

# **Watershed Improvement Plan Phase II Revision**

For

## **Long Cane Creek**

**(Panther, Blue John & Long Cane Creeks, d/s LaGrange to Chattahoochee River)**

**Troup County, Georgia**

**DRAFT**

September 30, 2011

*Prepared by*

Three Rivers Regional Commission

*Submitted to*

Georgia Department of Natural Resources  
Environmental Protection Division

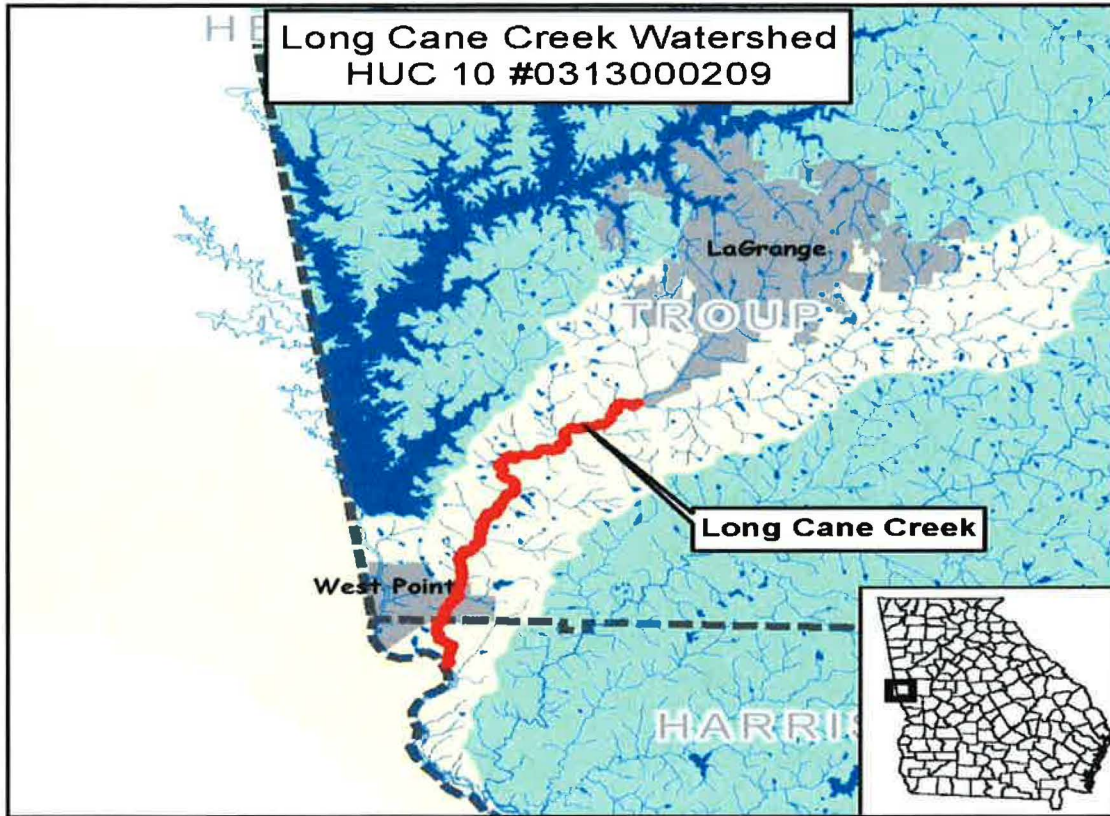
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**Watershed Location:**

The Long Cane Creek watershed for this Plan is shown below in the map which was taken from the TMDL Implementation Plan completed in 2004. The stream is located in Troup County, Georgia, between the City of LaGrange and the City of West Point near the Alabama border.



**Watershed Description:**

The majority of this study segment of the Long Cane Creek watershed lies within unincorporated Troup County. While this area is made up of low density residential, this is rapidly changing as the City of LaGrange expands its industrial land southward and the City of West Point expands northward with the addition of Kia Motors Manufacturing Plant.

The Total Maximum Daily Load Implementation Plan completed in 2001 describes the land use in the table below. Land use characteristics have changed much since then and continue to change at a rapid pace. Industrial land uses are gaining and now almost equal low density residential and agriculture.

The City of LaGrange will soon extend the city limits further south into the watershed, according to City leaders. This will bring expanded sewer service and increase the percentage of land use designated for industrial use. According to the current Comprehensive Plan Assessment, nearly twenty percent of the land within the City is designated as industrial. The



Plan also states this category increase is one of the largest since the last Plan completed in 1992. Specific land use by parcel is shown on the maps on the following pages.

The photo below shows some of the vacant land associated with the Callaway South Industrial Park near the entrance to Sewan America Inc., which is Kia’s largest supplier.

Blue John Creek is located in the distance near the edge of the tree line. It empties into Long Cane Creek approximately a half mile from this location.



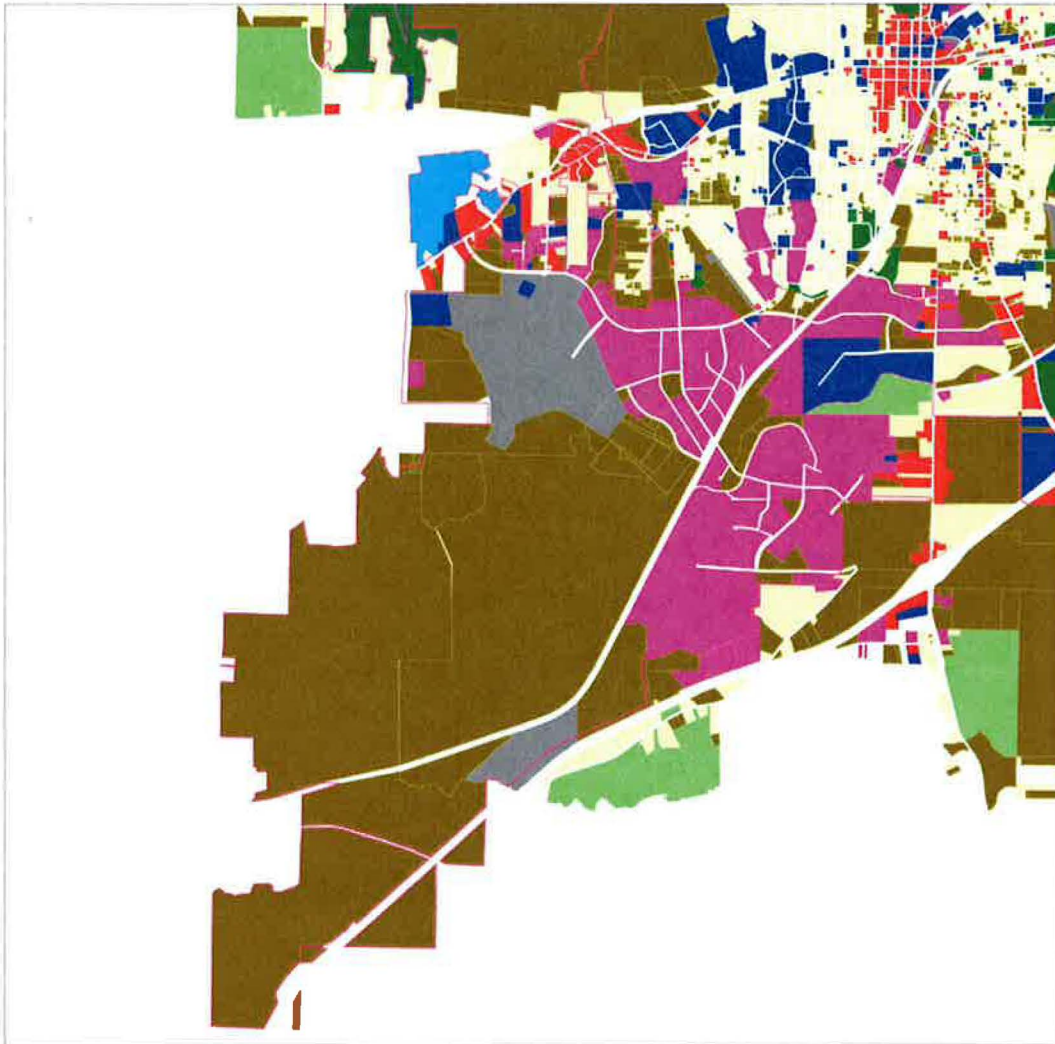
The table below shows the land use categories at the time of the EPA TMDL Report. Many changes have occurred since the data was gathered. The most notable difference would be the acreage of industrial and commercial land use. Approximately 3,000 acres transitioned from forest to industrial due to the Kia Manufacturing Plant site alone.

Long Cane Creek Watershed Land Use Categories – Acres (Percent)												
Open Water	Low Intensity Residential	High Intensity Commercial, Industrial, Transportation	Bare Rock, Sand, Clay	Quarries, Strip Mines, Gravel Pits	Transitional	Forest	Row Crops	Pasture, Hay	Other Grasses (Urban, recreational; e.g. parks, lawns)	Woody Wetlands	Emergent Herbaceous Wetlands	Total
368 (0.7)	1949 (3.6)	319 (0.6)	0	154 (0.3)	378 (0.7)	37579 (70.1)	2527 (4.7)	4835 (9.0)	1090 (2.0)	2870 (5.4)	174 (0.3)	53642



The Map below was taken from the soon to be adopted City of LaGrange Comprehensive Plan 2010-2030. Depicted here is the southwest quadrant.

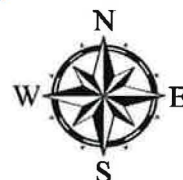
The olive green areas make up the unused Callaway South Industrial Park land. This land is rapidly becoming active, as Kia related suppliers and other companies locate there.



