



*Alabama's Water Quality Assessment  
and Listing Methodology*

**January 2008**

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## List of Acronyms

A&I	Agriculture and Industry water supply use classification
ADB	Assessment Database
ADEM	Alabama Department of Environmental Management
ADPH	Alabama Department of Public Health
AEMC	Alabama Environmental Management Commission
AWIC	Alabama Water Improvement Commission
CaCO <sub>3</sub>	Calcium Carbonate
CBOD <sub>5</sub>	Five-Day Carbonaceous Biochemical Oxygen Demand
Cl <sup>-1</sup>	Chlorides
CWA	Clean Water Act
DO	Dissolved Oxygen
DRP	Dissolved Reactive Phosphorus
EPA	Environmental Protection Agency
EPT	Ephemeroptera/Plecoptera/Trichoptera
F&W	Fish and Wildlife
GIS	Geographical Information System
GPS	Global Positioning System
IBI	Index of Biotic Integrity
LWF	Limited Warmwater Fishery
MDL	Method Detection Limit
NH <sub>3</sub> -N	Ammonia Nitrogen
NHD	National Hydrography Dataset
NO <sub>3</sub> + NO <sub>2</sub> -N	Nitrate + Nitrite Nitrogen
NPDES	National Pollutant Discharge Elimination System
NTU	Nephelometric Turbidity Units
OAW	Outstanding Alabama Waters
ONRW	Outstanding National Resource Water
PWS	Public Water Supply
QAPP	Quality Assurance Project Plan
S	Swimming and Other Whole Body Water-Contact Sports
SH	Shellfish Harvesting
SOP/QCA	Standard Operating Procedures/Quality Control Assurance
SW	Surface Water
TDS	Total Dissolved Solids
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
Total-P	Total Phosphorus
TSS	Total Suspended Solids
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
WMB-EPT	Wadeable Multi-habitat Bioassessment - EPT Families
WMB-I	Intensive Wadeable Multi-habitat Bioassessment

## **1.0 Introduction**

Alabama has long been recognized for its abundant water resources. With over 77,000 miles of perennial and intermittent streams and rivers, 481,757 acres of publicly-owned lakes and reservoirs, 610 square miles of estuaries, and 50 miles of coastal shoreline, the state is faced with a tremendous challenge to monitor and accurately report on the condition of its surface waters (ADEM, 2004).

Sections 305(b) and 303(d) of the federal Clean Water Act direct states to monitor and report the condition of their water resources. Recent guidance published by the Environmental Protection Agency (EPA) provides a basic framework that states may use to fulfill this reporting requirement. *Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act* provides recommendations on the delineation of assessment units, reporting the status and progress towards comprehensive assessment of state waters, attainment of state water quality standards and the basis for making attainment decisions, schedules for additional monitoring, listing waters which do not fully support their designated uses (i.e. impaired waters), and schedules to address impaired waters (EPA, 2005).

Alabama's assessment and listing methodology establishes a process, consistent with EPA's guidance, to assess the status of surface waters in Alabama relative to the designated uses assigned to each waterbody. The methodology will also describe the procedure to assign the size or extent of assessed waterbodies. This methodology is not intended to limit the data or information that the State considers as it prepares an integrated water quality assessment report. Rather, it is intended to establish a rational and consistent process for reporting the status of Alabama's surface waters relative to their designated uses.

## **2.0 Alabama's Water Quality Standards**

State water quality standards are the yardstick by which the condition of the nation's waters is measured. They are intended to protect, restore and maintain the condition of the nation's waters. In Alabama, water quality standards were first adopted in 1967 by the Alabama Water Improvement Commission (AWIC). In 1982 the Alabama Department of Environmental Management (ADEM) was formed by merging AWIC with elements of the Alabama Department of Public Health (ADPH). Since first being adopted in 1967, Alabama's water quality standards have been amended on numerous occasions (ADEM, 2005).

The Alabama Environmental Management Commission (AEMC) has the authority to adopt revisions to the ADEM Administrative Code. The Designated Uses (Chapter 335-6-11 of the Administrative Code) and the Water Quality Criteria (Chapter 335-6-10 of the Administrative Code) are reviewed once every three years pursuant to EPA regulations at 40 CFR Part 131.20. This review process is known as the triennial review and affords the public the opportunity to make comments and suggestions regarding Alabama's water quality standards. Any changes that ADEM may propose as a result of the review process are subject to further public comment before consideration by the AEMC.

Water quality standards consist of three components: designated uses, numeric and narrative criteria, and an antidegradation policy. These three components have been compared to the three legs of a stool which work together to provide water quality protection for the nation's surface waters.

Designated uses describe the best uses reasonably expected of waters. These uses should include such activities as recreation in and on the water, public water supply, agricultural and industrial water supply, and habitat for fish and wildlife. While all waters may not support all of these uses, the goal of the Clean Water Act is to provide protection of water quality consistent with "fishable/swimable" uses, where attainable. In Alabama, waters can be assigned one or more of seven designated uses pursuant to ADEM Administrative Code 335-6-11. These uses include:

1. Outstanding Alabama Water (OAW)
2. Public Water Supply (PWS)
3. Shellfish Harvesting (SH)
4. Swimming and Other Whole Body Water-Contact Sports (S)
5. Fish and Wildlife (F&W)
6. Limited Warmwater Fishery (LWF)
7. Agricultural and Industrial Water Supply (A&I)

Designated uses 1 through 5 in the list above are considered by EPA to be consistent with the "fishable/swimable" goal and, therefore, provide for protection of aquatic life and human health.

The State also has one special designation – Outstanding National Resource Water (ONRW). These high quality waters are protected from new or expanded point sources of pollutants and may be assigned to any one of the first five designated uses in the list above.

Numeric and narrative criteria provide the means to measure the degree to which the quality of waters is consistent with their designated use or uses. The criteria are intended to provide protection of the water quality commensurate with the water's use, to include protection of human health. Narrative criteria generally describe minimum conditions necessary for all uses and may include certain restrictions for specific uses. Numeric criteria include pollutant concentrations or physical characteristics necessary to protect a specific designated use. Alabama's narrative and numeric criteria are defined in ADEM Administrative Code 335-6-10.

The state's antidegradation policy provides for protection of high quality waters that constitute an outstanding national resource (Tier 3), waters whose quality exceeds the levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water (Tier 2), and existing instream water uses and the level of water quality necessary to protect the existing uses (Tier 1). In Tier 3 waters, ADEM Administrative Code 335-6-10-.10 prohibits new or expanded point source discharges. In Tier 2 waters, ADEM Administrative Code 335-6-10-.04 provides for new or expanded discharge of pollutants only after intergovernmental coordination, public participation, and a demonstration that the new or expanded discharge is necessary for important economic or social development. Alabama's water quality standards regulations (ADEM Administrative Code 335-6-10 and 335-6-11) are included in the **Appendix** of this document.

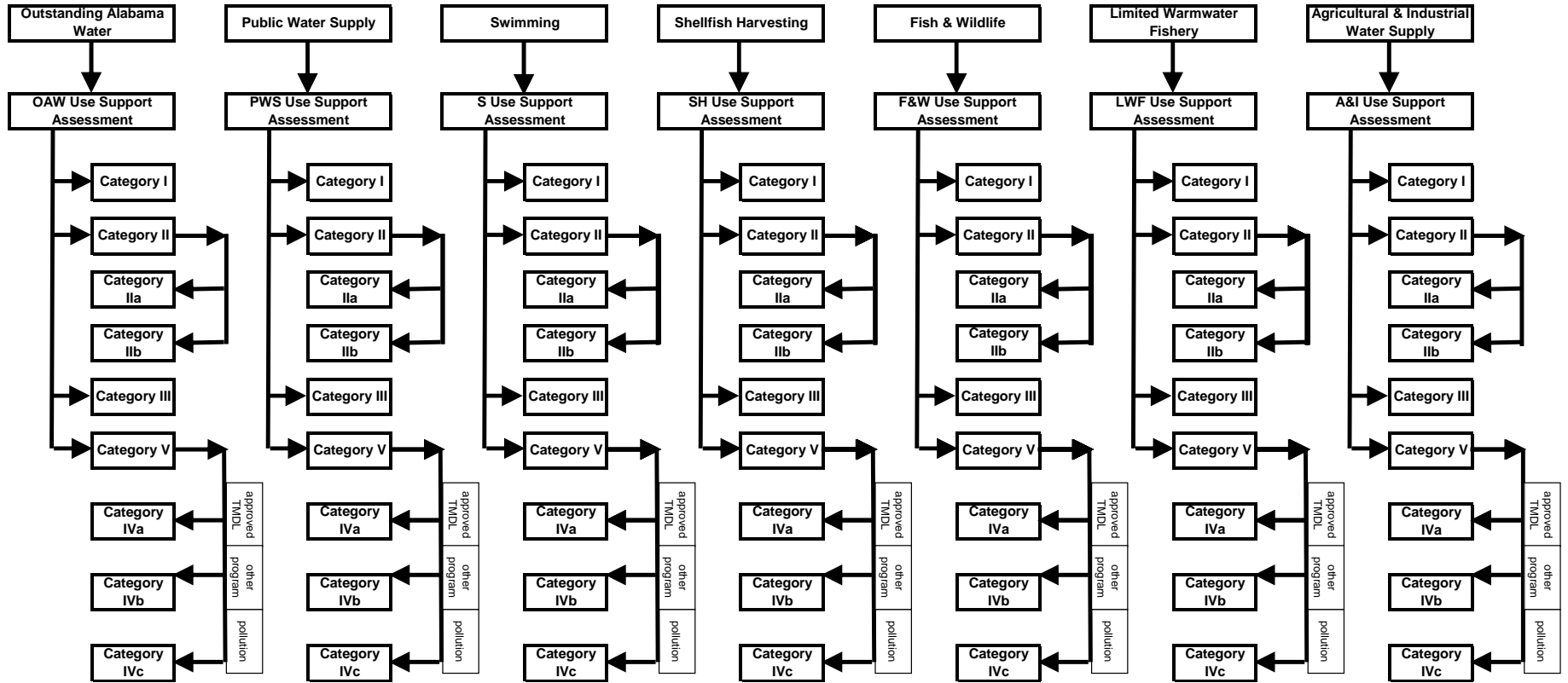
### **3.0 Waterbody Categorization**

The water quality assessment process begins with the collection, compilation, and evaluation of water quality data and information for the purpose of determining if a waterbody is supporting all of its designated uses. It is imperative that the data and information used in the process be of adequate quality and provides an accurate indication of the water quality conditions in the waterbody since decisions arising from the assessment process may have long-term consequences. Issues of data sufficiency and data quality must be addressed to ensure that use support decisions are based on accurate data and information. However, the minimum data requirements discussed in this methodology are not intended to exclude data and information from the assessment process but are a guide for use in designing monitoring activities to assess the State's surface waters and to ensure that decisions are made using the best available data. The goal is to accurately describe the status of surface waters where possible and to identify waters where more information is needed to make use support decisions.

The use support assessment process considers all existing and readily available data and information with a goal of placing waterbodies in one of five separate categories. This process is specific to the highest designated use assigned to the waterbody and is described by the flow chart depicted in **Figure 1**.



**Figure 1**  
**Alabama's Waterbody Assessment Process**



Waterbody data and information are evaluated using the use support assessment methodology and the waterbody is assigned to one of the following categories.

Category 1

Waters that are attaining all applicable water quality standards.

Category 2

Waters for which existing and readily available data, which meets the State's requirements as described in Section 4.9, supports a determination that some water quality standards are met and there is insufficient data to determine if remaining water quality standards are met. Attainment status of the remaining standards is unknown because data is insufficient. Waters for which the minimum data requirements (as described later) have not been met will be placed in Category 2.

1. *Category 2A*

For these waters available data does not satisfy minimum data requirements but there is a high potential for use impairment based on the limited data. These waters will be given a higher priority for additional data collection.

2. *Category 2B*

For these waters available data does not satisfy minimum data requirements but there is a low potential for use impairment based on the limited data. These waters will be included in future basin monitoring rotations as resources allow.

Category 3

Waters for which there is no data or information to determine if any applicable water quality standard is attained or impaired. These waters will be considered unassessed.

Category 4

Waters in which one or more applicable water quality standards are not met but establishment of a TMDL is not required.

1. *Category 4A*

Waters for which all TMDLs needed to result in attainment of all applicable WQs have been approved or established by EPA.

2. *Category 4B*

Waters for which other required control measures are expected to attain applicable water quality standards in a reasonable period of time. Adequate documentation is required to indicate that the proposed control mechanisms will address all major pollutant sources and should result in the issuance of more stringent effluent limitations required by either Federal, State, or local authority or the implementation of "other pollution control requirements (e.g., best management practices) required by local, state, or federal authority" that are stringent enough to implement applicable water quality standards. Waters will be evaluated on a case by case basis to determine if the proposed control measures or activities

under another program can be expected to address the cause of use impairment within a reasonable time period. A reasonable time period may vary depending on the degree of technical difficulty or extent of the modifications to existing measures needed to achieve water quality standards. EPA's 2006 assessment and listing guidance offers additional clarification of what might be expected of waters placed in Category 4b.

3. *Category 4C*

Waters in which the impairment is not caused by a pollutant. This would include waters which are impaired due to natural causes or pollution. A pollutant is defined in Section 502(6) of the Clean Water Act (CWA) as "spoil, solid waste, incinerator residue, sewerage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into water." Pollution is defined as "the man-made or man-induced alteration of the chemical, physical, or radiological integrity of a waterbody." Invasive plants and animal species are considered pollution.

*Category 5*

Waters in which a pollutant has caused or is suspected of causing impairment. If the impairment is caused by an identified pollutant the water should be placed in Category 5. All "existing and readily available data and information" will be used to determine when a water should be placed in Category 5. Waters in this category comprise the State's list of impaired waters or §303(d) list.

When the information used to assess the waterbody consist primarily of observed conditions, (limited water quality data, water quality data older than six years, or estimated impacts from observed or suspected activities), the assessment is generally referred to as an evaluated assessment (Category 2). Evaluated assessments usually require the use of some degree of professional judgment by the person making the assessment and these assessments are not considered sufficient to place waters in or to remove waters from the impaired category (Category 5) or the fully supporting category (Category 1).

Monitored assessments (Categories 1 and 5) are based on existing and readily available chemical, physical, and/or biological data collected during the previous six years, using commonly accepted and well-documented methods. Existing and readily available data are data that have been collected or assembled by the Department or other groups or agencies and are available to the public. Data older than six years old may be used on a case-by-case basis when assessing waters that are not currently included in Category 1 or Category 5. (For example, older data could be used if conditions, such as land use, have not changed.) Much of the remainder of this document will pertain to the use of monitoring data to make use support determinations.

#### **4.0 The Water Quality Assessment Process**

The water quality assessment process is different for each of Alabama's seven designated uses because each use is protected by specific numeric and narrative water quality criteria. As such, the methodology for assigning a given waterbody to one of the five categories may have different data requirements and thresholds for determining the waterbody's use support status. In addition, interpretation of narrative criteria may differ by classified use and waterbody type. Data and information that may be considered when assessing state waters could include water chemistry data such as chemical specific concentration data, land use or land cover data, physical data such as water temperature and conductivity, habitat evaluations, biological data such as macroinvertebrate and fish community assessments, and bacteriological data such as fecal coliform or enterococci counts. Waters classified as "Fish and Wildlife" or higher must provide protection of the aquatic life use. All classifications must provide protection of the human health use.

Alabama's designated uses embody a tiered approach to aquatic life protection. The assessment process recognizes this by allowing for different minimum data requirements and varying criteria exceedance thresholds. For example, in waters classified as OAW, Alabama's highest designated use, the assessment methodology requires less data and allows for fewer exceedances of a toxic criterion to be considered for inclusion in Category 5. The assessment process for waters classified as A&I, Alabama's lowest designated use, requires more data and allows for slightly more exceedances of toxic criteria. This sliding scale assessment approach provides for existing differences in the aquatic communities and habitat conditions represented by streams with Alabama's various designated uses.

In order to ensure consistent and accurate assessment of a waterbody's support status and proper categorization of the waterbody, minimum data requirements must be defined that address data quality and data quantity. Data requirements will not only be dictated by the classified use of the waterbody but also by the waterbody type to account for the different monitoring strategies that may be used for different waterbody types. The minimum data requirements are expected to guide future water quality monitoring activities and provide the basis for making use support decisions. However, in those cases where a data set may not include all of the elements specified by the minimum data requirements, a decision to include the water in Category 5 can still be made provided the available data indicates a clear impairment and the cause of the impairment is evident. These decisions will be made on a case by case basis and the decision will be documented in the ADB.

In the assessment methodology, the terms "Level IV WMB-I", "Level III WMB-EPT", "Fish IBI", "habitat assessment", "conventional parameter samples", "pesticide/herbicide samples", "inorganic samples", "chlorophyll *a* samples", and "fish tissue analysis" are used. For the purposes of this assessment methodology, these terms will have the following meanings.

##### **Level IV WMB-I:**

- An intensive multihabitat assessment of the macroinvertebrate community in a wadeable stream involving the collection of macroinvertebrates for identification and enumeration in a laboratory

**Level III WMB-EPT:**

- A screening-level multihabitat assessment of the macroinvertebrate community in a stream focusing on the collection, field processing and enumeration of the pollution-sensitive Ephemeroptera, Plecoptera, and Trichoptera taxa

**Fish IBI:**

- A multihabitat fish community assessment method developed by the Geological Survey of Alabama (O'Neil and Shepard, 1998) for streams in the Black Warrior and Cahaba River basins

**Habitat assessment:**

- An assessment of available aquatic habitat in a stream which considers habitat characteristics important to supporting a diverse and health aquatic community

**Conventional parameter samples** will include analyses for the following constituents:

- Collector Name
- Date (Month, Day, Year)
- Time (24 hr)
- Air Temperature, °C
- Water Temperature, °C
- Total Stream Depth at Sampling Point, feet
- Sample Collection Depth, feet
- Dissolved Oxygen (DO), mg/l
- Conductivity,  $\mu\text{mhos/cm}$  @ 25C
- Salinity, ppt (coastal waters only)
- pH, s.u.
- Turbidity, NTU (with Nephelometer, not multiprobe)
- Weather Conditions
- Stream Flow (where appropriate)
- Five-day Carbonaceous Biochemical Oxygen Demand (CBOD5), mg/l
- Alkalinity, mg/l
- Total Suspended Solids (TSS), mg/l
- Total Dissolved Solids (TDS), mg/l
- Dissolved Reactive Phosphorus (DRP), mg/l (field filtered, separate bottle)
- Ammonia Nitrogen (NH<sub>3</sub>-N), mg/l
- Nitrate + Nitrite Nitrogen (NO<sub>3</sub>+ NO<sub>2</sub>-N), mg/l
- Total Kjeldahl Nitrogen (TKN), mg/l
- Total Phosphorus (Total-P), mg/l
- Hardness, mg/l as CaCO<sub>3</sub> (measured when metals samples are collected)

**Pesticide/Herbicide samples** will include analyses for the following constituents:

- Organochlorine Pesticides by method SW8081A
- Organophosphorus Pesticides by method SW8141
- Chlorinated Herbicides by method SW8151

- Atrazine by Immunoassay

**Inorganic (metals) samples** will include analyses for the following constituents:

- "Dissolved" Antimony (Sb), ug/l
- "Dissolved" Arsenic<sup>+3</sup> (As<sup>+3</sup>), ug/l
- "Dissolved" Cadmium (Cd), ug/l
- "Dissolved" Chromium<sup>+3</sup> (Cr<sup>+3</sup>), ug/l
- "Dissolved" Copper (Cu), ug/l
- "Dissolved" Lead (Pb), ug/l
- "Dissolved" Nickel (Ni), ug/l
- "Dissolved" Silver (Ag), ug/l
- "Dissolved" Thallium (Tl), ug/l
- "Dissolved" Zinc (Zn), ug/l
- "Total" Mercury (Hg), ug/l
- "Total" Selenium (Se), ug/l
- "Dissolved" Selenium (Se), ug/l

**Bacteriological Samples**

- Fecal coliform, colonies/100 ml in non-coastal waters and Shellfish Harvesting waters
- Enterococci, colonies/100 ml in coastal waters

**Chlorophyll a samples** will include the collection of photic zone composite water samples to be processed in accordance with ADEM SOP # 2063 Chlorophyll *a* Collection and Processing.

**Fish tissue analysis** will include collection and analyses of fish for the following constituents:

- |                 |                      |
|-----------------|----------------------|
| • Arsenic       | • Lindane            |
| • Cadmium       | • Heptachlor         |
| • Mercury       | • Heptachlor Epoxide |
| • Selenium      | • Hexachlorobenzene  |
| • Lead          | • Mirex              |
| • Chlordane     | • Toxaphene          |
| • 4,4-DDD       | • PCBs               |
| • 4,4-DDE       | • Dioxin             |
| • 4,4-DDT       | • Percent lipids     |
| • 2,4-DDD       |                      |
| • 2,4-DDE       |                      |
| • 2,4-DDT       |                      |
| • Chlorpyrifos  |                      |
| • Dieldrin      |                      |
| • Endosulfan I  |                      |
| • Endosulfan II |                      |
| • Endrin        |                      |

Fish sampling and tissue preparation procedures are described in the ADEM *Standard Operating Procedures And Quality Control Assurance Manual Volume III – Fish Sampling And Tissue Preparation For Bioaccumulative Contaminants* (SOP).

Chronic aquatic life criteria will be used to assess a waterbody’s use support where the designated use specifies such criteria. In those cases where both human health criteria and chronic aquatic life criteria are included, the more stringent of the criteria will determine the waterbody’s use support status. The assessment process, including minimum data requirements and the number of chronic criteria exceedances, is described for each designated use in the remainder of the document.

4.1 Outstanding Alabama Waters (OAW)

The best usage of waters assigned this classification are those activities consistent with the natural characteristics of the waters. Waterbodies assigned the OAW use are high quality waters that constitute an outstanding Alabama resource, such as waters of state parks and wildlife refuges and waters of exceptional recreational or ecological significance. Beneficial uses encompassed within this classification include: aquatic life support and wildlife propagation, fish and shellfish harvesting and consumption, water contact recreation, agricultural irrigation, livestock watering and industrial cooling and process water supply.

4.1.1 Minimum Data Requirement for OAW Waters

For waters with the OAW classification the available data must have been collected consistent with the following standard operating procedures (SOP) manuals:

SOP#	Title
2040	Stream Flow Abbreviated Measurement Method
2041	SW Temperature Field Measurements
2042	SW pH Field Measurements
2043	SW Specific Conductivity Field Measurements
2044	SW Turbidity Field Measurements
2045	SW Dissolved Oxygen Field Measurements
2046	Photic Zone Measurements and Visibility Determinations
2048	Continuous SW Quality Monitoring Using Datasondes
2061	General SW Quality Sample Collection
2062	Dissolved Reactive Phosphorus (DRP) Collection & Field Processing
2063	Chlorophyll_a Collection & Field Processing
2064	Fecal Coliform Sample Collection
2065	Sediment Sampling
9021	Quality Control Samples and Field Measurements
9025	Field Equipment Cleaning Procedures
9040	Station, Sample ID & Chain of Custody Procedures
6300	Physical Characterization
6301	Habitat Assessment

- ADEM SOP/QCA Manual Volume 2 – Aquatic Macroinvertebrate Assessment (2005)
- ADEM SOP/QCA Manual Volume 5 – Algal Growth Potential Testing (2004)

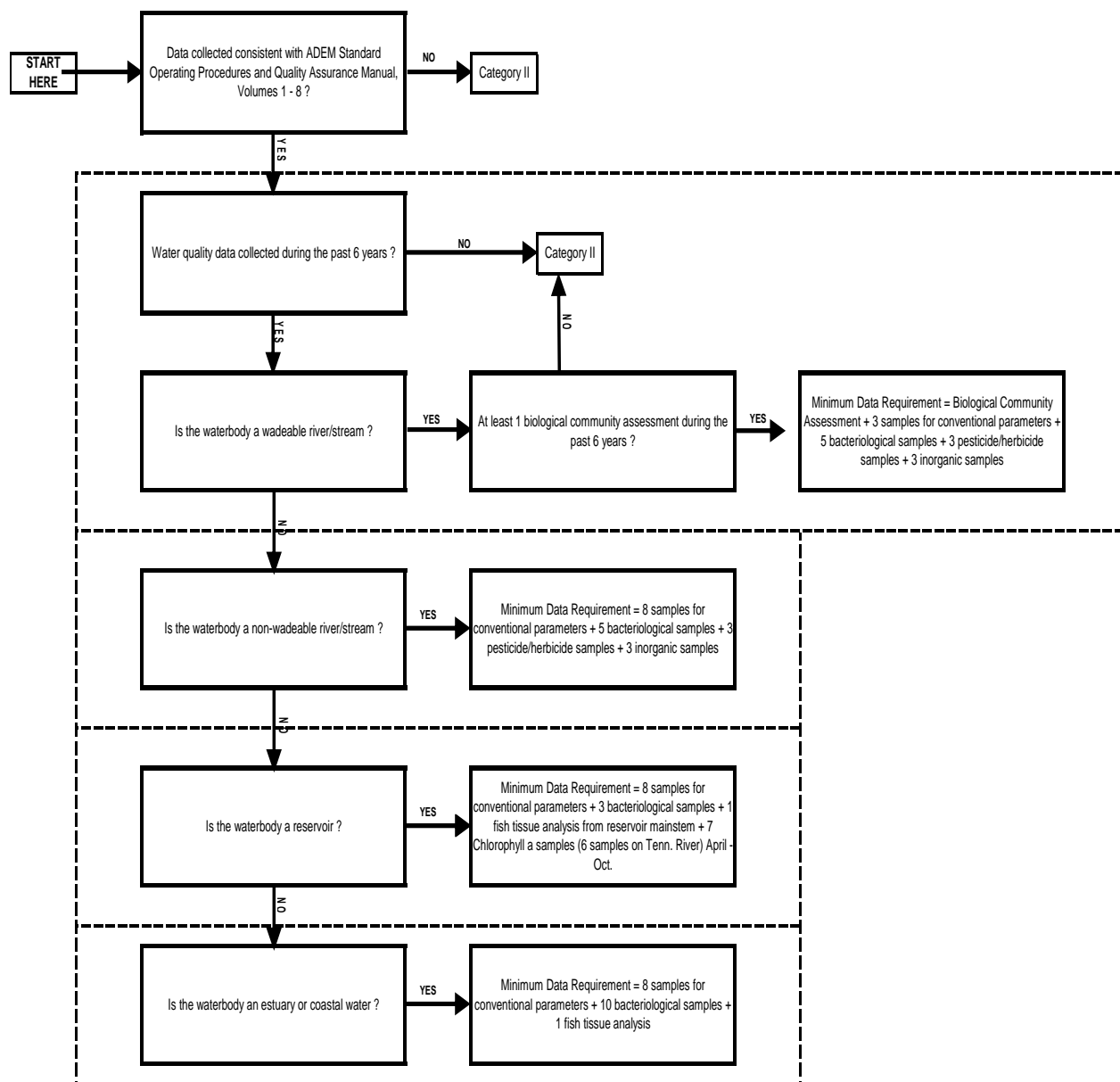
In addition, the data must have been collected within the last six years. The six year timeframe would capture all data collected by ADEM during one complete rotation of the five year monitoring schedule currently used by the Department. Failure to satisfy both of these conditions places the waterbody in Category 2. If these two conditions are met, the determination of the minimum data requirement is dependent upon the waterbody type. Waterbody types include wadeable rivers and streams, non-wadeable rivers and streams, reservoirs and reservoir embayments, and estuary and coastal waters. In addition, the minimum data requirement may change if pollutant sources upstream of the monitoring location are likely. Failure to meet the minimum data requirement for any waterbody type will place the waterbody in Category 2. The following list and **Figure 2** describe the minimum data requirements for assessing waters classified as OAW.

- Wadeable River or Stream
  - 1 Level IV Intensive Wadeable Multi-habitat Bioassessment (WMB-I) or 1 Level III Wadeable Multi-habitat Bioassessments – EPT Families (WMB-EPT) or 1 Level III WMB-EPT plus 1 fish community assessment (IBI). In addition, a habitat assessment must be completed with each biological assessment. Currently, metrics for the fish IBI have been calibrated only in the Black Warrior and Cahaba River basins.
  - 3 conventional parameter samples (including samples for nutrient analysis)
  - 3 bacteriological samples
  - 3 pesticide / herbicide samples
  - 3 inorganic samples
- Non-wadeable River or Stream
  - 8 conventional parameter samples (including samples for nutrient analysis)
  - 5 bacteriological samples (1 geometric mean)
  - 3 pesticide / herbicide samples
  - 3 inorganic samples
- Reservoirs and Embayments
  - 8 conventional parameter samples (including samples for nutrient analysis)
  - 3 bacteriological samples
  - 1 fish tissue analysis from the reservoir mainstem



- 7 chlorophyll a samples collected between April and October (For the Tennessee River Basin: 6 chlorophyll a samples collected between April and September). Results from critical period sampling (i.e., August sample only) will be used with other critical period data to evaluate chlorophyll a trends at a given sampling location.
- Estuary or Coastal Waters
  - 8 conventional parameter samples (including samples for nutrient analysis)
  - 10 bacteriological samples (2 geometric means)
  - 1 fish tissue analysis

**Figure 2**  
**Minimum Data Requirements for the OAW Designated Use**



**Biological community assessment means:**

- 1 Level IV Intensive Wadeable Multi-habitat Bioassessment (WMB-I) or
- 1 Level III Wadeable Multi-habitat Bioassessment – EPT Families (WMB-EPT) or
- Level III WMB-EPT plus 1 fish community assessment (IBI)

#### 4.1.2 Use Support Assessment for OAW Waters

Once the minimum data requirements have been met an assessment of the data can be completed resulting in the categorization of the waterbody as either fully supporting the OAW use (Category 1) or not fully supporting the OAW use (Category 5). The assessment process considers the available data and may include any fish consumption advisories, shellfish harvesting closure notices, chemical specific data, bacteriological data, biological community assessments, habitat assessments, periphyton assessments, and toxicity evaluations.

The OAW-classified waterbody is placed in Category 1 if all of the following are true:

- There is no fish/shellfish consumption advisory issued by the Alabama Department of Public Health (ADPH) for the waterbody.
- The Level IV WMB-I assessment result is “good” or “excellent”, or the Level III WMB-EPT assessment is “good” or “excellent” or the Level III WMB-EPT assessment is “good” or “excellent” and the fish community IBI is “fair”, “good”, or “excellent” (Wadeable streams only).
- The growing season mean chlorophyll *a* criterion has not been exceeded where such a criterion has been established. In making this determination, chlorophyll *a* values in excess of the criterion which are due to extreme hydrologic events (i.e., droughts and floods) will not be considered as an exceedance of the criterion.
- There is not an exceedance of any toxic pollutant criterion during the previous six years.
- There are no exceedances of conventional parameters, except due to natural conditions.
- Bacteriological sample results from a single sample in excess of 200 colonies fecal coliform per 100 ml will require a follow-up collection of 5 samples collected during a 30 day period to calculate the geometric mean fecal coliform density in reservoirs and wadeable streams. If the geometric mean fecal coliform density is less than or equal to 200 colonies/100 ml the waterbody will be considered fully meeting the bacteria criteria for this designated use. In coastal waters designated as OAW the geometric mean of enterococci sample must be less than 35 colonies/100 ml and not more than 10% of the individual samples (as determined by the binomial distribution function and Table 2) can exceed 104 colonies/100 ml.

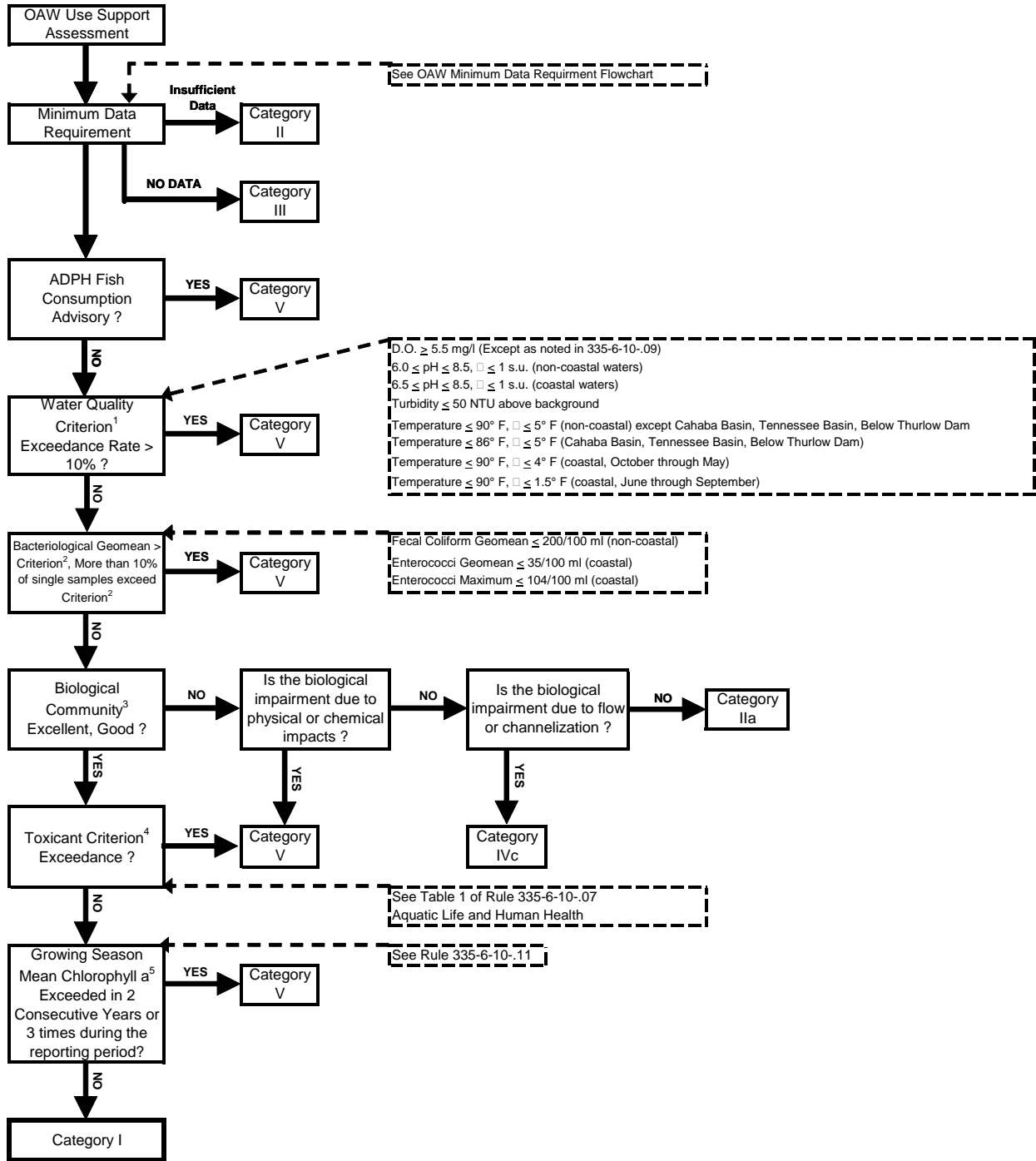
The OAW-classified waterbody is placed in Category 5 if any of the following are true:

- There is a fish consumption advisory issued by the ADPH.
- The Level IV WMB-I assessment result is less than “good”, or the Level III WMB-EPT assessment is less than “good” or the Level III WMB-EPT assessment is less than “good” or the fish community IBI is less than “fair”. In addition, a potential anthropogenic cause for the degraded condition must be identified (Wadeable streams only).

- There is an exceedance of a conventional parameter for other than natural causes.
- There is an exceedance of any toxic pollutant criterion during the previous six years.
- The geometric mean fecal coliform density exceeds 200 colonies/100 ml in follow-up samples collected in response to an exceedance of 200 colonies/100 ml in a single sample. In coastal waters the geometric mean enterococci density exceeds 35 colonies/100 ml.
- The growing season mean chlorophyll *a* criterion has been exceeded where such a criterion has been established. In making this determination, chlorophyll *a* values in excess of the criterion which are due to natural conditions (e.g., extreme hydrologic events such as drought or floods) will not be considered as an excursion of the criterion. When a growing season mean chlorophyll *a* value exceeds the criterion, the reservoir will be identified for re-sampling the following year and enough samples will be collected to ensure that the minimum data requirements necessary to calculate a growing season mean are met.

**Figure 3** illustrates the assessment process for OAW waters.

**Figure 3**  
**Outstanding Alabama Water (OAW) Assessment Methodology**



1 Water Quality Criterion refers to pH, Dissolved Oxygen, turbidity, and temperature resulting from heat sources  
 2 Bacteriological Criterion refers to both the single sample maximum and geometric mean, see discussion in Section 4.1.2  
 3 Biological community refers to macroinvertebrates and/or fish in wadeable rivers/streams only (See Minimum Data Requirements)  
 4 Toxicant Criterion refers to toxics listed in 335-6-10-.07  
 5 Applies only to reservoirs with established Chlorophyll a criteria and not during extreme hydrologic events  
**Special Note** - Natural waters may, on occasion, have characteristics outside of the limits established by these criteria. These

#### 4.2 Public Water Supply (PWS)

The best usage of waters assigned this classification is as a source of water supply for drinking or food-processing purposes after approved treatment. Waterbodies assigned the PWS use are considered safe for drinking or food-processing purposes if subjected to treatment approved by the Department equal to coagulation, sedimentation, filtration and disinfection, with additional treatment if necessary to remove naturally present impurities. Beneficial uses encompassed within this classification include: aquatic life support and wildlife propagation, fish and shellfish harvesting and consumption, drinking and food-processing water supply, water contact recreation, agricultural irrigation, livestock watering and industrial cooling and process water supply.

##### 4.2.1 Minimum Data Requirement for PWS Waters

For waters with the PWS classification the available data must have been collected consistent with the following standard operating procedures (SOP) manuals:

SOP#	Title
2040	Stream Flow Abbreviated Measurement Method
2041	SW Temperature Field Measurements
2042	SW pH Field Measurements
2043	SW Specific Conductivity Field Measurements
2044	SW Turbidity Field Measurements
2045	SW Dissolved Oxygen Field Measurements
2046	Photic Zone Measurements and Visibility Determinations
2048	Continuous SW Quality Monitoring Using Datasondes
2061	General SW Quality Sample Collection
2062	Dissolved Reactive Phosphorus (DRP) Collection & Field Processing
2063	Chlorophyll_a Collection & Field Processing
2064	Fecal Coliform Sample Collection
2065	Sediment Sampling
9021	Quality Control Samples and Field Measurements
9025	Field Equipment Cleaning Procedures
9040	Station, Sample ID & Chain of Custody Procedures
6300	Physical Characterization
6301	Habitat Assessment

- ADEM SOP/QCA Manual Volume 2 – Aquatic Macroinvertebrate Assessment (2005)
- ADEM SOP/QCA Manual Volume 5 – Algal Growth Potential Testing (2004)

In addition, the data must have been collected within the last six years. The six year timeframe would capture all data collected by ADEM during one complete rotation of the five year monitoring schedule currently used by the Department. Failure to satisfy both of these conditions places the waterbody in Category 2. If

these two conditions are met, the determination of the minimum data requirement is dependent upon the waterbody type. Waterbody types include wadeable rivers and streams, non-wadeable rivers and streams, reservoirs and reservoir embayments, and estuary and coastal waters. Failure to meet the minimum data requirement will place the waterbody in Category 2. The following list and **Figure 4** describe the minimum data requirement for assessing waters classified as PWS.

- Wadeable River or Stream
  - 1 Level IV Intensive Wadeable Multi-habitat Bioassessment (WMB-I) or 2 Level III Wadeable Multi-habitat Bioassessments – EPT Families (WMB-EPT) or 1 Level III WMB-EPT plus 1 fish community assessment (IBI). In addition, a habitat assessment must be completed with each biological assessment. Currently, metrics for the fish IBI have been calibrated only in the Black Warrior and Cahaba River basins.
  - 3 conventional parameter samples (including samples for nutrient analysis)
  - 3 bacteriological samples

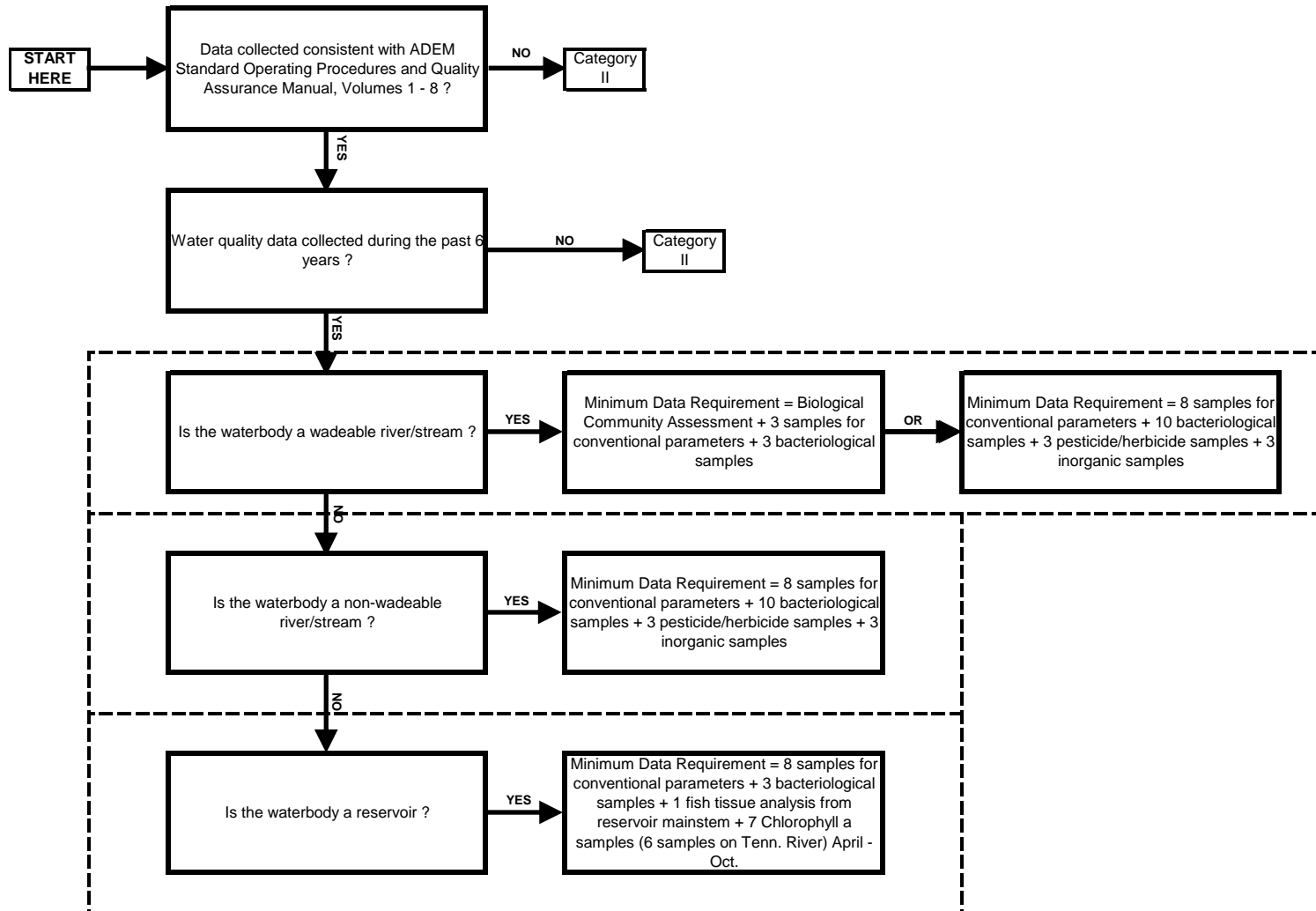
**OR**

- 8 conventional parameter samples (including samples for nutrient analysis)
  - 10 bacteriological samples (2 geometric mean samples)
  - 3 pesticide / herbicide samples
  - 3 inorganic samples
- Non-wadeable River or Stream
  - 8 conventional parameter samples (including samples for nutrient analysis)
  - 10 bacteriological samples (2 geometric mean samples)
  - 3 pesticide / herbicide samples
  - 3 inorganic samples
- Reservoirs and Embayments
  - 8 conventional parameter samples (including samples for nutrient analysis)
  - 3 bacteriological samples
  - 1 fish tissue analysis from the reservoir mainstem
  - 7 chlorophyll *a* samples collected between April and October (For the Tennessee River Basin: 6 chlorophyll *a* samples collected between April and September). . Results from critical period sampling (i.e., August sample only) will be used with other critical period data to evaluate chlorophyll *a* trends at a given sampling location.

