINCHAFOONEE CREEK WATERSHED MAP (HUC 0313000702)**
- **C. LAND USE MAPS: TRENDS AND FUTURE**
- **D. FIELD NOTES**
- **E. COPIES OF PUBLIC NOTICES AND OTHER LITERATURE**
- **F. MEETING MINUTES**

LIST OF TABLES:

TABLE 1. GENERALIZED SOILS OF THE KINCHAFOONEE CREEK WATERSHED.
TABLE 2. KINCHAFOONEE CREEK HUC 10 WATERSHED 2014 305(B) DRAFT LIST.
TABLE 3. KINCHAFOONEE CREEK HUC 10 WATERSHED 2014 303(D) DRAFT LIST.
TABLE 4. SEDIMENT SOURCES OF CONTAMINATION FOR CLEAR CREEK.
TABLE 5. FECAL COLIFORM SOURCES OF CONTAMINATION FOR LANAHASSEE CREEK.
TABLE 6. EXISTING MANAGEMENT MEASURES FOR KINCHAFOONEE CREEK.
TABLE 7. SUGGESTED ACTIONS AND MEASURES TO ADDRESS CLEAR CREEK.
TABLE 8. SUGGESTED ACTIONS AND MEASURES TO ADDRESS LANAHASSEE CREEK.
TABLE 9. PARTNERSHIP AND ADVISORY COUNCIL FOR KINCHAFOONEE CREEK.
TABLE 10. SAMPLING STATIONS FOR TARGETED MONITORING.
TABLE 11. SAMPLING SCHEDULE FOR KINCHAFOONEE CREEK WATERSHED.
TABLE 12. *ESCHERICHIA COLIFORM* MONITORING DATA.
TABLE 13. MACROINVERTEBRATE MONITORING DATA.
TABLE 14. TURBIDITY MONITORING DATA.
TABLE 15. CHEMICAL MONITORING DATA.
TABLE 16. FUTURE IMPLEMENTATION SCHEDULE.

LIST OF FIGURES:

FIGURE 1. KINCHAFOONEE CREEK WATERSHED (HUC0313000702).
FIGURE 2. KINCHAFOONEE CREEK WATERSHED LAND USE TRENDS.
FIGURE 3. KINCHAFOONEE CREEK WATERSHED FUTURE LAND USE.
FIGURE 4. KINCHAFOONEE CREEK WATERSHED TARGETED MONITORING SAMPLING SITES.

1.0 SUMMARY

This document describes an interim framework for the implementation of Total Maximum Daily Loads (TMDLs). This interim framework is intended to guide and document the evolving local policies and procedures for advancing consistency with water quality standards. This documentation will promote internal coordination among local, state, and federal agencies and help inform the general public and commercial interests.

2.0 INTRODUCTION

The Federal Clean Water Act (33 U.S.C. §§ 1251-1387) allows the U.S. Environmental Protection Agency (EPA) to delegate authority to states to implement a technical and administrative framework for managing water quality. Those assigned responsibilities include setting water quality standards, assessing water quality, identifying waters that do not meet standards, establishing limits on impairing substances, and issuing permits to ensure consistency with those pollutant limits.

For waters that do not meet water quality standards due to an excessive pollutant load, the State must conduct a scientific study to determine the maximum amount of the pollutant that can be introduced to a waterbody and still meet standards. That maximum amount of pollutant is called a Total Maximum Daily Load (TMDL). A TMDL is a means for recommending controls needed to meet water quality standards, which are set by the state and determines how much of a pollutant can be present in a waterbody. If the pollutant is over the set limit, a water quality violation has occurred. If a stream is polluted to the extent that there is a water quality standard violation, there cannot be any new additions (or "loadings") of the pollutant into the stream until a TMDL is developed. Pollutants can come from point source and non-point source pollution. Examples of "pollutants" include, but are not limited to: Point Source Pollution – wastewater treatment plant discharges and Non-point Source Pollution – runoff from urban, agricultural, and forested areas – such as animal waste, litter, antifreeze, gasoline, motor oil, pesticides, metals, and sediment. The purpose of developing a Watershed Management Plan for Kinchafoonee Creek is to provide a tool that demonstrates a holistic approach to water quality management. The TMDL report is reviewed by the public, revised, and then submitted to the EPA to be considered for approval.

The Kinchafoonee Creek Total Maximum Daily Load (TMDL) Watershed Management Plan defines the approach to planning, implementing, and evaluating the effectiveness of best management practices (BMPs) with the goal to achieve the wasteload allocations (WLAs) for Macroinvertebrates (Bio M) and restore the beneficial uses of the Kinchafoonee Creek Watershed (Figure 1).

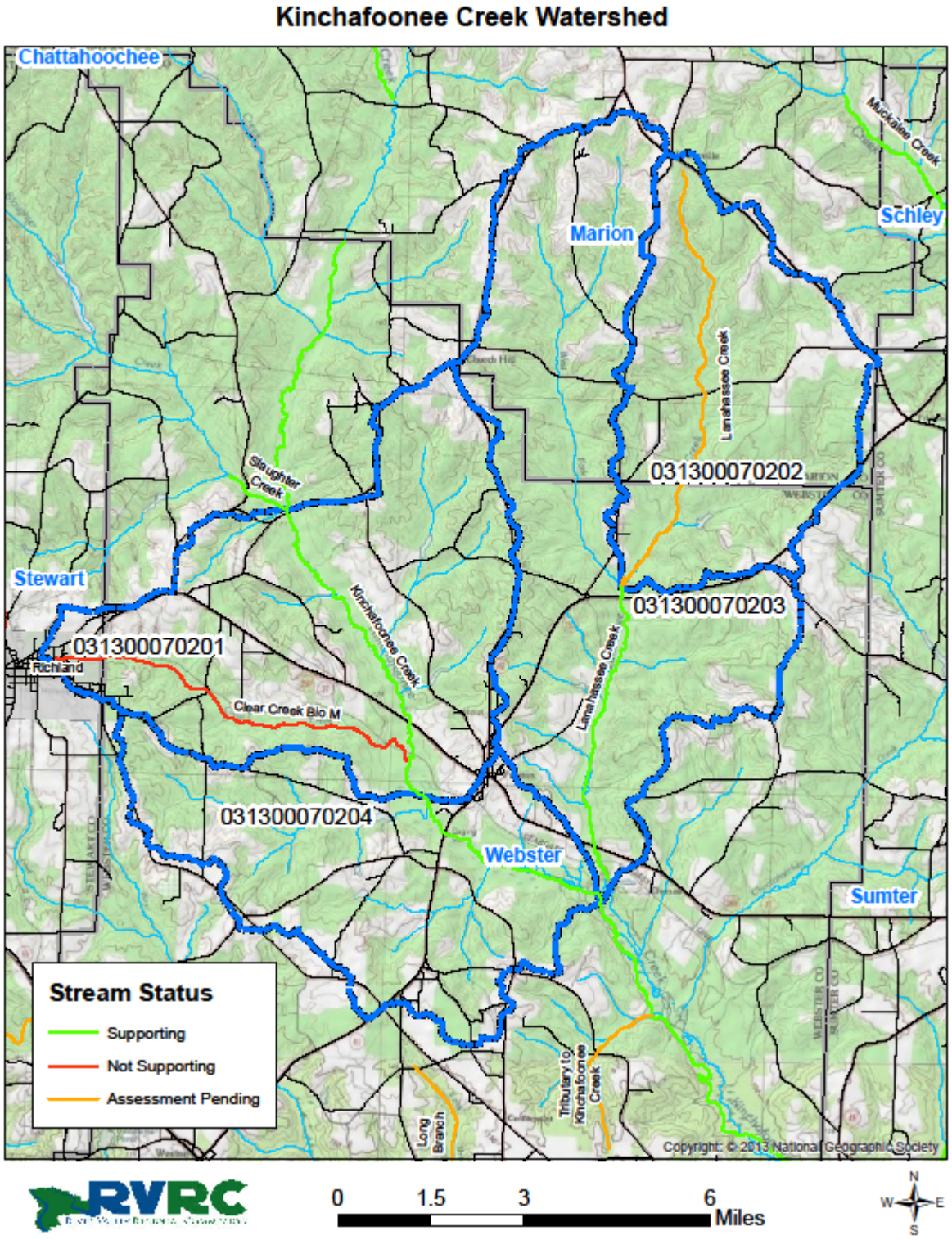
Two separate components within the HUC 0313000702 Kinchafoonee Creek watershed will be the main areas of focus for this Watershed Management Plan. One component will focus on two smaller HUC 12 watersheds (HUC 031300070201 and HUC 031300070204). Clear Creek, located within HUC 031300070201, is listed for a macroinvertebrate impairment. This HUC 12 drains into HUC 031300070204. Best management practice implementation will be

recommended to address the impairment of Clear Creek. These practices will focus on the reduction of sediment transport throughout these two HUC 12 watersheds.

The second component involves recommendations to support a Health Watersheds Initiative for the remaining two HUC 12 watersheds (HUC 031300070202 and HUC 031300070203). The southern section of Lanahassee Creek (HUC 031300070203) was on the 2012 303(d) list of impaired streams for a fecal coliform impairment. However, it has subsequently recovered its designated use of fishing and is on the 2014 305(b) draft list of supporting streams. Best management practices will be suggested to help maintain the healthy qualities of this stream and keep levels of fecal coliform reduced.

Watershed Management Plans require the development of a process to develop and implement a plan document for the purpose of: 1) creating the local network of partners; 2) identifying and securing the resources needed to fund and install the management practices and activities that would best achieve the pollutant load reductions needed to meet the TMDL and restore water quality; 3) verifying major sources or impairment; 4) developing a TMDL Implementation Plan that would address USEPA's 9-Key Elements of Watershed Planning; and 5) providing the information needed to support applications for funding (such as EQIP, Section 319(h), GEFA, or others), or identifying existing funding sources such as utility fees, SPLOST, or others.

FIGURE 1. KINCHAFOONEE CREEK WATERSHED (HUC0313000702).



3.0 SEGMENT AND WATERSHED DESCRIPTION

One of the first steps in understanding a watershed is through the discovery of its general and natural history. This section presents an overview and characterization of the Kinchafoonee Creek watershed. The successful application of BMPs in the Kinchafoonee Creek watershed will depend on the TMDL components, the physical characteristics of the watershed, and the regulatory requirements. By having a general knowledge of its history and natural resources, this can establish an understanding and appreciation of its existence.

The Kinchafoonee Creek watershed is located in Marion, Stewart, and Webster County and covers about 101.9 square miles or about 65,204 acres. This watershed begins where Kinchafoonee Creek meets Slaughter Creek and ends where Kinchafoonee Creek meets Lanahassee Creek. The Kinchafoonee Creek watershed is also part of the Upper Flint watershed. The Flint River Basin extends from south of Atlanta and merges with the Chattahoochee River Basin at Georgia's southwest corner, where it forms the Apalachicola River before it empties into the Gulf of Mexico.

Kinchafoonee Creek is located in the 10-digit hydrologic unit code (HUC) 0313000702. This plan will address the two HUC 12 watersheds (HUC 031300070202 and HUC 031300070203) that form the drainage basin for Lanahassee Creek, the HUC 12 watershed (HUC 031300070201) that forms the drainage basin for Clear Creek, and the HUC 12 watershed (HUC 031300070204) that forms the lower segment of Kinchafoonee Creek before it merges with Lanahassee Creek. This WMP will address the macroinvertebrate impairment in Clear Creek and can be used to help keep the remainder of the watershed healthy. A portion of Lanahassee Creek was previously listed on the 303(d) list of impaired streams, but is no longer listed to be impaired.

Clear Creek empties out into Kinchafoonee Creek west of Preston. The Political jurisdiction of the impaired segment of Clear Creek is in the City of Richland and Webster County.

Two, twelve-digit watersheds have previously been analyzed. The two primary water bodies in these basins form a "Y". The right fork of the "Y" is the upstream segment of Lanahassee Creek and constitutes the secondary hydrologic unit code, 031300070202, a roughly oval shaped basin of approximately 12,875 acres. The left fork of the "Y" is the location of the West Fork Lanahassee Creek and the base of the "Y" is the lower segment of Lanahassee Creek. The left fork and base of the "Y" constitute the 19,857 acre primary HUC 031300070203. The confluence of the left (West Fork Lanahassee) and right (upper Lanahassee) forks constitutes Lanahassee Creek, approximately 1,000 feet upstream of the GA Hwy 153 sampling site. These above mentioned watersheds are not charged by waters from any other basins. Approximately half of the combined area is in Webster County and half is in Marion County.

According to the 2013 The Georgia County Guide, by the University of Georgia, 66% of the state land area is in forest. In Webster, 68% is in forest; very similar to land cover is Webster's portion of the watershed studied. Eighty percent of Marion County is in forestland, but only approximately half of that portion in the affected watershed is in forest. Marion's second largest land use in the affected watershed is conventional agriculture. See Figure 2 for the Kinchafoonee

Creek watershed Land Use Trends of 2008 prescribed by Natural Resources Spatial Analysis Laboratory. This map demonstrates the characteristics of the land use cover within the Kinchafoonee Creek watershed. See Figure 3 for Kinchafoonee Creek's watershed future land use, which illustrates the estimated future land use changes in the watershed. Future land use scenarios were created based on an analysis of trends between 2010 land use and future land use zoning projected to the year 2014.

A description of soils within the watershed is provided for reference in Table 1.

FIGURE 2. KINCHAFOONEE CREEK WATERSHED LAND USE TRENDS.

