Part 6: Chapter 2: Mississippi Commission on Environmental Quality Regulations for Water Quality Criteria For Intrastate, Interstate, And Coastal Waters

TABLE OF CONTENTS

Rule 2.1 General Conditions

Rule 2.2 Minimum Condition Applicable to All Waters

Rule 2.3 Specific Water Quality Criteria

Rule 2.4 Designated Uses In State Waters

Rule 2.1 *General Conditions*:

A. Antidegradation: The policy inherent in the standards shall be to protect water quality existing at the time these water quality standards were adopted and to upgrade or enhance water quality within the State of Mississippi. Waters whose existing quality is better than the established standards will be maintained at high quality unless the Commission finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In no event, however, may degradation of water quality interfere with or become injurious to existing instream water uses. Further, in no case will water quality be degraded below (or above) the base levels set forth in these standards for the protection of the beneficial uses described herein. In addition, the State will assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control. Where the Commission determines that high quality waters constitute an outstanding national resource, such as waters of National State Parks, Wildlife Refuges, and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected. For the purposes of this rule, existing uses are defined as those uses actually attained in the water body on or after November 28, 1975, whether or not they are included in the Water Quality Criteria.

B. Sampling and Assessment: The limiting values of water quality herein described shall be measured by the Commission in waters under consideration as determined by good environmental engineering and scientific practice and after consultation with affected parties. Samples shall be taken from points so distributed over the seasons of the year, time of day, and area and depth of the waters being studied as to permit a realistic assessment of water quality. All sampling must be conducted in accordance with the MDEQ-approved Quality Management Plan (QMP), Quality Assurance Project Plan (QAPP), or its equivalent.

Samples shall be analyzed in accordance with methodology specified in 40 CFR 136 and with the latest edition of *Standard Methods for the Examination of Water and Wastewater* or other methods acceptable to the Commission.

C. Designated Use Attainability: Certain waters of the State may not fall within desired or prescribed limitations as outlined. In such instances the Commission may authorize exceptions to these limits, under the following conditions:

(1) the designated use is not attainable because of natural background conditions; or

(2) the designated use is not attainable because of irretrievable man-induced conditions; or

(3) the application of effluent limitations for existing point sources is more stringent than those required pursuant to Section 301(b)(2)(A) and (B) of the Federal Water Pollution Control Act of 1972, as amended, in order to attain the designated use, would result in substantial and widespread adverse economic and social impact.

In no case shall it be permissible to deposit or introduce materials into waters of the State that will cause impairment of the reasonable or legitimate use of said waters.

D. Natural Conditions: Natural conditions are defined as background water quality conditions due only to non-anthropogenic sources. The criteria herein apply specifically with regard to substances attributed to sources (discharges, nonpoint sources, or instream activities) as opposed to natural phenomena. Waters may naturally have characteristics outside the limits established by these criteria. Therefore, naturally occurring conditions that fail to meet criteria should not be interpreted as violations of these criteria.

E. Criteria: In view of the fact that industry is continuing to produce new materials whose characteristics and effects are unknown at this time or for which incomplete national criteria have been established, for the purposes of setting water quality standards or permit limits on a case-by-case basis, such materials shall be evaluated on their merits as information becomes available to the Commission. Sources of information shall include, but not be limited to, the latest edition of *Quality Criteria for Water*, prepared by the Environmental Protection Agency pursuant to Section 304(a) of the Federal Clean Water Act.

F. Applicable Flow: All criteria contained herein shall apply to all stages of stream flow greater than or equal to the 7-day, 10-year minimum flow (7Q10) in unregulated, natural streams, and the legally guaranteed minimum flow in regulated streams, unless otherwise provided in these regulations. This requirement shall not be interpreted to permit any unusual waste discharges during periods of lower flow. Notwithstanding the above, a stream flow equal to the 7-day, 2-year minimum flow (7Q2) in unregulated natural streams shall be utilized in establishing permit limitations for storm water permits. In cases in which either (1) the data are indefinite or inconclusive, or (2) the 7-day, 2-year minimum flow and/or the 7-day, 10-year minimum flow are inappropriate because of the hydrology of the area, other appropriate State and federal agencies will be consulted in establishing the applicable stream flow.

G. Mississippi River: The Mississippi River is classified for Fish and Wildlife, but with the following additions to the criteria stated herein:

Mineral Constituents: Not to exceed the following concentrations at any time:

From Mississippi-Tennessee border to Vicksburg

Chlorides	60 mg/l
Sulfates	150 mg/l
TDS	425 mg/l

From Vicksburg south to the Mississippi-Louisiana border

Chlorides	75 mg/l
Sulfates	120 mg/l
TDS	400 mg/l

H. Mixing Zones: It is recognized that limited areas of mixing are sometimes unavoidable; however, mixing zones shall not be used as a substitute for waste treatment. Mixing zones constitute an area whereby physical mixing of a wastewater effluent with a receiving water body occurs. Application of mixing zones shall be made on a case-by-case basis and shall only occur in cases involving large surface water bodies in which a long distance or large area is required for the wastewater to completely mix with the receiving water body.

The location of a mixing zone shall not significantly alter the designated uses of the receiving water outside its established boundary. Adequate zones of passage for the migration and free movement of fish and other aquatic biota shall be maintained. Toxicity and human health concerns within the mixing zone shall be addressed as specified in the *Environmental Protection Agency Technical Support Document* for Water Quality-Based Toxics Control (EPA-505/2-90-001, March 1991) and amendments thereof. Under no circumstances shall mixing zones overlap or cover tributaries, nursery locations, locations of threatened or endangered species, or other ecologically sensitive areas.

I. Coastal Recreational Waters: Coastal Recreational Waters are marine and estuarine waters that are suitable for recreational purposes, including such water contact activities as swimming, wading, and water skiing. Coastal recreational waters do not include inland waters upstream of the mouth of a river or a stream having a natural connection to the open sea. Water quality monitoring for bacteria content is conducted on these waters to protect the health of bathers. Water contact is discouraged on Mississippi's public access bathing beaches along the shoreline of Jackson, Harrison, and Hancock Counties when enterococci exceed 104 colonies per 100 ml. When enterococci counts exceed

104 per 100 ml at the public access beaches, water contact advisories are issued by Mississippi's Beach Monitoring Task Force.

J. Definitions:

(1) Acute criterion or Criteria Maximum Concentration (CMC) is the highest concentration of a pollutant to which aquatic life can be exposed for a short period of time (1-hour average) without deleterious effects. (40 CFR 131.36)

(2) Best management practice (BMP) means a structural or nonstructural management-based practice used singularly or in combination to reduce nonpoint source inputs to receiving waters in order to achieve water quality protection goals.

(3) Bioconcentration Factor (BCF) is defined as the ratio (in L/kg-tissue) of the concentration of a substance in tissue of an aquatic organism to its concentration in the ambient water, in situations where the organism is exposed through the water only and the ratio does not change substantially over time. (EPA-822-B-00-004)

(4) Biological integrity is defined as the ability of a system to support and maintain a balanced, integrated, and adaptive community of organisms having a composition, diversity, and functional organization comparable to that of natural habitats of the region.

(5) Cancer Potency Factor (CPF) is a measure of the cancer-causing potency of a substance estimated by the upper 95 percent confidence limit of the slope of a straight line calculated by the Linearized Multistage Model according to the U.S. Environmental Protection Agency Guidelines (FR 51(185): 339992-34003, and FR 45(231 Part V); 79318-79379).

(6) Chronic Criterion or Criteria Continuous Concentration (CCC) is the highest concentration of a pollutant to which aquatic life can be exposed for an extended period of time (4 days) without deleterious effects. (40 CFR 131.36)

(7) Clean techniques refers to an integrated system of sample collection and laboratory analytical procedures designed to detect concentrations of trace metals below criteria levels and eliminate or minimize inadvertent sample contamination that can occur during traditional sampling practices.

(8) Composite sampling is a technique whereby multiple temporally or spatially discrete media or tissue samples are combined, thoroughly homogenized, and treated as a single sample.

(9) E. coli (*Escherichia coli*) is a common inhabitant of the intestinal tract of warm-blooded animals, and its presence in water samples is an indication of fecal pollution and the possible presence of enteric pathogens.

(10) Enteric pathogens are a species of bacteria can be highly pathogenic when they enter and colonize the human digestive tract.

(11) Grab samples are samples where the entire sample is collected in one uninterrupted interval.

(12) Mean Annual Flow is the total of daily mean flows for the full period of record divided by the total days for the full period of record.

(13) Membrane Filtration (MF) is a method of quantitative or qualitative analysis of bacterial or particulate matter in a water sample filtered through a membrane capable of retaining bacteria.

(14) Most probable number (MPN) is the most probable number of coliform-group organisms per unit volume of sample water.

(15) Point source is a stationary location or fixed facility from which pollutants are discharged or emitted. Also, any single identifiable source of pollution, e.g., a pipe, ditch, or ship.

(16) 7Q10 is the average streamflow rate over seven consecutive days that may be expected to be reached as an annual minimum no more frequently than one year in ten years.

(17) 7Q2 is the average streamflow rate over seven consecutive days that may be expected to be reached as an annual minimum no more frequently than one year in two years.

(18) Stratification is the formation of layers of water within a water body that are of different densities. The density difference may be caused by variations of temperature, salinity, or concentrations of other dissolved substances within the water at different depths.

(19) Threshold odor number is the number of times a sample needs to be diluted with clean water in order to reach the level that smell is not detectable.

(20) Toxic substance means any substance or combination of substances (including disease-causing agents), which after discharge and upon exposure, ingestion, inhalation, or assimilation into any organism, whether directly from the environment or indirectly by ingestion through food chains, has the potential to cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunctions or suppression in reproduction or growth) or physical deformities in such organisms or their offspring.

Source: Miss. Code Ann. *§§ 49-2-1, et seq. and 49-17-1, et seq.*

Rule 2.2 Minimum Conditions Applicable to All Waters:

A. Narrative Standards

(1) Waters shall be free from substances attributable to municipal, industrial, agricultural, or other discharges that will settle to form putrescent or otherwise objectionable sludge deposits.

(2) Waters shall be free from floating debris, oil, scum, and other floating materials attributable to municipal, industrial, agricultural, or other discharges in amounts sufficient to be unsightly or deleterious.

(3) Waters shall be free from materials attributable to municipal, industrial, agricultural, or other discharges producing color, odor, taste, total suspended or dissolved solids, sediment, turbidity, or other conditions in such degree as to create a nuisance, render the waters injurious to public health, recreation, or to aquatic life and wildlife, or adversely affect the palatability of fish, aesthetic quality, or impair the waters for any designated use. Except as prohibited in Rule 2.1.H. above, the turbidity outside the limits of a 750-foot mixing zone shall not exceed the background turbidity at the time of discharge by more than 50 Nephelometric Turbidity Units (NTU). Exemptions to the turbidity standard may be granted under the following circumstances:

(a) in cases of emergency to protect the public health and welfare

(b) for environmental restoration projects which will result in reasonable and temporary deviations and which have been reviewed and approved by the Department of Environmental Quality.

(4) Waters shall be free from substances attributable to municipal, industrial, agricultural, or other discharges in concentrations or combinations that are toxic or harmful to humans, animals, or aquatic life. Specific requirements for toxicity are found in Rule 2.2.F.

(5) Municipal wastes, industrial wastes, or other wastes shall receive effective treatment or control in accordance with Section 301, 306, and 307 of the Federal Clean Water Act. A degree of treatment greater than defined in these sections may be required when necessary to protect legitimate water uses.

B. Water Body Classifications and Designated Uses: The State of Mississippi water body classifications and corresponding U.S. EPA associated designated uses for water quality assessment purposes recognized by the State of Mississippi are as follows:

Table 1. Mississippi Water Body Classifications and Designated Uses

MS Water Body Classification	U.S. EPA Associated Designated Use
Public Water Supply	Drinking Water Supply
Recreation	Primary Contact Recreation
Shellfish Harvesting	Shellfish Consumption
Fish and Wildlife	Aquatic Life Use Fish Consumption Secondary Contact Recreation

A water body classified as Public Water Supply, Recreation, or Shellfish Harvesting shall meet not only the criteria to support its respective classification, but also shall meet the criteria to support the Fish and Wildlife classification.

C. Dissolved Oxygen: Dissolved oxygen concentrations shall be maintained at a daily average of not less than 5.0 mg/l with an instantaneous minimum of not less than 4.0 mg/l.

When possible, samples should be taken from ambient sites according to the following guidelines:

For waters bodies that are not stratified, samples should be taken:

At mid-depth if the total water column depth is 10 feet or less.
At 5 feet from the water surface if the total water column depth is greater than 10 feet.

For waters that are stratified, samples should be taken:

At mid-depth of the epilimnion if the epilimnion depth is 10 feet or less.
At 5 feet from the water surface if the epilimnion depth is greater than 10 feet.

D. pH: The normal pH of the waters shall be 6.0 to 9.0. The discharge of waters or wastewaters should not cause the pH to vary more than 1.0 unit within this range, nor be less than 6.0, nor be greater than 9.0. Variations may be allowed on a case-by-case basis if the Commission determines that there will be no detrimental effect on the water body's designated uses as a result of the greater pH change. In black water streams and in those watersheds with highly acidic soils, the pH may be lower than 6.0 due to natural conditions.

E. Temperature: The maximum water temperature increase above natural temperatures shall not exceed 5°F (2.8°C) in streams, lakes, and reservoirs nor shall he maximum water temperature exceed 90°F (32.2°C), except that in the Tennessee River the temperature

shall not exceed 86°F (30°C). In lakes and reservoirs, there shall be no withdrawals from or discharge of heated waters to the hypolimnion unless it can be shown that such discharge will be beneficial to water quality.

In all waters the normal daily and seasonal temperature variations that were present before the addition of artificial heat shall be maintained. The maximum water temperature shall not exceed 90°F (32.2°C) in coastal or estuarine waters. The discharge of any heated waste into any coastal or estuarine waters shall not raise temperatures more than 4°F (2.2°C) above natural background temperatures during the months of October through May nor more than 1.5°F (0.8°C) above natural background temperature during the months of June through September.

There shall be no thermal block to the migration of aquatic organisms. Requirements for zones of passage as referenced in Rule 2.1.H. shall apply. The general requirements of Rule 2.1.B. state that samples should be taken from points so distributed over the seasons of the year, time of day, and area and depth of the waters being studies as to permit a realistic assessment of water quality. Therefore, the temperature shall be measured during the environmentally critical period. In addition, temperature 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, temperature criteria will be applied at mid-depth.

In those specific cases where natural conditions elevate the temperatures in excess of the limits expressed herein, Rule 2.2.E. shall apply on a case-by-case basis. The discharge of any heated waters into a stream, lake, or reservoir shall not raise temperatures more than 5°F(2.8°C) above natural condition temperatures. The discharge of any heated waste into any coastal or estuarine waters shall not raise temperatures more than 4°F (2.2°C) above natural condition temperatures during the months of October through May nor more than 1.5°F (0.8°C) above natural condition temperatures during the months of June through September. This will also be considered on a case-by-case basis requiring evidence that the aquatic life of the water body will not be adversely impacted by the elevated temperatures.

F. Toxic Substances:

(1) Aquatic Life and Human Health Standards

(a) Aquatic Life - The concentration of toxic substances in State waters shall not result in chronic or acute toxicity or impairment of the uses of aquatic life. Toxicity concentrations in State waters in excess of these values shown in Table 2 will be assessed to determine chronic or acute toxicity, and/or the impairment of the uses of aquatic life. Chronic and/or acute toxicity will be determined in accordance with the *Water Quality Standards Handbook: Second Edition* (EPA-823-B-94-005a, August 1994) *and Technical Support Document for Water Quality-Based Toxics Control* (EPA-505/2-90-001, March 1991). Regardless of the results of

chronic or acute toxicity bioassay surveys, the concentrations of toxic substances shall not exceed the chronic or acute values, except as provided for in Rules 2.2.F.5(a) and 2.2.F.5(b).

(b) Human Health - The concentration of toxic substances shall not exceed the level necessary to protect human health through exposure routes of fish (and shellfish) tissue consumption, water consumption, or other routes identified as appropriate for the water body.

(2) Numeric criteria for all waters are established herein for certain toxic pollutants for which the Environmental Protection Agency (EPA) has published national criteria for the protection of aquatic life and human health pursuant to Section 304(a) of the Federal Clean Water Act in addition to chlorine and ammonia. The pollutants are listed in Table 2 and are expressed as the dissolved phase of the parameter.

(3) Ammonia toxicity shall be evaluated according to EPA guidelines published in *1999 Update of Ambient Water Quality Criteria for Ammonia; EPA document number EPA-822-R-99-014 or Ambient Water Quality Criteria for Ammonia (Saltwater) - 1989*; EPA document number 440/5-88-004. This material related to ammonia toxicity is hereby incorporated by reference including any subsequent amendments and editions.

(4) Application of Numerical Criteria:

(a) When evaluating human health effects all waters must comply with the Organisms Only criteria except for waters classified as Public Water Supply and all stream segments within 50 stream miles upstream of a drinking water intake. Stream segments that are classified as Public Water Supply or are within 50 miles upstream of a drinking water intake shall comply with the Water and Organisms criteria.

(b) When applying acute or chronic toxicity or human health criteria the following stream flows shall be used:

Acute Toxicity - 7Q10
Chronic Toxicity - 7Q10
Human Health - Mean Annual Flow

(c) Criteria for certain metals may be modified on a site-specific basis when a water effect ratio (WER) is conducted in accordance with Rule 2.6.C.2.a. of Mississippi's *Wastewater Regulations for National Pollutant Discharge Elimination System (NPDES) Permits, Underground Injection Control (UIC) Permits, State Permits, Water Quality Based Effluent Limitations*

and Water Quality Certification, Title 11, Part 6, Chapter 1. In these instances, the criterion for the specific metal in the affected water body shall be equal to the criterion concentrations calculated using the following equations:

$$\boxed{CMC = WER * Acute \text{ and } CCC = WER * Chronic}$$

Where: CC = Criteria Continuous Concentration
CMC = Criteria Maximum Concentration
WER = Water Effects Ratio for a Specific Pollutant
Acute = Acute Criterion from Table 2
Chronic = Chronic Criterion from Table 2

When a WER has not been conducted, the criterion listed in Table 2 of this regulation shall apply because the value of the WER is presumed to equal one in the absence of data to indicate otherwise.

(5) Discharge Specific Criteria:

(a) Existing Discharges

(1) The Commission may establish discharger specific alternative criteria for existing discharges if all of the following conditions are satisfied:

(i) Discharge existed prior to December 1, 1988.

(ii) Discharger performs acute and/or chronic bioassays and instream biological assessments and other evaluations as deemed appropriate by the Commission.

(iii) The designated use of the waters is maintained.

(2) All discharger specific alternative criteria will be subject to Mississippi public participation requirements for revisions to water quality standards and will be subject to review by the U. S. Environmental Protection Agency.

(b) New Source Discharges

(1) The Commission may establish discharger specific criteria for new source discharges if the discharger can demonstrate that established Water Quality Criteria are based on conditions not

applicable to Mississippi such as, but not limited to, the use of species not indigenous to Mississippi.

(2) All discharger specific alternative criteria will be subject to Mississippi public participation requirements for revisions to water quality standards and will be subject to review by the U. S. Environmental Protection Agency.

(6) Toxic and Human Health Parameters for which no Numeric Criteria have been Established:

(a) For those toxic and human health parameters for which no numeric criteria have been established, the Commission shall determine limitations using available references which shall include, but not be limited to, *Quality Criteria for Water* (Section 304(a)), Federal regulations under Section 307 of the Clean Water Act, and Federal regulations under Section 1412 of the Public Health Service Act as amended by the Safe Drinking Act (Pub. 93-523).

(b) The not to be exceeded value for criteria published in 1980 or the one hour average value for criteria published in 1985 or later shall be used as an acute toxicity number for calculating effluent limitations, establishing Total Maximum Daily Loads (TMDLs), or reviewing ambient water quality data.

(c) The 24-hour average for criteria published in 1980 or the 4-day average for criteria published in 1985 or later shall be used as a chronic toxicity number for calculating effluent limitations, establishing TMDLs, or reviewing ambient water quality data.

(d) If metals concentrations for criteria are hardness-dependent, the chronic and acute concentrations shall be based on 25 mg/l hardness if the ambient hardness is less than or equal to 25 mg/l. Concentrations shall be based on the actual mixed stream hardness.

(e) If separate criteria are given for fresh and salt waters, they shall be applied as appropriate.

(f) For non-carcinogens, these concentrations will be determined using a Reference Dose (RfD) as published by the U. S. Environmental Protection Agency pursuant to Section 304(a) of the Federal Water Pollution Act as amended unless a more recent RfD is issued by the U. S. Environmental Protection Agency as listed in the Integrated Risk Information System (IRIS) file, in which case the more recent value will be used. Water quality standards or criteria used to calculate water quality-based effluent

limitations (and for all other purposes of water quality criteria under Section 303(c) of the Clean Water Act) to protect human health through the different exposure routes are determined as follows:

(1) Fish tissue consumption:

$$WQC = (RfD) \times \text{Body Weight} / (FCR \times BCF)$$

where: WQC = water quality criterion
RfD = reference dose
FCR = fish consumption rate (17.5 gm/person-day)
BCF = bioconcentration factor

BCF values are based on U. S. Environmental Protection Agency publications pursuant to Section 304(a) of the Clean Water Act. FCR values are average consumption rates for a 70 kg adult for a lifetime of the population; alternative FCR values may be used when it is considered necessary to protect localized populations which may be consuming fish at a higher rate.

(2) Water consumption and fish tissue consumption:

$$WQC = (RfD) \times \text{Body Weight} / (WCR + (FCR \times BCF))$$

where: WQC = water quality criterion
RfD = reference dose
FCR = fish consumption rate (17.5 gm/person-day)
BCF = bioconcentration factor
WCR = water consumption rate (assumed to be 2 liters/day for adults)

The equations listed in this subparagraph will be used to develop water criteria or standards on a case-by-case basis for toxic substances that are not presently included in the water quality standards. Alternative FCR values may be used when it is considered necessary to protect localized populations that may be consuming fish at a higher rate.