- Estuary or Coastal Waters
  - 8 conventional parameter samples (including samples for nutrient analysis)
  - 10 bacteriological samples (2 geometric mean samples)
  - 1 fish tissue analysis



**Figure 4**  
**Minimum Data Requirements for the PWS Designated Use**



**Biological community assessment means:**

- 1 Level IV Intensive Wadeable Multi-habitat Bioassessment (WMB-I) or
- 2 Level III Wadeable Multi-habitat Bioassessments – EPT Families (WMB-EPT) or
- 1 Level III WMB-EPT plus 1 fish community assessment (IBI)

#### 4.2.2 Use Support Assessment for PWS Waters

Once the minimum data requirement has been met an assessment of the data can be completed resulting in the categorization of the waterbody as either fully supporting the PWS use (Category 1) or not fully supporting the PWS use (Category 5). The assessment process considers the available data and may include any fish consumption advisories, shellfish harvesting closure notices, chemical specific data, bacteriological data, biological community assessments, habitat assessments, periphyton assessments, drinking water system compliance records, and toxicity evaluations.

The PWS-classified waterbody is placed in Category 1 if all of the following are true:

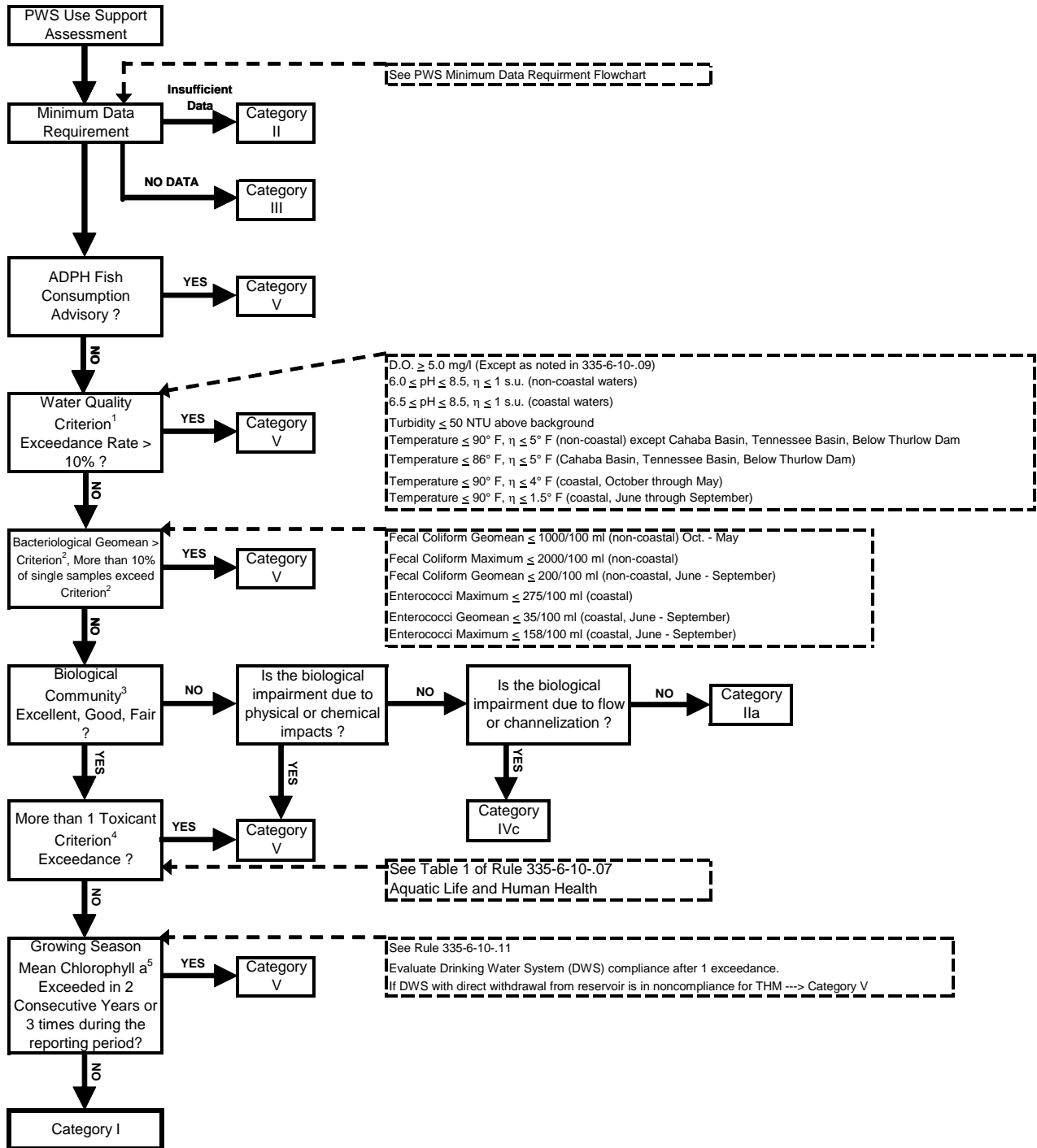
- There is no fish/shellfish consumption advisory issued by the Alabama Department of Public Health (ADPH) for the waterbody.
- The Level IV WMB-I assessment result is “fair”, “good” or “excellent”, or both Level III WMB-EPT assessments are “fair”, “good” or “excellent” or the Level III WMB-EPT assessment is “fair”, “good” or “excellent” and the fish community IBI is “fair”, “good”, or “excellent”. (Wadeable streams only)
- The growing season mean chlorophyll *a* criterion has not been exceeded in two consecutive years where such a criterion has been established unless a drinking water system withdrawing from waterbody is not in compliance with a THM requirement. In making this determination, chlorophyll *a* values in excess of the criterion which are due to extreme hydrologic events (i.e., droughts and floods) will not be considered as an exceedance of the criterion.
- There is no more than one exceedance of a particular toxic pollutant criterion during the previous six years.
- The water quality criteria exceedance rate for conventional parameters is not more than 10% as determined using the binomial distribution function and Table 2. Conventional parameters include dissolved oxygen, pH, temperature (where influenced by a heated discharge), and turbidity.
- Bacteriological sample results from a single sample in excess of 200 colonies fecal coliform per 100 ml in non-coastal waters and in excess of 35 colonies enterococci per 100 ml in coastal waters will necessitate a follow-up collection of 5 samples during a 30 day period to calculate the geometric mean density. If the geometric mean fecal coliform density in non-coastal waters is less than or equal to 200 colonies/100 ml (June through September) or less than or equal to 1000 colonies/100ml (October through May) the waterbody will be considered fully meeting the bacteria criteria for this designated use. In coastal waters (June through September) the geometric mean enterococci density must be less than 35 colonies / 100 ml and 10% or less (as determined using the binomial distribution function and Table 2) of the single samples must be less than 158 colonies/100 ml (June through September) or less than 275 colonies/100 ml (October through May).

The PWS-classified waterbody is placed in Category 5 if any of the following are true:

- There is a fish consumption advisory issued by the ADPH.
- The Level IV WMB-I assessment result is less than “fair”, or either of the Level III WMB-EPT assessments are less than “fair” or the Level III WMB-EPT assessment is less than “fair” and the fish community IBI is less than “fair”. In addition, a potential anthropogenic cause for the degraded condition must be identified using observations made during the sampling events or from information contained in the Department’s geographic information system. (Wadeable streams only)
- The water quality criteria exceedance rate for conventional parameters is more than 10% as defined in Table 2.
- There is more than one exceedance of a particular toxic pollutant criterion during the previous six years.
- In non-coastal waters the geometric mean fecal coliform density exceeded 200 colonies/100 ml in follow-up samples collected between June and September in response to an exceedance of 200 colonies/100 ml in a single sample. During October through May the geometric mean fecal coliform density exceeded 1000 colonies/100ml. In coastal waters the enterococci geometric mean density exceeded 35 colonies/100 ml during June through September or more than 10% of the individual samples (as defined in Table 2) exceeded 158 colonies/100 ml or 275 colonies/100 ml during October through May.
- The growing season mean chlorophyll *a* criterion has been exceeded in two consecutive years or three times during the previous six years where such a criterion has been established or after one exceedance of the chlorophyll *a* criterion if a drinking water system is out of compliance with the THM requirement. In making this determination, chlorophyll *a* values in excess of the criterion which are due to extreme hydrologic events (i.e., droughts and floods) will not be considered as an exceedance of the criterion. However, one exceedance of the chlorophyll *a* criterion may be sufficient justification for inclusion of a water in Category 5 when the exceedance is determined to be result of increasing nutrient loading from anthropogenic sources. These determinations will be made on a case by case basis and the decision will be documented in the ADB. In any case, when a growing season mean chlorophyll *a* value exceeds the criterion, the reservoir will be identified for re-sampling the following year and enough samples will be collected to ensure that the minimum data requirements necessary to calculate a growing season mean are met.

**Figure 5** illustrates the assessment process for PWS waters.

**Figure 5**  
**Public Water Supply (PWS) Categorization Methodology**



1 Water Quality Criterion refers to pH, Dissolved Oxygen, turbidity, and temperature resulting from heat sources  
 2 Bacteriological Criterion refers to both the single sample maximum and geometric mean, see discussion in Section 4.2.2  
 3 Biological community refers to macroinvertebrates and/or fish in wadeable rivers/streams only (See Minimum Data Requirements)  
 4 Toxicant Criterion refers to toxics listed in 335-6-10-.07  
 5 Applies only to reservoirs with established Chlorophyll a criteria and not during extreme hydrologic events  
**Special Note** - Natural waters may, on occasion, have characteristics outside of the limits established by these criteria. These

### 4.3 Swimming and Other Whole Body Water-Contact Sports (S)

The best usage of waters assigned this classification is for swimming and other whole body water-contact sports. Waterbodies assigned the S use, under proper sanitary supervision by the controlling health authorities, will meet accepted standards of water quality for outdoor swimming places and will be considered satisfactory for swimming and other whole body water-contact sports. Beneficial uses encompassed within this classification include: aquatic life support and wildlife propagation, fish and shellfish harvesting and consumption, water contact recreation, agricultural irrigation, livestock watering and industrial cooling and process water supply.

#### 4.3.1 *Minimum Data Requirement for S Waters*

For waters with the S classification the available data must have been collected consistent with the following standard operating procedures (SOP) manuals:

SOP#	Title
2040	Stream Flow Abbreviated Measurement Method
2041	SW Temperature Field Measurements
2042	SW pH Field Measurements
2043	SW Specific Conductivity Field Measurements
2044	SW Turbidity Field Measurements
2045	SW Dissolved Oxygen Field Measurements
2046	Photic Zone Measurements and Visibility Determinations
2048	Continuous SW Quality Monitoring Using Datasondes
2061	General SW Quality Sample Collection
2062	Dissolved Reactive Phosphorus (DRP) Collection & Field Processing
2063	Chlorophyll <i>a</i> Collection & Field Processing
2064	Fecal Coliform Sample Collection
2065	Sediment Sampling
9021	Quality Control Samples and Field Measurements
9025	Field Equipment Cleaning Procedures
9040	Station, Sample ID & Chain of Custody Procedures
6300	Physical Characterization
6301	Habitat Assessment

- ADEM SOP/QCA Manual Volume 2 – Aquatic Macroinvertebrate Assessment (2005)
- ADEM SOP/QCA Manual Volume 5 – Algal Growth Potential Testing (2004)

In addition, the data must have been collected within the last six years. The six year timeframe would capture all data collected by ADEM during one complete rotation of the five year monitoring schedule currently used by the Department. Failure to satisfy both of these conditions places the waterbody in Category 2. If these two conditions are met, the determination of the minimum data requirement is dependent upon the waterbody type. Waterbody types include wadeable rivers

and streams, non-wadeable rivers and streams, reservoirs and reservoir embayments, and estuary and coastal waters. Failure to meet the minimum data requirement will place the waterbody in Category 2. The following list and **Figure 6** describe the minimum data requirement for assessing waters classified as S.

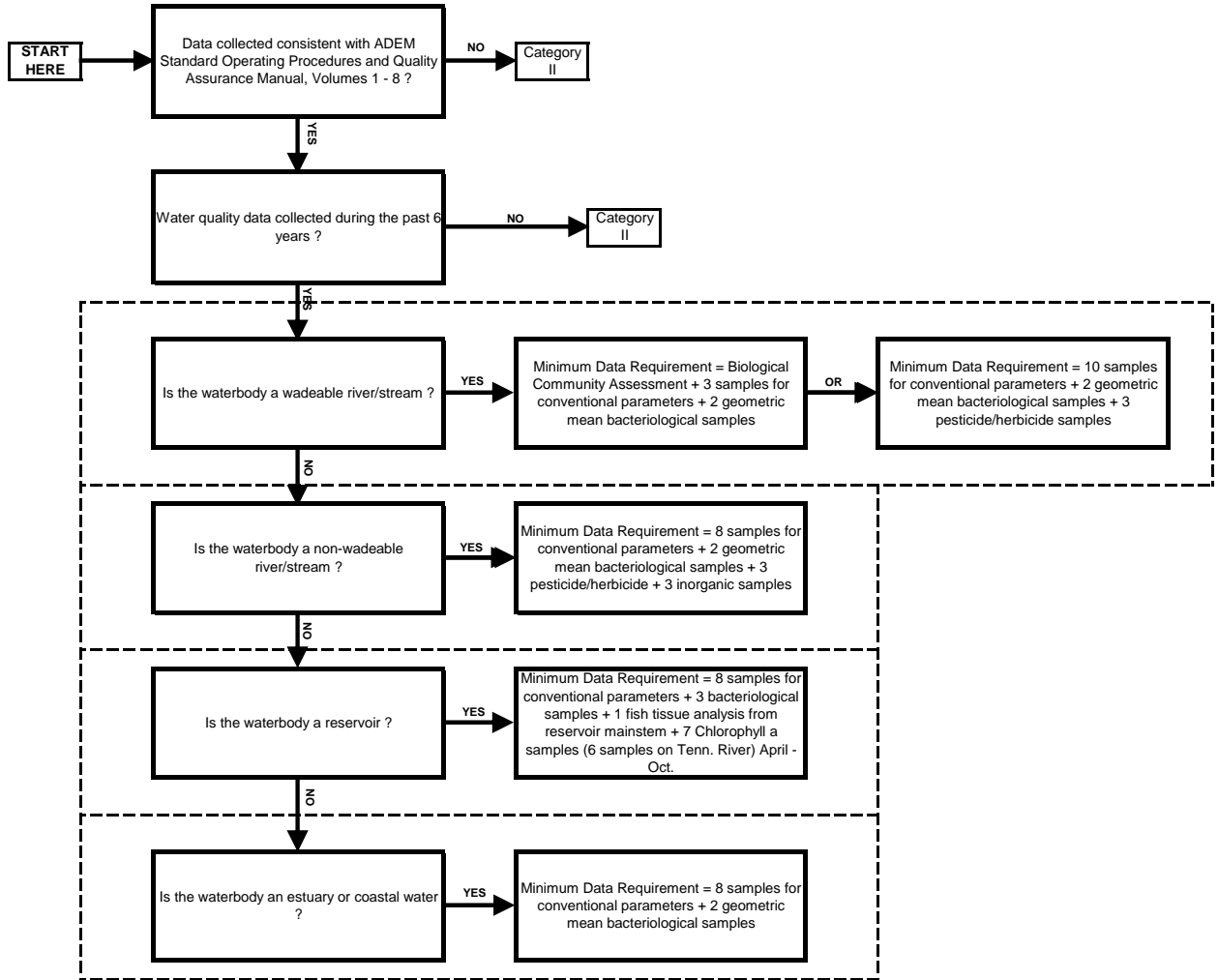
- Wadeable River or Stream
  - 1 Level IV Intensive Wadeable Multi-habitat Bioassessment (WMB-I) or 2 Level III Wadeable Multi-habitat Bioassessments – EPT Families (WMB-EPT) or 1 Level III WMB-EPT plus 1 fish community assessment (IBI). In addition, a habitat assessment must be completed with each biological assessment. Currently, metrics for the fish IBI have been calibrated only in the Black Warrior and Cahaba River basins.
  - 3 conventional parameter samples (including samples for nutrient analysis)
  - 10 bacteriological samples (2 geometric mean samples)

**OR**

- 8 conventional parameter samples (including samples for nutrient analysis)
- 10 bacteriological samples (2 geometric mean samples)
- 3 pesticide / herbicide samples
- Non-wadeable River or Stream
  - 8 conventional parameter samples (including samples for nutrient analysis)
  - 10 bacteriological samples (2 geometric mean samples)
  - 3 pesticide / herbicide samples
  - 3 inorganic samples
- Reservoirs and Embayments
  - 8 conventional parameter samples (including samples for nutrient analysis)
  - 3 bacteriological samples
  - 1 fish tissue analysis from the reservoir mainstem
  - 7 chlorophyll *a* samples collected between April and October (For the Tennessee River Basin: 6 chlorophyll *a* samples collected between April and September). . Results from critical period sampling (i.e., August sample only) will be used with other critical period data to evaluate chlorophyll *a* trends at a given sampling location.
- Estuary or Coastal Waters

- 8 conventional parameter samples (including samples for nutrient analysis)
- 10 bacteriological samples (2 geometric mean samples)

**Figure 6**  
**Minimum Data Requirements for the S Designated Use**



**Biological community assessment means:**  
 1 Level IV Intensive Wadeable Multi-habitat Bioassessment (WMB-I) or  
 2 Level III Wadeable Multi-habitat Bioassessments – EPT Families (WMB-EPT) or  
 1 Level III WMB-EPT plus 1 fish community assessment (IB)



#### 4.3.2 Use Support Assessment for S Waters

Once the minimum data requirement has been met an assessment of the data can be completed resulting in the categorization of the waterbody as either fully supporting the S use (Category 1) or not fully supporting the S use (Category 5). The assessment process considers the available data and may include any fish consumption advisories, shellfish harvesting closure notices, chemical specific data, bacteriological data, biological community assessments, habitat assessments, periphyton assessments, beach closure notices and toxicity evaluations.

The S-classified waterbody is placed in Category 1 if all of the following are true:

- There is no fish/shellfish consumption advisory issued by the Alabama Department of Public Health (ADPH) for the waterbody.
- The Level IV WMB-I assessment result is “fair”, “good” or “excellent”, or at least one of the Level III WMB-EPT assessments is “fair”, “good” or “excellent” or the Level III WMB-EPT assessment is “fair”, “good” or “excellent” and the fish community IBI is “fair”, “good”, or “excellent”. (Wadeable streams only)
- There is no more than one exceedance of a particular toxic pollutant criterion during the previous six years.
- The water quality criteria exceedance rate for conventional parameters is not more than 10% as determined using the binomial distribution function and Table 2. Conventional parameters include dissolved oxygen, pH, temperature (where influenced by a heated discharge), and turbidity. Determination of the 10% exceedance rate is discussed in Section 4.8.
- Bacteriological sample results from a single sample in excess of 200 colonies fecal coliform per 100 ml will require a follow-up collection of 5 samples collected during a 30 day period to calculate the geometric mean fecal coliform density in reservoirs. If the geometric mean fecal coliform density is less than or equal to 200 colonies/100 ml the waterbody will be considered fully meeting the bacteria criteria for this designated use. In coastal waters designated as S the geometric mean of enterococci sample must be less than 35 colonies/100 ml and not more than 10% of the individual samples (as determined by the binomial distribution function and Table 2) can exceed 104 colonies/100 ml.
- The growing season mean chlorophyll *a* criterion has not been exceeded in two consecutive years where such a criterion has been established. In making this determination, chlorophyll *a* values in excess of the criterion which are due to extreme hydrologic events (i.e., droughts and floods) will not be considered as an exceedance of the criterion.

The S-classified waterbody is placed in Category 5 if any of the following are true:

- There is a fish consumption advisory issued by the ADPH.
- The Level IV WMB-I assessment result is less than “fair”, or both of the Level III WMB-EPT assessments are less than “fair” or the Level III WMB-EPT assessment is less than “fair” and the fish community IBI is

less than “fair”. In addition, a potential anthropogenic cause for the degraded condition must be identified. (Wadeable streams only)

- The water quality criteria exceedance rate for conventional parameters is more than 10% as defined in Table 2.
- There is more than one exceedance of a particular toxic pollutant criterion during the previous six years.
- In reservoirs the geometric mean fecal coliform density exceeds 200 colonies/100 ml in follow-up samples collected in response to an exceedance of 200 colonies/100 ml in a single sample. In coastal waters designated as S the geometric mean of enterococci sample must be less than 35 colonies/100 ml and not more than 10% of the individual samples (as determined by the binomial distribution function and Table 2) can exceed 104 colonies/100 ml.
- For reservoirs with established chlorophyll *a* criteria, a criterion has been exceeded in two consecutive years or three times during the previous six years. In making this determination, chlorophyll *a* values in excess of the criterion which are due to extreme hydrologic events (i.e., droughts and floods) will not be considered as an exceedance of the criterion. However, one exceedance of the chlorophyll *a* criterion may be sufficient justification for inclusion of a water in Category 5 when the exceedance is determined to be the result of increasing nutrient loading from anthropogenic sources. These determinations will be made on a case by case basis and the decision will be documented in the ADB. In any case, when a growing season mean chlorophyll *a* value exceeds the criterion, the reservoir will be identified for re-sampling the following year and enough samples will be collected to ensure that the minimum data requirements necessary to calculate a growing season mean are met.

**Figure 7** illustrates the assessment process for S waters.

4.4 Shellfish Harvesting (SH)

The best usage of waters assigned this classification is the propagation and harvesting of shellfish (oysters) for sale or for use as a food product. Waterbodies assigned the SH use will meet the sanitary and bacteriological standards included in the *National Shellfish Sanitation Program Model Ordinance, 1999, Chapter IV*, published by the Food and Drug Administration, U.S. Department of Health and Human Services and the requirements of the Alabama Department of Public Health. The waters will also be of a quality suitable for the propagation of fish and other aquatic life, including shrimp and crabs. Beneficial uses encompassed within this classification include: aquatic life support and wildlife propagation, fish and shellfish harvesting and consumption, water contact recreation, agricultural irrigation, livestock watering and industrial cooling and process water supply.

4.4.1 Minimum Data Requirement for SH Waters

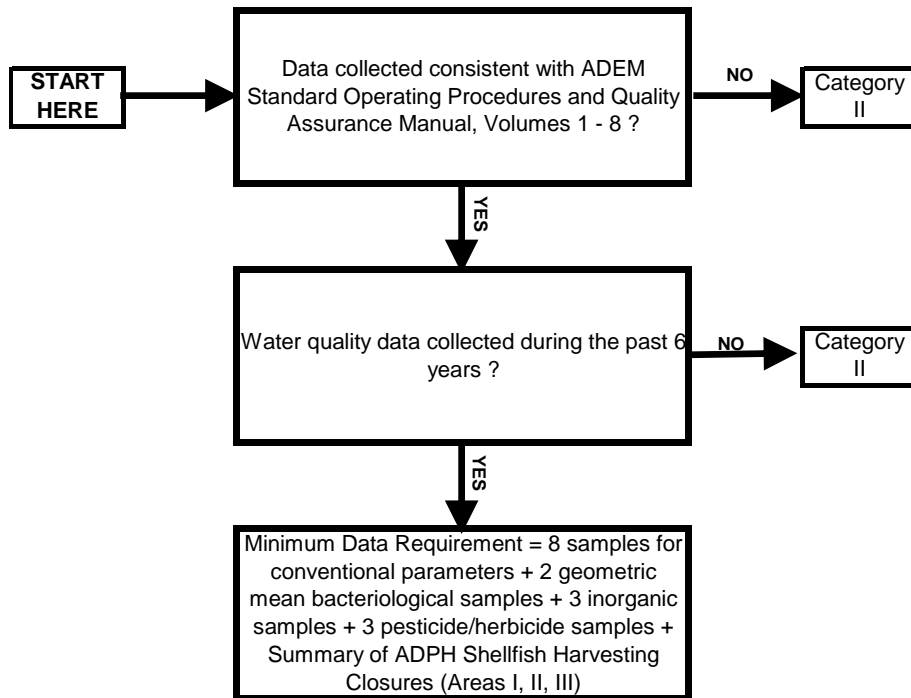
For waters with the SH classification the available data must have been collected consistent with the following standard operating procedures (SOP) manual:

SOP#	Title
2040	Stream Flow Abbreviated Measurement Method
2041	SW Temperature Field Measurements
2042	SW pH Field Measurements
2043	SW Specific Conductivity Field Measurements
2044	SW Turbidity Field Measurements
2045	SW Dissolved Oxygen Field Measurements
2046	Photic Zone Measurements and Visibility Determinations
2048	Continuous SW Quality Monitoring Using Datasondes
2061	General SW Quality Sample Collection
2062	Dissolved Reactive Phosphorus (DRP) Collection & Field Processing
2063	Chlorophyll_a Collection & Field Processing
2064	Fecal Coliform Sample Collection
2065	Sediment Sampling
9021	Quality Control Samples and Field Measurements
9025	Field Equipment Cleaning Procedures
9040	Station, Sample ID & Chain of Custody Procedures
6300	Physical Characterization
6301	Habitat Assessment

In addition, the data must have been collected within the last six years. The six year timeframe would capture all data collected by ADEM during one complete rotation of the five year monitoring schedule currently used by the Department. Failure to satisfy both of these conditions places the waterbody in Category 2. The following list and **Figure 8** describe the minimum data requirement for assessing waters classified as SH.

- 8 conventional parameter samples (including samples for nutrient analysis)
- 10 bacteriological samples (2 geometric mean samples)
- 3 inorganic samples
- 3 pesticide/herbicide samples
- Summary of ADPH shellfish harvesting closure notices for Areas I, II, and III

**Figure 8**  
**Minimum Data Requirements for the SH Designated Use**



4.4.2 Use Support Assessment for SH Waters

Once the minimum data requirement has been met an assessment of the data can be completed resulting in the categorization of the waterbody as either fully supporting the SH use (Category 1) or not fully supporting the SH use (Category 5). The assessment process considers the available data and may include any fish consumption advisories, shellfish harvesting closure notices, chemical specific data, bacteriological data, and toxicity evaluations.

The SH-classified waterbody is placed in Category 1 if:

- There is no fish/shellfish consumption advisory issued by the Alabama Department of Public Health (ADPH) for the waterbody and the ADPH

“conditionally approved” shellfish harvesting areas (Areas I, II, and III) are open at least 75% of the year;

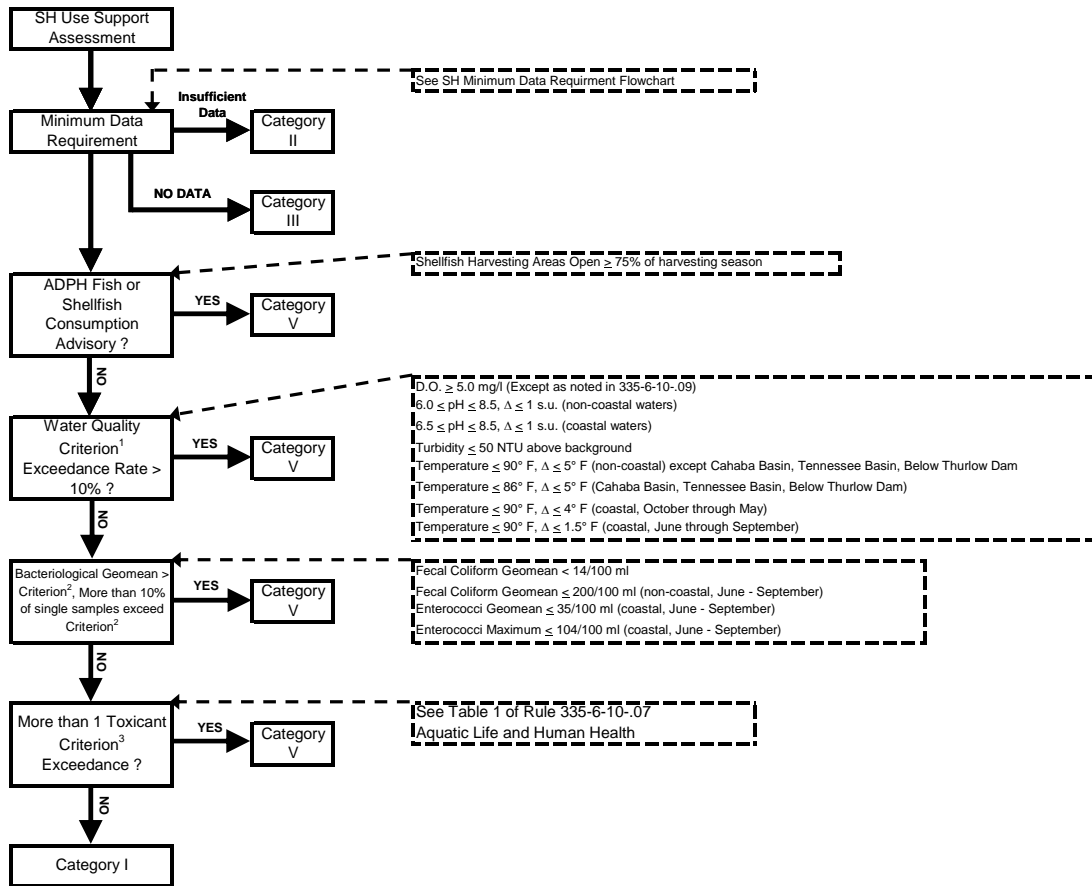
- There is no more than one exceedance of a particular toxic pollutant criterion during the previous six years and;
- The water quality criteria exceedance rate for conventional parameters is not more than 10% as determined using the binomial distribution function for the sample sizes shown in Table 2. Conventional parameters include dissolved oxygen, pH, temperature (where influenced by a heated discharge), and turbidity. Determination of the 10% exceedance rate is discussed in Section 4.8.
- The geometric mean of 5 fecal coliform samples collected during a 30-day period must be less than or equal to 14 colonies/100 ml and no more than 10% of the samples can exceed 43 colonies/100 ml. In addition, during June through September the geometric mean enterococci density must be less than 35 colonies/100 ml and 10% or less (as determined using the binomial distribution function and Table 2) of the single samples must be less than 104 colonies/100 ml.

The SH-classified waterbody is placed in Category 5 if:

- There is a fish consumption advisory issued by the ADPH or the shellfish growing areas are “conditionally open” or “conditionally restricted” or;
- The water quality criteria exceedance rate for conventional parameters is more than 10% as determined using the binomial distribution function for the sample sizes shown in Table 2 or;
- The geometric mean of 5 fecal coliform samples collected during a 30-day period is greater than 14 colonies/100 ml or more than 10% of the samples exceed 43 colonies/100 ml. In addition, during June through September the geometric mean enterococci density is greater than 35 colonies/100 ml and more than 10% (as determined using the binomial distribution function and Table 2) of the single samples are greater than 104 colonies/100 ml.
- There is more than one exceedance of a particular toxic pollutant criterion during the previous six years.

**Figure 9** illustrates the assessment process for SH waters.

**Figure 9**  
**Shellfish Harvesting (SH) Categorization Methodology**



1 Water Quality Criterion refers to pH, Dissolved Oxygen, turbidity, and temperature resulting from heat sources

2 Bacteriological Criterion refers to both the single sample maximum and geometric mean

3 Toxicant Criterion refers to toxics listed in 335-6-10-.07

**Special Note** - Natural waters may, on occasion, have characteristics outside of the limits established by these criteria. These criteria relate to condition of waters as affected by the discharge of sewage, industrial wastes, or other wastes, not to conditions resulting from natural forces. See 335-6-10-.05(4)

#### 4.5 Fish and Wildlife (F&W)

The best usage of waters assigned this classification includes fishing, the propagation of fish, aquatic life, and wildlife, and any other usage except swimming and water-contact sports or as a source of water supply for drinking or food-processing purposes. Waterbodies assigned the F&W classification will be suitable for fish, aquatic life and wildlife propagation. The quality of salt and estuarine waters to which this classification is assigned will also be suitable for the propagation of shrimp and crabs. In addition, it is recognized that these waters may be used for incidental water contact and recreation during June through September, except in the vicinity of wastewater discharges or other conditions beyond the control of the ADPH. These waters will, under proper sanitary supervision by the controlling health authorities, meet accepted standards of water quality for outdoor swimming places and will be considered satisfactory for swimming and other whole body water-contact sports during the months of June through September.

##### 4.5.1 Minimum Data Requirement for F&W Waters

For waters with the F&W classification the available data must have been collected consistent with the following standard operating procedures (SOP) manuals:

SOP#	Title
2040	Stream Flow Abbreviated Measurement Method
2041	SW Temperature Field Measurements
2042	SW pH Field Measurements
2043	SW Specific Conductivity Field Measurements
2044	SW Turbidity Field Measurements
2045	SW Dissolved Oxygen Field Measurements
2046	Photic Zone Measurements and Visibility Determinations
2048	Continuous SW Quality Monitoring Using Datasondes
2061	General SW Quality Sample Collection
2062	Dissolved Reactive Phosphorus (DRP) Collection & Field Processing
2063	Chlorophyll_a Collection & Field Processing
2064	Fecal Coliform Sample Collection
2065	Sediment Sampling
9021	Quality Control Samples and Field Measurements
9025	Field Equipment Cleaning Procedures
9040	Station, Sample ID & Chain of Custody Procedures
6300	Physical Characterization
6301	Habitat Assessment

- ADEM SOP/QCA Manual Volume 2 – Aquatic Macroinvertebrate Assessment (2005)
- ADEM SOP/QCA Manual Volume 5 – Algal Growth Potential Testing (2004)

In addition, the data must have been collected within the last six years. The six year timeframe would capture all data collected by ADEM during one complete

rotation of the five year monitoring schedule currently used by the Department. Failure to satisfy both of these conditions places the waterbody in Category 2. If these two conditions are met, the determination of the minimum data requirement is dependent upon the waterbody type. Waterbody types include wadeable rivers and streams, non-wadeable rivers and streams, reservoirs and reservoir embayments, and estuary and coastal waters. Failure to meet the minimum data requirement will place the waterbody in Category 2. The following list and **Figure 10** describe the minimum data requirement for assessing waters classified as F&W.

- Wadeable River or Stream
  - 1 Level IV Intensive Wadeable Multi-habitat Bioassessment (WMB-I) or 2 Level III Wadeable Multi-habitat Bioassessments – EPT Families (WMB-EPT) or 1 Level III WMB-EPT plus 1 fish community assessment (IBI). In addition, a habitat assessment must be completed with each biological assessment. Currently, metrics for the fish IBI have been calibrated only in the Black Warrior and Cahaba River basins.
  - 3 conventional parameter samples (including samples for nutrient analysis)
  - 3 bacteriological samples

**OR**

- 8 conventional parameter samples (including samples for nutrient analysis)
  - 10 bacteriological samples (2 geometric mean samples)
  - 5 pesticide / herbicide samples
  - 5 inorganic samples
- Non-wadeable River or Stream
    - 8 conventional parameter samples (including samples for nutrient analysis)
    - 10 bacteriological samples (2 geometric mean samples)
    - 5 pesticide / herbicide samples
    - 5 inorganic samples

Reservoirs and Embayments

- 8 conventional parameter samples (including samples for nutrient analysis)
- 3 bacteriological samples
- 1 fish tissue analysis from the reservoir mainstem
- 7 chlorophyll *a* samples collected between April and October (For the Tennessee River Basin: 6 chlorophyll *a* samples collected between April and September). . Results from critical period sampling (i.e., August sample only) will be used with other critical



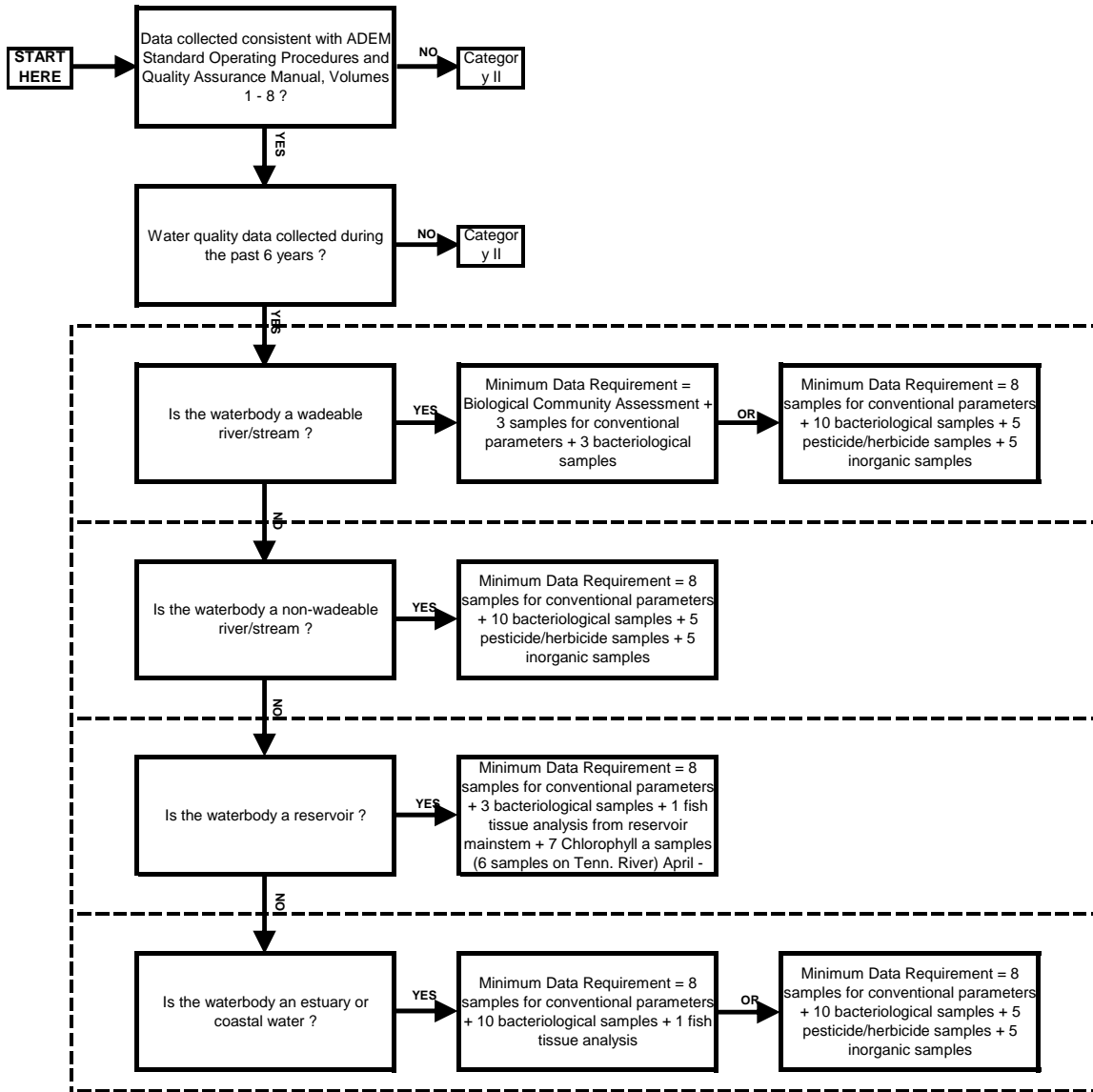
period data to evaluate chlorophyll a trends at a given sampling location.

