STATE OF MISSISSIPPI
WATER QUALITY CRITERIA FOR INTRASTATE, INTERSTATE AND COASTAL WATERS

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MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF POLLUTION CONTROL
P. O. BOX 10385
JACKSON, MISSISSIPPI 39289-0385

**WATER QUALITY CRITERIA FOR INTRASTATE,
INTERSTATE AND COASTAL WATERS**

STATE OF MISSISSIPPI

SECTION I. GENERAL CONDITIONS:

1. 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 and State parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected. For the purposes of this section, existing uses are defined as those uses actually attained in the waterbody on or after November 28, 1975, whether or not they are included in the Water Quality Criteria.

2. 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.

   Samples shall be analyzed in accordance with methodology specifed 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.

3. 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:

   A. The existing designated use is not attainable because of natural background conditions; or

   B. the existing designated use is not attainable because of irretrievable man-induced conditions; or

   C. the application of effluent limitations for existing 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 existing 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.

4. 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.

5. New 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.

6. 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 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 in unregulated natural streams shall be utilized in establishing permit limitations for storm water permits.

In cases in which either (1) the data is 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.

7. Mississippi River: The Mississippi River is classified for Fish and Wildlife use, 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
T.D.S.	425 mg/L

   From Vicksburg south to the Mississippi-Louisiana border

Chlorides	75 mg/L
Sulfates	120 mg/L
T.D.S.	400 mg/L

8. 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.

SECTION II. MINIMUM CONDITIONS APPLICABLE TO ALL WATERS:

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 Section I, Paragraph 8 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. [Remains under EPA review as of June 27, 2003.]

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 Section II.10.

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.

6. Designated Use Classifications: A waterbody classified as Public Water Supply, Recreation, or Shellfish Harvesting shall meet not only the criteria to support its respective use classification, but also shall meet the Fish and Wildlife criteria in order to support aquatic life.

7. 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 that are not thermally stratified, such as unstratified lakes, lakes during turnover, streams, and rivers:

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

   For waters that are thermally stratified such as lakes, estuaries, and impounded streams:

   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.

8. pH: The normal pH of the waters shall be 6.0 to 9.0 and shall not be caused to vary more than 1.0 unit within this range. Variations may be allowed on a case-by-case basis if the Commission determines that there will be no detrimental effect on the stream's designated uses as a result of the greater pH change. In blackwater streams and in those watersheds with highly acidic soils, the pH may be lower than 6.0 due to natural conditions.

9. Temperature: The maximum water temperature shall not exceed 90EF (32.2EC) in streams, lakes and reservoirs, except that in the Tennessee River the temperature shall not exceed 86EF (30EC). In addition, the discharge of any heated waters into a stream, lake or reservoir shall not raise temperatures more than 5EF (2.8EC) above natural background temperatures.

   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 90EF (32.2EC) in coastal or estuarine waters. In addition, the discharge of any heated waste into any coastal or estuarine waters shall not raise temperatures more than 4EF (2.2EC) above natural during the period October through May nor

more than 1.5 EF (0.8EC) above natural background temperature during the period June through September.

When ambient water temperatures naturally exceed 90EF (or 86EF in the Tennessee River), the discharge temperature of heated water must not exceed the ambient water temperature.

There shall be no thermal block to the migration of aquatic organisms. Requirements for zones of passage as referenced in Section I.8 shall apply. In addition to the general requirements of Section I.2, the temperature shall be measured at a depth of five 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.

10. Toxic Substances:

A. Aquatic Life and Human Health Standards

(1) Aquatic Life - The concentration of toxic substances shall not result in chronic or acute toxicity or impairment of the uses of aquatic life. Any levels in excess of these values will be considered to result in chronic or acute toxicity, or the impairment of the uses of aquatic life. Regardless of direct measurements of chronic or acute toxicity, the concentrations of toxic substances shall not exceed the chronic or acute values, except as provided for in Sections 10.F(1) and 10.F(2).

(2) 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 waterbody.

B. 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 1 and are expressed as the dissolved phase of the parameter.

C. 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.

D. Definitions: When applying acute or chronic toxicity or human health criteria, the following

definitions shall apply:

(1) 7Q10 is the seven-day average low stream flow with a ten-year occurrence period.

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

E. Application of Numerical Criteria:

(1) 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 fifty (50) stream miles upstream of a drinking water intake. Stream segments that are classified as Public Water Supply or are within fifty (50) miles upstream of a drinking water intake shall comply with the Water and Organisms criteria.

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

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

(3) Criteria for certain metals may be modified on a site-specific basis when a water effect ratio (WER) is conducted in accordance with VI.C.2.a. of *Mississippi 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*. In these instances, the criterion for the specific metal in the affected waterbody shall be equal to the criteria concentrations calculated using the following equations: CMC = WER * Acute and CCC = WER * Chronic.

Where:
CCC = Criteria Continuous Concentration
CMC = Criteria Maximum Concentration
WER = Water Effects Ratio for a Specific Pollutant
Acute = Acute Criteria from Table 1
Chronic = Chronic Criteria from Table 1

When a WER has not been conducted, the criteria listed in Table 1 of this regulation shall apply as the value of the WER is presumed to equal one in the absence of data to indicate otherwise.

F. Discharge Specific Criteria:

(1) Existing Discharges

(a) 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.

(b) 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.

(2) New Source Discharges

(a) The Commission may establish discharger specific criteria for new source discharges if the discharger can demonstrate that established Water Quality Criteria is based on conditions not applicable to Mississippi such as, but not limited to, the use of species not indigenous to Mississippi.

(b) 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.

G. Toxic and Human Health Parameters for which no Numeric Criteria have been Established:

(1) 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).

(2) Definitions:

(a) 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.

(b) The 24-hour average for criteria published in 1980 or the four-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.

(c) If metals concentrations for criteria are hardness-dependent, the chronic and acute concentrations shall be based on 50 mg/L hardness if the ambient hardness is less than or equal to 50 mg/L. Concentrations shall be based on the actual mixed stream hardness if it is greater than 50 mg/L.