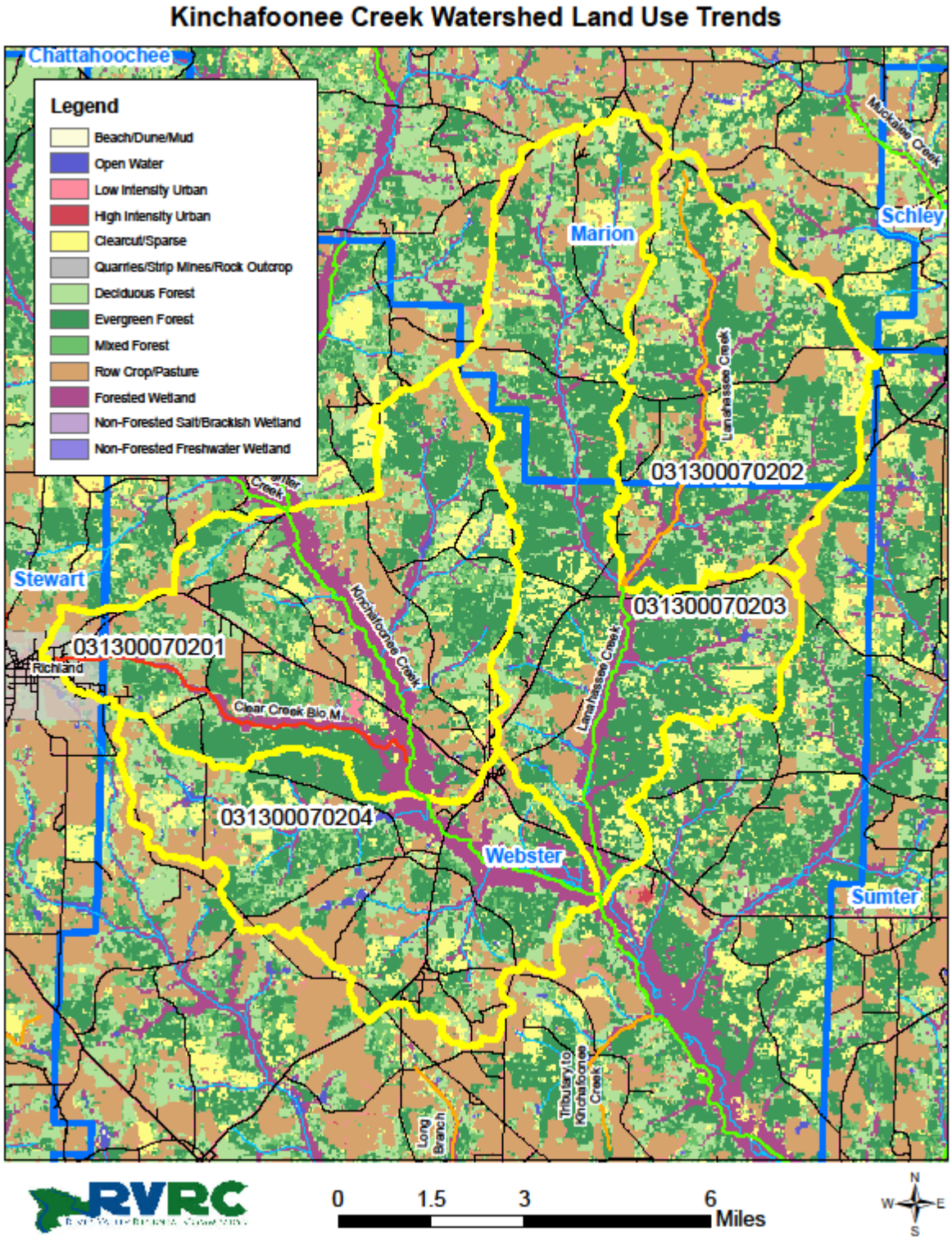


FIGURE 3. KINCHAFOONEE CREEK WATERSHED FUTURE LAND USE.

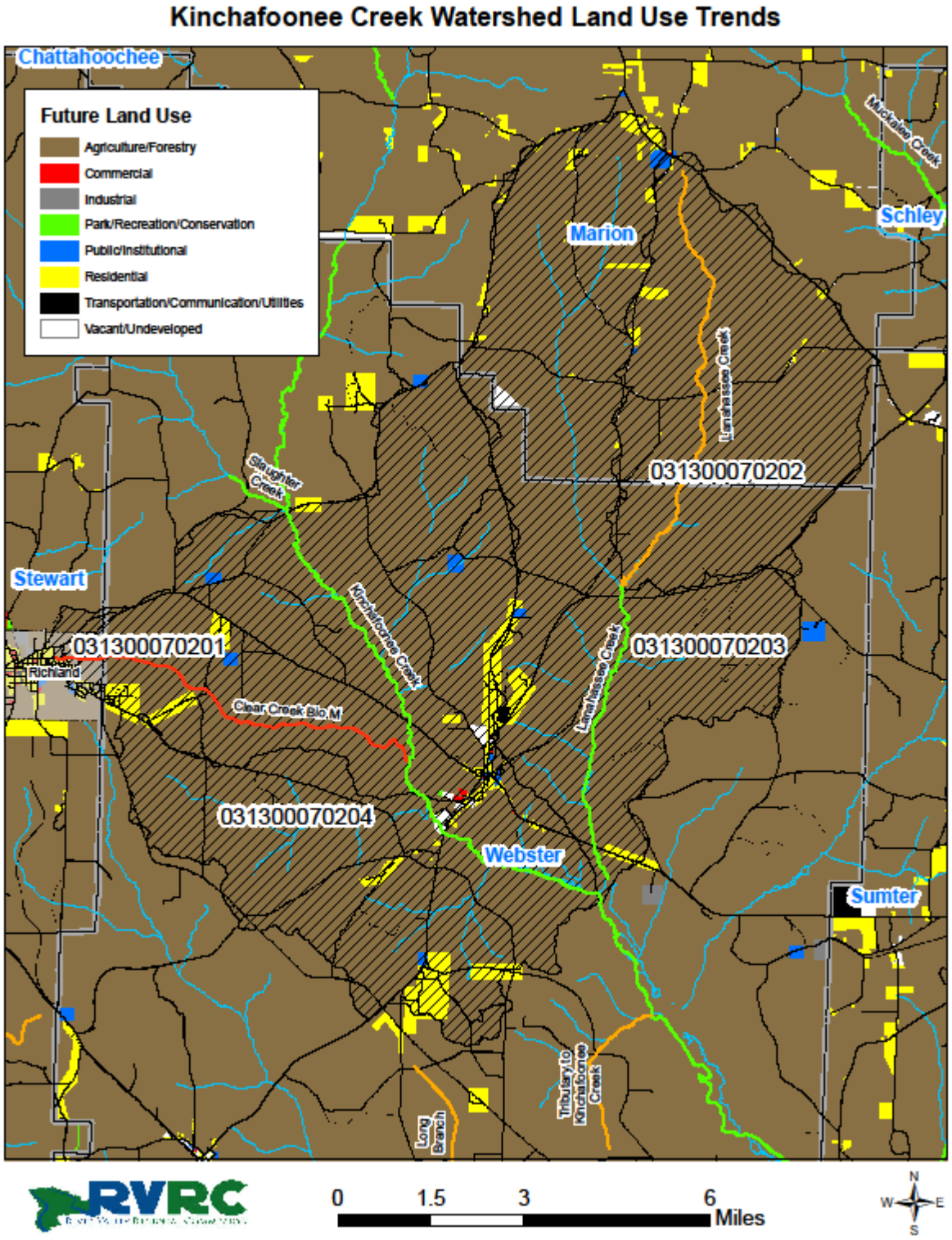


TABLE 1. GENERALIZED SOILS OF THE KINCHAFOONEE CREEK WATERSHED.

Soil Association	Soil Description
Kinston-Bibb	Nearly level, poorly drained soils on flood plains *Location*: Along Kinchafoonee Creek *Landscape*: Coastal Plain *Landform*: Flood plains *Slope*: 0 to 2 percent
Ocilla-Bonneau-Goldsboro	Nearly level to very gently sloping, well drained to somewhat poorly drained soils that have sandy surface and subsurface layers and a loamy subsoil or have a sandy layer and a loamy subsoil; on stream terraces and broad interstream divides *Location*: East-central part of the county along Kinchafoonee Creek *Landscape*: Coastal Plain *Landform*: Stream terraces and broad interstream divides *Slope*: 0 to 5 percent
Troup-Lucy	Nearly level to strongly sloping, somewhat excessively drained and will drained soils that have a sandy surface layer, a sandy subsurface layer, and a loamy subsoil; on broad interstream divides *Location*: Throughout the survey area *Landscape*: Coastal Plain *Landform*: Broad interstream divides *Slope*: 0 to 15 percent
Orangeburg-Greenville-Faceville	Nearly level to strongly sloping, well drained soils that have a sandy surface layer and a loamy subsoil of have a loamy surface and a clayey subsoil; on broad interstream divides *Location*: Mainly in the southwestern part of the county *Landscape*: Coastal Plain *Landform*: Broad interstream divides *Slope*: 0 to 15 percent
Cowarts-Orangeburg-Nankin	Nearly level to steep, well drained soils that have a sandy surface layer and a loamy or clayey subsoil; on interfluves and hillslopes *Location*: North and west-central parts of the county *Landscape*: Coastal Plain *Landform*: Uplands *Slope*: 0 to 35 percent

Source: NRCS/USDA. Soil Survey of Webster County, Georgia. 2011

4.0 WATER QUALITY IMPAIRMENTS AND TOTAL MAXIMUM DAILY LOADS (TMDLS)

Water quality standards address the federal requirement "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters" (Clean Water Act §101). The broad term "water quality standards" encompasses the adoption of "designated uses" and specific "criteria" that indicate whether or not the uses are being achieved.

The Georgia 2014 305(b)/303(d) draft list of waters was prepared as a part of the Georgia assessment of water quality prepared in accordance with Sections 305(b) and 303(d) of the Federal Clean Water Act and guidance from the U.S. Environmental Protection Agency. Assessed water bodies are classified according to a comparison of water quality monitoring results to water quality standards and other pertinent information. Table 2 depicts the 2014 draft list of supporting streams within the Kinchafoonee Creek HUC 10 watershed. Table 3 depicts the 2014 draft list of impaired streams located within the Kinchafoonee Creek HUC 10 watershed and their impairment.

TABLE 2. KINCHAFOONEE CREEK HUC 10 WATERSHED 2014 305(B) DRAFT LIST.

Waterbody Name	Location	County(s)	Impairment	Miles Impacted	Category
Kinchafoonee Creek	Marion County line to Terrell Count line	Webster	N/A	23	1
Lanahassee Creek	West Fork Lanahassee Creek to Kinchafoonee Creek	Webster	N/A	6	1

Source: Georgia Department of Natural Resources, Environmental Protection Division, 2010

TABLE 3. KINCHAFOONEE CREEK HUC 10 WATERSHED 2014 303(D) DRAFT LIST.

Waterbody Name	Location	County(s)	Impairment	Miles Impacted	Category
Clear Creek	Headwaters to Kinchafoonee Creek	Stewart/Webster	Bio M	7	5

Source: Georgia Department of Natural Resources, Environmental Protection Division, 2010

Clear Creek, from its headwaters to Kinchafoonee Creek (7 miles), was placed on the Section 303(d) list by the GA EPD for violating the state standards for sediment/macroinvertebrates. The GA EPD Sampling Station #1107020101, located at County Road 79 (32.08389°, -84.61325°), is where GA EPD monitors this creek.

Beginning in March 2000, the Department of Natural Resources (DNR) Environmental Protection Division (EPD) monitored by Wildlife Resources Division (WRD) collected water quality samples at a number of locations. Samples were analyzed to provide data to assess for the presence or absence of chemical pollution. The following analyses were conducted on each sample: dissolved oxygen (DO), temperature, conductivity, pH, turbidity, 5-day biochemical oxygen demand (BOD5), nitrate-nitrite, ammonia, total phosphorus, total alkalinity, total suspended solids (TSS), total organic carbon (TOC), metals, semi-volatile organics, pesticides, and PCBs.

EPD also conducted macroinvertebrate sampling at several of the locations to provide additional information and insight concerning water quality conditions. Macroinvertebrate sampling was conducted using a modified version of EPA's Rapid Bio Assessment Protocol III. Macroinvertebrate data results were evaluated using seven metrics as a measure of diversity, community composition (e.g., prevalence of tolerant or intolerant organisms), and environmental stress from a variety of possible sources. These data and metric calculation results were compared to those from reference streams located in the region (GAWPB, 2000).

In conjunction with macroinvertebrate sampling, habitat assessments were performed. The habitat assessments were conducted using the same procedures described above. All WRD impaired sites in the region were monitored by EPD. In general, each habitat assessment score is the average of three independent values that are determined on the same day. WRD performed their habitat assessments from April through September. EPD performed their assessment from mid-August through early October. The correlation between WRD and EPD habitat scores is 70.74 percent. Field personnel also performed a pebble count at those sampling locations where macroinvertebrate samples were collected. Pebble counts were conducted to document streambed particle-size distribution. The modified Wolman Pebble Count procedure was used, where 100 random particle samples are measured. A zig-zag collection technique was used that allows a longitudinal stream reach, incorporating pools and riffles, to be collected along a continuum instead of individual cross-sections (GAWPB, 2000). Visual observations of the stream and watershed were also made by EPD personnel. The type of land use and the extent of land-disturbing activities and other pertinent features of the watershed were systematically observed from all available road accesses and were recorded. This information was used to determine the potential sources of eroded soils and other possible contaminants.

A healthy aquatic ecosystem requires a healthy habitat. A major disturbance to stream habitats is erosion and sedimentation. As sediment is carried into the stream, it changes the stream bottom and smothers sensitive organisms. Turbidity associated with sediment loads may also impair recreational and drinking water uses (GAEPD, 1998). A source assessment characterizes the known and suspected sources of sediment in the watershed for use in a water quality model and the development of the TMDL. The general sources of sediment are point and nonpoint sources. National Pollutant Discharge Elimination System (NPDES) permittees discharging treated wastewater are the primary point sources of sediment as total suspended solids (TSS) and/or turbidity.

A Total Maximum Daily Load (TMDL) is the amount of a pollutant that can be assimilated by the receiving water body without exceeding the applicable water quality standard; in this case, the narrative water quality standard for aquatic life. TMDLs establish allowable pollutant loadings that are less than or equal to the TMDL, and thereby provide the basis to establish water quality based controls. For some pollutants, TMDLs are expressed on a mass loading basis. This TMDL determines the range of sediment load that can enter the impaired Clear Creek watershed without causing additional impairment to the stream. This is based on the hypothesis that if an impaired watershed has an annual average sediment loading rate similar to a biologically unimpaired watershed, then the receiving stream will remain stable and not be biologically impaired due to sediment. The average sediment load in the watersheds not on the 303(d) list is 0.06 tons/acre/yr. A TMDL is the sum of the individual waste load allocations (WLA) for point

sources and load allocations (LA) for nonpoint sources and natural background (40 CFR 130.2). The sum of these components may not result in an exceedance of water quality standards for a water body. To protect against exceedances, the TMDL must also include a margin of safety (MOS), either implicitly or explicitly, that accounts for the uncertainty in the relationship between pollutant loads and the water quality response of the receiving water body. Conceptually, a TMDL can be expressed as follows: TMDL = ΣWLAs + ΣLAs + MOS

As a result of the water quality impairment, Clear Creek was assessed as "not supporting" the Clean Water Act's fishing use support goal. In order to remedy the water quality impairment pertaining to macroinvertebrates, a TMDL has been developed, taking into account all sources of sediment. Upon implementation, the TMDL for Clear Creek shall ensure that the water quality standard relating to sediment will be in compliance with the standard.

Lanahassee Creek, from West Fork Lanahassee Creek to Kinchafoonee Creek (6 miles), was placed on the Section 303(d) list by the GA EPD for violating the state standards for fecal coliform (FC). Based off of information provided in the 2004 *Lanahassee Creek TMDL Implementation Plan*, a TMDL called for a 53% reduction in fecal coliform for Lanahassee Creek. The GA EPD Sampling Station #11065501, located at State Road 153 northeast of Preston (32.108034°, -84.500048°), is where GA EPD monitors this creek. Georgia's instantaneous standard specifies that fecal coliform concentration in the stream water shall not exceed the 30 – day geometric mean of 200 cfu/100 ml for the months of May through October, and 1,000 cfu/100 ml for the months of November through April.

