STATE OF GEORGIA

REVISED TMDL IMPLEMENTATION PLAN

Savannah and Ogeechee River Basins
Revision 01; June 15, 2007

FISH CONSUMPTION GUIDELINES FOR TOTAL MERCURY IN FISH TISSUE

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TMDL Implementation Plans are platforms for establishing a course of actions to restore the quality of impaired water bodies in a watershed. They are intended as a continuing process that may be revised as new conditions and information warrant. Procedures will be developed to track and evaluate the implementation of the management practices and activities identified in the plans. Once restored, appropriate management practices and activities will be continued to maintain the water bodies.

The initial TMDL Implementation Plan was part of the TMDL developed in 2005. This Revision supercedes the initial TMDL Implementation Plan.

This Implementation Plan is applicable to the following segments in the Savannah and Ogeechee River Basins:

Stream	River Basin	Location	Miles Impacted
Brier Creek	Savannah	Hwy 305 to MacIntosh Creek (Burke Co.)	19
Brier Creek	Savannah	MacIntosh Creek to Savannah River (Burke / Screven Co.)	26
Canoochee River	Ogeechee	Fifteen Mile Creek to Cedar Cr. (Candler / Evans / Bulloch Co.)	14
Canoochee River	Ogeechee	Lotts Creek to Savage Creek (Bryan / Evans / Liberty Co.)	38
Canoochee River	Ogeechee	Cedar Creek to Lotts Creek (Evans Co.)	13
Canoochee River	Ogeechee	Ga. Hwy. 192 to Fifteen Mile Creek near Metter (Emanuel / Candler Co.)	21
Canoochee River	Ogeechee	Savage Creek to Ogeechee River (Bryan / Liberty Co.)	18
Ogeechee River	Ogeechee	Hwy. 102 to U.S. Hwy 301 (Washington / Glascock Co.)	98
Ogeechee River	Ogeechee	U.S. Hwy. 301 to Black Creek (Bulloch / Bryan / Screven Co.)	59
Ogeechee River	Ogeechee	Black Creek to Richmond Hill (Bryan / Effingham / Chatham)	21

INTRODUCTION

The U.S. Environmental Protection Agency has identified these segments in the Savannah and Ogeechee River Basins as partially supporting or not supporting their designated use due to the issuance of Fish Consumption Guidelines (FCG) because of Total Mercury Fish Tissue (TWA) contamination. The water use classification for the Savannah and Ogeechee Rivers is Fishing. The *2000 Guidelines for Eating Fish from Georgia Waters* (Georgia Department of Natural Resources, 2000), recommends limiting consumption of Largemouth Bass, Red Breasted Sunfish, Snail Bullhead, Channel Catfish, and Spotted Suckers to either one meal per week or one meal per month in these stream segments if concentrations of Mercury (Hg) are found to be above 0.23 mg/kg or above 0.70 mg/kg respectively. A "Do Not Eat" guideline is issued if Hg concentrations are found to be above 2.3 mg/kg.

DISCUSSION OF POLLUTANT

The following general background on the impact of Mercury on fish consumption is taken from the U.S. EPA *Fact Sheet*: *Mercury Update: Impact on Fish Advisories* (U.S. EPA, 2001).

> Mercury is distributed throughout the environment from both natural sources and human activities. Methylmercury is the main form of organic mercury found in the environment and is the form that accumulates in both fish and human tissues. Several instances of methylmercury poisoning through consumption of contaminated food have occurred; these resulted in central nervous system effects such as impairment of vision, motor in-coordination, loss of feeling, and, at high doses, seizures, very severe neurological impairment, and death. Methylmercury has also been shown to be a developmental toxicant, causing subtle to severe neurological effects. EPA considers there is sufficient evidence for methylmercury to be considered a developmental toxicant, and to be of concern for potential human germ cell mutagenicity. As of December 2000, 41 states have issued 2,242 fish advisories for mercury. These advisories inform the public that concentrations of mercury have been found in local fish at levels of public health concern. State advisories recommend either limiting or avoiding consumption of certain fish from specific waterbodies or, in some cases, from specific waterbody types (e.g., all freshwater lakes or rivers).