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

(e) 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:

(i) Fish tissue consumption:

WQS = (RfD) x Body Weight/(FCR x BCF)
where:

WQS = water quality standard or criterion;
RfD = reference dose;
FCR = fish consumption rate (6.5 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.

(ii) Water consumption and fish tissue consumption:

WQS = (RfD) x Body Weight/(WCR + (FCR x BCF))

where:

WQS = water quality;
RfD = reference dose;
FCR = fish consumption rate (6.5 gm/person-day);
BCF = bioconcentration factor;
WCR = water consumption rate (assumed to be 2 liters per 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.

(f) For carcinogens, the concentrations of toxic substances will not result in unacceptable health risk and will be based on a Carcinogenic 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). The 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): 33992-34003, and FR 45(231 Part V): 79318-79379). 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:

(i) Fish tissue consumption:

WQS = (Risk) x Body Weight/(CPF x (FCR x BCF))
where:

WQS = water quality standard or criterion;
Risk = risk factor (10^{-6});
CPF = cancer potency factor;
FCR = fish consumption rate (6.5 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.

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

WQS = Risk x Body Weight/(CPF x (WCR + (FCR x BCF)))
where:

WQS = water quality standard or criterion;
Risk = risk factor (10^{-6});
CPF = cancer potency factor;
FCR = fish consumption rate (6.5 gm/person-day);
BCF = bioconcentration factor;
WCR = water consumption rate (assumed to be 2 liters per 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 1
Numeric Criteria for All Waters (Fg/L)

Parameter	Fresh Water		Salt Water		Human Health	
	Acute	Chronic	Acute	Chronic	Organisms Only	Water & Organisms
Aldrin	3.0		1.3		0.00014	0.00013
Ammonia	[g]	[g]	[g]	[g]		
Arsenic (III), Total Dissolved	340[f]	150[f]	69	36		
Arsenic, Total Dissolved					24 [i]	0.078 [i]
Cadmium, Total Dissolved	1.74 [b,f]	0.62 [b,f]	43	9.3	168	5
Chlordane	2.4	0.0043	0.09	0.004	0.0022	0.0021
Chlorine	19	11	13	7.5		
Chromium (Hex), Total Dissolved	16 [f]	11 [f]	1100	50	1470	98
Chromium (III), Total Dissolved	323 [b,f]	42 [b,f]			140468	100
Copper, Total Dissolved	7.0 [b,f]	5.0 [b,f]	4.8	3.1	1000	1000
Cyanide	22.0[h]	5.2[h]	1.0[h]	1.0[h]	220000	200
4,4 DDT	1.1	0.001	0.13	0.001	0.00059	0.00059
Dieldrin	0.24	0.056	0.71	0.0019	0.000144	0.000135
2,3,7,8 TCDD					1.0 ppq[d]	1.0 ppq[d]
Endosulfan	0.22[j]	0.056 [j]	0.034 [j]	0.0087 [j]	240 [k]	110 [k]
Endrin	0.086	0.036	0.037	0.0023	0.814	0.76
Heptachlor	0.52	0.0038	0.053	0.0036	0.000214	0.000208

Parameter	Fresh Water		Salt Water		Human Health	
	Acute	Chronic	Acute	Chronic	Organisms Only	Water & Organisms
Hexachlorocyclohexane(Lindane)	0.95	0.08	0.16		0.0625	0.0186
Lead, Total Dissolved	30 [b,f]	1.18 [b,f]	210	8.1		15
Mercury (II), Total Dissolved	2.1 [f]	0.012	1.8	0.025		
Mercury					0.153	0.151
Nickel, Total Dissolved	260 [b,f]	29 [b,f]	75	8.3	4584	607
			167 [e]	18.5 [e]		
Phenol	300	102	300	58	300	300
Pentachlorophenol	8.7 [c]	6.7 [c]	13 [c]	7.9 [c]	8.2	0.28
PCB 1242	0.2	0.014	1.0	0.03		
PCB 1254	0.2	0.014	1.0	0.03		
PCB 1221	0.2	0.014	1.0	0.03		
PCB 1232	0.2	0.014	1.0	0.03		
PCB 1248	0.2	0.014	1.0	0.03		
PCB 1260	0.2	0.014	1.0	0.03		
PCB 1016	0.2	0.014	1.0	0.03		
Total PCB					0.00035	0.00035
Selenium, Total Dissolved	11.8 [a,f]	4.6 [f]	290 [f]	71 [f]	3365	50
Silver, Total Dissolved	1.05 [b,f]		1.9			100
Toxaphene	0.73	0.0002	0.21	0.0002	0.00075	0.00073
Zinc, Total Dissolved	65 [b,f]	65 [b,f]	90	81	5000	5000

a = The CMC = 1/[(f1/CMC1) + (f2/CMC2)] where f1 and f2 are the fractions of total selenium that are treated as selenite and selenate, respectively, and CMC1 and CMC2 are 185.9 Fg/L and 12.83 Fg/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. All criteria are as indicated at hardness of 50 mg/L as $CaCO_3$. If hardness exceeds 50 mg/L as $CaCO_3$, then criteria is equal to result of hardness based equations as found in *Quality Criteria for Water*.
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 = Criteria for 2,3,7,8 TCDD based on a risk factor of one in one hundred thousand (10^{-5}).
e = Site specific criteria for Mississippi Sound.
f = Parameter subject to water effects ratio equations where "CMC = WER * Acute" and "CCC = WER * Chronic".
g = Ammonia criteria are dependent on pH, temperature and/or salinity. See Section II.10.C.
h = Expressed as Fg free cyanide (as CN)/L.
i = Refers to the inorganic form only.
j = Applies to the sum of α and β isomers.
k = Applies to individual isomers of Endosulfan including α, β, and Endosulfan Sulfate.

SECTION III. SPECIFIC WATER QUALITY CRITERIA:

1. PUBLIC WATER SUPPLY:

Water in this classification is for use as 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). 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 bacterially-related wastewater in or near waters with this classification, the Permit Board shall consider the relative proximity of the discharge to water supply intakes.