Subsequently, Lannahassee Creek has been placed on the 2014 305(b) draft list of supporting streams for meeting the 53% load reduction of fecal coliform. The water quality impairment of fecal coliform has been reduced to safe levels and the creek is now supporting the TMDL and the designated use of fishing. A Healthy Watersheds Initiative should be implemented for Lanahassee Creek to maintain the healthy status of the creek and to ensure that fecal coliform levels remain below the TMDL.

5.0 VISUAL FIELD SURVEY

A visual survey of the Kinchafoonee Creek watershed is very important. The purpose of a visual survey is to determine if there are observable problems on the stream and to characterize the environment the stream flows through. The visual survey helps pinpoint areas that may be the source of water quality problems and helps to familiarize the overall condition of the stream. The Visual Field Survey was conducted on May 13, 2015. See Appendix D for field notes.

6.0 RANKING AND PRIORITIZING OF SIGNIFICANT SOURCES OF IMPAIRMENTS

In the 2004 *Lanahassee Creek TMDL Implementation Plan*, several sources of the fecal coliform impairment were identified. The advisors/stakeholders have provided input on potential sources of sediment and fecal coliform at the Partnership and Advisory Council meetings held on June

16, 2015 and September 23, 2015. Tables 4 and 5 addresse the sources of impairment and their contribution (1 being little or no contribution and 5 being great contribution).

Characteristics of Clear Creek's topography are broad valleys and rolling hills. Elevations range from 357 feet to 618 feet above sea level. Many of the slopes are found in the south western section of the watershed, where the sediment impairment has been located. Coupled with agricultural and silvicultural operations, soil composition becomes a main concern and priority of stakeholders.

Along with soil composition and surrounding land uses, storm water drainage coming from the numerous dirt roads in the area could be contributing significantly to the issue of the sediment impairment. Sediment from these dirt roads is loose and relatively unstable, leaving a high possibility of large sediment loads directly entering the surface waters of Clear Creek and nearby tributaries, especially following very heavy precipitation events.

No municipalities or their wastewater disposal systems are located within the subject watersheds. However, Tri-County High School (±500 students) maintains a wastewater treatment facility in the northern-most section of the West Fork Lanahassee watershed. The facility is approximately 1/3 linear miles from a West Fork tributary, and approximately 9 linear miles north of the original collection site. The highest recorded fecal coliform bacteria count during monitoring conducted in 2000 was from a sample taken June 20, when school was out of session for the summer.

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

According to 2004 deer census data of the Wildlife Resources Division of the Georgia Department of Natural Resources, there are approximately 17.3 deer per square mile in Marion and Webster Counties. On the basis of this information, and assuming a relatively even distribution, it is assumed there are approximately 885 deer in the affected basin; equivalent to one deer for every thirty-seven acres.

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 the associated bacteria counts. This also holds true for other terrestrial mammals such as squirrel, rabbit and terrestrial birds.

The deer are numerous enough to attract the attention of large numbers of hunters. A hunting camp of undetermined size is upstream of the original water quality sampling site (currently Site 2). While the natural activity of deer in the watershed may not be contributing significantly to the presence of fecal coliform bacteria, it is yet to be determined whether conditions and activities at the hunting camp could be having an influence. Perhaps unrelated to the specific

hunting camp, stakeholders did report occasional sightings of deer carcasses along waterways in the watershed.

Webster County stakeholders also reported the presence of wild dogs and coyotes in the watershed.

Marion County stakeholders reported a "significant" feral hog population with the Kinchafoonee Creek watershed. Feral hogs are adaptable to almost any habitat, but prefer wooded areas close to water. 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.

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 the land surface 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 in a more direct manner. 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 provided by Natural Resources Conservation Service, there were 12,795 head of beef in Webster and Marion Counties in 2005, but local stakeholders stated that the number within the Kinchafoonee Creek watershed as dropped to near 500 or 600 cattle. It was made clear there were not any commercial livestock operations in the watershed since 2000. Any beef cattle which were present were in very small, sparse herds maintained by a hobby-farmer or used to supplement family income rather than serve as a source of livelihood.

The two counties reportedly had 188 head of swine in 2005. This number has dropped to zero over the past five years.

The 2005 agricultural statistics reported 7.31 million broilers, breeding hens and laying hens distributed throughout Marion County. Webster County was credited with 460,000 chickens that year. Currently, none of these chicken houses were reported to exist in the affected watersheds. Marion County's portion of the affected watershed is in the highest concentration of prime farmland in the county, and is more heavily devoted to conventional row-crop agriculture than the northern portion of the county. Webster County's portion of the watershed is heavily forested.

Agricultural officials reported application of poultry litter on farmland in this watershed was uncommon. Where it is applied, the poultry industry has been promoting the use of nutrient management planning; matching nutritional value of poultry litter with the nutritional needs of any given application site. This refinement to an existing best management practice further

reduces the potential for bacterial runoff. There was no report of exposed stock piles of poultry litter used for cultivation of deer plots or agricultural use in the affected watersheds.

TABLE 4. SEDIMENT SOURCES OF CONTAMINATION FOR CLEAR CREEK.

Source	Extent (Miles, acres, etc.)	Permitted (Y/N)	Estimated Contribution (Rank 1 – 5)	Stakeholder Opinion (1 – 5)	Comments
Agricultural Uses	75+ acres	Unsure	4	3	Possible introduction of sediment from normal practices when BMPs are not followed
Silviculture	50+ acres	NA	3	3	Possible introduction of sediment from normal practices and stream crossings when BMPs are not followed
Storm water drainage from dirt roads	25+ miles	NA	5	4	Possible introduction of sediment from dirt roads in need of repair and maintenance
Highly erodible soils of the area/steep slopes	NA	NA	3	3	Soils near agricultural land with steep slopes may lead to erosion problems

TABLE 5. FECAL COLIFORM SOURCES OF CONTAMINATION FOR LANAHASSEE CREEK.

Source	Extent (Miles, acres, etc.)	Permitted (Y/N)	Estimated Contribution (Rank 1 – 5)	Stakeholder Opinion (1 – 5)	Comments
Tri-County High School wastewater treatment facility	0	Yes	1	1	± 500 students

Wildlife	32,733 acres	N/A	2	2	Deer, raccoons, squirrels, rabbits, etc.
Invasive feral hogs	32,733 acres	N/A	4	3	No natural predators with high reproductive ability
Hunting camp	4 miles	Yes	2	2	May throw carcasses in the watershed
Agricultural livestock	14 miles	Yes	2	2	Cattle, hogs, goats, horses, etc.
Scavenging Birds	32,733 acres	NA	3	3	Dumped carcasses attract large groups of these birds that feed and defecate along the roadways.

7.0 IDENTIFICATION OF APPLICABLE EXISTING MANAGEMENT MEASURES

Several Best Management Practices exist for the Kinchafoonee Creek watershed. Marion and Webster County strives to keep its waterways clean and have implemented several ordinances to reduce the pollution levels within its watersheds. Table 6 describes these ordinances and their responsible entity.

TABLE 6. EXISTING MANAGEMENT MEASURES FOR KINCHAFOONEE CREEK.

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description
State rules and regulations for on-site sewage management systems	Webster County Health Department	Regulates installation of septic tanks
Groundwater Recharge Area Protection Ordinance	Webster County Board of Commissioners	Regulate development in areas of significant groundwater recharge
Concentrated Animal Feedlot Operations	GA EPD	Enforcement of wastewater treatment regulations applicable to feedlot operations
Hunter Education	GA DNR	Hunter safety and stewardship
Best Management Practices	Ag producers	Maximizing production without causing deleterious effects on other resources
Nutrient Management Practices	Ag Producers	Purchasers of poultry litter match nutrients needs of land to nutrient value of litter

Promote voluntary adoption of agricultural best management practices	Soil and Water Conservation District	Provide leadership in the protection, conservation, and improvement of soil, water and related sources
Environmental Quality Incentives Program and other T/A	USDA Natural Resources Conservation Service (NRCS)	Develop standards and specification regarding conservation practices, animal waste management systems, grazing activities, et. al. – implements state priorities
Disseminate information	Cooperative Extension Office	Consultative assistance, information on nonpoint-related impacts on water quality monitoring, analysis on nutrients and other constituents in animal waste, nutrient management plans
Water quality improvement practices (Conservation Reserve Program)	Farm Service Agency (FSA)	Administration of cost-sharing and incentive programs for practices that improve environmental quality of farms. Funds targeted for high-priority watersheds with water quality problems
Disease control	Georgia Department of Agriculture	Provides guidance in location of animal waste facilities and disposal of dead animals
Agriculture research and monitoring	USDA Agricultural Research Service (ARS)	Research on grazing land systems and irrigation methods relevant to watershed-scale monitoring projects and nutrient movement in surface water and groundwater
Volunteer activism	Resource Conservation and Development Council	Citizen activism in conservation of natural resources

Beyond the regulatory and voluntary actions listed above, there are not any watershed planning activities related to the Kinchafoonee Creek watershed impairments that are known by the staff at River Valley Regional Commission.

8.0 RECOMMENDATIONS FOR ADDITIONAL MANAGEMENT MEASURES

This Watershed Management Plan will focus on two components: 1) Addressing the sediment/macroinvertebrate impairment located within Clear Creek (HUC 031300070201 and HUC 031300070204) and 2) Implementing a Healthy Watersheds Initiative for Lannahassee Creek (HUC 031300070202 and HUC 031300070203).

Clear Creek Recommendations:

There are several management practices that can be applied within the Clear Creek watershed to help alleviate the sediment pollution levels. There are two known cattle operations that total to over 500 cows. These farms are nearby streams and tributaries that drain into Clear Creek and Kinchafoonee Creek. Cattle that have access to these streams and tributaries disturb the sediment and cause it to be transported downstream. BMPs such as stream crossings, heavy use areas, fencing, and vegetation buffers should be installed to minimize the sediment transport.

Ponders Mill Road (CR 79) is a dirt road that crosses Clear Creek. This is the location of the GA EPD Sampling Station #1107020101 where the stream was tested and determined to be impaired with sediment. The application of techniques found in the Georgia Better Back Roads Field Manual should be implemented on dirt roads in the area to include, but not limited to, turn outs, culverts, drainage ditches, and cross dams.

Much of the northern part of the watershed is used as commercial forestry operations. There are also some agricultural operations. Vegetation buffers, silt fences, filter strips, and sediment basins should be installed to reduce the amount of sediment in runoff from both agricultural and silvicultural activities. Terracing of agricultural land will also help to minimize the amount of sediment entering the waterway from farming operations. In addition to these and other erosion control measures, drainage practices such as turnouts, ditches, culverts, and cross dams should be used as deemed necessary.

Post BMP installation monitoring should be implemented during the final year of the 2-year implementation grant in order to determine the effectiveness of the BMPs. Three (3) sites within the watershed should be tested monthly for turbidity. The same three (3) sites should be tested quarterly for macroinvertabrates using GA EPD's Adopt-A-Stream protocol for macroinvertebrate monitoring.

TABLE 7. SUGGESTED ACTIONS AND MEASURES TO ADDRESS CLEAR CREEK.

Action/Best Management Practice	Category	Water Quality Criteria to be Addressed	BMP Estimated Effectiveness
Vegetative Buffers	Agricultural/ Silvicultural BMP	Bio (Sediment) and/or Fecal Coliform	59%
Filter Strips	Agricultural BMP	Bio (Sediment) and/or Fecal Coliform	60%
Sediment Control Basins	Silvicultural BMP	Bio (Sediment)	75-95%

Fencing	Agricultural	Bio (Sediment) and/or Fecal Coliform	75% (sediment), 99% (FC)
Alternate Watering Sources	Agricultural BMP	Bio (Sediment) and/or Fecal Coliform	15%
Terracing	Agricultural BMP	Bio (Sediment)	85-95%
Silt Fencing	Agricultural/ Silvicultural BMP	Bio (Sediment) and/or Fecal Coliform	68-98%
Stream Crossings	Agricultural BMP	Bio (Sediment) and/or Fecal Coliform	30-50%
Dirt road maintenance measures (turnouts, ditches, culverts, cross dams)	Dirt Road BMPs	Bio (Sediment)	40-80%

Lanahassee Creek Recommendations:

There are not may concentrated animal feeding operations within the Lanahassee Creek watershed. A few hog and chicken operations have shut down over the past five years. This may have contributed to the reduced amount of fecal coliform flowing through the watershed and the delisting of Lanahassee Creek from the 303(d) list of impaired streams. However, there are still come cattle located throughout the watershed. At these locations, several Best Management Practices should be installed. BMPs that can help reduce levels of fecal coliform entering into Lanahassee Creek include, but are not limited to, alternative watering sources, fencing, composting facilities, stream crossings, waste facility covers, tree/shrub buffers, filter strips, water wells etc.

A hunting camp is located just 1/3 of a mile north east from site two. The presence of fecal coliform will be abundant if the hunters do not follow regulations to properly dispose of carcasses. Educational presentations about legal and illegal carcass disposal and composting operations and techniques should also be offered to hunters, local residents, and any other interested patrons.

Feral hog populations are also a noted problem for residents throughout the area and a contributing source, like other wildlife, to fecal coliform levels. Educational workshops to promote effective hog management techniques should be offered to area residents.

Post BMP installation monitoring should be implemented during the final year of the 2-year implementation grant in order to determine the effectiveness of the BMPs. Five (5) sites within the watershed should be tested monthly for *E. coli* using GA EPD's Adopt-A-Stream protocol for bacterial monitoring.

TABLE 8. SUGGESTED ACTIONS AND MEASURES TO ADDRESS LANAHASSEE CREEK.

Action/Best Management Practice	Category	Water Quality Criteria to be Addressed	BMP Estimated Effectiveness
Vegetative Buffers	Agricultural/ Silvicultural BMP	Bio (Sediment) and/or Fecal Coliform	59%
Filter Strips	Agricultural BMP	Bio (Sediment) and/or Fecal Coliform	60%
Fencing	Agricultural/ ilvicultural BMP	Bio (Sediment) and/or Fecal Coliform	75% (sediment), 99% (FC)
Alternate Watering Sources	Agricultural BMP	Bio (Sediment) and/or Fecal Coliform	15%
Silt Fencing	Agricultural	Bio (Sediment) and/or Fecal Coliform	68-98%
Stream Crossings	Agricultural BMP	Bio (Sediment) and/or Fecal Coliform	30-50%

9.0 PARTNERSHIP ADVISORY COUNCIL AND PUBLIC INVOLVEMENT

A Partnership Advisory Council recruitment from a number of working group partners were prioritized to serve to provide input for this Watershed Management Plan. Representatives include agriculture, members of local government, and landowners. This group is a collection of individuals who bring unique knowledge and skills which complement the knowledge and skills of the public in order to more effectively accomplish this plan. The purpose of the Partnership Advisory Council is to provide a forum for the public, partners, etc. to discuss potential concerns and solutions that will impact the Kinchafoonee Creek watershed, and to make recommendations relative to TMDLs.