(g) For carcinogens, the concentrations of toxic substances will not result in unacceptable health risk and will be based on a Cancer Potency Factor (CPF). An unacceptable health risk for cancer will be considered to be more than one additional case of cancer per one million people exposed

(10-6 risk level). Water quality standards or criteria used to calculate water quality-based effluent limitations (and for all other purposes of water quality criteria under Section 303(c) of the Clean Water Act) to protect human health through the different exposure routes are determined as follows:

(1) Fish tissue consumption:

$$WQC = (Risk) \times Body\ Weight / (CPF \times (FCR \times BCF))$$

where: WQC = water quality criterion
Risk = risk factor (10)
CPF = cancer potency factor
FCR = fish consumption rate (17.5 gm/person-day)
BCF = bioconcentration factor

BCF values are based on U.S. Environmental Protection Agency publications pursuant to Section 304(a) of the Clean Water Act. FCR values are average consumption rates for a 70 kg adult for a lifetime of the population; alternative FCR values may be used when it is considered necessary to protect localized populations which may be consuming fish at a higher rate.

(2) Water consumption (including a correction for fish consumption):

$$WQC = Risk \times Body\ Weight / (CPF \times (WCR + (FCR \times BCF)))$$

where: WQC = water quality criterion
Risk = risk factor (10)
CPF = cancer potency factor
FCR = fish consumption rate (17.5 gm/person-day)
BCF = bioconcentration factor
WCR = water consumption rate (assumed to be 2 liters/day for adults)

The equations listed in this subparagraph will be used to develop water criteria or standards on a case-by-case basis for toxic substances that are not presently included in the water quality standards. Alternative FCR values may be used when it is considered necessary to protect localized populations that may be consuming fish at a higher rate.

TABLE 2 Notes

a The CMC = $1/[(f_1/CMC_1) + (f_2/CMC_2)]$ where f_1 and f_2 are the fractions of total selenium that are treated as selenite and selenate, respectively, and CMC_1 and CMC_2 are 185.9 µg/l and 12.83 µg/l. The value in the table is calculated assuming a worst case scenario in which all selenium is present as selenate.

b Hardness dependent parameter. Criteria are indicated at hardness of 50 mg/l as $CaCO_3$. Equations for criteria calculation of hardness dependent parameters can be found in *Quality Criteria for Water*. The equation is applicable for instream hardness ranges from 25 mg/l to 400 mg/l. If instream hardness is less than 25 mg/l, then a hardness value of 25 mg/l should be used to calculate the criteria. If instream hardness is greater than 400 mg/l, then a hardness of 400 mg/l should be used to calculate the criteria.

c Criteria for pentachlorophenol are based on a pH dependent equation as found in *Quality Criteria for Water*. Values listed are for a pH of 7.0 s.u.

d Site specific criteria for Mississippi Sound.

e Parameter subject to water effects ratio equations where:
CMC = WER * Acute
CCC = WER * Chronic

f Ammonia criteria are dependent on pH, temperature, and/or salinity. See Section II.10.C.

g Expressed as µg free cyanide (as CN)/L.

h Refers to the inorganic form only.

i Applies to the sum of α and β isomers.

j Chemical Abstracts Service (CAS) registry numbers, which provide a unique identification for each chemical.

k This criterion applies to total PCBs (e.g., the sum of all congener or all isomer or homolog or Aroclor analyses).

TABLE 2
Numeric Criteria for All Waters (µg/l)

CAS [j]	Parameter	Fresh Water		Salt Water		Human Health	
		Acute	Chronic	Acute	Chronic	Organisms Only	Water & Organisms
309002	Aldrin	3.0		1.3		0.000050	0.000049
7664417	Ammonia	[f]	[f]	[f]	[f]		
7440382	Arsenic (III), Total Dissolved	340 [e]	150 [e]	69	36		
7440382	Arsenic, Total Dissolved					24[h]	0.078[h]
7440439	Cadmium, Total Dissolved	1.03 [b,e]	0.15 [b,e]	40	8.8	168	5
57749	Chlordane	2.4	0.0043	0.09	0.004	0.00081	0.00080
7782505	Chlorine	19	11	13	7.5		
18540299	Chromium (Hex), Total Dissolved	16 [e]	11 [e]	1100	50	1470	98
16065831	Chromium (III), Total Dissolved	323 [b,e]	42 [b,e]			140468	100
7440508	Copper, Total Dissolved	7.0 [b,e]	5.0 [b,e]	4.8	3.1	1000	1300
57125	Cyanide	22.0 [g]	5.2 [g]	1.0 [g]	1.0 [g]	140	140
50293	4,4 DDT	1.1	0.001	0.13	0.001	0.00022	0.00022
60571	Dieldrin	0.24	0.056	0.71	0.0019	0.000054	0.000052
1746016	2,3,7,8 TCDD (Dioxin)					51×10^{-9}	50×10^{-9}
959988	alpha-Endosulfan	0.22 [i]	0.056 [i]	0.034 [i]	0.0087 [i]	89	62[j]
33213659	beta-Endosulfan	0.22 [i]	0.056 [i]	0.034 [i]	0.0087 [i]	89[j]	62
1031078	Endosulfan Sulfate					89[j]	62[j]
72208	Endrin	0.086	0.036	0.037	0.0023	0.060	0.059
76448	Heptachlor	0.52	0.0038	0.053	0.0036	0.000079	00.00079

CAS j	Parameter	Fresh Water		Salt Water		Human Health	
		Acute	Chronic	Acute	Chronic	Organisms Only	Water & Organisms
58899	gamma-BHC (Lindane)	0.95	0.08	0.16		1.8	0.98
7439921	Lead, Total Dissolved	30 [b,e]	1.18 [b,e]	210	8.1		15
7439976	Mercury (II), Total Dissolved	2.1e	0.012	1.8	0.025		
7439976	Mercury					0.153	0.151
7440020	Nickel, Total Dissolved	260 [b,e]	29 [b,e]	75	8.3	4600	610
108952	Phenol	300	102	300	58	860000	10000
87865	Pentachlorophenol	8.7 [c]	6.7 [c]	13 [c]	7.9 [c]	3.0	0.27
	Total PCB	0.02[k]	0.014[k]	1.0[k]	0.03[k]	0.000064[k]	0.000064[k]
7782492	Selenium, Total Dissolved	11.8 [a,e]	4.6 [e]	290 [e]	71 [e]	4200	170
7440224	Silver, Total Dissolved	0.98 [b,f]		1.9			100
8001352	Toxaphene	0.73	0.0002	0.21	0.0002	0.00028	0.00028
7440666	Zinc, Total Dissolved	65 [b,e]	65 [b,e]	90	81	26,000	7,400

Source: Miss. Code Ann. *§§ 49-2-9, 49-2-1, et seq., and 49-17-1, et seq.*

Rule 2.3 Specific Water Quality Criteria:

A. PUBLIC WATER SUPPLY CLASSIFICATION:

Waters in this classification are a source of raw water supply for drinking and food processing purposes. The water treatment process shall be approved by the Mississippi State Department of Health. The raw water supply shall be such that after the approved treatment process, it will satisfy the regulations established pursuant to Section 1412 of the Public Health Service Act as amended by the Safe Drinking Water Act (Pub. L. 93-523). Information regarding surface water intakes for Public Water Supply is provided in Table 3.

Table 3. Mississippi Surface Water Intakes for Public Water Supply

Water Body	**Name**	**Location**	**Status**
Bonita Reservoir	City of Meridian	Lauderdale County	Inactive
Long Creek Reservoir	City of Meridian	Lauderdale County	Inactive
Luxapallila Creek	Columbus Light and Water	Lowndes County	Inactive
Okatibbee Reservoir	Pat Harrison Waterway District	Lauderdale County	Inactive
Pascagoula River	Jackson County Port Authority	Jackson County	Active
Pickwick Lake (Yellow Creek Embayment)	Short Coleman Park Water Association	Tishomingo County	Inactive
Ross Barnett Reservoir Pearl River	City of Jackson	Hinds County	Active
Tenn-Tom Waterway	City of Corinth Gas and Water Department	Tishomingo County	Active
Tombigbee River	NE MS Regional Water Supply District	Itawamba County	Active

Waters that meet the Public Water Supply criteria shall also be suitable for secondary contact recreation. Secondary contact recreation is defined as incidental contact with the water during activities such as wading, fishing, and boating, that are not likely to result in full body immersion. In considering the acceptability of a proposed site for disposal of bacteria latent wastewater in or near waters with the public water supply classification, the Permit Board shall consider the relative proximity of the discharge to water supply intakes.

(1) Bacteria: Culturable e.coli should not exceed a geometric mean of 126 per 100 ml over a 30-day period, nor should the samples examined during a 30-day period exceed 410 per 100 ml more than 10% of the time. There should be a minimum of 5 samples taken over a 30-day period with no less than 12 hours between individual samples.

(2) Chlorides (Cl): There shall be no substances added which will cause the chloride content to exceed 230 mg/l in freshwater streams.

(3) Specific Conductance: There shall be no substances added to increase the conductivity above 500 micromhos/cm for freshwater streams.

(4) Dissolved Solids: There shall be no substances added to the waters that will cause the dissolved solids to exceed 500 mg/l for freshwater streams.

(5) Threshold Odor: There shall be no substances added which will cause the threshold odor number to exceed 24 (at 60°C) as a daily average.

(6) Radioactive Substances: There shall be no radioactive substances added to the waters which will cause the gross beta activity (in the known absence of Strontium-90 and alpha emitters) to exceed 1000 picocuries per liter at any time.

(7) Specific Chemical Constituents: In addition to the provisions in Section II.4. and 10., the following concentrations (dissolved) shall not be exceeded at any time:

Constituent	Concentration (mg/l)
Barium	2.0
Fluoride	2.0
Lead	0.015
Nitrate (as N)	10.0

B. SHELLFISH HARVESTING CLASSIFICATION

Waters in this classification are for propagation and harvesting shellfish for sale or use as a food product. These waters shall meet the requirements set forth in the latest edition of the *National Shellfish Sanitation Program, Manual of Operations, Part I, Sanitation of Shellfish Growing Areas*, as published by the U. S. Public Health Service. Waters that meet the Shellfish Harvesting Area Criteria shall also be suitable for recreational purposes. In considering the acceptability of a proposed site for disposal of bacteria latent wastewater in or near waters with this classification, the Permit Board shall consider the relative proximity of the discharge to shellfish harvesting beds.

(1) Bacteria: The median fecal coliform MPN (Most Probable Number) of the water shall not exceed 14 per 100 ml, and not more than 10% of the samples shall

ordinarily exceed an MPN of 43 per 100 ml in those portions or areas most probably exposed to fecal contamination during most unfavorable hydrographic and pollutive conditions.

C. RECREATION CLASSIFICATION:

Waters in this classification are to be suitable for recreational purposes, including such water contact activities as swimming and water skiing. In considering the acceptability of a proposed site for disposal of bacteria latent wastewater in or near waters with this classification, the Permit Board shall consider the relative proximity of the discharge to areas of actual water contact activity.

(1) Bacteria: Culturable e.coli should not exceed a geometric mean of 126 per 100 ml, nor should the samples examined during a 30-day period exceed 410 per 100 ml more than 10% of the time. There should be a minimum of 5 samples taken over a 30-day period with no less than 12 hours between individual samples.

For both marine and estuarine coastal recreational waters, Enterococci should not exceed a 90-day geometric mean of 35 per 100 ml, nor should the samples examined during a 90-day period exceed 130 per 100 ml more than 10% of the time. Coastal recreational waters do not include inland waters upstream of the mouth of a river or a stream having a natural connection to the open sea.

(2) Specific Conductance: There shall be no substances added to increase the conductivity above 1000 micromhos/cm for freshwater streams.

(3) Dissolved Solids: There shall be no substances added to the water to cause the dissolved solids to exceed 750 mg/l as a monthly average value, nor exceed 1500 mg/l at any time for freshwater streams.

D. FISH AND WILDLIFE CLASSIFICATION:

Waters in this classification are intended for fishing and for propagation of fish, aquatic life, and wildlife. Waters that meet the Fish and Wildlife Criteria shall also be suitable for secondary contact recreation. Secondary contact recreation is defined as incidental contact with the water during activities such as wading, fishing, and boating, that are not likely to result in full body immersion.

(1) Bacteria: Culturable e.coli should not exceed a geometric mean of 126 per 100 ml over a 30-day period, nor should the samples examined during a 30-day period exceed 410 per 100 ml more than 10% of the time. There should be a minimum of 5 samples taken over a 30-day period with no less than 12 hours between individual samples.

(2) Specific Conductance: There shall be no substances added to increase the conductivity above 1000 micromhos/cm for freshwater streams.

(3) Dissolved Solids: There shall be no substances added to the waters to cause the dissolved solids to exceed 750 mg/l as a monthly average value, nor exceed 1500 mg/l at any time for freshwater streams.

E. EPHEMERAL STREAM CLASSIFICATION:

Waters in this classification do not support a fisheries resource and are not usable for human consumption or aquatic life. Ephemeral streams normally are natural watercourses, including natural watercourses that have been modified by channelization or a manmade drainage ditch, that without the contribution of point source discharges, flow only in direct response to precipitation or irrigation return-water discharge in the immediate vicinity and whose channels are normally above the groundwater table. Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses. These streams may contain a transient population of aquatic life during the portion of the year when there is suitable habitat for fish survival. Normally, aquatic habitat in these streams is not adequate to support a reproductive cycle for fish and other aquatic life. Wetlands are excluded from this classification.

Waters in this classification shall be protective of wildlife and humans that may come in contact with the waters. Waters contained in ephemeral streams shall also allow maintenance of the standards applicable to all downstream waters.

(1) Provisions A, B, C, and E of Rule 2.2 (Minimum Conditions Applicable to All Waters: Narrative Standards) are applicable except as they relate to fish and other aquatic life. All aspects of provisions 2.2.A.4) and 2.2.F. concerning toxicity will apply to ephemeral streams, except for domestic or compatible domestic wastewater discharges which will be required to meet toxicity requirements in downstream waters not classified as ephemeral. Alternative methods may be utilized to determine the potential toxic effect of ammonia. Acutely toxic conditions are prohibited under any circumstances in waters in this classification.

(2) Dissolved Oxygen: The dissolved oxygen shall be maintained at an appropriate level to avoid nuisance conditions.

(3) Bacteria: The Permit Board may assign bacterial criteria where the probability of a public health hazard or other circumstances so warrant.

(4) Fisheries resource is defined as any water body which has a viable gamefish population as documented by the Mississippi Department of Wildlife Fisheries

and Parks or has sufficient flow or physical characteristics to support the fishing use during times other than periods of flow after precipitation events or irrigation return water discharge.

(5) "Not usable for human consumption or aquatic life" means that sufficient flow or physical characteristics are not available to support these uses.

(6) "Flow only in response to precipitation or irrigation return water" means that without the influence of point source discharges the stream will be dry unless there has been recent rainfall or a discharge of irrigation return water.

(7) "Protective of wildlife and humans that may come in contact with the waters" means that toxic pollutants shall not be discharged in concentrations that will endanger wildlife or humans.

(8) "Nuisance conditions" means objectionable odors or aesthetic conditions that may generate complaints from the public.

Recommendations for assignment of the Ephemeral Stream classification shall be made to the Commission on Environmental Quality by the Permit Board after appropriate demonstration of physical and hydrological data. The Ephemeral Stream classification shall not be assigned where environmental circumstances are such that a nuisance or hazardous condition would result or public health is likely to be threatened. Alternate discharge points shall be investigated before the Ephemeral Stream classification is considered.

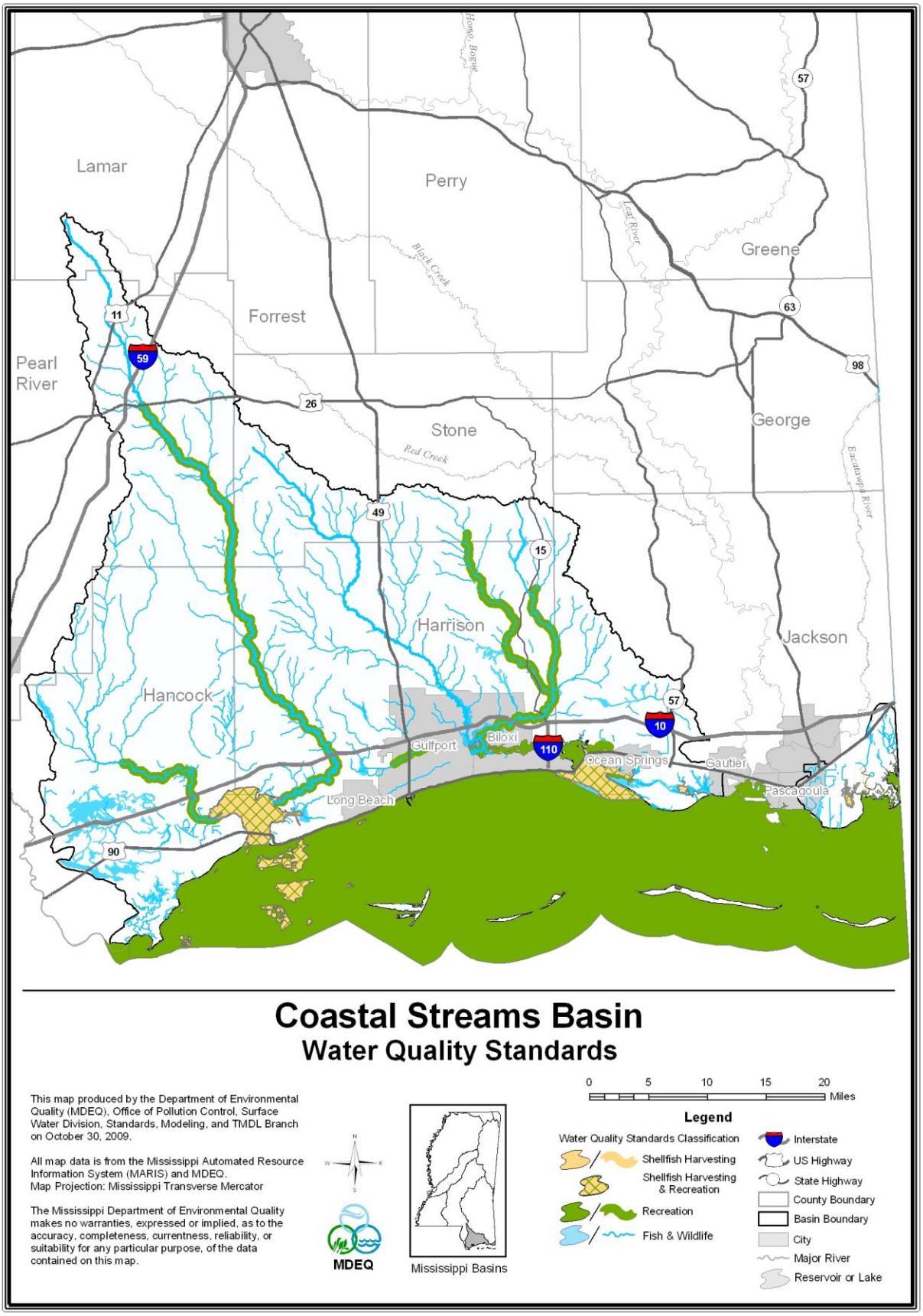
Source: Miss. Code Ann. *§§ 49-2-9, 49-2-1, et seq., and 49-17-1, et seq.*

Rule 2.4 Water Body Classifications in State Waters:

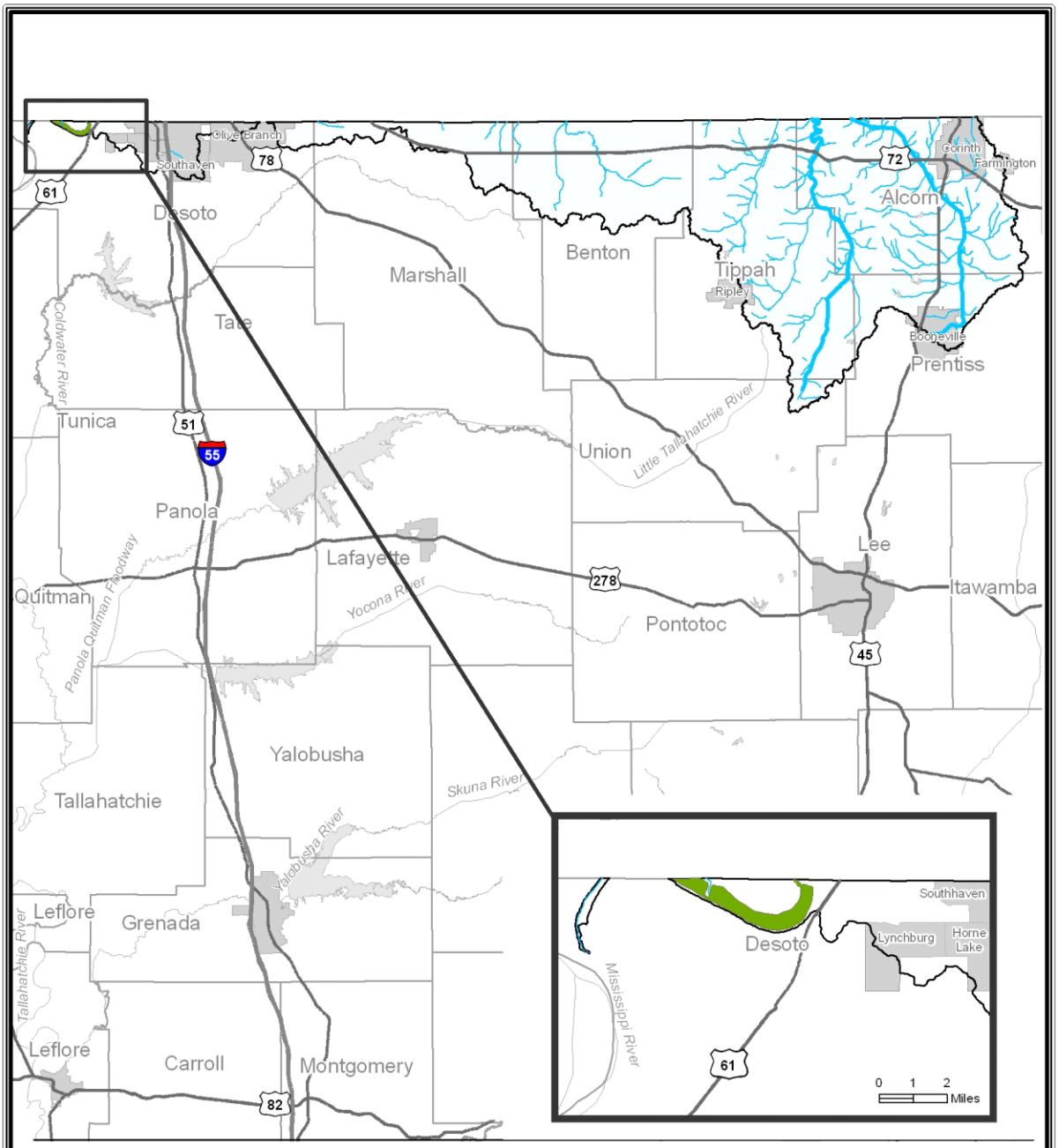
All of the State waters not specifically listed below shall be classified as Fish and Wildlife. State waters carrying other classifications are:

Coastal Streams Basin		
Waters	**Location**	**Classification**
Back Bay of Biloxi	From Popps Ferry Bridge to Biloxi Bay	Recreation
Bangs Lake	From headwaters to the Mississippi Sound	Shellfish Harvesting
Bayou Cumbest	From headwaters to the Mississippi Sound	Shellfish Harvesting
Big Lake	From Bernard Bayou to the Popps Ferry Bridge	Recreation
Biloxi Bay	From Headwaters (US Hwy 90 Bridge) to the Mississippi Sound	Shellfish Harvesting Recreation
Buoy Beef	Mississippi Sound	Shellfish Harvesting Recreation
Davis Bayou	From headwaters to the Biloxi Bay	Shellfish Harvesting
Graveline Bay	From headwaters to Graveline Bayou	Shellfish Harvesting
Graveline Bayou	From Graveline Bay to the Mississippi Sound	Shellfish Harvesting
Jourdan River	From confluence of Bacon Bayou and Catahoula Creek to the St. Louis Bay	Recreation
Kittiwake Reed (Long Beach Reef)	Mississippi Sound	Shellfish Harvesting Recreation
Mallini Bayou	From St. Louis Bay to St. Louis Bay	Shellfish Harvesting
Mississippi Sound	Contiguous to Mississippi Coastline	Recreation
Old Fort Bayou	From Bayou Talla to Biloxi Bay	Recreation
Pass Christian Reef (off Henderson Point)	Mississippi Sound	Shellfish Harvesting Recreation
Pass Marianne Reef	Mississippi Sound	Shellfish Harvesting Recreation
Pelican Key Reef	Mississippi Sound	Shellfish Harvesting Recreation
Point Clear Shell Plant	Mississippi Sound	Shellfish Harvesting Recreation
St. Joe Reef (St. Joseph's Point Reef)	Mississippi Sound	Shellfish Harvesting Recreation
St. Louis Bay	Harrison and Hancock Counties	Shellfish Harvesting Recreation

Coastal Streams Basin		
Waters	**Location**	**Classification**
St. Stanislaus Reef	Mississippi Sound	Shellfish Harvesting Recreation
Tchoutacabouffa River	From headwaters to the Back Bay of Biloxi	Recreation
Telegraph Reef	Mississippi Sound	Shellfish Harvesting Recreation
Turkey Creek	From North Gulfport Eighth Grade to Bernard Bayou	Recreation
Tuxachanie Creek	From headwaters to the Tchoutacabouffa River	Recreation
Waveland Reef	Mississippi Sound	Shellfish Harvesting Recreation
Wolf River	From MS Hwy 26 to the St. Louis Bay	Recreation


Lamar
Perry
Greene
Forrest
Pearl River
Stone
George
Harrison
Jackson
Hancock
Gulfport
Biloxi
Ocean Springs
Gautier
Pascagoula
Long Beach
Black Creek
Red Creek
Leaf River
Pascagoula River
Homo Bogue
11
59
26
49
15
57
10
110
90
63
98
Coastal Streams Basin
Water Quality Standards
This map produced by the Department of Environmental Quality (MDEQ), Office of Pollution Control, Surface Water Division, Standards, Modeling, and TMDL Branch on October 30, 2009.
All map data is from the Mississippi Automated Resource Information System (MARIS) and MDEQ.
Map Projection: Mississippi Transverse Mercator
The Mississippi Department of Environmental Quality makes no warranties, expressed or implied, as to the accuracy, completeness, currentness, reliability, or suitability for any particular purpose, of the data contained on this map.
MDEQ
Mississippi Basins
0 5 10 15 20 Miles
Legend
Water Quality Standards Classification
Shellfish Harvesting
Shellfish Harvesting & Recreation
Recreation
Fish & Wildlife
Interstate
US Highway
State Highway
County Boundary
Basin Boundary
City
Major River
Reservoir or Lake

North Independent Streams Basin		
Waters	**Location**	**Classification**
Horn Lake	DeSoto County	Recreation



North Independent Streams Basin

Water Quality Standards

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Map Projection: Mississippi Transverse Mercator

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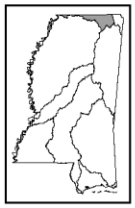
MDEQ



Mississippi Basins

0 6 12 18 24 Miles

Legend

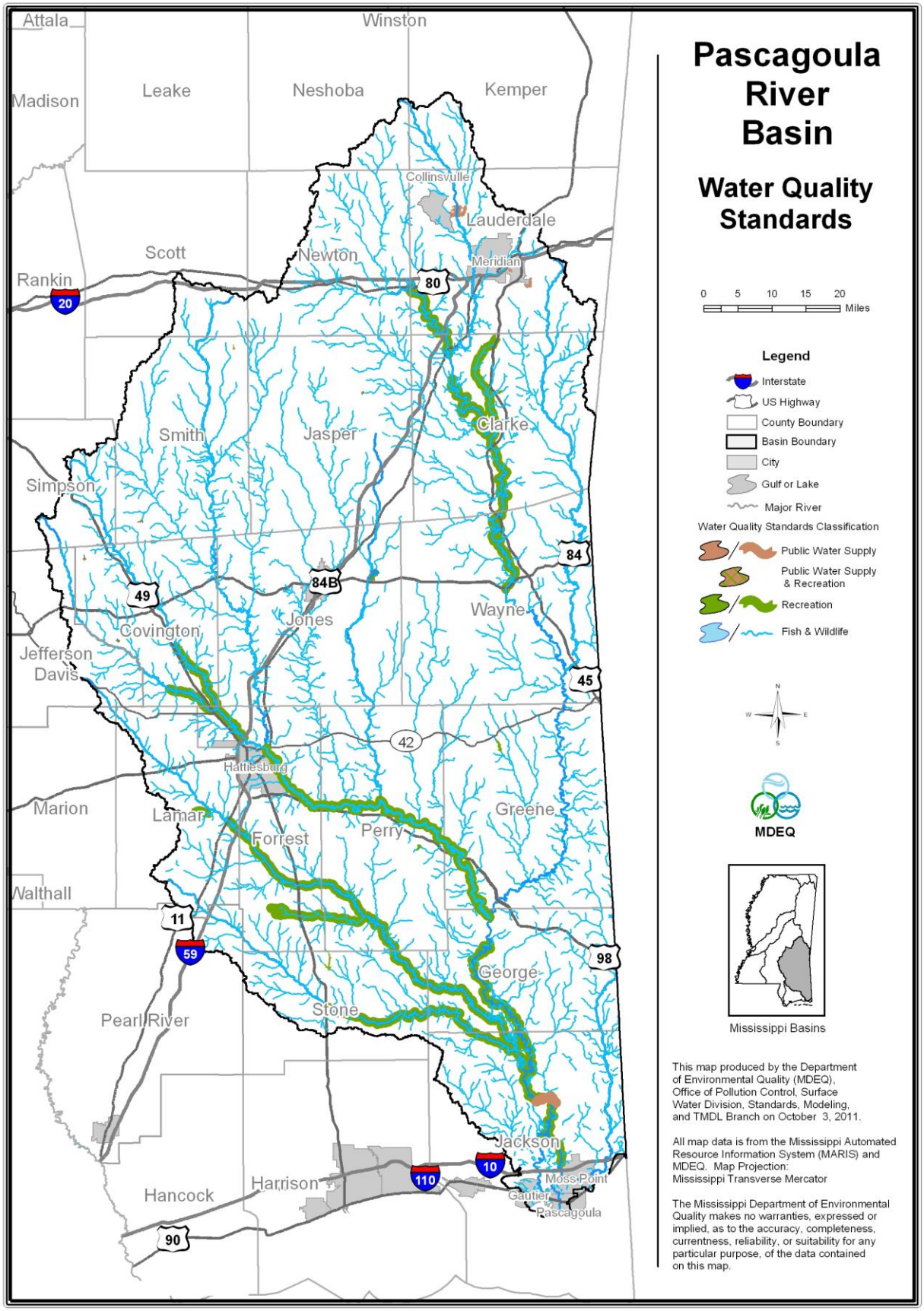
Water Quality Standards Classification
- Recreation
- Fish & Wildlife

- Interstate
- US Highway
- County Boundary
- Basin Boundary
- City
- Major River
- Reservoir or Lake

Pascagoula River Basin		
Waters	**Location**	**Classification**
Archusa Reservoir	Clarke County	Recreation
Beaverdam Creek	From headwaters in Perry and Forrest Counties to Black Creek	Recreation
Black Creek	From Hwy 11 to the Pascagoula River	Recreation
Bonita Reservoir	Lauderdale County	Public Water Supply
Bowie Creek	From MS Hwy 589 to the Bowie River	Recreation
Bowie River	From Bowie Creek to Interstate 59	Recreation
Chickasawhay River	From Stonewall to MS Hwy 84	Recreation
Chunky River	From US Hwy 80 to the Chickasawhay River	Recreation
Clarke State Park (Ivy Lake)	Clarke County	Recreation
Dry Creek Lake Site #3	Covington County	Recreation
Escatawpa River	From River Mile 10 to the Pascagoula River	Fish and Wildlife[1]
Flint Creek Reservoir	Stone County	Recreation
Lake Bogue Homa	Jones County	Recreation
Lake Claude Bennett	Jasper County	Recreation
Lake Geiger	Forrest County	Recreation
Lake Marathon	Smith County	Recreation
Lake Mike Conner	Covington County	Recreation
Lake Perry	Perry County	Recreation
Lake Ross Barnett	Smith County	Recreation
Lake Shongela	Smith County	Recreation
Lakeland Park Lake	Wayne County	Recreation
Leaf River	From Hwy 42 to the Chickasawhay River	Recreation
Long Creek Reservoir	Lauderdale County	Public Water Supply
Okatibbee Reservoir	Lauderdale County	Public Water Supply Recreation
Okatoma Creek	From Seminary (MS Hwy 590) to the Bowie River	Recreation
Pascagoula River	From 5 miles north of Cumbest Bluff to Cumbest Bluff	Public Water Supply
Pascagoula River	From 6 miles north of MS Hwy 26 (George County) to Smear Bayou (Jackson County)	Recreation
Red Creek	From US Hwy 49 to Big Black Creek	Recreation

[1] The following dissolved oxygen standard is applicable for this segment: dissolved oxygen concentrations shall not be less than a daily average of 3.7 mg/l from May 1 through October 31. Additional information regarding the derivation and implementation of this criterion can be found in the report titled *A Site-Specific Dissolved Oxygen Criterion for the Escatawpa River: Criteria Derivation and Implementation.*

Turkey Creek Reservoir	Greene County	Recreation


Pascagoula River Basin
Water Quality Standards
0 5 10 15 20 Miles
Legend
Interstate
US Highway
County Boundary
Basin Boundary
City
Gulf or Lake
Major River
Water Quality Standards Classification
Public Water Supply
Public Water Supply & Recreation
Recreation
Fish & Wildlife
MDEQ
Mississippi Basins
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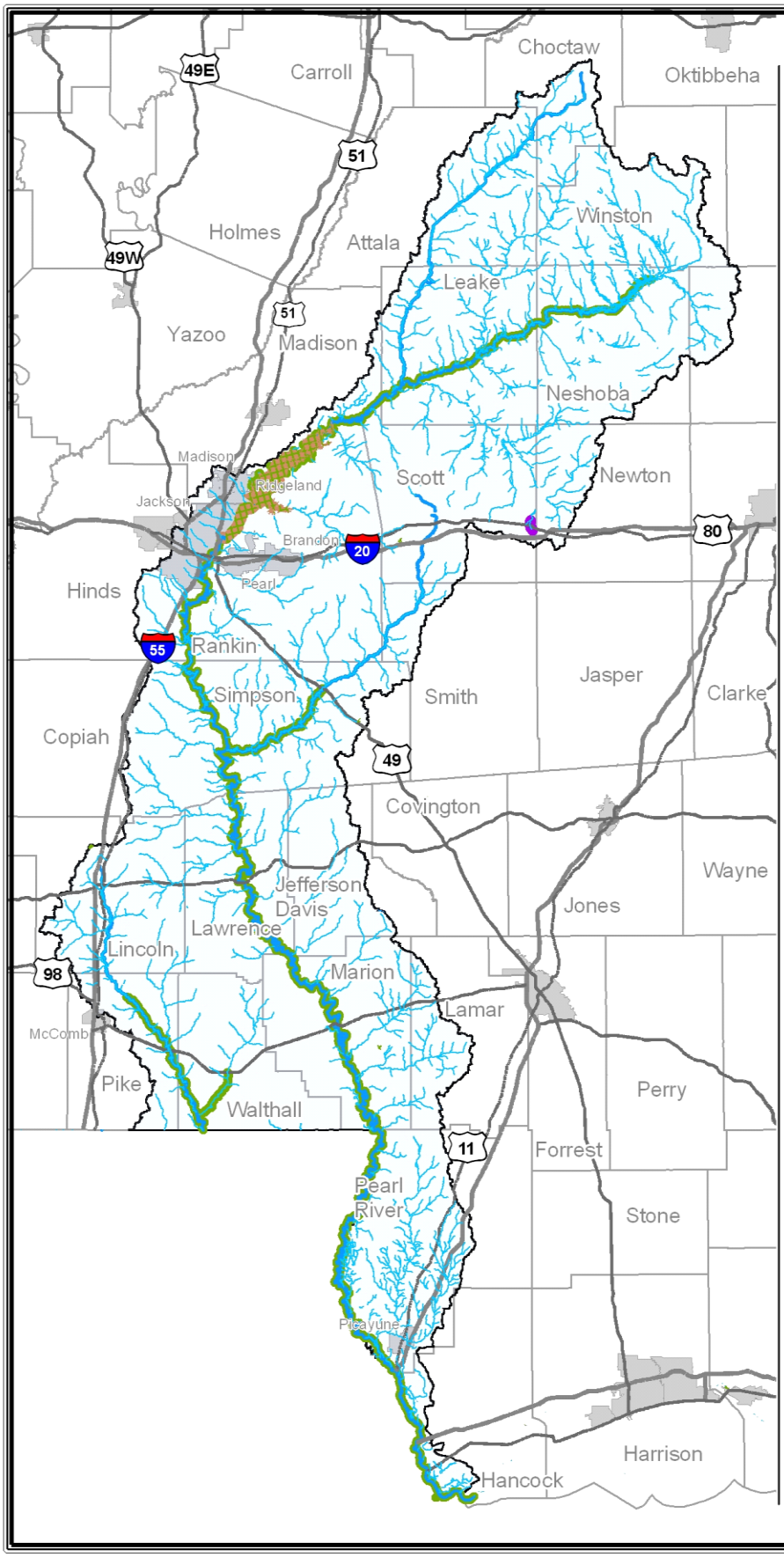
Attala
Winston
Madison
Leake
Neshoba
Kemper
Collinsville
Lauderdale
Meridian
Scott
Newton
Rankin
Smith
Jasper
Clarke
Simpson
Jones
Wayne
Covington
Jefferson Davis
Hattiesburg
Marion
Lamar
Forrest
Perry
Greene
Walthall
George
Stone
Pearl River
Jackson
Moss Point
Gautier
Pascagoula
Hancock
Harrison
20
80
84
84B
49
45
42
11
59
98
10
110
90

Pearl River Basin		
Waters	**Location**	**Classification**
Ross Barnett Reservoir	Madison and Rankin Counties	Recreation
Ross Barnett Reservoir	From River Bend to the Reservoir Dam	Public Water Supply
Bogue Chitto River	From MS Hwy 570 to the MS/LA State Line	Recreation
Lake Columbia	Marion County	Recreation
Lake Dixie Springs	Pike County	Recreation
Magees Creek	From US Hwy 98 to the Bogue Chitto River	Recreation
Pearl River	From Barnett Reservoir to the City of Jackson Water Intake	Public Water Supply
Pearl River (including Ross Barnett Reservoir)	From Hwy 16 near Edinburg to the Mississippi Sound	Recreation
Strong River	From US Hwy 49 to the Pearl River	Recreation
Shadow Lake (Roosevelt State Park)	Scott County	Recreation
Legion Lake	Simpson County	Recreation
Unnamed Drainage Ditch	From Lake POTW (MS0025194) to Warrior Branch	Ephemeral



Pearl River Basin

Water Quality Standards

0 5 10 15 20 Miles

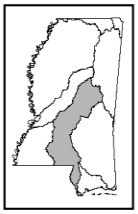
Legend

- Interstate
- US Highway
- County Boundary
- Basin Boundary
- City
- Gulf or Reservoir
- Major River

Water Quality Standards Classification

- Public Water Supply
- Public Water Supply & Recreation
- Recreation
- Ephemeral Stream
- Fish & Wildlife

MDEQ



Mississippi Basins

This map produced by the Department of Environmental Quality (MDEQ), Office of Pollution Control, Surface Water Division, Standards, Modeling, and TMDL Branch on October 30, 2009.

All map data is from the Mississippi Automated Resource Information System (MARIS) and MDEQ. Map Projection: Mississippi Transverse Mercator

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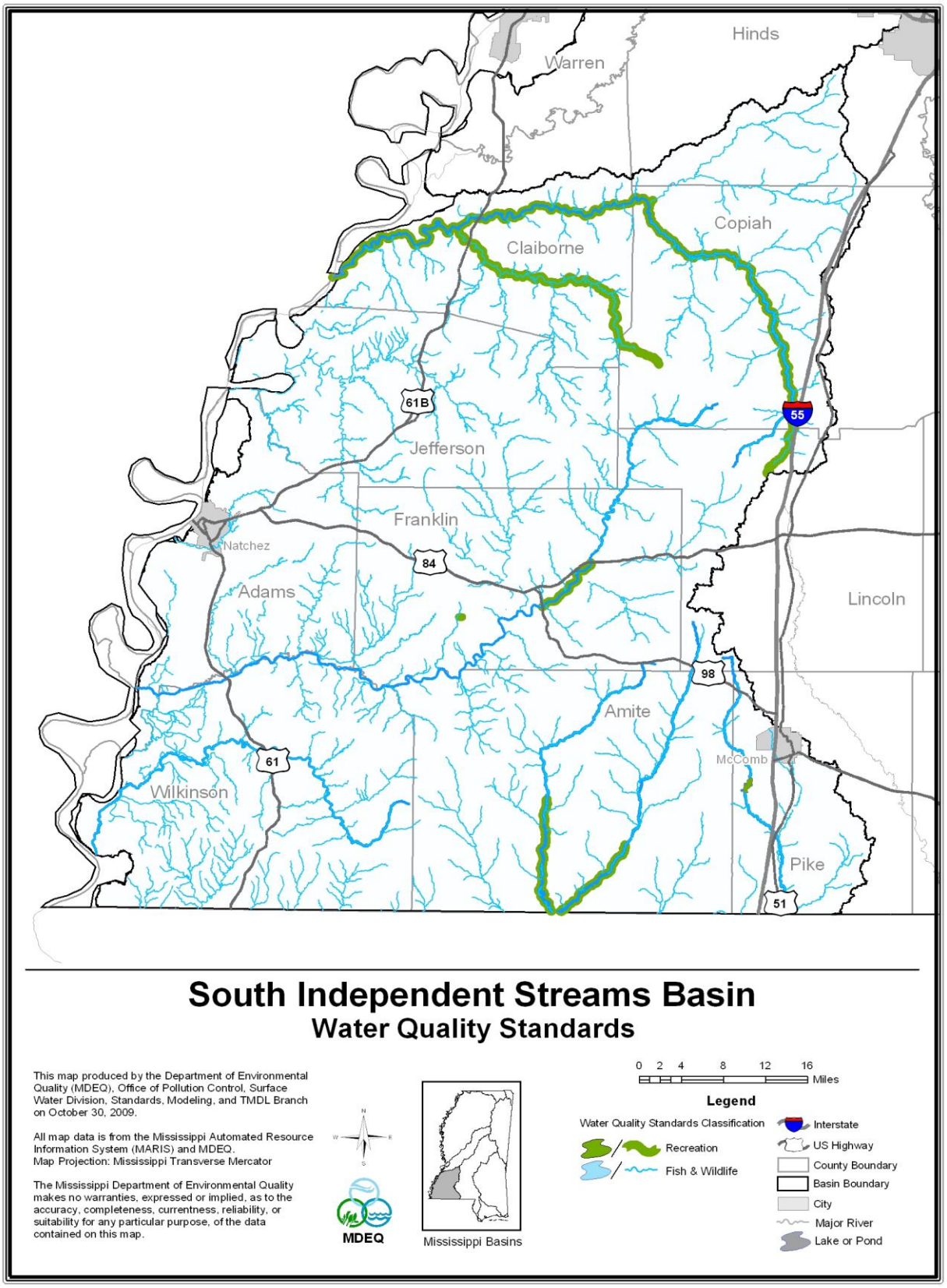
South Independent Streams Basin		
Waters	**Location**	**Classification**
Bayou Pierre	From headwaters to the Mississippi River	Recreation
Clear Springs Lake	Franklin County	Recreation
East Fork Amite River	From MS Hwy 584 to the MS/LA State Line	Recreation
Homochitto River	From US Hwy 84 to US Hwy 98	Recreation
Little Bayou Pierre	From headwaters to Bayou Pierre	Recreation
Percy Quinn State Park Lake	Pike County	Recreation
West Fork Amite River	From MS Hwy 24 to the MS/LA State Line	Recreation