- Estuary or Coastal Waters
  - 8 conventional parameter samples (including samples for nutrient analysis)
  - 10 bacteriological samples (2 geometric mean samples)
  - 1 fish tissue analysis

**OR**

- 8 conventional parameter samples (including samples for nutrient analysis)
- 10 bacteriological samples (2 geometric mean samples)
- 5 pesticide/herbicide samples
- 5 inorganic samples

**Figure 10**  
**Minimum Data Requirements for the F&W Designated Use**



**Biological community assessment means:**

- 1 Level IV Intensive Wadeable Multi-habitat Bioassessment (WMB-I) or
- 2 Level III Wadeable Multi-habitat Bioassessments – EPT Families (WMB-EPT) or
- 1 Level III WMB-EPT plus 1 fish community assessment (IBI)

#### 4.5.2 Use Support Assessment for F&W Waters

Once the minimum data requirement has been met an assessment of the data can be completed resulting in the categorization of the waterbody as either fully supporting the F&W use (Category 1) or not fully supporting the F&W use (Category 5). The assessment process considers the available data and may include any fish consumption advisories, chemical specific data, biological community assessments, bacteriological data, beach closure notices and toxicity evaluations.

The F&W-classified waterbody is placed in Category 1 if all of the following are true:

- There is no fish consumption advisory issued by the Alabama Department of Public Health (ADPH) for the waterbody.
- There are no more than two exceedances of a particular toxic pollutant criterion during the previous six years.
- The Level IV WMB-I assessment result is “fair”, “good” or “excellent”, or either of the Level III WMB-EPT assessments are “fair”, “good” or “excellent” or the Level III WMB-EPT assessment is “fair”, “good” or “excellent” and the fish community IBI is “fair”, “good”, or “excellent”. (Wadeable streams only)
- For reservoirs with established chlorophyll *a* criteria, a criterion has not been exceeded in two consecutive years. In making this determination, chlorophyll *a* values in excess of the criterion which are due to extreme hydrologic events (i.e., droughts and floods) will not be considered as an exceedance of the criterion.
- The water quality criteria exceedance rate for conventional parameters is not more than 10%. Conventional parameters include dissolved oxygen, pH, temperature (where influenced by a heated discharge), and turbidity. Determination of the 10% exceedance rate is discussed in Section 4.8.
- In reservoirs and wadeable streams with biological assessments, bacteriological sample results from a single sample in excess of 200 colonies fecal coliform per 100 ml in non-coastal waters and in excess of 35 colonies enterococci per 100 ml in coastal waters will necessitate a follow-up collection of 5 samples during a 30 day period to calculate the geometric mean density. If the geometric mean fecal coliform density in non-coastal waters is less than or equal to 200 colonies/100 ml (June through September) or less than or equal to 1000 colonies/100ml (October through May) and 10%, as defined in Table 2, or less of the single samples results are less than 2000 colonies/100 ml, the waterbody will be considered fully meeting the bacteria criteria for this designated use. In coastal waters (June through September) the geometric mean enterococci density must be less than 35 colonies / 100 ml and 10% or less (as determined using the binomial distribution function and Table 2) of the single samples must be less than 158 colonies/100 ml (June through September) or less than 275 colonies/100 ml (October through May). Use

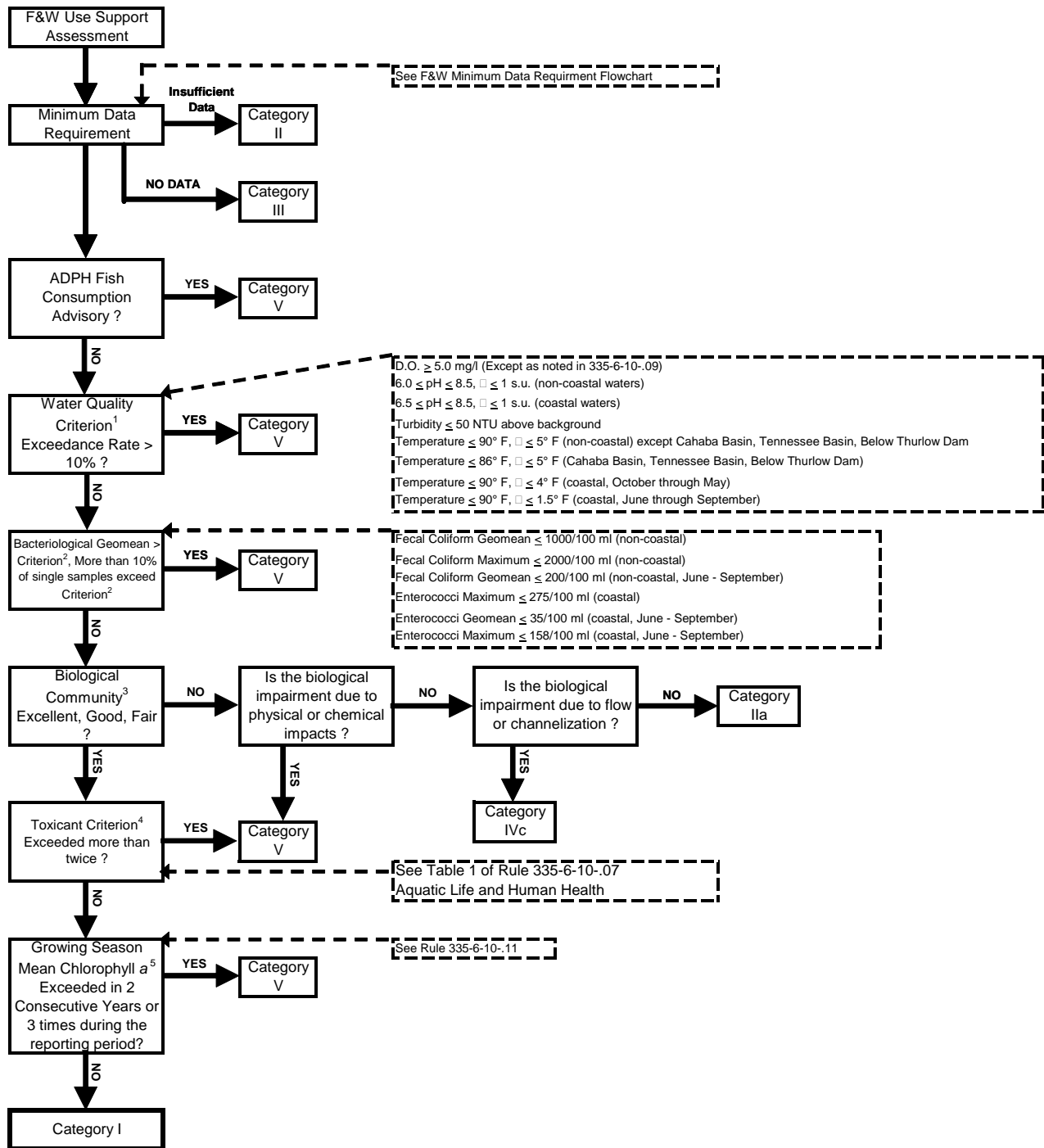
of the 10% rule will only be applied when there is at least the minimum number of samples.

The F&W-classified waterbody is placed in Category 5 if any of the following are true:

- There is a fish consumption advisory issued by the ADPH.
- The water quality criteria exceedance rate for conventional parameters is more than 10% as defined in Table 2.
- The Level IV WMB-I assessment result is less than “fair”, or both of the Level III WMB-EPT assessments are less than “fair” or the Level III WMB-EPT assessment is less than “fair” and the fish community IBI is less than “fair”. In addition, a potential anthropogenic cause for the degraded condition must be identified. (Wadeable streams only)
- The geometric mean fecal coliform density in non-coastal waters is greater than 200 colonies/100 ml (June through September) or more than 1000 colonies/100ml (October through May) and or more than 10% of the single samples results are greater than 2000 colonies/100 ml. In coastal waters (June through September) the geometric mean enterococci density is greater than 35 colonies / 100 ml and more than 10% (as determined using the binomial distribution function and Table 2) of the single samples is greater than 158 colonies/100 ml (June through September) or more than 275 colonies/100 ml (October through May). Use of the 10% rule will only be applied to data sets containing at least the minimum number of samples.
- There are more than two exceedances of a particular toxic pollutant criterion during the previous six years.
- For reservoirs with established chlorophyll *a* criteria, a criterion has been exceeded in two consecutive years or three times during the previous six years. In making this determination, chlorophyll *a* values in excess of the criterion which are due to extreme hydrologic events (i.e., droughts and floods) will not be considered as an exceedance of the criterion. However, one exceedance of the chlorophyll *a* criterion may be sufficient justification for inclusion of a water in Category 5 when the exceedance is determined to be the result of increasing nutrient loading from anthropogenic sources. These determinations will be made on a case by case basis and the decision will be documented in the ADB. In any case, when a growing season mean chlorophyll *a* value exceeds the criterion, the reservoir will be identified for re-sampling the following year and enough samples will be collected to ensure that the minimum data requirements necessary to calculate a growing season mean are met.

**Figure 11** illustrates the assessment process for F&W waters.

**Figure 11**  
**Fish and Wildlife (F&W) Categorization Methodology**



1 Water Quality Criterion refers to pH, Dissolved Oxygen, turbidity, and temperature resulting from heat sources  
 2 Bacteriological Criterion refers to both the single sample maximum and geometric mean, see discussion in Section 4.5.2  
 3 Biological community refers to macroinvertebrates and/or fish in wadeable rivers/streams only (See Minimum Data Requirements)  
 4 Toxicant Criterion refers to toxics listed in 335-6-10-.07  
 5 Applies only to reservoirs with established Chlorophyll a criteria and not during extreme hydrologic events

#### 4.6 Limited Warmwater Fishery (LWF)

For the months of December through April the best usage of waters assigned this classification includes fishing, the propagation of fish, aquatic life, and wildlife, and any other usage except swimming and water-contact sports or as a source of water supply for drinking or food-processing purposes. Waterbodies assigned the LWF classification will be suitable for fish, aquatic life and wildlife propagation except during the months of May through November. During May through November the quality of waters to which this classification is assigned will be suitable for agricultural irrigation, livestock watering, industrial cooling and process water supplies, and any other usage, except fishing, bathing, recreational activities, including water-contact sports, or as a source of water supply for drinking or food-processing purposes.

##### 4.6.1 Minimum Data Requirement for LWF Waters

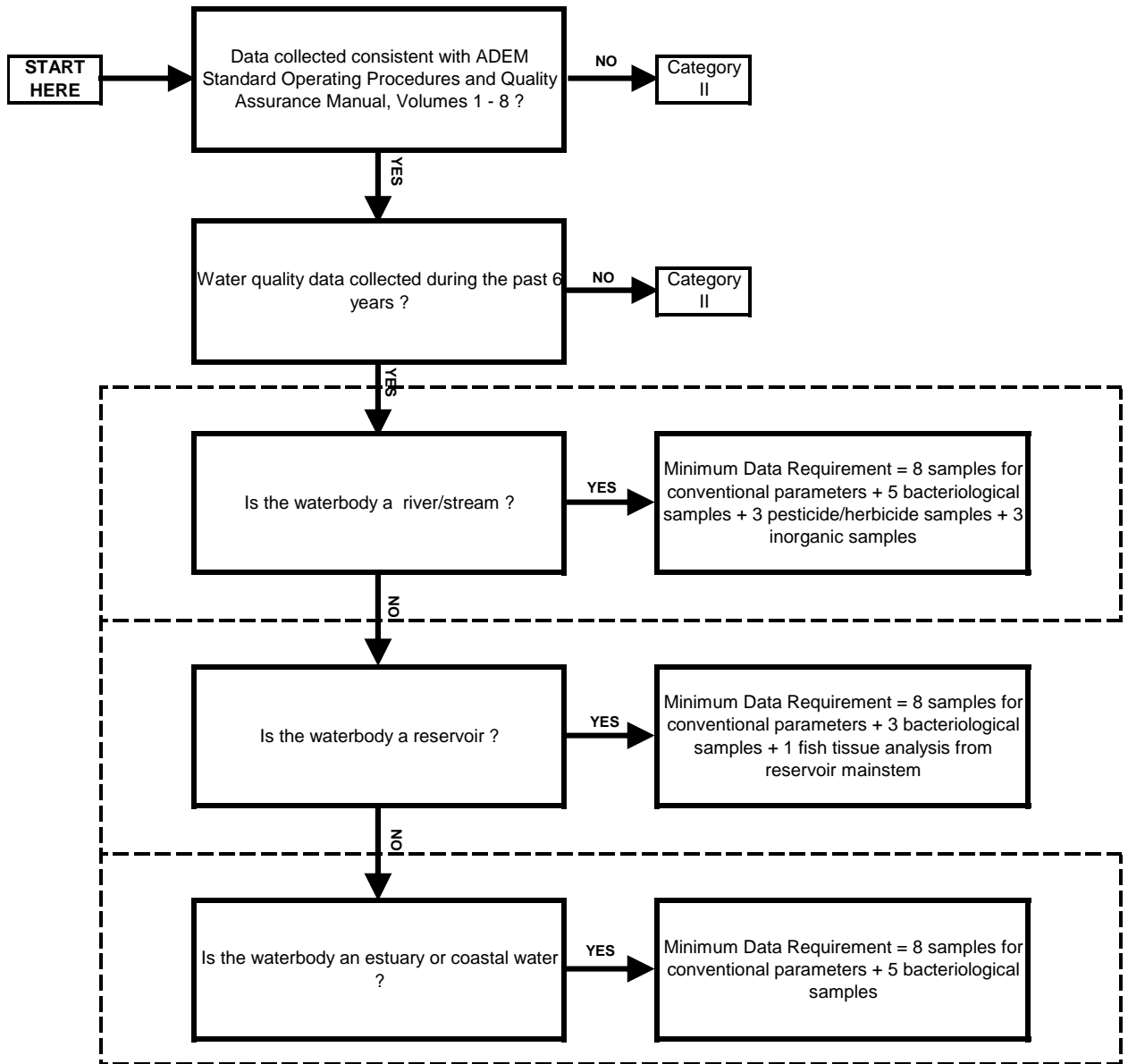
For waters with the LWF classification the available data must have been collected consistent with the following standard operating procedures (SOP) manuals:

SOP#	Title
2040	Stream Flow Abbreviated Measurement Method
2041	SW Temperature Field Measurements
2042	SW pH Field Measurements
2043	SW Specific Conductivity Field Measurements
2044	SW Turbidity Field Measurements
2045	SW Dissolved Oxygen Field Measurements
2046	Photic Zone Measurements and Visibility Determinations
2048	Continuous SW Quality Monitoring Using Datasondes
2061	General SW Quality Sample Collection
2062	Dissolved Reactive Phosphorus (DRP) Collection & Field Processing
2064	Fecal Coliform Sample Collection
2065	Sediment Sampling
9021	Quality Control Samples and Field Measurements
9025	Field Equipment Cleaning Procedures
9040	Station, Sample ID & Chain of Custody Procedures
6300	Physical Characterization
6301	Habitat Assessment

In addition, the data must have been collected within the last six years. The six year timeframe would capture all data collected by ADEM during one complete rotation of the five year monitoring schedule currently used by the Department. Failure to satisfy both of these conditions places the waterbody in Category 2. If these two conditions are met, the determination of the minimum data requirement is dependent upon the waterbody type. Waterbody types include rivers and streams, reservoirs and reservoir embayments, and estuary and coastal waters. Failure to meet the minimum data requirement will place the waterbody in Category 2. The following list and **Figure 12** describe the minimum data requirements for assessing waters classified as LWF.

- River or Stream (Wadeable and Non-wadeable)
  - 8 conventional parameter samples (including samples for nutrient analysis)
  - 5 bacteriological samples (1 geometric mean sample)
  - 3 pesticide / herbicide samples
  - 3 inorganic samples
  
- Reservoirs and Embayments
  - 8 conventional parameter samples (including samples for nutrient analysis)
  - 3 bacteriological samples
  - 1 fish tissue analysis from the reservoir mainstem
  
- Estuary or Coastal Waters
  - 8 conventional parameter samples (including samples for nutrient analysis)
  - 5 bacteriological samples (1 geometric mean sample)

**Figure 12**  
**Minimum Data Requirements for the LWF Designated Use**





#### 4.6.2 Use Support Assessment for LWF Waters

Once the minimum data requirement has been met an assessment of the data can be completed resulting in the categorization of the waterbody as either fully supporting the LWF use (Category 1) or not fully supporting the LWF use (Category 5). The assessment process considers the available data and may include any fish consumption advisories, chemical specific data, bacteriological data, and toxicity evaluations. However, at the present time there is no available protocol for use of biological assessment results to assess use support in LWF-classified waters. The Department's current SOP for conducting biological assessments employs the use of reference sites located in least impacted watersheds and is intended to assess the "fishable" use.

The LWF-classified waterbody is placed in Category 1 if all of the following are true:

- There is no fish consumption advisory issued by the Alabama Department of Public Health (ADPH) for the waterbody.
- There is no more than one exceedance of a toxic pollutant acute criterion (May through November) during the previous six years. There is no more than one exceedance of a particular toxic pollutant chronic criterion (December through April) during the previous six years.
- The water quality criteria exceedance rate for conventional parameters is not more than 10%. Conventional parameters include dissolved oxygen, pH, temperature (where influenced by a heated discharge), and turbidity. Determination of the 10% exceedance rate is discussed in Section 4.8.
- In reservoirs, bacteriological sample results from a single sample in excess of 1000 colonies fecal coliform per 100 ml will necessitate a follow-up collection of 5 samples during a 30 day period to calculate the geometric mean density. If the geometric mean fecal coliform density is less than or equal to 1000 colonies/100 ml and 10% or less of the single sample results are less than 2000 fecal coliform colonies/100 ml, the waterbody will be considered fully meeting the bacteria criteria for this designated use. In coastal waters 10% or less (as determined using the binomial distribution function and Table 2) of the single samples must be less than 275 enterococci colonies/100 ml. In non-coastal rivers and streams the geometric mean fecal coliform density is less than 1000 colonies/100 ml and 10% (as defined in Table 2) or less of the single sample results are less than or equal to 2000 fecal coliform colonies/100 ml. Use of the 10% rule will only be applied when there is at least the minimum number of samples.

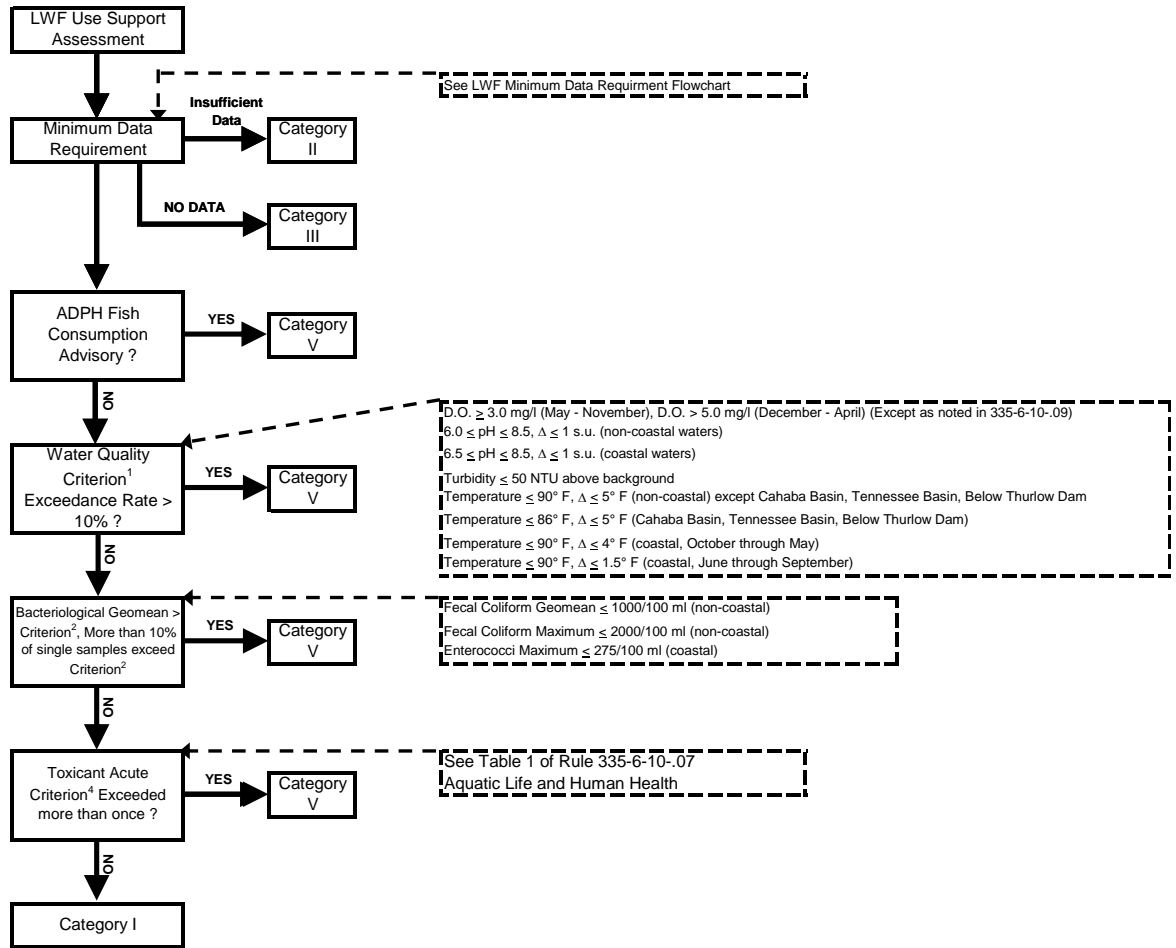
The LWF-classified waterbody is placed in Category 5 if any of the following are true:

- There is a fish consumption advisory issued by the ADPH.
- The water quality criteria exceedance rate for conventional parameters is more than 10%.

- The geometric mean fecal coliform density is greater than 1000 colonies/100 ml or more than 10% of the single sample results are greater than 2000 fecal coliform colonies/100 ml. In coastal waters more than 10% (as determined using the binomial distribution function and Table 2) of the single samples are greater than 275 enterococci colonies/100 ml. Use of the 10% rule will only be applied when there is at least the minimum number of samples.
- There are two or more exceedances of a particular toxic pollutant acute criterion (May through November) during the previous six years. There are two or more exceedances of a particular toxic pollutant chronic criterion (December through April) during the previous six years.

**Figure 13** illustrates the assessment process for LWF waters.

**Figure 13**  
**Limited Warmwater Fishery (LWF) Categorization Methodology**



1 Water Quality Criterion refers to pH, Dissolved Oxygen, turbidity, and temperature resulting from heat sources

2 Bacteriological Criterion refers to both the single sample maximum and geometric mean, see discussion in Section 4.6.2

3 Toxicant Criterion refers to toxics listed in 335-6-10-.07

4 Applies only to reservoirs with established Chlorophyll a criteria and not during extreme hydrologic events

**Special Note** - Natural waters may, on occasion, have characteristics outside of the limits established by these criteria. These criteria relate to condition of waters as affected by the discharge of sewage, industrial wastes, or other wastes, not to conditions resulting from natural forces. See 335-6-10-.05(4)

#### 4.7 Agricultural and Industrial Water Supply (A&I)

Best usage of waters assigned this classification include agricultural irrigation, livestock watering, industrial cooling and process water supplies, and any other usage, except fishing, bathing, recreational activities, including water-contact sports, or as a source of water supply for drinking or food-processing purposes. The waters, except for the natural impurities that may be present, will be suitable for agricultural irrigation, livestock watering, industrial cooling waters, and fish survival. The waters will be usable after special treatment, as may be needed under each particular circumstance, for industrial process water supplies. This classification includes watercourses in which natural flow is intermittent and non-existent during droughts and which may, of necessity, receive treated waste from existing municipalities and industries, both now and in the future.

##### 4.7.1 Minimum Data Requirement for A&I Waters

For waters with the A&I classification the available data must have been collected consistent with the following standard operating procedures (SOP) manuals:

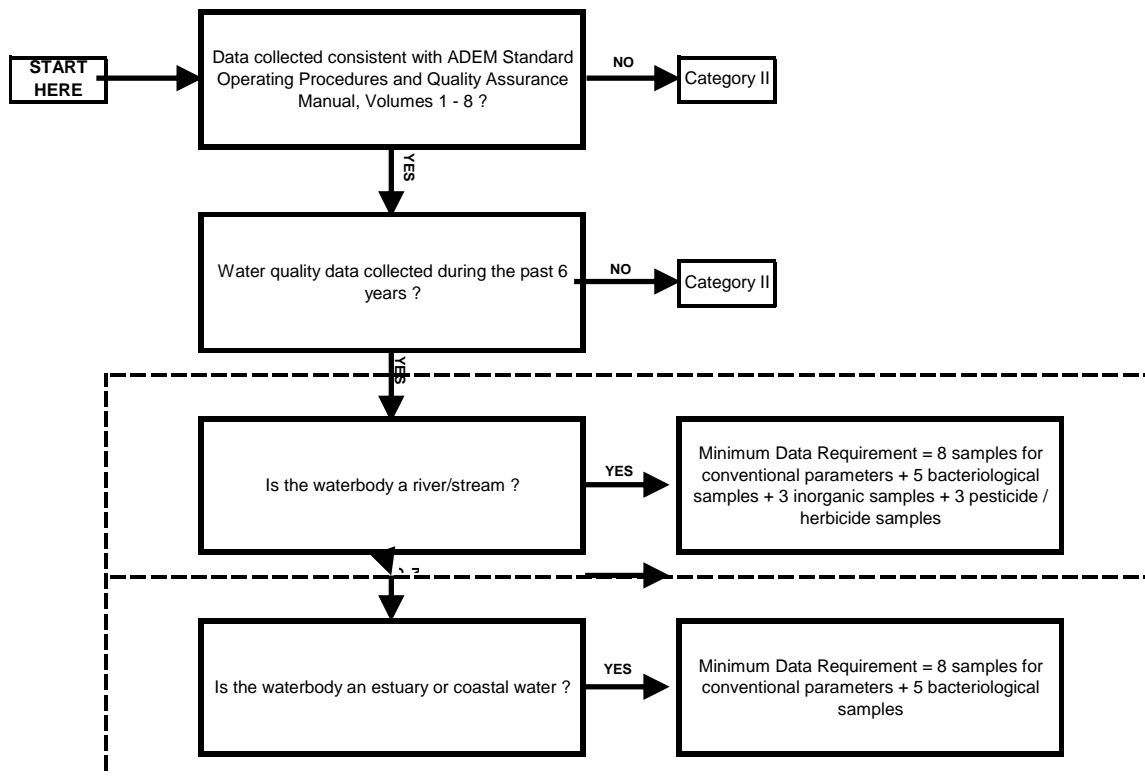
SOP#	Title
2040	Stream Flow Abbreviated Measurement Method
2041	SW Temperature Field Measurements
2042	SW pH Field Measurements
2043	SW Specific Conductivity Field Measurements
2044	SW Turbidity Field Measurements
2045	SW Dissolved Oxygen Field Measurements
2046	Photic Zone Measurements and Visibility Determinations
2048	Continuous SW Quality Monitoring Using Datasondes
2061	General SW Quality Sample Collection
2062	Dissolved Reactive Phosphorus (DRP) Collection & Field Processing
2064	Fecal Coliform Sample Collection
2065	Sediment Sampling
9021	Quality Control Samples and Field Measurements
9025	Field Equipment Cleaning Procedures
9040	Station, Sample ID & Chain of Custody Procedures
6300	Physical Characterization
6301	Habitat Assessment

In addition, the data must have been collected within the last six years. The six year timeframe would capture all data collected by ADEM during one complete rotation of the five year monitoring schedule currently used by the Department. Failure to satisfy both of these conditions places the waterbody in Category 2. If these two conditions are met, the determination of the minimum data requirement is dependent upon the waterbody type. Waterbody types include wadeable rivers and streams, non-wadeable rivers and streams, reservoirs and reservoir embayments, and estuary and coastal waters. Failure to meet the minimum data requirement will place the waterbody in Category 2. The following list and

**Figure 14** describe the minimum data requirement for assessing waters classified as A&I.

- River or Stream
  - 8 conventional parameter samples (including samples for nutrient analysis)
  - 5 bacteriological samples (1 geometric mean sample)
  - 3 inorganic samples
  - 3 pesticide / herbicide samples
  
- Reservoirs and Embayments
  - 8 conventional parameter samples (including samples for nutrient analysis)
  - 3 bacteriological samples
  - 1 fish tissue analysis from the reservoir mainstem
  
- Estuary or Coastal Waters
  - 8 conventional parameter samples (including samples for nutrient analysis)
  - 5 bacteriological samples (1 geometric mean sample)

**Figure 14**  
**Minimum Data Requirements for the A&I Designated Use**



#### 4.7.2 Use Support Assessment for A&I Waters

Once the minimum data requirement has been met an assessment of the data can be completed resulting in the categorization of the waterbody as either fully supporting the A&I use (Category 1) or not fully supporting the A&I use (Category 5). The assessment process considers the available data and may include any fish consumption advisories, chemical specific data, biological community assessments, bacteriological data, beach closure notices and toxicity evaluations.

The A&I-classified waterbody is placed in Category 1 if all of the following are true:

- There is no fish consumption advisory issued by the Alabama Department of Public Health (ADPH) for the waterbody.
- There are no more than two exceedances of a toxic pollutant acute criterion during the previous six years.
- The water quality criteria exceedance rate for conventional parameters is not more than 10%. Conventional parameters include dissolved oxygen, pH, temperature (where influenced by a heated discharge), and turbidity. Determination of the 10% exceedance rate is discussed in Section 4.8.
- In reservoirs, bacteriological sample results from a single sample in excess of 2000 colonies fecal coliform per 100 ml will necessitate a follow-up collection of 5 samples during a 30 day period to calculate the geometric mean density. If the geometric mean fecal coliform density is less than or equal to 2000 colonies/100 ml and 10% or less of the single sample results are less than 4000 fecal coliform colonies/100 ml, the waterbody will be considered fully meeting the bacteria criteria for this designated use. In coastal waters 10% or less (as determined using the binomial distribution function and Table 2) of the single samples must be less than 500 enterococci colonies/100 ml. In non-coastal rivers and streams the geometric mean fecal coliform density is less than 2000 colonies/100 ml and 10% or less of the single samples have a fecal coliform density of less than or equal to 4000 colonies/100 ml. Use of the 10% rule will only be applied when there is at least the minimum number of samples.

The A&I-classified waterbody is placed in Category 5 if any of the following are true:

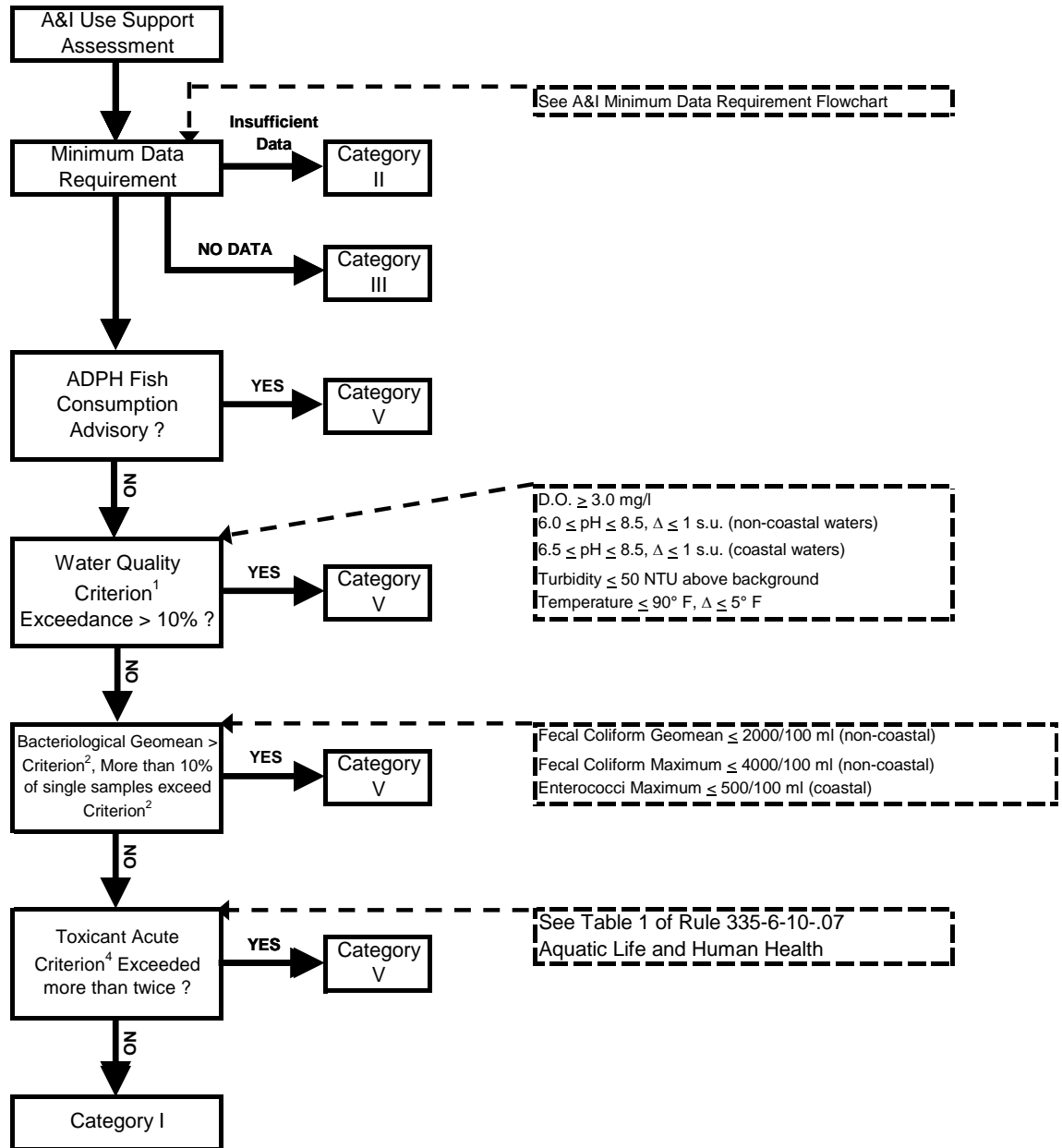
- There is a fish consumption advisory issued by the ADPH.
- The water quality criteria exceedance rate for conventional parameters is more than 10% (as defined in Table 2).
- The geometric mean fecal coliform density is greater than 2000 colonies/100 ml or more than 10% (as defined in Table 2) of the single sample results are greater than 4000 fecal coliform colonies/100 ml. In coastal waters more than 10% (as determined using the binomial distribution function and Table 2) of the single samples are more than 500 enterococci colonies/100 ml. In non-coastal rivers and streams the

geometric mean fecal coliform density is greater than 2000 colonies/100 ml and more than 10% of the single samples have a fecal coliform density of greater than 4000 colonies/100 ml. Use of the 10% rule will only be applied when there is at least the minimum number of samples.

- There are more than two exceedances of an acute criterion for a toxic pollutant during the previous six years.

**Figure 15** illustrates the assessment process for A&I waters.

**Figure 15**  
**Agricultural and Industrial Water Supply (A&I) Categorization Methodology**



1 Water Quality Criterion refers to pH, Dissolved Oxygen, turbidity, and temperature resulting from heat sources  
 2 Bacteriological Criterion refers to both the single sample maximum and geometric mean, see discussion in Section 4.7.2  
 3 Toxicant Criterion refers to toxics listed in 335-6-10-.07  
 4 Applies only to reservoirs with established Chlorophyll a criteria and not during extreme hydrologic events  
**Special Note** - Natural waters may, on occasion, have characteristics outside of the limits established by these criteria. These criteria relate to condition of waters as affected by the discharge of sewage, industrial wastes, or other wastes, not to conditions resulting from natural forces. See 335-6-10-.05(4)



## 4.8 Other Data considerations and Requirements

### 4.8.1 Use of the 10% Rule

Seasonal variation in water quality conditions, non-anthropogenic impacts (natural conditions), sampling frequency and number of samples collected, and the temporal and spatial sampling coverage of the waterbody must be considered when evaluating water quality data to determine whether a waterbody is fully supporting its designated uses. Most states, including Alabama, determine a waterbody's use support status based on the percent of measured values exceeding a given water quality criterion. Based on USEPA guidance, 10 percent is commonly used as the maximum percent of measurements that may exceed the criterion for waters fully supporting their designated uses. For any given set of samples the percent exceedance indicated by the number of samples which exceed a given criterion is only an estimate of the true percent exceedance for the waterbody segment. As a result, it is important that a level of confidence be assigned to the estimate of percent exceedance for a given set of samples.

Hypothesis testing can be used to make this estimate. When making a decision about whether a water should be included in Category 5 on the basis of data for conventional pollutants, the null hypothesis is that the water is not impaired and sufficient data must be collected to minimize the probability that this assumption is incorrect (Type I error). For the purpose of this methodology, a 90% confidence level will be used so that we can say for a given sample size with a given number of criterion exceedances we are 90% confident that the true exceedance percentage is greater than 0.1 (10%). Using the binomial distribution it is possible to determine the number of exceedances out of a given number of samples which will result in a greater than 10 percent exceedance rate at approximately the 90% confidence level. This is the number of exceedances need to reject the null hypothesis.

When making a decision about whether a water in Category 5 should be removed to Category 1 for a particular conventional pollutant, the null hypothesis is that the water is impaired and sufficient data must be collected to minimize the probability that this assumption is incorrect. Again, a 90% confidence level will be used in the binomial distribution function to estimate the number of samples required to be 90% confident that the water is truly not impaired.

### 4.8.2 Use of Data Older than Six Years

More recent data shall take precedence over older data if:

The newer data indicate a change in water quality and the change is related to changes in pollutant loading to the watershed or improved pollution control mechanisms in the watershed contributing to the assessed area. Or, the Department determines that the older data do not meet the data quality requirements of this methodology or are no longer representative of the water quality of the segment.

Data older than six years will generally not be considered valid, for the purpose of initially placing a water in Category 1 or Category 5, except that data and information older than six years will be considered in the assessment process when such data/information is determined to be reliable. Data older than six years may be used to demonstrate that a waterbody was placed in the wrong category (Category 1 or Category 5) when the original water quality assessment was completed. Also, data older than six years may be used if the data was not considered during a previous reporting cycle and there is evidence that conditions affecting water quality have not changed since the original data was collected. Waters will not be removed from Category 5 on the basis of age of data. However, water may be removed from Category 1 to Category 2 on the basis of age of data when there is evidence that water quality conditions are likely to have changed since the water was originally placed in Category 1.

#### 4.8.3 Use of Accurate Location Data

Accurate location data is required to ensure the appropriate use classification is applied, as well as confirming that sampling stations are located outside of regulatory mixing zones where water quality criteria do not apply. The monitoring data is acceptable if the locations are correct to within 200 feet. Digital spatial data (GIS or GPS) or latitude/longitude information obtained from USGS 7.5 minute quadrangle maps are acceptable methods of providing location information.

#### 4.8.4 Use of Temporally Independent Samples and Data from Continuous Monitoring

When relying solely upon chemical data to determine designated use support, at least ten temporally independent samples of chemical and physical conditions obtained during a time period that includes conditions considered critical for the particular pollutant of interest are needed. Independent samples, for the purpose of parameters other than bacteria and in-situ water quality measurements, will have been collected at least four days apart. Samples collected at the same location less than four days apart shall be considered as one sample for the purpose of determining compliance with toxic pollutant criteria, with the mean value used to represent the sampling period.

For conventional parameters measured using continuous monitoring instruments such as multi-probe datasondes, compliance with the applicable criteria will be determined at the regulatory depth established for dissolved oxygen measurements. This depth is five feet in water that is ten feet or more in total depth or is at mid-depth in water that is less than ten feet in total depth. Hourly measurements of dissolved oxygen, temperature, and pH data collected using continuous monitoring equipment will be assessed using the same binomial distribution function used for discrete sampling of these parameters. When measurements are made more frequently than hourly, the hourly values will be calculated as the mean of the measured values within each hour.

#### 4.8.5 Use of Fish / Shellfish Consumption Advisories and Shellfish Growing Area Classifications

In October 2000 EPA issued guidance to states regarding the use of fish and shellfish consumption advisories (EPA, 2000). The guidance recommended that states consider certain information when determining if designated uses were impaired, including consumption advisories for fish and shellfish and certain shellfish growing area classifications. The following is an excerpt from the EPA guidance.

*“Certain shellfish growing area classifications should be used as part of determinations of attainment of water quality standards and listing of impaired waterbodies. Shellfish growing area classifications are developed by the National Shellfish Sanitation Program (NSSP) using water column and tissue data (where available), and information from sanitary surveys of the contributing watershed, to protect public health. The States review these NSSP classifications every three years. There are certain NSSP classifications that are not appropriate to consider, and certain data and information that should not be considered independently of the classification (unless the data and information were not used in the development or review of the classification). These instances are: “Prohibited” classifications set as a precautionary measure due to the proximity of wastewater treatment discharges, or absence of a required sanitary survey; shellfish tissue pathogen data (which can fluctuate based on short-term conditions not representative of general water quality); or short-term actions to place growing areas in the closed status.”*

The ADPH, Seafood Program, regulates shellfish harvesting in coastal waters of Alabama. The ADPH has designated four areas in Mobile Bay and adjacent coastal waters and classifies shellfish harvesting waters within these areas as “conditionally open”, “conditionally restricted”, “unclassified”, and “prohibited”. Area I waters comprise most of Mobile Bay south of East Fowl River and west of Bon Secour Bay and including Mississippi Sound. Area II waters include Grand Bay and Portersville Bay with exceptions near wastewater discharges. Area III waters are located in Bon Secour Bay and east of a line drawn from Fort Morgan to Mullet Point. Area IV is located in approximately the northern half of Mobile Bay.

Most of the waters designated as Shellfish Harvesting are classified as “conditionally open”. These harvesting areas are closed when the river stage on the Mobile River at Bucks, Alabama reaches a river stage of 8.0 feet above mean sea level and a public notice announcing the closure is published. These procedures are described in detail in the Conditional Area Management Plan developed by ADPH (ADPH, 2001).

For purposes of making use support decisions relative to the SH designated use, the Department will consider “conditionally open” and “conditionally restricted” waters as impaired and will include these water in Category 5. In “prohibited” and “unclassified” waters the Department will use water column bacteria sampling results to determine use support. When the applicable bacteria criterion is exceeded in more than 10% of the samples as determined using the binomial distribution function and Table 2, these waters will be included in Category 5.

The October 2000 EPA guidance concerning the use of fish and shellfish consumption advisories for protection of human health also recommended that state’s include waters in Category 5 when there was a consumption advisory which suggested either limited consumption or no consumption of fish due to the presence of toxics in fish tissue. The following is an excerpt from the guidance.