A. Bacteria: For the months of May through October, when water contact recreation activities may be expected to occur, fecal coliform shall not exceed a geometric mean of 200 per 100 ml based on a minimum of five (5) samples taken over a 30-day period with no less than twelve (12) hours between individual samples, nor shall the samples examined during a 30-day period exceed 400 per 100 ml more than ten percent (10%) of the time.

   For the months of November through April, when incidental recreational contact is not likely, fecal coliform shall not exceed 2000/100 ml as a geometric mean (either MPN or MF count) based on at least five samples taken over a 30-day period with no less than twelve (12) hours between individual samples, nor shall the samples examined during a 30-day period exceed 4000/100 ml more than ten percent (10%) of the time.

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

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

D. 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.

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

F. 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.

G. 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

2. SHELLFISH HARVESTING

Waters classified for this use 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 bacterially-related wastewater in or near waters with this classification, the Permit Board shall consider the relative proximity of the discharge to shellfish harvesting beds.

A. Bacteria: The median fecal coliform MPN (Most Probable Number) of the water shall not exceed 14 per 100 ml, and not more than ten percent (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 pollutional conditions.

3. RECREATION:

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 bacterially-related 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.

A. Bacteria: Fecal coliform shall not exceed a geometric mean of 200 per 100 ml based on a minimum of five (5) samples taken over a 30-day period with no less than twelve (12) hours between individual samples, nor shall the samples examined during a 30-day period exceed 400 per 100 ml more than ten percent (10%) of the time.

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

C. 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.

4. FISH AND WILDLIFE:

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.

A. Bacteria: For the months of May through October, when water contact recreation activities may be expected to occur, fecal coliform shall not exceed a geometric mean of 200 per 100 ml based on a minimum of five (5) samples taken over a 30-day period with no less than twelve (12) hours between individual samples, nor shall the samples examined during a 30-day period exceed 400 per 100 ml more than ten percent (10%) of the time.

For the months of November through April, when incidental recreational contact is not likely, fecal coliform shall not exceed a geometric mean of 2000 per100 ml based on a minimum of five (5) samples taken over a 30-day period with no less than twelve (12) hours between individual samples, nor shall the samples examined during a 30-day period exceed 4000/100 ml more than ten percent (10%) of the time.

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

C. 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.

5. EPHEMERAL STREAM:

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 manmade drainage ditches, that without the influent 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. 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.

A. Provisions 1,2,3 and 5 of Section II (Minimum Conditions Applicable to All Waters) are applicable except as they relate to fish and other aquatic life. All aspects of provisions 4 and 10 of Section II 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.

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

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

D. Definitions:

(1) Fisheries resources is defined as any waterbody which has a viable gamefish population as documented by the Mississippi Department of Wildlife Conservation 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.

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

(3) "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.

(4) "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.

(5) "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.

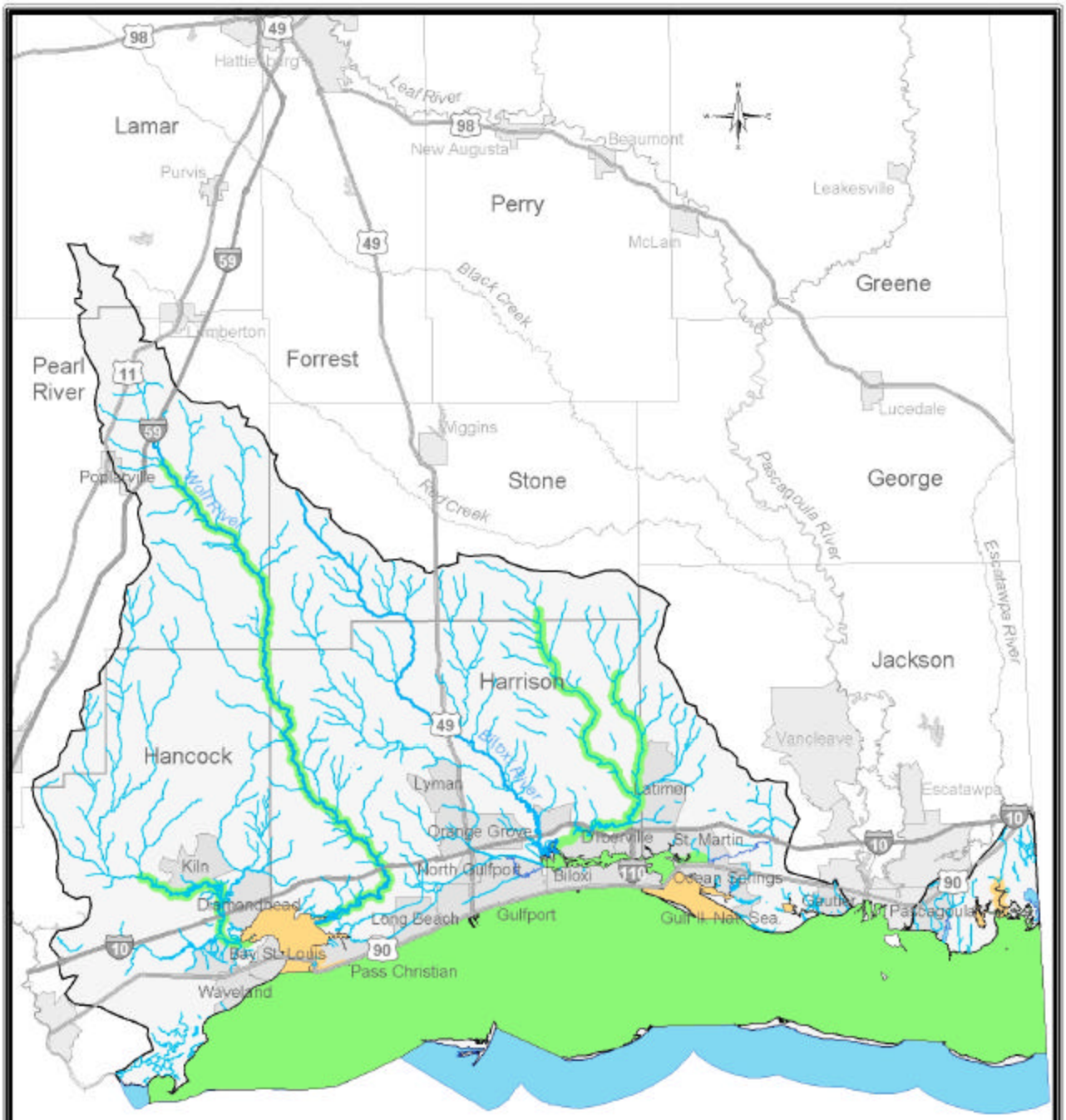
SECTION IV. DESIGNATED USES IN STATE WATERS:

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

COASTAL BASIN

Waters	From	To	Classification
Back Bay of Biloxi	Popps Ferry Bridge	Biloxi Bay	Recreation
Bangs Lake	Headwaters	Miss. Sound	Shellfish Harvesting
Bayou Cumbest	Headwaters	Miss. Sound	Shellfish Harvesting
Big Lake	Bernard Bayou	Popps Ferry Bridge	Recreation
Biloxi Bay	Headwaters U.S. Hwy 90 Bridge	Miss. Sound	Shellfish Harvesting
Davis Bayou	Headwaters	Biloxi Bay	Shellfish Harvesting
Graveline Bay	Headwaters	Graveline Bayou	Shellfish Harvesting
Graveline Bayou	Graveline Bay	Miss. Sound	Shellfish Harvesting
Jourdan River	Confluence of Bacon Bayou and Catahoula Creek	St. Louis Bay	Recreation
Mallini Bayou	St. Louis Bay	St. Louis Bay	Shellfish Harvesting
Miss. Sound	Contiguous	Miss. Coastline	Recreation
Old Fort Bayou	Bayou Talla	Biloxi Bay	Recreation
Pass Christian Reef- off Henderson Point	Miss. Sound		Shellfish Harvesting
St. Louis Bay	Harrison-Hancock Counties		Shellfish Harvesting
Tchoutacabouffa River	Headwaters	Back Bay of Biloxi	Recreation

Waters	From	To	Classification
Tuxachanie Creek	Headwaters	Tchoutacabouffa River	Recreation
Wolf River	Ms. Hwy. 26	St. Louis Bay	Recreation



Coastal Streams Basin

Water Quality Standards

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Map Projection: Mississippi Transverse Mercator

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MDEQ

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Mississippi Basins

Scale: 1:700,000

5 0 5 10 Miles

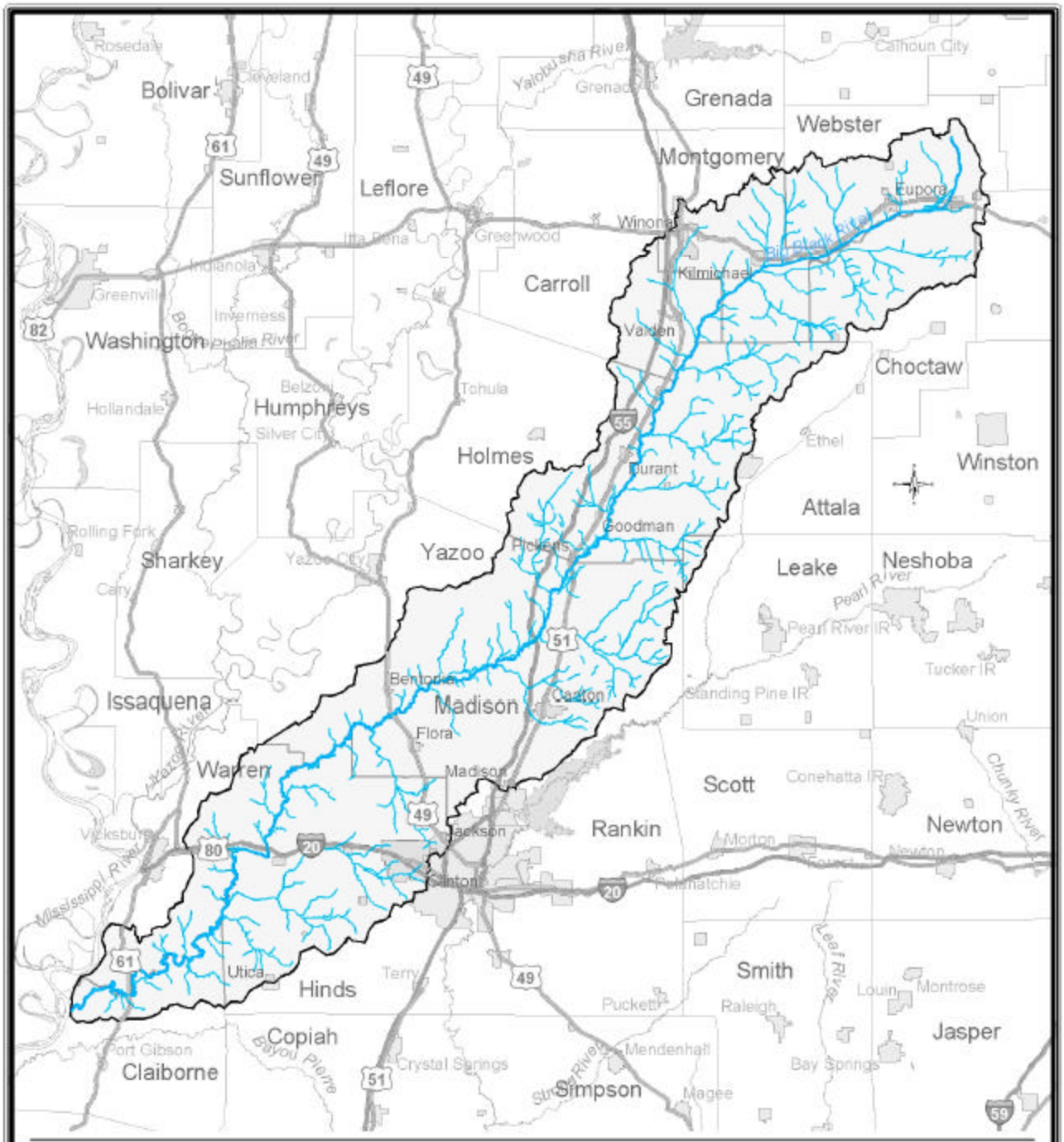
Legend

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

BIG BLACK RIVER BASIN

All waters in the Big Black Basin are classified Fish and Wildlife.