Hinds
Warren
Copiah
Claiborne
61B
55
Jefferson
Franklin
Natchez
84
Adams
Lincoln
98
Amite
61
McComb
Wilkinson
Pike
51
South Independent Streams Basin
Water Quality Standards
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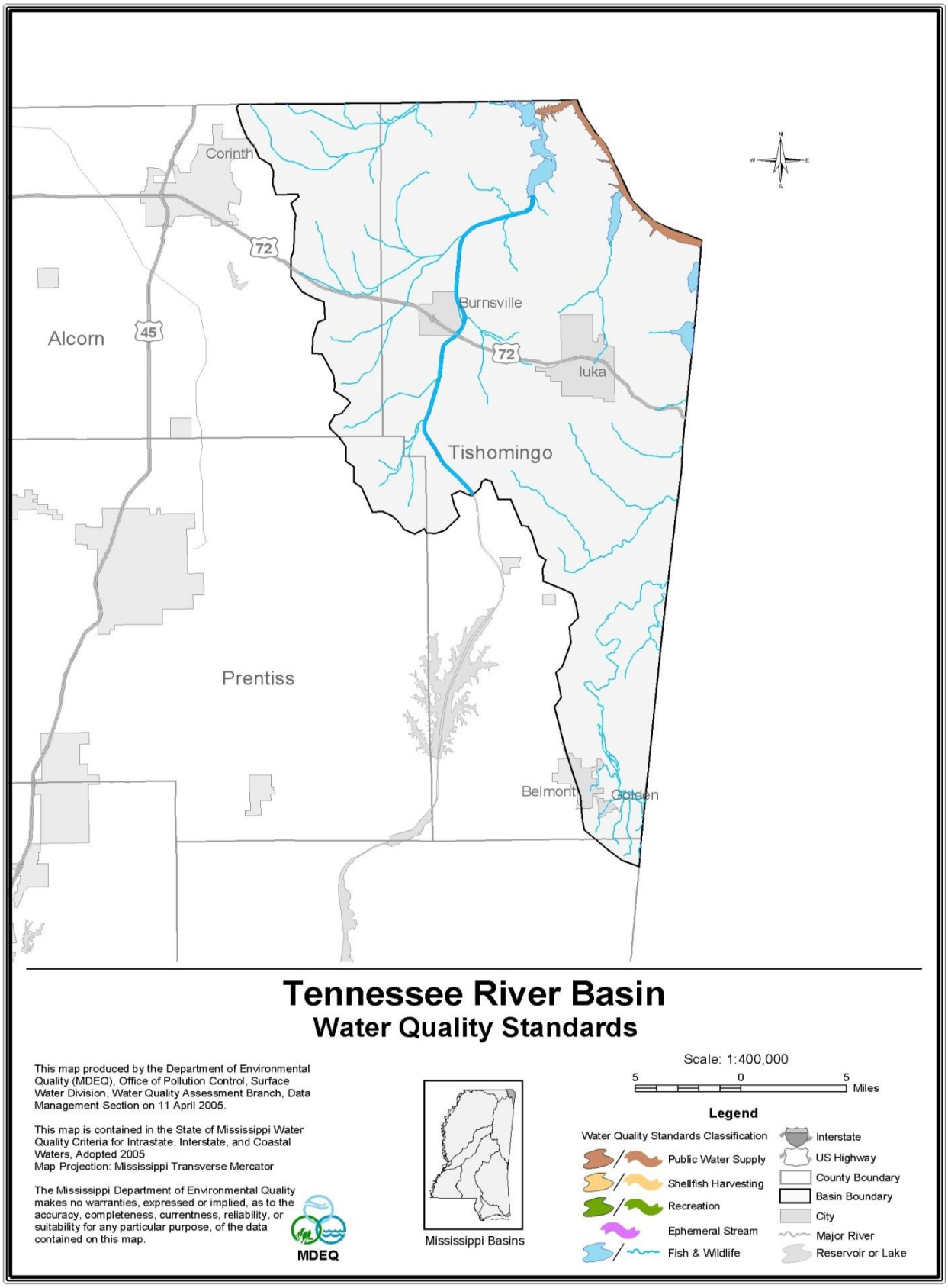
MDEQ
Mississippi Basins
0 2 4 8 12 16
Miles
Legend
Water Quality Standards Classification
Recreation
Fish & Wildlife
Interstate
US Highway
County Boundary
Basin Boundary
City
Major River
Lake or Pond

Tennessee River Basin		
Waters	**Location**	**Classification**
Bear Creek	From MS/AL State Line to the MS/AL State Line	Recreation
Pickwick Lake (including Yellow Creek Embayment)	Tishomingo County	Public Water Supply Recreation
Tennessee River	From MS/AL State Line to the MS/TN State Line	Public Water Supply Recreation
Tenn-Tom Waterway	From Pickwick Lake to Little Yellow Creek	Public Water Supply Recreation


Corinth
72
Burnsville
Alcorn
45
72
Iuka
Tishomingo
Prentiss
Belmont
Golden
Tennessee River Basin
Water Quality Standards
This map produced by the Department of Environmental Quality (MDEQ), Office of Pollution Control, Surface Water Division, Water Quality Assessment Branch, Data Management Section on 11 April 2005.
This map is contained in the State of Mississippi Water Quality Criteria for Intrastate, Interstate, and Coastal Waters, Adopted 2005
Map Projection: Mississippi Transverse Mercator
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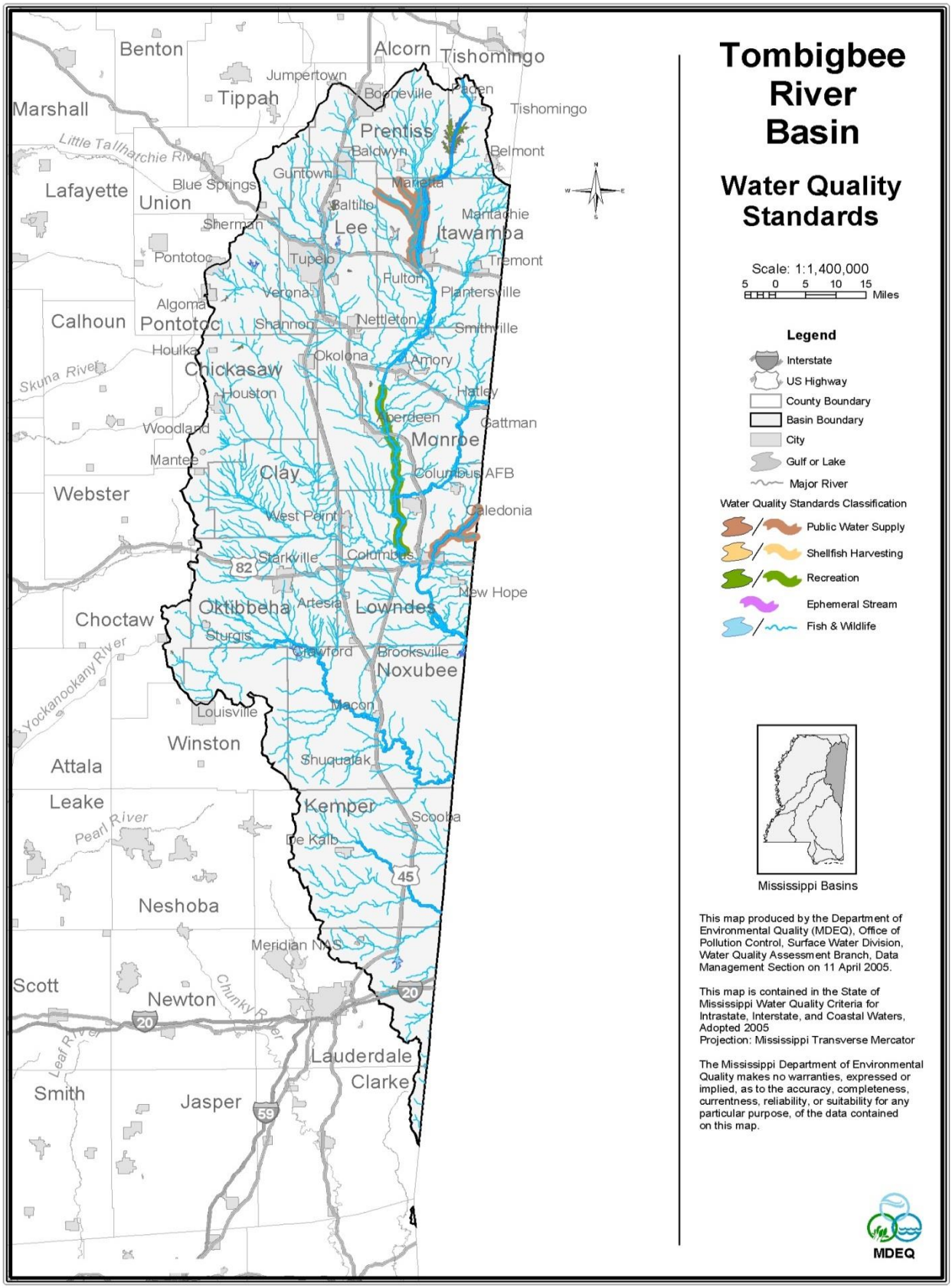
MDEQ
Mississippi Basins
Scale: 1:400,000
5
0
5
Miles
Legend
Water Quality Standards Classification
Public Water Supply
Shellfish Harvesting
Recreation
Ephemeral Stream
Fish & Wildlife
Interstate
US Highway
County Boundary
Basin Boundary
City
Major River
Reservoir or Lake

Tombigbee River Basin		
Waters	**Location**	**Classification**
Aberdeen Lake (Tenn-Tom Waterway)	From Mile 355.5 to Mile 364.3 (Normal Pool Elevation 190.0)	Recreation
Bay Springs Lake (Tenn-Tom Waterway)	From Mile 410.0 to Mile 419.0 (Normal Pool Elevation 414.0)	Recreation
Canal Section Pool "C" (Tenn-Tom Waterway)	From Mile 389.0 to Mile 396.4 (Normal Pool Elevation 270.0)	Recreation
Chiwapa Reservoir	Pontotoc County	Recreation
Choctaw Lake	Choctaw County	Recreation
Columbus Lake (Tenn-Tom Waterway)	From Mile 332.9 to Mile 355.5 (Normal Pool Elevation 163.0)	Recreation
Davis Lake	Chickasaw County	Recreation
Donivan Creek	From Natchez Trace Parkway to the Tombigbee River	Public Water Supply
Lake Lamar	Lee County	Recreation
Lake Lowndes	Lowndes County	Recreation
Lake Monroe	Monroe County	Recreation
Lake Tom Bailey	Lauderdale County	Recreation
Luxapallila Creek	From the MS/AL State Line to Hwy 50	Public Water Supply Recreation
Oktibbeha County Lake	Oktibbeha County	Recreation
Tenn-Tom Waterway	From Montgomery Lock Dam to Hwy 25 near Fulton	Public Water Supply
Twentymile Creek	From Natchez Trace Parkway to the Tombigbee River	Public Water Supply
Tombigbee River	From Boat Ramp Road to Hwy 78	Public Water Supply
Tombigbee State Park Reservoir	Lee County	Recreation
Yellow Creek	From the MS/AL State Line to Luxapallila Creek	Public Water Supply


Tombigbee River Basin
Water Quality Standards
Scale: 1:1,400,000
5 0 5 10 15 Miles
Legend
Interstate
US Highway
County Boundary
Basin Boundary
City
Gulf or Lake
Major River
Water Quality Standards Classification
Public Water Supply
Shellfish Harvesting
Recreation
Ephemeral Stream
Fish & Wildlife
Mississippi Basins
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Projection: Mississippi Transverse Mercator
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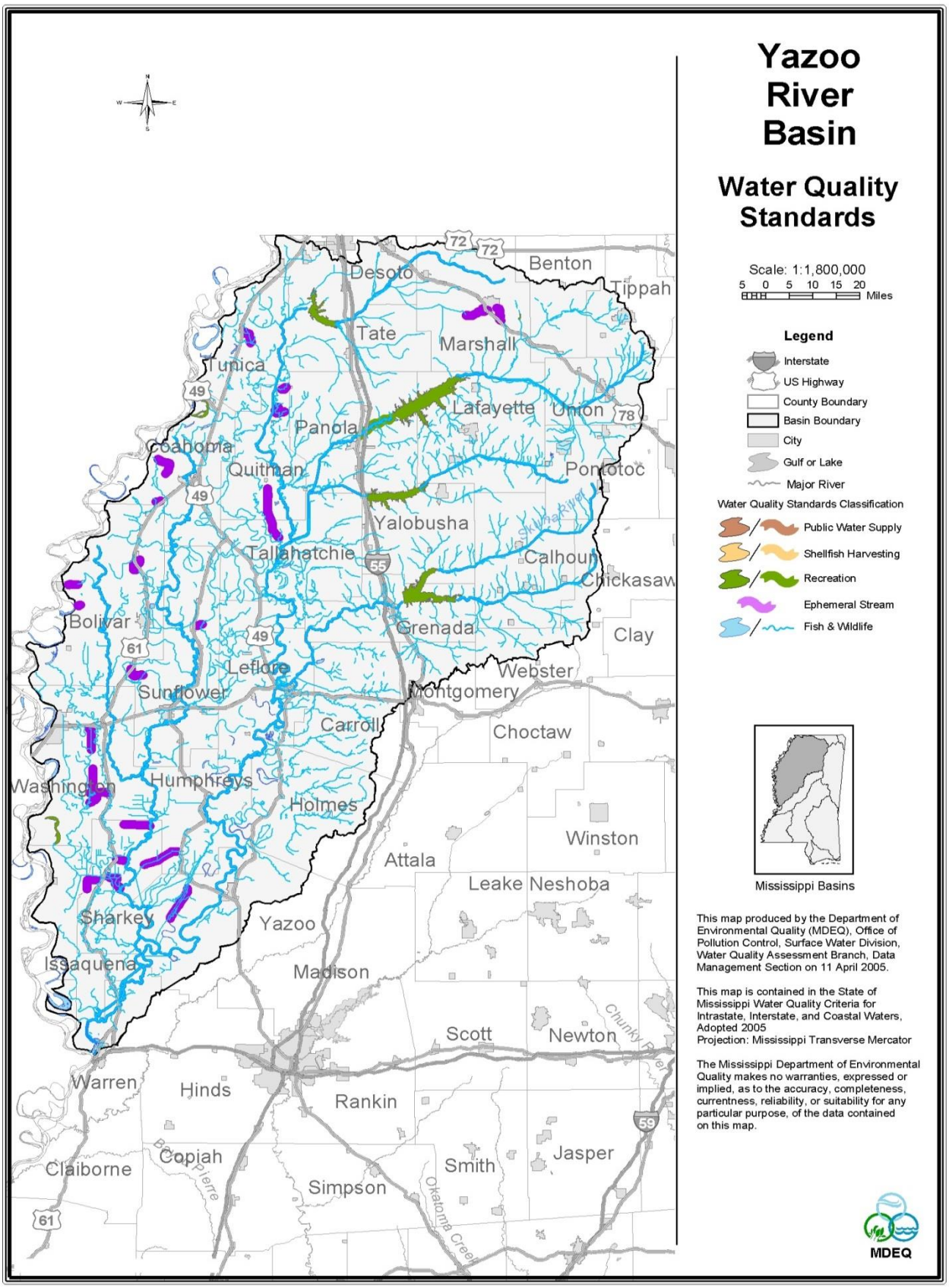
MDEQ
Benton
Alcorn
Tishomingo
Marshall
Tippah
Jumpertown
Booneville
Tishomingo
Prentiss
Little Tallahatchie River
Baldwyn
Belmont
Guntown
Lafayette
Union
Blue Springs
Marietta
Baldillo
Mantachie
Sherman
Lee
Itawamba
Pontotoc
Tupelo
Tremont
Fulton
Verona
Plantersville
Algoma
Calhoun
Pontotoc
Shannon
Nettleton
Smithville
Houlka
Okolona
Amory
Skuna River
Chickasaw
Hatley
Houston
Aberdeen
Cattman
Woodland
Monroe
Mantee
Clay
Columbus AFB
Webster
West Point
Caledonia
Starkville
Columbus
82
New Hope
Choctaw
Oktibbeha
Artesia
Lowndes
Sturgis
Yockanookany River
Crawford
Brooksville
Noxubee
Louisville
Macon
Winston
Attala
Shuqualak
Leake
Kemper
Pearl River
Scooba
De Kalb
45
Neshoba
Meridian NAS
Scott
Newton
Chunky River
20
Leaf River
Lauderdale
Clarke
Smith
Jasper
59

Yazoo River Basin		
Waters	**Location**	**Classification**
Arkabutla Reservoir	DeSoto and Tate Counties	Recreation
Canal #12	From Delta City Utility District (MS0038164) to the Big Sunflower River	Ephemeral
Chewalla Reservoir	Marshall County	Recreation
Drainage Ditch #3	From Rosedale POTW (MS0020630) to Lane Bayou	Ephemeral
Enid Reservoir	Panola, Lafayette, and Yalobusha Counties	Recreation
Grenada Reservoir	Grenada County	Recreation
Lake Dumas	Tippah County	Recreation
Lake Washington	Washington County	Recreation
Little Tallahatchie River	From Sardis Reservoir to US Hwy 51	Recreation
Moon Lake	Coahoma County	Recreation
Sardis Reservoir	Panola and Lafayette Counties	Recreation
Straight Bayou Drainage Main Ditch "A"	From Louise POTW (MS0044512) to Unnamed Tributary of Silver Creek	Ephemeral
Tillatoba Lake	Yalobusha County	Recreation
Unnamed Drainage Canal	From Anguilla POTW (MS0020541) to the Big Sunflower River	Ephemeral
Unnamed Drainage Ditch	From Arcola POTW (MS0037311) to Black Bayou	Ephemeral
Unnamed Drainage Ditch	From Beulah POTW (MS0042285) to Leban Bayou	Ephemeral
Unnamed Drainage Ditch	From Crenshaw POTW (MS0026930) to David Bayou	Ephemeral
Unnamed Drainage Ditch (Hollandale)	From Farm Fresh Catfish POTW (MS0039535) to Black Bayou	Ephemeral
Unnamed Drainage Ditch	From Farrell to POTW (MS0045187) Overcup Slough	Ephemeral
Unnamed Drainage Ditch	From Lambert POTW (MS0020231) to Muddy Bayou	Ephemeral

Yazoo River Basin Continued		
Waters	**Location**	**Classification**
Unnamed Drainage Ditch	From Leland POTW (MS0020761)to Black Bayou	Ephemeral
Unnamed Drainage Ditch	From Lurand Utility District (MS0045080)to the Big Sunflower River	Ephemeral
Unnamed Drainage Ditch	From Rolling Fork POTW (East Lagoon) (MS0025585) to the Little Sunflower River	Ephemeral
Unnamed Drainage Ditch	From Rolling Fork POTW (West Lagoon) (MS0025593) to Indian Bayou	Ephemeral
Unnamed Drainage Ditch	From Ruleville POTW (MS0024945) to the Quiver River	Ephemeral
Unnamed Drainage Ditch	From Shaw POTW (MS0024953) to Porter Bayou	Ephemeral
Unnamed Drainage Ditch	From Shelby POTW (MS0025089) to Mound Bayou	Ephemeral
Unnamed Drainage Ditch	From Simmons Farm Raised Catfish (Yazoo County) (MS0039403) to Unnamed Tributary of Lake George	Ephemeral
Unnamed Drainage Ditch	From Sledge POTW (MS0021016) to David Bayou	Ephemeral
Unnamed Drainage Ditch	From Tunica POTW (MS0042323) Unnamed Tributary of White Oak Bayou	Ephemeral
Unnamed Drainage Ditch	From Winstonville POTW (MS0026450 to the ephemeral ditch west of Winstonville	Ephemeral
Wall Doxey State Park Reservoir (Spring Lake)	Marshall County	Recreation


Yazoo River Basin
Water Quality Standards
Scale: 1:1,800,000
5 0 5 10 15 20 Miles
Legend
Interstate
US Highway
County Boundary
Basin Boundary
City
Gulf or Lake
Major River
Water Quality Standards Classification
Public Water Supply
Shellfish Harvesting
Recreation
Ephemeral Stream
Fish & Wildlife
Mississippi Basins
This map produced by the Department of Environmental Quality (MDEQ), Office of Pollution Control, Surface Water Division, Water Quality Assessment Branch, Data Management Section on 11 April 2005.
This map is contained in the State of Mississippi Water Quality Criteria for Intrastate, Interstate, and Coastal Waters, Adopted 2005
Projection: Mississippi Transverse Mercator
The Mississippi Department of Environmental Quality makes no warranties, expressed or implied, as to the accuracy, completeness, currentness, reliability, or suitability for any particular purpose, of the data contained on this map.
MDEQ
Desoto
Benton
Tippah
Tate
Marshall
Tunica
Lafayette
Union
Panola
Coahoma
Quitman
Pontotoc
Yalobusha
Tallahatchie
Calhoun
Chickasaw
Bolivar
Grenada
Clay
Leflore
Webster
Sunflower
Montgomery
Carroll
Choctaw
Washington
Humphreys
Holmes
Winston
Attala
Leake
Neshoba
Sharkey
Yazoo
Issaquena
Madison
Scott
Newton
Warren
Hinds
Rankin
Claiborne
Copiah
Smith
Jasper
Simpson

Source Miss. Code Ann. *§§ 49-2-9, 49-17-17, 49-2-1, et seq. and 49-17-1, et seq.*

Part 6: Chapter 2: Mississippi Commission on Environmental Quality Regulations for Water Quality Criteria For Intrastate, Interstate, And Coastal Waters
Adopted by Commission on Environmental Quality (February 25, 2016)

TABLE OF CONTENTS

Rule 2.1 General Conditions

Rule 2.2 Minimum Condition Applicable to All Waters

Rule 2.3 Specific Water Quality Criteria

Rule 2.4 Designated Uses In State Waters

Rule 2.1 General Conditions:

A. Antidegradation: The policy inherent in the standards shall be to protect water quality existing at the time these water quality standards were adopted and to upgrade or enhance water quality within the State of Mississippi. Waters whose existing quality is better than the established standards will be maintained at high quality unless the Commission finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In no event, however, may degradation of water quality interfere with or become injurious to existing instream water uses. Further, in no case will water quality be degraded below (or above) the base levels set forth in these standards for the protection of the beneficial uses described herein. In addition, the State will assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control. Where the Commission determines that high quality waters constitute an outstanding national resource, such as waters of National State Parks, Wildlife Refuges, and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected. For the purposes of this rule, existing uses are defined as those uses actually attained in the water body on or after November 28, 1975, whether or not they are included in the Water Quality Criteria.