**Existing Land Use**

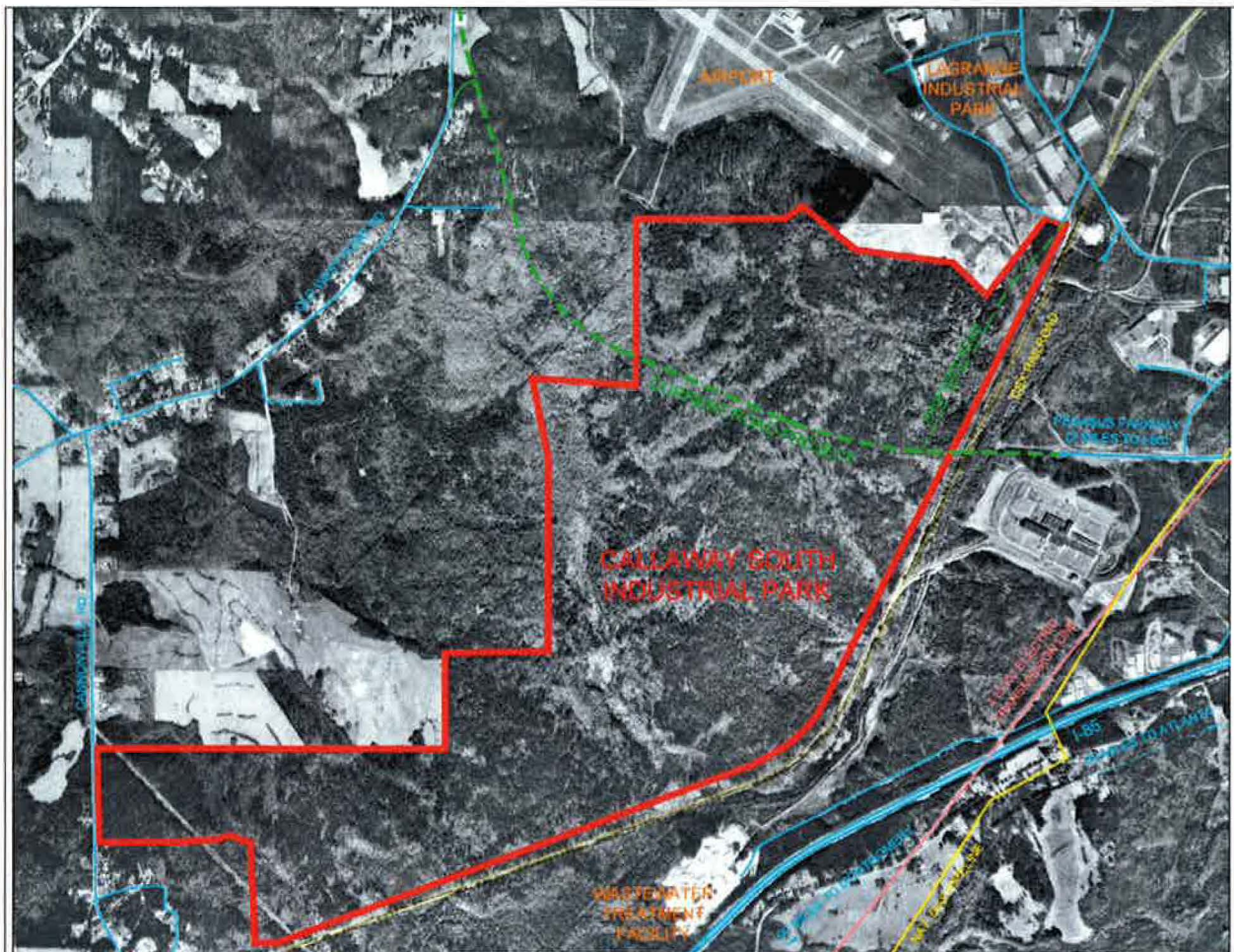
Southwest Quad

-  Agriculture/Forestry
-  Commercial
-  Industrial
-  Mixed Use
-  Public/Institutional
-  Park/Recreation/Conservation
-  Single-family Residential
-  Transportation/Communication/Utilities
-  Undeveloped



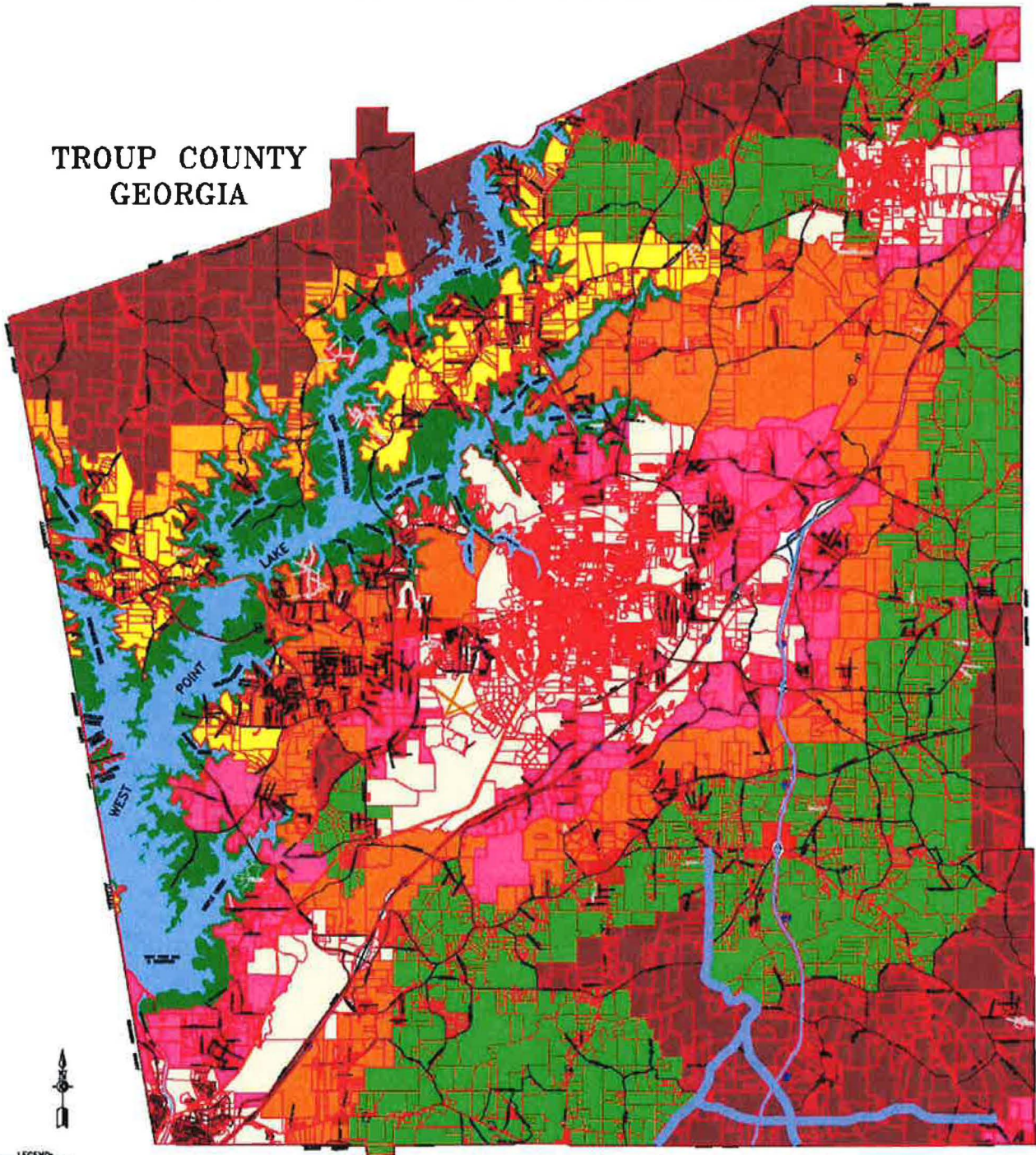
Below is a map of the planned Callaway South Industrial Park at the extreme southern end of the LaGrange City limits. Sewon America Inc., which is Kia's largest supplier is located there. This is located just above the Long Cane Creek study segment. Water monitoring Site 1 is located at the bottom center of this map.

Blue John Creek, a tributary to this Long Cane Creek segment is located on the red border of the delineated industrial park. Blue John also parallels the CSX railroad line at this site. Parcels inside the industrial park remain vacant as more industry and Kia related suppliers continue to locate here. Sewer lines will also continue to increase as the park expands.





The map below was taken from the Troup County Comprehensive Plan 2010-2030. Industrial expansion in both LaGrange and West Point is clearly seen.



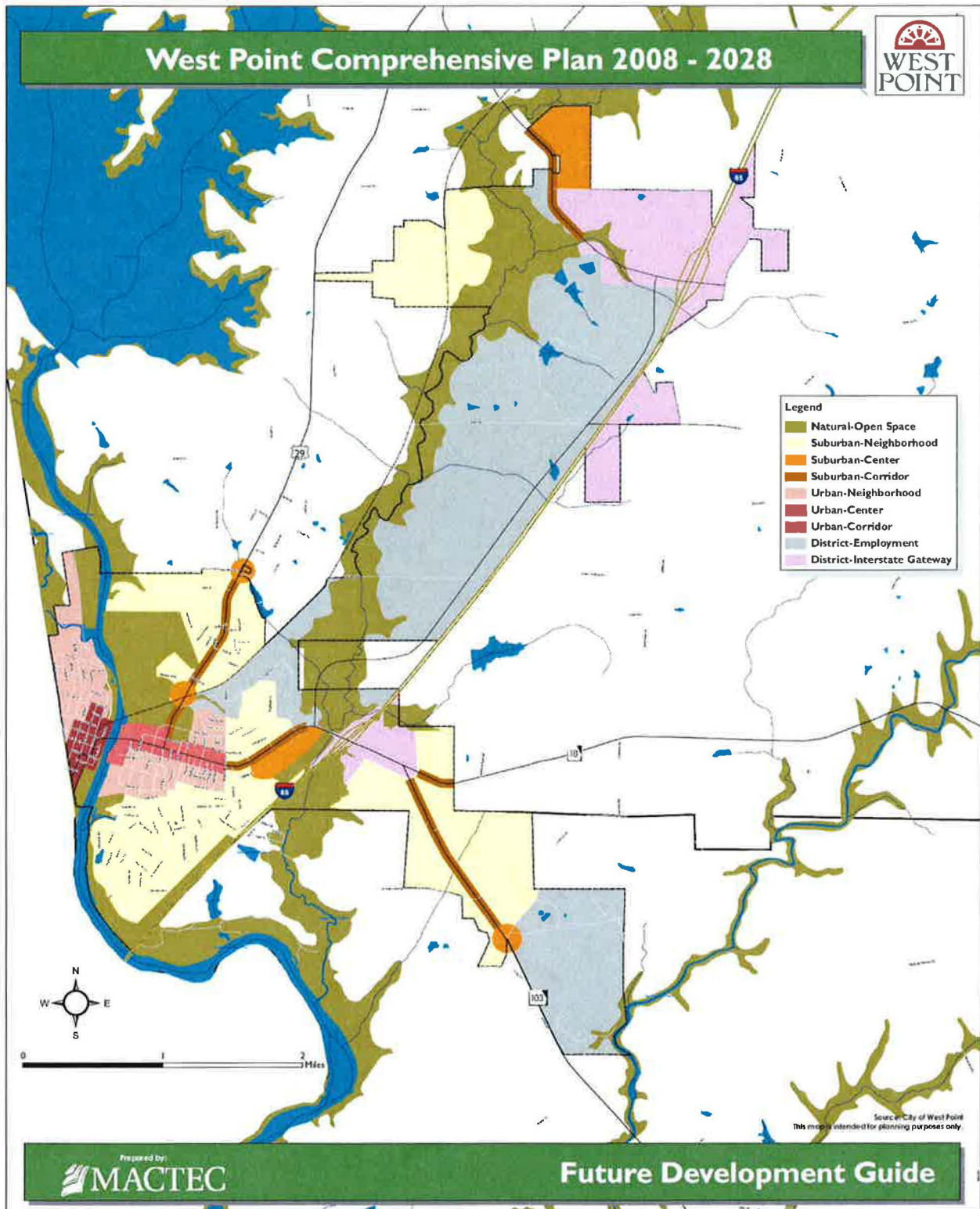
- LEGEND:**
- AGRICULTURAL
  - CONSERVATION AREA
  - URBAN
  - HISTORIC
  - LAKEBIDE RESIDENTIAL
  - LAKEBIDE RURAL RESIDENTIAL
  - GENERAL COMMERCIAL
  - LIMITED COMMERCIAL
  - NEIGHBORHOOD COMMERCIAL
  - AGRICULTURAL RESIDENTIAL
  - SCenic CORRIDOR
  - SUBURBAN
  - EXISTING CITY LIMITS

PREPARED BY  
TROUP COUNTY BUILDING,  
ZONING, AND PLANNING  
DRAWN BY ANDREW RUPPEL  
UPDATED: SEPTEMBER 20, 2007  
SCALE: 1"=1MILE

**FUTURE DEVELOPMENT**



The Map below was taken from the City of West Point Comprehensive Plan 2008-2028 and shows the Kia site (large brown area) and the Long Cane Creek preservation area (green swath in the map center).



### **Segment Description:**

This particular section of the Long Cane Creek watershed is characterized by very flat topography, wide floodplain, shallow stream channel, and slow moving current. Exact rate of flow is unknown since the USGS does not have a gage station on Long Cane Creek.