*“When deciding whether to identify a water as impaired, States, Territories, and authorized Tribes need to determine whether there are impairments of designated uses and narrative criteria, as well as the numeric criteria. Although the CWA does not explicitly direct the use of fish and shellfish consumption advisories or NSSP classifications to determine attainment of water quality standards, States, Territories, and authorized Tribes are required to consider all existing and readily available data and information to identify impaired waterbodies on their section 303(d) lists. For purposes of determining whether a waterbody is impaired and should be included on a section 303(d) list, EPA considers a fish or shellfish consumption advisory, a NSSP classification, and the supporting data, to be existing and readily available data and information that demonstrates non-attainment of a section 101(a) “fishable” use when:*

- 1. the advisory is based on fish and shellfish tissue data,*
- 2. a lower than “Approved” NSSP classification is based on water column and shellfish tissue data (and this is not a precautionary “Prohibited” classification or the state water quality standard does not identify lower than “Approved” as attainment of the standard)*
- 3. the data are collected from the specific waterbody in question and*
- 4. the risk assessment parameters (e.g., toxicity, risk level, exposure duration and consumption rate) of the advisory or classification are cumulatively equal to or less protective than those in the State, Territory, or authorized Tribal water quality standards.”*

This listing and assessment methodology will consider fish consumption advisories issued by the ADPH as an indication of impaired use in all State waters. However, there may be circumstances under which these waters could be placed in a category other than Category 5. For example, it may be appropriate to

place certain waters in Category 4b when activities are ongoing under another restoration program with the goal of restoring the water to fully supporting its uses. These decisions will be made on a case by case basis and documented in the ADB.

#### 4.8.6 Use of Biological Assessments

Biological assessments compare data from biological surveys and other direct measurements of resident biota in surface waters to established biological criteria and assess the waterbody's degree of use support. Alabama has not established numeric biological criteria (except in the case of chlorophyll *a* in reservoirs) and, as a result, biological data are used as a means of applying narrative criteria contained in Alabama's water quality criteria document (ADEM Administrative Code Chapter 335-6-10). ADEM has been gathering biological assessment data for streams across Alabama since the 1970s. In the early 1990's the Department began assessing the biological health of wadeable streams using the USEPA Rapid Bioassessment Protocol (Level III Wadeable Multi-habitat Bioassessments – EPT Families (WMB-EPT)) and the Intensive Wadeable Multi-habitat Bioassessment (Level IV Intensive Wadeable Multi-habitat Bioassessment (WMB-I)). USEPA has offered the following technical considerations when using biological data to make use support determinations.

- A waterbody's use support should be based on a comparison of site-specific biological data to a reference condition established for the ecoregion in which the waterbody is located.
- A multimetric approach to bioassessment is recommended.
- The use of a standardized index or sampling period is recommended.
- Standard operation procedures and a quality assurance program should be established.
- A determination of the performance characteristics of the bioassessment methodology is suggested.
- An identification of the appropriate number of sampling sites that are representative of the waterbody is also recommended.

Biological assessment data will be used in combination with other surface water quality data or information to arrive at an overall use support determination. However, EPA recommends that biological data should be weighted more heavily than other types of data when integrating information to make use support determinations since biological data provide a more direct indication of the condition of the aquatic community. Alabama's assessment methodology has weighted biological data more heavily by requiring at least one biological assessment for certain use classifications and stream types and by reducing the number of water quality samples needed when a biological assessment is available. However, the biological assessment must include a habitat assessment conducted at the time of the biological sampling. When available, periphyton assessment data and algal growth potential tests results will be used to refine stressor identification.

In this methodology, several bioassessment methodologies can be used to assess aquatic life use support. Two Level III Wadeable Multi-habitat Bioassessments – EPT Families (WMB-EPT) are required since these assessments are intended for screening purposes only. A combination of one WMB-EPT assessment and one fish IBI assessment is sufficient but only in the Cahaba and Black Warrior River basins since the metric ranges for the fish IBI have been calibrated only to the Cahaba and Black Warrior River basins. Alternatively, one Level IV Intensive Wadeable Multi-habitat Bioassessment (WMB-I) would be sufficient for assessing aquatic life use support. These methodologies are described in detail in the Department’s SOPs referenced earlier. Occasionally it may be appropriate to place a water in Category 5 based on a single screening level assessment (WMB-EPT) when there is a clear indication of impairment and the cause is readily apparent. In addition, when assessment results vary significantly between the macroinvertebrate and fish communities, it may be appropriate place the waterbody in Category 5 when there is an indication of the cause for the discrepancy. These decisions will be made on a case by case basis in consultation with the biologist(s) responsible for conducting the assessment and will be documented in the ADB.

A multi-agency, multi-year effort is currently underway to develop fish IBI metrics for all of Alabama’s river basins. As the effort progresses across the state, fish IBI assessments will be incorporated into the use support assessment process. The project is expected be completed by 2011, provided that sufficient funding is available,.

#### 4.8.7 Use of Data Collected by Others

Data collected by other agencies, industry or industry groups, neighboring states, and watershed groups will be considered and evaluated provided the data meet the minimum data requirements specified for each designated use and comply with the quality control and quality assurance requirements discussed in Section 4.9. Examples of other agencies and groups collecting water quality data in Alabama include, but are not limited to, the following agencies and groups:

- USGS
- USEPA
- Tennessee Valley Authority
- National Oceanic and Atmospheric Administration
- United States Fish and Wildlife Service
- Mobile Bay National Estuary Program
- Dauphin Island Sea Lab
- Geological Survey of Alabama
- Natural Resources Conservation Service
- Soil and Water Conservation Districts
- Alabama Department of Conservation and Natural Resources
- Alabama Clean Water Partnership
- Alabama Department of Public Health
- Alabama Department of Transportation

- Citizen and Watershed Groups
- Industries and municipalities conducting river monitoring pursuant to NPDES or CWA Section 401 requirements

Data submitted by third parties for consideration should include documentation describing the data, including a study plan or SOP, and certification that the data were (or were not) collected consistent with the requirements presented in this methodology.

#### 4.8.8 Use of Bacteria Data

Waterbody segments are sampled for bacteria either as part of a special study, routine ambient monitoring, or as part of the Department's Beach Monitoring Program. Bacteria of the fecal coliform group are currently used as indicators of the possible presence of pathogens in non-coastal waters. In coastal waters, bacteria of the enterococci group are used as indicators of the possible presence of pathogens. Alabama's bacteria criteria are summarized for each designated use in **Table 1**.

When assessing the geometric means of bacteria samples, one excursion will generally be sufficient to determine impairment as long as the total number of geometric means is less than eight. When eight or more geometric means are available for assessment, impairment will be determined using Table 2. In addition, both the geometric mean and single sample maximum criteria must be met when the number of individual samples is less than eight. For eight or more individual samples, Table 2 will be used to determine impairment based on exceedances of the single sample criterion.

**Table 1**  
**Alabama's Bacteria Criteria**

<b>Outstanding Alabama Water (OAW)</b>	<b>Public Water Supply (PWS)</b>	<b>Swimming and Other Whole Body Water-Contact Sports (S)</b>	<b>Shellfish Harvesting (SH)</b>	<b>Fish and Wildlife (F&amp;W)</b>	<b>Limited Warmwater Fishery (LWF)</b>	<b>Agricultural and Industrial Water Supply (A&amp;I)</b>
<p><b>Coastal Waters:</b> Enterococci - Geometric mean <math>\leq 35</math> Single Max. <math>\leq 104</math></p> <p><b>Non-coastal Waters:</b> Fecal Coliform - Geometric mean <math>\leq 200</math></p>	<p><b>Coastal Waters:</b> Enterococci - June through Sept. Geometric mean <math>\leq 35</math> Single Max. <math>\leq 158</math></p> <p>Enterococci - Oct. through May Single Max. <math>\leq 275</math></p> <p><b>Non-coastal Waters:</b> Fecal Coliform - June through Sept. Geometric mean <math>\leq 200</math> Oct. through May Geometric mean <math>\leq 1000</math> Single Max. <math>\leq 2000</math></p>	<p><b>Coastal Waters:</b> Enterococci - Geometric mean <math>\leq 35</math> Single Max. <math>\leq 104</math></p> <p><b>Non-coastal Waters:</b> Fecal Coliform - Geometric mean <math>\leq 200</math></p>	<p><b>Coastal Waters:</b> Not to exceed FDA limits<sup>1</sup> for fecal coliform bacteria</p> <p>Enterococci - June through Sept. Geometric mean <math>\leq 35</math> Single Max. <math>\leq 104</math></p> <p><b>Non-coastal Waters:</b> Fecal Coliform - June through Sept. Geometric mean <math>\leq 200</math></p>	<p><b>Coastal Waters:</b> Enterococci - June through Sept. Geometric mean <math>\leq 35</math> Single Max. <math>\leq 158</math></p> <p>Enterococci - Oct. through May Single Max. <math>\leq 275</math></p> <p><b>Non-coastal Waters:</b> Fecal Coliform - June through Sept. Geometric mean <math>\leq 1000</math> Single Max. <math>\leq 2000</math></p>	<p><b>Coastal Waters:</b> Enterococci Single Max. <math>\leq 275</math></p> <p><b>Non-coastal Waters:</b> Fecal Coliform - Geometric mean <math>\leq 1000</math> Single Max. <math>\leq 2000</math></p>	<p><b>Coastal Waters:</b> Enterococci Single Max. <math>\leq 500</math></p> <p><b>Non-coastal Waters:</b> Fecal Coliform - Geometric mean <math>\leq 2000</math> Single Max. <math>\leq 4000</math></p>

<sup>1</sup> Not to exceed the limits specified in the latest edition of the National Shellfish Sanitation Program Manual of Operations, Sanitation of Shellfish Growing Areas (1999), published by the Food and Drug Administration, U.S. Department of Health and Human Services.



#### 4.8.9 Consideration of Stream Flow and Method Detection Limits

During toxicant sampling in rivers or streams the measured flow must be at or above the 7Q10 value for that location. In cases where the applicable water quality criterion is less than the method detection limit (MDL) for a particular pollutant and the concentration for the pollutant is reported as less than detection (<MDL), the Department will evaluate the data consistent with EPA guidance provided in “*Guidance for Data Quality Assessment*”, EPA QA/G-9, QA00 UPDATE, EPA, July 2000 and will use the approach that is appropriate for the data set.

These requirements are intended to ensure that existing water quality conditions are accurately portrayed, do not characterize transitional conditions, and that obsolete or inaccurate data are not used. In addition, the minimum data requirements may change on a case by case basis if pollutant sources upstream of the monitoring locations are likely. This determination will be made using information obtained from the Department’s geographic information system or other databases. Failure to meet the minimum data requirements for any waterbody type will place the waterbody in Category 2.

#### 4.9 Quality Control / Quality Assurance Requirements

All data (including chemical, physical, and biological) should be collected and analyzed consistent with the SOPs presented earlier. Study plans should reference the SOP appropriate for the type of data being collected and should discuss how data quality will be documented. This should include a discussion of the quality control procedures followed during sample collection and analysis. These procedures should describe the number and type of field and laboratory quality control samples for the project, if appropriate for the type of sampling being conducted, field blanks, equipment blanks, split samples, duplicate samples, the name of the laboratory performing the analyses, name of the laboratory contact person, and the number and type of laboratory quality control samples.

While the Department will consider any existing and readily available data and information, the Department reserves the right to not use data or information in making use support decisions which do not comply with the minimum data requirements presented in this document. The decision not to use certain data will be documented in the ADB. The Department applies best professional judgment when considering datasets smaller than the specified minimum data requirements. In such instances, use support decisions are made on a case by case basis in consideration of ancillary data and information such as watershed characteristics, known pollutant sources, water quality trends or other environmental indicators.

#### 4.10 Minimum Sample Size and Allowable Number of Water Quality Criterion Exceedances

**Table 2** shows the allowable number of exceedances for various samples sizes up to 199 samples. The Department’s annual sampling plans and available resources generally allow for at least eight samples per sampling location except in reservoirs where fewer samples (i.e. 3 samples) may be collected due to sample holding time and resource

constraints. The number of exceedances in each range of sample sizes was calculated using the binomial distribution function. This number is the number of exceedances of a particular water quality criterion needed to say with 90% confidence that the criterion is exceeded in more than 10% of the population represented by the available samples. This table will be used to determine the number of exceedances of Alabama numeric water quality criteria listed in ADEM Administrative Code 335-6-10 (for dissolved oxygen, temperature, turbidity, pH, and bacteria), consistent with the assessment methodology for each use discussed earlier, necessary to establish that a waterbody segment is not fully supporting its designated uses. This approach is consistent with ADEM Administrative Code 335-6-10 which recognizes that natural conditions may cause sporadic excursions of numeric water quality criteria and with EPA's 1997 305(b) guidance. For conventional water quality parameters, there must be at least eight temporally independent samples collected during the previous six year period to be considered adequate for making use support determinations, except where fewer samples are determined to be adequate as discussed earlier. As used in this context, temporally independent means that the samples were collected at an interval appropriate to capture the expected variation in the parameter. For example, dissolved oxygen, temperature and pH measurements should capture the normal diurnal variation that occurs in the parameters and temporal independence may occur in several hours (i.e. morning versus afternoon). Measurements for turbidity and bacteria should typically be at least 24 hours apart.

It is the intent of the methodology to ensure that an adequate number of samples are available for use in the assessment process and for developing future monitoring plans. Smaller sample sizes may be appropriate in certain circumstances where there is a clear indication that exceedances of the criteria are not due to natural conditions. For example, a data set comprised of fewer than the required minimum number of samples collected monthly may be sufficient to determine that a waterbody is not supporting its use when a significant number (more than two) exceed a particular criterion. Conversely, a data set with fewer than the required minimum number of samples collected monthly may be sufficient to determine that a waterbody is fully supporting its use if none of the samples exceed any of the criteria and there is sufficient supporting information to support this conclusion (i.e. biological assessment indicates full use support). The decision to use smaller data sets for making use support decisions will be made on a case by case basis using best professional judgment. The basis for these decisions will be documented in the ADB.

## Table 2

<b>Minimum Number of Samples Exceeding the Numeric Criterion Necessary for Listing*</b>
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Sample Size	Number of Exceedances	Sample Size	Number of Exceedances
8 thru 11	2	97 thru 104	14
12 thru 18	3	105 thru 113	15
19 thru 25	4	114 thru 121	16
26 thru 32	5	122 thru 130	17
33 thru 40	6	131 thru 138	18
41 thru 47	7	139 thru 147	19
48 thru 55	8	148 thru 156	20
56 thru 63	9	157 thru 164	21
64 thru 71	10	165 thru 173	22
72 thru 79	11	174 thru 182	23
80 thru 88	12	183 thru 191	24
89 thru 96	13	192 thru 199	25

\* - For conventional parameters, including bacteria, at the 90 percent confidence level

### **5.0 Removing a Waterbody from Category 5**

Waterbodies may be removed from a 303(d) list (category 5) for various reasons, including:

- Assessment of more recent water quality data demonstrates that the waterbody is meeting all applicable water quality standards. (Move to Category 1)
- A review of the original listing decision demonstrates that the waterbody should not have been included in Category 5. (Move to Category 1 or Category 2)
- TMDL has been completed. (Move to Category 4a)
- Other pollution control requirements are reasonably expected to result in the attainment of the water quality standards in the near future. These requirements must be specifically applicable to the particular water quality problem. (Move to Category 4b)
- Impairment is not caused by a pollutant. (Move to Category 4c)
- Natural causes – When it can be demonstrated the exceedance of a numeric water quality criterion is due to natural conditions and not to human disturbance activities, the water may be removed from Category 5. (Move to Category 1)

**Table 3** shows the allowable number of exceedances of criteria for conventional pollutants for various sample sizes and a 90% confidence level. This table will be used to determine the number of allowable exceedances of Alabama numeric water quality criteria for pollutants listed in ADEM Administrative Code 335-6-10, with the exception of chlorophyll *a* criteria and the toxics criteria listed in the appendix to ADEM Administrative Code 335-6-10, for the waterbody to be removed from a 303(d) list for a specific pollutant (move to Category 1). In addition, the original basis for listing the waterbody will be considered as a part of the delisting process. Included in this evaluation will be a review of pollutant sources to determine which ones may have been removed or remediated, changes in land practices or uses, installation of new treatment facilities or best management practices, and changes in stream hydrology or morphology.

**Table 3**

**Maximum Number of Samples Exceeding the Numeric  
Criterion Necessary for Delisting\***

Sample Size	Number of Exceedances	Sample Size	Number of Exceedances
8 thru 21	0	104 thru 115	7
22 thru 37	1	116 thru 127	8
38 thru 51	2	128 thru 139	9
52 thru 64	3	140 thru 151	10
65 thru 77	4	152 thru 163	11
78 thru 90	5	164 thru 174	12
91 thru 103	6	175 thru 186	13

\* - For conventional parameters, including bacteria, at the 90 percent confidence level

When a waterbody has been included in Category 5 due to a fish consumption advisory, the waterbody will be moved to Category 1 when subsequent fish tissue results indicate that pollutant concentrations have declined and a fish consumption advisory is no longer needed. The determination that a fish consumption advisory is no longer needed is made by the Alabama Department of Public Health.

For waters originally placed in Category 5 due to a specific toxic pollutant or specific toxic pollutants, there should be no violations of the appropriate criteria in a minimum of 8 samples collected over a three year period before the cause of impairment is removed or the water is placed in Category 1.

## **6.0 Estimating the Size of the Assessed Waterbody**

Waterbodies are assessed on the basis of assessment units. Assessment units vary in size depending on the waterbody type, watershed characteristics, designated use, and the location of monitoring stations. In most cases, individual assessments will lie completely within a designated use or multiple uses. For example, an assessment unit will not generally be partially within one designated use and partially within a different designated use. However, assessment units may be assigned more than one designated use. For example, an assessment unit may have classified uses of both Fish and Wildlife and Public Water Supply provided both uses are assigned to the entire assessment unit. An assessment unit may be defined as a stream, the mainstem of a river, embayment, portion of a lake or reservoir, or a part of an estuary or coastal water.

A monitoring unit is defined as the watershed draining to, or close to, a sampling location and is made up of many assessment units (individual reaches). A monitoring unit will generally have a drainage area of more than 10 square miles and will be characterized by a predominant land use / land cover. When it is necessary to better characterize assessment units within the larger monitoring units, new monitoring units can be delineated based on the location of the additional sampling location or locations. Water quality data and information gathered at a sampling location which defines a monitoring unit will be the primary means for assigning a use support status to assessment units within the monitoring unit.

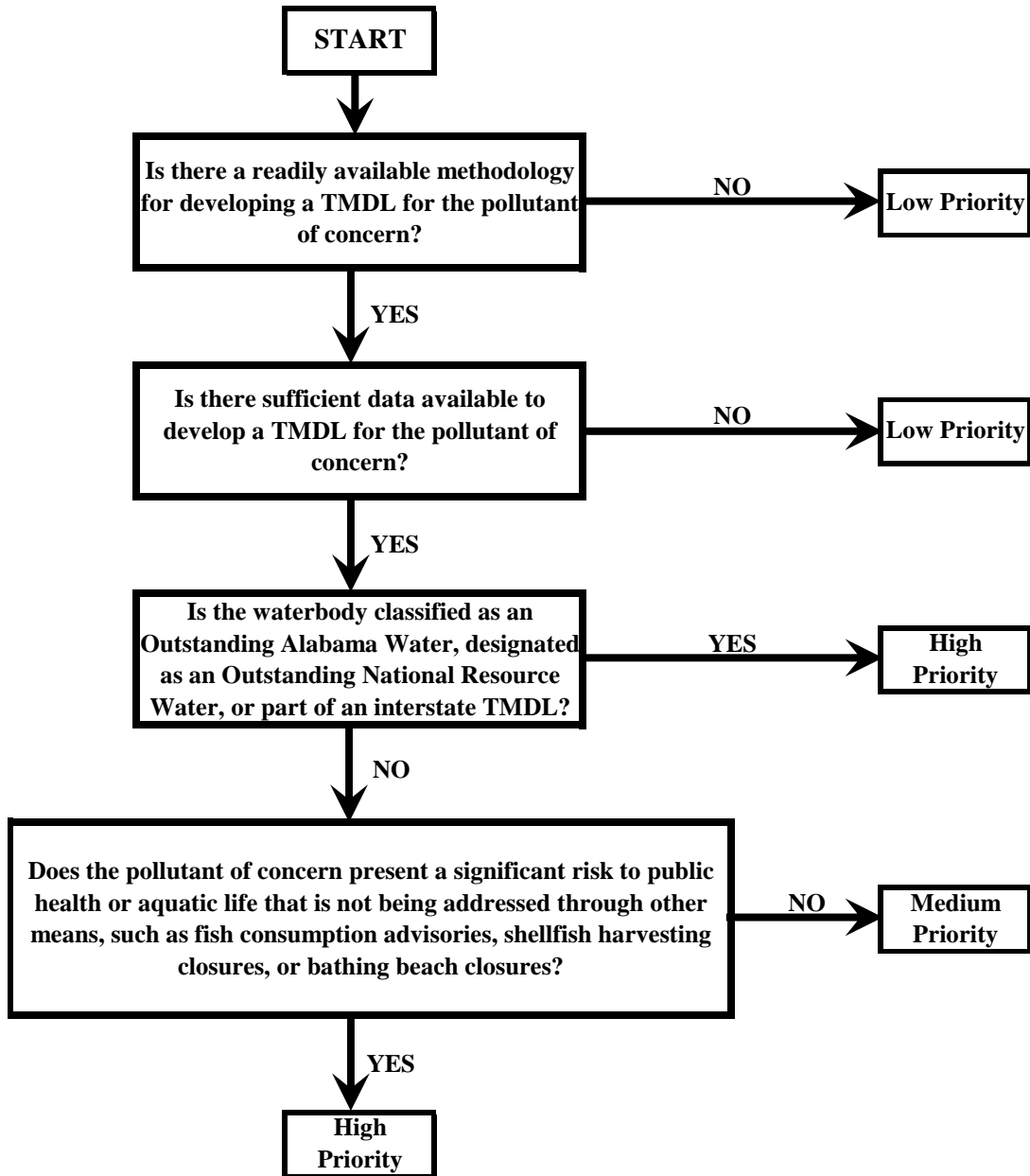
The spatial extent of each monitoring unit will be determined using information contained in the Department's Geographic Information System (GIS). Specifically, stream coverages contained within the National Hydrography Dataset (NHD) will be the basis for determining the size of assessed waters. This database of natural and constructed surface waters is a comprehensive set of digital spatial data that contains information about surface water features such as lakes, ponds, streams, rivers, springs and wells. Within the NHD, surface water features are combined to form "reaches", which provide the framework for linking water-related data to the NHD surface drainage network. These linkages enable the analysis and display of these water-related data in upstream and downstream order. Characteristics such as stream length or reservoir area can be aggregated within a monitoring unit to estimate the size of assessed waters.

## **7.0 Ranking and Prioritizing Impaired Waters**

Waters in Category 5 will be prioritized based on the nature of the pollutant of concern. Pollutants that relate directly to human health issues rank "high", while more conventional water quality parameters rank "medium" while other non-conventional or legacy pollutant impacts such as contaminated sediments, or impaired habitat rank "low". An example of high priority pollutants are toxics. Dissolved oxygen, pH, and unionized ammonia are examples of medium priority. **Figure 16** describes the general approach to assigning a ranking to each TMDL included in Category 5. However, the TMDL development schedule may not always consider only the ranking of the impaired waterbody. The following factors may be used to determine the timing for the development of the TMDL.

- TMDL complexity
- Pollutants of concern
- Need for additional data and information
- Sources of the pollutants
- Severity of the impairment
- Spatial extent of impairment
- Designated uses of the waterbodies
- General watershed management activities (e.g. 319 grant activities and watershed management planning)
- Existence of endangered and sensitive aquatic species
- Degree of public interest and support for particular waterbodies.

**Figure 16**  
*Alabama's TMDL Prioritization Strategy*



Waters which are currently listed on the §303(d) list will have their TMDL developed within 8 to 13 years unless they become eligible for delisting. TMDLs for Category 5 waters will be developed no later than 13 years after the water is first placed in Category 5.

The Integrated Monitoring Report will include proposed schedules (both long term and annually) for the development of TMDLs.

The Department will communicate with bordering states concerning the status of shared waters. When requested, the state will provide data concerning shared waters to the adjacent state.

### **8.0 Schedule for Assessing State Waters**

The State has developed a Watershed Management Schedule and has been operating under the rotating basin plan since 1997. This schedule has the state divided into 5 river basin groups which are sampled on a five year rotating basis. The rotating basin schedule is as follows:

- 2005 - Alabama, Coosa, and Tallapoosa River Basins
- 2006 – Escatawpa, Lower Tombigbee, Upper Tombigbee, and Mobile River Basins
- 2007 – Cahaba and Black Warrior River Basins
- 2008 – Tennessee River Basin
- 2009 – Chipola, Choctawhatchee, Perdido-Escambia, and Chattahoochee River Basins
- 2010 – Tallapoosa, Alabama, and Coosa River Basins
- 2011 – Escatawpa, Lower Tombigbee, Upper Tombigbee, and Mobile River Basins

The Integrated Monitoring and Assessment Report will include a comprehensive monitoring and assessment plan that describes the state’s proposed schedule for the following two years. Elements of this plan include: a description of the sampling approach (i.e. rotating basin and fixed ambient), and a list of the parameters to be collected (i.e. physical, chemical, and biological). The report will also include a schedule (both long term and annually) for collecting data and information for basic assessments and for TMDLs.

### **9.0 Public Participation**

The Integrated Report will combine the Water Quality Inventory Report (§305(b)) with the Impaired Waterbodies (§303(d)) listing. Category 5 in the Integrated Report is considered to be the Impaired Waterbodies list. The remaining categories are considered the Water Quality Inventory. This methodology lays out the framework for assessing data and determining which of the five categories the waterbody will be assigned to. The entire Integrated List will follow the same public process as the §303(d) listing but Categories 1 through 4 and the monitoring schedule will be provided for informational purposes only since these schedules are subject to change as resources allow.

The Department will solicit the submittal of data and information for use in developing the Integrated Report. The public notice requesting data will be published in four major newspapers in the state and on the Department’s Website. The time period for submitting data will be



specified in the public notice. The data must be received by the Department by October 31 in the year prior to the report being due to EPA. Data submitted after the specified period will be considered in the development of subsequent Integrated Reports. The Department reviews all existing and readily available data and is committed to using only data with acceptable quality assurance to develop the Integrated Report. Only electronic data or data available in published reports are considered “readily available”. Typically, the Department uses Microsoft databases (i.e., Excel, Access) or the Water Resources Database (WRDB) for database management and retrieval.

The Department will publish notice of the availability of the Integrated Water Quality Monitoring and Assessment Methodology and Draft Integrated Report in four major newspapers of general circulation throughout the State and on the Department Website. Adjacent states, federal and interstate agencies shall also be noticed as necessary. The Department will coordinate with neighboring states during the development of the Integrated Report, as needed. The comment period on a proposed Category 5 (§303(d)) list will be a minimum of 30 days.

The Integrated Report, which will include the integrated List, expected monitoring schedules, TMDL schedules, as well as any other information usually included in the §305(b) Report, will be submitted to the USEPA as required by §305(b) of the Clean Water Act. The Department will post the availability of the Integrated Report on its web page at that time.

## **10.0 References**

ADEM, 2004. Alabama's 2004 Integrated Water Quality Monitoring & Assessment Report. Alabama Department of Environmental Management. Montgomery, AL

ADEM, 2005. ADEM Administrative Code R. 335-6-10, Water Quality Criteria. Alabama Department of Environmental Management, Montgomery, AL.

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ADPH, 2001. ADPH, Seafood Branch. Area I-II-III Triennial Report – 1999, 2000, 2001. Alabama Department of Public Health, Montgomery, AL.

EPA, 2000. Guidance: Use of Fish and Shellfish Advisories and Classifications in 303(d) and 305(b) Listing Decisions, Geoffrey H. Grubbs and Robert H. Wayland, III, October 24, 2000. United States Environmental Protection Agency, Washington, DC.

EPA, 2005. Guidance for 2006 Assessment, Listing, and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 3314 of the Clean Water Act; United States Environmental Protection Agency. Washington, DC.

O'Neil, P.E., and T.E. Shepard, 1998. Standard operating procedure manual for sampling freshwater fish communities and application of the index of biotic integrity for assessing biological condition of flowing, wadeable streams in Alabama. ADEM Contract No. AGY7042. Geological Survey of Alabama, Tuscaloosa, Alabama.

## **APPENDIX**

**ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
WATER DIVISION - WATER QUALITY PROGRAM**

**CHAPTER 335-6-10  
WATER QUALITY CRITERIA**

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**335-6-10-.01 Purpose.**

(1) Title 22, Section 22-22-1 et seq., Code of Alabama 1975, includes as its purpose "... to conserve the waters of the State and to protect, maintain and improve the quality thereof for public water supplies, for the propagation of wildlife, fish and aquatic life and for domestic, agricultural, industrial, recreational and other legitimate beneficial uses; to provide for the prevention, abatement and control of new or existing water pollution; and to cooperate with other agencies of the State, agencies of other states and the federal government in carrying out these objectives."

(2) Water quality criteria, covering all legitimate water uses, provide the tools and means for determining the manner in which waters of the State may be best utilized, provide a guide for determining waste treatment requirements, and provide the basis for standards of quality for State waters and portions thereof. Water quality criteria are not intended to freeze present uses of water, nor to exclude other uses not now possible. They are not a device to insure the lowest common denominator of water quality, but to encourage prudent use of the State's water resources and to enhance their quality and productivity commensurate with the stated purpose of Title 22, Section 22-22-1 et seq., Code of Alabama 1975.

(3) Water quality criteria herein set forth have been developed by the Commission for those uses of surface waters known and expected to exist over the State.

They are based on present scientific knowledge, experience and judgment. Characteristics or parameters included in the criteria are those of fundamental significance to a determination of water quality and are those which are and can be routinely monitored and compared to data that are generally available. It is the intent that these criteria will be applied only after reasonable opportunity for mixture of wastes with receiving waters has been afforded. The reasonableness of the opportunity for mixture of wastes and receiving waters shall be judged on the basis of the physical characteristics of the receiving waters and approval by the Department of the method in which the discharge is physically made.

**Author:** James E. McIndoe.

**Statutory Authority:** Code of Alabama 1975, §§ 22-22-9, 22-22A-5, 22-22A-6, 22-22A-8.

**History:** May 5, 1967. **Amended:** June 19, 1967; July 17, 1972; February 26, 1973; May 30, 1977; December 19, 1977; February 4, 1981; March 2, 1990; April 3, 1991.

### **335-6-10-.02 Definitions.**

(1) "Commission" means the Environmental Management Commission, established by the Environmental Management Act, Code of Alabama 1975, §§ 22-22A-1 to 22-22A-16.

(2) "Department" means the Alabama Department of Environmental Management, established by the Alabama Environmental Management Act, Code of Alabama 1975, §§ 22-22A-1 to 22-22A-16.

(3) "Existing Uses" means those legitimate beneficial uses of a water body attained in fact on or after November 28, 1975, whether or not they are included as classified uses in ADEM Administrative Code Rule 335-6-11-.02.

(4) "Industrial Waste" means liquid or other wastes resulting from any process of industry, manufacture, trade or business or from the development of natural resources.

(5) "NPDES" means National Pollutant Discharge Elimination System.

(6) "Other Wastes" means all other substances, whether liquid, gaseous or solid, from all other sources including, but not limited to, any vessels, or other conveyances traveling or using the waters of this State, except industrial wastes or sewage, which may cause pollution of any waters of the State.

(7) "Pollutant" includes but is not limited to dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. Pollutant does not mean (a) sewage from vessels; or (b) water, gas, or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil or gas production and disposed of in a well, if the

well used either to facilitate production or for disposal purposes is approved by authority of the State, and if the Department determines that such injection or disposal will not result in the degradation of ground or surface water resources.

(8) "Pollution" means the discharge of a pollutant or combination of pollutants.

(9) "Sewage" means water-carried human wastes from residences, buildings, industrial establishments or other places including, but not limited to, any vessels, or other conveyances traveling or using the waters of this State, together with such ground, surface, storm or other waters as may be present.

(10) "State Waters" or "Waters of the State" means all waters of any river, stream, watercourse, pond, lake, coastal, or surface water, wholly or partially within the State, natural or artificial. This does not include waters which are entirely confined and retained completely upon the property of a single individual, partnership or corporation unless such waters are used in interstate commerce.

**Author:** James E. McIndoe.

**Statutory Authority:** Code of Alabama 1975, §§ 22-22-9, 22-22A-5, 22-22A-6, 22-22A-8.

**History:** May 5, 1967. **Amended:** June 19, 1967; July 17, 1972; February 26, 1973; May 30, 1977; December 19, 1977; February 4, 1981; March 2, 1990; April 3, 1991.

### **335-6-10-.03 Water Use Classifications.**

- (1) Outstanding Alabama Water
- (2) Public Water Supply
- (3) Swimming and Other Whole Body Water-Contact Sports
- (4) Shellfish Harvesting
- (5) Fish and Wildlife
- (6) Limited Warmwater Fishery
- (7) Agricultural and Industrial Water Supply

**Author:** James E. McIndoe.

**Statutory Authority:** Code of Alabama 1975, §§ 22-22-9, 22-22A-5, 22-22A-6, 22-22A-8.

**History:** May 5, 1967. **Amended:** June 19, 1967; July 17, 1972; February 26, 1973; May 30, 1977; December 19, 1977; February 4, 1981; December 30, 1992; September 7, 2000.

### **335-6-10-.04 Antidegradation Policy.**

(1) The purpose and intent of the water quality standards is to conserve the waters of the State of Alabama and to protect, maintain and improve the quality thereof for public water supplies, for the propagation of wildlife, fish and aquatic life, and for domestic, agricultural, industrial, recreational and other legitimate beneficial uses; and to provide for the prevention, abatement and control of new or existing water pollution.

(2) Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected. Uses and the water quality to support such uses were established through public participation in the initial establishment, and periodic review, of water quality standards. Should the Department determine that an existing use is not encompassed in the classification of a waterbody, that use shall be recognized.

(3) Where the quality of the waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected, except that a new or increased discharge of pollutants may be allowed, after intergovernmental coordination and public participation pursuant to applicable permitting and management processes, when the person proposing the new or increased discharge of pollutants demonstrates that the proposed discharge is necessary for important economic or social development. In such cases, water quality adequate to protect existing uses fully shall be maintained. All new and existing point source discharges shall be subject to the highest statutory and regulatory requirements, and nonpoint source discharges shall use best management practices adequate to protect water quality consistent with the Department's nonpoint source control program.

(4) Where high quality waters constitute an outstanding National resource, such as waters of national and state parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.

(5) Developments constituting a new or increased source of thermal pollution shall assure that such release will not impair the propagation of a balanced indigenous population of fish and aquatic life.

(6) In applying these policies and requirements, the State of Alabama will recognize and protect the interests of the federal government. Toward this end the Department will consult and cooperate with the Environmental Protection Agency on all matters affecting the federal interest.

**Author:** James E. McIndoe.

**Statutory Authority:** Code of Alabama 1975, §§ 22-22-9, 22-22A-5, 22-22A-6, 22-22A-8.

**History:** May 5, 1967. **Amended:** June 19, 1967; July 17, 1972; February 26, 1973; May 30, 1977; December 19, 1977; February 4, 1981; March 2, 1990; April 3, 1991.

**335-6-10-.05 General Conditions Applicable to All Water Quality Criteria.**

(1) The quality of any waters receiving sewage, industrial wastes or other wastes, regardless of their use, shall be such as will not cause the best usage of any other waters to be adversely affected by such sewage, industrial wastes or other wastes.

(2) Tests or analytical procedures to determine compliance or noncompliance with water quality criteria shall be in accordance with the methods specified in 40 CFR 136.3 (2003). Where other tests or analytical procedures are found to be more applicable and satisfactory, these may be used upon acceptance and approval by the Department.

(3) In making any tests or analytical determinations to determine compliance or noncompliance with water quality criteria, samples shall be collected in such manner and at such locations approved by a duly authorized representative of the Department as being representative of the receiving waters after reasonable opportunity for dilution and mixture with the wastes discharged thereto. Mixing zones, i.e., that portion of the receiving waters where mixture of effluents and natural waters take place, shall not preclude passage of free-swimming and drifting aquatic organisms to the extent that their populations are significantly affected.

(4) Natural waters may, on occasion, have characteristics outside of the limits established by these criteria. The criteria contained herein relate to the condition of waters as affected by the discharge of sewage, industrial wastes or other wastes, not to conditions resulting from natural forces.

(5) All waters, where attainable, shall be suitable for recreation in and on the waters during the months of June through September except that recreational use is not recommended in the vicinity of discharges or other conditions which the Department or the Department of Public Health does not control.

(6) Where necessary to attain compliance with a new water quality standard, existing permits for the discharge of wastewaters shall be modified or reissued to limit the discharge of a substance causing or contributing to the failure of a water of the state to meet the new standard. Compliance with the modified limit shall be required as soon as practical, but in all cases within three years of the adoption of the new standard.

**Author:** James E. McIndoe.

**Statutory Authority:** Code of Alabama 1975, §§ 22-22-9, 22-22A-5, 22-22A-6, 22-22A-8.

**History:** May 5, 1967. **Amended:** June 19, 1967; July 17, 1972; February 26, 1973; May 30, 1977; December 19, 1977; February 4, 1981; March 2, 1990; April 3, 1991; January 14, 2005.

**335-6-10-.06 Minimum Conditions Applicable to All State Waters.** The following minimum conditions are applicable to all State waters, at all places and at all times, regardless of their uses:



(a) State waters shall be free from substances attributable to sewage, industrial wastes or other wastes that will settle to form bottom deposits which are unsightly, putrescent or interfere directly or indirectly with any classified water use.

(b) State waters shall be free from floating debris, oil, scum, and other floating materials attributable to sewage, industrial wastes or other wastes in amounts sufficient to be unsightly or interfere directly or indirectly with any classified water use.

(c) State waters shall be free from substances attributable to sewage, industrial wastes or other wastes in concentrations or combinations which are toxic or harmful to human, animal or aquatic life to the extent commensurate with the designated usage of such waters.

**Author:** James E. McIndoe.

**Statutory Authority:** Code of Alabama 1975, §§ 22-22-9, 22-22A-5, 22-22A-6, 22-22A-8.

**History:** May 5, 1967. **Amended:** June 19, 1967; July 17, 1972; February 26, 1973; May 30, 1977; December 19, 1977; February 4, 1981.

### **335-6-10-.07 Toxic Pollutant Criteria Applicable to State Waters.**

(1) The U. S. Environmental Protection Agency has listed the chemical constituents given in Table 1 as toxic pollutants pursuant to Section 307(a)(1) of the Federal Water Pollution Control Act (FWPCA). Concentrations of these toxic pollutants in State waters shall not exceed the criteria indicated in Table 1 to the extent commensurate with the designated usage of such waters.

(a) The freshwater and marine aquatic life criteria for certain of the pollutants are dependent on hardness or pH. For these pollutants, the criteria are given by the following equations. In the hardness-dependent equations for metals, a conversion factor converts the total recoverable value to a criterion expressed as the dissolved fraction in the water column. All numeric values listed for metals in Table 1 at the end of this chapter are expressed as dissolved metals unless otherwise noted.

#### 1. Cadmium

(i) freshwater acute aquatic life:

$$\text{conc. } (\mu\text{g/l}) = (e^{(1.0166[\ln(\text{hardness in mg/l as CaCO}_3)]-3.924)})(\text{CF}); \quad \text{(Eq. 1)}$$

$$\text{conversion factor (CF)} = 1.136672 - [\ln(\text{hardness})(0.041838)]$$

(ii) freshwater chronic aquatic life:

$$\text{conc. } (\mu\text{g/l}) = (e^{(0.7409[\ln(\text{hardness in mg/l as CaCO}_3)]-4.719)})(\text{CF}); \quad \text{(Eq. 2)}$$

$$\text{conversion factor (CF)} = 1.101672 - [\ln(\text{hardness})(0.041838)]$$

## 2. Chromium (trivalent)

## (i) freshwater acute aquatic life:

$$\text{conc. } (\mu\text{g/l}) = (e^{(0.8190[\ln(\text{hardness in mg/l as CaCO}_3)]+3.7256)})(\text{CF}); \quad \text{(Eq. 3)}$$

$$\text{conversion factor (CF)} = 0.316$$

## (ii) freshwater chronic aquatic life:

$$\text{conc. } (\mu\text{g/l}) = (e^{(0.8190[\ln(\text{hardness in mg/l as CaCO}_3)]+0.6848)})(\text{CF}); \quad \text{(Eq. 4)}$$

$$\text{conversion factor (CF)} = 0.860$$

## 3. Copper

## (i) freshwater acute aquatic life:

$$\text{conc. } (\mu\text{g/l}) = (e^{(0.9422[\ln(\text{hardness in mg/l as CaCO}_3)]-1.700)})(\text{CF}); \quad \text{(Eq. 5)}$$

$$\text{conversion factor (CF)} = 0.960$$

## (ii) freshwater chronic aquatic life:

$$\text{conc. } (\mu\text{g/l}) = (e^{(0.8545[\ln(\text{hardness in mg/l as CaCO}_3)]-1.702)})(\text{CF}); \quad \text{(Eq. 6)}$$

$$\text{conversion factor (CF)} = 0.960$$

## 4. Lead

## (i) freshwater acute aquatic life:

$$\text{conc. } (\mu\text{g/l}) = (e^{(1.273[\ln(\text{hardness in mg/l as CaCO}_3)]-1.460)})(\text{CF}); \quad \text{(Eq. 7)}$$

$$\text{conversion factor (CF)} = 1.46203 - [\ln(\text{hardness})(0.145712)]$$

## (ii) freshwater chronic aquatic life:

$$\text{conc. } (\mu\text{g/l}) = (e^{(1.273[\ln(\text{hardness in mg/l as CaCO}_3)]-4.705)})(\text{CF}); \quad \text{(Eq. 8)}$$

$$\text{conversion factor (CF)} = 1.46203 - [\ln(\text{hardness})(0.145712)]$$

## 5. Nickel

## (i) freshwater acute aquatic life:

$$\text{conc. } (\mu\text{g/l}) = (e^{(0.8460[\ln(\text{hardness in mg/l as CaCO}_3)]+2.255)})(\text{CF}); \quad \text{(Eq. 9)}$$

$$\text{conversion factor (CF)} = 0.998$$

(ii) freshwater chronic aquatic life:

$$\text{conc. } (\mu\text{g/l}) = (e^{(0.8460[\ln(\text{hardness in mg/l as CaCO}_3)]+0.0584)})(\text{CF}); \quad \text{(Eq. 10)}$$

conversion factor (CF) = 0.997

6. Pentachlorophenol

(i) freshwater acute aquatic life:

$$\text{conc. } (\mu\text{g/l}) = e^{[1.005(\text{pH})-4.869]} \quad \text{(Eq. 11)}$$

(ii) freshwater chronic aquatic life:

$$\text{conc. } (\mu\text{g/l}) = e^{[1.005(\text{pH})-5.134]} \quad \text{(Eq. 12)}$$

7. Silver

(i) freshwater acute aquatic life:

$$\text{conc. } (\mu\text{g/l}) = (e^{(1.72[\ln(\text{hardness in mg/l as CaCO}_3)]-6.59)})(\text{CF}); \quad \text{(Eq. 13)}$$

conversion factor (CF) = 0.85

8. Zinc

(i) freshwater acute aquatic life:

$$\text{conc. } (\mu\text{g/l}) = (e^{(0.8473[\ln(\text{hardness in mg/l as CaCO}_3)]+0.884)})(\text{CF}); \quad \text{(Eq. 14)}$$

conversion factor (CF) = 0.978

(ii) freshwater chronic aquatic life:

$$\text{conc. } (\mu\text{g/l}) = (e^{(0.8473[\ln(\text{hardness in mg/l as CaCO}_3)]+0.884)})(\text{CF}); \quad \text{(Eq. 15)}$$

conversion factor (CF) = 0.986

(b) The marine aquatic life criteria apply only to interstate and coastal waters of the Mobile River - Mobile Bay Basin and interstate and coastal waters of the Perdido River Basin, as identified in Rule 335-6-11-.02 of the Department's regulations. The acute aquatic life criteria apply to all waters of the State. The chronic aquatic life criteria apply only to waters classified Outstanding Alabama Water, Public Water Supply, Swimming and Other Whole Body Water-Contact Sports, Shellfish Harvesting, Fish and Wildlife, and Limited Warmwater Fishery, as identified in Rule 335-6-11-.02 of the Department's regulations.