B. Sampling and Assessment: The limiting values of water quality herein described shall be measured by the Commission in waters under consideration as determined by good environmental engineering and scientific practice and after consultation with affected parties. Samples shall be taken from points so distributed over the seasons of the year, time of day, and area and depth of the waters being studied as to permit a realistic assessment of water quality. All sampling must be conducted in accordance with the MDEQ-approved Quality Management Plan (QMP), Quality Assurance Project Plan (QAPP), or its equivalent. Water quality assessments are technical reviews of physical,

chemical, bacteriological, biological, and/or toxicological data and information to determine the quality of the state's surface water resources. Monitoring data are compared to the water quality criteria in order to make decisions on whether a water body is supporting or not supporting its designated uses. Water quality assessments regarding use attainment will be conducted in accordance with the most recent version of Mississippi's Consolidated Listing and Assessment Methodology (CALM).

Samples shall be analyzed in accordance with methodology specified in 40 CFR 136 and with the latest edition of *Standard Methods for the Examination of Water and Wastewater* or other methods acceptable to the Commission.

C. Designated Use Attainability: Certain waters of the State may not fall within desired or prescribed limitations as outlined. In such instances the Commission may authorize exceptions to these limits, under the following conditions:

(1) the designated use is not attainable because of natural background conditions; or

(2) the designated use is not attainable because of irretrievable man-induced conditions; or

(3) the application of effluent limitations for existing point sources is more stringent than those required pursuant to Section 301(b)(2)(A) and (B) of the Federal Water Pollution Control Act of 1972, as amended, in order to attain the designated use, would result in substantial and widespread adverse economic and social impact.

In no case shall it be permissible to deposit or introduce materials into waters of the State that will cause impairment of the reasonable or legitimate use of said waters.

D. Natural Conditions: Natural conditions are defined as background water quality conditions due only to non-anthropogenic sources. The criteria herein apply specifically with regard to substances attributed to sources (discharges, nonpoint sources, or instream activities) as opposed to natural phenomena. Waters may naturally have characteristics outside the limits established by these criteria. Therefore, naturally occurring conditions that fail to meet criteria should not be interpreted as violations of these criteria.

E. Criteria: In view of the fact that industry is continuing to produce new materials whose characteristics and effects are unknown at this time or for which incomplete national criteria have been established, for the purposes of setting water quality standards or permit limits on a case-by-case basis, such materials shall be evaluated on their merits as information becomes available to the Commission. Sources of information shall include, but not be limited to, the latest edition of *Quality Criteria for Water*, prepared by the Environmental Protection Agency pursuant to Section 304(a) of the Federal Clean Water Act.

F. Applicable Flow: All criteria contained herein shall apply to all stages of stream flow greater than or equal to the 7-day, 10-year minimum flow (7Q10) in unregulated, natural

streams, and the legally guaranteed minimum flow in regulated streams, unless otherwise provided in these regulations. This requirement shall not be interpreted to permit any unusual waste discharges during periods of lower flow. Notwithstanding the above, a stream flow equal to the 7-day, 2-year minimum flow (7Q2) in unregulated natural streams shall be utilized in establishing permit limitations for storm water permits. In cases in which either (1) the data are indefinite or inconclusive, or (2) the 7-day, 2-year minimum flow and/or the 7-day, 10-year minimum flow are inappropriate because of the hydrology of the area, other appropriate State and federal agencies will be consulted in establishing the applicable stream flow.

G. Mississippi River: The Mississippi River is classified for Fish and Wildlife, but with the following additions to the criteria stated herein:

Mineral Constituents: Not to exceed the following concentrations at any time:

From Mississippi-Tennessee border to Vicksburg

Chlorides	60 mg/l
Sulfates	150 mg/l
TDS	425 mg/l

From Vicksburg south to the Mississippi-Louisiana border

Chlorides	75 mg/l
Sulfates	120 mg/l
TDS	400 mg/l

H. Mixing Zones: It is recognized that limited areas of mixing are sometimes unavoidable; however, mixing zones shall not be used as a substitute for waste treatment. Mixing zones constitute an area whereby physical mixing of a wastewater effluent with a receiving water body occurs. Application of mixing zones shall be made on a case-by-case basis and shall only occur in cases involving large surface water bodies in which a long distance or large area is required for the wastewater to completely mix with the receiving water body.

The location of a mixing zone shall not significantly alter the designated uses of the receiving water outside its established boundary. Adequate zones of passage for the migration and free movement of fish and other aquatic biota shall be maintained. Toxicity and human health concerns within the mixing zone shall be addressed as specified in the *Environmental Protection Agency Technical Support Document* for

Water Quality-Based Toxics Control (EPA-505/2-90-001, March 1991) and amendments thereof. Under no circumstances shall mixing zones overlap or cover tributaries, nursery locations, locations of threatened or endangered species, or other ecologically sensitive areas.

I. Coastal Recreational Waters: Coastal Recreational Waters are marine and estuarine waters that are suitable for recreational purposes, including such water contact activities as swimming, wading, and water skiing. Coastal recreational waters do not include inland waters upstream of the mouth of a river or a stream having a natural connection to the open sea. Water quality monitoring for bacteria content is conducted on these waters to protect the health of bathers. Water contact is discouraged on Mississippi's public access bathing beaches along the shoreline of Jackson, Harrison, and Hancock Counties when enterococci exceed 104 colonies per 100 ml. When enterococci counts exceed 104 per 100 ml at the public access beaches, water contact advisories are issued by Mississippi's Beach Monitoring Task Force.

J. Definitions:

(1) Acute criterion or Criteria Maximum Concentration (CMC) is the highest concentration of a pollutant to which aquatic life can be exposed for a short period of time (1-hour average) without deleterious effects. (40 CFR 131.36)

(2) Best management practice (BMP) means a structural or nonstructural management-based practice used singularly or in combination to reduce nonpoint source inputs to receiving waters in order to achieve water quality protection goals.

(3) Bioconcentration Factor (BCF) is defined as the ratio (in L/kg-tissue) of the concentration of a substance in tissue of an aquatic organism to its concentration in the ambient water, in situations where the organism is exposed through the water only and the ratio does not change substantially over time. (EPA-822-B-00-004)

(4) Biological integrity is defined as the ability of a system to support and maintain a balanced, integrated, and adaptive community of organisms having a composition, diversity, and functional organization comparable to that of natural habitats of the region.

(5) Cancer Potency Factor (CPF) is a measure of the cancer-causing potency of a substance estimated by the upper 95 percent confidence limit of the slope of a straight line calculated by the Linearized Multistage Model according to the U.S. Environmental Protection Agency Guidelines (FR 51(185): 339992-34003, and FR 45(231 Part V); 79318-79379).

(6) Chronic Criterion or Criteria Continuous Concentration (CCC) is the highest concentration of a pollutant to which aquatic life can be exposed for an extended period of time (4 days) without deleterious effects. (40 CFR 131.36)

(7) Clean techniques refers to an integrated system of sample collection and laboratory analytical procedures designed to detect concentrations of trace metals below criteria levels and eliminate or minimize inadvertent sample contamination that can occur during traditional sampling practices.

(8) Composite sampling is a technique whereby multiple temporally or spatially discrete media or tissue samples are combined, thoroughly homogenized, and treated as a single sample.

(9) E. coli (*Escherichia coli*) is a common inhabitant of the intestinal tract of warm-blooded animals, and its presence in water samples is an indication of fecal pollution and the possible presence of enteric pathogens.

(10) Enteric pathogens are a species of bacteria can be highly pathogenic when they enter and colonize the human digestive tract.

(11) Grab samples are samples where the entire sample is collected in one uninterrupted interval.

(12) Mean Annual Flow is the total of daily mean flows for the full period of record divided by the total days for the full period of record.

(13) Membrane Filtration (MF) is a method of quantitative or qualitative analysis of bacterial or particulate matter in a water sample filtered through a membrane capable of retaining bacteria.

(14) Most probable number (MPN) is the most probable number of coliform-group organisms per unit volume of sample water.

(15) Point source is a stationary location or fixed facility from which pollutants are discharged or emitted. Also, any single identifiable source of pollution, e.g., a pipe, ditch, or ship.

(16) 7Q10 is the average streamflow rate over seven consecutive days that may be expected to be reached as an annual minimum no more frequently than one year in ten years.

(17) 7Q2 is the average streamflow rate over seven consecutive days that may be expected to be reached as an annual minimum no more frequently than one year in two years.

(18) Stratification is the formation of layers of water within a water body that are of different densities. The density difference may be caused by variations of temperature, salinity, or concentrations of other dissolved substances within the water at different depths.

(19) Threshold odor number is the number of times a sample needs to be diluted with clean water in order to reach the level that smell is not detectable.

(20) Toxic substance means any substance or combination of substances (including disease-causing agents), which after discharge and upon exposure, ingestion, inhalation, or assimilation into any organism, whether directly from the environment or indirectly by ingestion through food chains, has the potential to cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunctions or suppression in reproduction or growth) or physical deformities in such organisms or their offspring.

Source: Miss. Code Ann. *§§ 49-2-1, et seq. and 49-17-1, et seq.*

Rule 2.2 Minimum Conditions Applicable to All Waters:

A. Narrative Standards

(1) Waters shall be free from substances attributable to municipal, industrial, agricultural, or other discharges that will settle to form putrescent or otherwise objectionable sludge deposits.

(2) Waters shall be free from floating debris, oil, scum, and other floating materials attributable to municipal, industrial, agricultural, or other discharges in amounts sufficient to be unsightly or deleterious.

(3) Waters shall be free from materials attributable to municipal, industrial, agricultural, or other discharges producing color, odor, taste, total suspended or dissolved solids, sediment, turbidity, or other conditions in such degree as to create a nuisance, render the waters injurious to public health, recreation, or to aquatic life and wildlife, or adversely affect the palatability of fish, aesthetic quality, or impair the waters for any designated use. Except as prohibited in Rule 2.1.H. above, the turbidity outside the limits of a 750-foot mixing zone shall not exceed the background turbidity at the time of discharge by more than 50 Nephelometric Turbidity Units (NTU). Exemptions to the turbidity standard may be granted under the following circumstances:

(a) in cases of emergency to protect the public health and welfare

(b) for environmental restoration projects which will result in reasonable and temporary deviations and which have been reviewed and approved by the Department of Environmental Quality.

(4) Waters shall be free from substances attributable to municipal, industrial, agricultural, or other discharges in concentrations or combinations that are toxic or harmful to humans, animals, or aquatic life. Specific requirements for toxicity are found in Rule 2.2.F.

(5) Municipal wastes, industrial wastes, or other wastes shall receive effective treatment or control in accordance with Section 301, 306, and 307 of the Federal Clean Water Act. A degree of treatment greater than defined in these sections may be required when necessary to protect legitimate water uses.

B. Water Body Classifications and Designated Uses: The State of Mississippi water body classifications and corresponding U.S. EPA associated designated uses for water quality assessment purposes recognized by the State of Mississippi are as follows:

Table 1. Mississippi Water Body Classifications and Designated Uses

MS Water Body Classification	U.S. EPA Associated Designated Use
Public Water Supply	Drinking Water Supply
Recreation	Primary Contact Recreation
Shellfish Harvesting	Shellfish Consumption
Fish and Wildlife	Aquatic Life Use Fish Consumption Secondary Contact Recreation

A water body classified as Public Water Supply, Recreation, or Shellfish Harvesting shall meet not only the criteria to support its respective classification, but also shall meet the criteria to support the Fish and Wildlife classification.

C. Dissolved Oxygen: Dissolved oxygen concentrations shall be maintained at a daily average of not less than 5.0 mg/l with an instantaneous minimum of not less than 4.0 mg/l.

When possible, samples should be taken from ambient sites according to the following guidelines:

For waters bodies that are not stratified, samples should be taken:

At mid-depth if the total water column depth is 10 feet or less.
At 5 feet from the water surface if the total water column depth is greater than 10 feet.

For waters that are stratified, samples should be taken:

At mid-depth of the epilimnion if the epilimnion depth is 10 feet or less.
At 5 feet from the water surface if the epilimnion depth is greater than 10 feet.

D. pH: The normal pH of the waters shall be 6.0 to 9.0. The discharge of waters or wastewaters shall not cause the pH to vary more than 1.0 unit within this range, nor be less than 6.0, nor be greater than 9.0. Variations may be allowed on a case-by-case basis if the Commission determines that there will be no detrimental effect on the water body's designated uses as a result of the greater pH change. In black water streams and in those watersheds with highly acidic soils, the pH may be lower than 6.0 due to natural conditions.

E. Temperature: The maximum water temperature increase above natural temperatures shall not exceed 5°F (2.8°C) in streams, lakes, and reservoirs nor shall he maximum water temperature exceed 90°F (32.2°C), except that in the Tennessee River the temperature shall not exceed 86°F

(30°C). In lakes and reservoirs, there shall be no withdrawals from or discharge of heated waters to the hypolimnion unless it can be shown that such discharge will be beneficial to water quality.

In all waters the normal daily and seasonal temperature variations that were present before the addition of artificial heat shall be maintained. The maximum water temperature shall not exceed 90°F (32.2°C) in coastal or estuarine waters. The discharge of any heated waste into any coastal or estuarine waters shall not raise temperatures more than 4°F (2.2°C) above natural background temperatures during the months of October through May nor more than 1.5°F (0.8°C) above natural background temperature during the months of June through September.

There shall be no thermal block to the migration of aquatic organisms. Requirements for zones of passage as referenced in Rule 2.1.H. shall apply. The general requirements of Rule 2.1.B. state that samples should be taken from points so distributed over the seasons of the year, time of day, and area and depth of the waters being studies as to permit a realistic assessment of water quality. Therefore, the temperature shall be measured during the environmentally critical period. In addition, temperature 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, temperature criteria will be applied at mid-depth.

In those specific cases where natural conditions elevate the temperatures in excess of the limits expressed herein, Rule 2.2.E. shall apply on a case-by-case basis. The discharge of any heated waters into a stream, lake, or reservoir shall not raise temperatures more than 5°F(2.8°C) above natural condition temperatures. The discharge of any heated waste into any coastal or estuarine waters shall not raise temperatures more than 4°F (2.2°C) above natural condition temperatures during the months of October through May nor more than 1.5°F (0.8°C) above natural condition temperatures during the months of June through September. This will also be considered on a case-by-case basis requiring evidence that the aquatic life of the water body will not be adversely impacted by the elevated temperatures.

F. Toxic Substances:

(1) Aquatic Life and Human Health Standards

(a) Aquatic Life - The concentration of toxic substances in State waters shall not result in chronic or acute toxicity or impairment of the uses of aquatic life. Toxicity concentrations in State waters in excess of these values shown in Table 2 will be assessed to determine chronic or acute toxicity, and/or the impairment of the uses of aquatic life. Chronic and/or acute toxicity will be determined in accordance with the *Water Quality Standards Handbook: Second Edition* (EPA-823-B-94-005a, August 1994) *and Technical Support Document for Water Quality-Based Toxics Control* (EPA-505/2-90-001, March 1991). Regardless of the results of

chronic or acute toxicity bioassay surveys, the concentrations of toxic substances shall not exceed the chronic or acute values, except as provided for in Rules 2.2.F.5(a) and 2.2.F.5(b).

(b) Human Health - The concentration of toxic substances shall not exceed the level necessary to protect human health through exposure routes of fish (and shellfish) tissue consumption, water consumption, or other routes identified as appropriate for the water body.

(2) Numeric criteria for all waters are established herein for certain toxic pollutants for which the Environmental Protection Agency (EPA) has published national criteria for the protection of aquatic life and human health pursuant to Section 304(a) of the Federal Clean Water Act in addition to chlorine and ammonia. The pollutants are listed in Table 2 and are expressed as the dissolved phase of the parameter.

(3) Ammonia toxicity shall be evaluated according to EPA guidelines published in *1999 Update of Ambient Water Quality Criteria for Ammonia; EPA document number EPA-822-R-99-014 or Ambient Water Quality Criteria for Ammonia (Saltwater) - 1989*; EPA document number 440/5-88-004. This material related to ammonia toxicity is hereby incorporated by reference including any subsequent amendments and editions.

(4) Application of Numerical Criteria:

(a) When evaluating human health effects all waters must comply with the Organisms Only criteria except for waters classified as Public Water Supply and all stream segments within 50 stream miles upstream of a drinking water intake. Stream segments that are classified as Public Water Supply or are within 50 miles upstream of a drinking water intake shall comply with the Water and Organisms criteria.

(b) When applying acute or chronic toxicity or human health criteria the following stream flows shall be used:

Acute Toxicity - 7Q10
Chronic Toxicity - 7Q10
Human Health - Mean Annual Flow

(c) Criteria for certain metals may be modified on a site-specific basis when a water effect ratio (WER) is conducted in accordance with Rule 2.6.C.2.a. of Mississippi's *Wastewater Regulations for National Pollutant Discharge Elimination System (NPDES) Permits, Underground Injection Control (UIC) Permits, State Permits, Water Quality Based Effluent Limitations*

and Water Quality Certification, Title 11, Part 6, Chapter 1. In these instances, the criterion for the specific metal in the affected water body shall be equal to the criterion concentrations calculated using the following equations:

$$\boxed{CMC = WER * Acute \text{ and } CCC = WER * Chronic}$$

Where: CC = Criteria Continuous Concentration
CMC = Criteria Maximum Concentration
WER = Water Effects Ratio for a Specific Pollutant
Acute = Acute Criterion from Table 2
Chronic = Chronic Criterion from Table 2

When a WER has not been conducted, the criterion listed in Table 2 of this regulation shall apply because the value of the WER is presumed to equal one in the absence of data to indicate otherwise.

(5) Discharge Specific Criteria:

(a) Existing Discharges

(1) The Commission may establish discharger specific alternative criteria for existing discharges if all of the following conditions are satisfied:

(i) Discharge existed prior to December 1, 1988.

(ii) Discharger performs acute and/or chronic bioassays and instream biological assessments and other evaluations as deemed appropriate by the Commission.

(iii) The designated use of the waters is maintained.

(2) All discharger specific alternative criteria will be subject to Mississippi public participation requirements for revisions to water quality standards and will be subject to review by the U. S. Environmental Protection Agency.

(b) New Source Discharges

(1) The Commission may establish discharger specific criteria for new source discharges if the discharger can demonstrate that established Water Quality Criteria are based on conditions not

applicable to Mississippi such as, but not limited to, the use of species not indigenous to Mississippi.

(2) All discharger specific alternative criteria will be subject to Mississippi public participation requirements for revisions to water quality standards and will be subject to review by the U. S. Environmental Protection Agency.

(6) Toxic and Human Health Parameters for which no Numeric Criteria have been Established:

(a) For those toxic and human health parameters for which no numeric criteria have been established, the Commission shall determine limitations using available references which shall include, but not be limited to, *Quality Criteria for Water* (Section 304(a)), Federal regulations under Section 307 of the Clean Water Act, and Federal regulations under Section 1412 of the Public Health Service Act as amended by the Safe Drinking Act (Pub. 93-523).

(b) The not to be exceeded value for criteria published in 1980 or the one hour average value for criteria published in 1985 or later shall be used as an acute toxicity number for calculating effluent limitations, establishing Total Maximum Daily Loads (TMDLs), or reviewing ambient water quality data.

(c) The 24-hour average for criteria published in 1980 or the 4-day average for criteria published in 1985 or later shall be used as a chronic toxicity number for calculating effluent limitations, establishing TMDLs, or reviewing ambient water quality data.

(d) If metals concentrations for criteria are hardness-dependent, the chronic and acute concentrations shall be based on 25 mg/l hardness if the ambient hardness is less than or equal to 25 mg/l. Concentrations shall be based on the actual mixed stream hardness.

(e) If separate criteria are given for fresh and salt waters, they shall be applied as appropriate.

(f) For non-carcinogens, these concentrations will be determined using a Reference Dose (RfD) as published by the U. S. Environmental Protection Agency pursuant to Section 304(a) of the Federal Water Pollution Act as amended unless a more recent RfD is issued by the U. S. Environmental Protection Agency as listed in the Integrated Risk Information System (IRIS) file, in which case the more recent value will be used. Water quality standards or criteria used to calculate water quality-based effluent

limitations (and for all other purposes of water quality criteria under Section 303(c) of the Clean Water Act) to protect human health through the different exposure routes are determined as follows:

(1) Fish tissue consumption:

$$WQC = (RfD) \times \text{Body Weight} / (FCR \times BCF)$$

where: WQC = water quality criterion
RfD = reference dose
FCR = fish consumption rate (17.5 gm/person-day)
BCF = bioconcentration factor

BCF values are based on U. S. Environmental Protection Agency publications pursuant to Section 304(a) of the Clean Water Act. FCR values are average consumption rates for a 70 kg adult for a lifetime of the population; alternative FCR values may be used when it is considered necessary to protect localized populations which may be consuming fish at a higher rate.