The majority of the watershed is forested rural and low density residential. A small percentage of the watershed is considered urban which is the portion within the West Point city limits. As noted before, the amount of acreage transitioning from rural has increased drastically.

The photo below is an excerpt from Georgia Trend Magazine and shows the newly built Kia Motors Manufacturing Plant site. Long Cane Creek is located parallel to this site just beyond the tree line. This significant land use change is a special case and is the most extreme within the watershed. The 3,000 acre site was previously farmland, rural residential and vacant natural land.

According to the Joint Public Notice of the Department of the Army Permit required by Section 404 of the Clean Water Act for Kia site preparation; 9,909 linear feet of stream, 0.03 ephemeral stream channel was to be piped, and 25.2 acres of natural wetlands to be filled. The Long Cane Stream channel itself was not changed, though it makes up the western border of the Kia site.



The permit also indicates a conceptual mitigation plan was submitted to compensate for the loss of riparian corridors and wetland areas. The plan was to consist of on-site and near-site wetland preservation, enhancement, restoration, stream buffer preservation, riparian restoration, and stream channel restoration. The exact location of these improvements at the time of this WIP document is unknown. Further research can indicate how much these improvements contribute to the health of the Long Cane Creek watershed.

The greatest pollutant risk associated with industrial expansion, initially, is sediment/biota from clearing land for building. Increased sediment may have affected Long Cane Creek, since it flows directly adjacent to the site. Hopefully future watershed improvement plans will look at the sediment issue of the stream, since it is also listed for this parameter.

## Watershed Monitoring and Data Results:

### Methodology:

Water samples were collected and tested using the LaMotte ColiQuant EZ kit. This testing kit utilizes the Coliscan Easygel EZ Method which has been approved by Georgia Environmental Protection Division. The second year of water quality monitoring was conducted using a similar Coliscan Easygel product made by Micrology Laboratories, LLC. Detailed information regarding the use of this method is attached to this document.

Fecal coliform colonies are reported as Colony Forming Units (CFU) per 100 milliliters of water. The number of colonies are counted, multiplied by 100 then divided by the sample amount.

$$\text{Fecal Coliform Colonies mL (CFU/mL)} = \# \text{ Colonies} / \text{Amount of Sample used}$$

### Water Quality Data Summary:

Five monitoring sites were utilized to gather fecal coliform levels in Long Cane Creek. These sites cover the top end this particular segment of the watershed to the end of the segment just before it empties into the Chattahoochee in Harris County. One month of targeted watershed monitoring took place in the initial phase of the Long Cane Creek Watershed Improvement Plan.

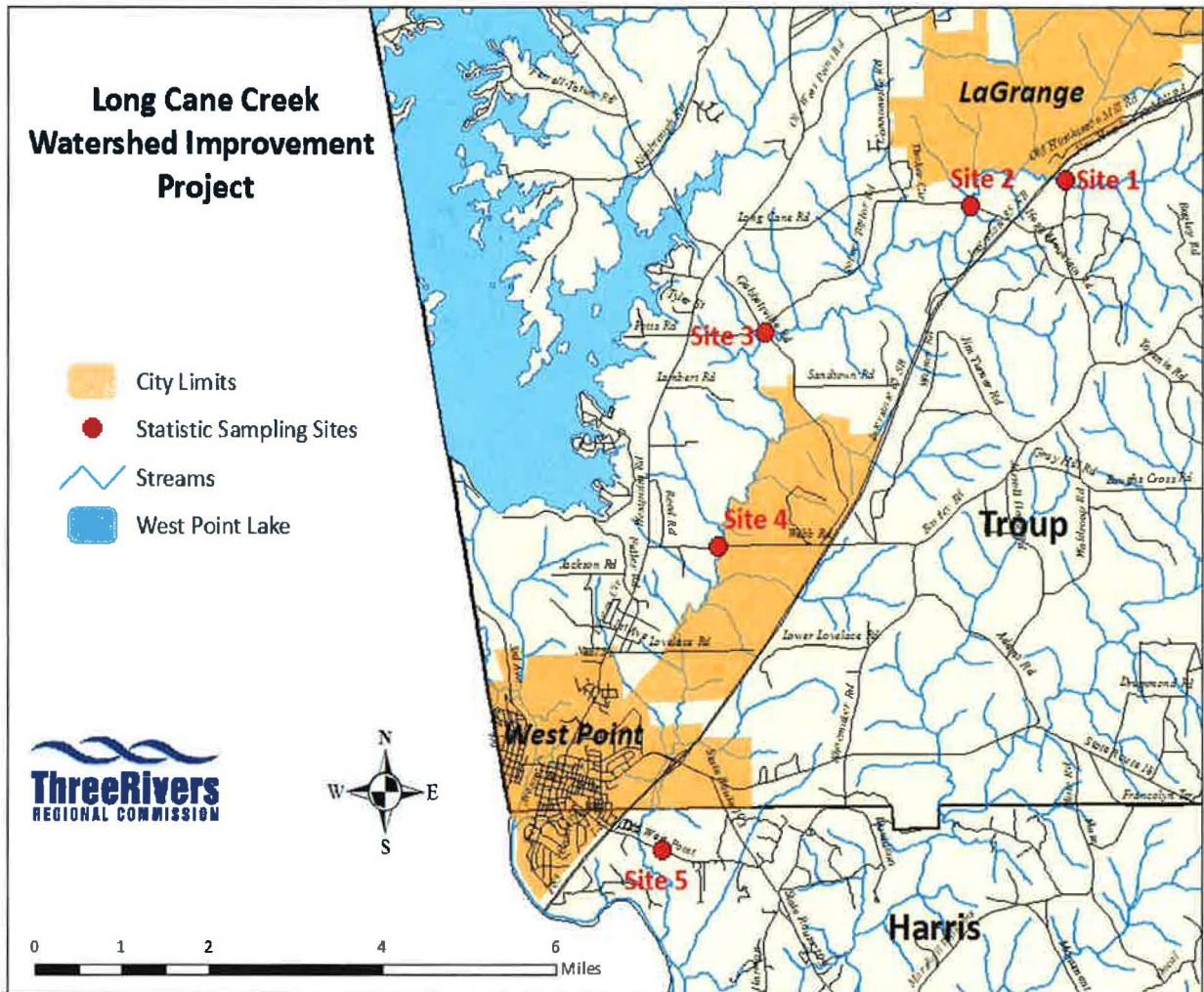
Long Cane Creek Watershed Monitoring Sites September 23, 2010		Total CFU/mL
Site 1	New Hutchinson Mill Rd	100
Site 2	Cannonville Rd	0
Site 3	Gabbettville Rd	100
Site 4	Webb Rd	333
Site 5	Old West Point Rd (E. 6 <sup>th</sup> St.)	200

During the second year of the project, water quality sampling took place June, July, and August of 2011. The results from that testing period can be seen on page 11.

Long Cane Creek Watershed Monitoring - Summer 2011 – CFU/100 mL			
Site	Month		
	June	July	Aug
1 – New Hutchinson Mill Road	117	150	150
2 – Cannonville Road	133	50	100
3 – Gabbottville Road	67	50	130
4 – Webb Road	83	50	50
5 – Old West Point Rd (E. 6 <sup>th</sup> St.)	0	0	165



Below is a map of the watershed monitoring sites.



**Detailed Monitoring Results – September 2010:**

<b>Site 1 – New Hutchison Mill Road – September 23, 2010</b>				
<b>Time</b>	<b>Air Temp (f)</b>	<b>Water Temp (f)</b>	<b>Weather Conditions</b>	<b>Rainfall (last 72 hrs)</b>
12:23 PM	76	73	Sunny	0"
<b>Sample Dish</b>				
<b>1</b>	<b>2</b>	<b>3</b>	<b>Average CFU</b>	
0 / 100 mL	0 / 100 mL	100 / 100 mL	100 mL	

<b>Site 2 – Cannonville Road – September 23, 2010</b>				
<b>Time</b>	<b>Air Temp (f)</b>	<b>Water Temp (f)</b>	<b>Weather Conditions</b>	<b>Rainfall (last 72 hrs)</b>
12:38 PM	80	77	Sunny	0"
<b>Sample Dish (1 mL sample per dish)</b>				
<b>1</b>	<b>2</b>	<b>3</b>	<b>Average CFU</b>	
0 / 100 mL	0 / 100 mL	0 / 100 mL	0 mL	

<b>Site 3 – Gabbottville Road – September 23, 2010</b>				
<b>Time</b>	<b>Air Temp (f)</b>	<b>Water Temp (f)</b>	<b>Weather Conditions</b>	<b>Rainfall (last 72 hrs)</b>
12:55 PM	95	78	Sunny	0"
<b>Sample Dish (1 mL sample per dish)</b>				
<b>1</b>	<b>2</b>	<b>3</b>	<b>Average CFU</b>	
100 / 100 mL	0 / 100 mL	200 / 100 mL	100 mL	

<b>Site 4 – Webb Road – September 23, 2010</b>				
<b>Time</b>	<b>Air Temp (f)</b>	<b>Water Temp (f)</b>	<b>Weather Conditions</b>	<b>Rainfall (last 72 hrs)</b>
1:15 PM	94	80	Sunny	0"
<b>Sample Dish (1 mL sample per dish)</b>				
<b>1</b>	<b>2</b>	<b>3</b>	<b>Average CFU</b>	
300 / 100 mL	400 / 100 mL	300 / 100 mL	333 mL	

<b>Site 5 – Old West Point Road (E. 6<sup>th</sup> St) – September 23, 2010</b>				
<b>Time</b>	<b>Air Temp (f)</b>	<b>Water Temp (f)</b>	<b>Weather Conditions</b>	<b>Rainfall (last 72 hrs)</b>
1:36 PM	96	81	Sunny	0"
<b>Sample Dish (1 mL sample per dish)</b>				
<b>1</b>	<b>2</b>	<b>3</b>	<b>Average CFU</b>	
500 / 100 mL	100 / 100 mL	0 / 100 mL	200 mL	

**Detailed Monitoring Results – Summer 2011:**

During this period of water quality monitoring, the amount of sample used was 2 mL.

<b>Water Sampling Data - June 29, 2011</b>						
<b>Site</b>	<b>Time</b>	<b>Air Temp (f)</b>	<b>Water Temp (f)</b>	<b>Rainfall</b>	<b>3 Dish CFU Counts</b>	<b>CFU/100mL</b>
Site 1	9:34 AM	75 <sup>o</sup>	75 <sup>o</sup>	>72 hours	3/3/1	117
Site 2	9:53 AM	78 <sup>o</sup>	74.5 <sup>o</sup>		2/4/2	133
Site 3	10:10 AM	79 <sup>o</sup>	76 <sup>o</sup>		1/2/1	67
Site 4	10:31 AM	79 <sup>o</sup>	76 <sup>o</sup>		3/0/2	83
Site 5	11:06 AM	81 <sup>o</sup>	76.5 <sup>o</sup>		0/0/0	0

<b>Water Sampling Data - July 25, 2011</b>						
<b>Site</b>	<b>Time</b>	<b>Air Temp (f)</b>	<b>Water Temp (f)</b>	<b>Rainfall</b>	<b>3 Dish CFU Counts</b>	<b>CFU/100mL</b>
Site 1	9:43 AM	76 <sup>o</sup>	79 <sup>o</sup>	>72 hours	3/2/4	150
Site 2	10:02 AM	79 <sup>o</sup>	79 <sup>o</sup>		1/0/1	50
Site 3	10:19 AM	79 <sup>o</sup>	78 <sup>o</sup>		0/0/1	50
Site 4	10:41 AM	79 <sup>o</sup>	80 <sup>o</sup>		1/1/0	50
Site 5	11:07 AM	81 <sup>o</sup>	81 <sup>o</sup>		0/0/0	0

<b>Water Sampling Data – August 22, 2011</b>						
<b>Site</b>	<b>Time</b>	<b>Air Temp (f)</b>	<b>Water Temp (f)</b>	<b>Rainfall</b>	<b>3 Dish CFU Counts</b>	<b>CFU/100mL</b>
Site 1	10:15 AM	85 <sup>o</sup>	78 <sup>o</sup>	>72 hours	2/5/1	150
Site 2	10:30 AM	86 <sup>o</sup>	78 <sup>o</sup>		5/3/1	100
Site 3	10:47 AM	86 <sup>o</sup>	78 <sup>o</sup>		4/2/2	130
Site 4	11:05 AM	88 <sup>o</sup>	78 <sup>o</sup>		1/1/0	50
Site 5	11:27 AM	90 <sup>o</sup>	80 <sup>o</sup>		4/3/3	165



It was decided to conduct a water sampling at two of the main tributaries listed with this segment of Long Cane Creek. Blue John Creek and Panther Creeks were testing to see if any of the pollutant in the watershed could be coming from these tributaries. The water sampling for these stream segments occurred on August 22, 2011. Surprisingly these sampling results yielded negligible fecal coliform levels.