(c) For the purpose of establishing effluent limitations pursuant to Chapter 335-6-6 of the Department's regulations, the minimum 7-day low flow that occurs once in

10 years ( $7Q_{10}$ ) shall be the basis for applying the chronic aquatic life criteria, except as noted in Rule 335-6-10-.09(6), and the minimum 1-day low flow that occurs once in 10 years ( $1Q_{10}$ ) shall be the basis for applying the acute aquatic life criteria, except as noted in Rule 335-6-10-.09(7)(c)(5). Where a permit specifies a minimum flow greater than  $7Q_{10}$ , the specified minimum flow may be used as the basis for applying the acute and chronic aquatic life criteria for that permit.

(d) Except as noted in Table 1, two human health criteria are provided for each pollutant--a criterion for consumption of water and fish, and a criterion for consumption of fish only. For certain pollutants, the human health criterion for consumption of water and fish may represent a maximum contaminant level (MCL) developed under the Safe Drinking Water Act.

1. For pollutants classified by the U.S. Environmental Protection Agency as non-carcinogens, the criteria shall be given by the following equations, except where numeric values are given in Table 1.

(i) Consumption of water and fish:

$$\text{conc. (mg/l)} = (\text{HBW} \times \text{RfD}) / [(\text{FCR} \times \text{BCF}) + \text{WCR}] \quad \text{(Eq. 16)}$$

(ii) Consumption of fish only:

$$\text{conc. (mg/l)} = (\text{HBW} \times \text{RfD}) / (\text{FCR} \times \text{BCF}) \quad \text{(Eq. 17)}$$

where: HBW = human body weight, set at 70 kg

RfD = reference dose, in mg/(kg-day)

FCR = fish consumption rate, set at 0.030 kg/day

BCF = bioconcentration factor, in l/kg

WCR = water consumption rate, set at 2 l/day

(iii) The values used for the reference dose (RfD) shall be values available through the U.S. Environmental Protection Agency's Integrated Risk Information System (IRIS), and values used for the bioconcentration factor (BCF) shall be values contained in ambient water quality criteria documents published by the U.S. Environmental Protection Agency, except where other values are established pursuant to subparagraph (1)(g). The RfD and BCF values for specific pollutants are provided in Appendix A.

2. For pollutants classified by the U.S. Environmental Protection Agency as carcinogens, the criteria shall be given by the following equations, except where numeric values are given in Table 1.

(i) Consumption of water and fish:

$$\text{conc. (mg/l)} = (\text{HBW} \times \text{RL}) / (\text{CPF} \times [(\text{FCR} \times \text{BCF}) + \text{WCR}]) \quad \text{(Eq. 18)}$$

(ii) Consumption of fish only:

$$\text{conc. (mg/l)} = (\text{HBW} \times \text{RL}) / (\text{CPF} \times \text{FCR} \times \text{BCF}) \quad \text{(Eq. 19)}$$

where: HBW = human body weight, set at 70 kg

RL = risk level, set at  $1 \times 10^{-5}$

CPF = cancer potency factor, in (kg-day)/mg

FCR = fish consumption rate, set at 0.030 kg/day

BCF = bioconcentration factor, in l/kg

WCR = water consumption rate, set at 2 l/day

(iii) The values used for the cancer potency factor (CPF) shall be values available through the U.S. Environmental Protection Agency's Integrated Risk Information System (IRIS), and values used for the bioconcentration factor (BCF) shall be values contained in ambient water quality criteria documents published by the U.S. Environmental Protection Agency, except where other values are established pursuant to subparagraph (1)(g). The CPF and BCF values for specific pollutants are provided in Appendix A.

(e) The criteria given in Table 1 for consumption of water and fish, or computed from equation 16 or equation 18 for consumption of water and fish, shall apply only to those waters of the State classified Public Water Supply, as identified in Rule 335-6-11-.02 of the Department's regulations. The criteria given in Table 1 for consumption of fish only, or computed from equation 17 or equation 19 for consumption of fish only, shall apply to all waters of the State.

(f) For the purposes of establishing effluent limitations pursuant to Chapter 335-6-6 of the Department's regulations, the minimum 7-day low flow that occurs once in 10 years ( $7Q_{10}$ ) shall be the basis for applying the human health criteria for pollutants classified as non-carcinogens, and the mean annual flow shall be the basis for applying the human health criteria for pollutants classified as carcinogens; except that where a permit specifies a minimum flow greater than  $7Q_{10}$ , the specified minimum flow may be used as the basis for applying the human health criteria for pollutants classified as non-carcinogens for that permit.

(g) Numeric criteria may be computed by the Department from equations 16, 17, 18, and 19 using values for the reference dose (RfD), cancer potency factor (CPF), and bioconcentration factor (BCF) determined by the Department in consultation with the State Department of Public Health after review of information available from sources other than the U.S. Environmental Protection Agency's Integrated Risk Information System (IRIS) or ambient water quality criteria documents. Such criteria, or the RfD,

CPF, and BCF values used to compute criteria, shall not be effective until adopted following established rulemaking procedures.

**Author:** James E. McIndoe.

**Statutory Authority:** Code of Alabama 1975, §§ 22-22-9, 22-22A-5, 22-22A-6, 22-22A-8.

**History:** March 2, 1990. **Amended:** April 3, 1991; May 28, 1992; August 29, 1994; May 30, 1997; September 7, 2000; January 12, 2001; January 14, 2005; September 21, 2005; May 29, 2007.

**335-6-10-.08 Waste Treatment Requirements.** The following treatment requirements apply to all industrial waste discharges, sewage treatment plants, and combined waste treatment plants:

(a) As a minimum, secondary treatment or "equivalent to secondary treatment" as provided for in rules and regulations promulgated by the U.S. Environmental Protection Agency at 40 CFR Part 133 (1990), shall be applied to all waste discharges. The term "secondary treatment" is applied to biologically degradable waste and is interpreted to mean a facility which at design flow is capable of removing substantially all floating and settleable solids and to achieve a minimum removal of 85 percent of both the 5-day biochemical oxygen demand and suspended solids which, in the case of municipal wastes, is generally considered to produce an effluent quality containing a BOD<sub>5</sub> concentration of 30 mg/l and a suspended solids concentration of 30 mg/l. For municipal waste treatment facilities with effluent concentration limitations that are more stringent than secondary treatment, minimum removal of 85 percent of both the 5-day biochemical oxygen demand and suspended solids shall be at the Department's discretion. Disinfection, where necessary, will also be required. Waste treatment requirements also include those established under the provisions of Sections 301, 304, 306, and 307 of the Federal Water Pollution Control Act (FWPCA). In addition, the Department may require secondary treatment of biologically degradable industrial wastewaters when the application of guidelines published under federal law do not produce a similar reduction in the parameters of concern. In the application of this requirement, consideration will be given to efficiencies achieved through in-process improvements.

(b) In all cases an analysis of water use and flow characteristics for the receiving stream shall be provided to determine the degree of treatment required. Where indicated by the analysis, a higher degree of treatment may be required.

(c) The minimum 7-day low flow that occurs once in 10 years shall be the basis for design criteria.

**Author:** James E. McIndoe.

**Statutory Authority:** Code of Alabama 1975, §§ 22-22-9, 22-22A-5, 22-22A-6, 22-22A-8.

**History:** May 5, 1967. **Amended:** June 19, 1967; July 17, 1972; February 26, 1973; May 30, 1977; December 19, 1977; February 4, 1981; March 2, 1990; April 3, 1991; January 14, 2005.

**335-6-10-.09 Specific Water Quality Criteria.**

(1) **OUTSTANDING ALABAMA WATER**

(a) Best usage of waters: activities consistent with the natural characteristics of the waters.

(b) Conditions related to best usage:

1. High quality waters that constitute an outstanding Alabama resource, such as waters of state parks and wildlife refuges and waters of exceptional recreational or ecological significance, may be considered for classification as an Outstanding Alabama Water (OAW).

(c) Specific criteria:

1. Sewage, industrial wastes, or other wastes:

(i) Existing point source discharges to an Outstanding Alabama Water shall be allowed; however, within three years of assignment of the OAW classification or at permit renewal, whichever is later, existing point sources shall be required to meet the effluent limitations specified for new point source discharges in subparagraph (ii) hereof.

(ii) New point source discharges or expansions of existing point source discharges shall not be allowed unless a thorough evaluation of all practicable treatment and disposal alternatives by the permit applicant has demonstrated to the satisfaction of the Department that there is no feasible alternative to discharge to the waters classified OAW. At a minimum, domestic wastewater discharges shall be required to meet monthly average effluent limitations of 15 mg/l biochemical oxygen demand (5-day), 3 mg/l ammonia nitrogen, and 6 mg/l dissolved oxygen, and shall be required to provide disinfection of the effluent. Non-domestic wastewater discharges shall be required to provide a comparably stringent level of treatment as determined by the Department.

(iii) Effluent limitations for new point source discharges or expansions of existing point source discharges to waters upstream of, or tributary to, waters classified OAW shall be established by the Department such that the impact of the discharge within the waters classified OAW is no greater than if the discharge occurred at the OAW boundary at the treatment levels specified in subparagraph (ii) hereof.

(iv) All NPDES permits shall contain toxics limits that will ensure compliance with all applicable water quality standards. Such limits shall be acute and chronic toxicity limits for individual toxic substances, whole effluent toxicity limits, or both. For permittees subject to whole effluent toxicity limitations, both acute and chronic testing will be required. Whole effluent acute toxicity will be demonstrated if the effluent causes more than 10 percent mortality of test organisms when tested at an effluent concentration of 100 percent. For permittees whose discharge will result in an in-stream waste concentration of 10 percent or more, whole effluent chronic toxicity limits will be based on an in-stream concentration of 100 percent; for permittees whose discharge will result in an in-stream waste concentration of less than 10 percent, whole effluent chronic toxicity limits will be based on the in-stream waste concentration.

(v) Nonpoint source discharges shall use best management practices adequate to protect water quality consistent with the Department's nonpoint source control program.

(vi) All NPDES permits and nonpoint sources shall incorporate or employ water pollution prevention or waste reduction measures as established by the Department.

2. pH: sewage, industrial wastes or other wastes shall not cause the pH to deviate more than one unit from the normal or natural pH, nor be less than 6.0, nor greater than 8.5. For salt waters and estuarine waters to which this classification is assigned, wastes as herein described shall not cause the pH to deviate more than one unit from the normal or natural pH, nor be less than 6.5, nor greater than 8.5.

3. Temperature:

(i) The maximum temperature in streams, lakes, and reservoirs, other than those in river basins listed in subparagraph (ii) hereof, shall not exceed 90 °F.

(ii) The maximum temperature in streams, lakes, and reservoirs in the Tennessee and Cahaba River Basins, and for that portion of the Tallapoosa River Basin from the tailrace of Thurlow Dam at Tallassee downstream to the junction of the Coosa and Tallapoosa Rivers which has been classified by the Alabama Department of Conservation and Natural Resources as supporting smallmouth bass, sauger, or walleye, shall not exceed 86 °F.

(iii) The maximum in-stream temperature rise above ambient water temperature due to the addition of artificial heat by a discharger shall not exceed 5 °F in streams, lakes, and reservoirs in non-coastal and non-estuarine areas.

(iv) The maximum in-stream temperature rise above ambient water temperature due to the addition of artificial heat by a discharger shall not exceed 4 °F in coastal or estuarine waters during the period October through May, nor shall the rise exceed 1.5 °F during the period June through September.



(v) In lakes and reservoirs there shall be no withdrawal from, nor discharge of heated waters to, the hypolimnion unless it can be shown that such discharge or withdrawal will be beneficial to water quality.

(vi) In all waters the normal daily and seasonal temperature variations that were present before the addition of artificial heat shall be maintained, and there shall be no thermal block to the migration of aquatic organisms.

(vii) Thermal permit limitations in NPDES permits may be less stringent than those required by subparagraphs (i) - (iv) hereof when a showing by the discharger has been made pursuant to Section 316 of the Federal Water Pollution Control Act (FWPCA), 33 U.S.C. § 1251 et seq. or pursuant to a study of an equal or more stringent nature required by the State of Alabama authorized by Title 22, Section 22-22-9(c), Code of Alabama 1975, that such limitations will assure the protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife, in and on the body of water to which the discharge is made. Any such demonstration shall take into account the interaction of the thermal discharge component with other pollutants discharged.

4. Dissolved oxygen:

(i) For a diversified warm water biota, including game fish, daily dissolved oxygen concentrations shall not be less than 5.5 mg/l at all times; except under extreme conditions due to natural causes, it may range between 5.5 mg/l and 4 mg/l, provided that the water quality is favorable in all other parameters. The normal seasonal and daily fluctuations shall be maintained above these levels. In no event shall the dissolved oxygen level be less than 4 mg/l due to hydroelectric turbine discharges from existing hydroelectric generation impoundments. All new hydroelectric generation impoundments, including addition of new hydroelectric generation units to existing impoundments, shall be designed so that the discharge will contain at least 5.5 mg/l dissolved oxygen where practicable and technologically possible. The Environmental Protection Agency, in cooperation with the State of Alabama and parties responsible for impoundments, shall develop a program to improve the design of existing facilities.

(ii) In coastal waters, surface dissolved oxygen concentrations shall not be less than 5.5 mg/l, except where natural phenomena cause the value to be depressed.

(iii) In estuaries and tidal tributaries, dissolved oxygen concentrations shall not be less than 5.5 mg/l, except in dystrophic waters or where natural conditions cause the value to be depressed.

(iv) In the application of dissolved oxygen criteria referred to above, dissolved oxygen shall be measured at a depth of 5 feet in waters 10 feet or greater in depth; and for those waters less than 10 feet in depth, dissolved oxygen criteria will be applied at mid-depth.

5. Toxic substances attributable to sewage, industrial wastes, or other wastes: only such amounts, whether alone or in combination with other substances, as will not exhibit acute toxicity or chronic toxicity, as demonstrated by effluent toxicity testing or

by application of numeric criteria given in Rule 335-6-10-.07, to fish and aquatic life, including shrimp and crabs in estuarine or salt waters or the propagation thereof.

6. Taste, odor, and color-producing substances attributable to sewage, industrial wastes, or other wastes: only such amounts, whether alone or in combination with other substances, as will not exhibit acute toxicity or chronic toxicity, as demonstrated by effluent toxicity testing or by application of numeric criteria given in Rule 335-6-10-.07, to fish and aquatic life, including shrimp and crabs in estuarine and salt waters or adversely affect the propagation thereof; impair the palatability or marketability of fish and wildlife or shrimp and crabs in estuarine and salt waters; or unreasonably affect the aesthetic value of waters for any use under this classification.

7. Bacteria: in non-coastal waters, bacteria of the fecal coliform group shall not exceed a geometric mean of 200 colonies/100 ml. In coastal waters, bacteria of the enterococci group shall not exceed a geometric mean of 35 colonies/100 ml nor exceed a maximum of 104 colonies/100 ml in any sample. The geometric mean shall be calculated from no less than five samples collected at a given station over a 30-day period at intervals not less than 24 hours.

8. Radioactivity: the concentrations of radioactive materials present shall not exceed the requirements of the State Department of Public Health.

9. Turbidity: there shall be no turbidity of other than natural origin that will cause substantial visible contrast with the natural appearance of waters or interfere with any beneficial uses which they serve. Furthermore, in no case shall turbidity exceed 50 Nephelometric units above background. Background will be interpreted as the natural condition of the receiving waters without the influence of man-made or man-induced causes. Turbidity levels caused by natural runoff will be included in establishing background levels.

(2) **PUBLIC WATER SUPPLY**

(a) Best usage of waters: source of water supply for drinking or food-processing purposes.\*

(b) Conditions related to best usage: the waters, if subjected to treatment approved by the Department equal to coagulation, sedimentation, filtration and disinfection, with additional treatment if necessary to remove naturally present impurities, and which meet the requirements of the Department, will be considered safe for drinking or food-processing purposes.

(c) Other usage of waters: it is recognized that the waters may be used for incidental water contact and recreation during June through September, except that water

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\* **NOTE:** In determining the safety or suitability of waters for use as sources of water supply for drinking or food-processing purposes after approved treatment, the Commission will be guided by the physical and chemical standards specified by the Department.

contact is strongly discouraged in the vicinity of discharges or other conditions beyond the control of the Department or the Alabama Department of Public Health.

(d) Conditions related to other usage: the waters, under proper sanitary supervision by the controlling health authorities, will meet accepted standards of water quality for outdoor swimming places and will be considered satisfactory for swimming and other whole body water-contact sports.

(e) Specific criteria:

1. Sewage, industrial wastes, or other wastes: none which are not effectively treated or controlled in accordance with Rule 335-6-10-.08.

2. pH: sewage, industrial wastes or other wastes shall not cause the pH to deviate more than one unit from the normal or natural pH, nor be less than 6.0, nor greater than 8.5.

3. Temperature:

(i) The maximum temperature in streams, lakes, and reservoirs, other than those in river basins listed in subparagraph (ii) hereof, shall not exceed 90 °F.

(ii) The maximum temperature in streams, lakes, and reservoirs in the Tennessee and Cahaba River Basins, and for that portion of the Tallapoosa River Basin from the tailrace of Thurlow Dam at Tallassee downstream to the junction of the Coosa and Tallapoosa Rivers which has been designated by the Alabama Department of Conservation and Natural Resources as supporting smallmouth bass, sauger, or walleye, shall not exceed 86 °F.

(iii) The maximum in-stream temperature rise above ambient water temperature due to the addition of artificial heat by a discharger shall not exceed 5 °F in streams, lakes, and reservoirs in non-coastal and non-estuarine areas.

(iv) The maximum in-stream temperature rise above ambient water temperature due to the addition of artificial heat by a discharger shall not exceed 4 °F in coastal or estuarine waters during the period October through May, nor shall the rise exceed 1.5 °F during the period June through September.

(v) In lakes and reservoirs there shall be no withdrawal from, nor discharge of heated waters to, the hypolimnion unless it can be shown that such discharge or withdrawal will be beneficial to water quality.

(vi) In all waters the normal daily and seasonal temperature variations that were present before the addition of artificial heat shall be maintained, and there shall be no thermal block to the migration of aquatic organisms.

(vii) Thermal permit limitations in NPDES permits may be less stringent than those required by subparagraphs (i) - (iv) hereof when a showing by the discharger has

been made pursuant to Section 316 of the Federal Water Pollution Control Act (FWPCA), 33 U.S.C. § 1251 et seq. or pursuant to a study of an equal or more stringent nature required by the State of Alabama authorized by Title 22, Section 22-22-9(c), Code of Alabama, 1975, that such limitations will assure the protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife, in and on the body of water to which the discharge is made. Any such demonstration shall take into account the interaction of the thermal discharge component with other pollutants discharged.

4. Dissolved oxygen:

(i) For a diversified warm water biota, including game fish, daily dissolved oxygen concentrations shall not be less than 5 mg/l at all times; except under extreme conditions due to natural causes, it may range between 5 mg/l and 4 mg/l, provided that the water quality is favorable in all other parameters. The normal seasonal and daily fluctuations shall be maintained above these levels. In no event shall the dissolved oxygen level be less than 4 mg/l due to discharges from existing hydroelectric generation impoundments. All new hydroelectric generation impoundments, including addition of new hydroelectric generation units to existing impoundments, shall be designed so that the discharge will contain at least 5 mg/l dissolved oxygen where practicable and technologically possible. The Environmental Protection Agency, in cooperation with the State of Alabama and parties responsible for impoundments, shall develop a program to improve the design of existing facilities.

(ii) In coastal waters, surface dissolved oxygen concentrations shall not be less than 5 mg/l, except where natural phenomena cause the value to be depressed.

(iii) In estuaries and tidal tributaries, dissolved oxygen concentrations shall not be less than 5 mg/l, except in dystrophic waters or where natural conditions cause the value to be depressed.

(iv) In the application of dissolved oxygen criteria referred to above, dissolved oxygen shall be measured at a depth of 5 feet in waters 10 feet or greater in depth; and for those waters less than 10 feet in depth, dissolved oxygen criteria will be applied at mid-depth.

5. Toxic substances; color producing; heated liquids; or other deleterious substances attributable to sewage, industrial wastes, or other wastes: only such amounts, whether alone or in combination with other substances, and only such temperatures as will not render the waters unsafe or unsuitable as a source of water supply for drinking or food-processing purposes, or exhibit acute toxicity or chronic toxicity, as demonstrated by effluent toxicity testing or by application of numeric criteria given in Rule 335-6-10-.07, to fish, wildlife and aquatic life, or adversely affect the aesthetic value of waters for any use under this classification.

6. Taste and odor producing substances attributable to sewage, industrial wastes, or other wastes: only such amounts, whether alone or in combination with other substances or wastes, as will not cause taste and odor difficulties in water supplies which

cannot be corrected by treatment as specified under subparagraph (b), or impair the palatability of fish.

7. Bacteria:

(i) In non-coastal waters, bacteria of the fecal coliform group shall not exceed a geometric mean of 1,000 colonies/100 ml; nor exceed a maximum of 2,000 colonies/100 ml in any sample. The geometric mean shall be calculated from no less than five samples collected at a given station over a 30-day period at intervals not less than 24 hours. In coastal waters, bacteria of the enterococci group shall not exceed a maximum of 275 colonies/100 ml in any sample.

(ii) For incidental water contact and recreation during June through September, the bacterial quality of water is acceptable when a sanitary survey by the controlling health authorities reveals no source of dangerous pollution and when the geometric mean fecal coliform organism density does not exceed 200 colonies/100 ml in non-coastal waters. In coastal waters, bacteria of the enterococci group shall not exceed a geometric mean of 35 colonies/100 ml nor exceed a maximum of 158 colonies/100 ml in any sample. The geometric mean shall be calculated from no less than five samples collected at a given station over a 30-day period at intervals not less than 24 hours. When the geometric mean bacterial organism density exceeds these levels, the bacterial water quality shall be considered acceptable only if a second detailed sanitary survey and evaluation discloses no significant public health risk in the use of the waters. Waters in the immediate vicinity of discharges of sewage or other wastes likely to contain bacteria harmful to humans, regardless of the degree of treatment afforded these wastes, are not acceptable for swimming or other whole body water-contact sports.

8. Radioactivity: no radionuclide or mixture of radionuclides shall be present at concentrations greater than those specified by the requirements of the State Department of Public Health.

9. Turbidity: there shall be no turbidity of other than natural origin that will cause substantial visible contrast with the natural appearance of waters or interfere with any beneficial uses which they serve. Furthermore, in no case shall turbidity exceed 50 Nephelometric units above background. Background will be interpreted as the natural condition of the receiving waters, without the influence of man-made or man-induced causes. Turbidity levels caused by natural runoff will be included in establishing background levels.

(3) **SWIMMING AND OTHER WHOLE BODY WATER-CONTACT SPORTS**

(a) Best usage of waters: swimming and other whole body water-contact sports.\*

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\* **NOTE:** In assigning this classification to waters intended for swimming and water-contact sports, the Commission will take into consideration the relative proximity of discharges of wastes and will recognize

(b) Conditions related to best usage: the waters, under proper sanitary supervision by the controlling health authorities, will meet accepted standards of water quality for outdoor swimming places and will be considered satisfactory for swimming and other whole body water-contact sports. The quality of waters will also be suitable for the propagation of fish, wildlife and aquatic life. The quality of salt waters and estuarine waters to which this classification is assigned will be suitable for the propagation and harvesting of shrimp and crabs.

(c) Specific criteria:

1. Sewage, industrial wastes, or other wastes: none which are not effectively treated or controlled in accordance with Rule 335-6-10-.08.

2. pH: sewage, industrial wastes or other wastes shall not cause the pH to deviate more than one unit from the normal or natural pH, nor be less than 6.0, nor greater than 8.5. For estuarine waters and salt waters to which this classification is assigned, wastes as described herein shall not cause the pH to deviate more than one unit from the normal or natural pH, nor be less than 6.5, nor greater than 8.5.

3. Temperature:

(i) The maximum temperature in streams, lakes, and reservoirs, other than those in river basins listed in subparagraph (ii) hereof, shall not exceed 90 °F.

(ii) The maximum temperature in streams, lakes, and reservoirs in the Tennessee and Cahaba River Basins, and for that portion of the Tallapoosa River Basin from the tailrace of Thurlow Dam at Tallassee downstream to the junction of the Coosa and Tallapoosa Rivers which has been designated by the Alabama Department of Conservation and Natural Resources as supporting smallmouth bass, sauger, or walleye, shall not exceed 86 °F.

(iii) The maximum in-stream temperature rise above ambient water temperature due to the addition of artificial heat by a discharger shall not exceed 5 °F in streams, lakes, and reservoirs in non-coastal and non-estuarine areas.

(iv) The maximum in-stream temperature rise above ambient water temperature due to the addition of artificial heat by a discharger shall not exceed 4 °F in coastal or estuarine waters during the period October through May, nor shall the rise exceed 1.5 °F during the period June through September.

(v) In lakes and reservoirs there shall be no withdrawal from, nor discharge of heated waters to, the hypolimnion unless it can be shown that such discharge or withdrawal will be beneficial to water quality.

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the potential hazards involved in locating swimming areas close to waste discharges. The Commission will not assign this classification to waters, the bacterial quality of which is dependent upon adequate disinfection of waste and where the interruption of such treatment would render the water unsafe for bathing.

(vi) In all waters the normal daily and seasonal temperature variations that were present before the addition of artificial heat shall be maintained, and there shall be no thermal block to the migration of aquatic organisms.

(vii) Thermal permit limitations in NPDES permits may be less stringent than those required by subparagraphs (i) - (iv) hereof when a showing by the discharger has been made pursuant to Section 316 of the Federal Water Pollution Control Act (FWPCA), 33 U.S.C. § 1251 et seq. or pursuant to a study of an equal or more stringent nature required by the State of Alabama authorized by Title 22, Section 22-22-9(c), Code of Alabama, 1975, that such limitations will assure the protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife, in and on the body of water to which the discharge is made. Any such demonstration shall take into account the interaction of the thermal discharge component with other pollutants discharged.

4. Dissolved oxygen:

(i) For a diversified warm water biota, including game fish, daily dissolved oxygen concentrations shall not be less than 5 mg/l at all times; except under extreme conditions due to natural causes, it may range between 5 mg/l and 4 mg/l, provided that the water quality is favorable in all other parameters. The normal seasonal and daily fluctuations shall be maintained above these levels. In no event shall the dissolved oxygen level be less than 4 mg/l due to discharges from existing hydroelectric generation impoundments. All new hydroelectric generation impoundments, including addition of new hydroelectric generation units to existing impoundments, shall be designed so that the discharge will contain at least 5 mg/l dissolved oxygen where practicable and technologically possible. The Environmental Protection Agency, in cooperation with the State of Alabama and parties responsible for impoundments, shall develop a program to improve the design of existing facilities.

(ii) In coastal waters, surface dissolved oxygen concentrations shall not be less than 5 mg/l, except where natural phenomena cause the value to be depressed.

(iii) In estuaries and tidal tributaries, dissolved oxygen concentrations shall not be less than 5 mg/l, except in dystrophic waters or where natural conditions cause the value to be depressed.

(iv) In the application of dissolved oxygen criteria referred to above, dissolved oxygen shall be measured at a depth of 5 feet in waters 10 feet or greater in depth; and for those waters less than 10 feet in depth, dissolved oxygen criteria will be applied at mid-depth.

5. Toxic substances; color producing substances; odor producing substances; or other deleterious substances attributable to sewage, industrial wastes, or other wastes: only such amounts, whether alone or in combination with other substances or wastes, as will not render the water unsafe or unsuitable for swimming and water-contact sports; exhibit acute toxicity or chronic toxicity, as demonstrated by effluent toxicity testing or by application of numeric criteria given in Rule 335-6-10-.07, to fish, wildlife, and

aquatic life or, where applicable, shrimp and crabs; impair the palatability of fish, or where applicable, shrimp and crabs; impair the waters for any other usage established for this classification or unreasonably affect the aesthetic value of waters for any use under this classification.

6. Bacteria:

(i) Waters in the immediate vicinity of discharges of sewage or other wastes likely to contain bacteria harmful to humans, regardless of the degree of treatment afforded these wastes\*, are not acceptable for swimming or other whole body water-contact sports.

(ii) In all other areas, the bacterial quality of water is acceptable when a sanitary survey by the controlling health authorities reveals no source of dangerous pollution and when the geometric mean fecal coliform organism density does not exceed 200 colonies/100 ml in non-coastal waters. In coastal waters, bacteria of the enterococci group shall not exceed a geometric mean of 35 colonies/100 ml nor exceed a maximum of 104 colonies/100 ml in any sample. The geometric mean shall be calculated from no less than five samples collected at a given station over a 30-day period at intervals not less than 24 hours. When the geometric mean bacterial organism density exceeds these levels, the bacterial water quality shall be considered acceptable only if a second detailed sanitary survey and evaluation discloses no significant public health risk in the use of the waters.

(iii) The policy of nondegradation of high quality waters shall be stringently applied to bacterial quality of recreational waters.

7. Radioactivity: the concentrations of radioactive materials present shall not exceed the requirement of the State Department of Public Health.

8. Turbidity: there shall be no turbidity of other than natural origin that will cause substantial visible contrast with the natural appearance of waters or interfere with any beneficial uses which they serve. Furthermore, in no case shall turbidity exceed 50 Nephelometric units above background. Background will be interpreted as the natural condition of the receiving waters, without the influence of man-made or man-induced causes. Turbidity levels caused by natural runoff will be included in establishing background levels.

(4) **SHELLFISH HARVESTING**

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\* **NOTE:** In assigning this classification to waters intended for swimming and water-contact sports, the Commission will take into consideration the relative proximity of discharges of wastes and will recognize the potential hazards involved in locating swimming areas close to waste discharges. The Commission will not assign this classification to waters, the bacterial quality of which is dependent upon adequate disinfection of waste and where the interruption of such treatment would render the water unsafe for bathing.



(a) Best usage of waters: propagation and harvesting of shellfish for sale or use as a food product.

(b) Conditions related to best usage: waters will meet the sanitary and bacteriological standards included in the *National Shellfish Sanitation Program Model Ordinance, 1999, Chapter IV*, published by the Food and Drug Administration, U.S. Department of Health and Human Services and the requirements of the State Department of Public Health. The waters will also be of a quality suitable for the propagation of fish and other aquatic life, including shrimp and crabs.

(c) Other usage of waters: it is recognized that the waters may be used for incidental water contact and recreation during June through September, except that water contact is strongly discouraged in the vicinity of discharges or other conditions beyond the control of the Department or the Alabama Department of Public Health.

(d) Conditions related to other usage: the waters, under proper sanitary supervision by the controlling health authorities, will meet accepted standards of water quality for outdoor swimming places and will be considered satisfactory for swimming and other whole body water-contact sports.

(e) Specific criteria:

1. Sewage, industrial wastes, or other wastes: none which are not effectively treated in accordance with Rule 335-6-10-.08.

2. pH: sewage, industrial wastes or other wastes shall not cause the pH to deviate more than one unit from the normal or natural pH, nor be less than 6.5, nor greater than 8.5.

3. Temperature:

(i) The maximum temperature in streams, lakes, and reservoirs, other than those in river basins listed in subparagraph (ii) hereof, shall not exceed 90 °F.

(ii) The maximum temperature in streams, lakes, and reservoirs in the Tennessee and Cahaba River Basins, and for that portion of the Tallapoosa River Basin from the tailrace of Thurlow Dam at Tallassee downstream to the junction of the Coosa and Tallapoosa Rivers which has been designated by the Alabama Department of Conservation and Natural Resources as supporting smallmouth bass, sauger, or walleye, shall not exceed 86 °F.

(iii) The maximum in-stream temperature rise above ambient water temperature due to the addition of artificial heat by a discharger shall not exceed 5 °F in streams, lakes, and reservoirs in non-coastal and non-estuarine areas.

(iv) The maximum in-stream temperature rise above ambient water temperature due to the addition of artificial heat by a discharger shall not exceed 4 °F in

coastal or estuarine waters during the period October through May, nor shall the rise exceed 1.5 °F during the period June through September.

(v) In lakes and reservoirs there shall be no withdrawal from, nor discharge of heated waters to, the hypolimnion unless it can be shown that such discharge or withdrawal will be beneficial to water quality.

(vi) In all waters the normal daily and seasonal temperature variations that were present before the addition of artificial heat shall be maintained, and there shall be no thermal block to the migration of aquatic organisms.

(vii) Thermal permit limitations in NPDES permits may be less stringent than those required by subparagraphs (i) - (iv) hereof when a showing by the discharger has been made pursuant to Section 316 of the Federal Water Pollution Control Act (FWPCA), 33 U.S.C. § 1251 et seq. or pursuant to a study of an equal or more stringent nature required by the State of Alabama authorized by Title 22, Section 22-22-9(c), Code of Alabama, 1975, that such limitations will assure the protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife, in and on the body of water to which the discharge is made. Any such demonstration shall take into account the interaction of the thermal discharge component with other pollutants discharged.

#### 4. Dissolved oxygen:

(i) For a diversified warm water biota, including game fish, daily dissolved oxygen concentrations shall not be less than 5 mg/l at all times; except under extreme conditions due to natural causes, it may range between 5 mg/l and 4 mg/l, provided that the water quality is favorable in all other parameters. The normal seasonal and daily fluctuations shall be maintained above these levels. In no event shall the dissolved oxygen level be less than 4 mg/l due to discharges from existing hydroelectric generation impoundments. All new hydroelectric generation impoundments, including addition of new hydroelectric generation units to existing impoundments, shall be designed so that the discharge will contain at least 5 mg/l dissolved oxygen where practicable and technologically possible. The Environmental Protection Agency, in cooperation with the State of Alabama and parties responsible for impoundments, shall develop a program to improve the design of existing facilities.

(ii) In coastal waters, surface dissolved oxygen concentrations shall not be less than 5 mg/l, except where natural phenomena cause the value to be depressed.

(iii) In estuaries and tidal tributaries, dissolved oxygen concentrations shall not be less than 5 mg/l, except in dystrophic waters or where natural conditions cause the value to be depressed.

(iv) In the application of dissolved oxygen criteria referred to above, dissolved oxygen shall be measured at a depth of 5 feet in waters 10 feet or greater in depth; and for those waters less than 10 feet in depth, dissolved oxygen criteria will be applied at mid-depth.

5. Toxic substances attributable to sewage, industrial wastes, or other wastes: only such amounts, whether alone or in combination with other substances, as will not exhibit acute toxicity or chronic toxicity, as demonstrated by effluent toxicity testing or by application of numeric criteria given in Rule 335-6-10-.07, to fish and aquatic life, including shrimp and crabs; or affect the marketability of fish and shellfish, including shrimp and crabs.

6. Color, taste, and odor-producing substances and other deleterious substances attributable to sewage, industrial wastes, or other wastes: only such amounts, whether alone or in combination with other substances, as will not exhibit acute toxicity or chronic toxicity, as demonstrated by effluent toxicity testing or by application of numeric criteria given in Rule 335-6-10-.07, to fish and shellfish, including shrimp and crabs; adversely affect marketability or palatability of fish and shellfish, including shrimp and crabs; or unreasonably affect the aesthetic value of waters for any use under this classification.

7. Bacteria:

(i) Not to exceed the limits specified in the *National Shellfish Sanitation Program Model Ordinance, 1999, Chapter IV*, published by the Food and Drug Administration, U. S. Department of Health and Human Services.

(ii) For incidental water contact and recreation during June through September, the bacterial quality of water is acceptable when a sanitary survey by the controlling health authorities reveals no source of dangerous pollution and when the geometric mean fecal coliform organism density does not exceed 200 colonies/100 ml in non-coastal waters. In coastal waters, bacteria of the enterococci group shall not exceed a geometric mean of 35 colonies/100 ml nor exceed a maximum of 104 colonies/100 ml in any sample. The geometric mean shall be calculated from no less than five samples collected at a given station over a 30-day period at intervals not less than 24 hours. When the geometric mean bacterial organism density exceeds these levels, the bacterial water quality shall be considered acceptable only if a second detailed sanitary survey and evaluation discloses no significant public health risk in the use of the waters. Waters in the immediate vicinity of discharges of sewage or other wastes likely to contain bacteria harmful to humans, regardless of the degree of treatment afforded these wastes, are not acceptable for swimming or other whole body water-contact sports.

8. Radioactivity: the concentrations of radioactive materials present shall not exceed the requirements of the State Department of Public Health.

9. Turbidity: there shall be no turbidity of other than natural origin that will cause substantial visible contrast with the natural appearance of waters or interfere with any beneficial uses which they serve. Furthermore, in no case shall turbidity exceed 50 Nephelometric units above background. Background will be interpreted as the natural condition of the receiving waters without the influence of man-made or man-induced causes. Turbidity levels caused by natural runoff will be included in establishing background levels.

(5) **FISH AND WILDLIFE**

(a) Best usage of waters: fishing, propagation of fish, aquatic life, and wildlife, and any other usage except for swimming and water-contact sports or as a source of water supply for drinking or food-processing purposes.

(b) Conditions related to best usage: the waters will be suitable for fish, aquatic life and wildlife propagation. The quality of salt and estuarine waters to which this classification is assigned will also be suitable for the propagation of shrimp and crabs.

(c) Other usage of waters: it is recognized that the waters may be used for incidental water contact and recreation during June through September, except that water contact is strongly discouraged in the vicinity of discharges or other conditions beyond the control of the Department or the Alabama Department of Public Health.

(d) Conditions related to other usage: the waters, under proper sanitary supervision by the controlling health authorities, will meet accepted standards of water quality for outdoor swimming places and will be considered satisfactory for swimming and other whole body water-contact sports.

## (e) Specific criteria:

1. Sewage, industrial wastes, or other wastes: none which are not effectively treated in accordance with Rule 335-6-10-.08.

2. pH: sewage, industrial wastes or other wastes shall not cause the pH to deviate more than one unit from the normal or natural pH, nor be less than 6.0, nor greater than 8.5. For salt waters and estuarine waters to which this classification is assigned, wastes as herein described shall not cause the pH to deviate more than one unit from the normal or natural pH, nor be less than 6.5, nor greater than 8.5.

## 3. Temperature:

(i) The maximum temperature in streams, lakes, and reservoirs, other than those in river basins listed in subparagraph (ii) hereof, shall not exceed 90° F.

(ii) The maximum temperature in streams, lakes, and reservoirs in the Tennessee and Cahaba River Basins, and for that portion of the Tallapoosa River Basin from the tailrace of Thurlow Dam at Tallassee downstream to the junction of the Coosa and Tallapoosa Rivers which has been designated by the Alabama Department of Conservation and Natural Resources as supporting smallmouth bass, sauger, or walleye, shall not exceed 86 °F.

(iii) The maximum in-stream temperature rise above ambient water temperature due to the addition of artificial heat by a discharger shall not exceed 5 °F in streams, lakes, and reservoirs in non-coastal and non-estuarine areas.

(iv) The maximum in-stream temperature rise above ambient water temperature due to the addition of artificial heat by a discharger shall not exceed 4 °F in coastal or estuarine waters during the period October through May, nor shall the rise exceed 1.5 °F during the period June through September.

(v) In lakes and reservoirs there shall be no withdrawal from, nor discharge of heated waters to, the hypolimnion unless it can be shown that such discharge or withdrawal will be beneficial to water quality.

(vi) In all waters the normal daily and seasonal temperature variations that were present before the addition of artificial heat shall be maintained, and there shall be no thermal block to the migration of aquatic organisms.