Big Black River Basin
Water Quality Standards

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MDEQ

Mississippi Basins

Scale: 1:1,200,000

5 0 5 10 15 20 Miles

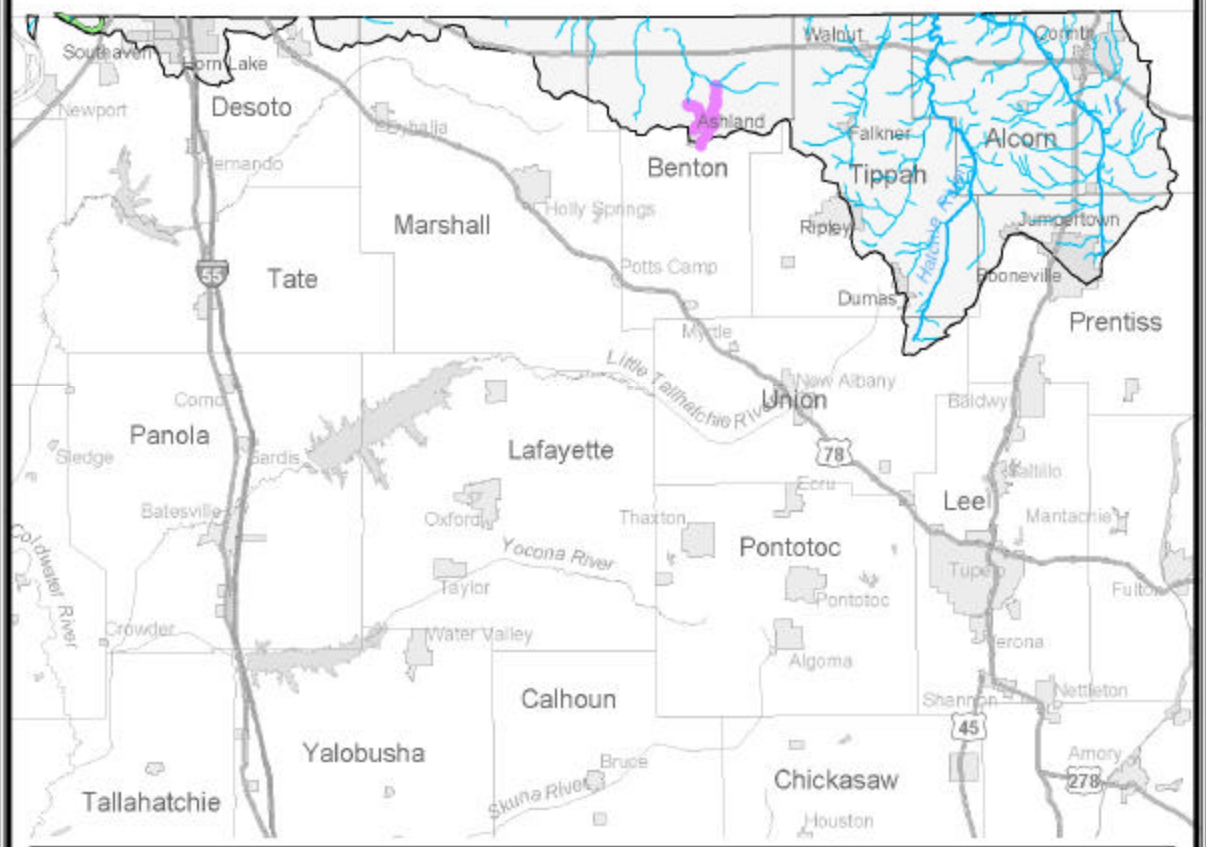
Legend

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

NORTH INDEPENDENT STREAMS BASIN

Waters	From	To	Classification
Bowden Sand Ditch (East Lagoon)	Ashland	Tubby Creek	Ephemeral
Drennan Sand Ditch (NW Lagoon)	Ashland	Robinson Bottom	Ephemeral
Horn Lake	DeSoto County		Recreation
Tubby Creek	Mile 5.2	Mile 2.8	Ephemeral