The Partnership Advisory Council's key responsibilities were to:

- **Advise** on matters of concern to the community;
- **Contribute to the education** of the residents of the watershed on water quality issues;
- **Help identify** contributing pollution sources;
- **Assist** in arriving at equitable pollution reduction allocations among contributors;
- **Recommend specific actions** needed to effectively control sources of pollution; and
- **Help develop** and set in motion an extended plan.

Stakeholders are individuals who live or have land management responsibilities in the watershed, including government agencies, businesses, private individuals and special interest groups. Stakeholder participation and support is essential for achieving the goals of this TMDL effort.

Building partnerships was a key component in order to declare input from the stakeholder perspective in evaluating the Watershed Management Plan; and to provide an opportunity for stakeholders to understand how the peer review process contributes to the development of

TMDL plans and results. As a result of their participation, stakeholders became knowledgeable advocates for the role to help manage or decrease non-point source pollution impacts.

The stakeholder's key responsibilities were to:

- **Provide** technical support and assistance;
- **Distribute** and share information;
- **Identify** opportunities and common concerns; and
- **Develop** public support.

Examples of recommendations include:

- Additional monitoring to verify effectiveness of measures implemented;
- Review of all existing development codes, ordinances, and policies to identify where revisions could be made to reduce non-point source water pollution;
- Design and implement a citizen education program to make citizens aware of the non-point source water pollution problem and their role in improving the water quality;
- Encourage the continuing formation of volunteer groups to conduct community based stream protection efforts such as restoring vegetative cover within riparian areas, stream clean-up, and reporting of problems;
- Conduct screening level analyses of structural and non-structural BMPs;
- Investigate grant and funding opportunities to fund these efforts;
- Propose best management practices (BMPs) or other ways to correct problems at each location; and
- Evaluate technical assistance needed and how to administer assistance.

RVRC staff encouraged public participation in the development of this TMDL Plan by inviting environmental professionals and stakeholders to participate in meetings throughout the development stages. The objective of these meetings was to obtain feedback from environmental professionals and stakeholders about the concerns and composition of watershed activities. These meetings were held on June 16, 2015 at 1:00 pm at the Webster County Board of Commissioners Office in Preston and on September 23, 2015 at the City of Buena Vista City Hall to discuss potential ways to assess the watershed of Kinchafoonee Creek. See Appendix F for public hearing announcements and meeting minutes. Table 9 shows the final Partnership Advisory Council and community participants.

TABLE 9. PARTNERSHIP AND ADVISORY COUNCIL FOR KINCHAFOONEE CREEK.

Name	Affiliation	Address	Phone Number	E-mail
Jack Holbrook	Unified Government of Webster County	PO Box 76	229-310-6991	
James Bankston		PO Box 636	229-828-4050	
Troy Key	Landowner	PO Box 35,	229-942-2840	

		Richland, GA		
Cassie Renfrow	Chattahochee RiverWarden	PO Box 985, Columbus, GA 31902	706-649-2326	chattriverwarden@gmail.com
John Pollard	GA Forestry Commission	1766 Valley Rd, Lumpkin, GA 31825		jpollard@gfc.state.ga.us
Tim Sweezy	Marion County			
Shondria Golden	City of Buena Vista	PO Box 158	229-649-7888	
Brenda McAllister	City of Buena Vista	PO Box 158	229-649-7888	bvcityhall@windstream.net

10.0 SCHEDULE OF SEQUENTIAL MILESTONES

There are two main goals of this Watershed Management Plan:

1) To bring Clear Creek into compliance with water quality standards, which will result in its removal from the 303(d) list of impaired waters. This goal will be measured by the concentration of sediment and macroroinvertebrate samples taken after installation of BMPs to address the agriculture, silviculture, and dirt roads. In order to establish BMPs to mitigate the pollution levels, it was important to determine the sources of pollution. RVRC staff has executed a targeted monitoring plan whereby turbidity samples were taken at four (4) locations throughout the watershed over a 5-month period in order to establish sources of contamination during Year 2 of the plan.

The targeted monitoring for sediment was conducted during the months of May 2015 – September 2015. Testing was avoided up to 48 hours after rain events totaling 1-2 inches of precipitation. This data is stored at the River Valley Regional Commission, located at 1428 2nd Avenue, Columbus, Georgia 31901, and was updated regularly on the Adopt-A-Stream website. After results were obtained, RVRC staff and local governments determined what Best Management Practices were needed to mitigate the pollution levels.

Money to fund the management practices outlined in Section 8 of this report will be sought through Section 319(h) of the Federal Clean Water Act. The 319(h) grant application will be submitted to EPD by the November 2, 2015 deadline. Notification of approved applicants will be in the spring of 2016, and funding and project activities will begin in the fall of 2016.

Should the grant application be funded, evaluation of BMP locations will begin immediately. Installation of all BMPs, will take approximately a year complete. During the time of BMP installation, the educational outreach component will take place and continue on through the

second year. All of the outputs of the 319(h) application will take approximately two years to complete.

2) To execute a Clean Watersheds Initiative throughout both of Lanahassee Creek's HUC 10 watersheds, which will help maintain the healthy qualities of this stream and keep levels of fecal coliform reduced. This goal will be measured by the concentration of fecal coliform samples taken after installation of BMPs to address levels of bacteria. In order to establish BMPs to keep the fecal coliform at low levels, it was important to determine the sources of fecal coliform. RVRC staff has executed a targeted monitoring plan whereby *E. coli* (an indicator species for fecal coliform) samples were taken at eight (8) locations throughout the watershed over a 5-month period in order to establish sources of contamination during Year 2 of the plan.

The targeted monitoring for *E. coli* was conducted during the months of May 2015 – September 2015. Testing was avoided up to 48 hours after rain events totaling 1-2 inches of precipitation. This data is stored at the River Valley Regional Commission, located at 1428 2nd Avenue, Columbus, Georgia 31901, and was updated regularly on the Adopt-A-Stream website. After results were obtained, RVRC staff and local governments determined what Best Management Practices were needed to keep the low levels of fecal coliform.

Money to fund the management practices outlined in Section 8 of this report will be sought through Section 319(h) of the Federal Clean Water Act for a Healthy Watersheds Initiative. The 319(h) grant application will be submitted to EPD by the November 2, 2015 deadline. Notification of approved applicants will be in the spring of 2016, and funding and project activities will begin in the fall of 2016.

Should the grant application be funded, evaluation of BMP locations will begin immediately. Installation of all BMPs, will take approximately a year complete. During the time of BMP installation, the educational outreach component will take place and continue on through the second year. All of the outputs of the 319(h) application will take approximately two years to complete.

11.0 TARGETED MONITORING AND DATA

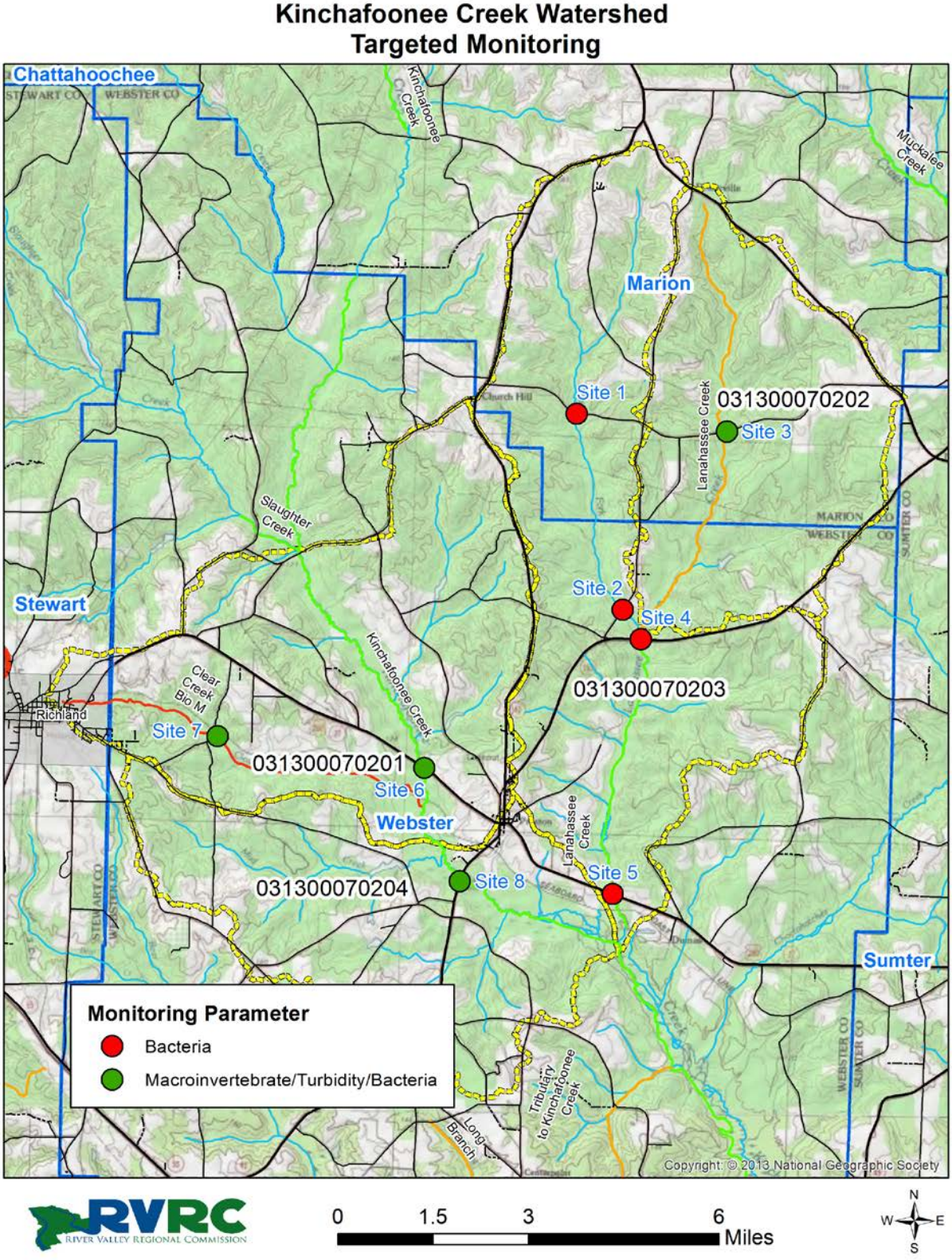
Through funding from the Georgia Department of Natural Resources, the River Valley Regional Commission tracked potential sources of fecal coliform and sediment within the watershed.

Sampling locations were identified while considering stakeholder opinion to best assess sources of pollution within the watershed. Specific sampling locations and GPS coordinates for each site are listed below in Table 10. A map of the sampling locations may be found in Figure 4. Samples were collected on the upstream side of the bridge at the road crossings.

TABLE 10. SAMPLING STATIONS FOR TARGETED MONITORING.

Station Number	General Location	Sampling Site Coordinates		Sample Parameters
		Longitude	Latitude	
1	Bill Merritt Road (West Fork Lanahassee Creek)	-84.518173°	32.159260°	*E. coli*
2	Tri-County Road (West Fork Lanahassee Creek)	-84.505365°	32.114562°	*E. coli*
3	Bill Merrit Road (Lanahassee Creek, upper segment)	-84.477592°	32.155563°	*E. coli* Biota Turbidity
4	GA Hwy 153 (Lannahassee Creek, downstream of confluence)	-84.500045°	32.108021°	*E. coli*
5	GA Hwy 27 (Lannahassee Creek, lower segment)	-84.50702	32.04992	*E. coli*
6	GA Hwy 27 (Kinchafoonee Creek, upstream of Clear Creek)	-84.55807	32.07821	*E. coli* Biota Turbidity
7	CR 79 (Clear Creek)	-84.61401	32.08439	*E. coli* Biota Turbidity
8	GA Hwy 41 (Kinchafoonee, downstream of Clear Creek)	-84.54823	32.05255	*E. coli* Biota Turbidity

FIGURE 4. KINCHAFOONEE CREEK WATERSHED TARGETED MONITORING SAMPLING SITES.



The following outlines the procedures for *E. Coli* monitoring:

A. 8 sites were monitored.
   1. Sites were sampled in May 2015 – September 2015
   2. 1 sample was collected per site per month over a 5-month period
   3. There was a total of 8 samples per month and 40 samples over a 5-month period

B. Samples were collected and analyzed by EPD-trained professionals. Staff who collected and analyzed *E. coli* samples was trained by GA EPD Adopt-A-Stream personnel on February 9, 2015 in *E. coli* sampling and testing. Staff will renew the Adopt-A-Stream one year certification in February 2016.

C. Equipment used for sampling and testing is as follows:
   1. 3M™ *E. coliform* Count Plates
   2. Genesis Hova-Bator Incubator with circulation fan, calibrated to 35° C
   3. Fixed-volume pipettor 1000µL
   4. Pipette tips, 200 - 1300µLMicroLite USB Temperature Data Logger
   5. Armored Thermometer
   6. Whirl-Pak® sterile sampling bag, 2 oz
   7. 90% Isopropyl Alcohol
   8. Latex Gloves
   9. Bleach
   10. Distilled Water

D. Georgia Adopt-A-Stream Bacterial Monitoring Data Form was used to record official field notes for weather, air and water temperature, rainfall intensity over the previous 24 hours, date, and time.

The following outlines the procedures for biological monitoring:

A. 4 sites were monitored.
   1. Sites were sampled in May 2015 and September 2015
   2. 1 sampling event was conducted per site per quarter over a 5-month period
   3. There was a total of 4 samples per quarter and 8 samples over a 5-month period

B. Samples were collected and analyzed by EPD-trained professionals. Staff who collected macroinvertebrate biological samples were trained by GA EPD Adopt-A-Stream personnel in biological monitoring protocol on February 4, 2015.

C. Equipment used for sampling is as follows:
   1. D-frame net and/or kick seine
   2. Sorting pans
   3. Tweezers, Forceps, or Plastic Spoons
   4. Hand lens
   5. Latex Gloves
   6. Collection Bucket
   7. Bucket with screen bottom
   8. 90% Isopropyl Alcohol
   9. Collection vials/preservation jars

D. Georgia Adopt-A-Stream Macroinvertebrate Count Form was used to record official field notes for stream bottom sediment type, weather, rainfall intensity over the previous 24 hours, date, and time, as well as macroinvertebrate counts.

The following outlines the procedures for turbidity monitoring:

A. 4 sites were monitored.
   1. Sites were sampled March 2015 – September 2015
   2. 1 sample was collected per site monthly over a 5-month period
   3. There was a total of 4 samples per month and 20 samples over a 5-month period

B. Samples were collected and analyzed using the EPA compliant protocol in order to determine any potential sediment pollution hotspots.

C. Equipment used for sampling is as follows:
   1. LaMotte 2020we turbidimeter
   2. Associated calibration solutions and water sample tube
   3. Lint-free cloth
   4. 1 liter bottle should sites need mixing to achieve a representative sample

Table 11 demonstrates the sampling schedule for the Kinchafoonee Creek watershed. One sample for turbidity was collected at sites 3 6, 7, and 8 monthly from March 2015 – September 2015. One sample for *E. coli* was collected at sites 1 – 8 monthly from March 2015 – September 2015. One biological sampling event was conducted at sites 3, 6, 7, and 8 quarterly from March 2015 – September 2015.