(vii) Thermal permit limitations in NPDES permits may be less stringent than those required by subparagraphs (i) - (iv) hereof when a showing by the discharger has been made pursuant to Section 316 of the Federal Water Pollution Control Act (FWPCA), 33 U.S.C. § 1251 et seq. or pursuant to a study of an equal or more stringent nature required by the State of Alabama authorized by Title 22, Section 22-22-9(c), Code of Alabama, 1975, that such limitations will assure the protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife, in and on the body of water to which the discharge is made. Any such demonstration shall take into account the interaction of the thermal discharge component with other pollutants discharged.

#### 4. Dissolved oxygen:

(i) For a diversified warm water biota, including game fish, daily dissolved oxygen concentrations shall not be less than 5 mg/l at all times; except under extreme conditions due to natural causes, it may range between 5 mg/l and 4 mg/l, provided that the water quality is favorable in all other parameters. The normal seasonal and daily fluctuations shall be maintained above these levels. In no event shall the dissolved oxygen level be less than 4 mg/l due to discharges from existing hydroelectric generation impoundments. All new hydroelectric generation impoundments, including addition of new hydroelectric generation units to existing impoundments, shall be designed so that the discharge will contain at least 5 mg/l dissolved oxygen where practicable and technologically possible. The Environmental Protection Agency, in cooperation with the State of Alabama and parties responsible for impoundments, shall develop a program to improve the design of existing facilities.

(ii) In coastal waters, surface dissolved oxygen concentrations shall not be less than 5 mg/l, except where natural phenomena cause the value to be depressed.

(iii) In estuaries and tidal tributaries, dissolved oxygen concentrations shall not be less than 5 mg/l, except in dystrophic waters or where natural conditions cause the value to be depressed.

(iv) In the application of dissolved oxygen criteria referred to above, dissolved oxygen shall be measured at a depth of 5 feet in waters 10 feet or greater in depth; and for

those waters less than 10 feet in depth, dissolved oxygen criteria will be applied at mid-depth.

5. Toxic substances attributable to sewage, industrial wastes, or other wastes: only such amounts, whether alone or in combination with other substances, as will not exhibit acute toxicity or chronic toxicity, as demonstrated by effluent toxicity testing or by application of numeric criteria given in Rule 335-6-10-.07, to fish and aquatic life, including shrimp and crabs in estuarine or salt waters or the propagation thereof.

6. Taste, odor, and color-producing substances attributable to sewage, industrial wastes, or other wastes: only such amounts, whether alone or in combination with other substances, as will not exhibit acute toxicity or chronic toxicity, as demonstrated by effluent toxicity testing or by application of numeric criteria given in Rule 335-6-10-.07, to fish and aquatic life, including shrimp and crabs in estuarine and salt waters or adversely affect the propagation thereof; impair the palatability or marketability of fish and wildlife or shrimp and crabs in estuarine and salt waters; or unreasonably affect the aesthetic value of waters for any use under this classification.

7. Bacteria:

(i) In non-coastal waters, bacteria of the fecal coliform group shall not exceed a geometric mean of 1,000 colonies/100 ml; nor exceed a maximum of 2,000 colonies/100 ml in any sample. In coastal waters, bacteria of the enterococci group shall not exceed a maximum of 275 colonies/100 ml in any sample. The geometric mean shall be calculated from no less than five samples collected at a given station over a 30-day period at intervals not less than 24 hours.

(ii) For incidental water contact and recreation during June through September, the bacterial quality of water is acceptable when a sanitary survey by the controlling health authorities reveals no source of dangerous pollution and when the geometric mean fecal coliform organism density does not exceed 200 colonies/100 ml in non-coastal waters. In coastal waters, bacteria of the enterococci group shall not exceed a geometric mean of 35 colonies/100 ml nor exceed a maximum of 158 colonies/100 ml in any sample. The geometric mean shall be calculated from no less than five samples collected at a given station over a 30-day period at intervals not less than 24 hours. When the geometric bacterial coliform organism density exceeds these levels, the bacterial water quality shall be considered acceptable only if a second detailed sanitary survey and evaluation discloses no significant public health risk in the use of the waters. Waters in the immediate vicinity of discharges of sewage or other wastes likely to contain bacteria harmful to humans, regardless of the degree of treatment afforded these wastes, are not acceptable for swimming or other whole body water-contact sports.

8. Radioactivity: the concentrations of radioactive materials present shall not exceed the requirements of the State Department of Public Health.

9. Turbidity: there shall be no turbidity of other than natural origin that will cause substantial visible contrast with the natural appearance of waters or interfere with

any beneficial uses which they serve. Furthermore, in no case shall turbidity exceed 50 Nephelometric units above background. Background will be interpreted as the natural condition of the receiving waters without the influence of man-made or man-induced causes. Turbidity levels caused by natural runoff will be included in establishing background levels.

**(6) LIMITED WARMWATER FISHERY**

(a) The provisions of the Fish and Wildlife water use classification at Rule 335-6-10-.09(5) shall apply to the Limited Warmwater Fishery water use classification, except as noted below. Unless alternative criteria for a given parameter are provided in paragraph (e) below, the applicable Fish and Wildlife criteria at paragraph 10-.09(5)(e) shall apply year-round. At the time the Department proposes to assign the Limited Warmwater Fishery classification to a specific waterbody, the Department may apply criteria from other classifications within this chapter if necessary to protect a documented, legitimate existing use.

(b) Best usage of waters (May through November): agricultural irrigation, livestock watering, industrial cooling and process water supplies, and any other usage, except fishing, bathing, recreational activities, including water-contact sports, or as a source of water supply for drinking or food-processing purposes.

(c) Conditions related to best usage (May through November):

1. The waters will be suitable for agricultural irrigation, livestock watering, and industrial cooling waters. The waters will be usable after special treatment, as may be needed under each particular circumstance, for industrial process water supplies. The waters will also be suitable for other uses for which waters of lower quality will be satisfactory.

2. This category includes watercourses in which natural flow is intermittent, or under certain conditions non-existent, and which may receive treated wastes from existing municipalities and industries. In such instances, recognition is given to the lack of opportunity for mixture of the treated wastes with the receiving stream for purposes of compliance. It is also understood in considering waters for this classification that urban runoff or natural conditions may impact any waters so classified.

(d) Other usage of waters: none recognized.

(e) Specific criteria:

1. Dissolved oxygen (May through November): treated sewage, industrial wastes, or other wastes shall not cause the dissolved oxygen to be less than 3.0 mg/l. In the application of dissolved oxygen criteria referred to above, dissolved oxygen shall be measured at a depth of 5 feet in waters 10 feet or greater in depth; and for those waters less than 10 feet in depth, dissolved oxygen criteria will be applied at mid-depth.

2. Toxic substances and taste-, odor-, and color-producing substances attributable to treated sewage, industrial wastes, and other wastes: only such amounts as will not render the waters unsuitable for agricultural irrigation, livestock watering, industrial cooling, and industrial process water supply purposes; interfere with downstream water uses; or exhibit acute toxicity or chronic toxicity, as demonstrated by effluent toxicity testing or by application of numeric criteria given in Rule 335-6-10-.07, to fish and aquatic life, including shrimp and crabs in estuarine or salt waters or the propagation thereof. For the purpose of establishing effluent limitations pursuant to Chapter 335-6-6 of the Department's regulations, the minimum 7-day low flow that occurs once in 2 years ( $7Q_2$ ) shall be the basis for applying the chronic aquatic life criteria. The use of the  $7Q_2$  low flow for application of chronic criteria is appropriate based on the historical uses and/or flow characteristics of streams to be considered for this classification.

3. Bacteria: In non-coastal waters, bacteria of the fecal coliform group shall not exceed a geometric mean of 1,000 colonies/100 ml; nor exceed a maximum of 2,000 colonies/100 ml in any sample. In coastal waters, bacteria of the enterococci group shall not exceed a maximum of 275 colonies/100 ml in any sample. The geometric mean shall be calculated from no less than five samples collected at a given station over a 30-day period at intervals not less than 24 hours.

(7) **AGRICULTURAL AND INDUSTRIAL WATER SUPPLY**

(a) Best usage of waters: agricultural irrigation, livestock watering, industrial cooling and process water supplies, and any other usage, except fishing, bathing, recreational activities, including water-contact sports, or as a source of water supply for drinking or food-processing purposes.

(b) Conditions related to best usage:

(i) The waters, except for natural impurities which may be present therein, will be suitable for agricultural irrigation, livestock watering, industrial cooling waters, and fish survival. The waters will be usable after special treatment, as may be needed under each particular circumstance, for industrial process water supplies. The waters will also be suitable for other uses for which waters of lower quality will be satisfactory.

(ii) This category includes watercourses in which natural flow is intermittent and non-existent during droughts and which may, of necessity, receive treated wastes from existing municipalities and industries, both now and in the future. In such instances, recognition must be given to the lack of opportunity for mixture of the treated wastes with the receiving stream for purposes of compliance. It is also understood in considering waters for this classification that urban runoff or natural conditions may impact any waters so classified.

(c) Specific criteria:

1. Sewage, industrial wastes, or other wastes: none which are not effectively treated or controlled in accordance with Rule 335-6-10-.08.



2. pH: sewage, industrial wastes or other wastes shall not cause the pH to deviate more than one unit from the normal or natural pH, nor be less than 6.0, nor greater than 8.5. For salt waters and estuarine waters to which this classification is assigned, wastes as herein described shall not cause the pH to deviate more than one unit from the normal or natural pH, nor be less than 6.5, nor greater than 8.5.

3. Temperature: the maximum temperature rise above natural temperatures due to the addition of artificial heat shall not exceed 5 °F in streams, lakes, and reservoirs, nor shall the maximum water temperature exceed 90 °F.

4. Dissolved oxygen: sewage, industrial wastes, or other wastes shall not cause the dissolved oxygen to be less than 3.0 mg/l. In the application of dissolved oxygen criteria referred to above, dissolved oxygen shall be measured at a depth of 5 feet in waters 10 feet or greater in depth; and for those waters less than 10 feet in depth, dissolved oxygen criteria will be applied at mid-depth.

5. Color, odor, and taste-producing substances, toxic substances, and other deleterious substances, including chemical compounds attributable to sewage, industrial wastes, and other wastes: only such amounts as will not render the waters unsuitable for agricultural irrigation, livestock watering, industrial cooling, industrial process water supply purposes, and fish survival, nor interfere with downstream water uses. For the purpose of establishing effluent limitations pursuant to Chapter 335-6-6 of the Department's regulations, the minimum 7-day low flow that occurs once in 10 years ( $7Q_{10}$ ) shall be the basis for applying the acute aquatic life criteria. The use of the  $7Q_{10}$  low flow for application of acute criteria is appropriate based on the historical uses and/or flow characteristics of streams to be considered for this classification.

6. Bacteria: In non-coastal waters, bacteria of the fecal coliform group shall not exceed a geometric mean of 2,000 colonies/100 ml; nor exceed a maximum of 4,000 colonies/100 ml in any sample. In coastal waters, bacteria of the enterococci group shall not exceed a maximum of 500 colonies/100 ml in any sample. The geometric mean shall be calculated from no less than five samples collected at a given station over a 30-day period at intervals not less than 24 hours.

7. Radioactivity: the concentrations of radioactive materials present shall not exceed the requirements of the State Department of Public Health.

8. Turbidity: there shall be no turbidity of other than natural origin that will cause substantial visible contrast with the natural appearance of waters or interfere with any beneficial uses which they serve. Furthermore, in no case shall turbidity exceed 50 Nephelometric units above background. Background will be interpreted as the natural condition of the receiving waters without the influence of man-made or man-induced causes. Turbidity levels caused by natural runoff will be included in establishing background levels.

**Author:** James E. McIndoe.

**Statutory Authority:** Code of Alabama 1975, §§ 22-22-9, 22-22A-5, 22-22A-6, 22-22A-8.

**History:** May 5, 1967. **Amended:** June 19, 1967; July 17, 1972; February 26, 1973; May 30, 1977; December 19, 1977; February 4, 1981; March 2, 1990; April 3, 1991; December 30, 1992; September 7, 2000; May 27, 2004; January 14, 2005.

**335-6-10-.10 Special Designations.****(1) OUTSTANDING NATIONAL RESOURCE WATER****(a) Designation:**

1. High quality waters that constitute an outstanding National resource, such as waters of national and state parks and wildlife refuges and waters of exceptional recreational or ecological significance, may be considered for designation as an Outstanding National Resource Water (ONRW). For waters designated as ONRW, existing water quality shall be maintained and protected.

**(b) Specific Criteria:**

## 1. Sewage, industrial wastes or other wastes:

(i) No new point source discharges or expansions of existing point source discharges to Outstanding National Resource Waters shall be allowed.

(ii) Existing point source discharges to the Outstanding National Resource Water shall be allowed provided they are treated or controlled in accordance with applicable laws and regulations.

(iii) New point source discharges or expansions of existing point source discharges to waters upstream of, or tributary to, Outstanding National Resource Waters shall be regulated in accordance with applicable laws and regulations, including compliance with water quality criteria for the use classification applicable to the particular water. However, no new point source discharge or expansion of an existing point source discharge to waters upstream of, or tributary to, Outstanding National Resource Waters shall be allowed if such discharge would not maintain and protect water quality within the Outstanding National Resource Water.

(iv) Nonpoint source discharges shall use best management practices adequate to protect water quality consistent with the Department's nonpoint source control program.

**Author:** James E. McIndoe.

**Statutory Authority:** Code of Alabama 1975, §§ 22-22-9, 22-22A-5, 22-22A-6, 22-22A-8.

**History:** April 3, 1991.

**335-6-10-.11 Water Quality Criteria Applicable to Specific Lakes.**

(1) For certain lakes and reservoirs, waterbody-specific criteria are appropriate to enhance nutrient management. The response to nutrient input may vary

significantly lake-to-lake, and for a given lake year-to-year, depending on a number of factors such as rainfall distribution and hydraulic retention time. For this reason, lake nutrient quality targets necessary to maintain and protect existing uses, expressed as chlorophyll *a* criteria, may also vary lake-to-lake. Because the relationship between nutrient input and lake chlorophyll *a* levels is not always well-understood, it may be necessary to revise the criteria as additional water quality data and improved assessment tools become available.

(2) The following lake-specific criteria apply to the waters listed below, in addition to any other applicable criteria commensurate with the designated usage of such waters.

(a) **The Alabama River Basin**

1. Claiborne Lake: those waters impounded by Claiborne Lock and Dam on the Alabama River. The lake has a surface area of 5,930 acres at full pool.

(i) Chlorophyll *a* (corrected, as described in *Standard Methods for the Examination of Water and Wastewater, 20<sup>th</sup> Edition*, 1998): the mean of the photic-zone composite chlorophyll *a* samples collected monthly April through October shall not exceed 15 µg/l, as measured at the deepest point, main river channel, dam forebay.

2. Dannelly Lake: those waters impounded by Millers Ferry Lock and Dam on the Alabama River. The lake has a surface area of 17,200 acres at full pool.

(i) Chlorophyll *a* (corrected, as described in *Standard Methods for the Examination of Water and Wastewater, 20<sup>th</sup> Edition*, 1998): the mean of the photic-zone composite chlorophyll *a* samples collected monthly April through October shall not exceed 17 µg/l, as measured at the deepest point, main river channel, dam forebay.

(b) **The Chattahoochee River Basin**

1. Walter F. George Lake: those waters impounded by Walter F. George Lock and Dam on the Chattahoochee River. The lake has a surface area of 45,181 acres at full power pool, 18,672 acres of which are within Alabama. The Alabama-Georgia state line is represented by the west bank of the original river channel, and the points of measurement for the criteria given below are located in Georgia waters.

(i) Chlorophyll *a* (corrected, as described in *Standard Methods for the Examination of Water and Wastewater, 20<sup>th</sup> Edition*, 1998): the mean of photic-zone composite chlorophyll *a* samples collected monthly April through October shall not exceed 15 µg/l, as measured at the deepest point, main river channel, dam forebay; or 18 µg/l, as measured at the deepest point, main river channel, approximately 0.25 miles upstream of U.S. Highway 82.

2. Lake Harding: those waters impounded by Bartletts Ferry Dam on the Chattahoochee River. The lake has a surface area of 5850 acres at full pool, 2,176 acres

of which are within Alabama. The point of measurement for the criterion given below is located in Georgia waters.

(i) Chlorophyll *a* (corrected, as described in *Standard Methods for the Examination of Water and Wastewater, 20<sup>th</sup> Edition*, 1998): the mean of the photic-zone composite chlorophyll *a* samples collected monthly April through October shall not exceed 15 µg/l, as measured at the deepest point, main river channel, dam forebay.

3. West Point Lake: those waters impounded by West Point Dam on the Chattahoochee River. The lake has a surface area of 25,864 acres at full power pool, 2,765 acres of which are within Alabama. The point of measurement for the criterion given below is located in Georgia waters.

(i) Chlorophyll *a* (corrected, as described in *Standard Methods for the Examination of Water and Wastewater, 20<sup>th</sup> Edition*, 1998): the mean of photic-zone composite chlorophyll *a* samples collected monthly April through October shall not exceed 27 µg/l, as measured at the LaGrange, Georgia Water Intake.

(c) **The Coosa River Basin**

1. Weiss Lake: those waters impounded by Weiss Dam on the Coosa River. The lake has a surface area of 30,200 acres at full pool.

(i) Chlorophyll *a* (corrected, as described in *Standard Methods for the Examination of Water and Wastewater, 20<sup>th</sup> Edition*, 1998): the mean of photic-zone composite chlorophyll *a* samples collected monthly April through October shall not exceed 20 µg/l, as measured at the deepest point, main river channel, power dam forebay; or 20 µg/l, as measured at the deepest point, main river channel, immediately upstream of causeway (Alabama Highway 9) at Cedar Bluff. If the mean of photic-zone composite chlorophyll *a* samples collected monthly April through October is significantly less than 20 µg/l for a given year, the Department will re-evaluate the chlorophyll *a* criteria, associated nutrient management strategies, and available data and information, and recommend changes, if appropriate, to maintain and protect existing uses.

(d) **The Lower Tombigbee River Basin**

1. Coffeenville Lake: those waters impounded by Coffeenville Dam on the Tombigbee River. The lake has a surface area of 8,500 acres at full pool.

(i) Chlorophyll *a* (corrected, as described in *Standard Methods for the Examination of Water and Wastewater, 20<sup>th</sup> Edition*, 1998): the mean of photic-zone composite chlorophyll *a* samples collected monthly April through October shall not exceed 10 µg/l, as measured at the deepest point, main river channel, upstream of the lock canal.

(e) **The Perdido/Escambia River Basin**

1. Lake Jackson: This natural lake, located in Florala, Alabama, has a surface area of 256 acres at full pool.

(i) Chlorophyll a (corrected, as described in *Standard Methods for the Examination of Water and Wastewater, 20<sup>th</sup> Edition*, 1998): the mean of the photic-zone composite chlorophyll a samples collected monthly April through October shall not exceed 7 µg/l, as measured at mid-lake.

2. Point A Lake: those waters impounded by Point A Dam on the Conecuh River. The lake has a surface area of 900 acres at full pool.

(i) Chlorophyll a (corrected, as described in *Standard Methods for the Examination of Water and Wastewater, 20<sup>th</sup> Edition*, 1998): the mean of the photic-zone composite chlorophyll a samples collected monthly April through October shall not exceed 9 µg/l, as measured at the deepest point, main river channel, dam forebay.

3. Gantt Lake: those waters impounded by Gantt Dam on the Conecuh River. The lake has a surface area of 2,767 acres at full pool.

(i) Chlorophyll a (corrected, as described in *Standard Methods for the Examination of Water and Wastewater, 20<sup>th</sup> Edition*, 1998): the mean of the photic-zone composite chlorophyll a samples collected monthly April through October shall not exceed 11 µg/l, as measured at the deepest point, main river channel, dam forebay.

(f) **The Tallapoosa River Basin**

1. Thurlow Lake: those waters impounded by Thurlow Dam on the Tallapoosa River. The reservoir has a surface area of 574 acres at full pool.

(i) Chlorophyll a (corrected, as described in *Standard Methods for the Examination of Water and Wastewater, 20<sup>th</sup> Edition*, 1998): the mean of the photic-zone composite chlorophyll a samples collected monthly April through October shall not exceed 5 µg/l, as measured at the deepest point, main river channel, dam forebay.

2. Yates Lake: those waters impounded by Yates Dam on the Tallapoosa River. The lake has a surface area of 2,000 acres at full pool.

(i) Chlorophyll a (corrected, as described in *Standard Methods for the Examination of Water and Wastewater, 20<sup>th</sup> Edition*, 1998): the mean of the photic-zone composite chlorophyll a samples collected monthly April through October shall not exceed 5 µg/l, as measured at the deepest point, main river channel, dam forebay.

3. Lake Martin: those waters impounded by Martin Dam on the Tallapoosa River. The lake has a surface area of 40,000 acres at full pool.

(i) Chlorophyll a (corrected, as described in *Standard Methods for the Examination of Water and Wastewater, 20<sup>th</sup> Edition*, 1998): the mean of the photic-zone composite chlorophyll a samples collected monthly April through October shall not

exceed 5 µg/l, as measured at the deepest point, main river channel, dam forebay; or 5 µg/l, as measured at the deepest point main river channel, immediately upstream of Blue Creek embayment; or 5 µg/l as measured at the deepest point, main creek channel, immediately upstream of Alabama Highway 63 (Kowaliga) bridge.

4. R.L. Harris Lake: those waters impounded by R.L. Harris Dam on the Tallapoosa River. The lake has a surface area of 10,660 acres at full pool.

(i) Chlorophyll *a* (corrected, as described in *Standard Methods for the Examination of Water and Wastewater, 20th Edition, 1998*): the mean of photic-zone composite chlorophyll *a* samples collected monthly April through October shall not exceed 10 µg/l, as measured at the deepest point, main river channel, dam forebay; or 12 µg/l, as measured at the deepest point, main river channel, immediately upstream of the Tallapoosa River - Little Tallapoosa River confluence.

(g) **The Tennessee River Basin**

1. Pickwick Lake: those waters impounded by Pickwick Dam on the Tennessee River. The reservoir has a surface area of 43,100 acres at full pool, 33,700 acres of which are within Alabama. The point of measurement for the criterion given below is located in Tennessee waters.

(i) Chlorophyll *a* (corrected, as described in *Standard Methods for the Examination of Water and Wastewater, 20<sup>th</sup> Edition, 1998*): the mean of the photic-zone composite chlorophyll *a* samples collected monthly April through September shall not exceed 18 µg/l, as measured at the deepest point, main river channel, dam forebay.

2. Wilson Lake: those waters impounded by Wilson Dam on the Tennessee River. The lake has a surface area of 15,930 acres at full pool.

(i) Chlorophyll *a* (corrected, as described in *Standard Methods for the Examination of Water and Wastewater, 20<sup>th</sup> Edition, 1998*): the mean of the photic-zone composite chlorophyll *a* samples collected monthly April through September shall not exceed 18 µg/l, as measured at the deepest point, main river channel, dam forebay.

3. Wheeler Lake: those waters impounded by Wheeler Dam on the Tennessee River. The lake has a surface area of 67,100 acres at full pool.

(i) Chlorophyll *a* (corrected, as described in *Standard Methods for the Examination of Water and Wastewater, 20<sup>th</sup> Edition, 1998*): the mean of the photic-zone composite chlorophyll *a* samples collected monthly April through September shall not exceed 18 µg/l, as measured at the deepest point, main river channel, dam forebay.

4. Guntersville Lake: those waters impounded by Guntersville Dam on the Tennessee River. The lake has a surface area of 69,700 acres at full pool, 67,900 of which are within Alabama.

(i) Chlorophyll *a* (corrected, as described in *Standard Methods for the Examination of Water and Wastewater, 20th Edition, 1998*): the mean of photic-zone

composite chlorophyll *a* samples collected monthly April through September shall not exceed 18 µg/l, as measured at the deepest point, main river channel, dam forebay.

5. Cedar Creek Lake: those waters impounded by Cedar Creek Dam on Cedar Creek. The reservoir has a surface area of 4,200 acres at full pool.

(i) Chlorophyll *a* (corrected, as described in *Standard Methods for the Examination of Water and Wastewater, 20<sup>th</sup> Edition*, 1998): the mean of the photic-zone composite chlorophyll *a* samples collected monthly April through October shall not exceed 8 µg/l, as measured at the deepest point, main creek channel, dam forebay.

6. Little Bear Creek Lake: those waters impounded by Little Bear Dam on Little Bear Creek. The reservoir has a surface area of 1,600 acres at full pool.

(i) Chlorophyll *a* (corrected, as described in *Standard Methods for the Examination of Water and Wastewater, 20<sup>th</sup> Edition*, 1998): the mean of the photic-zone composite chlorophyll *a* samples collected monthly April through October shall not exceed 8 µg/l, as measured at the deepest point, main creek channel, dam forebay.

(h) **The Upper Tombigbee River Basin**

1. Demopolis Lake: those waters impounded by Demopolis Dam downstream of the confluence of the Tombigbee and the Black Warrior Rivers. The lake has a surface area of 10,000 acres at full pool.

(i) Chlorophyll *a* (corrected, as described in *Standard Methods for the Examination of Water and Wastewater, 20<sup>th</sup> Edition*, 1998): the mean of photic-zone composite chlorophyll *a* samples collected monthly April through October shall not exceed 10 µg/l, as measured at the deepest point, main river channel, dam forebay.

2. Gainesville Lake: those waters impounded by Gainesville Dam on the Tombigbee River. The lake has a surface area of 6,400 acres at full pool.

(i) Chlorophyll *a* (corrected, as described in *Standard Methods for the Examination of Water and Wastewater, 20<sup>th</sup> Edition*, 1998): the mean of photic-zone composite chlorophyll *a* samples collected monthly April through October shall not exceed 14 µg/l, as measured at the deepest point, main river channel, dam forebay.

(i) **The Warrior River Basin**

1. Warrior Lake: those waters impounded by Warrior Lock and Dam on the Black Warrior River. The lake has a surface area of 7,800 acres at full pool.

(i) Chlorophyll *a* (corrected, as described in *Standard Methods for the Examination of Water and Wastewater, 20<sup>th</sup> Edition*, 1998): the mean of the photic-zone composite chlorophyll *a* samples collected monthly April through October shall not exceed 12 µg/l, as measured at the deepest point, main river channel, dam forebay.



2. Oliver Lake: those waters impounded by William Bacon Oliver Lock and Dam on the Black Warrior River. The lake has a surface area of 800 acres at full pool.

(i) Chlorophyll  $a$  (corrected, as described in *Standard Methods for the Examination of Water and Wastewater, 20<sup>th</sup> Edition*, 1998): the mean of the photic-zone composite chlorophyll  $a$  samples collected monthly April through October shall not exceed 12  $\mu\text{g/l}$ , as measured at the deepest point, main river channel, dam forebay.

3. Holt Lake: those waters impounded by Holt Lock and Dam on the Black Warrior River. The lake has a surface area of 3,200 acres at full pool.

(i) Chlorophyll  $a$  (corrected, as described in *Standard Methods for the Examination of Water and Wastewater, 20<sup>th</sup> Edition*, 1998): the mean of the photic-zone composite chlorophyll  $a$  samples collected monthly April through October shall not exceed 16  $\mu\text{g/l}$ , as measured at the deepest point, main river channel, dam forebay.

4. Lake Tuscaloosa: those waters impounded by Lake Tuscaloosa Dam on the North River. The lake has a surface area of 5,885 acres at full pool.

(i) Chlorophyll  $a$  (corrected, as described in *Standard Methods for the Examination of Water and Wastewater, 20<sup>th</sup> Edition*, 1998): the mean of the photic-zone composite chlorophyll  $a$  samples collected monthly April through October shall not exceed 8  $\mu\text{g/l}$ , as measured at the deepest point, main river channel, dam forebay.

5. Bankhead Lake: those waters impounded by John Hollis Bankhead Lock and Dam on the Black Warrior River. The lake has a surface area of 9,200 acres at full pool.

(i) Chlorophyll  $a$  (corrected, as described in *Standard Methods for the Examination of Water and Wastewater, 20<sup>th</sup> Edition*, 1998): the mean of the photic-zone composite chlorophyll  $a$  samples collected monthly April through October shall not exceed 16  $\mu\text{g/l}$ , as measured at the deepest point, main river channel, dam forebay.

6. Smith Lake: those waters impounded by Lewis M. Smith Dam on the Sipsey Fork River. The lake has a surface area of 21,200 acres at full pool.

(i) Chlorophyll  $a$  (corrected, as described in *Standard Methods for the Examination of Water and Wastewater, 20<sup>th</sup> Edition*, 1998): the mean of the photic-zone composite chlorophyll  $a$  samples collected monthly April through October shall not exceed 5  $\mu\text{g/l}$ , as measured at the deepest point, main river channel, dam forebay; 5  $\mu\text{g/l}$ , as measured at the deepest point, main river channel, at Duncan Creek/Sipsey River confluence (downstream of the Alabama Highway 257 bridge); and 5  $\mu\text{g/l}$ , as measured at the deepest point, main river channel, immediately downstream of Brushy Creek confluence.

7. Inland Lake: those waters impounded by Inland Lake Dam on the Blackburn Fork of the Little Warrior River. The lake has a surface area of 1,095 acres at full pool.

(i) Chlorophyll *a* (corrected, as described in *Standard Methods for the Examination of Water and Wastewater, 20<sup>th</sup> Edition*, 1998): the mean of the photic-zone composite chlorophyll *a* samples collected monthly April through October shall not exceed 6 µg/l, as measured at the deepest point, main river channel, dam forebay.

**Author:** James E. McIndoe.

**Statutory Authority:** Code of Alabama 1975, §§ 22-22-9, 22-22A-5, 22-22A-6, 22-22A-8.

**History:** January 12, 2001. **Amended:** May 16, 2002; May 27, 2004; September 21, 2005.

### **335-6-10-.12 Implementation of the Antidegradation Policy.**

(1) The antidegradation policy at Rule 335-6-10-.04 addresses three categories of waters/uses:

(a) High quality waters that constitute an outstanding national resource (Tier 3);

(b) Waters where the quality exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water (Tier 2); and

(c) Existing instream water uses and the level of water quality necessary to protect the existing uses (Tier 1).

(2) Tier 3 waters are those waters designated pursuant to the Outstanding National Resource Water (ONRW) special designation at Rule 335-6-10-.10, and are identified in Rule 335-6-11-.02.

(3) Tier 1 waters are:

(a) Those waters (except waters assigned the use classification of Outstanding Alabama Water, which are Tier 2 waters) identified on the most recent EPA-approved Section 303(d) list;

(b) Those waters (except waters assigned the use classification of Outstanding Alabama Water, which are Tier 2 waters) for which attainment of applicable water quality standards has been, or is expected to be, achieved through implementation of effluent limitations more stringent than technology-based controls (BPT, BAT, and secondary treatment); and

(c) Those waters assigned the use classification of Limited Warmwater Fishery or Agricultural and Industrial Water Supply (as identified in Rule 335-6-11-.02).

(4) Tier 2 waters are all other waters (those waters not identified as either Tier 3 waters or Tier 1 waters), including all waters assigned the use classification of Outstanding Alabama Water (as identified in Rule 335-6-11-.02).

(5) All new or expanded discharges to Tier 2 waters (except discharges eligible for coverage under general permits) covered by the NPDES permitting program are potentially subject to the provisions of Rule 335-6-10-.04(3). Applicants for such discharges are required to demonstrate that the proposed discharge is necessary for important economic or social development as a part of the permit application process.

(6) After receipt of a permit application for a potentially covered discharge, the Department will determine whether the proposed discharge is to a Tier 2 water, as defined in paragraph (4) above. Of necessity, this determination will be made on a case-by-case basis.

(7) The basic framework of the permitting process is unchanged for a covered discharge to a Tier 2 water. However, the process is enhanced to document the consideration of Tier 2 provisions. The additional documentation includes:

(a) The Department's determination that the application is for a new or expanded discharge;

(b) The Department's determination that the receiving stream is considered to be a Tier 2 water; and

(c) The Department's determination, based on the applicant's demonstration, that the proposed discharge is necessary for important economic or social development in the area in which the waters are located.

(8) All three items will be documented in the permit file and/or fact sheet, and will be used by the Department in its decision process. The public notice process will be used to announce a preliminary Department decision to deny or to allow a covered discharge to a Tier 2 water, while the final determination will be made concurrently with the final Department decision regarding the permit application for a covered discharge.

(9) Documentation by the applicant shall include:

(a) An evaluation of discharge alternatives completed by a Registered Professional Engineer licensed to practice in the State of Alabama.

1. The applicant shall document the discharge alternatives evaluation by completing and submitting the following forms, or by submitting the same information in another format acceptable to the Department:

(i) ADEM Form 311, Alternatives Analysis; and, as applicable,

(ii) ADEM Form 312, Calculation of Total Annualized Costs for Public-Sector Projects, or ADEM Form 313, Calculation of Total Annualized Costs for Private-Sector Projects. Alternatives with total annualized project costs that are less than 110% of the total annualized project costs for the Tier 2 discharge proposal are considered viable alternatives.

(b) A demonstration that the proposed discharge will support important economic or social development in the area in which the waters are located, documented by the applicant's response, in writing, to the following questions. The applicant shall provide supporting information for each response.

1. What environmental or public health problem will the discharger be correcting?
2. How much will the discharger be increasing employment (at its existing facility or as the result of locating a new facility)?
3. How much reduction in employment will the discharger be avoiding?
4. How much additional state or local taxes will the discharger be paying?
5. What public service to the community will the discharger be providing?
6. What economic or social benefit will the discharger be providing to the community?

(10) The following forms are embodied in this rule:

- (a) ADEM Form 311      Alternatives Analysis
- (b) ADEM Form 312      Calculation of Total Annualized Costs for Public-Sector Projects
- (c) ADEM Form 313      Calculation of Total Annualized Costs for Private-Sector Projects

**Author:** James E. McIndoe.

**Statutory Authority:** Code of Alabama 1975, §§ 22-22-9, 22-22A-5, 22-22A-6, 22-22A-8.

**History:** August 1, 2002.

## Alternatives Analysis

Applicant/Project: \_\_\_\_\_

All new or expanded discharges (except discharges eligible for coverage under general permits) covered by the NPDES permitting program are subject to the provisions of the antidegradation policy. Applicants for such discharges to Tier 2 waters are required to demonstrate " . . . that the proposed discharge is necessary for important economic or social development." As a part of this demonstration, the applicant must complete an evaluation of the discharge alternatives listed below, to include calculation of total annualized project costs for each technically feasible alternative (using ADEM Form 312 for public-sector projects and ADEM Form 313 for private-sector projects). Alternatives with total annualized project costs that are less than 110% of the total annualized project costs for the Tier 2 discharge proposal are considered viable alternatives.

Alternative	Viable	Non-Viable	Comment
1 Land Application			
2 Pretreatment/Discharge to POTW			
3 Relocation of Discharge			
4 Reuse/Recycle			
5 Process/Treatment Alternatives			
6 On-site/Sub-surface Disposal			
<i>(other project-specific alternatives identified by the applicant or the Department; attach additional sheets if necessary)</i>			
7			
8			
9			

<p><i>Pursuant to ADEM Administrative Code Rule 335-6-3-.04, I certify on behalf of the applicant that I have completed an evaluation of the discharge alternatives identified above,</i></p>	<p style="text-align: right;">Signature: _____ <i>(Professional Engineer)</i></p> <p style="text-align: right;">Date: _____</p>
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*and reached the conclusions indicated.*

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*(Supporting documentation to be attached, referenced, or otherwise handled as appropriate.)*

*ADEM Form 311 3/02*

**Calculation of Total Annualized Project Costs  
for Public-Sector Projects**

**A. Capital Costs**

Capital Cost of Project	\$	
Other One-Time Costs of Project (Please List, if any)		
<hr/>	\$	
<hr/>	\$	
<hr/>	\$	
<b>Total Capital Costs (Sum column)</b>	\$	(1)
Portion of Capital Costs to be Paid for with Grant Monies	\$	(2)
Capital Costs to be Financed [Calculate: (1) – (2) ]	\$	(3)
Type of Financing (e.g., G.O. bond, revenue bond, bank loan)		
Interest Rate for Financing (expressed as decimal)		(i)
Time Period of Financing (in years)		(n)
Annualization Factor = $\frac{i}{(1+i)^n - 1} + i$		(4)
<b>Annualized Capital Cost [Calculate: (3) x (4) ]</b>		(5)

**B. Operating and Maintenance Costs**

Annual Costs of Operation and Maintenance (including but not limited to: monitoring, inspection, permitting fees, waste disposal charges, repair, administration and replacement.) (Please list below.)

<hr/>	\$	
<hr/>	\$	
<hr/>	\$	
<hr/>	\$	
<b>Total Annual O &amp; M Costs (Sum column)</b>	\$	(6)

**C. Total Annual Cost of Pollution Control Project**

Total Annual Cost of Pollution Control Project [ (5) + (6) ]	\$	(7)
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**Calculation of Total Annualized Project Costs  
for Private-Sector Projects**

Capital Costs to be Financed (Supplied by applicant)	\$ (1)
Interest rate for Financing (Expressed as a decimal)	(i)
Time Period of Financing (Assume 10 years*)	10 years (n)
Annualization Factor = $\frac{i}{(1+i)^{10} - 1} + i$	(2)
Annualized Capital Cost [Calculate: (1) x (2) ]	\$ (3)
Annual Cost of Operation and Maintenance (including but not limited to monitoring, inspection, permitting fees, waste disposal charges, repair, administration and replacement)**	\$ (4)
<b>Total Annual Cost of Pollution Control Project [ (3) + (4) ]</b>	<b>\$ (5)</b>

\* While actual payback schedules may differ across projects and companies, assume equal annual payments over a 10-year period for consistency in comparing projects.

\*\* For recurring costs that occur less frequently than once a year, pro rate the cost over the relevant number of years (e.g., for pumps replaced once every three years, include one-third of the cost in each year).