North Independent Streams Basin

Water Quality Standards

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MDEQ

Mississippi Basins

Scale: 1:1,000,000

5 0 5 10 15 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

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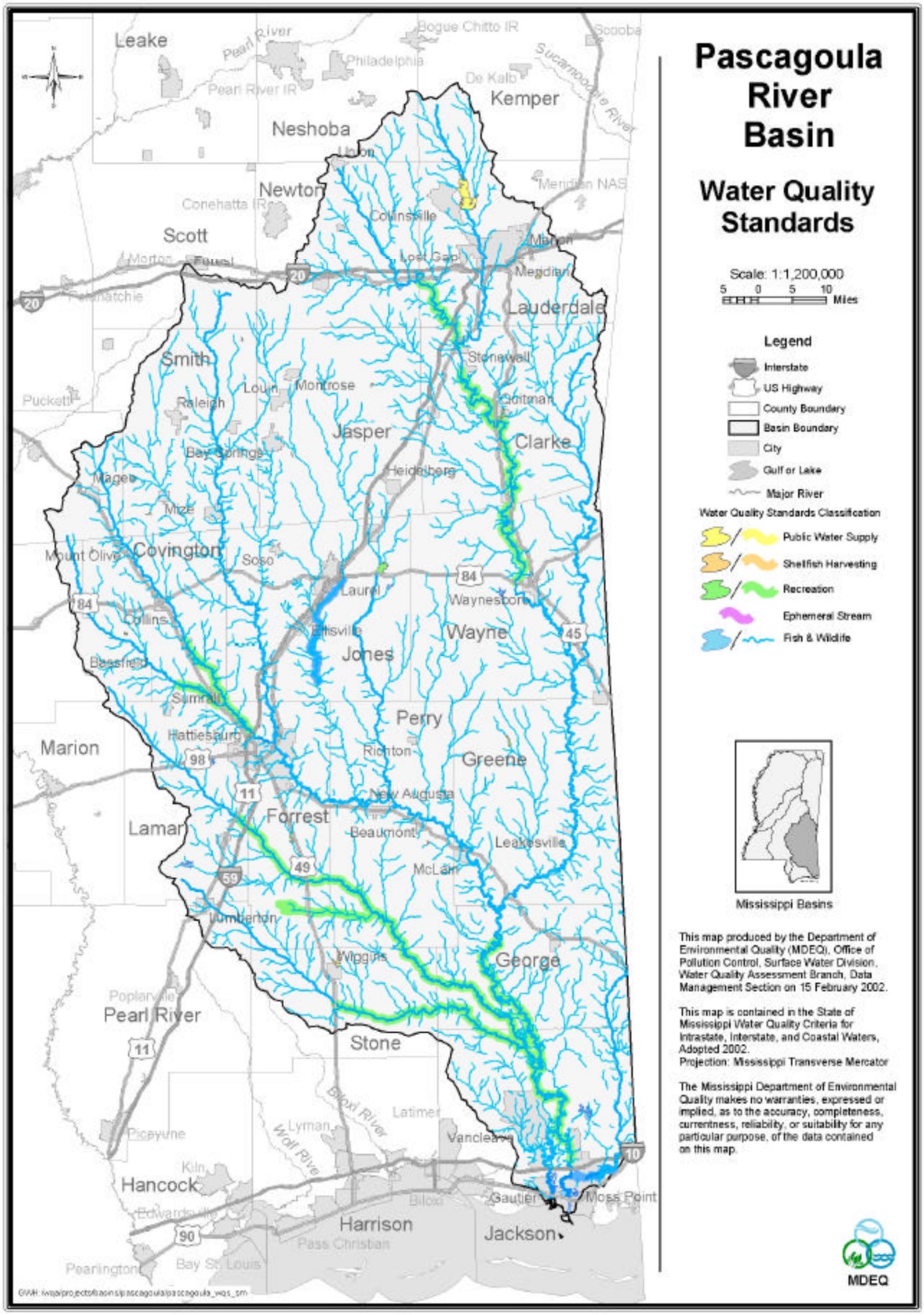
PASCAGOULA RIVER BASIN

Waters	From	To	Classification
Archusa Reservoir	Clarke County		Recreation
Beaverdam Creek	Headwaters Perry-Forrest Counties	Black Creek	Recreation
Black Creek	Highway 11	Pascagoula River	Recreation
Bonita Reservoir	Lauderdale County		Public Water Supply
Bowie Creek	Ms. Hwy. 589	Bowie River	Recreation
Bowie River	Bowie Creek	Interstate 59	Recreation
Chickasawhay River	Stonewall Ms.	Hwy. 84	Recreation
Chunky River	U.S. Hwy. 80	Chickasawhay River	Recreation
Clarke State Park	Clarke County		Recreation
Dry Creek Lake Site #3	W/S SCS	Covington County	Recreation
Escatawpa River	Mile 10	Pascagoula River	Fish and Wildlife[1,3]
Flint Creek Reservoir	Stone County		Public Water Supply & 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

Waters	From	To	Classification
Lake Ross Barnett	Smith County		Recreation
Lake Shongela	Smith County		Recreation
Lakeland Park Lake	Wayne County		Recreation
Long Creek Reservoir	Lauderdale County		Public Water Supply
Okatibbee Reservoir	Lauderdale County		Public Water Supply & Recreation
Okatoma Creek	Seminary (MS Hwy 590)	Bowie River	Recreation
Pascagoula River	6 Mi. North of MS Hwy 26 George County	Smear Bayou Jackson County	Recreation
Red Creek	U.S. Hwy. 49	Big Black Creek	Recreation
Tallahala Creek	1 Mi. N. of Hwy.15	Tallahoma Creek	Fish and Wildlife[2,3]
Turkey Fork Reservoir	Greene County		Recreation

[1] The following dissolved oxygen standard is applicable: The dissolved oxygen shall not be less than 3.0 mg/L.
[2] The following dissolved oxygen standard is applicable: The dissolved oxygen shall not be less than 3.5 mg/L at flows greater than or equal to the 7-day, 10-year low flow.
[3] Remains under EPA review as of June 27, 2003.