**Detailed Monitoring Results – Blue John and Panther Creeks:**

<b>Blue John Creek – Pegasus Parkway, LaGrange, GA – August 22, 2011</b>				
<b>Time</b>	<b>Air Temp (f)</b>	<b>Water Temp (f)</b>	<b>Weather Conditions</b>	<b>Rainfall (last 72 hrs)</b>
12:03 PM	91	78	Sunny	0"
<b>Sample Dish</b>				
<b>1</b>	<b>2</b>	<b>3</b>	<b>Average CFU</b>	
1 / 100 mL	0 / 100 mL	0 / 100 mL	0 mL	

<b>Panther Creek – John Lovelace Road, Troup County – September 23, 2010</b>				
<b>Time</b>	<b>Air Temp (f)</b>	<b>Water Temp (f)</b>	<b>Weather Conditions</b>	<b>Rainfall (last 72 hrs)</b>
12:50 PM	91	80	Sunny	0"
<b>Sample Dish</b>				
<b>1</b>	<b>2</b>	<b>3</b>	<b>Average CFU</b>	
0 / 100 mL	0 / 100 mL	1 / 100 mL	0 mL	

The City of LaGrange Long Cane Creek Water Pollution Control Plant tests for fecal coliform on Long Cane as part of the GA WQS. Their testing site is located on Hood Road which is north of this WIP study segment. Their numbers are shown below.

<b>Long Cane WPCP Sampling Data – Hood Road – LaGrange, GA</b>		
<b>Date</b>	<b>Time</b>	<b>CFU/mL</b>
7/26/2010	10:06	120
7/27/2010	10:38	180
7/28/2010	10:40	18
7/29/2010	11:15	180
1/24/2011	10:00	30
1/25/2011	9:28	90
1/27/2011	10:15	130
2/8/2011	9:29	20
6/7/2011	9:30	40
6/8/2011	10:01	56
6/9/2011	10:13	48
6/13/2011	11:57	120

### **Visual Field Surveys:**

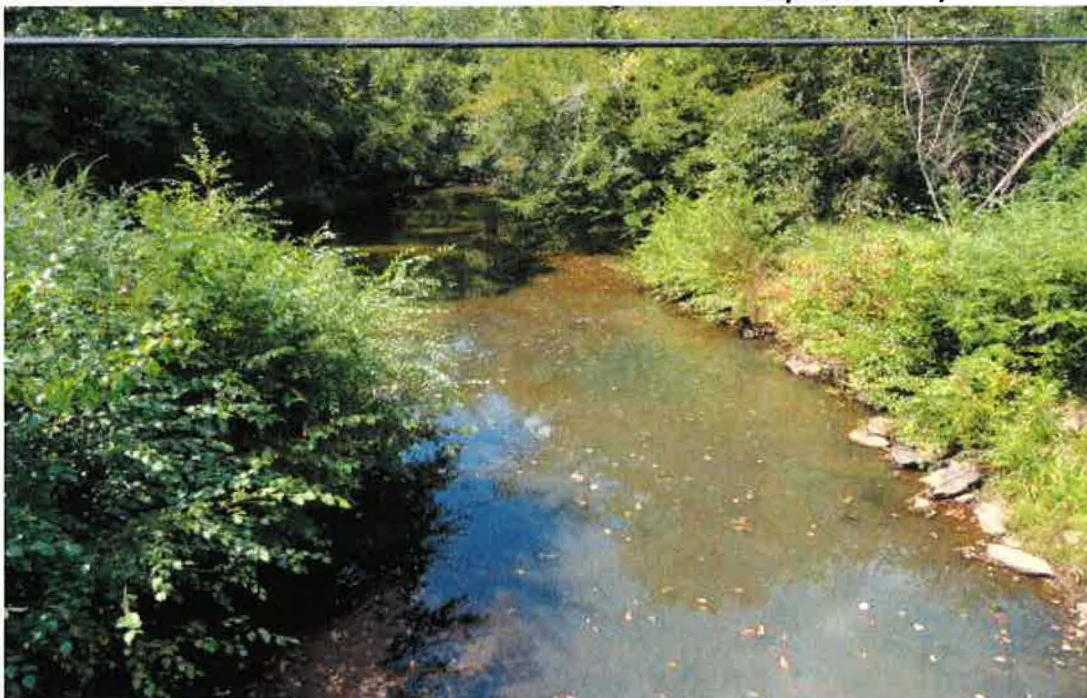
An initial visual survey of the watershed was conducted in 2009 as part of the Extended Revision project. During the first phase of the Watershed Improvement Plan, a visual survey of monitoring sites was conducted on September 2, 2010. Additional visual field surveys were conducted on September, 19 2011 and during water sampling events. General land use observation took place to confirm and update characteristics given in the previous TMDL Implementation Plan.

As identified before, major land use changes are occurring and were observed in the Long Cane Creek watershed. Parcels converting from undeveloped and rural to industrial use are the largest change. The most significant of these is the Kia Motors Manufacturing Plant located in the lower end of this study segment.

With these industrial land use changes comes the extension of sanitary sewer lines which are more environmentally friendly than the current use of septic systems. The City of West Point has made sewer system improvements unrelated to the Kia site. This is evidenced in one of the visual survey photos.

Much of the watershed remains forested and rural. Low density residential is apparent throughout as also agricultural pasture land. The majority of the agricultural land is open field with very little grazing observed. Most of the active animal grazing was seen on Robert Taylor Road in the form of one horse per property. Examples are shown in the photos on the next few pages.

**Photo below was taken at Site 1 – New Hutchinson Mill Road. September 19, 2011.**





**Below is a photo of the creek at Site 1: New Hutchison Mill Road. Note the beaver dam impeding flow. Water sample was taken below the dam. September 23, 2010.**



**Photo below is taken at Site 1: New Hutchison Mill Road. September 23, 2010.**





**Photo below is taken at Site 1: New Hutchison Mill Road. September 23, 2010.**



**Photo below along New Hutchison Mill Road and adjacent to Long Cane Creek. September 2011.**





**Photo below was taken along Cannonville Road. Much of this segment of the watershed is forested and rural.**



**Photo below was taken from the Cannonville Road bridge. Sampling Site 2. September 2011.**





**Photo below was taken along Robert Taylor Road. As mentioned earlier, this is where the individual horse grazing is concentrated.**



**Photo below is along Robert Taylor Road. Concentrated horse grazing is shown. September 2011.**





**Photo below is along Gabbottville Road near sampling Site 3. Long Cane Creek is in the background. August 2009.**



**Photo below was taken at Gabbottville Road. Sampling Site 3. September 23, 2011. Looking downstream.**





**Photo below was taken at Site 4: Webb Road. September 2010. Looking upstream.**



**Photo below was taken at Site 4: Webb Road. September 2010. Looking downstream.**





Photo taken September 2011. Example of the low density residential development within the watershed.



Photo taken along Warner Road just across from the Kia Plant. Photo shows the rural landscape transitioning into industrial and commercial. September 2011.





Photo taken from Warner Road near the new Kia Parkway interchange at I-85. Kia Plant water tower visible.



Photo below was taken along Webb Bartley Road. September 2011. Example of rural/vacant land with the potential for industrial or commercial use.





Photo below was taken at Site 5: Old West Point Road (E. 6<sup>th</sup> St.) showing recent sewer system upgrades by the City of West Point. Long Cane Creek and sewer caps visible below. September 2011.



Photo below is taken at Site 5: Old West Point Road (E. 6<sup>th</sup> St.) September 23, 2010





**Photo below is taken at Site 5: Old West Point Road (E. 6<sup>th</sup> St.) September 23, 2010**

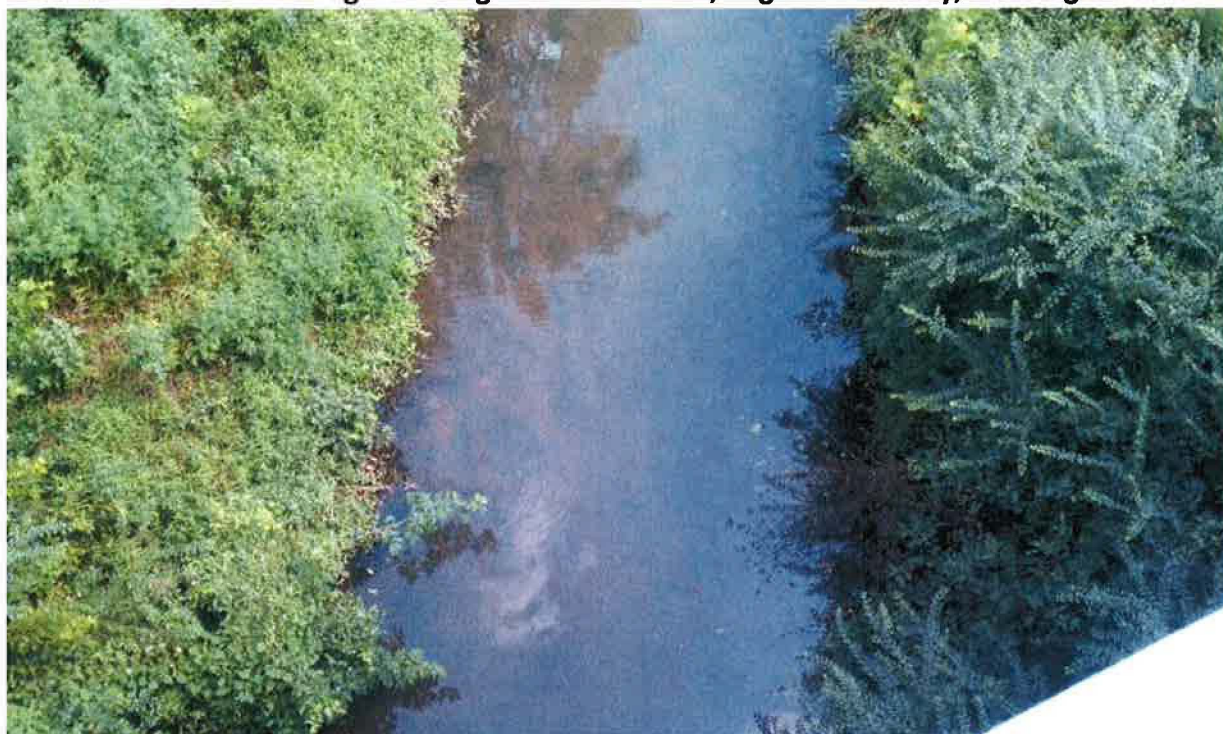


**Photo below taken on Pegasus Parkway in LaGrange looking to the bridge which crosses over Blue John Creek and the CSX Railroad. The picture also shows the undeveloped portions of the Callaway South Industrial Park.**





**Photo taken from the bridge crossing Blue John Creek, Pegasus Parkway, LaGrange.**



**Photo below is Panther Creek and was taken from John Lovelace Road. September 19, 2011. Looking upstream.**





**Photo below is Panther Creek and was taken from John Lovelace Road. September 19, 2011. Looking upstream.**



**Photo below is Panther Creek and was taken from John Lovelace Road. September 19, 2011. Looking Downstream.**



## **Identification and Prioritization of Sources of Impairment:**

According to the Long Cane Creek TMDL Implementation Plan, sources of fecal coliform in the stream can and typically include sources from the list below. These have been prioritized and listed according to the probable source for fecal coliform levels in the watershed.