TABLE 1  
TOXIC POLLUTANT CRITERIA

Pollutant	Aquatic Life Criteria (in µg/l unless otherwise noted)				Human Health Criteria (in µg/l unless otherwise noted)	
	Freshwater Acute	Freshwater Chronic	Marine Acute	Marine Chronic	Consumption of Water and Fish	Consumption of Fish Only
	Acenaphthene					Eq. 16
Acrolein					Eq. 16	Eq. 17
Acrylonitrile <sup>1</sup>					Eq. 18	Eq. 19
Aldrin <sup>1</sup>	3.0		1.3		Eq. 18	Eq. 19
Anthracene					Eq. 16	Eq. 17
Antimony					Eq. 16	Eq. 17
Arsenic <sup>1</sup>	340 (tri)	150 (tri)	69 (tri)	36 (tri)	Eq. 18	Eq. 19
Asbestos					7,000,000 fibers/l (MCL)	
Benzene <sup>1</sup>					Eq. 18	Eq. 19
Benzidine <sup>1</sup>					Eq. 18	Eq. 19
Benzo(a)anthracene <sup>1</sup>					Eq. 18	Eq. 19
Benzo(a)pyrene <sup>1</sup>					Eq. 18	Eq. 19
Benzo(b)fluoranthene <sup>1</sup>					Eq. 18	Eq. 19
Benzo(k)fluoranthene <sup>1</sup>					Eq. 18	Eq. 19
Bis(2-chloroethyl)ether <sup>1</sup>					Eq. 18	Eq. 19
Bis(2-chloroisopropyl)ether					Eq. 16	Eq. 17
Bis(2-ethylhexyl)phthalate <sup>1</sup>					Eq. 18	Eq. 19
Bromoform <sup>1</sup>					Eq. 18	Eq. 19
Butylbenzyl phthalate					Eq. 16	Eq. 17
Cadmium	Eq. 1	Eq. 2	40	8.8		
Carbon tetrachloride <sup>1</sup>					Eq. 18	Eq. 19
Chlordane <sup>1</sup>	2.4	0.0043	0.09	0.004	Eq. 18	Eq. 19
Chlorobenzene					Eq. 16	Eq. 17
Chlorodibromomethane <sup>1</sup>					Eq. 18	Eq. 19
Chloroform <sup>1</sup>					Eq. 18	Eq. 19

TABLE 1  
TOXIC POLLUTANT CRITERIA

Pollutant	Aquatic Life Criteria (in µg/l unless otherwise noted)				Human Health Criteria (in µg/l unless otherwise noted)	
	Freshwater Acute	Freshwater Chronic	Marine Acute	Marine Chronic	Consumption of Water and Fish	Consumption of Fish Only
	2-Chloronaphthalene					Eq. 16
2-Chlorophenol					Eq. 16	Eq. 17
Chromium (trivalent)	Eq. 3	Eq. 4				
Chromium (hexavalent)	16	11	1100	50		
Chrysene <sup>1</sup>					Eq. 18	Eq. 19
Copper	Eq. 5	Eq. 6	4.8	3.1	1300 (MCL)	
Cyanide (free)	22	5.2	1.0	1.0	Eq. 16	Eq. 17
4,4'-DDD <sup>1</sup>					Eq. 18	Eq. 19
4,4'-DDE <sup>1</sup>					Eq. 18	Eq. 19
4,4'-DDT <sup>1</sup>	1.1	0.001	0.13	0.001	Eq. 18	Eq. 19
Dibenzo(a,h)anthracene <sup>1</sup>					Eq. 18	Eq. 19
1,2-Dichlorobenzene					Eq. 16	Eq. 17
1,3-Dichlorobenzene					Eq. 16	Eq. 17
1,4-Dichlorobenzene					Eq. 16	Eq. 17
3,3'-Dichlorobenzidine <sup>1</sup>					Eq. 18	Eq. 19
Dichlorobromomethane <sup>1</sup>					Eq. 18	Eq. 19
1,2-Dichloroethane <sup>1</sup>					Eq. 18	Eq. 19
1,1-Dichloroethylene					Eq. 16	Eq. 17
2,4-Dichlorophenol					Eq. 16	Eq. 17
1,2 Dichloropropane <sup>1</sup>					Eq. 18	Eq. 19
1,3 Dichloropropylene <sup>1</sup>					Eq. 18	Eq. 19
Dieldrin <sup>1</sup>	0.24	0.056	0.71	0.0019	Eq. 18	Eq. 19
2,4-Dimethylphenol					Eq. 16	Eq. 17
Diethyl phthalate					Eq. 16	Eq. 17
Dimethyl phthalate					Eq. 16	Eq. 17

TABLE 1  
TOXIC POLLUTANT CRITERIA

Pollutant	Aquatic Life Criteria (in µg/l unless otherwise noted)				Human Health Criteria (in µg/l unless otherwise noted)	
	Freshwater Acute	Freshwater Chronic	Marine Acute	Marine Chronic	Consumption of Water and Fish	Consumption of Fish Only
	Di-n-butyl phthalate					Eq. 16
4,6-Dinitro-2-methylphenol					Eq. 16	Eq. 17
2,4 Dinitrotoluene <sup>1</sup>					Eq. 18	Eq. 19
2,4-Dinitrophenol					Eq. 16	Eq. 17
Dioxin (2,3,7,8-TCDD) <sup>1</sup>					Eq. 18	Eq. 19
1,2-Diphenylhydrazine <sup>1</sup>					Eq. 18	Eq. 19
Endosulfan (alpha)	0.22	0.056	0.034	0.0087	Eq. 16	Eq. 17
Endosulfan (beta)	0.22	0.056	0.034	0.0087	Eq. 16	Eq. 17
Endosulfan sulfate					Eq. 16	Eq. 17
Endrin	0.086	0.036	0.037	0.0023	Eq. 16	Eq. 17
Endrin aldehyde					Eq. 16	Eq. 17
Ethylbenzene					Eq. 16	Eq. 17
Fluoranthene					Eq. 16	Eq. 17
Fluorene					Eq. 16	Eq. 17
Heptachlor <sup>1</sup>	0.52	0.0038	0.053	0.0036	Eq. 18	Eq. 19
Heptachlor epoxide <sup>1</sup>	0.52	0.0038	0.053	0.0036	Eq. 18	Eq. 19
Hexachlorobenzene <sup>1</sup>					Eq. 18	Eq. 19
Hexachlorobutadiene <sup>1</sup>					Eq. 18	Eq. 19
Hexachlorocyclohexane (alpha) <sup>1</sup>					Eq. 18	Eq. 19
Hexachlorocyclohexane (beta) <sup>1</sup>					Eq. 18	Eq. 19
Hexachlorocyclohexane (gamma)	0.95		0.16		Eq. 16	Eq. 17
Hexachlorocyclopentadiene					Eq. 16	Eq. 17
Hexachloroethane <sup>1</sup>					Eq. 18	Eq. 19
Indeno (1,2,3-cd) pyrene <sup>1</sup>					Eq. 18	Eq. 19
Isophorone <sup>1</sup>					Eq. 18	Eq. 19
Lead	Eq. 7	Eq. 8	210	8.1		

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TABLE 1  
TOXIC POLLUTANT CRITERIA

Pollutant	Aquatic Life Criteria (in µg/l unless otherwise noted)				Human Health Criteria (in µg/l unless otherwise noted)	
	Freshwater Acute	Freshwater Chronic	Marine Acute	Marine Chronic	Consumption of Water and Fish	Consumption of Fish Only
	Mercury (total recoverable)	2.4	0.012	2.1	0.025	Eq. 16
Methyl bromide					Eq. 16	Eq. 17
Methylene chloride <sup>1</sup>					Eq. 18	Eq. 19
Nickel	Eq. 9	Eq. 10	74	8.2	Eq. 16	Eq. 17
Nitrobenzene					Eq. 16	Eq. 17
N-Nitrosodimethylamine <sup>1</sup>					Eq. 18	Eq. 19
N-Nitrosodi-n-propylamine <sup>1</sup>					Eq. 18	Eq. 19
N-Nitrosodiphenylamine <sup>1</sup>					Eq. 18	Eq. 19
PCB-1016 <sup>1,2</sup>		0.014		0.03	Eq. 18	Eq. 19
PCB-1221 <sup>1,2</sup>		0.014		0.03	Eq. 18	Eq. 19
PCB-1232 <sup>1,2</sup>		0.014		0.03	Eq. 18	Eq. 19
PCB-1242 <sup>1,2</sup>		0.014		0.03	Eq. 18	Eq. 19
PCB-1248 <sup>1,2</sup>		0.014		0.03	Eq. 18	Eq. 19
PCB-1254 <sup>1,2</sup>		0.014		0.03	Eq. 18	Eq. 19
PCB-1260 <sup>1,2</sup>		0.014		0.03	Eq. 18	Eq. 19
Pentachlorophenol <sup>1</sup>	Eq. 11	Eq. 12	13	7.9	Eq. 18	Eq. 19
Phenol					Eq. 16	Eq. 17
Pyrene					Eq. 16	Eq. 17
Selenium <sup>3</sup>	20	5.0	290	71	Eq. 16	Eq. 17
Silver	Eq. 13		1.9			
1,1,2,2-Tetrachloroethane <sup>1</sup>					Eq. 18	Eq. 19
Tetrachloroethylene <sup>1</sup>					Eq. 18	Eq. 19
Thallium					Eq. 16	Eq. 17
Toluene					Eq. 16	Eq. 17
Toxaphene <sup>1</sup>	0.73	0.0002	0.21	0.0002	Eq. 18	Eq. 19

TABLE 1  
TOXIC POLLUTANT CRITERIA

Pollutant	Aquatic Life Criteria (in µg/l unless otherwise noted)				Human Health Criteria (in µg/l unless otherwise noted)	
	Freshwater Acute	Freshwater Chronic	Marine Acute	Marine Chronic	Consumption of Water and Fish	Consumption of Fish Only
1,2-Trans-dichloroethylene					Eq. 16	Eq. 17
Tributyltin (TBT)	0.46	0.072	0.42	0.0074		
1,2,4-Trichlorobenzene					Eq. 16	Eq. 17
1,1,2-Trichloroethane <sup>1</sup>					Eq. 18	Eq. 19
Trichloroethylene <sup>1</sup>					Eq. 18	Eq. 19
2,4,6-Trichlorophenol <sup>1</sup>					Eq. 18	Eq. 19
Vinyl chloride <sup>1</sup>					Eq. 18	Eq. 19
Zinc	Eq. 14	Eq. 15	90	81	Eq. 16	Eq. 17

<sup>1</sup> Pollutants considered by EPA to be carcinogenic.

<sup>2</sup> The criteria for Polychlorinated Biphenyls (PCBs) apply to total PCBs, which is defined as the sum of the seven particular Aroclors (1016, 1221, 1232, 1242, 1248, 1254, and 1260) listed in this table.

<sup>3</sup> The freshwater aquatic life criteria for selenium are expressed in terms of total recoverable metal in the water column.

## APPENDIX A

POLLUTANT	CAS Registry Number	REFERENCE DOSE mg/(kg-day)	CANCER POTENCY FACTOR (kg-day)/mg	BIO- CONCENTRATION FACTOR l/kg
Acenaphthene	83329	0.06		242
Acrolein	107028	0.0156		215
Acrylonitrile	107131		0.54	30
Aldrin	309002		17	4670
Anthracene	120127	0.3		30
Antimony	7440360	0.0004		1
Arsenic	7440382		1.75	44
Benzene	71432		0.029	5.2
Benzidine	92875		230	87.5
Benzo(a)anthracene	56553		7.3	30
Benzo(a)pyrene	50328		7.3	30
Benzo(b)fluoranthene	205992		7.3	30
Benzo(k)fluoranthene	207089		7.3	30
Bis(2-chloroethyl)ether	111444		1.1	6.9
Bis(2-chloroisopropyl)ether	108601	0.04		2.47
Bis(2-ethylhexyl)phthalate	117817		0.014	130
Bromoform	75252		0.0079	3.75
Butylbenzyl phthalate	85687	0.2		414
Carbon tetrachloride	56235		0.13	18.75
Chlordane	57749		0.35	14100
Chlorobenzene	108907	0.02		10.3
Chlorodibromomethane	124481		0.084	3.75
Chloroform	67663		0.0061	3.75
2-Chloronaphthalene	91587	0.08		202

## APPENDIX A

POLLUTANT	CAS Registry Number	REFERENCE DOSE mg/(kg-day)	CANCER POTENCY FACTOR (kg-day)/mg	BIO- CONCENTRATION FACTOR l/kg
2-Chlorophenol	95578	0.005		134
Chrysene	218019		7.3	30
Cyanide	57125	0.02		1
4,4'-DDD	72548		0.24	53600
4,4'-DDE	72559		0.34	53600
4,4'-DDT	50293		0.34	53600
Dibenzo(a,h)anthracene	53703		7.3	30
1,2-Dichlorobenzene	95501	0.09		55.6
1,3-Dichlorobenzene	541731	0.0134		55.6
1,4-Dichlorobenzene	106467	0.0134		55.6
3,3'-Dichlorobenzidine	91941		0.45	312
Dichlorobromomethane	75274		0.062	3.75
1,2-Dichloroethane	107062		0.091	1.2
1,1-Dichloroethylene	75354	0.05		5.6
2,4-Dichlorophenol	120832	0.003		40.7
1,2-Dichloropropane	78875		0.067	4.1
1,3-Dichloropropylene	542756		0.1	1.9
Dieldrin	60571		16	4670
Diethyl phthalate	84662	0.8		73
2,4 Dimethylphenol	105679	0.02		93.8
Dimethyl phthalate	131113	10		36
Di-n-butyl phthalate	84742	0.1		89
4,6-Dinitro-2-methylphenol	534521	0.00039		5.5
2,4-Dinitrophenol	51285	0.002		1.5

## APPENDIX A

POLLUTANT	CAS Registry Number	REFERENCE DOSE mg/(kg-day)	CANCER POTENCY FACTOR (kg-day)/mg	BIO- CONCENTRATION FACTOR l/kg
2,4 Dinitrotoluene	121142		0.31	3.8
Dioxin (2,3,7,8-TCDD)	1746016		17500	5000
1,2-Diphenylhydrazine	122667		0.8	24.9
Endosulfan (alpha)	959988	0.006		270
Endosulfan (beta)	33213659	0.006		270
Endosulfan sulfate	1031078	0.006		270
Endrin	72208	0.0003		3970
Endrin aldehyde	7421934	0.0003		3970
Ethylbenzene	100414	0.1		37.5
Fluoranthene	206440	0.04		1150
Fluorene	86737	0.04		30
Heptachlor	76448		4.5	11200
Heptachlor epoxide	1024573		9.1	11200
Hexachlorobenzene	118741		1.6	8690
Hexachlorobutadiene	87683		0.078	2.78
Hexachlorocyclohexane (alpha)	319846		6.3	130
Hexachlorocyclohexane (beta)	319857		1.8	130
Hexachlorocyclohexane (gamma)	58899	0.0003		130
Hexachlorocyclopentadiene	77474	0.006		4.34
Hexachloroethane	67721		0.014	86.9
Indeno (1,2,3-cd) pyrene	193395		7.3	30
Isophorone	78591		0.00095	4.38
Mercury	7439976	0.0001		5500
Methyl bromide	74839	0.0014		3.75



## APPENDIX A

POLLUTANT	CAS Registry Number	REFERENCE DOSE mg/(kg-day)	CANCER POTENCY FACTOR (kg-day)/mg	BIO- CONCENTRATION FACTOR l/kg
Methylene chloride	75092		0.0075	0.9
Nickel	7440020	0.02		47
Nitrobenzene	98953	0.0005		2.89
N-Nitrosodimethylamine	62759		51	0.026
N-Nitrosodi-n-propylamine	621647		7	1.13
N-Nitrosodiphenylamine	86306		0.0049	136
PCB-1016 <sup>1</sup>	12674112		2.0	31200
PCB-1221 <sup>1</sup>	11104282		2.0	31200
PCB-1232 <sup>1</sup>	11141165		2.0	31200
PCB-1242 <sup>1</sup>	53469219		2.0	31200
PCB-1248 <sup>1</sup>	12672296		2.0	31200
PCB-1254 <sup>1</sup>	11097691		2.0	31200
PCB-1260 <sup>1</sup>	11096825		2.0	31200
Pentachlorophenol	87865		0.12	11
Phenol	108952	0.6		1.4
Pyrene	129000	0.03		30
Selenium	7782492	0.005		4.8
1,1,2,2-Tetrachloroethane	79345		0.2	5
Tetrachloroethylene	127184		0.039776	30.6
Thallium	7440280	0.000068		116
Toluene	108883	0.2		10.7
Toxaphene	8001352		1.1	13100
1,2-Trans-dichloroethylene	156605	0.02		1.58
1,2,4-Trichlorobenzene	120821	0.01		114

## APPENDIX A

POLLUTANT	CAS Registry Number	REFERENCE DOSE mg/(kg-day)	CANCER POTENCY FACTOR (kg-day)/mg	BIO- CONCENTRATION FACTOR l/kg
1,1,2-Trichloroethane	79005		0.057	4.5
Trichloroethylene	79016		0.0126	10.6
2,4,6-Trichlorophenol	88062		0.011	150
Vinyl chloride	75014		1.4	1.17
Zinc	7440666	0.3		47

<sup>1</sup> The criteria for Polychlorinated Biphenyls (PCBs) apply to total PCBs, which is defined as the sum of the seven particular Aroclors (1016, 1221, 1232, 1242, 1248, 1254, and 1260) listed in this table.

**ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
WATER DIVISION - WATER QUALITY PROGRAM**

**CHAPTER 335-6-11  
WATER USE CLASSIFICATIONS FOR INTERSTATE AND INTRASTATE WATERS**

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**335-6-11-.01      The Use Classification System**

**335-6-11-.02      Use Classifications**

**335-6-11-.01    The Use Classification System.**

(1)      Use classifications utilized by the State of Alabama are as follows:

Outstanding Alabama Water	OAW
Public Water Supply	PWS
Swimming and Other Whole Body Water-Contact Sports	S
Shellfish Harvesting	SH
Fish and Wildlife	F&W
Limited Warmwater Fishery	LWF
Agricultural and Industrial Water Supply	A&I

(2)      Use classifications apply water quality criteria adopted for particular uses based on existing utilization, uses reasonably expected in the future, and those uses not now possible because of correctable pollution but which could be made if the effects of pollution were controlled or eliminated. Of necessity, the assignment of use classifications must take into consideration the physical capability of waters to meet certain uses.

(3)      Those use classifications presently included in the standards are reviewed informally by the Department's staff as the need arises, and the entire standards package, to include the use classifications, receives a formal review at least once each three years. Efforts currently underway through local 201 planning projects will provide additional technical data on certain streams in the State, information on treatment alternatives, and applicability of various management techniques, which, when available, will hopefully lead to new decisions regarding use classifications. Of particular interest are those segments which are currently classified for any usage which has an associated degree of quality criteria considered to be less than that applicable to a classification of "Fish and Wildlife." As rapidly as it can be demonstrated that new classifications are feasible on these segments from an economic and technological viewpoint, based on the information being generated pursuant to staff studies and the planning efforts previously outlined, such improvement will be sought.

(4)      Although it is not explicitly stated in the classifications, it should be understood that the use classification of "Shellfish Harvesting" is only applicable in the coastal area and,

therefore, is included only in the Mobile River Basin and the Perdido-Escambia River Basin. It should also be noted that with the exception of those segments in the "Public Water Supply" classification, every segment, in addition to being considered acceptable for its designated use, is also considered acceptable for any other use with a less stringent associated criteria.

(5) Not all waters are included by name in the use classifications since it would be a tremendous administrative burden to list all stream segments in the State. In addition, in virtually every instance where a segment is not included by name, the Department has no information or stream data upon which to base a decision relative to the assignment of a particular classification. An effort has been made, however, to include all major stream segments and all segments which, to the Department's knowledge, are currently recipients of point source discharges. Those segments which are not included by name will be considered to be acceptable for a "Fish and Wildlife" classification unless it can be demonstrated that such a generalization is inappropriate in specific instances.

**Author:** James E. McIndoe.

**Statutory Authority:** Code of Alabama 1975, §§22-22-9, 22-22A-5, 22-22A-6, 22-22A-8.

**History:** May 5, 1967. **Amended:** June 19, 1967; April 1, 1970; October 16, 1972; September 17, 1973; May 30, 1977; December 19, 1977; February 4, 1981; April 5, 1982; December 11, 1985; March 26, 1986; September 7, 2000.

### 335-6-11-.02      Use Classifications.

#### (1)      **THE ALABAMA RIVER BASIN**

## INTERSTATE WATERS

Stream	From	To	Classification
ALABAMA RIVER	MOBILE RIVER	Claiborne Lock and Dam	F&W
ALABAMA RIVER	Claiborne Lock and Dam	Frisco Railroad Crossing	S/F&W
ALABAMA RIVER	Frisco Railroad Crossing	River Mile 131	F&W
ALABAMA RIVER	River Mile 131	Millers Ferry Lock and Dam	PWS
ALABAMA RIVER	Millers Ferry Lock and Dam	Blackwell Bend (Six Mile Creek)	S/F&W

Stream	From	To	Classification
ALABAMA RIVER	Blackwell Bend (Six Mile Creek)	Jones Bluff Lock and Dam	F&W
ALABAMA RIVER	Jones Bluff Lock and Dam	Pintlalla Creek	S/F&W
ALABAMA RIVER	Pintlalla Creek	Its source	F&W

## INTRASTATE WATERS

Stream	From	To	Classification
Little River	ALABAMA RIVER	Its source	S/F&W
Randons Creek	ALABAMA RIVER	Its source	F&W
Bear Creek	Randons Creek	Its source	F&W
Limestone Creek	ALABAMA RIVER	Its source	F&W
Double Bridges Creek	Limestone Creek	Its source	F&W
Hudson Branch	Limestone Creek	Its source	F&W
Big Flat Creek	ALABAMA RIVER	Its source	S/F&W
Pursley Creek	ALABAMA RIVER	Its source	F&W
Unnamed tributary south of Camden	Pursley Creek	Its source	F&W
Beaver Creek	ALABAMA RIVER	Its source	F&W
Cub Creek	Beaver Creek	Its source	F&W
Turkey Creek	Beaver Creek	Its source	F&W
Rockwest Creek	ALABAMA RIVER	Its source	F&W
Unnamed tributary west of Camden	Rockwest Creek	Its source	F&W
Pine Barren Creek	ALABAMA RIVER	Its source	S/F&W

Stream	From	To	Classification
Chilatchee Creek	ALABAMA RIVER	Its source	S/F&W
Bogue Chitto Creek	ALABAMA RIVER	Its source	F&W
Sand Creek	Bogue Chitto Creek	Its source	F&W
Big Cedar Creek	ALABAMA RIVER	Its source	S/F&W
Valley Creek	ALABAMA RIVER	Selma-Summerfield Rd.	F&W
Valley Creek	Selma-Summerfield Rd.	Its source	S/F&W
Mulberry Creek	ALABAMA RIVER	Plantersville	S/F&W
Mulberry Creek	Plantersville	Its source	F&W
Gale Creek	Mulberry Creek	Its source	F&W
Charlotte Creek	Gale Creek	Its source	F&W
Big Swamp Creek	ALABAMA RIVER	Its source	S/F&W
Swift Creek	ALABAMA RIVER	Its source	S/F&W
Pintlalla Creek	ALABAMA RIVER	Its source	S/F&W
Autauga Creek	ALABAMA RIVER	Western boundary of Prattville	F&W
Autauga Creek	Western boundary of Prattville	Its source	S/F&W
Catoma Creek	ALABAMA RIVER	Its source	F&W
Mortar Creek	ALABAMA RIVER	Its source	F&W
Valley Creek Lake	Within Valley Creek State Park		S/F&W
Little River Lake	Within Valley Creek State Park		S/F&W

## (2) THE CAHABA RIVER BASIN

**INTRASTATE WATERS**

Stream	From	To	Classification
CAHABA RIVER	ALABAMA RIVER	Junction of lower Little Cahaba River	OAW/S
CAHABA RIVER	Junction of lower Little Cahaba River	Shelby County Road 52	OAW/F&W
CAHABA RIVER	Shelby County Road 52	Dam near U.S. Highway 280	F&W
CAHABA RIVER	Dam near U.S. Highway 280	Grant's Mill Road	OAW/PWS
CAHABA RIVER	Grant's Mill Road	U.S. Highway 11	F&W
CAHABA RIVER	U.S. Highway 11	Its source	OAW/F&W
Childers Creek	CAHABA RIVER	Its source	F&W
Oakmulgee Creek	CAHABA RIVER	Its source	S
Little Oakmulgee Creek	Oakmulgee Creek	Its source	S
Rice Creek	CAHABA RIVER	Its source	F&W
Waters Creek	CAHABA RIVER	Its source	S
Old Town Creek	CAHABA RIVER	Its source	S
Blue Girth Creek	CAHABA RIVER	Its source	S
Affonee Creek	CAHABA RIVER	Its source	S
Haysop Creek	CAHABA RIVER	Its source	F&W
Schultz Creek	CAHABA RIVER	Its source	S
Little Cahaba River (Bibb County)	CAHABA RIVER	Its source (junction of Mahan and Shoal Creeks)	OAW/F&W

Stream	From	To	Classification
Sixmile Creek	Little Cahaba River	Its source	S
Mahan Creek	Little Cahaba River	Its source	F&W
Shoal Creek	Little Cahaba River	Its source	F&W
Caffee Creek	CAHABA RIVER	Its source	F&W
Shades Creek	CAHABA RIVER	Its source	F&W
Buck Creek	CAHABA RIVER	Cahaba Valley Creek	F&W
Buck Creek	Cahaba Valley Creek	Shelby County Road 44	LWF <sup>4</sup>
Buck Creek	Shelby County Road 44	Its source	F&W
Cahaba Valley Creek	Buck Creek	Its source	F&W
Peavine Creek	Buck Creek	Its source	F&W
Oak Mountain State Park Lakes			PWS
Patton Creek	CAHABA RIVER	Its source	F&W
Little Shades Creek	CAHABA RIVER	Its source	F&W
Little Cahaba River (Jefferson-Shelby Counties)	CAHABA RIVER	Head of Lake Purdy	PWS
Little Cahaba River (Jefferson County)	Head of Lake Purdy	Its source	F&W

<sup>4</sup>Applicable dissolved oxygen level is 4.0 mg/l during May through November. Fish and Wildlife fecal coliform bacteria criteria at paragraph 10-.09(5)(e)7. are applicable year-round. For the purpose of establishing effluent limitations pursuant to Chapter 335-6-6 of the Department's regulations, the minimum 7-day low flow that occurs once in 10 years (7Q<sub>10</sub>) shall be the basis for applying the chronic aquatic life criteria.



## (3) THE CHATTAHOOCHEE RIVER BASIN

**INTERSTATE WATERS**

Stream	From	To	Classification
CHATTAHOOCHEE RIVER	Alabama-Florida state line	Water supply intake of Great Southern Division, Great Northern Paper Co.	F&W
CHATTAHOOCHEE RIVER	Water supply intake of Great Southern Division, Great Northern Paper Co.	Cowikey Creek	S/F&W
CHATTAHOOCHEE RIVER	Cowikey Creek	14th Street Bridge between Columbus and Phenix City	F&W
CHATTAHOOCHEE RIVER	14th Street Bridge between Columbus and Phenix City	Osanippa Creek	PWS/S/F&W
CHATTAHOOCHEE RIVER	Osanippa Creek	West Point Manufacturing Company water supply intake at Lanett	F&W
CHATTAHOOCHEE RIVER	West Point Manufacturing Company water supply intake at Lanett	West Point Dam	PWS
CHATTAHOOCHEE RIVER (West Point Lake)	West Point Dam	West Point Lake limits in Alabama	S/F&W
Oseligee Creek	Alabama-Georgia state line	Its source	F&W
Wehadkee Creek	Alabama-Georgia state line	Its source	F&W
Finley Creek	Alabama-Georgia State line	Its source	F&W

Stream	From	To	Classification
Hardley Creek	Alabama-Georgia State	Its source line	F&W
Veasey Creek	Alabama-Georgia State	Its source line	F&W

## INTRASTATE WATERS

Stream	From	To	Classification
Omusee Creek	CHATTAHOOCHEE RIVER	Its source	F&W
Mill Creek	Omusee Creek	Its source	F&W
Abbie Creek	CHATTAHOOCHEE RIVER	Its source	F&W
Skippers Creek	Abbie Creek	Its source	F&W
Owens Branch	Abbie Creek	Its source	F&W
Cheneyhatchee Creek	CHATTAHOOCHEE RIVER	Its source	S/F&W
Barbour Creek	CHATTAHOOCHEE RIVER	Its source	F&W
Chewalla Creek	CHATTAHOOCHEE RIVER	Its source	S/F&W
Cowikee Creek	CHATTAHOOCHEE RIVER	Its source	S/F&W
North Fork of Cowikee Creek	Cowikee Creek	Its source	F&W
Middle Fork of Cowikee Creek	North Fork of Cowikee Creek	Its source	S/F&W
Hurtsboro Creek	North Fork of Cowikee Creek	Its source	A&I

Stream	From	To	Classification
South Fork of Cowikee Creek	Cowikee Creek	Its source	S/F&W
Hatchechubbee Creek	CHATTAHOOCHEE RIVER	Russell County Highway 4, west of Pittsview	S/F&W
Hatchechubbee Creek	Russell County Highway 4, west of Pittsview	Its source	F&W
Ihagee Creek	CHATTAHOOCHEE RIVER	Its source	S/F&W
Uchee Creek	CHATTAHOOCHEE RIVER	County Road 39	S/F&W
Uchee Creek	County Road 39	Alabama Highway 169	PWS/S/F&W
Uchee Creek	Alabama Highway 169	Its source	S/F&W
Halawakee Creek	CHATTAHOOCHEE RIVER	Three miles upstream of County Road 79	PWS/F&W
Halawakee Creek	Three miles upstream Of County Road 79	Its source	F&W
Osanippa Creek	CHATTAHOOCHEE RIVER	Its source	F&W
Kellum Hill Creek	Osligee Creek	Its source	F&W
Allen Creek	Kellum Hill Creek	Its source	F&W
Moore's Creek	CHATTAHOOCHEE RIVER	Its source	F&W
Guss Creek	Wehadkee Creek	Its source	F&W
Gladney Mill Branch	Guss Creek	Its source	F&W

(4) **THE CHIPOLA RIVER BASIN****INTERSTATE WATERS**

Stream	From	To	Classification
Big Creek	Alabama-Florida state line	Its source	F&W
Buck Creek	Alabama-Florida state line	Its source	F&W
Cowarts Creek	Alabama-Florida state line	Its source	F&W

**INTRASTATE WATERS**

Stream	From	To	Classification
Limestone Creek	Big Creek	Its source	F&W
Cypress Creek	Limestone Creek	Its source	F&W
Rocky Creek	Cowarts Creek	Its source	F&W

(5) **THE CHOCTAWHATCHEE RIVER BASIN****INTERSTATE WATERS**

Stream	From	To	Classification
Pea River	CHOCTAWHATCHEE RIVER	Its source	F&W
CHOCTAWHATCHEE RIVER	Alabama-Florida state line	Its source	F&W
Wright Creek	Alabama-Florida state line	Its source	F&W
Holmes Creek	Alabama-Florida state line	Its source	F&W
Ten Mile Creek	Alabama-Florida state line	Its source	F&W



## INTRASTATE WATERS

Stream	From	To	Classification
Sandy Creek	Pea River	Samson	F&W
Flat Creek	Pea River	Junction with Eightmile Creek	F&W
Flat Creek	Junction with Eightmile Creek	Its source	S/F&W
Eightmile Creek	Flat Creek	Its source	F&W
Corner Creek	Eightmile Creek	Its source	F&W
Cripple Creek	Pea River	Its source	F&W
Samson Branch	Pea River	Its source	F&W
Whitewater Creek	Pea River	Its source	F&W
Big Creek	Whitewater Creek	Its source	F&W
Walnut Creek	Whitewater Creek	Its source	F&W
Mims Creek	Whitewater Creek	Its source	F&W
Pea Creek	Pea River	Its source	F&W
Double Bridges Creek	CHOCTAWHATCHE RIVER	Its source	F&W
Blanket Creek	Double Bridges Creek	Its source	F&W
Claybank Creek	CHOCTAWHATCHE RIVER	Lake Tholocco	F&W
Lake Tholocco	Dam	Its source	S/F&W
Claybank Creek	Lake Tholocco	Its source	F&W
Harrand Creek	Claybank Creek	Its source	F&W

Stream	From	To	Classification
Tributary of Harrand Creek	Harrand Creek	Its source	F&W
Hurricane Creek	CHOCTAWHATCHEE RIVER	Its source	F&W
Mill Creek	Hurricane Creek	Hartford	F&W
Little Choctawhatchee River	CHOCTAWHATCHEE RIVER	Its source	F&W
Newton Creek	Little Choctawhatchee River	Its source	F&W
Beaver Creek	Newton Creek	Its source	F&W
Hurricane Creek (Dale County)	CHOCTAWHATCHEE RIVER	Its source	F&W
West Fork of Choctawhatchee River	CHOCTAWHATCHEE RIVER	Its source	F&W
Judy Creek	West Fork of Choctawhatchee River	Its source	F&W
Little Judy Creek	Judy Creek	Its source	F&W
Lindsey Creek	West Fork of Choctawhatchee River	Its source	F&W
East Fork of Choctawhatchee River	CHOCTAWHATCHEE RIVER	Blackwood Creek	F&W
East Fork of Choctawhatchee River	Blackwood Creek	Its source	S/F&W
Blackwood Creek	East Fork of Choctawhatchee River	Its source	F&W

## (6) THE COOSA RIVER BASIN

**INTERSTATE WATERS**

Stream	From	To	Classification
COOSA RIVER	Its junction with the TALLAPOOSA RIVER	Jordan Dam	F&W
COOSA RIVER (Lake Jordan)	Jordan Dam	Mitchell Dam	S/F&W
COOSA RIVER (Lake Jordan)	Bouldin Dam	Alabama Highway 111	PWS/S/F&W
COOSA RIVER (Lake Mitchell)	Mitchell Dam	Lay Dam	PWS/S/F&W
COOSA RIVER (Lay Lake)	Lay Dam	Southern RR Bridge (1-1/3 miles above Yellowleaf Creek)	PWS/S/F&W
COOSA RIVER (Lay Lake)	Southern RR Bridge (1-1/3 miles above Yellowleaf Creek)	River Mile 89 (1-1/2 miles above Talladega Creek)	S/F&W <sup>2</sup>
COOSA RIVER (Lay Lake)	River Mile 89 (1-1/2 miles above Talladega Creek)	Logan Martin Dam	PWS/S/F&W
COOSA RIVER (Logan Martin Lake)	Logan Martin Dam	Broken Arrow Creek	S/F&W
COOSA RIVER (Logan Martin Lake)	Broken Arrow Creek	Trout Creek	PWS/S/F&W
COOSA RIVER (Logan Martin Lake) (Lake Henry)	Trout Creek	McCardney's Ferry (3 miles upstream of Big Canoe Creek)	S/F&W

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<sup>2</sup>Applicable dissolved oxygen level below existing impoundments is 4.0 mg/l.



Stream	From	To	Classification
COOSA RIVER (Lake Henry)	McCardney's Ferry (3 miles upstream of Big Canoe Creek)	City of Gadsden's water supply intake	F&W
COOSA RIVER (Lake Henry)	City of Gadsden's water supply intake	Weiss Dam powerhouse	PWS/F&W
COOSA RIVER	Weiss Dam powerhouse	Weiss Dam	F&W
COOSA RIVER (Weiss Lake)	Weiss Dam and Weiss Dam powerhouse	Spring Creek	PWS/S/F&W
COOSA RIVER (Weiss Lake)	Spring Creek	Alabama-Georgia state line	S/F&W
Bouldin Tailrace Canal (Callaway Creek)	COOSA RIVER	Bouldin Dam	F&W
Terrapin Creek	COOSA RIVER	U.S. Highway 278	F&W
Terrapin Creek	U.S. Highway 278	Calhoun County Road 70, east of Vigo	PWS/F&W
Terrapin Creek	Calhoun County Road 70, east of Vigo	Alabama-Georgia state line	F&W
Little River and tributaries	COOSA RIVER (Weiss Lake)	Junction of East Fork of Little River and West Fork of Little River	PWS/S/ F&W <sup>3</sup>
East Fork of Little River and tributaries	Little River	Alabama-Georgia state line	PWS/S/ F&W <sup>3</sup>
West Fork of Little River and tributaries	Little River	Alabama-Georgia state line	PWS/S/ F&W <sup>3</sup>
Chattooga River	COOSA RIVER (Weiss Lake)	Gaylesville	S/F&W

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<sup>3</sup>The special designation of Outstanding National Resource Water applies to this segment.

Stream	From	To	Classification
Chattooga River	Gaylesville	Alabama-Georgia state line	F&W
Spring Creek	COOSA RIVER (Weiss Lake)	Alabama-Georgia state line	F&W

## INTRASTATE WATERS

Stream	From	To	Classification
Weoka Creek	COOSA RIVER (Lake Jordan)	Its source	S/F&W
Chestnut Creek	COOSA RIVER (Lake Jordan)	Its source	F&W
Hatchet Creek	COOSA RIVER (Lake Mitchell)	Norfolk Southern Railway	OAW/S/F&W
Hatchet Creek	Norfolk Southern Railway	Junction of East Fork Hatchet Creek and West Fork Hatchet Creek	OAW/PWS/ S/F&W
East Fork Hatchet Creek	Hatchet Creek	Its source	OAW/F&W
West Fork Hatchet Creek	Hatchet Creek	Its source	OAW/F&W
Socapatoy Creek	Hatchet Creek	Its source	F&W
Weogufka Creek	Hatchet Creek (Lake Mitchell)	Its source	S/F&W
Walnut Creek	COOSA RIVER (Lake Mitchell)	Its source	F&W
Waxahatchee Creek	COOSA RIVER (Lay Lake)	Its source	F&W
Tributary of Waxahatchee Creek	Waxahatchee Creek	Its source	F&W

Stream	From	To	Classification
Buxahatchee Creek	Waxahatchee Creek (Lay Lake)	Its source	F&W
Yellowleaf Creek	COOSA RIVER (Lay Lake)	Its source	S/F&W
Tallasseehatchee Creek	COOSA RIVER (Lay Lake)	City of Sylacauga's water supply reservoir dam	F&W
Tallasseehatchee Creek	City of Sylacauga's water supply reservoir dam	Its source	PWS/F&W
Shirtee Creek	Tallasseehatchee Creek	Its source	F&W
Talladega Creek	COOSA RIVER (Lay Lake)	County Road 303	F&W
Talladega Creek	County Road 303	Alabama Highway 77	PWS/F&W
Talladega Creek	Alabama Highway 77	Its source	F&W
Mump Creek	Talladega Creek	City of Talladega's water supply reservoir dam	F&W
Mump Creek	City of Talladega's water supply reservoir dam	Its source	PWS/F&W
Kelly Creek	COOSA RIVER (Lay Lake)	Its source	S/F&W
Wolf Creek	Kelly Creek	Its source	F&W
Chocolocco Creek	COOSA RIVER (Logan Martin Lake)	Tributary from Boiling Spring (Boiling Spring Road)	F&W
Chocolocco Creek	Tributary from Boiling Spring (Boiling Spring Road)	Egoniaga Creek	PWS/F&W
Chocolocco Creek	Egoniaga Creek	Its source	F&W

Stream	From	To	Classification
Eastaboga Creek	Choccolocco Creek	Its source	F&W
Cheaha Creek	Choccolocco Creek	Lake Chinnabee	S/F&W
Lake Chinnabee	Within Talladega National Forest		S/F&W
Kelly Creek	Cheaha Creek	Its source	F&W
Brecon Branch	Kelly Creek	Its source	F&W
Coldwater Creek	Choccolocco Creek	Its source	F&W
Coldwater Spring			PWS/F&W
Snow Creek	Choccolocco Creek	Its source	F&W
Dye Creek	COOSA RIVER (Logan Martin Lake)	Its source	F&W
Cane Creek	COOSA RIVER (Logan Martin Lake)	Its source	F&W
Cave Creek	Cane Creek	Its source	F&W
Ohatchee Creek	COOSA RIVER (Logan Martin Lake)	Its source	S/F&W
Tallahatchee Creek	Ohatchee Creek	Its source	F&W
Tributary of Tallahatchee Creek	Tallahatchee Creek	Its source	F&W
Big Canoe Creek	COOSA RIVER (Lake Henry)	Its source	F&W
Little Canoe Creek	Big Canoe Creek	Its source	F&W
Spring Creek	Little Canoe Creek	Its source	F&W
Big Wills Creek	COOSA RIVER (Lake Henry- Lake Gadsden)	100 yds. below Allen Branch	F&W
Big Wills Creek	100 yds. below Allen Branch	Its source	PWS/F&W

Stream	From	To	Classification
Lake Gadsden (Lake Henry)	U. S. Highway 411	Impoundment limits	F&W
Black Creek	Lake Henry (Lake Gadsden)	Its source	F&W
Allen Branch	Big Wills Creek	Ft. Payne public water supply dam	F&W
Allen Branch	Ft. Payne public water supply dam	Its source	PWS/F&W
Coleman Lake	Within Talladega National Forest		S/F&W
Sweetwater Lake	Within Talladega National Forest		PWS/S/F&W
High Rock Lake	Within Talladega National Forest		S/F&W
Hillabee Lake	Within Talladega National Forest		PWS/S/F&W
Salt Creek Lake	Within Talladega National Forest		S/F&W
Shoal Creek	Choccolocco Creek	Whitesides Mill Lake	S/F&W
Whitesides Mill Lake	Western border of Talladega National Forest		PWS/S/F&W
Shoal Creek	Whitesides Mill Lake	Sweetwater Lake	S/F&W
Ladiga Creek	Terrapin Creek	Terrapin Creek	PWS

(7)

**THE ESCATAWPA RIVER BASIN****INTERSTATE WATERS**

Stream	From	To	Classification
Big Creek	Alabama-Mississippi state line	Big Creek Reservoir	F&W
Big Creek	Big Creek Reservoir	Its source	PWS/F&W
ESCATAWPA RIVER	Alabama-Mississippi state line	Its source	S/F&W

**INTRASTATE WATERS**

<u>Stream</u>	<u>From</u>	<u>To</u>	<u>Classification</u>
Puppy Creek	ESCATAWPA RIVER	Its source	F&W

(8) **THE LOWER TOMBIGBEE RIVER BASIN****INTERSTATE WATERS**

Stream	From	To	Classification
TOMBIGBEE RIVER	MOBILE RIVER	One-half mile downstream from Southern Railway Crossing	F&W
TOMBIGBEE RIVER	One-half mile downstream from Southern Railway Crossing	Five miles upstream from U. S. Highway 43	PWS/S/F&W
TOMBIGBEE RIVER	Five miles upstream from U. S. Highway 43	Jackson Lock and Dam	F&W
TOMBIGBEE RIVER	Jackson Lock and Dam	Beach Bluff (River Mile 141)	S/F&W
TOMBIGBEE RIVER	Beach Bluff (River Mile 141)	One-half mile downstream from Alabama Highway 114	F&W <sup>1</sup>
TOMBIGBEE RIVER	One-half mile downstream from Alabama Highway 114	Three miles upstream from Alabama Highway 114	PWS/F&W <sup>1</sup>
TOMBIGBEE RIVER	Three miles upstream from Alabama Highway 114	Demopolis Lock and Dam	F&W <sup>1</sup>
TOMBIGBEE RIVER	Demopolis Lock and Dam	WARRIOR RIVER	S/F&W
Okatuppa Creek	TOMBIGBEE RIVER	Alabama-Mississippi state line	F&W
Bogueloosa Creek	Okatuppa Creek	Its source	F&W

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<sup>1</sup> Applicable dissolved oxygen level below existing impoundments is 4.0 mg/l.

Stream	From	To	Classification
Tuckabum Creek	TOMBIGBEE RIVER	Alabama-Mississippi state line	F&W
Yantley Creek	Tuckabum Creek	Alabama-Mississippi state line	F&W
Sucarnoochee River	TOMBIGBEE RIVER	U. S. Highway 11	F&W
Sucarnoochee River	U. S. Highway 11	Five miles upstream from Livingston city limits	PWS/S/F&W
Sucarnoochee River	Five miles upstream from U. S. Highway 11	Alabama-Mississippi state line	F&W
Alamuchee Creek	Sucarnoochee River	Alabama-Mississippi state line	F&W
Toomsba Creek	Alamuchee Creek	AT&N Railroad	F&W
Toomsba Creek	AT&N Railroad	Alabama-Mississippi state line	PWS/F&W

## INTRASTATE WATERS

Stream	From	To	Classification
Bilbo Creek	TOMBIGBEE RIVER	Its source	S/F&W
Bates Creek	Bilbo Creek	Its source	S/F&W
Lewis Creek	TOMBIGBEE RIVER	Its source	S/F&W
Bassetts Creek (Washington County)	TOMBIGBEE RIVER	Its source	S/F&W
Little Bassetts Creek (Washington County)	Bassetts Creek (Washington County)	Its source	F&W
Miles Creek	Little Bassetts Creek (Washington County)	Its source	F&W
Bassett Creek (Clarke County)	TOMBIGBEE RIVER	Its source	F&W



Stream	From	To	Classification
James Creek	Bassett Creek (Clarke Co.)	Its source	F&W
Jackson Creek	TOMBIGBEE RIVER	Its source	F&W
Satilpa Creek	TOMBIGBEE RIVER	Its source	S/F&W
Santa Bogue Creek	TOMBIGBEE RIVER	Its source	S/F&W
Turkey Creek	TOMBIGBEE RIVER	Its source	S/F&W
Bashi Creek	TOMBIGBEE RIVER	Its source	S/F&W
Tishlarka Creek	TOMBIGBEE RIVER	Its source	F&W
Wahalak Creek	Tishlarka Creek	Its source	F&W
Horse Creek	TOMBIGBEE RIVER	Its source	S/F&W
Beaver Creek	TOMBIGBEE RIVER	Its source	S/F&W
Kinterbish Creek	TOMBIGBEE RIVER	Its source	S/F&W
Chickasaw Bogue	TOMBIGBEE RIVER	Its source	F&W
Sycamore Creek	Chickasaw Bogue	Its source	F&W
Unnamed tributary southwest of York (Lake Louise)	Toomsuba Creek	Its source	PWS

(9) **THE MOBILE RIVER-MOBILE BAY BASIN**

**INTERSTATE AND COASTAL WATERS**

Stream	From	To	Classification
Mobile River and all other rivers, creeks, lakes of the Mobile River Delta and their tributaries except as otherwise designated			F&W
MOBILE RIVER	Barry Steam Plant	Tensaw River	PWS/F&W

Stream	From	To	Classification
MOBILE RIVER	Its mouth	Spanish River	LWF <sup>4</sup>
Tensaw River	Junction of Tensaw and Apalachee Rivers	Junction of Briar Lake	OAW/S/F&W
Tensaw River	Junction of Briar Lake	Junction of Tensaw Lake	OAW/F&W
Briar Lake	Junction of Tensaw River	Junction of Tensaw Lake	OAW/F&W
Tensaw Lake	Junction of Tensaw River	Bryant Landing	OAW/F&W
MOBILE BAY	West of a line drawn due south from the western shore of Chacaloochee Bay (Lat. 304047.3/ Long. 0875944.2)	A point due east of the mouth of Dog River (Lat. 303353.2/ Long. 0880515.3)	F&W
MOBILE BAY	South of a line drawn due east from the mouth of Dog River (Lat. 303353.2/ Long. 0880515.3) and east of a line drawn due south from the western shore of Chacaloochee Bay (Lat. 304047.3/ Long. 0875944.2) and all other portions of MOBILE BAY		S/F&W
MOBILE BAY	All that portion lying south of a line extending in an easterly direction from the south bank of East Fowl River at its mouth (Lat. 302703.1/ Long. 0880622.6) through lighted beacon (FL 2 seconds) (Lat. 302707.5/ Long. 0880539.3) to lighted beacon (FLG 4 seconds "23") (Lat. 302718.3/ Long. 0880058.3) at the Mobile Ship Channel thence in a northeasterly direction to Daphne (Bench Mark 157, Lat. 303607.5/ Long. 0875416.4)		SH/F&W

<sup>4</sup> For the purpose of establishing effluent limitations pursuant to Chapter 335-6-6 of the Department's regulations, the minimum 7-day low flow that occurs once in 10 years (7Q<sub>10</sub>) shall be the basis for applying the chronic aquatic life criteria.