Pascagoula River Basin

Water Quality Standards

Scale: 1:1,200,000

5 0 5 10 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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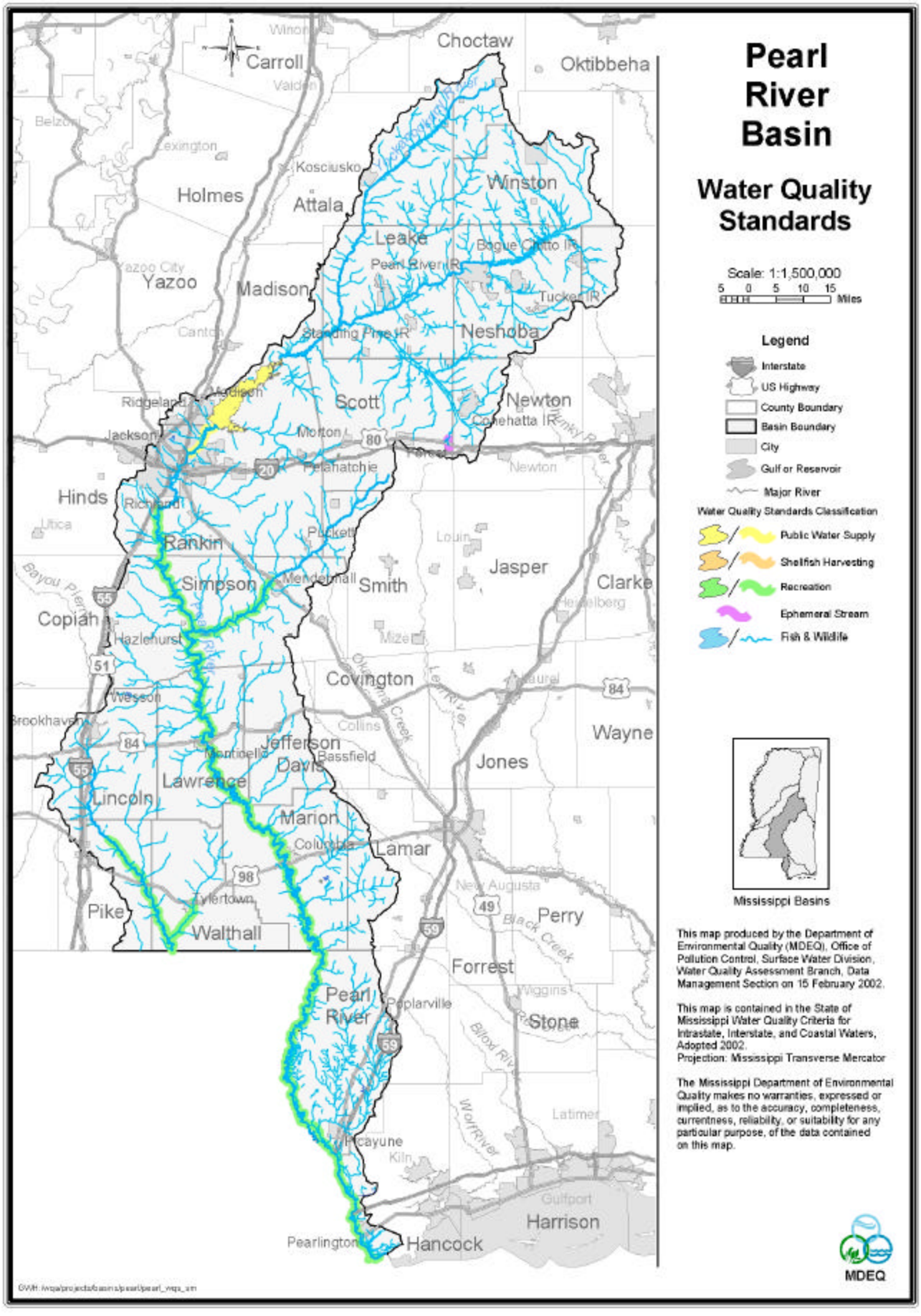
MDEQ

PEARL RIVER BASIN

Waters	From	To	Classification
Barnett Reservoir	River Bend	Township Line between T7N & T8N	Public Water Supply
Barnett Reservoir	Township Line between T7N & T8N	Reservoir Dam	Public Water Supply & Recreation
Bogue Chitto River	Ms. Hwy. 570	MS/LA State Line	Recreation
Lake Columbia	Marion County		Recreation
Lake Dixie Springs	Pike County		Recreation
Magees Creek	U.S. Hwy. 98	Bogue Chitto River	Recreation
Pearl River	Barnett Reservoir	City of Jackson Water Intake	Public Water Supply
Pearl River	Byram Bridge	Miss. Sound	Recreation
Strong River	U.S. Hwy. 49	Pearl River	Recreation
Shadow Lake	Roosevelt State Park Scott County		Recreation
Simpson County Legion Lake	Simpson County		Recreation
Warrior Branch	Lake	Warrior Creek	Ephemeral



Pearl River Basin

Water Quality Standards

Scale: 1:1,500,000

5 0 5 10 15 Miles

Legend

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

Water Quality Standards Classification

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

Mississippi Basins

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MDEQ

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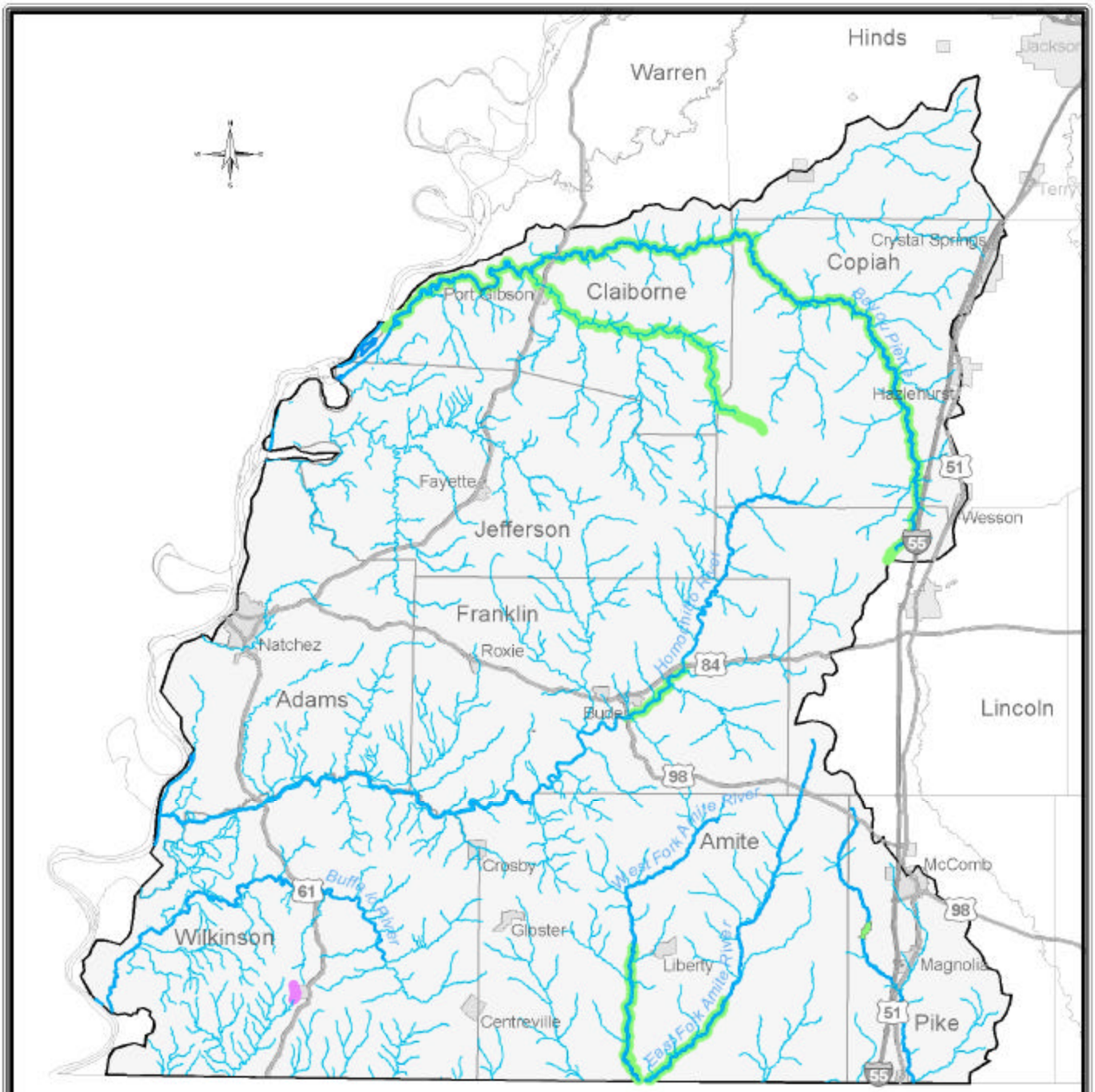
SOUTH INDEPENDENT STREAMS BASIN