(2) Water consumption and fish tissue consumption:

$$WQC = (RfD) \times \text{Body Weight} / (WCR + (FCR \times BCF))$$

where: WQC = water quality criterion
RfD = reference dose
FCR = fish consumption rate (17.5 gm/person-day)
BCF = bioconcentration factor
WCR = water consumption rate (assumed to be 2 liters/day for adults)

The equations listed in this subparagraph will be used to develop water criteria or standards on a case-by-case basis for toxic substances that are not presently included in the water quality standards. Alternative FCR values may be used when it is considered necessary to protect localized populations that may be consuming fish at a higher rate.

(g) For carcinogens, the concentrations of toxic substances will not result in unacceptable health risk and will be based on a Cancer Potency Factor (CPF). An unacceptable health risk for cancer will be considered to be more than one additional case of cancer per one million people exposed

(10-6 risk level). Water quality standards or criteria used to calculate water quality-based effluent limitations (and for all other purposes of water quality criteria under Section 303(c) of the Clean Water Act) to protect human health through the different exposure routes are determined as follows:

(1) Fish tissue consumption:

$$WQC = (Risk) \times Body\ Weight / (CPF \times (FCR \times BCF))$$

where: WQC = water quality criterion
Risk = risk factor (10)
CPF = cancer potency factor
FCR = fish consumption rate (17.5 gm/person-day)
BCF = bioconcentration factor

BCF values are based on U.S. Environmental Protection Agency publications pursuant to Section 304(a) of the Clean Water Act. FCR values are average consumption rates for a 70 kg adult for a lifetime of the population; alternative FCR values may be used when it is considered necessary to protect localized populations which may be consuming fish at a higher rate.

(2) Water consumption (including a correction for fish consumption):

$$WQC = Risk \times Body\ Weight / (CPF \times (WCR + (FCR \times BCF)))$$

where: WQC = water quality criterion
Risk = risk factor (10)
CPF = cancer potency factor
FCR = fish consumption rate (17.5 gm/person-day)
BCF = bioconcentration factor
WCR = water consumption rate (assumed to be 2 liters/day for adults)

The equations listed in this subparagraph will be used to develop water criteria or standards on a case-by-case basis for toxic substances that are not presently included in the water quality standards. Alternative FCR values may be used when it is considered necessary to protect localized populations that may be consuming fish at a higher rate.

TABLE 2 Notes

a The CMC = $1/[(f_1/CMC_1) + (f_2/CMC_2)]$ where f_1 and f_2 are the fractions of total selenium that are treated as selenite and selenate, respectively, and CMC_1 and CMC_2 are 185.9 µg/l and 12.83 µg/l. The value in the table is calculated assuming a worst case scenario in which all selenium is present as selenate.

b Hardness dependent parameter. Criteria are indicated at hardness of 50 mg/l as $CaCO_3$. Equations for criteria calculation of hardness dependent parameters can be found in *Quality Criteria for Water*. The equation is applicable for instream hardness ranges from 25 mg/l to 400 mg/l. If instream hardness is less than 25 mg/l, then a hardness value of 25 mg/l should be used to calculate the criteria. If instream hardness is greater than 400 mg/l, then a hardness of 400 mg/l should be used to calculate the criteria.

c Criteria for pentachlorophenol are based on a pH dependent equation as found in *Quality Criteria for Water*. Values listed are for a pH of 7.0 s.u.

d Site specific criteria for Mississippi Sound.

e Parameter subject to water effects ratio equations where:
CMC = WER * Acute
CCC = WER * Chronic

f Ammonia criteria are dependent on pH, temperature, and/or salinity. See Section II.10.C.

g Expressed as µg free cyanide (as CN)/L.

h Refers to the inorganic form only.

i Applies to the sum of α and β isomers.

j Chemical Abstracts Service (CAS) registry numbers, which provide a unique identification for each chemical.

k This criterion applies to total PCBs (e.g., the sum of all congener or all isomer or homolog or Aroclor analyses).

TABLE 2
Numeric Criteria for All Waters (µg/l)

CAS [j]	Parameter	Fresh Water		Salt Water		Human Health	
		Acute	Chronic	Acute	Chronic	Organisms Only	Water & Organisms
309002	Aldrin	3.0		1.3		0.000050	0.000049
7664417	Ammonia	[f]	[f]	[f]	[f]		
7440382	Arsenic (III), Total Dissolved	340 [e]	150 [e]	69	36		
7440382	Arsenic, Total Dissolved					24[h]	0.078[h]
7440439	Cadmium, Total Dissolved	1.03 [b,e]	0.15 [b,e]	40	8.8	168	5
57749	Chlordane	2.4	0.0043	0.09	0.004	0.00081	0.00080
7782505	Chlorine	19	11	13	7.5		
18540299	Chromium (Hex), Total Dissolved	16 [e]	11 [e]	1100	50	1470	98
16065831	Chromium (III), Total Dissolved	323 [b,e]	42 [b,e]			140468	100
7440508	Copper, Total Dissolved	7.0 [b,e]	5.0 [b,e]	4.8	3.1	1000	1300
57125	Cyanide	22.0 [g]	5.2 [g]	1.0 [g]	1.0 [g]	140	140
50293	4,4 DDT	1.1	0.001	0.13	0.001	0.00022	0.00022
60571	Dieldrin	0.24	0.056	0.71	0.0019	0.000054	0.000052
1746016	2,3,7,8 TCDD (Dioxin)					51×10^{-9}	50×10^{-9}
959988	alpha-Endosulfan	0.22 [i]	0.056 [i]	0.034 [i]	0.0087 [i]	89	62[j]
33213659	beta-Endosulfan	0.22 [i]	0.056 [i]	0.034 [i]	0.0087 [i]	89[j]	62
1031078	Endosulfan Sulfate					89[j]	62[j]
72208	Endrin	0.086	0.036	0.037	0.0023	0.060	0.059
76448	Heptachlor	0.52	0.0038	0.053	0.0036	0.000079	00.00079

58899	gamma-BHC (Lindane)	0.95	0.08	0.16		1.8	0.98
7439921	Lead, Total Dissolved	30 [b,e]	1.18 [b,e]	210	8.1		15
7439976	Mercury (II), Total Dissolved	2.1e	0.012	1.8	0.025		
7439976	Mercury					0.153	0.151
7440020	Nickel, Total Dissolved	260 [b,e]	29 [b,e]	75	8.3	4600	610
108952	Phenol	300	102	300	58	860000	10000
87865	Pentachlorophenol	8.7 [c]	6.7 [c]	13 [c]	7.9 [c]	3.0	0.27
	Total PCB	0.02[k]	0.014[k]	1.0[k]	0.03[k]	0.000064[k]	0.000064[k]
7782492	Selenium, Total Dissolved	11.8 [a,e]	4.6 [e]	290 [e]	71 [e]	4200	170
7440224	Silver, Total Dissolved	0.98 [b,f]		1.9			100
8001352	Toxaphene	0.73	0.0002	0.21	0.0002	0.00028	0.00028
7440666	Zinc, Total Dissolved	65 [b,e]	65 [b,e]	90	81	26,000	7,400

Source: Miss. Code Ann. *§§ 49-2-9, 49-2-1, et seq., and 49-17-1, et seq.*

Rule 2.3 Specific Water Quality Criteria:

A. PUBLIC WATER SUPPLY CLASSIFICATION:

Waters in this classification are a source of raw water supply for drinking and food processing purposes. The water treatment process shall be approved by the Mississippi State Department of Health. The raw water supply shall be such that after the approved treatment process, it will satisfy the regulations established pursuant to Section 1412 of the Public Health Service Act as amended by the Safe Drinking Water Act (Pub. L. 93-523). Information regarding surface water intakes for Public Water Supply is provided in Table 3.

Table 3. Mississippi Surface Water Intakes for Public Water Supply

Water Body	Name	Location	Status
Bonita Reservoir	City of Meridian	Lauderdale County	Inactive
Long Creek Reservoir	City of Meridian	Lauderdale County	Inactive
Luxapallila Creek	Columbus Light and Water	Lowndes County	Inactive
Okatibbee Reservoir	Pat Harrison Waterway District	Lauderdale County	Inactive
Pascagoula River	Jackson County Port Authority	Jackson County	Active
Pickwick Lake (Yellow Creek Embayment)	Short Coleman Park Water Association	Tishomingo County	Inactive
Ross Barnett Reservoir Pearl River	City of Jackson	Hinds County	Active
Tenn-Tom Waterway	City of Corinth Gas and Water Department	Tishomingo County	Active
Tombigbee River	NE MS Regional Water Supply District	Itawamba County	Active

Waters that meet the Public Water Supply criteria shall also be suitable for secondary contact recreation. Secondary contact recreation is defined as incidental contact with the water during activities such as wading, fishing, and boating, that are not likely to result in full body immersion. In considering the acceptability of a proposed site for disposal of bacteria latent wastewater in or near waters with the public water supply classification, the Permit Board shall consider the relative proximity of the discharge to water supply intakes.

(1) Bacteria: Culturable e.coli ~~should~~ shall not exceed a geometric mean of 126 per 100 ml over a 30-day period, nor ~~should~~ shall the samples examined during a 30-day period exceed 410 per 100 ml more than 10% of the time. There should be a minimum of 5 samples taken over a 30-day period with no less than 12 hours between individual samples.

(2) Chlorides (Cl): There shall be no substances added which will cause the chloride content to exceed 230 mg/l in freshwater streams.

(3) Specific Conductance: There shall be no substances added to increase the conductivity above 500 micromhos/cm for freshwater streams.

(4) Dissolved Solids: There shall be no substances added to the waters that will cause the dissolved solids to exceed 500 mg/l for freshwater streams.

(5) Threshold Odor: There shall be no substances added which will cause the threshold odor number to exceed 24 (at 60°C) as a daily average.

(6) Radioactive Substances: There shall be no radioactive substances added to the waters which will cause the gross beta activity (in the known absence of Strontium-90 and alpha emitters) to exceed 1000 picocuries per liter at any time.

(7) Specific Chemical Constituents: In addition to the provisions in Section II.4. and 10., the following concentrations (dissolved) shall not be exceeded at any time:

Constituent	Concentration (mg/l)
Barium	2.0
Fluoride	2.0
Lead	0.015
Nitrate (as N)	10.0

B. SHELLFISH HARVESTING CLASSIFICATION

Waters in this classification are for propagation and harvesting shellfish for sale or use as a food product. These waters shall meet the requirements set forth in the latest edition of the *National Shellfish Sanitation Program, Manual of Operations, Part I, Sanitation of Shellfish Growing Areas*, as published by the U. S. Public Health Service. Waters that meet the Shellfish Harvesting Area Criteria shall also be suitable for recreational purposes. In considering the acceptability of a proposed site for disposal of bacteria latent wastewater in or near waters with this classification, the Permit Board shall consider the relative proximity of the discharge to shellfish harvesting beds.

(1) Bacteria: The median fecal coliform MPN (Most Probable Number) of the water shall not exceed 14 per 100 ml, and not more than 10% of the samples shall ordinarily exceed an MPN of 43 per 100 ml in those portions or areas most

probably exposed to fecal contamination during most unfavorable hydrographic and pollutive conditions.

C. RECREATION CLASSIFICATION:

Waters in this classification are to be suitable for recreational purposes, including such water contact activities as swimming and water skiing. In considering the acceptability of a proposed site for disposal of bacteria latent wastewater in or near waters with this classification, the Permit Board shall consider the relative proximity of the discharge to areas of actual water contact activity.

(1) Bacteria: Culturable e.coli ~~should~~ shall not exceed a geometric mean of 126 per 100 ml, nor ~~should~~ shall the samples examined during a 30-day period exceed 410 per 100 ml more than 10% of the time. There should be a minimum of 5 samples taken over a 30-day period with no less than 12 hours between individual samples.

For both marine and estuarine coastal recreational waters, Enterococci ~~should~~ shall not exceed a 90-day geometric mean of 35 per 100 ml, nor ~~should~~ shall the samples examined during a 90-day period exceed 130 per 100 ml more than 10% of the time. Coastal recreational waters do not include inland waters upstream of the mouth of a river or a stream having a natural connection to the open sea.

(2) Specific Conductance: There shall be no substances added to increase the conductivity above 1000 micromhos/cm for freshwater streams.

(3) Dissolved Solids: There shall be no substances added to the water to cause the dissolved solids to exceed 750 mg/l as a monthly average value, nor exceed 1500 mg/l at any time for freshwater streams.

D. FISH AND WILDLIFE CLASSIFICATION:

Waters in this classification are intended for fishing and for propagation of fish, aquatic life, and wildlife. Waters that meet the Fish and Wildlife Criteria shall also be suitable for secondary contact recreation. Secondary contact recreation is defined as incidental contact with the water during activities such as wading, fishing, and boating, that are not likely to result in full body immersion.

(1) Bacteria: Culturable e.coli ~~should~~ shall not exceed a geometric mean of 126 per 100 ml over a 30-day period, nor ~~should~~ shall the samples examined during a 30-day period exceed 410 per 100 ml more than 10% of the time. There should be a minimum of 5 samples taken over a 30-day period with no less than 12 hours between individual samples.

(2) Specific Conductance: There shall be no substances added to increase the conductivity above 1000 micromhos/cm for freshwater streams.

(3) Dissolved Solids: There shall be no substances added to the waters to cause the dissolved solids to exceed 750 mg/l as a monthly average value, nor exceed 1500 mg/l at any time for freshwater streams.

E. EPHEMERAL STREAM CLASSIFICATION:

Waters in this classification do not support a fisheries resource and are not usable for human consumption or aquatic life. Ephemeral streams normally are natural watercourses, including natural watercourses that have been modified by channelization or a manmade drainage ditch, that without the contribution of point source discharges, flow only in direct response to precipitation or irrigation return-water discharge in the immediate vicinity and whose channels are normally above the groundwater table. Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses. These streams may contain a transient population of aquatic life during the portion of the year when there is suitable habitat for fish survival. Normally, aquatic habitat in these streams is not adequate to support a reproductive cycle for fish and other aquatic life. Wetlands are excluded from this classification.

Waters in this classification shall be protective of wildlife and humans that may come in contact with the waters. Waters contained in ephemeral streams shall also allow maintenance of the standards applicable to all downstream waters.

(1) Provisions A, B, C, and E of Rule 2.2 (Minimum Conditions Applicable to All Waters: Narrative Standards) are applicable except as they relate to fish and other aquatic life. All aspects of provisions 2.2.A.4) and 2.2.F. concerning toxicity will apply to ephemeral streams, except for domestic or compatible domestic wastewater discharges which will be required to meet toxicity requirements in downstream waters not classified as ephemeral. Alternative methods may be utilized to determine the potential toxic effect of ammonia. Acutely toxic conditions are prohibited under any circumstances in waters in this classification.

(2) Dissolved Oxygen: The dissolved oxygen shall be maintained at an appropriate level to avoid nuisance conditions.

(3) Bacteria: The Permit Board may assign bacterial criteria where the probability of a public health hazard or other circumstances so warrant.

(4) Fisheries resource is defined as any water body which has a viable gamefish population as documented by the Mississippi Department of Wildlife Fisheries and Parks or has sufficient flow or physical characteristics to support the fishing use during times other than periods of flow after precipitation events or irrigation return water discharge.

(5) "Not usable for human consumption or aquatic life" means that sufficient flow or physical characteristics are not available to support these uses.

(6) "Flow only in response to precipitation or irrigation return water" means that without the influence of point source discharges the stream will be dry unless there has been recent rainfall or a discharge of irrigation return water.

(7) "Protective of wildlife and humans that may come in contact with the waters" means that toxic pollutants shall not be discharged in concentrations that will endanger wildlife or humans.

(8) "Nuisance conditions" means objectionable odors or aesthetic conditions that may generate complaints from the public.

Recommendations for assignment of the Ephemeral Stream classification shall be made to the Commission on Environmental Quality by the Permit Board after appropriate demonstration of physical and hydrological data. The Ephemeral Stream classification shall not be assigned where environmental circumstances are such that a nuisance or hazardous condition would result or public health is likely to be threatened. Alternate discharge points shall be investigated before the Ephemeral Stream classification is considered.

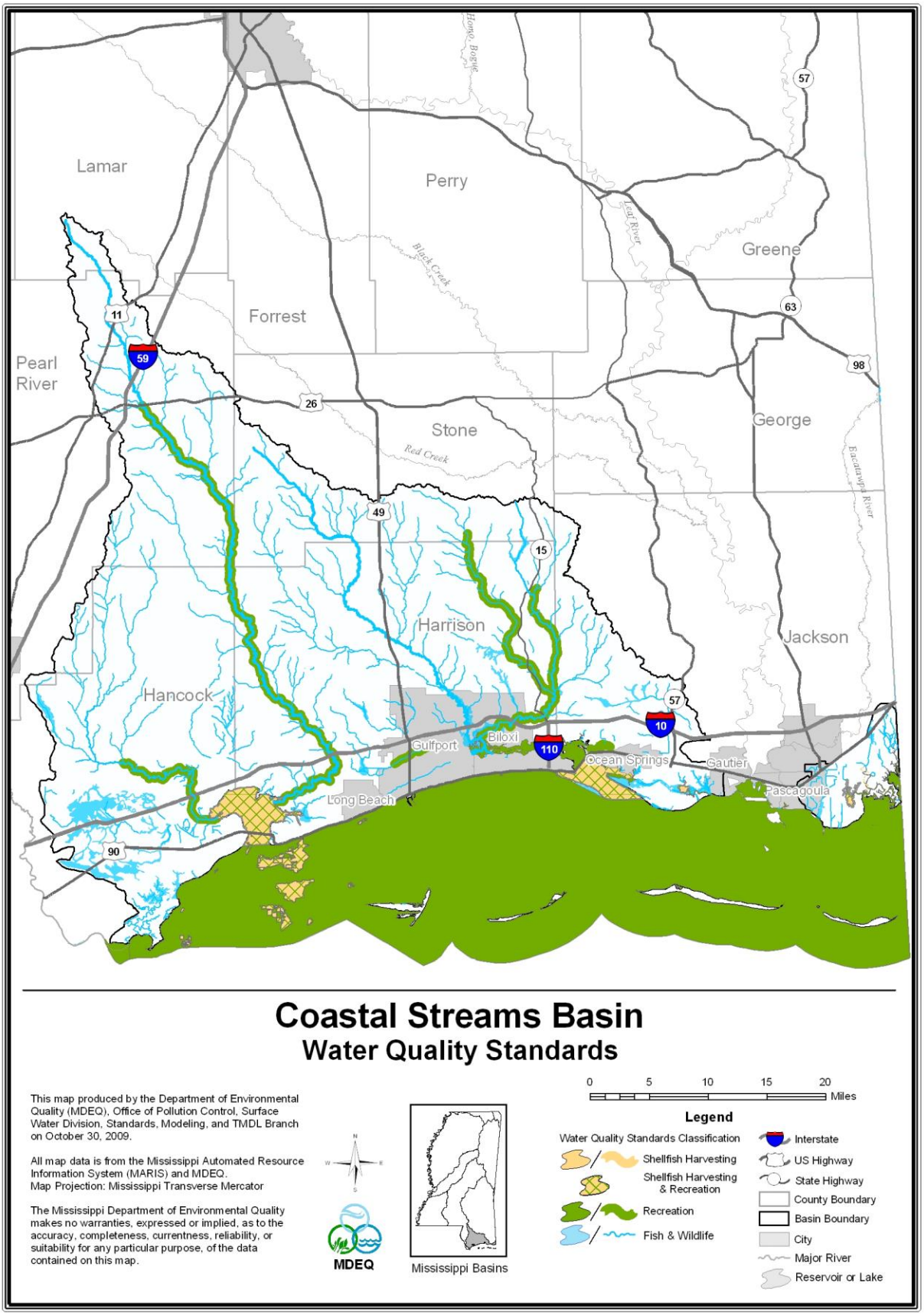
Source: Miss. Code Ann. *§§ 49-2-9, 49-2-1, et seq., and 49-17-1, et seq.*

Rule 2.4 Water Body Classifications in State Waters:

All of the State waters not specifically listed below shall be classified as Fish and Wildlife. State waters carrying other classifications are:

Coastal Streams Basin		
Waters	**Location**	**Classification**
Back Bay of Biloxi	From Popps Ferry Bridge to Biloxi Bay	Recreation
Bangs Lake	From headwaters to the Mississippi Sound	Shellfish Harvesting
Bayou Cumbest	From headwaters to the Mississippi Sound	Shellfish Harvesting
Big Lake	From Bernard Bayou to the Popps Ferry Bridge	Recreation
Biloxi Bay	From Headwaters (US Hwy 90 Bridge) to the Mississippi Sound	Shellfish Harvesting Recreation
Buoy Beef	Mississippi Sound	Shellfish Harvesting Recreation
Davis Bayou	From headwaters to the Biloxi Bay	Shellfish Harvesting
Graveline Bay	From headwaters to Graveline Bayou	Shellfish Harvesting
Graveline Bayou	From Graveline Bay to the Mississippi Sound	Shellfish Harvesting
Jourdan River	From confluence of Bacon Bayou and Catahoula Creek to the St. Louis Bay	Recreation
Kittiwake Reed (Long Beach Reef)	Mississippi Sound	Shellfish Harvesting Recreation
Mallini Bayou	From St. Louis Bay to St. Louis Bay	Shellfish Harvesting
Mississippi Sound	Contiguous to Mississippi Coastline	Recreation
Old Fort Bayou	From Bayou Talla to Biloxi Bay	Recreation
Pass Christian Reef (off Henderson Point)	Mississippi Sound	Shellfish Harvesting Recreation
Pass Marianne Reef	Mississippi Sound	Shellfish Harvesting Recreation
Pelican Key Reef	Mississippi Sound	Shellfish Harvesting Recreation
Point Clear Shell Plant	Mississippi Sound	Shellfish Harvesting Recreation
St. Joe Reef (St. Joseph's Point Reef)	Mississippi Sound	Shellfish Harvesting Recreation
St. Louis Bay	Harrison and Hancock Counties	Shellfish Harvesting Recreation