### Non-Point Sources:

#### Wildlife: Beaver and Deer:

Several stakeholders expressed concern over the high beaver population in portions of the Creek. Troup also has a high deer population (50 deer/square mile). Since large portions of the mid and lower watershed are forested, wildlife could have an impact on fecal loads.

Beavers continue to create problems along the Long Cane Creek corridor. The dams impede flow in the stream which is evidenced in the photos taken at the water monitoring Site 1. Stakeholders have also stated there are multiple beaver dam issues along other sections of the creek.

#### Agricultural Livestock:

Troup has a moderate number of dairy cattle and horses. The dairy cattle population is 608 and the horse population is 350 county, wide according to the Natural Resource Conservation Service. There are no confined animal feeding lots. Several agency stakeholders stated that cattle farmers within the watershed have low-density operations. Several of the 1999 biomonitoring reports identify cattle production as one of the main contributors to fish community and habitat impairment. Since there is a significant amount of cattle production in the watershed, and since it is customary for cattle to have direct access to stream in this area, livestock could be contributing to the fecal loads. There are no current chicken or hog producers in the watershed.

The latest visual surveys conducted in September of 2010 revealed agricultural pasture land was still prevalent in the watershed. Very little agricultural land included active livestock or grazing and was mostly inactive except for hay production. This was observed via the adjacent roadways and not within the interior of parcels.

The most active animal grazing identified in the watershed was along Robert Taylor Road. This road segment is located just upstream from water testing Site 3. The topography is sloping, and the creek flows within 1,000 feet of the creek.

According to Georgia Department of Natural Resources Wildlife Resource Division, there were 50 head of deer per square mile.



### Leaking Septic Systems:

The majority of Troup County uses septic systems. This includes all new subdivision development in the mid to lower watershed. According to the Georgia Department of Human Resources, Division of Public Health there was 15,084 septic systems in Troup County. This is an increase of 1,195 since 1990.

The growth in the number of septic tanks due to increased residential development in the watershed should be a primary concern for future water quality. Residential development is currently and will continue to be low density. The economic downturn will slow the number of new systems being put into place. The past two years have been very dry, which keep septic failures to a minimum.

### Point Sources:

#### Leaking Sewer Lines:

Sewer lines serving LaGrange run parallel to Blue John Creek. Although no leaks have been detected in the area, any leaks would have a significant impact on fecal coliform counts.

Sewer lines are located within the floodplain in the cities of LaGrange and West Point. No leaks for overflows have been reported in the last two years.

#### Land Application Systems:

At the time of the TMDL Plan, Days Inn on Whitesville Road utilized a LAS system but has since ceased that operation. The TMDL states that NPDES point source fecal coliform loads from wastewater treatment facilities do not significantly contribute to the impairment unless repeated violates occur.

Landfills: One Construction & Demolition, and one sanitary landfill active, two sanitary landfills closed.

### NPDES Permitted Sites:

Long Cane Creek Water Pollution Control Plant (GA0036951) does not discharge into Long Cane Creek but sewer lines do run along the creek in the upper watershed. The Long Cane WPCP discharges its wastewater in the Chattahoochee River just below where the creek empties.

A small wastewater treatment plant operating under the name Raylar Corp (GA0032565) is located on Whitesville Road just north of Interstate 85, which is utilized by the nearby Pilot and Chapman's truck stops. A photo of the treatment plant is below.



Other NPDES permitted sites are located within the watershed but do not release contaminants related to the fecal coliform parameter.



## Identification of Applicable Existing Management Practices and Controls:

### Agricultural Management Practices

Below are Best Management Practices (BMP) measures currently utilized in Troup County. These are not specific to the Long Cane Creek watershed.

BMP Practice	Responsible Party	BMP Description	Funding Source	Source of Impairment	Date	BMP LRP Rating
Comprehensive Nutrient Management Plan (100, 102, 103)	NRCS Agricultural Producer	A CNMP addresses concerns such as soil erosion, manure, and organic by products and their potential impact on water quality.	Various	Ag	2009	1-5
Critical Area Planting (342)	NRCS Agricultural Producer	The establishment of permanent vegetation or cover on highly erodible land in order to reduce soil erosion.	Various	Ag	2009	1-5
Fencing (382)	NRCS Agricultural Producer	Barriers installed to limit animal, human and wildlife entry into specified areas and water resources.	Various	Ag	2009	3-5
Nutrient Management (590)	NRCS Agricultural Producer	A management plan that assists producers in improving management and nutrient use by matching needs more efficiently and reducing nutrients in runoff.	Various	Ag	2009	1-3
Pipeline (516)	NRCS Agricultural Producer	A component of an alternative water system used to transport water for livestock or recreation purposes.	Various	Ag	2009	1-5
Water Well (642)	NRCS Agricultural Producer	A component of an alternative water supply used to provide water for irrigation, livestock, wildlife or recreation purposes.	Various	Ag	2009	3-5

### General Management Practices and Controls

Governments within the watershed have certain policies and protections.

- *Troup County Comprehensive Plan 2010-2030*. The Plan contains policies which support the protection of natural resources and conservation practices when it comes to new development in or around environmentally sensitive areas.

- Troup County Flood Protection Ordinance
- Troup County Soil Erosion, Sedimentation, and Pollution Control Ordinance
- *City of West Point Comprehensive Plan 2008-2028*. The Plan includes policies which “support the health and natural function of West Point’s water features, including the Chattahoochee and its tributaries.”

Within the comprehensive plan is a *Future Development Guide* which will aid in quality growth strategies for the future, including the protection of natural areas. The Long Cane Creek stream corridor and floodplain is considered an important natural area to be protected.

- City of West Point Flood Protection Ordinance
- City of West Point Sewer Ordinance – Updated 2009

**Recommendations for Additional Management Practices:**

Agricultural

There are many more BMPs and conservation/protective measures which can be utilized in the watershed to alleviate fecal coliform contaminants from entering the creek. The local Natural Resources Conservation Service (NRCS) office can assist with the implementation of additional management measures. These measures are described in detail within the *Best Management Practices for Georgia Agriculture Manual* produced by the Georgia Soil and Water Conservation Service.

Below are additional Agricultural Best Management Practices offered through the NRCS.

<b>BMP Practice</b>	<b>Responsible Party</b>	<b>BMP Description</b>	<b>Purpose</b>
Manure Storage Facility (313)	NRCS Agricultural Producer	a storage facility constructed to temporarily store waste, wastewater and contaminated runoff as part of an agricultural waste management system	Animal Waste Management
Animal Mortality Facility (316)	NRCS Agricultural Producer	a permanent structure used to dispose of carcasses used as part of a waste management plan	Animal Waste Management
Composting Facility (317)	NRCS Agricultural Producer	a facility used to dispose of carcasses and waste in a sanitary method that results in a usable soil	Animal Waste Management



		additive by-product	
Contour Farming (330)	NRCS Agricultural Producer	a planting system of tilling, planting and performing farming operations on or near the contour of a field to reduce erosion and runoff	Non-Point Source Pollution Control
Contour Buffer Strip (332)	NRCS Agricultural Producer	strips of permanent vegetation established on a field's contour to reduce erosion, slow sediment transport and reduce runoff	Non-Point Source Pollution Control
Critical Area Planting (342)	NRCS Agricultural Producer	the establishment of permanent vegetation or cover on highly erodible land in order to reduce soil erosion	Animal Waste Management
Conservation Tillage-Mulch Till (345)	NRCS Agricultural Producer	a conservation tillage system in which residue is maintained on fields year-round and the entire field is tilled prior to planting	Non-Point Source Pollution Control
Conservation Tillage-Ridge Till (346)	NRCS Agricultural Producer	a conservation tillage system in which residue is maintained on fields year-round and crops are grown on pre-formed ridges that are alternated with furrows with residue	Non-Point Source Pollution Control
Waste Treatment Lagoon (359)	NRCS Agricultural Producer	a treatment facility constructed to biologically treat waste, wastewater and contaminated runoff as part of an agricultural waste management system	Animal Waste Management
Closure of Wastewater Impoundment (360)	NRCS Agricultural Producer	the closure of lagoons and waste storage ponds that are no longer used for their original purpose	Animal Waste Management
Anaerobic Digester-Ambient Temp (365)	NRCS Agricultural Producer	an unheated waste treatment impoundment that biologically treats waste as part of a waste management system	Animal Waste Management
Anaerobic Digester-Controlled Temp (366)	NRCS Agricultural Producer	a managed temperature waste treatment impoundment that biologically treats waste as part of a waste	Animal Waste Management

		management system	
Waste Facility Cover (367)	NRCS Agricultural Producer	a component of an animal waste management system used to maintain the capacity of and limit rainfall entering storage facilities to improve water and air quality	Animal Waste Management
Riparian Herbaceous Cover (390)	NRCS Agricultural Producer	the establishment of grasses, grass-like plants and forbs adjacent to water bodies to protect water quality, provide wildlife habitats and to stabilize stream banks and channels	Non-Point Source Pollution Control
Riparian Forest Buffer (391)	NRCS Agricultural Producer	the establishment of primarily trees and/or shrubs adjacent to water bodies to protect water quality, provide wildlife habitats and to stabilize stream banks and channels	Non-Point Source Pollution Control
Filter Strip (393)	NRCS Agricultural Producer	strips of vegetation located between cropland, grazing land or disturbed areas and water sources to protect water quality	Non-Point Source Pollution Control
Use Exclusion (472)	NRCS Agricultural Producer	the restriction of animals, people or vehicles from areas to improve and protect natural resources in the area	Animal Waste Management
Spring Development (574)	NRCS Agricultural Producer	the development of a spring or seep to improve the quality, quantity and distribution of water	Non-Point Source Pollution Control
Stream Crossing (578)	NRCS Agricultural Producer	a structure that is designed to protect quality and reduce erosion by designating stable access points and crossings for livestock	Animal Waste Management
Field Strip-cropping (586)	NRCS Agricultural Producer	a planting system in which crops are grown in alternating strips with grasses to reduce soil erosion and runoff	Non-Point Source Pollution Control
Subsurface Drain (606)	NRCS Agricultural	an underground drain used to collect and remove	Non-Point Source Pollution Control



	Producer	excess water	
Manure Transfer (634)	NRCS Agricultural Producer	a manure transport system that utilizes a conveyance system to transport manure to storage facilities, loading areas or agricultural land	Animal Waste Management
Wastewater Treatment Strip (635)	NRCS Agricultural Producer	a strip of herbaceous cover used to reduce sediment and nutrient loadings as part of an agricultural waste management system	Animal Waste Management
Water Well (642)	NRCS Agricultural Producer	a component of an alternative water supply used to provide water for irrigation, livestock, wildlife or recreation purposes	Animal Waste Management

### Urban

Additional management practices to control fecal coliform from entering the Long Cane Creek watershed within the urbanized areas could include those discussed in *The Use of Best Management Practices (BMP) in Urban Areas Guide*. As a reference, use the links provided below.