TABLE 11. SAMPLING SCHEDULE FOR KINCHAFOONEE CREEK WATERSHED.

Month/Year	Sampling Sites	Parameter
May 2015	1-8 3, 6-8	*E. coli* Turbidity/Biota
June 2015	1-8 3, 6-8	*E. coli* Turbidity
July 2015	1-8 3, 6-8	*E. coli* Turbidity
August 2105	1-8 3, 6-8	*E. coli* Turbidity
September 2015	1-8 3, 6-8	*E. coli* Turbidity/Biota

The following outlines the Quality Assurance Plan for sampling the Kinchafoonee Creek watershed:

A. The River Valley Regional Commission was in a contract to track potential pollutant sources within the watershed.

B. Bacterial Field Quality Assurance

a. The following sampling protocol was used for each sample:

i. The grab samples for quantification of *E. coli* bacteria was collected at 8 locations within Kinchafoone Creek watershed

ii. Prior to sample collection:

1. 1 Whirl-Pak® bag per site plus a bag for the "Blank"
2. Using a Sharpie, label each bag as follows:
    a. Stream name or for the blank, label the bag "Blank"
    b. Collection site number
    c. Date of collection
    d. Time of collection
    e. Collector

iii. Record the following on the Field Notes Form at each sample site:

1. Weather conditions (overcast, partly cloudy, clear/sunny)
2. Air temperature
3. Water temperature
4. Date and time
5. Rainfall intensity for the previous 24 hours, total amount if known

iv. Sample Collection

1. Put on latex gloves for protection and to limit sample contamination
2. Tear off top of bag along perforation. Avoid touching the inside of the bag
3. Before first sample is collected from the stream, fill one Whirl-Pak® bag with distilled water. This will be the "blank." Twist the yellow ties to seal the top and place the bag in a cooler with ice or frozen ice packs
4. Select a location in the middle of the flow channel. The flow channel may not be in the middle of the stream. Stand downstream from the flow
5. Collect sample from mid-depth of the flow channel
6. Open the Whirl-Pak® bag by taking hold of the white tabs on either side of the bag, one in each hand. Use a different bag if the inside is accidentally touched
7. Keep the bag upright and use a scooping motion to submerge the top under the water
8. At mid-depth, pull both white tabs apart to open the mouth. Allow water to pour into the mouth until the bag is ¾ full
9. Pull the bag out of the water, take the yellow ties on either side, one in each hand, and flip of fold the top of the bag twice to wrap up the top
10. Twist the yellow ties to seal the top and place the bag in a cooler with ice or frozen ice packs

b. Sample Handling and Custody Requirements

i. *E. coli* samples were stored for no longer than 24 hours after collection in a cooler with ice or frozen packs
    1. Within 24 hours of collection, RVRC staff utilized the Adopt-A-Stream Bacterial Monitoring methods and procedures to process and analyze the samples and the blank
    2. Petrifilm plates for each sample, including the blank, were labeled with a Sharpie pen as follows:
        a. Stream name, or in the case of the blank, "Blank"
        b. Site number
        c. Date of collection
        d. Collector
    3. The Georgia Adopt-A-Stream *E. coli* Data Form was completed by RVRC staff for petrifilm results
        a. Utilizing a fixed volume pipette, a sample from each site was placed on 3 petrifilm plates according to the instructions in the GA EPD Adopt-A-Stream Bacterial Monitoring Manual
        b. Utilizing a fixed volume pipette, a sample from the "Blank" was placed on 1 petrifilm plate
        c. Plates were stacked and placed in the Hova-Bator incubator calibrated to 35° C for 24 hours
        d. Incubator temperature was monitored over a 24-hour period with thermometer
        e. After 24 hours, plates (3 per site plus the blank were removed from the incubator and *E. coli* colonies were counted. The sum of colonies found on 3 plates prepared for each site as well as the 1 plate prepared for the blank, was multiplied by 33.33 to calculate the total colony count per 100 mL for each site

ii. RVRC staff collected the samples with equipment obtained by the River Valley Regional Commission. Staff was trained by GA EPD staff prior to any collection. To ensure safety, staff chose a sample collection technique on site. If waters were safe for wading, staff used the "grab sampling while wading technique" for *E. coli* bacteria. However, if the water appeared to be unsafe for wading, then the *E. coli* sample was collected by lowering a sampling container from a bridge or culvert, or the grab sampling technique was employed from the safety of the stream bank. If rainfall in the preceding 24 hours was greater than 1", then sampling did not occur until 48 hours after the rain event. Sampling was postponed, however, if weather conditions made sampling unsafe for field personnel.

C. Biological Field Sampling Quality Assurance
    a. The following sampling protocol were used for each sample:
        i. The samples for quantification of macroinvertebrates was collected at 4 locations within the Kinchafoonee Creed watershed using the muddy bottom stream sampling protocol

ii. The same stream segment at each site was sampled each quarter to ensure consistency
iii. Prior to sample collection:
    1. 2 preservation jars were labeled with site number, date, and time for each of the four sampling sites
    2. Samples collected from the streambed was kept in a separate preservation jar than those samples collected from vegetated margins and woody debris
iv. Record the following on the Field Notes Form at each sample site
    1. Current weather conditions (overcast, partly cloudy, clear/sunny)
    2. Date and time
    3. Rainfall intensity for the previous 24 hours, total amount if known
    4. Site Description
    5. Stream Bottom Sediment Type
    6. Habitats selected for sampling
v. Sample Collection
    1. RVRC staff utilized the biological sampling protocol for muddy bottom streams
        a. The following three habitats were sampled using a D-frame net: vegetated margins, woody debris with organic matter, and streambed substrate
        b. Each scoop of the D-frame net involved a forward motion covering a sample area of one square foot
        c. 7 scoops were taken from vegetated margins, 4 scoops were taken from woody debris with organic matter, and 3 scoops were taken from the streambed bottom/ substrate
            i. For vegetated margin sampling, the D-frame net was moved quickly in a bottom-to-surface motion, scooping toward the stream bank, jabbing at the bank to loosen organisms with each scoop of the net covering one square foot of submerged area
            ii. For woody debris sampling, the D-frame net was placed under the section of wood to be sampled, and one square foot of the surface was rubbed allowing organisms to be swept into the net
            iii. For streambed sampling, the coarsest area of the streambed was sampled by moving the D-frame net upstream with a jabbing motion in order to dislodge the first few inches of sediment, which were then gently washed in the screen bottom bucket

1. For rocks greater than two inches in diameter, kicking of the substrate upstream was conducted in order to dislodge any burrowing organisms
2. For fine silt and mud, the sample was placed in a bucket with water, stirred, and excess water was poured off, a process that was conducted three times to separate any organisms from the finer sediment particles
3. As with the other habitats, only one square foot of sediment was sampled

iv. Samples were taken starting downstream and moving upstream after each scoop

d. All macroinvertebrates were placed in preservation jars, analyzed, and counted within 24 hours of collection

b. Sample Handling and Custody Requirements
   i. Macroinvertebrate samples were sorted and counted within 24 hours of collection to ensure no damage to the specimens occurs
      1. Each sample was placed in a sorting tray and examined closely to ensure all organisms are included in the final counts
      2. The Georgia Adopt-A-Stream Macroinvertebrate Count Form was completed following the sorting and counting of organisms to determine the water quality rating
   ii. RVRC staff collected the samples with equipment obtained by the River Valley Regional Commission. Staff was trained by GA EPD staff prior to any collection. Sampling was postponed if weather conditions made sampling unsafe for field personnel.

D. Turbidity Field Quality Assurance
   a. The following protocol was used for each sample:
      i. Prior to collection:
         1. One liter bottles were labeled with the following information:
            a. Site number
            b. Date
            c. Time
            d. Current weather conditions
      ii. Sample Collection
         1. For uniform sampling sites, sample were collected in a one liter bottle and stored for sampling
         2. For sites that are not uniform, several locations at varying depths were sampled and combined into a single, well-mixed composite sample
   b. Sample Handling and Custody Requirements
      i. RVRC staff analyzed samples using the EPA-compliant equipment and protocols, following all turbidimeter user manual instructions and

calibration techniques in order to determine any areas of sedimentation issues

ii. Samples were analyzed within 24 hours of collection
    1. Sample from each site were mixed gently but thoroughly enough to ensure a representative sample before taking the measurement
    2. The sample were not allowed time to settle before the measurement was obtained

iii. RVRC staff collected the samples with equipment obtained by the River Valley Regional Commission. To ensure safety, staff chose a sample collection technique on site. If waters were safe for wading, staff used the "grab sampling while wading technique" for representative samples. However, if the water appeared to be unsafe for wading, then the turbidity samples were collected by lowering a sampling container from a bridge or culvert, or the grab sampling technique was employed from the safety of the stream bank. Sampling was postponed, however, if weather conditions made sampling unsafe for field personnel.

Records will be maintained by the Planning Division of the River Valley Regional Commission located at 1428 2nd Avenue, Columbus, Georgia 31901 for a period of three years from the conclusion of the project and will be available for review. Additionally, data was posted by the Regional Commission to the Georgia Adopt-A-Stream database.

During the final month of sampling, RVRC staff obtained a multi-probe meter on loan from GA EPD designed to measure parameters such as air and water temperature, conductivity, pH, and dissolved oxygen.

Tables 12 - 15 below show the results of all of the above described sampling methods from March 2015 through September 2015.

TABLE 12. *ESCHERICHIA COLIFORM* MONITORING DATA.

Kinchafoonee Creek Watershed		Date					Average
E. coli Count (CFU/100mL)		5/13/2015	6/9/2015	7/8/2015	8/11/2015	9/8/2015	
Site	1	100	300	33	400	0	166.6
	2	0	33	33	767	33	173.2
	3	33	67	67	400	100	133.4
	4	167	100	33	867	267	286.8
	5	0	167	133	133	67	100
	6	0	267	33	133	500	186.6
	7	33	33	0	n/a	333	99.75
	8	33	267	33	67	100	100

TABLE 13. MACROINVERTEBRATE MONITORING DATA.

Kinchafoonee Creek Watershed		Date			
Macroinvertebrates		5/13/2015		9/8/2015	
		Index	Rating	Index	Rating
Site	3	7	poor	13	fair
	6	12	fair	14	fair
	7	12	fair	11	fair
	8	no safe access	no safe access	no safe access	no safe access

TABLE 14. TURBIDITY MONITORING DATA.

Kinchafoonee Creek Watershed		Date					Average	Geometric Mean
Turbidity Count (NTU)		5/13/2015	6/9/2015	7/8/2015	8/11/2015	9/8/2015		
Site	3	7.96	10.9	10.76	30.80	8.80	13.84	12.0
	6	11.24	26.4	17.6	19.70	17.20	18.43	17.8
	7	5.03	9.97	7.76	N/A	5.27	7.01	6.73
	8	13.4	18.3	15.6	13.90	12.47	14.73	14.6

TABLE 15. CHEMICAL MONITORING DATA.

Kinchafoonee Creek Watershed Chemical Monitoring Samples collected 9/8/15		Air Temp (°C)	Water Temp (°C)	Conductivity (µS/cm)	pH	Dissolved Oxygen
Sites	3	26.6	32.2	56.30	6.96	7.58
	6	25.6	21.3	33.24	6.39	5.14
	7	25.5	21.0	35.20	6.01	7.24

Should funding become available for Clear Creek and/or Lanahassee Creek to install BMPs that will help reduce the sediment impairment in Clear Creek of continue the trend of Lanahassee Creek's healthy watershed, targeted monitoring should follow BMP installation. This will enable RVRC and GA EPD staff to determine the effectiveness of the BMPs installed.

12.0 PLAN IMPLEMENTATION

The objective of Watershed Management Plans is to restore impaired water quality to meet water quality standards. From a broader perspective, Georgia's water quality management strategy addresses three things:

1. Protection: Prevent the degradation of healthy waters.

2. Restoration: Develop and execute plans to eliminate impairments.
3. Maintaining Restored Waters: Institutionalize technical and administrative procedures to prevent or offset new pollutants.

A list of management measures and other general actions to be implemented during future stages is shown in Table 16.

TABLE 16. FUTURE IMPLEMENTATION SCHEDULE.

Management Measure	Responsible Organization	Time Frame
Determination of Most Effective BMP Locations	River Valley Regional Commission, Local governments, GA Department of Agriculture	1 year, Fall 2016 – Fall 2017
Installation of Forestry BMPs	River Valley Regional Commission, Georgia Forestry Commission, Natural Resources Conservation Services	1½ years, Spring 2017 – Fall 2018
Installation of Agricultural BMPs	River Valley Regional Commission, Natural Resources Conservation Service, Local landowners	1½ years, Spring 2017 – Fall 2018
Installation of Dirt Road BMPs	River Valley Regional Commission, Natural Resources Conservation Service, Local governments	1½ years, Spring 2017 – Fall 2018
Post-BMP Targeted Monitoring	River Valley Regional Commission	1 year, Fall 2017 – Fall 2018

During each semi – annual evaluation of implementation on Kinchafoonee Creek, a reassessment of implementation priorities will be made by the Partnership and Advisory Council to readjust and fine – tune the targeting approach in concert with the staged implementation approach. If reasonable progress toward implementing the management practices is not demonstrated, the Partnership and Advisory Council will consider additional implementation actions.

If it is demonstrated that reasonable and feasible management measures have been implemented for a sufficient period of time and TMDL targets are still not being met, the TMDL will be reevaluated and revised accordingly. If after three years the Advisory Group determines that load reductions are being achieved as management measures are implemented, then the recommended appropriate course of action would be to continue management measure implementation and compliance oversight. If it is determined that all proposed control measures have been implemented, yet the TMDL is not achieved, further investigations will be made to determine whether: 1) the control measures are not effective; 2) sediment and fecal coliform loads are due to sources not previously addressed; or 3) the TMDL is unattainable.

13.0 PLAN APPENDICES

- **A. NINE (9) – KEY ELEMENT SUMMARY**
- **B. KINCHAFOONEE CREEK WATERSHED MAP (HUC 0313000702)**
- **C. LAND USE MAPS: TRENDS AND FUTURE**
- **D. FIELD NOTES**
- **E. COPIES OF PUBLIC NOTICES AND OTHER LITERATURE**
- **F. MEETING MINUTES**

APPENDIX A. NINE (9) – KEY ELEMENT SUMMARY

Element 1 – An identification of the sources or groups of similar sources contributing to nonpoint source pollution to be controlled to implement load allocations or achieve water quality standards. Sources should be identified at the subcategory level.

This Watershed Management Plan will focus on two components: 1) Addressing the sediment/macroinvertebrate impairment located within Clear Creek (HUC 031300070201 and HUC 031300070204) and 2) Implementing a Healthy Watersheds Initiative for Lannahassee Creek (HUC 031300070202 and HUC 031300070203).

