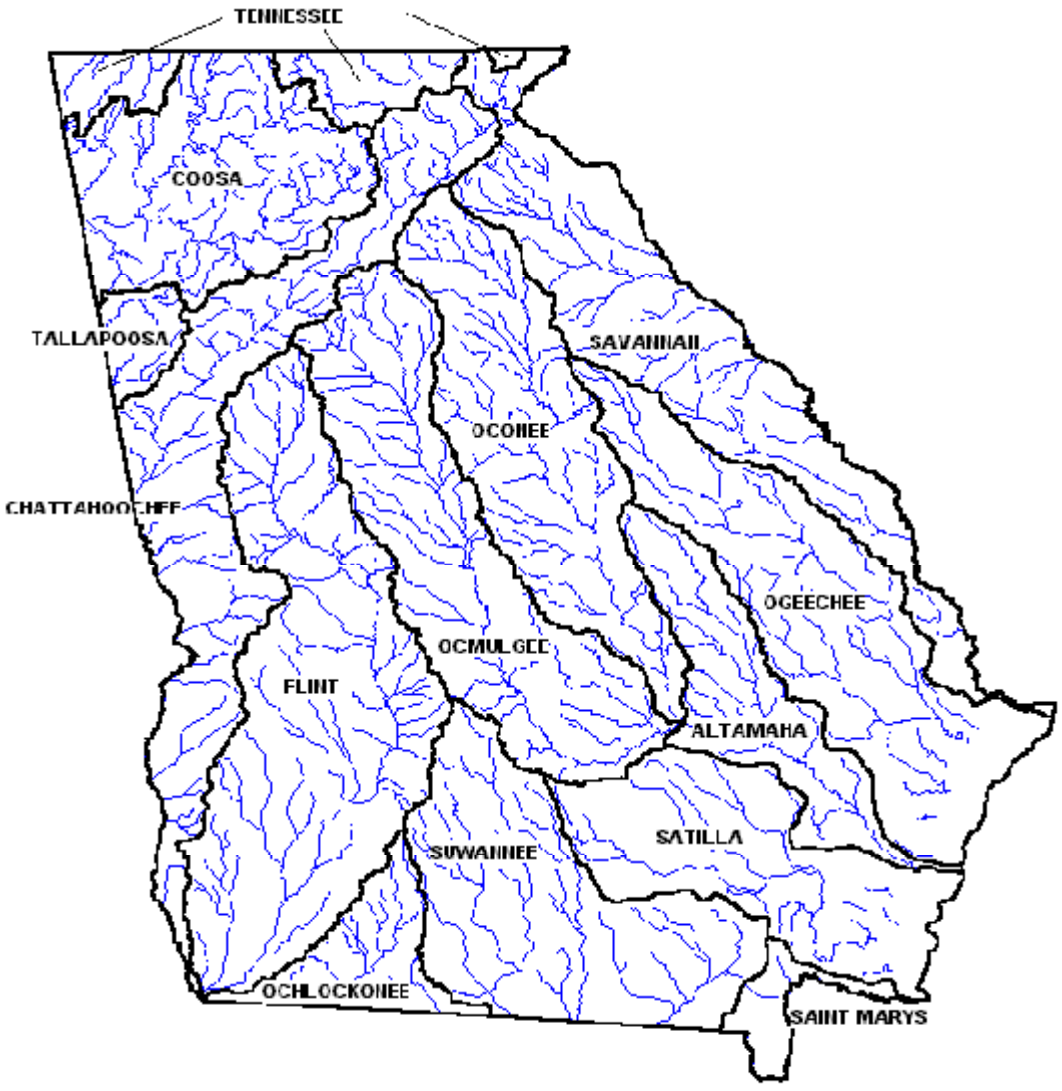
WATERSHED ASSESSMENT AND PROTECTION PLAN GUIDANCE: Phase I Watershed Monitoring Plans



Georgia Department of Natural Resources
Environmental Protection Division
Watershed Protection Branch

The Watershed Monitoring Plan should describe the field study to document current water quality and identify stressors that affect the quality of water resources in the area. These data will be included and analyzed in the subsequent Watershed Assessment. The chemical water quality, biological, and habitat assessment Monitoring Plan should be submitted to EPD for review and approval. It is strongly encouraged that a pre-submittal meeting be scheduled with EPD staff to discuss components of the Watershed Monitoring Plan.

I. Introduction
   A. Explain the purpose and objectives of the monitoring plan and the way in which the data will be used.

II. Watershed Characterization
   A. Provide a narrative description of the current service area and if applicable, the proposed expanded service area.
   B. Provide a narrative description of any water intakes, landfills, RCRA sites, hazardous waste facilities, industrial sites, wastewater treatment plants, land application sites, land disturbing activities, or any other significant facilities that may impact water quality. The absence of any of these features should be clearly stated in the narrative.
   C. Show delineated watersheds associated with the political boundaries and/or service area on map(s).
   D. Indicate if any 303(d) listed stream segments are within the delineated watersheds. EPD's most current 305(b)/303(d) listing can be found at http://www.dnr.state.ga.us/dnr/environ/, under "Georgia's Environment."
   E. Summarize the source, nature, and quantity of available historical data.