<http://cfpub.epa.gov/npdes/stormwater/urbanbmp/bmpeffectiveness.cfm>

<http://www.bmpdatabase.org/>

<http://www.epa.gov/nrmrl/pubs/600r04184/600r04184.pdf>

### Comprehensive

Additional management practices which are in place and are enforced on the local government level include:

Troup County Government:

<b>Troup County Short Term Work Program 2010-2015</b>				
<b>Management Measure</b>	<b>Years</b>	<b>Responsible Party</b>	<b>Estimated Cost</b>	<b>Funding Source</b>
Feasibility Study to determine the	2010-2011	Troup, Consultant	\$50,000	Troup

feasibility of a countywide water and sewer system				
Educational program about littering and enforce littering ordinances	2010-2015	Troup	\$7,500	Troup
Enforce Part V Environmental Standards as adopted	2010	Troup Staff	\$0	N/A
Develop regulations for large acreage developments that preserve greenspace, protect habitat and provide public or decentralized sewer system and public or community water system	2010	Troup Staff	\$0	Troup
Develop additional programs and policies to protect environmentally sensitive areas	2010	Troup, DNR, DCA, RC	unknown	Troup
Study and develop alternatives to individual septic systems and wells	2010	Troup, consultant	\$50,000	Troup
Develop Joint Planning Commission	2010-2011	Troup, LaGrange, Hogansville and West Point	unknown	Troup and municipalities

City of West Point Government:

<b>City of West Point Short Term Work Program 2010-2015</b>				
<b>Management Measure</b>	<b>Years</b>	<b>Responsible Party</b>	<b>Estimated Cost</b>	<b>Funding Source</b>
Prepare and adopt Suburban-Center Master Plans for each area (designated on the Future Development Map) to guide long-range development of	2013	Community Development, Development Authority	\$20,000	General Fund, Grants



these areas and address goals and objectives, building placement, design, and size, and materials, landscaping, access management, interparcel access, and other elements that contribute to the look and function of the district.				
Host joint workshops and symposiums that bring in experts on specific topics (e.g. conservation easements, innovative stormwater management, green architecture) to inform local officials and staff and the general public about common interests on a regular basis.	Ongoing	Historic Preservation Commission, DCA, Housing Authority, CD, RDC, DA, VC	\$5,000	General Fund
Continue to work with regional and state agencies to identify funding sources related to transportation, utilities, community facilities and services, housing, economic development, and environmental and historic resource protection.	Ongoing	City of West Point	Staff time	General Fund
Pursue government purchase of environmentally sensitive lands for the creation of wildlife areas, nature preserves, and public parks.	Ongoing	Nature Conservancy, Parks/Rec, DA, CD	TBD	General Fund, Nature Conservancy, Grants
Develop a land conservation program with the Georgia Conservancy to create conservation easements or other similar conservation tools that preserve important natural areas.	Ongoing	Nature Conservancy, Parks/Rec, DA, CD	TBD	General Fund, Nature Conservancy, Grants
Develop a system/program that promotes the use of conservation easements and conservation tax credits by landowners.	2014	Community Development	Staff time	General Fund
Establish a program designed to utilize conservation easements and other land preservation	2013	Parks/Rec, CD	Staff time	General Fund

tools to preserve important natural areas on either public or private land.				
Considering establishing minimum open space requirements into development standards and incentives that encourage the creation of publicly-accessible parks in new development.	2012	Community Development	Staff time	General Fund
Review Floodplain Protection Ordinance to ensure compliance with state and federal regulations.	Ongoing	Community Development	Staff time	General Fund
Review development regulations to ensure stormwater and erosion controls to mitigate construction and development impacts on natural areas.	Ongoing	Community Development	Staff time	General Fund
Follow BMPs for erosion and sedimentation control, as defined in the Georgia Erosion and Sedimentation Act.	Ongoing	City of West Point	Staff time	General Fund
Discourage development in environmentally sensitive areas, as delineated in the Natural development category (See Future Development Guide and Map).	Ongoing	Community Development	Staff time	General Fund

**Partnership Advisory Council and Public Involvement:**

A meeting of the Long Cane Creek Advisory Committee and other stakeholders was held September 27, 2010 at the Troup County Government Center in LaGrange for the initial Watershed Improvement Plan Phase. An additional PAC meeting was held at the same location on September 22, 2011. Copies of the sign-in sheets are attached. Partners from the following entities were present: The City of LaGrange; Long Cane Creek Wastewater Pollution Control Plant, The City of West Point, Sierra Club, Troup County Environmental Health Department, Troup County Engineering, Troup County Board of Commissioners, and Three Rivers Regional Commission.



The public is highly involved in the comprehensive policy making process and periodically educated on agricultural management practice options. Future Adopt-A-Stream groups will be citizen driven and allow those participating to take a direct interest in the watershed.

<b>Long Cane Creek Watershed Improvement Plan – Partnership Advisory Council</b>			
<b>Name</b>	<b>Organization</b>	<b>Phone</b>	<b>Email</b>
Mike Dobbs	Troup County Manager	706-883-1610	<a href="mailto:mdobbs@troupc.org">mdobbs@troupc.org</a>
James Emery	County Engineer	706-883-1713	<a href="mailto:jemery@troupc.org">jemery@troupc.org</a>
Nancy Seegar	County Planner	706-883-1650	<a href="mailto:nseegar@troupc.org">nseegar@troupc.org</a>
Nancy Green	Citizen	706-812-8469	<a href="mailto:mngreen@wirelesshometown.com">mngreen@wirelesshometown.com</a>
Anne Westmoreland	City of LaGrange WPCP	706-883-2150	<a href="mailto:anew@lagrange-ga.org">anew@lagrange-ga.org</a>
Winston Turner	Troup County Health	706-298-3702	<a href="mailto:Wturner2@dhr.state.ga.us">Wturner2@dhr.state.ga.us</a>
Buck Davis	Troup County Commission	706-302-9324	<a href="mailto:bdavis@troupc.org">bdavis@troupc.org</a>
Matt Livingston	City of West Point	706-590-1577	<a href="mailto:mlivingston@cityofwestpoint.com">mlivingston@cityofwestpoint.com</a>
Forest Hill	Two Rivers RC&D	706-885-0101	<a href="mailto:Tworiversrcd@hotmail.com">Tworiversrcd@hotmail.com</a>

September 27, 2010 - Meeting Summary:

The current Watershed Improvement Plan and related activities was discussed along with preliminary goals to be accomplished in the next contract phase. The committee was informed and given the results from what watershed monitoring had taken place. Through open dialog, issues, opportunities, and changes within the watershed were discussed. Additional land owners and stakeholders were identified.

Topics in the meetings included:

- The City of LaGrange’s future annexation and expansion south for the Callaway South Industrial Park. This is located at the top of this study segment.
- Wastewater facility located on Whitesville Road identified as used for the nearby truck stop.
- Current flood zone maps do not truly show where flooding occurs along the creek corridor.
- The Flood Insurance Rate Maps (FIRMs) should be digitized and updated by now.
- Long Cane Elementary wastewater system has been failing and continues to fail leaking untreated sewerage into the watershed.
- Older homes near Kia and along Robert Taylor Road have had septic failures and repairs needed.

- Additional Best Management Practices (BMPs) and other NRCS/RC&D programs could be utilized.
- Beaver dams under bridges continue to be a problem.
- Quite a few septic failures go unreported.
- EPD Adopt-a-Streams exist within the County, and the Long Cane Creek group has been inactive for a few years.

September 22, 2011 – Meeting Summary:

- The advisory council was given an opportunity to update issues within the Long Cane Creek watershed.
- The water quality monitoring conducted this summer was discussed.
- Comparison to the testing the RC conducted compared to the Long Cane WPCP was analyzed
- Current, ongoing, and future management measures were considered.
- The lack of funding for septic related issues was a concern. But, the dry weather the past few years has kept septic failures to a minimum.
- Recent spring tornados have left parts of the watershed damaged and more susceptible to runoff.
- County engineer stated the government of Troup County will have to adopt the Georgia stormwater “blue book” regulations in the near future.
- A few citizens test Long Cane Creek water quality but not part of a formal Adopt-A-Stream group
- The Long Cane Creek Crawlers of Long Cane Middle School are still inactive.
- RC&D administered 319(h) funding could be used septic issues in the future

**Implementation Strategy:**

The implementation of the Watershed Improvement Plan will take place with the following action steps:

- Enforce current environmental protection ordinances and natural resource protection policies which the governments which reside within the Long Cane Creek Watershed.
- Continue to implement water resource protection items in local government short term work programs.
- Educate farmers of available best management practices available to them which keep fecal coliform from entering waterways within the watershed.
- Educate homeowners about watershed stewardship, specifically their septic system and how to maintain the systems properly.
- Utilize Georgia Environmental Protection Division 319(h) Grants for projects to assist with projects aimed at watershed protection such as septic system assistance.
- Partner with other agencies and governments on watershed wide projects.
- Establish Adopt-A-Stream groups and reactivate any inactive groups.



### **Sources and Supporting Documents:**

- Long Cane Creek TMDL Implementation Plan 2004.
- City of LaGrange Watershed Assessment and Plan 2007-2009
- Best Management Practices for Georgia Agriculture Manual 2007
- US EPA Urban BMP Performance Tool
- USDA NRCS PRS Report 2009
- City of LaGrange Comprehensive Plan
- City of West Point Code of Ordinances
- City of West Point Comprehensive Plan
- Troup County Comprehensive Plan
- Troup County Code of Ordinances

**Attachments:**  
**Visual Field Survey Sheets**  
**Meeting Agenda**  
**Sign-In Sheets**  
**Coliscan Easygel Procedures**



## **Visual Field Survey Sheets**

Show stream or road segment & landmarks (crossing stream or road) or distances marking the upper & lower end of segment. If a stream, show the direction of flow, ponds or swampy areas, & estimate the width of the riparian corridor from each bank. Use an arrow to show the approximate direction of north. Show & describe (in the notes section) major adjoining land activities (see attached table) & show the location of specific potential sources & describe in the notes section. Show the direction and number of photographs taken.

### Stream or Road Segment Map Or Drawing

Long Lane Creek Visual Field Survey  
 Date: 9-23-10 Arrival Time: 12:20  
 Site Location New Hutchinson Mill Rd  
 GPS Coordinates (if taken) — & —  
 Current Weather Sunny Time Since Last Rain > 72  
 Team Members: Paul Jarrell & Sharon Marshall

### Notes (point to/reference applicable activity on map):

moderate amount of water

low flow in stream

water is cloudy / oily

Beaver dam holding back  
water under bridge

some moderate amount of  
trash

stagnant water smell

### STREAM CONDITIONS @ ROAD CROSSINGS (Check as appropriate)

Channel Type: Swamp ; pool ; run ; riffle ; other \_\_\_\_\_.

Flow Stage: High ; medium ; low ; dry .

Odors: None/normal ; sewage ; petroleum ; chemical ; chlorine ; rotten egg ; animal waste ; other organic.

Water Clarity: Clear ; tea-colored ; cloudy ; opaque ; red or brown from sediment ; other \_\_\_\_\_.