Coastal Streams Basin		
Waters	**Location**	**Classification**
St. Stanislaus Reef	Mississippi Sound	Shellfish Harvesting Recreation
Tchoutacabouffa River	From headwaters to the Back Bay of Biloxi	Recreation
Telegraph Reef	Mississippi Sound	Shellfish Harvesting Recreation
Turkey Creek	From North Gulfport Eighth Grade to Bernard Bayou	Recreation
Tuxachanie Creek	From headwaters to the Tchoutacabouffa River	Recreation
Waveland Reef	Mississippi Sound	Shellfish Harvesting Recreation
Wolf River	From MS Hwy 26 to the St. Louis Bay	Recreation


Lamar
Perry
Greene
Forrest
Pearl River
Stone
George
Harrison
Jackson
Hancock
Gulfport
Biloxi
Ocean Springs
Gautier
Pascagoula
Long Beach
Red Creek
Black Creek
Leaf River
Homochitto
Pascagoula River
11
59
26
49
15
57
10
110
63
98
90
Coastal Streams Basin
Water Quality Standards
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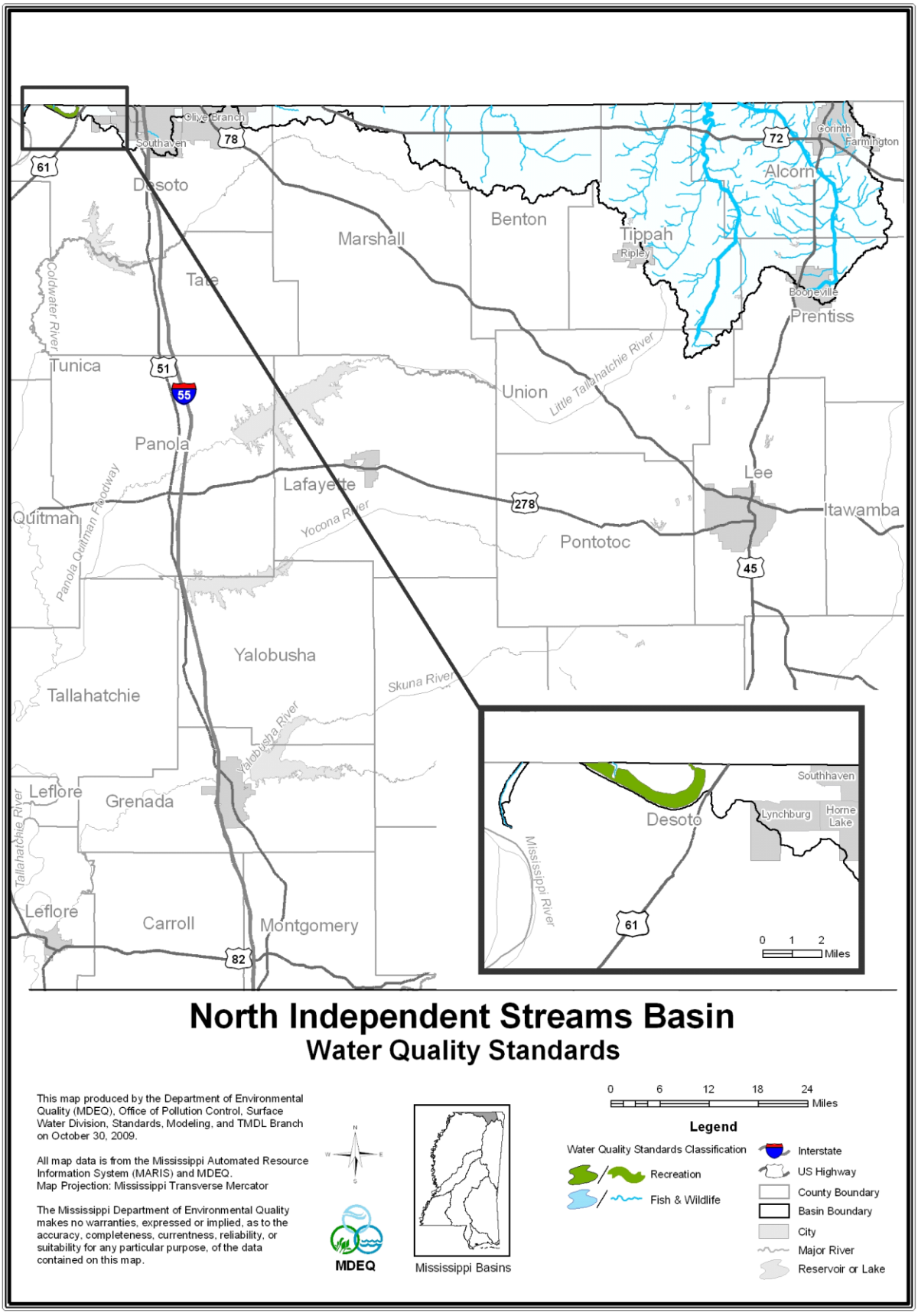
All map data is from the Mississippi Automated Resource Information System (MARIS) and MDEQ.
Map Projection: Mississippi Transverse Mercator
The Mississippi Department of Environmental Quality makes no warranties, expressed or implied, as to the accuracy, completeness, currentness, reliability, or suitability for any particular purpose, of the data contained on this map.
MDEQ
Mississippi Basins
0 5 10 15 20 Miles
Legend
Water Quality Standards Classification
Shellfish Harvesting
Shellfish Harvesting & Recreation
Recreation
Fish & Wildlife
Interstate
US Highway
State Highway
County Boundary
Basin Boundary
City
Major River
Reservoir or Lake

North Independent Streams Basin		
Waters	**Location**	**Classification**
Horn Lake	DeSoto County	Recreation


North Independent Streams Basin
Water Quality Standards
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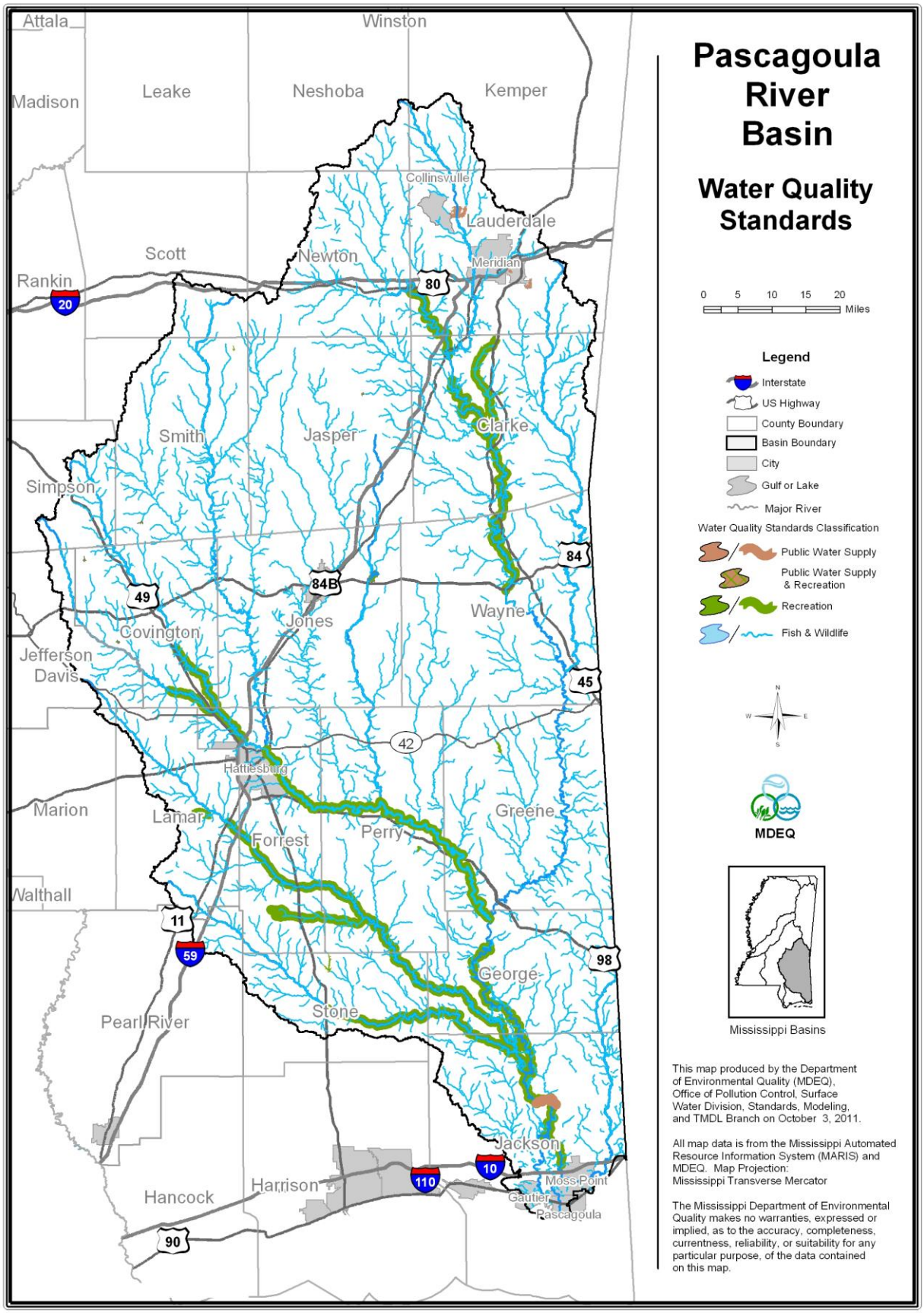
MDEQ
Mississippi Basins
0 6 12 18 24 Miles
Legend
Water Quality Standards Classification
Recreation
Fish & Wildlife
Interstate
US Highway
County Boundary
Basin Boundary
City
Major River
Reservoir or Lake
Desoto
Marshall
Benton
Tippah
Alcorn
Tate
Tunica
Panola
Lafayette
Union
Lee
Prentiss
Itawamba
Quitman
Pontotoc
Yalobusha
Tallahatchie
Leflore
Grenada
Carroll
Montgomery
Olive Branch
Southaven
Corinth
Farmington
Ripley
Booneville
Coldwater River
Little Tallahatchie River
Panola Quitman Floodway
Yocona River
Skuna River
Yalobusha River
Tallahatchie River
Mississippi River
Lynchburg
Horne Lake
0 1 2 Miles

Pascagoula River Basin		
Waters	**Location**	**Classification**
Archusa Reservoir	Clarke County	Recreation
Beaverdam Creek	From headwaters in Perry and Forrest Counties to Black Creek	Recreation
Black Creek	From Hwy 11 to the Pascagoula River	Recreation
Bonita Reservoir	Lauderdale County	Public Water Supply
Bowie Creek	From MS Hwy 589 to the Bowie River	Recreation
Bowie River	From Bowie Creek to Interstate 59	Recreation
Chickasawhay River	From Stonewall to MS Hwy 84	Recreation
Chunky River	From US Hwy 80 to the Chickasawhay River	Recreation
Clarke State Park (Ivy Lake)	Clarke County	Recreation
Dry Creek Lake Site #3	Covington County	Recreation
Escatawpa River	From River Mile 10 to the Pascagoula River	Fish and Wildlife[2]
Flint Creek Reservoir	Stone County	Recreation
Lake Bogue Homa	Jones County	Recreation
Lake Claude Bennett	Jasper County	Recreation
Lake Geiger	Forrest County	Recreation
Lake Marathon	Smith County	Recreation
Lake Mike Conner	Covington County	Recreation
Lake Perry	Perry County	Recreation
Lake Ross Barnett	Smith County	Recreation
Lake Shongela	Smith County	Recreation
Lakeland Park Lake	Wayne County	Recreation
Leaf River	From Hwy 42 to the Chickasawhay River	Recreation
Long Creek Reservoir	Lauderdale County	Public Water Supply
Okatibbee Reservoir	Lauderdale County	Public Water Supply Recreation
Okatoma Creek	From Seminary (MS Hwy 590) to the Bowie River	Recreation
Pascagoula River	From 5 miles north of Cumbest Bluff to Cumbest Bluff	Public Water Supply
Pascagoula River	From 6 miles north of MS Hwy 26 (George County) to Smear Bayou (Jackson County)	Recreation
Red Creek	From US Hwy 49 to Big Black Creek	Recreation
Turkey Creek Reservoir	Greene County	Recreation

[2] The following dissolved oxygen standard is applicable for this segment: dissolved oxygen concentrations shall not be less than a daily average of 3.7 mg/l from May 1 through October 31. Additional information regarding the derivation and implementation of this criterion can be found in the report titled *A Site-Specific Dissolved Oxygen Criterion for the Escatawpa River: Criteria Derivation and Implementation.*


Pascagoula River Basin
Water Quality Standards
0 5 10 15 20 Miles
Legend
Interstate
US Highway
County Boundary
Basin Boundary
City
Gulf or Lake
Major River
Water Quality Standards Classification
Public Water Supply
Public Water Supply & Recreation
Recreation
Fish & Wildlife
MDEQ
Mississippi Basins
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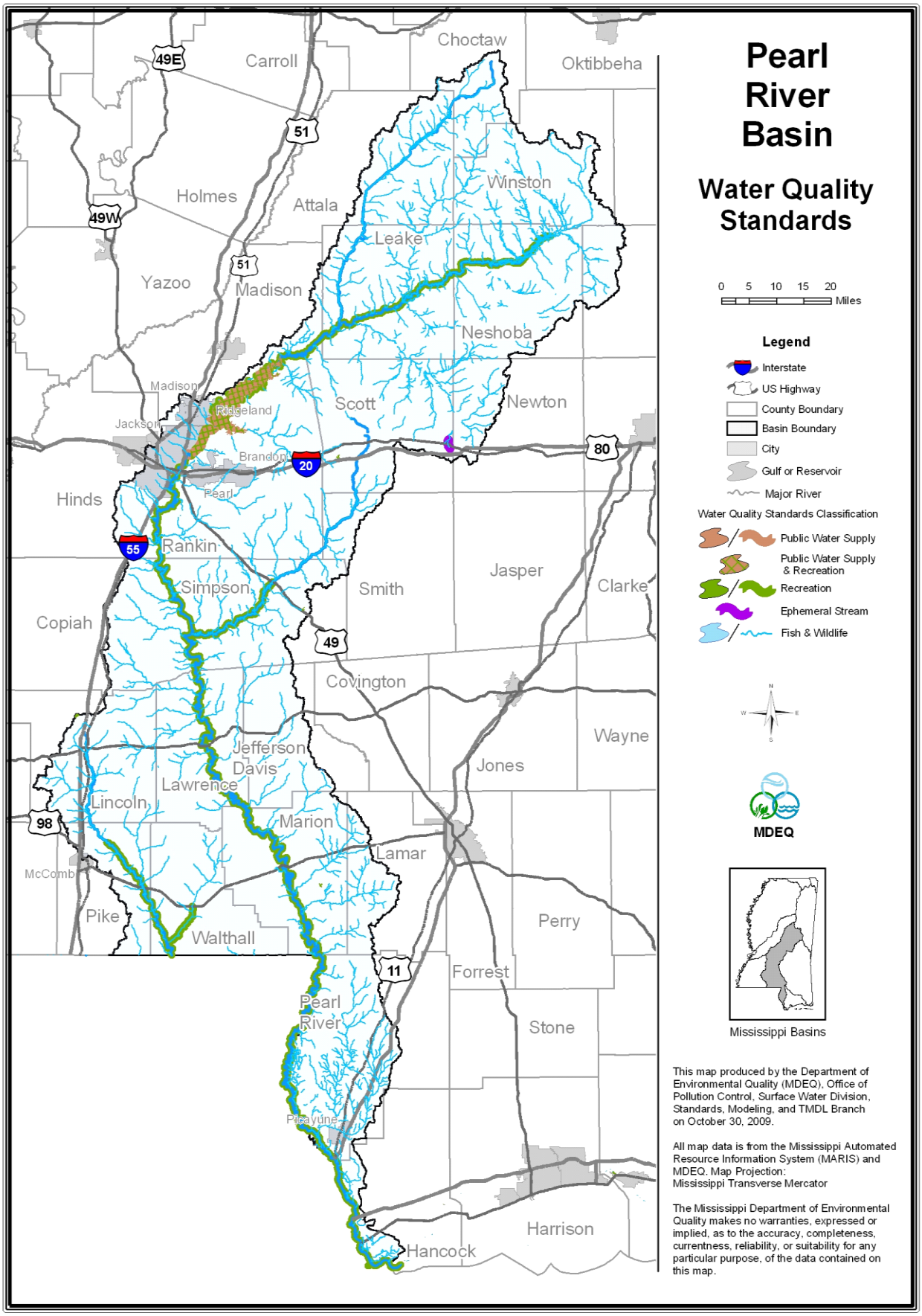
Attala
Winston
Madison
Leake
Neshoba
Kemper
Collinsville
Lauderdale
Meridian
Scott
Newton
Rankin
20
80
Smith
Jasper
Clarke
Simpson
84
84B
49
Jones
Wayne
Covington
Jefferson Davis
45
42
Hattiesburg
Marion
Lamar
Greene
Forrest
Perry
Walthall
11
59
98
George
Stone
Pearl River
Jackson
10
110
Moss Point
Gautier
Pascagoula
Harrison
Hancock
90

Pearl River Basin		
Waters	**Location**	**Classification**
Ross Barnett Reservoir	Madison and Rankin Counties	Recreation
Ross Barnett Reservoir	From River Bend to the Reservoir Dam	Public Water Supply
Bogue Chitto River	From MS Hwy 570 to the MS/LA State Line	Recreation
Lake Columbia	Marion County	Recreation
Lake Dixie Springs	Pike County	Recreation
Magees Creek	From US Hwy 98 to the Bogue Chitto River	Recreation
Pearl River	From Barnett Reservoir to the City of Jackson Water Intake	Public Water Supply
Pearl River (including Ross Barnett Reservoir)	From Hwy 16 near Edinburg to the Mississippi Sound	Recreation
Strong River	From US Hwy 49 to the Pearl River	Recreation
Shadow Lake (Roosevelt State Park)	Scott County	Recreation
Legion Lake	Simpson County	Recreation
Unnamed Drainage Ditch	From Lake POTW (MS0025194) to Warrior Branch	Ephemeral


Pearl River Basin
Water Quality Standards
0 5 10 15 20
Miles
Legend
Interstate
US Highway
County Boundary
Basin Boundary
City
Gulf or Reservoir
Major River
Water Quality Standards Classification
Public Water Supply
Public Water Supply & Recreation
Recreation
Ephemeral Stream
Fish & Wildlife
MDEQ
Mississippi Basins
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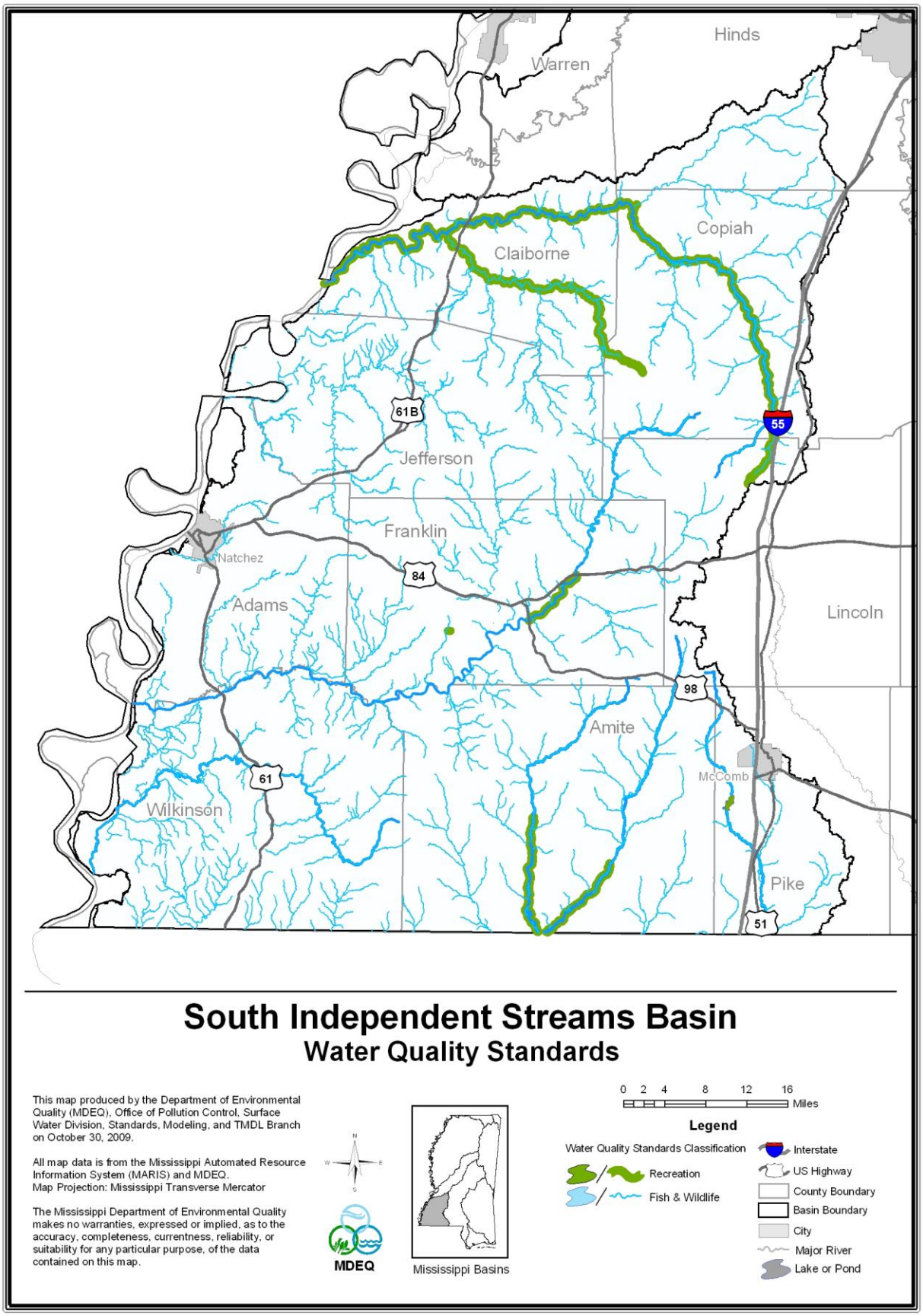
Choctaw
Oktibbeha
Carroll
Holmes
Attala
Winston
Leake
Yazoo
Madison
Neshoba
Scott
Newton
Ridgeland
Jackson
Brandon
Pearl
Hinds
Rankin
Simpson
Smith
Jasper
Clarke
Copiah
Covington
Wayne
Jefferson Davis
Lawrence
Jones
Lincoln
Marion
Lamar
McComb
Pike
Walthall
Perry
Forrest
Pearl River
Stone
Pascagoula
Harrison
Hancock
49E
51
49W
80
20
55
49
98
11