Clear Creek Sources:

(See Section 6.0, page 14)
Characteristics of Clear Creek's topography are broad valleys and rolling hills. Elevations range from 357 feet to 618 feet above sea level. Many of the slopes are found in the south western section of the watershed, where the sediment impairment has been located. Coupled with agricultural and silvicultural operations, soil composition becomes a main concern and priority of stakeholders.

Along with soil composition and surrounding land uses, storm water drainage coming from the numerous dirt roads in the area could be contributing significantly to the issue of the sediment impairment. Sediment from these dirt roads is loose and relatively unstable, leaving a high possibility of large sediment loads directly entering the surface waters of Clear Creek and nearby tributaries, especially following very heavy precipitation events.

Lanahassee Creek Sources:

(See Section 6.0, pages 14-16)
No municipalities or their wastewater disposal systems are located within the subject watersheds. However, Tri-County High School (±500 students) maintains a wastewater treatment facility in the northern-most section of the West Fork Lanahassee watershed. The facility is approximately 1/3 linear miles from a West Fork tributary, and approximately 9 linear miles north of the original collection site (current site 2). The highest recorded fecal coliform bacteria count during monitoring conducted in 2000 was from a sample taken June 20, when school was out of session for the summer.

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

According to 2004 deer census data of the Wildlife Resources Division of the Georgia Department of Natural Resources, there are approximately 17.3 deer per square mile in Marion and Webster Counties. On the basis of this information, and assuming a relatively even

distribution, it is assumed there are approximately 885 deer in the affected basin; equivalent to one deer for every thirty-seven acres.

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 the associated bacteria counts. This also holds true for other terrestrial mammals such as squirrel, rabbit and terrestrial birds.

The deer are numerous enough to attract the attention of large numbers of hunters. A hunting camp of undetermined size is upstream of the original water quality sampling site (current Site 2). While the natural activity of deer in the watershed may not be contributing significantly to the presence of fecal coliform bacteria, it is yet to be determined whether conditions and activities at the hunting camp could be having an influence. Perhaps unrelated to the specific hunting camp, stakeholders did report occasional sightings of deer carcasses along waterways in the watershed.

Webster County stakeholders also reported the presence of wild dogs and coyotes in the watershed.

Marion County stakeholders reported a "significant" feral hog population with the Kinchafoonee Creek watershed. Feral hogs are adaptable to almost any habitat, but prefer wooded areas close to water. 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.

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 the land surface 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 in a more direct manner. 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 provided by Natural Resources Conservation Service, there were 12,795 head of beef in Webster and Marion Counties in 2005, but local stakeholders stated that the number within the Kinchafoonee Creek watershed as dropped to near 500 or 600 cattle. It was made clear there were not any commercial livestock operations in the watershed since 2000. Any beef cattle which were present were in very small, sparse herds maintained by a hobby-farmer or used to supplement family income rather than serve as a source of livelihood.

The two counties reportedly had 188 head of swine in 2005. This number has dropped to zero over the past five years.

The 2005 agricultural statistics reported 7.31 million broilers, breeding hens and laying hens distributed throughout Marion County. Webster County was credited with 460,000 chickens that year. Currently, none of these chicken houses were reported to exist in the affected watersheds. Marion County's portion of the affected watershed is in the highest concentration of prime farmland in the county, and is more heavily devoted to conventional row-crop agriculture than the northern portion of the county. Webster County's portion of the watershed is heavily forested.

Agricultural officials reported application of poultry litter on farmland in this watershed was uncommon. Where it is applied, the poultry industry has been promoting the use of nutrient management planning; matching nutritional value of poultry litter with the nutritional needs of any given application site. This refinement to an existing best management practice further reduces the potential for bacterial runoff. There was no report of exposed stock piles of poultry litter used for cultivation of deer plots or agricultural use in the affected watersheds.

Element 2 – An estimate of the load reductions expected for the management measures described under Element 3.

(See Table 7, pages 19-20)
According to the 2007 *Best Management Practices for Georgia Agriculture* by the Georgia Soil and Water Conservation Commission, installing an alternative watering source "significantly reduce[s] the amount of waste and sediment entering the water." It continues to note that vegetation buffers prevent erosion and help absorb up to 59% of nutrients, and filter strips can potentially remove up to 60% of pathogens. Sediment control ponds or settling pools protect water bodies from runoff flows and improve water quality downstream, reducing suspended solids in runoff by 75-95%. Level terraces have been found to reduce sediment by 85-95%, total nitrogen by 20%, and total phosphorus by 70%.Fencing animals out of second order streams has reduced fecal coliform colony forming units by 99% in studies. Composting facilities provide a place to store manure away from a steam. The load reduction of this BMP is unknown. Streams crossings prevent livestock from entering the stream and should reduce fecal coliform and sediment at the same order as fencing. Waste facility covers prevent overflows and runoff of wastes. This can reduce the amount of fecal coliform entering from this location by approximately 99%. Tree/shrub buffers prevent erosion help absorb up to 59% of nutrients. Filter strips can potentially remove up to 60% of pathogens. There are many additional BMPs that may be installed within each livestock farm.

It is extremely difficult to quantify the percent reduction of sediment and fecal coliform within the Kinchafoonee Creek watershed prior to installation of the BMPs. Although a reduced load is a good hypothesis, due to the proximity of the silviculture, agriculture, and livestock operations from the creek itself, it is certain that the stream will collect additional fecal coliform colonies from native species within the watershed and sediment downstream from the BMP installations,

as well as dilute the fecal coliform colonies that do slip past the BMPs. Determining the load reduction of Kinchafoonee Creek itself is not plausible until after BMP installation.

Element 3 – A description of the nonpoint source management measures that will need to be implemented to achieve the load reductions established in the TMDL or to achieve water quality standards.

This Watershed Management Plan will focus on two components: 1) Addressing the sediment/macroinvertebrate impairment located within Clear Creek (HUC 031300070201 and HUC 031300070204) and 2) Implementing a Healthy Watersheds Initiative for Lannahassee Creek (HUC 031300070202 and HUC 031300070203).

Clear Creek Recommendations:

(See Section 8.0, page 19, Table 7)
There are several management practices that can be applied within the Clear Creek watershed to help alleviate the sediment pollution levels. There are two known cattle operations that total to over 500 cows. These farms are nearby streams and tributaries that drain into Clear Creek and Kinchafoonee Creek. Cattle that have access to these streams and tributaries disturb the sediment and cause it to be transported downstream. BMPs such as stream crossings, heavy use areas, fencing, and vegetation buffers should be installed to minimize the sediment transport.

Ponders Mill Road (CR 79) is a dirt road that crosses Clear Creek. This is the location of the GA EPD Sampling Station #1107020101 where the stream was tested and determined to be impaired with sediment. The application of techniques found in the Georgia Better Back Roads Field Manual should be implemented on dirt roads in the area to include, but not limited to, turn outs, culverts, drainage ditches, and cross dams.

Much of the northern part of the watershed is used as commercial forestry operations. There are also some agricultural operations. Vegetation buffers, silt fences, filter strips, and sediment basins should be installed to reduce the amount of sediment in runoff from both agricultural and silvicultural activities. Terracing of agricultural land will also help to minimize the amount of sediment entering the waterway from farming operations. In addition to these and other erosion control measures, drainage practices such as turnouts, ditches, culverts, and cross dams should be used as deemed necessary.

Post BMP installation monitoring should be implemented during the final year of the 2-year implementation grant in order to determine the effectiveness of the BMPs. Three (3) sites within the watershed should be tested monthly for turbidity. The same three (3) sites should be tested quarterly for macroinvertabrates using GA EPD's Adopt-A-Stream protocol for macroinvertebrate monitoring.

Lanahassee Creek Recommendations:

(See Section 8.0, page 20, Table 8)

There are not may concentrated animal feeding operations within the Lanahassee Creek watershed. A few hog and chicken operations have shut down over the past five years. This may have contributed to the reduced amount of fecal coliform flowing through the watershed and the delisting of Lanahassee Creek from the 303(d) list of impaired streams. However, there are still come cattle located throughout the watershed. At these locations, several Best Management Practices should be installed. BMPs that can help reduce levels of fecal coliform entering into Lanahassee Creek include, but are not limited to, alternative watering sources, fencing, composting facilities, stream crossings, waste facility covers, tree/shrub buffers, filter strips, water wells etc.

A hunting camp is located just 1/3 of a mile north east from site two. The presence of fecal coliform will be abundant if the hunters do not follow regulations to properly dispose of carcasses. Educational presentations about legal and illegal carcass disposal and composting operations and techniques should also be offered to hunters, local residents, and any other interested patrons.

Feral hog populations are also a noted problem for residents throughout the area and a contributing source, like other wildlife, to fecal coliform levels. Educational workshops to promote effective hog management techniques should be offered to area residents.

Post BMP installation monitoring should be implemented during the final year of the 2-year implementation grant in order to determine the effectiveness of the BMPs. Five (5) sites within the watershed should be tested monthly for *E. coli* using GA EPD's Adopt-A-Stream protocol for bacterial monitoring.

Element 4 – An estimate of the sources of funding needed, and/or authorities that will be relied upon, to implement the plan.

(See Section 10.0, pages 23-24)
Funding for BMP implementation for Clear Creek can be obtained from a 319(h) Non-point Source Implementation Grant from GA Environmental Protection Division, Department of Natural Resources. Funding for a Healthy Watersheds Initiative for Lanahassee Creek can be obtained from a 319(h) Healthy Watersheds Initiative Grant from GA Environmental Protection Division, Department of Natural Resources. Should funding be awarded, the staff of the River Valley Regional Commission would implement the Watershed Management Plan during the allowed contractual timeline. Match funds would be obtained through in-kind services provided by the three counties/munacipalities through which the majority of the watershed lies. Additional support will be given through local governments and assistance from one or more Resource Conservation and Development Councils, Georgia Department of Agriculture, Natural Resources Conservation Service, and Two Rivers Resource Conservation & Development Council.

Element 5 – An information/education component that will be used to enhance public understanding of and participation in implementing the plan.

(See Section 8.0, page 20; Section 10, pages 23-24)
This Watershed Management Plan for Kinchafoonee Creek document will be available for all persons who wish to obtain it. The RVRC will hold additional Stakeholder/Advisory meetings to update interested persons in the status of the Watershed Management Plan. All announcements for a stakeholder meeting will be announced in the *Stewart-Webster Journal*. Advisors and stakeholders will also be contacted by mailed letters. The targeted monitoring results will be posted on the Adopt-A-Stream website to be available for all interested parties.

Educational workshops to promote effective hog management techniques should be offered to area residents. Educational presentations about legal and illegal carcass disposal and composting operations and techniques should also be offered to hunters, local residents, and any other interested patrons. Adopt-A-Stream workshops were held during the development of this Watershed Management Plan; recertification workshops will be held to keep participants up-to-date with Quality Assurance and Quality Control protocols, and two additional certification classes will be offered in order to raise awareness and allow for proper long term monitoring efforts in the area.

Element 6 – A schedule for implementing the management measures that is reasonably expeditious.

(See Section 10.0, page 23-24)
The 319(h) grant application will be submitted to EPD by the November 2, 2015 deadline. Notification of approved applications will be in spring of 2016, and funding and project activities will begin in fall of 2016. Should the grant application be funded, evaluation of BMP locations will begin immediately. Installation of all BMPs will take up to a year or more to complete. During this time, the educational outreach component will take place and continue on through the second year. All of the outputs of the 319(h) application will take approximately two years to complete.

Element 7 – A description of interim, measurable milestones for determining whether management measures or other control actions are being implemented.

(See Section 10.0, page 23-24)
River Valley Regional Commission staff will make monthly visits to the watershed in order to monitor the progress of the BMP installation.

The success of the installed Best Management Practices will be measured by collecting samples throughout the watershed. This will be implemented once all BMPs have been installed. Should more outreach be necessary, more workshops will be held.

Element 8 – A set of criteria that can be used to determine whether substantial progress is being made towards attaining water quality standards and, if not, the criteria for determining whether the plan needs to be revised.

(See Sections 10.0 and 11.0)
Monitoring after BMP installation will be conducted. Previous data sets and post BMP monitoring will be compared to assess whether the BMPs are working. To conclude success, sample counts taken after BMP installation should be lower than those in previous years.

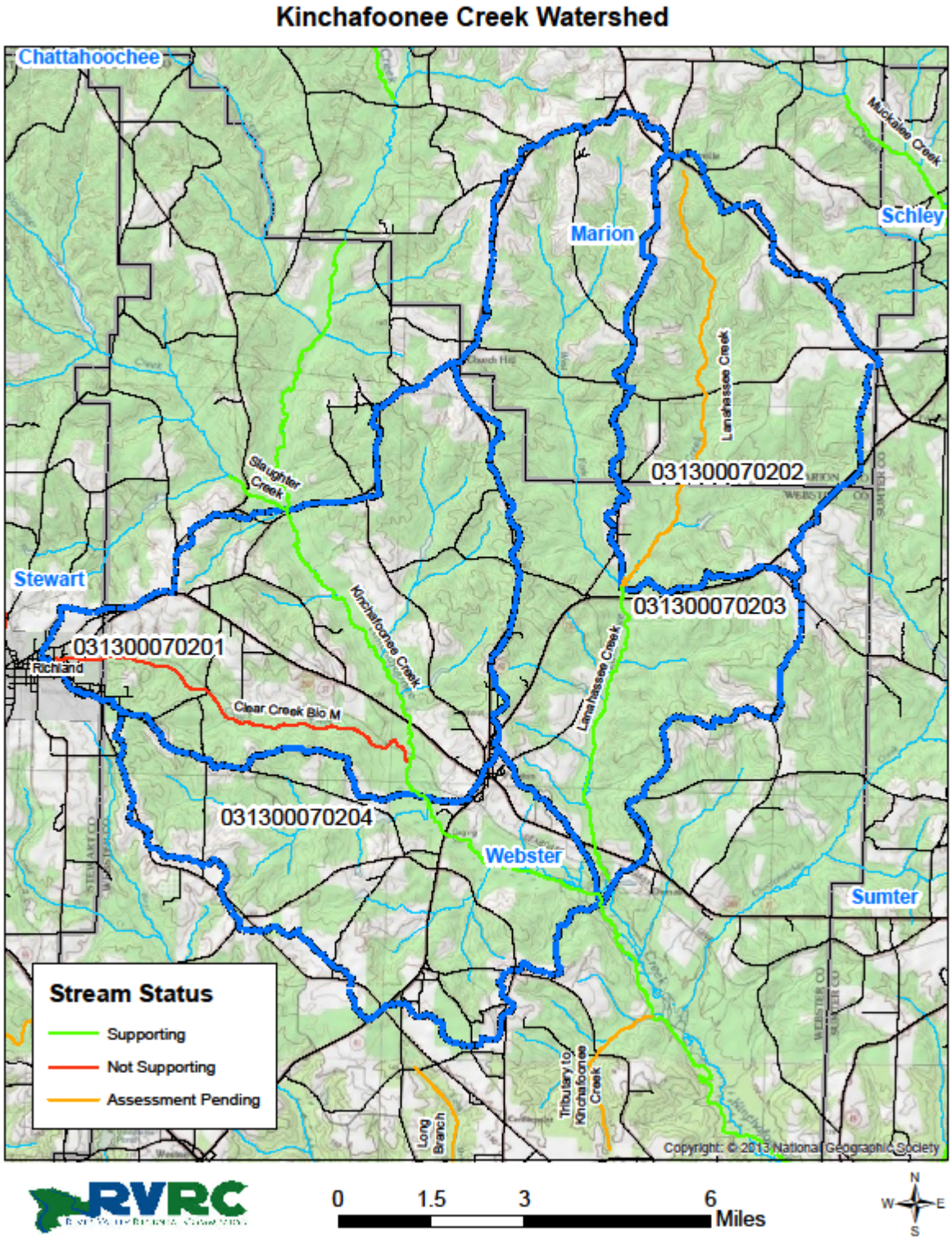
During each semi – annual evaluation of implementation on Pataula Creek, a reassessment of implementation priorities will be made by the Advisory Group to readjust and fine-tune the targeting approach in concert with the staged implementation approach. If reasonable progress toward implementing the management practices is not demonstrated, the Advisory Group will consider additional implementation actions.