III. Water Quality Monitoring
   A. Provide a narrative description of why each monitoring station was selected. Sampling locations should include the surface drainage of all or most of the political boundaries and/or service area, and should be representative of major land uses and significant drainage features. Consideration should be given for both the present service area and if applicable, the proposed future service area when selecting sampling sites. Any 303(d) listed segments should be evaluated.
   B. Show the monitoring stations on a map. Note that at least one monitoring station should be downstream of proposed growth areas.
   C. Describe the sampling schedule. Sampling needs to be conducted during critical conditions (i.e., low flow, high temperature) to determine if water quality standards are being met. Both wet and dry weather events should be sampled. This will show the effects of stormwater during low flow conditions, as well as non-storm related stressors, such as leaky sewer pipes or a WWTP discharge.
   D. Indicate the number of sampling events, and how the samples are to be collected.
      i. Three dry weather events should be sampled. Grab samples can be used. The suggested dry weather criterion is a period of at least 72 hours since the last rainfall.
      ii. At least one good wet weather event should be sampled and a composite sample that covers the complete hydrograph needs to be collected for the wet weather event(s). The suggested wet weather criteria are at least 0.2 inches of rainfall and at least 72 hours since the last storm event. If EPA approved stormwater sampling is used, the details should be described in the report.

E. Provide a narrative description of the sampling procedures used, including equipment and any standard operating procedures. Analysis must be conducted according to approved test procedures set forth in 40 CFR Part 136.
F. Include the following parameters in the sampling plan:
    i. Temperature (water and air)
    ii. pH
    iii. Dissolved oxygen
    iv. Specific conductance
    v. Turbidity
    vi. BOD_5 (to a detection limit of 2.0 mg/L; laboratory bench sheets may need to be requested for laboratories who do not report below 5.0 mg/L)
    vii. COD
    viii. TSS
    ix. Phosphorus (total and ortho)
    x. Nitrogen (TKN, Ammonia, NO_2/NO_3)
    xi. Metals (Cd, Cu, Pb, Zn), total and dissolved; dissolved metals may be measured or calculated
    xii. Hardness
    xiii. Fecal coliform
    xiv. E. coli west of I-95; enterococci east of I-95
    xv. Any criteria violated on a 303(d) listed stream segment, if applicable
    xvi. And site-specific parameters believed to be significant
G. The fecal coliform standard is a geometric mean based on at least four samples collected within a 30-day period at intervals not less than 24 hours. A minimum of two fecal coliform geometric means must be calculated for the period from May to October. The samples should be collected on a regular schedule, regardless of the weather. E. coli and enterococci should be sampled in the same manor.
H. Collect metal samples using Clean Techniques, where necessary (*Office of Water Policy and Technical Guidance on Interpretation and Implementation of Aquatic Life Metals Criteria*, USEPA, October 1, 1993).
I. Provide detection limits for each of the parameters tested.
J. Record weather conditions during sampling, including rainfall amounts and time elapsed since the last significant rainfall event.
K. Measure or estimate stream flow.
L. Record notes regarding any significant activities observed in the watershed during the sampling event. Examples may include: animals, dry weather runoff from parking lots, odors, foam, discoloration, leaking pipes, etc.

IV. Biological Monitoring
A. Biological evaluation should include:
    i. Habitat assessment
    ii. Aquatic macroinvertebrate community assessment
    iii. Fish community assessment
    iv. In-situ physical measurements
    v. Pebble count
B. Monitoring must fully document the current conditions and the potential impacts of the project.
C. An adequate number of sample sites should be established for biological monitoring and should be relevant to the cause for this assessment. Explanation needs to be provided as to why these sites were chosen.

D. Biological assessments need to be conducted using the EPD 2002 Standard Operating Procedures (SOP). Fish surveys need to be conducted using the most current GA Wildlife Resource Division (WRD) SOP.
    i. The SOP for Freshwater Macroinvertebrate Biological Assessment will be continually updated during this transition period toward the adoption of biological criteria. It is critical to contact the EPD Ambient Monitoring Unit (404-675-6236) to acquire the most current protocol prior to monitoring.
E. Established reference stream data from the nearest EPD/WRD reference station should be used to represent "least impacted/impaired" conditions, and serve as the baseline for comparison as part of the water quality, biological and habitat assessments. Contact the EPD Ambient Monitoring Unit for reference stream data and further information.
    i. Ecoregional reference site data are currently available and can be used in conjunction with the ecological condition worksheets found in the SOP document. As we continue through the transition towards the adoption of biological criteria, ecoregional numeric scoring systems will also be modified. Check with the EPD Ambient Monitoring Unit for the most current procedures for scoring biomonitoring sites.
F. A location map clearly identifying the biomonitoring sites must be provided.
G. Results must be presented in a clear and concise manner. Results must be compared to the reference site data and include the dates the monitoring was performed. Impairment should be documented and discussed in terms of the proposed project.