Stream	From	To	Classification
Bon Secour Bay	In its entirety (east and south of a line connecting Mullet Point, Lat. 302435.0/ Long. 0875423.2, and Engineers Point, Lat. 301350.1/ Long. 0880126.2, at Fort Morgan)		SH/S/F&W
Mississippi Sound and contiguous waters excepting: that portion of Portersville Bay 1,000 feet on each side of a straight line connecting the shore at Bayou Coden to a lighted beacon (FLR 4 seconds "6") (Lat. 302231.2/ Long. 0881425.8) and lighted beacon (FL 4 seconds "1") (Lat. 302223.7/ Long. 0881434.8); that portion of Portersville Bay 1,000 feet on each side of a straight line connecting the shore at Bayou La Batre and lighted beacons (FR)(Lat. 302311.0/ Long. 0881609.6), and (FLR 4 seconds "6") (Lat.302105.2/1 Long. 0881702.2); and that portion of Bayou Aloe within 1,000 feet of the outfall (Lat. 301552.0/ Long. 0880702.1) of the Dauphin Island sewage treatment plant			SH/S/F&W
Waters excepted in foregoing description of Portersville Bay and contiguous waters			F&W
Oyster Bay and that portion of Bon Secour River west of a line drawn due north from the east bank of the inlet connecting Oyster Bay and Bon Secour River			SH/F&W
Coastal waters of the Gulf of Mexico contiguous to the State of Alabama			SH/S/F&W
Intracoastal Waterway	Bon Secour Bay	Alabama Highway 59	F&W
Bon Secour River	Bon Secour Bay	One mile upstream from first bridge above its mouth	S/F&W
Boggy Branch	Bon Secour River	Its source	S/F&W
Weeks Bay	Bon Secour Bay	Fish River	S/F&W <sup>3</sup>
Magnolia River	Weeks Bay	Its source	S/F&W
Fish River	Weeks Bay	Clay City	S/F&W
Turkey Branch	Fish River	Its source	S/F&W

<sup>3</sup>The special designation of Outstanding National Resource Water applies to this segment.

Stream	From	To	Classification
Waterhole Branch	Fish River	Its source	S/F&W
Cowpen Creek	Fish River	Its source	S/F&W
Point Clear Creek	MOBILE BAY	Its source	F&W
Fly Creek	MOBILE BAY	Its source	S/F&W
Rock Creek	MOBILE BAY	Its source	F&W
D'Olive Creek	D'Olive Bay	Its source	F&W
West Fowl River	Fowl River Bay	Its source	S/F&W
Bayou Coden	Portersville Bay	Its source	F&W
Bayou La Batre	Portersville Bay	Its source	F&W
Little River	Portersville Bay	Its source	F&W
East Fowl River	Fowl River	Its source	S/F&W
Fowl River	MOBILE BAY	Its source	S/F&W
Deer River and its forks	MOBILE BAY	Their sources	F&W
Dog River	MOBILE BAY	Halls Mill Creek	S/F&W
Halls Mill Creek	Dog River	Its source	F&W
Alligator Bayou	Dog River	Its source	F&W
Rabbit Creek	Dog River	Its source	F&W
Rattlesnake Bayou	Dog River	Its source	F&W
Robinson's Bayou	Dog River	Its source	F&W
Threemile Creek	MOBILE RIVER	Mobile Street	A&I
Industrial Canal	Threemile Creek	Its source	A&I

Stream	From	To	Classification
Chickasaw Creek	MOBILE RIVER	Limit of tidal effects (Highway 43)	LWF
Hog Bayou	Chickasaw Creek	Its source	F&W
Little Lagoon (Baldwin County)	In its entirety		SH/S/F&W
Bayou Sara	MOBILE RIVER	U. S. Highway 43	S/F&W
Bayou Sara	U. S. Highway 43	Its source	F&W
Gunnison Creek	Bayou Sara	Its source	S/F&W
Steele Creek	Gunnison Creek	Its source	S/F&W

**NOTE:** Waters of the Mobile River-Mobile Bay Basin classified for SWIMMING AND OTHER WHOLE BODY WATER-CONTACT SPORTS, SHELLFISH HARVESTING and/or FISH AND WILDLIFE in which natural conditions provide an appropriate habitat for shrimp and crabs are to be suitable for the propagation and harvesting of shrimp and crabs.

## INTRASTATE WATERS

Stream	From	To	Classification
Bon Secour River	One mile upstream from first bridge above its mouth	Its source	S/F&W
Fish River	Clay City	Its source	S/F&W
Polecat Creek	Fish River	Its source	S/F&W
Corn Branch	Fish River	Its source	F&W
Thremile Creek	Mobile Street	Its source	A&I
Chickasaw Creek	Limit of tidal effects	Mobile College	F&W
Chickasaw Creek	Mobile College	Its source	S/F&W
Eight Mile Creek	Chickasaw Creek	City of Prichard's water supply intake	F&W

Stream	From	To	Classification
Eight Mile Creek	City of Prichard's water supply intake	U. S. Highway 45	PWS/F&W
Eight Mile Creek	U. S. Highway 45	Its source	F&W
Norton Creek	Bayou Sara	Its source	F&W
Martin Branch	Tensaw River	Its source	F&W
Cold Creek	MOBILE RIVER	Dam 1 1/2 miles west of U.S. Highway 43	F&W <sup>2</sup>
Cold Creek	Dam 1 1/2 miles west of U. S. Highway 43	Its source	PWS/F&W

(10) **THE PERDIDO/ESCAMBIA RIVER BASIN (TO INCLUDE THE BLACKWATER, CONECUH, PERDIDO, AND YELLOW RIVER SUB-BASINS)**

### **INTERSTATE WATERS OF THE BLACKWATER RIVER BASIN**

Stream	From	To	Classification
BLACKWATER RIVER	Alabama-Florida state line	Its source	F&W
Big Juniper Creek	Alabama-Florida state line	Its source	F&W
Sweetwater Creek	Alabama-Florida state line	Its source	F&W
Rock Creek	Alabama-Florida state line	Its source	F&W
Boggy Hollow Creek	Alabama-Florida state line	Its source	F&W

### **INTERSTATE WATERS OF THE CONECUH RIVER BASIN**

Stream	From	To	Classification
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<sup>2</sup>Due to naturally occurring conditions, quality in this segment may not always be commensurate with the classification assigned.

Stream	From	To	Classification
CONECUH RIVER	Alabama-Florida state line	Point A Dam	F&W
CONECUH RIVER	Point A Dam	Head of Gantt Lake	S/F&W
CONECUH RIVER	Head of Gantt Lake	Its source	F&W
Little Escambia Creek	Alabama-Florida state line	Its source	F&W
Big Escambia Creek	Alabama-Florida state line	Its source	F&W
Pine Barren Creek	Alabama-Florida state line	Its source	F&W
Dixon Creek	Alabama-Florida state line	Its source	F&W
Canoe Creek	Alabama-Florida state line	Its source	F&W
Reedy Creek	Alabama-Florida state line	Its source	F&W
Beaver Dam Creek	Alabama-Florida state line	Its source	F&W

## **INTRASTATE WATERS OF THE CONECUH RIVER BASIN**

Stream	From	To	Classification
Murder Creek	CONECUH RIVER	Its source	F&W
Sandy Creek	Murder Creek	Its source	F&W
Burnt Corn Creek	Murder Creek	Its source	S/F&W
Sepulga River	CONECUH RIVER	Its source	F&W
Pigeon Creek	Sepulga River	Its source	F&W
Unnamed Tributary	Pigeon Creek	Its source	F&W

Stream	From	To	Classification
Persimmon Creek	Sepulga River	Its source	F&W
Rocky Creek	Persimmon Creek	Its source	F&W
Prestwood Creek	CONECUH RIVER	Its source	F&W
Unnamed Tributary west of Andalusia	CONECUH RIVER	Its source	F&W
Patsaliga Creek	CONECUH RIVER	Its source	F&W
Little Patsaliga Creek	Patsaliga Creek	Its source	S/F&W
Double Branch	CONECUH RIVER	Its source	F&W
Sizemore Creek	Big Escambia Creek	Its source	S/F&W
Wet Weather Creek	Sizemore Creek	Its source	F&W

## **INTERSTATE AND COASTAL WATERS OF THE PERDIDO RIVER BASIN**

Stream	From	To	Classification
PERDIDO BAY and all connecting coves and bayous	Gulf of Mexico	Its source	S/F&W/SH
Intracoastal Waterway	Alabama Highway 59	Wolf Bay	F&W
Wolf Bay and all connecting coves and bayous	Intracoastal Waterway	Moccasin Bayou	OAW/S/F&W/ SH
Wolf Bay and all connecting coves and bayous	Moccasin Bayou	Its source	S/F&W/SH
Bay La Launch and all connecting coves and bayous	Wolf Bay	Arnica Bay	S/F&W/SH



Stream	From	To	Classification
Arnica Bay and all connecting coves and bayous	Bay La Launch	PERDIDO BAY	S/F&W/SH
Miflin Creek	Wolf Bay	Limit of tidal effects	S/F&W
Hammock Creek	Wolf Bay	Limit of tidal effects	S/F&W
Palmetto Creek	PERDIDO BAY	Its source	S/F&W
Spring Branch	PERDIDO BAY	Its source	S/F&W
Soldier Creek	PERDIDO BAY	Its source	S/F&W
PERDIDO RIVER	PERDIDO BAY	Its source	F&W
Perdido Creek	PERDIDO RIVER	Its source	F&W
Brushy Creek	Alabama-Florida state line	Its source	F&W
Shelby Lakes	Within Gulf State Park		S/F&W
Coastal waters of the Gulf of Mexico Contiguous to the State of Alabama			S/F&W/SH

**NOTE:** Waters of the Perdido River Basin classified for SWIMMING AND OTHER WHOLE BODY WATER-CONTACT SPORTS, SHELLFISH HARVESTING and/or FISH AND WILDLIFE in which natural conditions provide an appropriate habitat for shrimp and crabs are to be suitable for the propagation and harvesting of shrimp and crabs.

## INTRASTATE WATERS OF THE PERDIDO RIVER BASIN

Stream	From	To	Classification
Wolf Creek	Wolf Bay	Its source	F&W
Sandy Creek	Wolf Bay	Its source	S/F&W
Miflin Creek	Limit of tidal effects	Its source	F&W
BLACKWATER RIVER	PERDIDO RIVER	Its source	F&W

Stream	From	To	Classification
Negro Creek	BLACKWATER RIVER	Its source	F&W
Rock Creek	BLACKWATER RIVER	Its source	F&W
Styx River	PERDIDO RIVER	Hollinger Creek	F&W
Styx River	Hollinger Creek	Its source	S/F&W
Hollinger Creek	Styx River	Its source	F&W
Dyas Creek	PERDIDO RIVER	Its source	S/F&W

## INTERSTATE WATERS OF THE YELLOW RIVER BASIN

Stream	From	To	Classification
YELLOW RIVER	Alabama-Florida state line	Its source	F&W
Pond Creek	Alabama-Florida state line	Its source	F&W
Big Creek	Alabama-Florida state line	Its source	F&W
Horsehead Creek	Alabama-Florida state line	Its source	F&W
Fleming Creek	Alabama-Florida state line	Its source	F&W
Lake Jackson	Within Florida and north of Alabama-Florida state line		S/F&W

## INTRASTATE WATERS OF THE YELLOW RIVER BASIN

Stream	From	To	Classification
Five Runs Creek	YELLOW RIVER	Its source	F&W
Indian Creek	YELLOW RIVER	Its source	F&W
Lightwood Knot Creek	YELLOW RIVER	Its source	F&W
Cameron Creek	Lightwood Knot Creek	Its source	F&W
Bay Branch	Five Runs Creek	Its source	F&W
Blue Lake	Within Conecuh National Forest		S/F&W
Open Pond	Within Conecuh National Forest		S/F&W
Dowdy Pond	Within Conecuh National Forest		S/F&W

## (11) THE TALLAPOOSA RIVER BASIN

**INTERSTATE WATERS**

Stream	From	To	Classification
TALLAPOOSA RIVER	ALABAMA RIVER	U. S. Highway 231	F&W
TALLAPOOSA RIVER	U. S. Highway 231	Thurlow Dam	PWS/F&W
TALLAPOOSA RIVER (Thurlow Lake)	Thurlow Dam	Yates Dam	PWS/S/F&W
TALLAPOOSA RIVER (Yates Lake)	Yates Dam	Martin Dam	PWS/S/F&W
TALLAPOOSA RIVER (Lake Martin)	Martin Dam	Highway 280	S/F&W
TALLAPOOSA RIVER (Lake Martin)	Highway 280	Hillabee Creek	PWS/S/F&W
TALLAPOOSA RIVER	Hillabee Creek	R.L. Harris Dam	F&W
TALLAPOOSA RIVER (R.L. Harris Lake)	R.L. Harris Dam	Four miles upstream of Randolph County Road 88 (Lee Bridge)	S/F&W
TALLAPOOSA RIVER	Four miles upstream of Randolph County Road 88 (Lee Bridge)	One-half mile upstream of Cleburne County Road 36	F&W
TALLAPOOSA RIVER	One-half mile upstream of Cleburne County Road 36	Cleburne County Road 19	PWS/F&W
TALLAPOOSA RIVER	Cleburne County Road 19	Alabama-Georgia state line	F&W
Little Tallapoosa River (R.L. Harris Lake)	TALLAPOOSA RIVER (R.L. Harris Lake)	U.S. Highway 431	S/F&W

Stream	From	To	Classification
Little Tallapoosa River (R.L. Harris Lake)	U.S. Highway 431	Five miles upstream of U.S. Highway 431	PWS/S/F&W
Little Tallapoosa River	Five miles upstream of U.S. Highway 431	Alabama-Georgia state line	F&W

## INTRASTATE WATERS

Stream	From	To	Classification
Oakfuskee Creek (Line Creek)	TALLAPOOSA RIVER	Its source	F&W
Old Town Creek	Oakfuskee Creek (Line Creek)	Its source	F&W
Cubahatchee Creek	TALLAPOOSA RIVER	Its source	S/F&W
Calebee Creek	TALLAPOOSA RIVER	Its source	F&W
Uphapee Creek	TALLAPOOSA RIVER	Its source	F&W
Bulger Creek	Uphapee Creek	Its source	PWS/F&W
Parkerson Mill Creek	Chewacla Creek	Its source	F&W
Chewacla Creek	Uphapee Creek	Chewacla State Park Lake (Moore's Mill Creek)	F&W
Chewacla Creek	Chewacla State Park Lake (Moore's Mill Creek)	Its source	PWS/F&W
Moore's Mill Creek	Chewacla Creek (Dam at Chewacla State Park Lake)	Its source	S/F&W
Sougahatchee Creek	TALLAPOOSA RIVER (Yates Lake)	Sougahatchee Lake Dam	F&W

Stream	From	To	Classification
Sougahatchee Creek	Sougahatchee Lake Dam	Its source	PWS/F&W
Pepperell Branch	Sougahatchee Creek	Its source	F&W
Head Creek	Sougahatchee Creek	Its source	F&W
Little Kowaliga Creek (Lake Martin)	Big Kowaliga Creek (Lake Martin)	Reservoir Limits	PWS/S/F&W
Sandy Creek	TALLAPOOSA RIVER (Lake Martin)	Its source	F&W
Chattasofka Creek	Sandy Creek	Its source	F&W
North Fork of Sandy Creek	Sandy Creek	Its source	F&W
Little Sandy Creek	Sandy Creek	Central of Georgia RR	F&W
Little Sandy Creek	Central of Georgia RR	Its source	PWS/F&W
Manoy Creek (Lake Martin)	TALLAPOOSA RIVER (Lake Martin)	Reservoir Limits	PWS/S/F&W
Elkahatchee Creek	TALLAPOOSA RIVER (Lake Martin)	Alabama Highway 63	F&W
Elkahatchee Creek	Alabama Highway 63	Alabama Highway 22	PWS/F&W
Elkahatchee Creek	Alabama Highway 22	Its source	F&W
Harold Creek	Elkahatchee Creek	Its source	F&W
Sugar Creek	Elkahatchee Creek	Its source	F&W
Coley Creek	TALLAPOOSA RIVER (Lake Martin)	Its source	F&W
Hillabee Creek	TALLAPOOSA RIVER	Jct. of Oaktasasi and Town Creeks	F&W
Hillabee Creek	Jct. of Oaktasasi and Town Creeks	County road bridge 3 miles east of Hackneyville	PWS/F&W

Stream	From	To	Classification
Hillabee Creek	County road bridge 3 miles east of Hackneyville	Its source	F&W
Oaktasasi Creek	Hillabee Creek	Its source	F&W
Christian Creek	Oaktasasi Creek	Its source	F&W
Dobbs Creek	Oaktasasi Creek	Its source	F&W
Town Creek	Hillabee Creek	Its source	F&W
Hackney Creek	Town Creek	Its source	PWS/F&W
Chatahospee Creek	TALLAPOOSA RIVER	Its source	F&W
Mill Creek	Chatahospee Creek	Its source	F&W
Finley Creek	Mill Creek	Its source	PWS/F&W
High Pine Creek	TALLAPOOSA RIVER	Highway 431 Crossing	F&W
High Pine Creek	Highway 431 crossing	Its source	PWS
Jones Creek	High Pine Creek	Its source	PWS
Unnamed tributary to Jones Creek northwest of Roanoke	Jones Creek	Its source	PWS
Graves Creek	High Pine Creek	Its source	F&W
Town Creek	High Pine Creek	Its source	F&W
Hutton Creek	TALLAPOOSA RIVER	Its source	F&W
Beaverdam Creek	TALLAPOOSA RIVER	Its source	F&W
Crooked Creek	TALLAPOOSA RIVER	Alabama Highway 9	F&W

Stream	From	To	Classification
Crooked Creek	Alabama Highway 9	Its source	PWS/F&W
Horsetrough Creek	Crooked Creek	Its source	F&W
Wedowee Creek	Little Tallapoosa River	Its source	F&W
Cahulga Creek	TALLAPOOSA RIVER	U. S. Highway 78	F&W
Cahulga Creek	U .S. Highway 78	Its source	PWS/F&W

(12) **THE TENNESSEE RIVER BASIN**

### INTERSTATE WATERS

Stream	From	To	Classification
TENNESSEE RIVER Pickwick Lake	Alabama-Tennessee state line	Lower end of Seven Mile Island	PWS/S/F&W
TENNESSEE RIVER Pickwick Lake	Lower end of Seven Mile Island	Sheffield water intake	F&W
TENNESSEE RIVER Pickwick Lake	Sheffield water intake	Wilson Dam	PWS/F&W
TENNESSEE RIVER Wilson Lake	Wilson Dam	Wheeler Dam	PWS/S/F&W
TENNESSEE RIVER Wheeler Lake	Wheeler Dam	Five miles upstream of Elk River (RM 289.3)	PWS/S/F&W
TENNESSEE RIVER Wheeler Lake	Five miles upstream of Elk River (RM 289.3)	U. S. Highway 31 (see Note 1 this basin)	S/F&W
TENNESSEE RIVER Wheeler Lake	U. S. Highway 31	Flint Creek	PWS/S/F&W
TENNESSEE RIVER Wheeler Lake	Flint Creek	Cotaco Creek	S/F&W
TENNESSEE RIVER Wheeler Lake	Cotaco Creek	Indian Creek	PWS/S/F&W



Stream	From	To	Classification
TENNESSEE RIVER Wheeler Lake	Indian Creek	Flint River	PWS/F&W
TENNESSEE RIVER Wheeler Lake	Flint River	Guntersville Dam	S/F&W
TENNESSEE RIVER Guntersville Lake	Guntersville Dam	Upper end of Buck's Island (see Note 2 this basin)	PWS/S/F&W
TENNESSEE RIVER Guntersville Lake	Upper end of Buck's Island	Roseberry Creek	S/F&W
TENNESSEE RIVER Guntersville Lake	Roseberry Creek	Alabama-Tennessee state line (see Note 3 this basin)	PWS/S/F&W
Bear Creek	Alabama-Mississippi state line	Bear Creek Lake Dam	F&W
Bear Creek (Bear Creek Lake)	Bear Creek Lake Dam	Alabama Highway 187	PWS/S/F&W
Bear Creek	Alabama Highway 187	Upper Bear Creek Lake Dam	S/F&W
Bear Creek (Upper Bear Creek Lake)	Upper Bear Creek Lake Dam	Alabama Highway 243	PWS/S/F&W
Bear Creek	Alabama Highway 243	Its source	F&W
Cedar Creek	Bear Creek	Alabama-Mississippi state line	F&W
Cedar Creek	Alabama-Mississippi state line	Cedar Creek Lake Dam	F&W
Cedar Creek (Cedar Creek Lake)	Cedar Creek Lake Dam	Alabama Highway 24	PWS/S/F&W
Cedar Creek	Alabama Highway 24	Its source	F&W
Bear Creek	U. S. Highway 72	Alabama-Mississippi state line	F&W

Stream	From	To	Classification
Bear Creek	TENNESSEE RIVER (Pickwick Lake)	U. S. Highway 72	S/F&W
Second Creek	TENNESSEE RIVER (Pickwick Lake)	Alabama-Tennessee state line	F&W
Cypress Creek	TENNESSEE RIVER (Pickwick Lake)	City of Florence Water Treatment Plant	F&W
Cypress Creek	City of Florence Water Treatment Plant	Little Cypress Creek	PWS/F&W
Cypress Creek	Little Cypress Creek	Alabama-Tennessee state line	F&W
Little Cypress Creek	Cypress Creek	Alabama-Tennessee state line	F&W
Shoal Creek	TENNESSEE RIVER (Wilson Lake)	Indian Camp Creek	S/F&W
Shoal Creek	Indian Camp Creek	Alabama-Tennessee state line	F&W
Bluewater Creek	TENNESSEE RIVER (Wilson Lake)	U. S. Highway 72	S/F&W
Bluewater Creek	U. S. Highway 72	Alabama-Tennessee state line	F&W
Second Creek	TENNESSEE RIVER (Wheeler Lake)	First bridge upstream from U. S. Highway 72	S/F&W
Second Creek	First bridge upstream from U. S. Highway 72	Alabama-Tennessee state line	F&W
Elk River	TENNESSEE RIVER (Wheeler Lake)	Alabama Highway 99	S/F&W
Elk River	Alabama Highway 99	Alabama-Tennessee state line	PWS/F&W
Piney Creek	TENNESSEE RIVER (Wheeler Lake)	Alabama-Tennessee state line	F&W

Stream	From	To	Classification
Limestone Creek	TENNESSEE RIVER (Wheeler Lake)	Alabama-Tennessee state line	F&W
Flint River	TENNESSEE RIVER (Wheeler Lake)	Big Cove Creek	F&W
Flint River	Big Cove Creek	Hurricane Creek	PWS/F&W
Flint River	Hurricane Creek	Alabama-Tennessee state line	F&W
Paint Rock River (including Estill and Larkin Forks)	TENNESSEE RIVER (Wheeler Lake)	Alabama-Tennessee state line	F&W
Crow Creek	TENNESSEE RIVER (Guntersville Lake)	Alabama-Tennessee state line	F&W
Lookout Creek	Alabama-Georgia state line	Junction of East Fork Lookout Creek and West Fork Lookout Creek	S/F&W

**NOTE 1.** That portion of Wheeler Lake in the immediate vicinity of the discharge from the City of Decatur's sewage treatment plant is not considered suitable for SWIMMING AND OTHER WHOLE BODY WATER-CONTACT SPORTS.

**NOTE 2.** Those portions of Guntersville Lake in the immediate vicinity of discharges from the City of Guntersville's sewage treatment plants are not considered suitable for SWIMMING and OTHER WHOLE BODY WATER-CONTACT SPORTS nor for sources of PUBLIC WATER SUPPLY.

**NOTE 3.** That portion of Guntersville Lake in the immediate vicinity of the discharge of sewage from the City of Bridgeport is not considered suitable for use as a source of PUBLIC WATER SUPPLY nor for SWIMMING AND OTHER WHOLE BODY WATER-CONTACT SPORTS.

## INTRASTATE WATERS

Stream	From	To	Classification
Little Bear Creek (Franklin County)	Cedar Creek	Little Bear Creek Lake Dam	S/F&W

Stream	From	To	Classification
Little Bear Creek (Little Bear Creek Lake, Franklin County)	Little Bear Creek Lake Dam	Alabama Highway 187	PWS/S/F&W
Little Bear Creek (Franklin County)	Alabama Highway 187	Its source	S/F&W
Dunkin Creek	Cedar Creek	Its source	PWS
Little Bear Creek	Bear Creek	Its source	PWS/S/F&W
Mud Creek	Cedar Creek	Its source	F&W
Flat Creek	Bear Creek	Its source	F&W
Cane Creek	TENNESSEE RIVER	Its source	S/F&W
Little Bear Creek (Colbert County)	TENNESSEE RIVER	Its source	S/F&W
Stinking Bear Creek	Little Bear Creek (Colbert County)	Its source	F&W
Spring Creek (Colbert County)	TENNESSEE RIVER	Its source	F&W
Cox Creek	Cypress Creek	Its source	F&W
Pond Creek	TENNESSEE RIVER	Its source	A&I
Town Creek	TENNESSEE RIVER	Its source	F&W
Big Nance Creek	TENNESSEE RIVER	Its source	F&W
Muddy Fork	Big Nance Creek	Crow Branch	A&I
Crow Branch	Muddy Fork	Its source	A&I
Clear Fork	Big Nance Creek	Its source	F&W
Sinking Creek	Clear Fork	Its source	PWS/F&W
First Creek	TENNESSEE RIVER	Its source	S/F&W

Stream	From	To	Classification
Spring Creek (Lawrence County)	TENNESSEE RIVER	Its source	F&W
Swan Creek	TENNESSEE RIVER	Highway 24 crossing	F&W
Swan Creek	Highway 24 crossing	Town Creek	A&I
Swan Creek	Town Creek	Its source	F&W
Town Creek (Athens)	Swan Creek	Its source	F&W
Flint Creek	TENNESSEE RIVER	L & N Railroad	F&W
Flint Creek	L & N Railroad	Alabama Highway 36	PWS/F&W
Flint Creek	Alabama Highway 36	Shoal Creek	LWF <sup>4</sup>
Flint Creek	Shoal Creek	Its source	F&W
Shoal Creek	Flint Creek	Its source	F&W
Cotaco Creek	TENNESSEE RIVER	Its source	S/F&W
Mill Pond Creek	Cotaco Creek	Junction with Gilliam Creek	F&W
Gilliam Creek	Mill Pond Creek	Its source	F&W
Bradford Creek	Barren Fork Creek	Its source	F&W
Indian Creek	TENNESSEE RIVER	Its source	F&W
Huntsville Spring Branch	Indian Creek	Its source	F&W
Aldridge Creek	TENNESSEE RIVER	Its source	F&W
Hurricane Creek	Flint River	Its source	F&W
Sand Branch	Hurricane Creek	Its source	F&W

<sup>4</sup> For the purpose of establishing effluent limitations pursuant to Chapter 335-6-6 of the Department's regulations, the minimum 7-day low flow that occurs once in 10 years (7Q<sub>10</sub>) shall be the basis for applying the chronic aquatic life criteria.

Stream	From	To	Classification
Short Creek	TENNESSEE RIVER	Scarham Creek	PWS/F&W
Short Creek	Scarham Creek	Its source	F&W
Drum Creek	Short Creek	Its source	F&W
East Fork of Drum Creek	Drum Creek	Its source	F&W
Turkey Creek	Short Creek	Its source	F&W
Town Creek (DeKalb County)	TENNESSEE RIVER	Its source	F&W
South Sauty Creek	TENNESSEE RIVER	Its source	S/F&W
North Sauty Creek	TENNESSEE RIVER	Its source	PWS
Roseberry Creek	TENNESSEE RIVER	Its source	F&W
Coon-Flat Rock Creek	TENNESSEE RIVER	Its source	S/F&W
Widow's Creek	TENNESSEE RIVER	Its source	S/F&W
Long Island Creek	TENNESSEE RIVER	Long Creek	PWS/S/F&W
Long Island Creek	Long Creek	Its source	S/F&W
Turkey Creek	Clear Fork	Its source	PWS/F&W
Bengis Creek	Town Creek	Its source	F&W

(13) **THE UPPER TOMBIGBEE RIVER BASIN**

## **INTERSTATE WATERS**

Stream	From	To	Classification
TOMBIGBEE RIVER	Junction with WARRIOR RIVER	Cobb Creek	S/F&W
TOMBIGBEE RIVER	Cobb Creek	Gainesville Lock and Dam	F&W

Stream	From	To	Classification
TOMBIGBEE RIVER (Gainesville and Aliceville Lakes)	Gainesville Lock and Dam	Alabama-Mississippi state line	S/F&W
Noxubee River	TOMBIGBEE RIVER	Alabama-Mississippi state line	F&W
Bodka Creek	Noxubee River	Alabama-Mississippi state line	F&W
Yellow Creek	At Alabama- Mississippi state line		PWS
Yellow Creek	Alabama-Mississippi state line	Its source	F&W
Buttahatchee River	Alabama-Mississippi state line	U.S. Hwy. 278 one mile east of junction of U.S. Highways 43 and 78 in Hamilton	F&W
Buttahatchee River	U.S. Hwy. 278 one mile east of junction of U.S Highways 43 and 78 in Hamilton	U.S. Hwy. 278 seven miles east of junction of U.S. Highways 43 and 78 in Hamilton	PWS/F&W
Buttahatchee River	U.S. Hwy. 278 seven miles east of junction of U.S. Highways 43 and 78 in Hamilton	Lake Buttahatchee Dam	F&W
Buttahatchee River	Lake Buttahatchee Dam	Head of backwaters of Lake Buttahatchee	S
Buttahatchee River	Head of backwaters of Lake Buttahatchee	Its source	F&W
Bull Mountain Creek	Alabama-Mississippi state line	Its source	F&W
Sipsey Creek	Alabama-Mississippi state line	Its source	F&W
Luxapallila Creek	At Alabama-Mississippi state line		PWS

Stream	From	To	Classification
Luxapallila Creek	Alabama-Mississippi state line	County Road 37	F&W
Luxapallila Creek	County Road 37	County road crossing approximately 6 miles upstream from Alabama Highway 18	PWS/F&W
Luxapallila Creek	County road crossing approximately 6 miles upstream from Alabama Highway 18	U.S. Highway 78	F&W
Luxapallila Creek	U. S. Highway 78	Its source	PWS/F&W

## INTRASTATE WATERS

Stream	From	To	Classification
Sipsey River	TOMBIGBEE RIVER	U. S. Highway 43	F&W
Sipsey River	U. S. Highway 43	Alabama Highway 102	PWS/F&W
Sipsey River	Alabama Highway 102	Its source	F&W
New River	Sipsey River	Its source	F&W
Little New River	Sipsey River	Its source	F&W
Lubbub Creek	TOMBIGBEE RIVER	Its source	F&W
Bear Creek	Lubbub Creek	Its source	F&W
Little Bear Creek	Bear Creek	Its source	F&W
Coal Fire Creek	TOMBIGBEE RIVER	Its source	S/F&W
Bogue Creek	Buttahatchee River	Its source	F&W
Beaver Creek	Buttahatchee River	U. S. Highway 78	F&W
Beaver Creek	U. S. Highway 78	Its source	PWS/F&W
Purgatory Creek	Beaver Creek	U. S. Highway 278	F&W



<u>Stream</u>	<u>From</u>	<u>To</u>	<u>Classification</u>
Purgatory Creek	U. S. Highway 278	Its source	PWS/F&W
Camp Creek	Buttahatchee River	Its source	F&W
East Branch Luxapallila Creek	Luxapallila Creek At Winfield	Its source	PWS/F&W
Moore Creek	Buttahatchee River	Its source	F&W

(14) **THE WARRIOR RIVER BASIN**INTRASTATE WATERS

<u>Stream</u>	<u>From</u>	<u>To</u>	<u>Classification</u>
WARRIOR RIVER	TOMBIGBEE RIVER	Five miles upstream from Big Prairie Creek	S/F&W
WARRIOR RIVER	Five miles upstream from Big Prairie Creek	Eight miles upstream from Big Prairie Creek	PWS/S/F&W
WARRIOR RIVER	Eight miles upstream from Big Prairie Creek	Warrior Lock and Dam	S/F&W
WARRIOR RIVER	Warrior Lock and Dam	Oliver Lock and Dam	F&W
WARRIOR RIVER	Oliver Lock and Dam	Hurricane Creek	F&W <sup>1</sup>
WARRIOR RIVER	Hurricane Creek	Bankhead Lock and Dam	S/F&W <sup>1</sup>
WARRIOR RIVER	Bankhead Lock and Dam	Junction of Locust and Mulberry Forks	PWS/S/F&W
Locust Fork	Junction of Locust and Mulberry Forks	Jefferson County Highway 61 (Maxine)	PWS/S/F&W
Locust Fork	Jefferson County Highway 61 (Maxine)	U. S. Highway 31	F&W
Locust Fork	U. S. Highway 31	County road between Hayden and County Line	PWS/F&W
Locust Fork	County road between Hayden and County Line	Its source	F&W
Mulberry Fork	Junction of Locust and Mulberry Forks	Burnt Cane Creek (9 miles below Cordova)	PWS/S/F&W
Mulberry Fork	Burnt Cane Creek (9 miles below Cordova)	Frog Ague Creek (Cordova)	PWS/F&W

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<sup>1</sup>Applicable dissolved oxygen level below existing impoundments is 4.0 mg/l.

Stream	From	To	Classification
Mulberry Fork	Frog Ague Creek (Cordova)	Junction of Mulberry and Sipsey Forks	PWS/F&W
Mulberry Fork	Junction of Mulberry and Sipsey Forks	Its source	F&W
Sipsey Fork	Junction of Mulberry and Sipsey Forks	Lewis Smith Dam	PWS/F&W
Lake Lewis Smith on Sipsey Fork	Lewis Smith Dam	Three miles upstream from Lewis Smith Dam	PWS/S/F&W
Lake Lewis Smith on Sipsey Fork	Three miles upstream from Lewis Smith Dam	Reservoir limits	S/F&W
Sipsey Fork	Lake Lewis Smith	Sandy Creek	F&W
Sipsey Fork and tributaries	Sandy Creek	Its source	F&W <sup>3</sup>
Big Prairie Creek	Head of backwater above Demopolis Lock and Dam on WARRIOR RIVER	Its source	F&W
Cottonwood Creek	Big Prairie Creek	Its source	F&W
White Creek	WARRIOR RIVER	Its source	F&W
Big Brush Creek	WARRIOR RIVER	Its source	F&W
Colwell Creek	Big Brush Creek	Its source	F&W
Minter Creek	WARRIOR RIVER	Its source	F&W
Five Mile Creek	WARRIOR RIVER	Payne Lake in Talladega National Forest	F&W
Payne Lake in Talladega National Forest			S
Elliotts Creek	WARRIOR RIVER	Its source	F&W

<sup>3</sup> The special designation of Outstanding National Resource Water applies to this segment.

Stream	From	To	Classification
Cypress Creek	WARRIOR RIVER	Its source	F&W
North River	WARRIOR RIVER	City of Tuscaloosa's water supply reservoir dam	F&W
North River	City of Tuscaloosa's water supply reservoir dam	Binnion Creek	PWS/S
North River	Binnion Creek	Its source	F&W
Binnion Creek	North River	Its source	F&W
Cedar Creek	North River	Its source	F&W
Clear Creek	North River	Bugs Lake Dam	F&W
Clear Creek	Bugs Lake Dam	Its source	PWS
Hurricane Creek	WARRIOR RIVER	Its source	F&W
Yellow Creek	WARRIOR RIVER	City of Tuscaloosa's water supply reservoir dam	F&W
Yellow Creek	City of Tuscaloosa's water supply reservoir dam	Its source	PWS
Davis Creek	WARRIOR RIVER	Its source	F&W
Blue Creek	WARRIOR RIVER	Its source	F&W
Big Yellow Creek	WARRIOR RIVER	Its source	S/F&W
Valley Creek	WARRIOR RIVER	Blue Creek	F&W
Valley Creek	Blue Creek	Its source	LWF
Opossum Creek	Valley Creek	Its source	A&I
Village Creek	Locust Fork	Bayview Lake Dam	F&W

Stream	From	To	Classification
Village Creek	Bayview Lake Dam	Its source	LWF
Fivemile Creek	Locust Fork	Its source	F&W
Turkey Creek	Locust Fork	Its source	F&W
Cunningham Branch	Turkey Creek	Its source	F&W
Self Creek	Locust Fork	Town of Bradford's water supply intake	F&W
Self Creek	Town of Bradford's water supply intake	Its source	PWS
Gurley Creek	Self Creek	Its source	F&W
Little Warrior River	Locust Fork	Junction of Blackburn Fork and Calvert Prong	F&W
Calvert Prong	Little Warrior River	City of Oneonta's water supply intake	F&W
Calvert Prong	City of Oneonta's water supply intake	Its source	PWS
Blackburn Fork	Little Warrior River	Inland Lake Dam	F&W
Blackburn Fork	Inland Lake Dam	Its source	PWS/S
Chitwood Creek	Calvert Prong	Its source (junction with Mill and Cheney Branch)	F&W
Mill Creek	Chitwood Creek	Its source	F&W
Graves Creek	Locust Fork	Its source	F&W
Whippoorwill Creek	Locust Fork	Its source	F&W
Clear Creek	Locust Fork	Its source	F&W
Slab Creek	Locust Fork	Its source	F&W
Lost Creek	Mulberry Fork	Two miles upstream from Wolf Creek	F&W

Stream	From	To	Classification
Lost Creek	Two miles upstream from Wolf Creek	Cane Creek	PWS/F&W
Lost Creek	Cane Creek	Its source	F&W
Cane Creek (Oakman)	Lost Creek	Dixie Springs Road	F&W
Cane Creek (Oakman)	Dixie Springs Road	Alabama Highway 69	LWF
Cane Creek (Oakman)	Alabama Highway 69	Its source	F&W
Indian Creek	Lost Creek	Its source	F&W
Wolf Creek	Lost Creek	Its source	F&W
Burnt Cane Creek	Mulberry Fork	Its source	F&W
Cane Creek (Jasper)	Mulberry Fork	Town Creek	LWF
Cane Creek (Jasper)	Town Creek	Its source	F&W
Town Creek	Cane Creek	100 yards upstream of Southern Railway crossing (1.1 miles upstream of Cane Creek)	LWF
Town Creek	100 yards upstream of Southern Railway crossing (1.1 miles upstream of Cane Creek)	Its source	F&W
Blackwater Creek	Mulberry Fork	Its source	F&W
Mud Creek	Mulberry Fork	Its source	F&W
Broglen River	Mulberry Fork	Junction of Eightmile and Brindley Creeks	F&W
Brindley Creek	Broglen River	Its source	PWS
Eightmile Creek	Broglen River	Cullman water supply reservoir dam	F&W

Stream	From	To	Classification
Eightmile Creek	Cullman water supply reservoir dam	Its source	PWS
Pope Creek	Cullman water supply dam	Its source	PWS
Blue Springs Creek	Mulberry Fork	Its source	F&W
Warrior Creek	Mulberry Fork	Its source	F&W
Tibb Creek	Warrior Creek	Its source	F&W
Riley Maze Creek	Tibb Creek	Its source	F&W
Ryan Creek	Lake Lewis Smith	Its source	F&W
Crooked Creek	Lake Lewis Smith	Its source	F&W
Brushy Creek	Lake Lewis Smith (Sipsey Fork)	U.S. Highway 278	PWS/F&W
Brushy Creek	U.S. Highway 278	Its source	F&W
Clear Creek	Lake Lewis Smith	City of Haleyville water supply reservoir dam	F&W
Clear Creek	City of Haleyville water supply reservoir dam	Its source	PWS
Rock Creek	Lake Lewis Smith	Its source	F&W
Sandy Creek	Sipsey Fork	Its source	F&W
Curtis Mill Creek	Sandy Creek	Town of Double Springs water supply reservoir dam	F&W
Curtis Mill Creek	Town of Double Springs water supply reservoir dam	Its source	PWS

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**Statutory Authority:** Code of Alabama 1975, §§22-22-9, 22-22A-5, 22-22A-6, 22-22A-8.

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