South Independent Streams Basin		
Waters	**Location**	**Classification**
Bayou Pierre	From headwaters to the Mississippi River	Recreation
Clear Springs Lake	Franklin County	Recreation
East Fork Amite River	From MS Hwy 584 to the MS/LA State Line	Recreation
Homochitto River	From US Hwy 84 to US Hwy 98	Recreation
Little Bayou Pierre	From headwaters to Bayou Pierre	Recreation
Percy Quinn State Park Lake	Pike County	Recreation
West Fork Amite River	From MS Hwy 24 to the MS/LA State Line	Recreation


Hinds
Warren
Copiah
Claiborne
61B
55
Jefferson
Franklin
Natchez
84
Adams
Lincoln
98
Amite
61
McComb
Wilkinson
Pike
51
South Independent Streams Basin
Water Quality Standards
This map produced by the Department of Environmental Quality (MDEQ), Office of Pollution Control, Surface Water Division, Standards, Modeling, and TMDL Branch on October 30, 2009.
All map data is from the Mississippi Automated Resource Information System (MARIS) and MDEQ.
Map Projection: Mississippi Transverse Mercator
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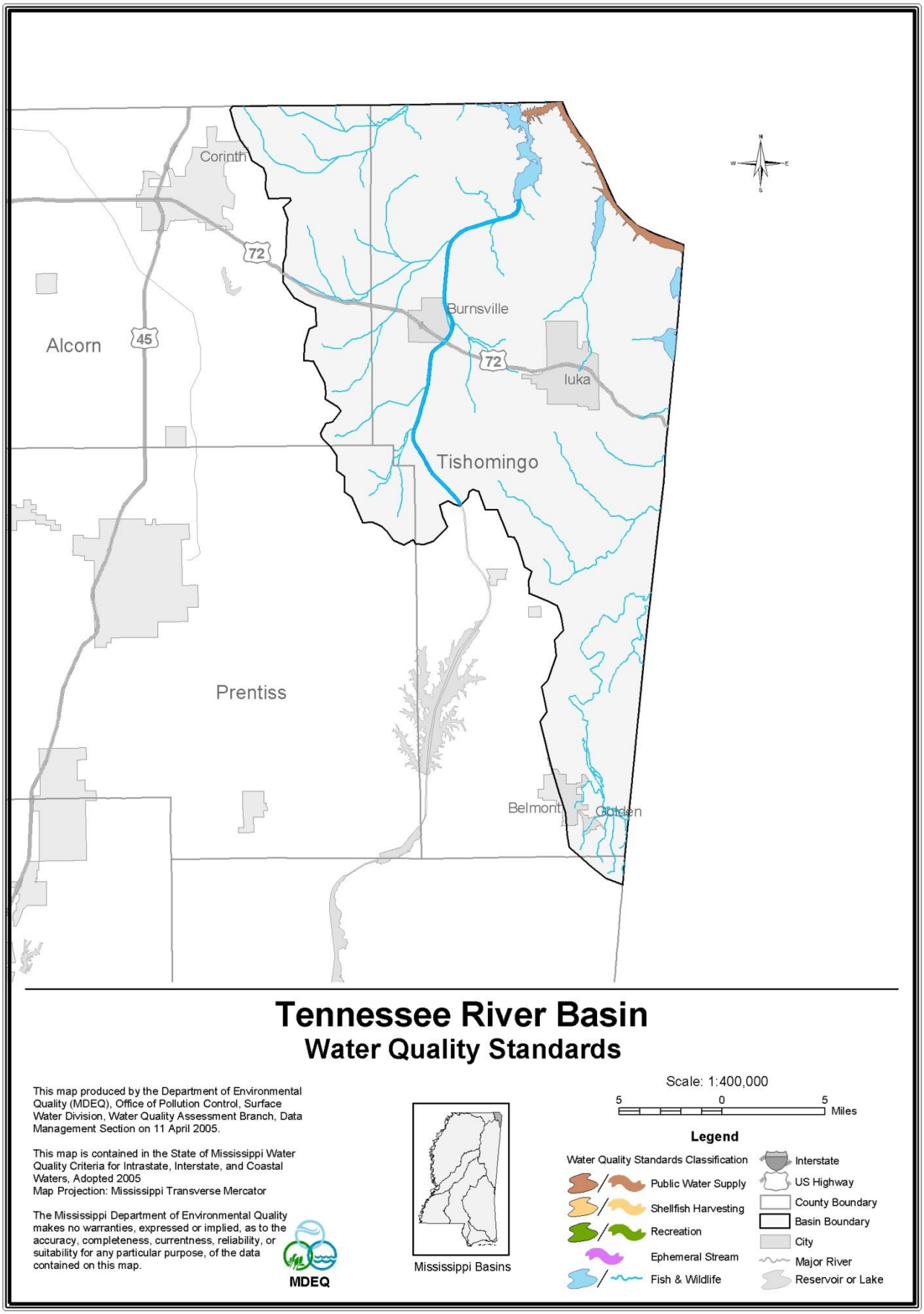
MDEQ
Mississippi Basins
0 2 4 8 12 16
Miles
Legend
Water Quality Standards Classification
Recreation
Fish & Wildlife
Interstate
US Highway
County Boundary
Basin Boundary
City
Major River
Lake or Pond

Tennessee River Basin		
Waters	**Location**	**Classification**
Bear Creek	From MS/AL State Line to the MS/AL State Line	Recreation
Pickwick Lake (including Yellow Creek Embayment)	Tishomingo County	Public Water Supply Recreation
Tennessee River	From MS/AL State Line to the MS/TN State Line	Public Water Supply Recreation
Tenn-Tom Waterway	From Pickwick Lake to Little Yellow Creek	Public Water Supply Recreation


Corinth
72
Burnsville
Alcorn
45
72
Iuka
Tishomingo
Prentiss
Belmont
Golden
Tennessee River Basin
Water Quality Standards
This map produced by the Department of Environmental Quality (MDEQ), Office of Pollution Control, Surface Water Division, Water Quality Assessment Branch, Data Management Section on 11 April 2005.
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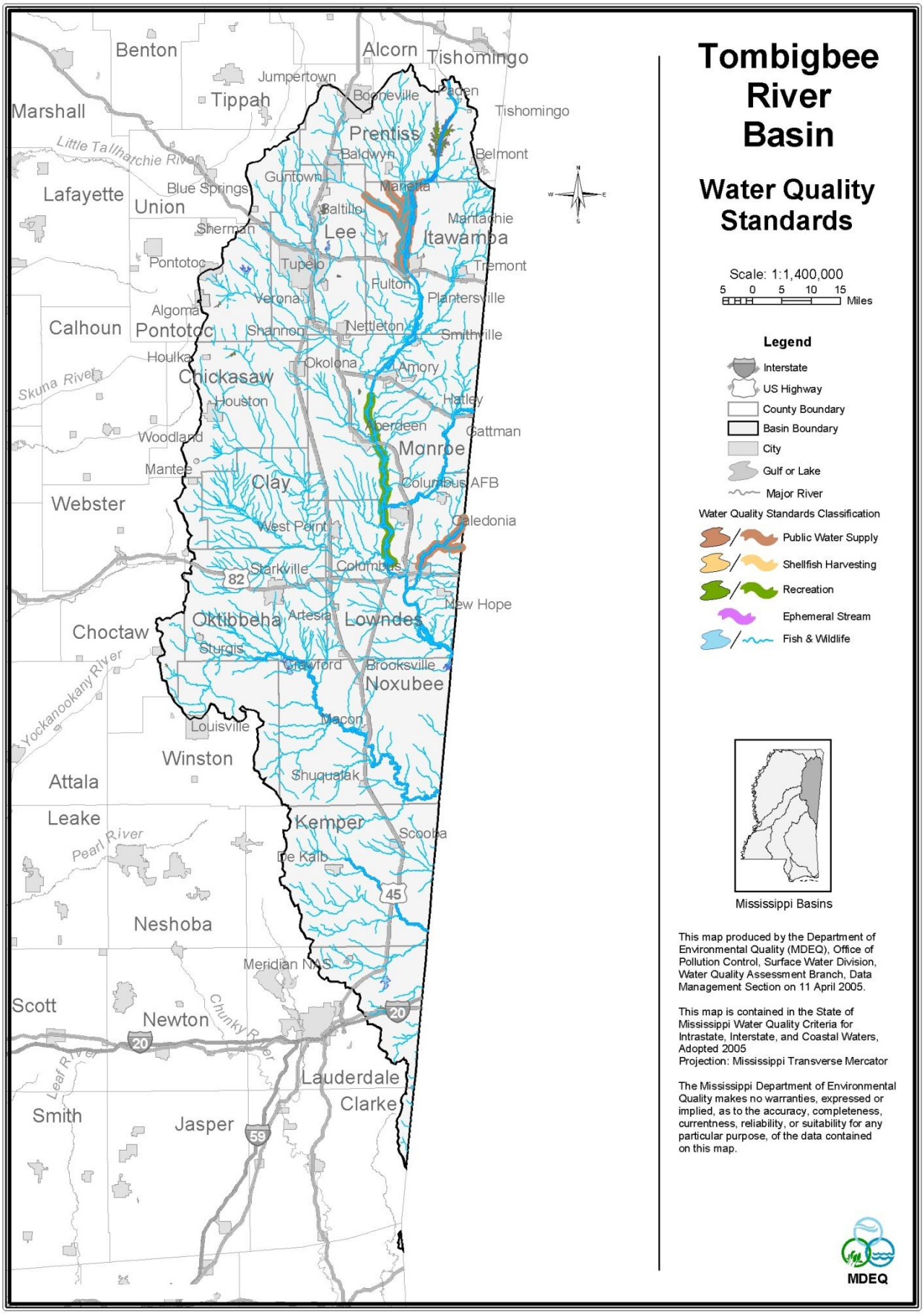
MDEQ
Mississippi Basins
Scale: 1:400,000
5
0
5
Miles
Legend
Water Quality Standards Classification
Public Water Supply
Shellfish Harvesting
Recreation
Ephemeral Stream
Fish & Wildlife
Interstate
US Highway
County Boundary
Basin Boundary
City
Major River
Reservoir or Lake

Tombigbee River Basin		
Waters	**Location**	**Classification**
Aberdeen Lake (Tenn-Tom Waterway)	From Mile 355.5 to Mile 364.3 (Normal Pool Elevation 190.0)	Recreation
Bay Springs Lake (Tenn-Tom Waterway)	From Mile 410.0 to Mile 419.0 (Normal Pool Elevation 414.0)	Recreation
Canal Section Pool "C" (Tenn-Tom Waterway)	From Mile 389.0 to Mile 396.4 (Normal Pool Elevation 270.0)	Recreation
Chiwapa Reservoir	Pontotoc County	Recreation
Choctaw Lake	Choctaw County	Recreation
Columbus Lake (Tenn-Tom Waterway)	From Mile 332.9 to Mile 355.5 (Normal Pool Elevation 163.0)	Recreation
Davis Lake	Chickasaw County	Recreation
Donivan Creek	From Natchez Trace Parkway to the Tombigbee River	Public Water Supply
Lake Lamar	Lee County	Recreation
Lake Lowndes	Lowndes County	Recreation
Lake Monroe	Monroe County	Recreation
Lake Tom Bailey	Lauderdale County	Recreation
Luxapallila Creek	From the MS/AL State Line to Hwy 50	Public Water Supply Recreation
Oktibbeha County Lake	Oktibbeha County	Recreation
Tenn-Tom Waterway	From Montgomery Lock Dam to Hwy 25 near Fulton	Public Water Supply
Twentymile Creek	From Natchez Trace Parkway to the Tombigbee River	Public Water Supply
Tombigbee River	From Boat Ramp Road to Hwy 78	Public Water Supply
Tombigbee State Park Reservoir	Lee County	Recreation
Yellow Creek	From the MS/AL State Line to Luxapallila Creek	Public Water Supply


Tombigbee River Basin
Water Quality Standards
Scale: 1:1,400,000
5 0 5 10 15 Miles
Legend
Interstate
US Highway
County Boundary
Basin Boundary
City
Gulf or Lake
Major River
Water Quality Standards Classification
Public Water Supply
Shellfish Harvesting
Recreation
Ephemeral Stream
Fish & Wildlife
Mississippi Basins
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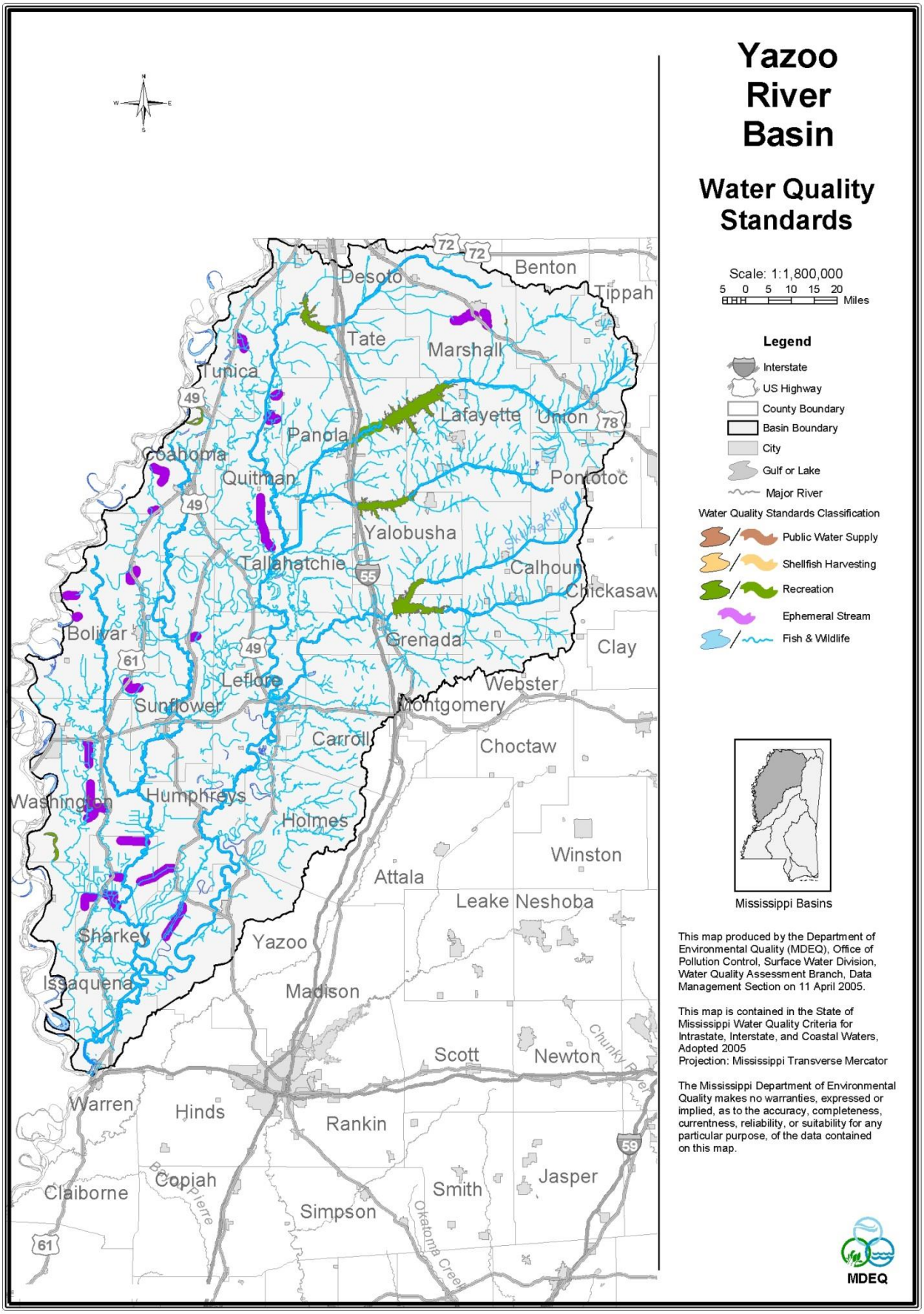
MDEQ
Benton
Alcorn
Tishomingo
Marshall
Tippah
Jumpertown
Booneville
Prentiss
Little Tallahatchie River
Lafayette
Union
Blue Springs
Guntown
Baldwyn
Belmont
Marietta
Sherman
Lee
Itawamba
Mantachie
Pontotoc
Tupelo
Tremont
Fulton
Verona
Plantersville
Algoma
Calhoun
Shannon
Nettleton
Smithville
Houlka
Okolona
Amory
Chickasaw
Skuna River
Houston
Hatley
Aberdeen
Gattman
Woodland
Monroe
Mantee
Clay
Columbus AFB
Webster
West Point
Caledonia
Starkville
Columbus
82
New Hope
Choctaw
Oktibbeha
Artesia
Lowndes
Sturgis
Yockanookany River
Crawford
Brooksville
Noxubee
Louisville
Macon
Winston
Attala
Shuqualak
Leake
Kemper
Scooba
Pearl River
De Kalb
45
Neshoba
Meridian NAS
Scott
Newton
Chunky River
20
Leaf River
Lauderdale
Clarke
Smith
Jasper
59

Yazoo River Basin		
Waters	**Location**	**Classification**
Arkabutla Reservoir	DeSoto and Tate Counties	Recreation
Canal #12	From Delta City Utility District (MS0038164) to the Big Sunflower River	Ephemeral
Chewalla Reservoir	Marshall County	Recreation
Drainage Ditch #3	From Rosedale POTW (MS0020630) to Lane Bayou	Ephemeral
Enid Reservoir	Panola, Lafayette, and Yalobusha Counties	Recreation
Grenada Reservoir	Grenada County	Recreation
Lake Dumas	Tippah County	Recreation
Lake Washington	Washington County	Recreation
Little Tallahatchie River	From Sardis Reservoir to US Hwy 51	Recreation
Moon Lake	Coahoma County	Recreation
Sardis Reservoir	Panola and Lafayette Counties	Recreation
Straight Bayou Drainage Main Ditch "A"	From Louise POTW (MS0044512) to Unnamed Tributary of Silver Creek	Ephemeral
Tillatoba Lake	Yalobusha County	Recreation
Unnamed Drainage Canal	From Anguilla POTW (MS0020541) to the Big Sunflower River	Ephemeral
Unnamed Drainage Ditch	From Arcola POTW (MS0037311) to Black Bayou	Ephemeral
Unnamed Drainage Ditch	From Beulah POTW (MS0042285) to Leban Bayou	Ephemeral
Unnamed Drainage Ditch	From Crenshaw POTW (MS0026930) to David Bayou	Ephemeral
Unnamed Drainage Ditch (Hollandale)	From Farm Fresh Catfish POTW (MS0039535) to Black Bayou	Ephemeral
Unnamed Drainage Ditch	From Farrell to POTW (MS0045187) Overcup Slough	Ephemeral
Unnamed Drainage Ditch	From Lambert POTW (MS0020231) to Muddy Bayou	Ephemeral

Yazoo River Basin Continued		
Waters	**Location**	**Classification**
Unnamed Drainage Ditch	From Leland POTW (MS0020761)to Black Bayou	Ephemeral
Unnamed Drainage Ditch	From Lurand Utility District (MS0045080)to the Big Sunflower River	Ephemeral
Unnamed Drainage Ditch	From Rolling Fork POTW (East Lagoon) (MS0025585) to the Little Sunflower River	Ephemeral
Unnamed Drainage Ditch	From Rolling Fork POTW (West Lagoon) (MS0025593) to Indian Bayou	Ephemeral
Unnamed Drainage Ditch	From Ruleville POTW (MS0024945) to the Quiver River	Ephemeral
Unnamed Drainage Ditch	From Shaw POTW (MS0024953) to Porter Bayou	Ephemeral
Unnamed Drainage Ditch	From Shelby POTW (MS0025089) to Mound Bayou	Ephemeral
Unnamed Drainage Ditch	From Simmons Farm Raised Catfish (Yazoo County) (MS0039403) to Unnamed Tributary of Lake George	Ephemeral
Unnamed Drainage Ditch	From Sledge POTW (MS0021016) to David Bayou	Ephemeral
Unnamed Drainage Ditch	From Tunica POTW (MS0042323) Unnamed Tributary of White Oak Bayou	Ephemeral
Unnamed Drainage Ditch	From Winstonville POTW (MS0026450 to the ephemeral ditch west of Winstonville	Ephemeral
Wall Doxey State Park Reservoir (Spring Lake)	Marshall County	Recreation


Yazoo River Basin
Water Quality Standards
Scale: 1:1,800,000
5 0 5 10 15 20 Miles
Legend
Interstate
US Highway
County Boundary
Basin Boundary
City
Gulf or Lake
Major River
Water Quality Standards Classification
Public Water Supply
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MDEQ
Desoto
Benton
Tippah
Tate
Marshall
Tunica
Lafayette
Union
Panola
Coahoma
Quitman
Pontotoc
Yalobusha
Tallahatchie
Calhoun
Chickasaw
Bolivar
Grenada
Clay
Leflore
Webster
Sunflower
Montgomery
Carroll
Choctaw
Humphreys
Washington
Holmes
Winston
Attala
Leake
Neshoba
Sharkey
Yazoo
Issaquena
Madison
Scott
Newton
Warren
Hinds
Rankin
Jasper
Claiborne
Copiah
Smith
Simpson
Okatoma Creek
Chunky Creek
Big Pierre
72
49
78
55
61
59

Source Miss. Code Ann. *§§ 49-2-9, 49-17-17, 49-2-1, et seq. and 49-17-1, et seq.*