POLLUTANT SOURCES

The following pollutant sources of Mercury are taken from the U.S. EPA *Fact Sheet*: *Mercury Update: Impact on Fish Advisories* (U.S. EPA, 2001):

> Mercury is found in the environment in the metallic form and in different inorganic and organic forms. Most of the mercury in the atmosphere is elemental mercury vapor and inorganic mercury; most of the mercury in water, soil, plants, and animals is inorganic and organic mercury (primarily methylmercury). Mercury occurs naturally and is distributed throughout the environment by both natural processes and human activities. Solid waste incineration and fossil fuel combustion facilities contribute approximately 87% of the emissions of mercury in the United States. Other sources of mercury releases to the air include mining and smelting, industrial processes involving the use of mercury such as chlor-alkali production facilities and production of cement. Mercury is released to surface waters from naturally occurring mercury in rocks and soils and from industrial activities, including pulp and paper mills, leather tanning, electroplating, and chemical manufacturing. Wastewater treatment facilities may also release mercury to water. An indirect source of mercury to surface waters is mercury in the air; it is deposited from rain and other processes directly to water surfaces and to soils. Mercury also may be mobilized from sediments if disturbed (e.g., flooding, dredging). Sources of mercury in soil include direct application of fertilizers and fungicides and disposal of solid waste, including batteries and thermometers, to landfills. The disposal of municipal incinerator ash in landfills and the application of sewage sludge to cropland result in increased levels of mercury in soil due to being deposited in soil and sediments.

PLAN FOR TMDL IMPLEMENTATION

NPDES permitted major facilities on a 303(d) listed stream for mercury or fish contaminated with mercury will have a monitoring requirement put in the permit. The permittee will characterize the effluent and the source of drinking water in the area for mercury concentrations through this monitoring. If the mercury concentration in the effluent is greater than the water quality target mentioned in the TMDL or greater than the mercury concentration in the source of drinking water, then the permittee will have to develop and implement a mercury minimization plan. This mercury minimization plan will involve source identification and then the reduction and elimination of mercury from the effluent.

Air point sources will continue to reduce emissions of mercury through implementation of the Clean Air Act. EPA and the regulated community will improve the mercury air emissions inventory. EPA will revise the mercury air deposition model to get better characterizations of the sources of mercury.

MONITORING PLAN

EPA and EPD will continue to collect ambient data on mercury concentrations in water, sediments, and fish.

EDUCATION/OUTREACH ACTIVITIES

The Environmental Protection Division will continue to provide guidance and education to the public on all water quality issues through outreach by the Watershed Protection Branch. The Pollution Prevention Assistance Division is another excellent resource for this outreach. When necessary, the Department of Natural Resources will issue fish consumption guidelines. These guidelines are updated annually, identify specific stream segments where there is a problem, and list all known species of fish with mercury contamination and how often they may be consumed. The DNR fish-testing program is ongoing. Testing on additional lakes and rivers is balanced with retesting of waters where change may be occurring. Contaminant levels in fish change very slowly, and sampling the same species of fish from the same locations over time will allow the DNR to document changes and trends in contaminant levels. Information on contaminant levels is updated yearly and published in the *Guidelines for Eating Fish from Georgia Waters*.

REFERENCES

U.S. EPA, 2001. Fact Sheet: Mercury (Hg) Update: Impact on Fish Advisories. USEPA Office of Water, June 2001. EPA-823-F-01-011

Georgia Department of Natural Resources, 2000. Guidelines for Eating Fish from Georgia Waters – *2000 Update*.

U.S. EPA, 2005. Total Maximum Daily Load (TMDL) for Total Mercury Fish Tissue in Brier Creek (Located in the Savannah River Basin) March 2005

U.S. EPA, 2005. Total Maximum Daily Load (TMDL) for Total Mercury Fish Tissue in the Canoochee River (Canoochee Watershed) March 2005

U.S. EPA, 2005. Total Maximum Daily Load (TMDL) for Total Mercury Fish Tissue in the Ogeechee River (Ogeechee Watershed) March 2005

Georgia Rules and Regulations for Water Quality Control, Chapter 391-3-6-03, Water Use Classifications and Water Quality Standards,

Revised November 2005.