Water Surface: None ; slick ; oil sheen ; oil sheen—breaks into plates ; globs ; flecks ; foam ; other \_\_\_\_\_.

Algal Growth—Description & Extent: \_\_\_\_\_.

Sediment: Eroded banks ; mid-channel bars ; recent sediment deposition on banks ; other \_\_\_\_\_.

Show stream or road segment & landmarks (crossing stream or road) or distances marking the upper & lower end of segment. If a stream, show the direction of flow, ponds or swampy areas, & estimate the width of the riparian corridor from each bank. Use an arrow to show the approximate direction of north. Show & describe (in the notes section) major adjoining land activities (see attached table) & show the location of specific potential sources & describe in the notes section. Show the direction and number of photographs taken.

**Stream or Road Segment Map Or Drawing**

Long Can Creek **Visual Field Survey**  
 Date: 9-23-10 Arrival Time: 12:50  
 Site Location Mahaska Rd.  
 GPS Coordinates (if taken) - & -  
 Current Weather Sunny Time Since Last Rain > 72  
 Team Members: Paul Jarrell & Sharon Marshall

**Notes (point to/reference applicable activity on map):**

Water current slow - undetectable  
 - Pooling

Wide stream channel

Property directly adjacent to creek has a horse.  
 - possible direct access to the creek. Horse was in yard at time of survey.

also sampling site # 3

This site is the first after the Robert Taylor Rd Horse farm

**STREAM CONDITIONS @ ROAD CROSSINGS** (Check as appropriate)  
 Channel Type: Swamp ; pool ; run ; riffle ; other \_\_\_\_\_  
 Flow Stage: High ; medium ; low ; dry .  
 Odors: None/normal ; sewage ; petroleum ; chemical ; chlorine ; rotten egg ; animal waste ; other \_\_\_\_\_  
 Water Clarity: Clear ; tea-colored ; cloudy ; opaque ; red or brown from sediment ; other \_\_\_\_\_  
 Water Surface: None ; slick ; oil sheen ; oil sheen—breaks into plates ; globs ; flecks ; foam ; other \_\_\_\_\_  
 Algal Growth—Description & Extent: \_\_\_\_\_  
 Sediment: Eroded banks ; mid-channel bars ; recent sediment deposition on banks ; other \_\_\_\_\_



Show stream or road segment & landmarks (crossing stream or road) or distances marking the upper & lower end of segment. If a stream, show the direction of flow, ponds or swampy areas, & estimate the width of the riparian corridor from each bank. Use an arrow to show the approximate direction of north. Show & describe (in the notes section) major adjoining land activities (see attached table) & show the location of specific potential sources & describe in the notes section. Show the direction and number of photographs taken.

**Stream or Road Segment Map  
Or Drawing**

Long Lane Creek Visual Field Survey  
 Date: 9-23-10 Arrival Time: 1:00  
 Site Location Webb Rd  
 GPS Coordinates (if taken) - & -  
 Current Weather Sunny Time Since Last Rain -  
 Team Members: Paul Jarrell & Sharon Marshall

**Notes (point to/reference applicable activity on map):**

Sampling site 4.  
Near Kia Plant  
Water is muddy & cloudy  
Pools d/s - sand bars w/s  
Sand bars and low currents  
up-stream  
Turtles & water moccasin spotted.  
Water pools d/s with no visible current.  
No homes nearby - one burned

**STREAM CONDITIONS @ ROAD CROSSINGS** (Check as appropriate)  
**Channel Type:** Swamp ; pool ; run ; riffle ; other \_\_\_\_\_  
**Flow Stage:** High ; medium ; low ; dry   
**Odors:** None/normal ; sewage ; petroleum ; chemical ; chlorine ; rotten egg ; animal waste ; other \_\_\_\_\_  
**Water Clarity:** Clear ; tea-colored ; cloudy ; opaque ; red or brown from sediment ; other \_\_\_\_\_  
**Water Surface:** None ; slick ; oil sheen ; oil sheen—breaks into plates ; globs ; flecks ; foam ; other \_\_\_\_\_  
**Algal Growth—Description & Extent:** \_\_\_\_\_  
**Sediment:** Eroded banks ; mid-channel bars ; recent sediment deposition on banks ; other \_\_\_\_\_

Show stream or road segment & landmarks (crossing stream or road) or distances marking the upper & lower end of segment. If a stream, show the direction of flow, ponds or swampy areas, & estimate the width of the riparian corridor from each bank. Use an arrow to show the approximate direction of north. Show & describe (in the notes section) major adjoining land activities (see attached table) & show the location of specific potential sources & describe in the notes section. Show the direction and number of photographs taken.

**Stream or Road Segment Map  
Or Drawing**

Long Cane Creek **Visual Field Survey**  
 Date: July 25 Arrival Time: 9:40  
 Site Location New Hutchison Mill Rd  
 GPS Coordinates (if taken) — & —  
 Current Weather Sunny Time Since Last Rain —  
 Team Members: Paul Jewell & Alex Pfaltzgraff

**Notes (point to/reference applicable activity on map):**

Water slow moving - cloudy  
still oily as it was last year  
High amounts of trash  
- mattress  
- other trash  
Water macroin spotted on  
mattress.

**STREAM CONDITIONS @ ROAD CROSSINGS** (Check as appropriate)  
 Channel Type: Swamp ; pool ; run ; riffle ; other —.  
 Flow Stage: High ; medium ; low ; dry .  
 Odors: None/normal ; sewage ; petroleum ; chemical ; chlorine ; rotten egg ; animal waste ; other —.  
 Water Clarity: Clear ; tea-colored ; cloudy ; opaque ; red or brown from sediment ; other —.  
 Water Surface: None ; slick ; oil sheen ; oil sheen—breaks into plates ; globs ; flecks ; foam ; other —.  
 Algal Growth—Description & Extent: —.  
 Sediment: Eroded banks ; mid-channel bars ; recent sediment deposition on banks ; other —.

Show stream or road segment & landmarks (crossing stream or road) or distances marking the upper & lower end of segment. If a stream, show the direction of flow, ponds or swampy areas, & estimate the width of the riparian corridor from each bank. Use an arrow to show the approximate direction of north. Show & describe (in the notes section) major adjoining land activities (see attached table) & show the location of specific potential sources & describe in the notes section. Show the direction and number of photographs taken.

**Stream or Road Segment Map  
Or Drawing**

Long Cove Creek **Visual Field Survey**  
 Date: 6-29-11 Arrival Time: 9:30  
 Site Location Cannerville Rd  
 GPS Coordinates (if taken)            &             
 Current Weather Sunny Time Since Last Rain >72  
 Team Members: Paul Jarrell &  
Alex Pfaltzgraff

**Notes (point to/reference applicable activity on map):**

Water low flow - pooling on  
both upstream & downstream  
furniture & some trash  
dumped into stream.  
Some items there from last  
years survey  
Water muddy / cloudy  
Rural setting  
- no homes in sight  
Heavily forested.

**STREAM CONDITIONS @ ROAD CROSSINGS** (Check as appropriate)  
**Channel Type:** Swamp ; pool ; run ; riffle ; other   
**Flow Stage:** High ; medium ; low ; dry   
**Odors:** None/normal ; sewage ; petroleum ; chemical ;  
 chlorine ; rotten egg ; animal waste ; other   
**Water Clarity:** Clear ; tea-colored ; cloudy ; opaque ; red or  
 brown from sediment ; other   
**Water Surface:** None ; slick ; oil sheen ; oil sheen—breaks into  
 plates ; globs ; flecks ; foam ; other   
**Algal Growth—Description & Extent:**   
**Sediment:** Eroded banks ; mid-channel bars ; recent sediment  
 deposition on banks ; other



Show stream or road segment & landmarks (crossing stream or road) or distances marking the upper & lower end of segment. If a stream, show the direction of flow, ponds or swampy areas, & estimate the width of the riparian corridor from each bank. Use an arrow to show the approximate direction of north. Show & describe (in the notes section) major adjoining land activities (see attached table) & show the location of specific potential sources & describe in the notes section. Show the direction and number of photographs taken.

**Stream or Road Segment Map  
Or Drawing**

Long Cone Creek Visual Field Survey  
 Date: 8-22-11 Arrival Time: 11:20  
 Site Location Old West Point Rd (6th St)  
 GPS Coordinates (if taken) \_\_\_\_\_ & \_\_\_\_\_  
 Current Weather Sunny Time Since Last Rain 77  
 Team Members: Paul Jarrell & Alex Plattgraf

**Notes (point to/reference applicable activity on map):**

Sand bars upstream - low flow

Pooling downstream - currents not seen

West Point Pump station close to stream

sewer caps also close by

**STREAM CONDITIONS @ ROAD CROSSINGS** (Check as appropriate)

**Channel Type:** Swamp ; pool ; run ; riffle ; other \_\_\_\_\_

**Flow Stage:** High ; medium ; low ; dry

**Odors:** None/normal ; sewage ; petroleum ; chemical ; chlorine ; rotten egg ; animal waste ; other \_\_\_\_\_

**Water Clarity:** Clear ; tea-colored ; cloudy ; opaque ; red or brown from sediment ; other \_\_\_\_\_

**Water Surface:** None ; slick ; oil sheen ; oil sheen—breaks into plates ; globs ; flecks ; foam ; other \_\_\_\_\_

**Algal Growth—Description & Extent:** \_\_\_\_\_

**Sediment:** Eroded banks ; mid-channel bars ; recent sediment deposition on banks ; other \_\_\_\_\_

Show stream or road segment & landmarks (crossing stream or road) or distances marking the upper & lower end of segment. If a stream, show the direction of flow, ponds or swampy areas, & estimate the width of the riparian corridor from each bank. Use an arrow to show the approximate direction of north. Show & describe (in the notes section) major adjoining land activities (see attached table) & show the location of specific potential sources & describe in the notes section. Show the direction and number of photographs taken.

Long Cone Creek (Blue John Creek) (Arb) Visual Field Survey

Date: 8-22-11 Arrival Time: 12:21

Site Location Pegasus Ptwy

GPS Coordinates (if taken) \_\_\_\_\_ & \_\_\_\_\_

Current Weather Sunny Time Since Last Rain (hr) 778

Team Members: Paul Jarrell & Alex Holtzgraff

Stream or Road Segment Map Or Drawing

Notes (point to/reference applicable activity on map):

Rolling Hills and vacant with rapidly increasing industry. No active agriculture or grazing.

**STREAM CONDITIONS @ ROAD CROSSINGS** (Check as appropriate)

**Channel Type:** Swamp ; pool ; run ; riffle ; other \_\_\_\_\_.

**Flow Stage:** High ; medium ; low ; dry .

**Odors:** None/normal ; sewage ; petroleum ; chemical ; chlorine ; rotten egg ; animal waste ; other \_\_\_\_\_.

**Water Clarity:** Clear ; tea-colored ; cloudy ; opaque ; red or brown from sediment ; other \_\_\_\_\_.

**Water Surface:** None ; slick ; oil sheen ; oil sheen—breaks into plates ; globs ; flecks ; foam ; other \_\_\_\_\_.

**Algal Growth—Description & Extent:** \_\_\_\_\_.

**Sediment:** Eroded banks ; mid-channel bars ; recent sediment deposition on banks ; other \_\_\_\_\_.

Show stream or road segment & landmarks (crossing stream or road) or distances marking the upper & lower end of segment. If a stream, show the direction of flow, ponds or swampy areas, & estimate the width of the riparian corridor from each bank. Use an arrow to show the approximate direction of north. Show & describe (in the notes section) major adjoining land activities (see attached table) & show the location of specific potential sources & describe in the notes section. Show the direction and number of photographs taken.