Element 9 – A monitoring component to evaluate the effectiveness of the implementation efforts, measured against the criteria established under Element 8.

(See Sections 10.0 and 11.0)
Should the 319(h) application be funded, following identification of agricultural operations that would benefit from BMP installation, implementation would begin.

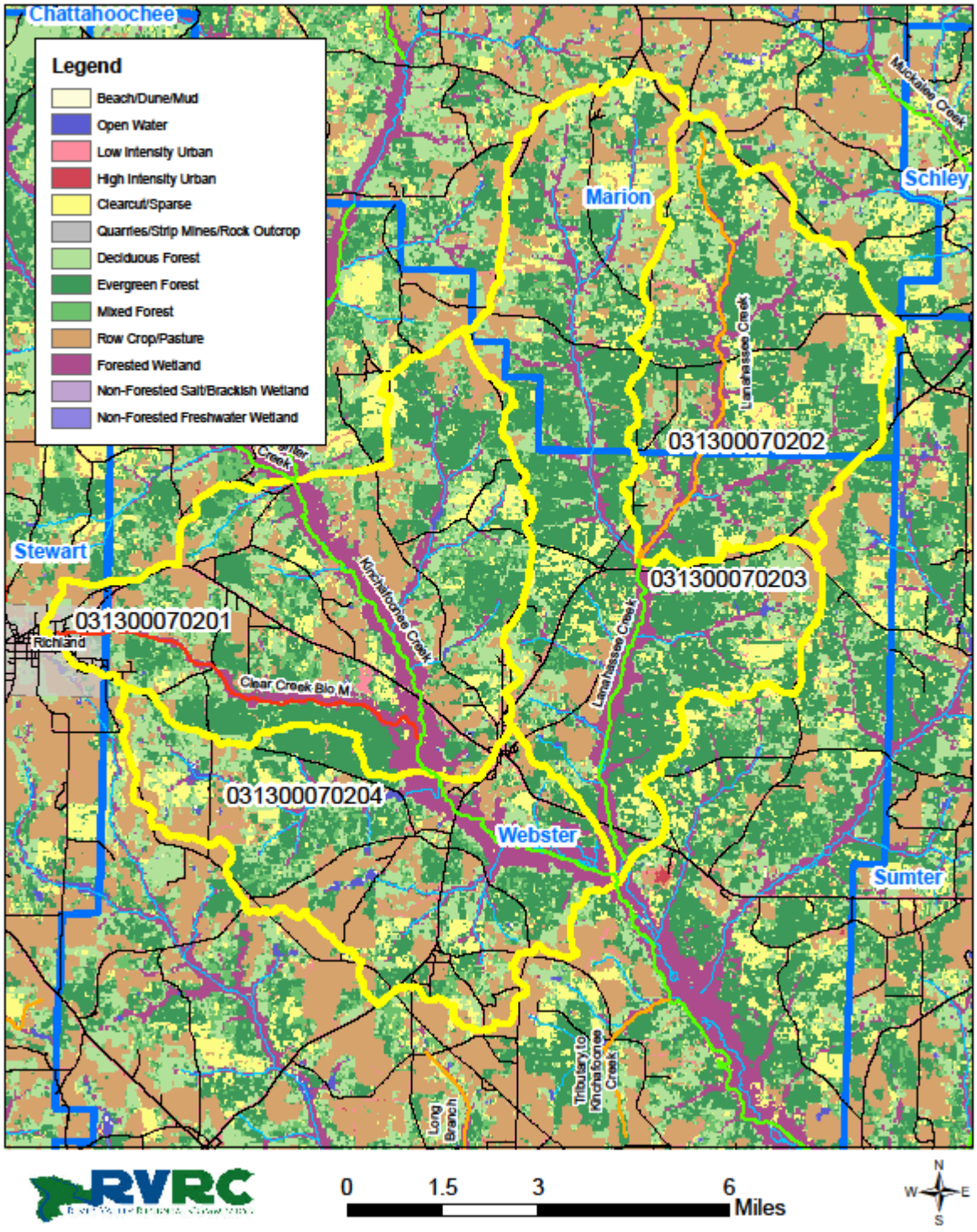
After BMP installation, follow up monitoring should be conducted to determine load reductions of both fecal coliform and sediment. Should Best Management Practices be installed correctly and used as intended, reductions in both parameters should be found.

APPENDIX B. KINCHAFOONEE CREEK WATERSHED MAP (HUC 0313000702)

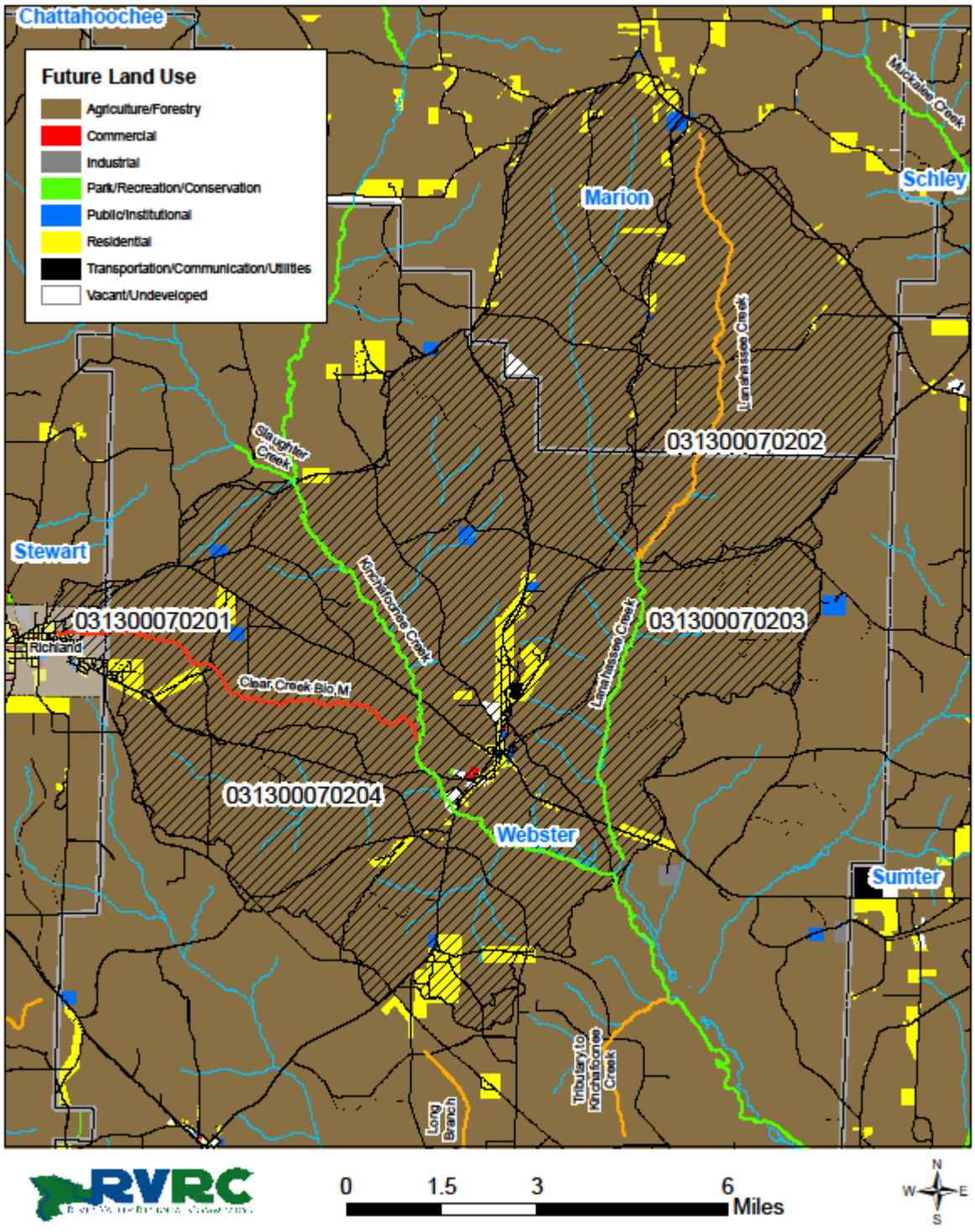


APPENDIX C. LAND USE MAPS: TRENDS AND FUTURE

Kinchafoonee Creek Watershed Land Use Trends



Kinchafoonee Creek Watershed Land Use Trends



APPENDIX D. FIELD NOTES

A visual field survey was conducted on May 13, 2015. Observations for each site are described below.

West Fork Lanahassee Creek Site 1: 5/13/15

- N 32° 9.559' W 84° 31.093'
- Channel ≈ 25 ft wide
- Water dark tea colored
- Level ≈ 1 feet low
- Little visible riprap around old bridge
- Very low density population
- No visible signs of pollution

West Fork Lanahassee Creek Site 2: 5/13/15

- N 32° 6.875' W 84° 30.318'
- Channel ≈ 20 ft wide
- Water very lightly tea colored
- Level ≈ 1.5 feet low
- Riprap for sediment control by bridge
- Very low density population
- No visible signs of pollution

Lanahassee Creek Site 3: 5/13/15

- N 32° 9.337' W 84° 28.656'
- Channel ≈ 20 ft wide
- Water lightly tea colored
- Level ≈ 1 feet low
- Little visible riprap around old bridge
- Very low density population
- No visible signs of pollution

Lanahassee Creek Site 4: 5/13/15

- N 32° 6.4781' W 84° 30.004'
- Channel ≈ 35 ft wide
- Water lightly tea colored
- Level ≈ 1.5 feet low
- Riprap for sediment control by bridge
- Very low density population
- No visible signs of pollution

Lanahassee Creek Site 5: 5/13/15

- N 32° 2.995' W 84° 30.418'

- Channel ≈ 40 ft wide
- Water opaque colored
- Level ≈ 1 ft low
- Riprap for sediment control by bridge
- Low density population
- No visible signs of pollution

Kinchafoonee Creek Site 6: 5/13/15

- N 32° 4.757' W 84° 33.580'
- Channel ≈ 35 ft wide
- Water lightly tea colored
- Level ≈ 1 feet low
- Little visible riprap around old bridge
- Very low density population
- No visible signs of pollution

Clear Creek Site 7: 5/13/15

- N 32° 5.069' W 84° 36.876'
- Channel ≈ 10 ft wide
- Water lightly tea colored
- Level ≈ 1.5 feet low
- No Riprap
- Very low density population
- No visible signs of pollution

Lanahassee Creek Site 8: 5/13/15

- N 32° 3.158' W 84° 32.892'
- Channel ≈ 110 ft wide
- Water opaque colored
- Level ≈ 1 ft low
- Vegetation along banks for sediment control
- Low to medium density population
- No visible signs of pollution

APPENDIX E. COPIES OF PUBLIC NOTICES AND OTHER LITERATURE

RVRC
River Valley Regional Commission
www.rivervalleyrc.org

Columbus Office
1428 Second Avenue
P. O. Box 1908
Columbus, GA 31902
Phone (706) 256-2910
Fax (706) 256-2908

Americus Office
228 West Lamar Street
Americus, GA 31709
Phone (706) 256-2910
Fax (229) 931-2745
Fax (229) 931-2917

Toll Free (877) 819-6348

June 5, 2015

Dear Stakeholder and Community Leader:

The Georgia Department of Natural Resources – Environmental Protection Division (GA DNR – EPD) has contracted with River Valley Regional Commission (RVRC) to monitor and prepare a new Watershed Management Plan. The plan will make recommendations that will maintain the supporting levels of fecal coliform in the section of Kinchafoonee Creek from the Marion County Line to the Terrell County Line (23 miles) and Lanahassee Creek from West Fork Lanahassee Creek to Kinchafoonee Creek (6 miles). The new plan will also make recommendations for the decrease in the Total Maximum Daily Load (TMDL) of the levels of sediment in Clear Creek from the headwaters to Kinchafoonee Creek (7 miles). The RVRC is holding a Stakeholder/Advisory meeting so that key advisors may make recommendations and/or provide key information and materials to the RVRC staff. The purpose of the Advisory Group is to provide a forum for the public, partners, etc. to discuss potential concerns and solutions that will impact the Kinchafoonee Creek Watershed and to make recommendations relative to TMDLs.

This committee will assist in developing a plan to restore Clear Creek to its designated use of fishing. The Advisory Group will help identify contributing pollution sources, assist in arriving at equitable pollution reduction allocations, and recommend specific actions needed to effectively control sources of pollution. These groups of people are critical to the successful restoration and protection of the Kinchafoonee Creek Watershed.

The Advisory Group's key responsibilities are to:

- **Advise** on matters of concern to the community;
- **Contribute to the education** of the residents of the watershed on water quality issues;
- **Help identify** contributing pollution sources;
- **Assist** in arriving at equitable pollution reduction allocations among contributors;
- **Recommend specific actions** needed to effectively control sources of pollution; and
- **Help develop** and set in motion an extended plan.

Since you may have a better understanding of the interests in your area, we are asking for you or someone of interest to please serve on this Advisory Group. Our next meeting will be held on **Tuesday, June 16, 2015 at 1:00 pm** at the Webster County Board of Commissioners' Office in Preston, located at 6622 Cass Street. If you have any questions, please feel free to call me at 706.256.2910 or email me at LRenfrow@rivervalleyrc.org. I look forward to seeing you there.