PANTHER CREEK **Visual Field Survey**  
 Date: 8/22/11 Arrival Time: 12:50  
 Site Location TROUP COUNTY  
 GPS Coordinates (if taken) \_\_\_\_\_ & \_\_\_\_\_  
 Current Weather SUNNY Time Since Last Rain 72 hrs\*  
 Team Members: PAUL ; ALEX

**Stream or Road Segment Map  
Or Drawing**

**Notes (point to/reference applicable activity on map):**

PANTHER CREEK TEST SITE IS  
LOCATED IN A SUBURBAN AREA.  
VERY MUDDY WATER. ~~SEPTIC~~ POSSIBLY  
SEPTIC

**STREAM CONDITIONS @ ROAD CROSSINGS (Check as appropriate)**

**Channel Type:** Swamp ; pool ; run ; riffle ; other \_\_\_\_\_  
**Flow Stage:** High ; medium ; low ; dry   
**Odors:** None/normal ; sewage ; petroleum ; chemical ; chlorine ; rotten egg ; animal waste ; other \_\_\_\_\_  
**Water Clarity:** Clear ; tea-colored ; cloudy ; opaque ; red or brown from sediment ; other None  
**Water Surface:** None ; slick ; oil sheen ; oil sheen—breaks into plates ; globs ; flecks ; foam ; other \_\_\_\_\_  
**Algal Growth—Description & Extent:** \_\_\_\_\_  
**Sediment:** Eroded banks ; mid-channel bars ; recent sediment deposition on banks ; other \_\_\_\_\_



## **Meeting Agenda**



*Long Cane Creek Watershed Improvement Plan  
Planning Advisory Council/Stakeholder Meeting  
Thursday, September, 2011  
@ 10:00 A.M.*

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## **AGENDA**

- I. Welcome**
  - II. Water Quality Monitoring – Summer 2011**
  - III. Visual Field Surveying**
  - IV. Best Management Practices and Measures**
  - V. Other Watershed Issues**
  - VI. Other Questions/Discussion**
  - VII. Adjourn**
-

## **Sign-In Sheets**





Long Cane Creek Watershed Improvement Plan  
Partnership Advisory Council/Stakeholder Meeting  
Thursday, September 22, 2011  
@ 10:00 A.M.

SIGN-IN SHEET

NAME	ORGANIZATION	PHONE	EMAIL
Anne Westmoreland	City of LaGrange	706-883-2150	annew@lagrange-ga.org
Nancy Seeger	Troup County	706-883-1650	nseegar@troupcoc.org
Ben Givins	Troup Health Dept	706-298-3702	bsgivins1@dhr.state.ga.us
Mary Green	citizen	706-812-8469	mngreen@wirelesskometown.com
FORREST HILL	TWO RIVERS ROAD	706/885-0101	tworiverskd@hotmail.com
Buck Davis	TROUP CO. COMMISARIES	706883-1610	
JAMES EMERY	TROUP CO. ENGINEER	706-883-1713	jemery@troupcoc.org

**Long Cane Creek Watershed Improvement Plan  
Partnership Advisory Council Meeting - Sign-In Sheet  
September 27, 2010**

9-27-10

SIGN-IN [LONG CANE PROJECT]

<u>NAME</u>	<u>ORG</u>	<u>PHONE</u>	<u>EMAIL</u>
Paul Jewell	TRRC		
Shaun Marshall	TRRC		
Winston Kim	Troup Co Health	706-298-3702	watwncr2@ dhe.state. ga.us
Benny Givins	Troup Co Health	298-3702	B5Givins@ state. ga.us
Math Livingston	City of West Point	706-590-1577	mlivingston@cityof westpointga.us
Taryn Davis	Sierra Club	706-812-1167	mdavis@sierraclub.org
Buck DAVIS	BEAIDOT.COM	706-302-9324	wireless@beaidot.com
JAMES EMERY	TROUP Co. ENGINEER	706-883-1713	jemery@troupcog.org
MIKE DOBBS	TROUP Co. MANAGER	706-885-1610	mdobbs@troupcog.org
Anne Westmoreland	City of La Grange	706-883-2150	annew@lagrange.ga.gov
MIKE DUBBS	TROUP COUNTY	706-883-1610	mdubbs@troupcog.org

## **Coliscan Easygel Procedures**



# Detection of Waterborne Coliforms and Fecal Coliforms with Coliscan® Easygel®

## Introduction

The Coliscan Easygel medium is a patented formulation for water testing. It contains a sugar linked to a dye which, when acted on by the enzyme  $\beta$ -galactosidase (produced by coliforms including *E. coli*), turns the colony a pink color. Similarly, there is a second sugar linked to a different dye which produces a blue-green color when acted on by the enzyme  $\beta$ -glucuronidase. Because *E. coli* produces both  $\beta$ -galactosidase and  $\beta$ -glucuronidase, *E. coli* colonies grow with a purple color (pink + blue). The combination of these two dyes makes possible the unique ability to use one test to differentiate and quantify coliforms and *E. coli*. (Because *E. coli* is a member of the coliform group, add the number of purple colonies to the number of pink colonies when counting total coliforms.)

## Instructions

1. Either collect your water sample in a sterile container and transport the water back to the test site, or take a measured water sample directly from the source and place directly into the bottle of Coliscan Easygel. Water samples kept longer than 1 hour prior to plating, or any Coliscan Easygel bottle that has had sample placed into it for transport longer than 10 minutes, should be kept on ice or in a refrigerator until plated.
2. Label the petri dishes with the appropriate sample information. A permanent marker or wax pencil will work.
3. Sterilely transfer water from the sample containers into the bottles of Coliscan Easygel (Consult the following table for rough guidelines for inoculum amount). Swirl the bottles to distribute the inoculum and then pour the medium/inoculum mixtures into the correctly labeled petri dishes. Place the lids back on to the petri dishes. Gently swirl the poured dish until the entire dish is covered with liquid (but be careful not to splash over the side or on the lid).

## Inoculation of Coliscan Easygel

Water Sources	Inoculum Amount
<u>Environmental:</u> River, lake, pond, stream, ditch	1.0 to 5.0 mL
<u>Drinking water:</u> Well, municipal, bottled	5.0 mL

4. The dishes may be placed right-side-up directly into a level incubator or warm level spot in the room while still liquid. Solidification will occur in approximately 45 minutes.
5. Incubate at 35° C (95° F) for 24 hours, or at room temperature for 48 hours. (see Comments on incubation)
6. Inspect the dishes.
  - a. Count all the purple colonies on the Coliscan dish (disregard any light blue, blue-green or white colonies), and report the results in terms of *E. coli* or Fecal Coliform per mL of water.

Note: To report in terms of *E. coli* or Fecal Coliform per 100 mL of water, first find the number to multiply by:

    1. Divide 100 by the number of mL that you used for your sample.
    2. Multiply the count in your plate by the result obtained from #1.

e.g. For a 3 mL sample,  $100 / 3 = 33.3$ . So 4 *E. coli* colonies multiplied by 33.3 will be equal to 133.2 *E. coli* per 100 mL of water.
  - b. Count all the pink and purple colonies on the Coliscan dish (disregard any light blue, blue-green or white colonies) and report the results in terms of coliforms per mL of water.
7. Do one of the following prior to disposal in normal trash:
  - a. Place dishes and Coliscan bottles in a pressure cooker and cook at 15 lbs. for 15 minutes. (This is the best method.)
  - b. Place dishes and Coliscan bottles in an oven-proof bag, seal it, and heat in an oven at 300° F for 45 minutes.
  - c. Place dishes and Coliscan bottles in a large pan, cover with water and boil for 45 minutes.
  - d. Place 5 mL (about 1 teaspoon) of straight bleach onto the surface of the medium of each plate. Allow to sit at least 5 minutes. Place in a water-tight bag and discard in trash.

## Comments on Incubation

Micrology Laboratories, LLC. in-house studies indicate that Coliscan can effectively differentiate general coliforms from *E. coli* when incubated at either room temperatures or at elevated temperatures (such as 90-98° F). However, some further explanation may be helpful.

There is no one standard to define room temperature. Most would consider normal room temperature to vary from 68-74° F, but even within this range the growth of bacteria will be varied. Members of the bacterial family **Enterobacteriaceae** (which includes coliforms and *E. coli*\*) are generally hardy growers that prefer higher than room temperatures, but which will grow at those temperatures. They tend to grow at a faster rate than most other bacterial types when conditions are favorable. It is therefore logical to try to place inoculated dishes in a "warm" place in a room for incubation if a controlled temperature incubator is not available. It is a very easy task to make an adequate incubator from a box with a 40-60 watt bulb in it to provide heat at an even rate. One can also use a heat tape such as is used to prevent the freezing of pipes in the winter as your heat source.

Our general instructions indicate that incubation times for coliforms (including *E. coli*) are generally 24-48 hours at elevated temperatures (90-98° F) and 48 or more hours at room temperatures. At elevated temperatures, no counts should be made after 48 hours as any coliforms present will be quite evident by that time and if new colonies form after 48 hours they are most likely not coliforms, but some other type of slow growing organism that should not be included in your data. At room temperatures, the best procedure is to watch the plates by checking them at 10-12 hour intervals until you observe some pink or purple colonies starting to form and then allowing another 24-30 hours for the maturation of those colonies. Since the coliforms (including *E. coli*) are generally the fastest growing organisms, these will be the first to grow and be counted. Colonies that may show up at a later time are likely to not be coliforms. As you can see, there are advantages to incubating your dishes at elevated temperatures. First, you can count the results earlier. At 95° F, it is often possible to do accurate counts at 18-20 hours of incubation. There is also less probability of variation from batch to batch when the incubation temperatures are kept at one uniform level. And a higher incubation temperature will tend to inhibit the growth of non-coliforms that may prefer lower temperatures.

\**E.coli* is the primary fecal coliform, however, *Klebsiella* is sometimes of fecal origin. Other general coliform genera include *Enterobacter* and *Citrobacter*.

## Interpretation of Results

This test method utilizes well established, widely accepted criteria for the recognition of coliforms and *E. coli* and proper application of the method will result in accurate results. Therefore, if you suspect that your water is dangerously contaminated based on the results you get using Coliscan Easygel, you should contact your local health department and ask for their help in performing an official assessment of the water.

Non-fecal coliforms are widely distributed in nature, being found both as naturally occurring soil organisms, and in the intestines of warm-blooded animals and humans. Fecal coliforms are coliforms found naturally only in the intestines of warm-blooded animals and humans. Fecal coliform contamination is therefore the result of some form of fecal contamination. Sources may be either animal or human.

## General Notes on Differentiating Coliforms and *E. coli*

Generally, water containing *E. coli* (the fecal contamination indicator organism) should not be used for drinking water unless it is sanitized in some manner. Contact your local health department for guidelines regarding *E. coli* and coliforms in recreational waters. Inform them if you suspect that contamination may be occurring from a specific source.

Colonies which have the blue-green color are not exhibiting any  $\beta$ -galactosidase activity (which is evidenced by the pink color). Because of this, they are not considered to be either coliforms or *E. coli* and therefore should be ignored when counting your coliform or *E. coli* colonies. Similarly, colonies which are white are exhibiting neither color-causing enzyme, and should also be ignored.

Colonies on the surface of the plate are exposed to the medium on only the underside of the colony. This causes these colonies to appear with much less of the indicator color. *E. coli* colonies may only have a slight purple tinge to them, and it may appear only in the center of the colony with the remainder of the colony being white. Similarly, coliforms on the surface may be light pink or white with a pink center.

Coliscan and Easygel are registered trademarks of Micrology Laboratories, LLC.

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