Sincerely,

Lance Renfrow
Environmental Planner

Chattahoochee | Clay | Crisp | Dooly | Harris | Macon | Marion | Muscogee
Quitman | Randolph | Schley | Stewart | Sumter | Talbot | Taylor | Webster

RVRC
RIVER VALLEY REGIONAL COMMISSION
www.rivervalleyrc.org

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Columbus, GA 31902
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Americus, GA 31709
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Fax (229) 931-2745
Fax (229) 931-2917

Toll Free (877) 819-6348

September 2, 2015

Dear Stakeholder and Community Leader:

The Georgia Department of Natural Resources – Environmental Protection Division has contracted with River Valley Regional Commission (RVRC) to monitor and prepare a new Watershed Management Plan. The plan will make recommendations that will maintain the supporting levels of fecal coliform in the section of Kinchafoonee Creek from the Marion County Line to the Terrell County Line and Lanahassee Creek from West Fork Lanahassee Creek to Kinchafoonee Creek. The new plan will also make recommendations for the decrease in the Total Maximum Daily Load (TMDL) of the levels of sediment in Clear Creek from the headwaters to Kinchafoonee Creek. The RVRC is holding a Stakeholder/Advisory meeting so that key advisors may make recommendations and/or provide key information and materials to the RVRC staff. The purpose of the Advisory Group is to provide a forum for the public, partners, etc. to discuss potential concerns and solutions that will impact the Kinchafoonee Creek Watershed and to make recommendations relative to TMDLs.

This committee will assist in developing a plan to restore Clear Creek to its designated use of fishing and will discuss healthy watershed initiatives for Kinchafoonee Creek. The Advisory Group will help identify contributing pollution sources, assist in arriving at equitable pollution reduction allocations, and recommend specific actions needed to effectively control sources of pollution. These groups of people are critical to the successful restoration and protection of the Kinchafoonee Creek Watershed.

Since you may have a better understanding of the interests in your area, we are asking for you or someone of interest to please serve on this Advisory Group. Our next meeting will be held on **Wednesday, September 23, 2015** at **1:00 pm** at the Buena Vista City Hall in Buena Vista, located at 136 East Sixth Avenue. If you have any questions, please feel free to call me at 706-256-2910 or email me at LRenfrow@rivervalleyrc.org. I look forward to seeing you.

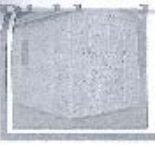
Sincerely,

Lance Renfrow
Environmental Planner

For Immediate Service Announcement:
Stewart Webster Journal – Thursday 6/11/15

8 - SWJ PC - THURSDAY, JUNE 11, 2015

#1689



Local Dealer for
Yoder's Storage Buildings & Carolina Carports

00
June 22, 2015

NOTICE

Enrichment Services Program, Inc. is now accepting Applications for the Early Head Start/Head Start Ipc. 2015-2016 School Year. Children who are 6 weeks old to 4 years are eligible to apply. Must be 3 years old by September 1, 2015.

For Stewart County Residents:
Please Call: 229-838-4135 for an appointment

For Clay County Residents:
Please Call: 229-938-4751 for an appointment

For Chattahoochee County Residents:
Please Call: 706-989-1479 for an appointment

For Quitman County Residents:
Please Call: 229-334-9214 for an appointment

Or Call: 844-875-7773 for an appoint-

Sumter EMC

Annual Meeting of Members
Saturday, June 13, 2015
South Georgia Technical College Gymnasium
Americus, Georgia

Registration
8:00 a.m. - 10:30 a.m.

Entertainment
Daysprings Trio
8:00 a.m. - 10:30 a.m.

Call to Order of Business Session
(Registration Closes)
10:30 a.m.

Over 40 prizes will be given away

Grand Prize:

$2,000 Appliance Center Gift Certificate

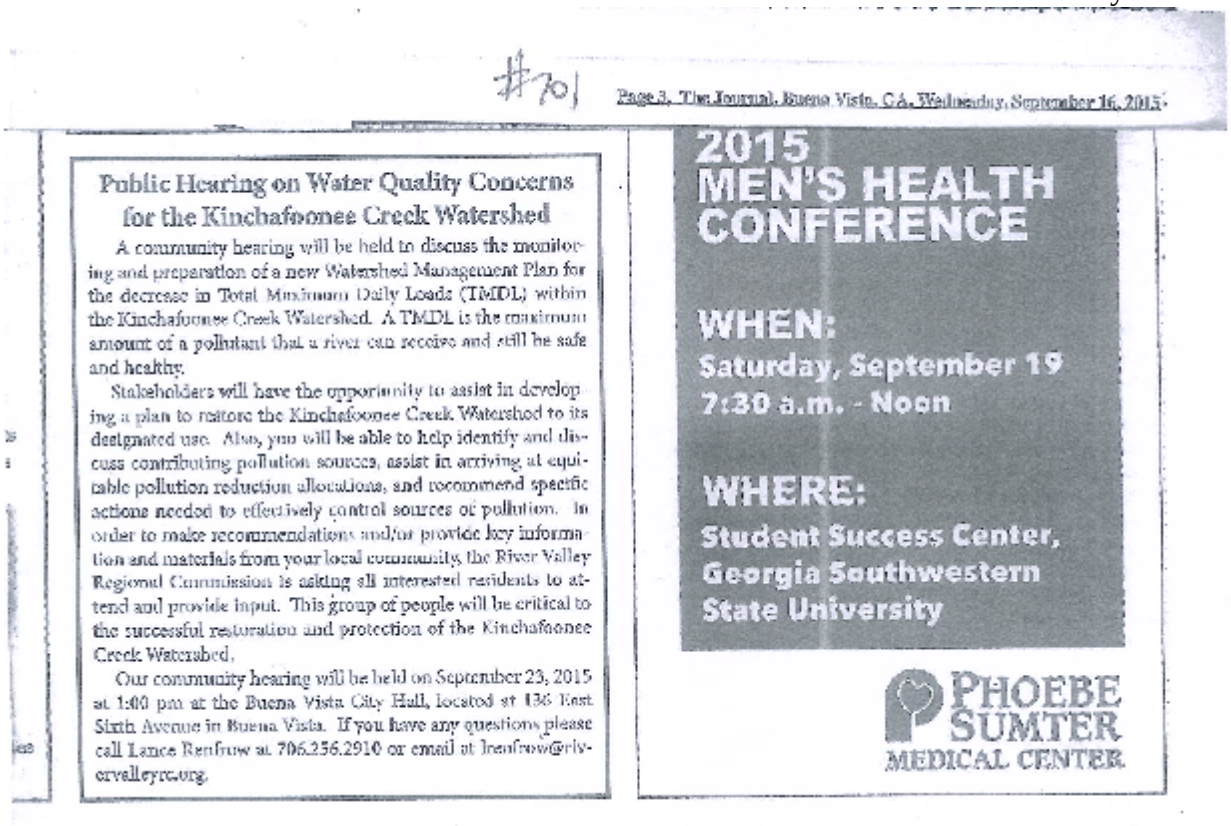
Public Hearing on Water Quality Concerns for the Kinchafoonee Creek Watershed

A community hearing will be held to discuss the monitoring and preparation of a new Watershed Management Plan for the decrease in Total Maximum Daily Loads (TMDL) within the Kinchafoonee Creek Watershed. A TMDL is the maximum amount of a pollutant that a river can receive and still be safe and healthy.

Stakeholders will have the opportunity to assist in developing a plan to restore the Kinchafoonee Creek Watershed to its designated use. Also, you will be able to help identify and discuss contributing pollution sources, assist in arriving at equitable pollution reduction allocations, and recommend specific actions needed to effectively control sources of pollution. In order to make recommendations and/or provide key information and materials from your local community, the River Valley Regional Commission is asking all interested residents to attend and provide input. This group of people will be critical to the successful restoration and protection of the Kinchafoonee Creek Watershed.

Our community hearing will be held on June 16, 2015 at 1:00 pm at the Webster County Board of Commissioners Office, located at 6622 Cass Street in Preston. If you have any questions please call Lance Renfrow at 706.256.2910 or email at lrenfrow@rivervalleyrc.org.

For Immediate Service Announcement:
The Journal – Wednesday 9/16/15



#701

Public Hearing on Water Quality Concerns for the Kinchafoonee Creek Watershed

A community hearing will be held to discuss the monitoring and preparation of a new Watershed Management Plan for the decrease in Total Maximum Daily Loads (TMDL) within the Kinchafoonee Creek Watershed. A TMDL is the maximum amount of a pollutant that a river can receive and still be safe and healthy.

Stakeholders will have the opportunity to assist in developing a plan to restore the Kinchafoonee Creek Watershed to its designated use. Also, you will be able to help identify and discuss contributing pollution sources, assist in arriving at equitable pollution reduction allocations, and recommend specific actions needed to effectively control sources of pollution. In order to make recommendations and/or provide key information and materials from your local community, the River Valley Regional Commission is asking all interested residents to attend and provide input. This group of people will be critical to the successful restoration and protection of the Kinchafoonee Creek Watershed.

Our community hearing will be held on September 23, 2015 at 1:00 pm at the Buena Vista City Hall, located at 136 East Sixth Avenue in Buena Vista. If you have any questions please call Lance Renfrow at 706.256.2910 or email at lrenfrow@rivervalleyrc.org.

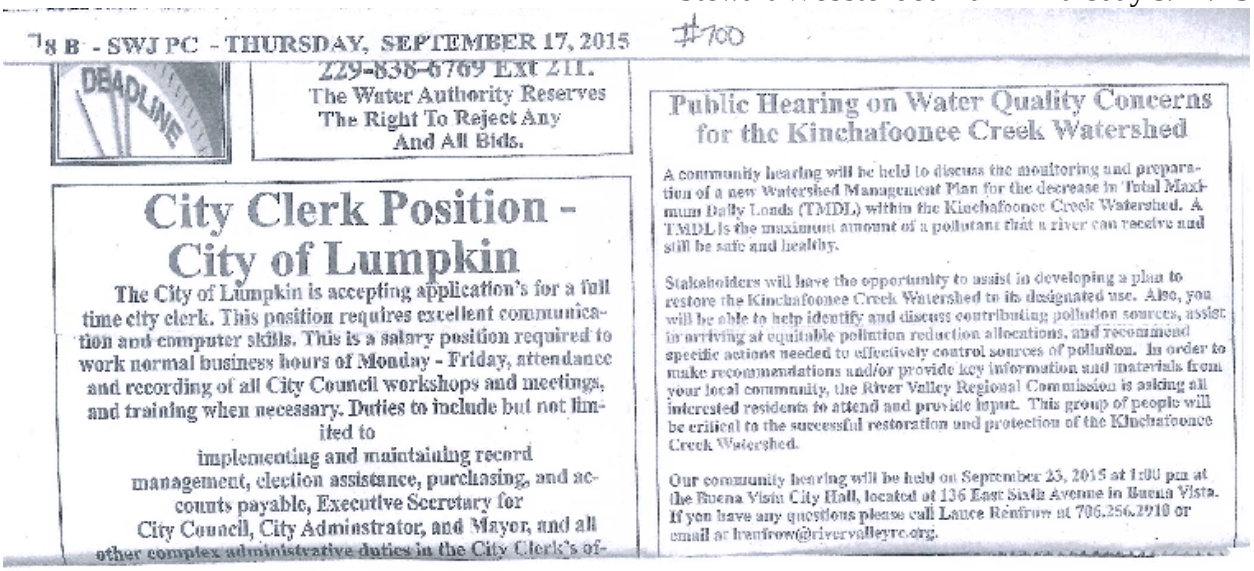
2015 MEN'S HEALTH CONFERENCE

WHEN:
Saturday, September 19
7:30 a.m. - Noon

WHERE:
Student Success Center,
Georgia Southwestern
State University

PHOEBE SUMTER MEDICAL CENTER

For Immediate Service Announcement:
Stewart Webster Journal – Thursday 9/17/15



#700

DEADLINE

229-838-6769 Ext 211.
The Water Authority Reserves
The Right To Reject Any
And All Bids.

City Clerk Position - City of Lumpkin

The City of Lumpkin is accepting application's for a full time city clerk. This position requires excellent communication and computer skills. This is a salary position required to work normal business hours of Monday - Friday, attendance and recording of all City Council workshops and meetings, and training when necessary. Duties to include but not limited to
implementing and maintaining record management, election assistance, purchasing, and accounts payable, Executive Secretary for City Council, City Administrator, and Mayor, and all other complex administrative duties in the City Clerk's of-

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APPENDIX F. MEETING MINUTES

TMDL Stakeholder/Advisory Committee Meeting Minutes
June 16, 2015
Kinchafoonee Creek

Persons Attending

Lance Renfrow, RVRC
Jack Holbrook, Webster County BOC
Cassie Renfrow, Chattahoochee RiverWarden
James Bankston
Troy Key
Bill Mesuk

This meeting was held at 1:00 pm at the Webster County Board of Commissioners office to discuss potential sources and solutions for the macroinvertebrate impairment of Clear Creek.

Lance Renfrow provided an overview of the Total Maximum Daily Load Watershed Management Plan that is being written for Kinchafoonee Creek and the role that the Advisory and Stakeholder Committee has in providing input into the plan.

- Mr. Holbrook noted that all structures have septic systems and there is no sewage system in Webster County.
- Lance discussed that the current data for sediment transport and *E. coli* is favorable for the watershed.
- The committee did not know of any major contributors for the sediment impairment.
- Cassie Renfrow suggested to perform chemical monitoring at sight seven noting that maybe it is not sediment contributing to low counts of macroinvertebrates.
- Bill said that there is not enough farming going on to contribute to any chemical pollution.
- The council noted that large tree buffers and timber exist throughout a majority of the watershed.
- Bill noted that feral hogs were a major issue in the area. They are uprooting longleaf pines and destroying crops. He has built a three mile fence around is property to keep them out. He is also using Rod Pinkston of Jager Pro to help with the hog issue.
- A lift station is located near the beginning of Clear Creek in Richland that overflows periodically.
- Mr. Bankston said that Lance can have access to his property if he needs it for sampling.

Meeting was adjourned at 2:30 pm.

TMDL Stakeholder/Advisory Committee Meeting Minutes
September 23, 2015
Kinchafoonee Creek

Persons Attending

Lance Renfrow, RVRC
Tim Sweezey, Marion County Manager
Shondria Golden, City of Buena Vista
Brenda McAllister, City of Beuna Vista
Cassie Renfrow, Chattahoochee RiverWarden
John Pollard, Georgia Forestry Commission

This meeting was held at 1:00 pm at the Buena Vista City Hall to discuss potential sources and solutions for the macroinvertebrate impairment of Clear Creek.

Lance Renfrow provided an overview of the Total Maximum Daily Load Watershed Management Plan that is being written for Kinchafoonee Creek and the role that the Advisory and Stakeholder Committee has in providing input into the plan.

- Lance discussed the current status of the project and that the River Valley Regional Commission intends to apply for 319(h) funds to implement a Healthy Watershed Initiative since much of the water quality data indicates low levels of pollutants.
- John and Tim though it would be a good idea to apply for these funds.
- Tim stated that the Marion County Board of Commissioners will be happy with the potential project and can provide a letter of support.
- Lance asked if there were any know forestry operations in the area to install BMPs. John noted that he was not aware of any. Tim noted that logging permits can be found through the county and that he would obtain that information if needed.
- Lance discussed the 60/40 cost share program through NRCS and how it will be proposed in the application. Lance also noted that many farmers like this idea and probably will not turn it down.
- Finally, Lance presented an aerial map of the watershed and asked if there were any farms in the area that may benefit from BMP installations. Several farms were pointed out.

Meeting was adjourned at 2:30 pm.