Waters	From	To	Classification
Bayou Pierre	Headwaters	Mississippi River	Recreation
Clear Springs Lake	Franklin County		Recreation
East Fork Amite River	MS Hwy 584	MS/LA State Line	Recreation
Homochitto River	U.S. Hwy 84	U.S. Hwy 98	Recreation
Little Bayou Pierre	Headwaters	Bayou Pierre	Recreation
Percy Quinn State Park Lake		Pike County	Recreation
Unnamed Drainage Ditch (Westside Heights)	Woodville	Bayou Sara	Ephemeral
West Fork Amite River	MS Hwy 24	MS/LA State Line	Recreation



South Independent Streams Basin

Water Quality Standards

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Map Projection: Mississippi Transverse Mercator

MDEQ

Mississippi Basins

Scale: 1:800,000

5 0 5 10 15 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
- Lake or Pond

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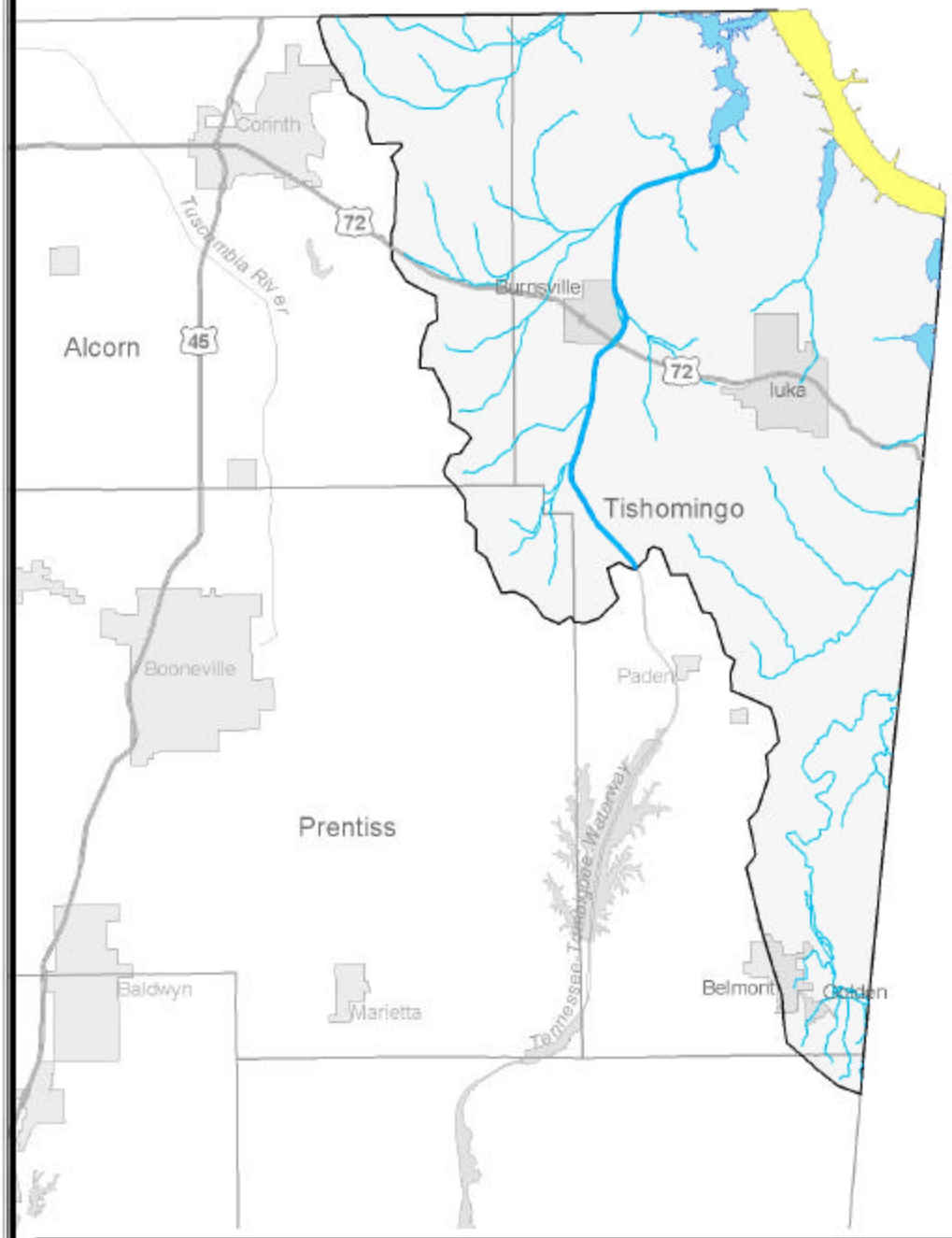
TENNESSEE RIVER BASIN

Waters	From	To	Classification
Tennessee River	MS – AL State Line	MS – TN State Line	Public Water Supply



Tennessee River Basin
Water Quality Standards

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MDEQ

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Mississippi Basins

Scale: 1:400,000

5 0 5 Miles

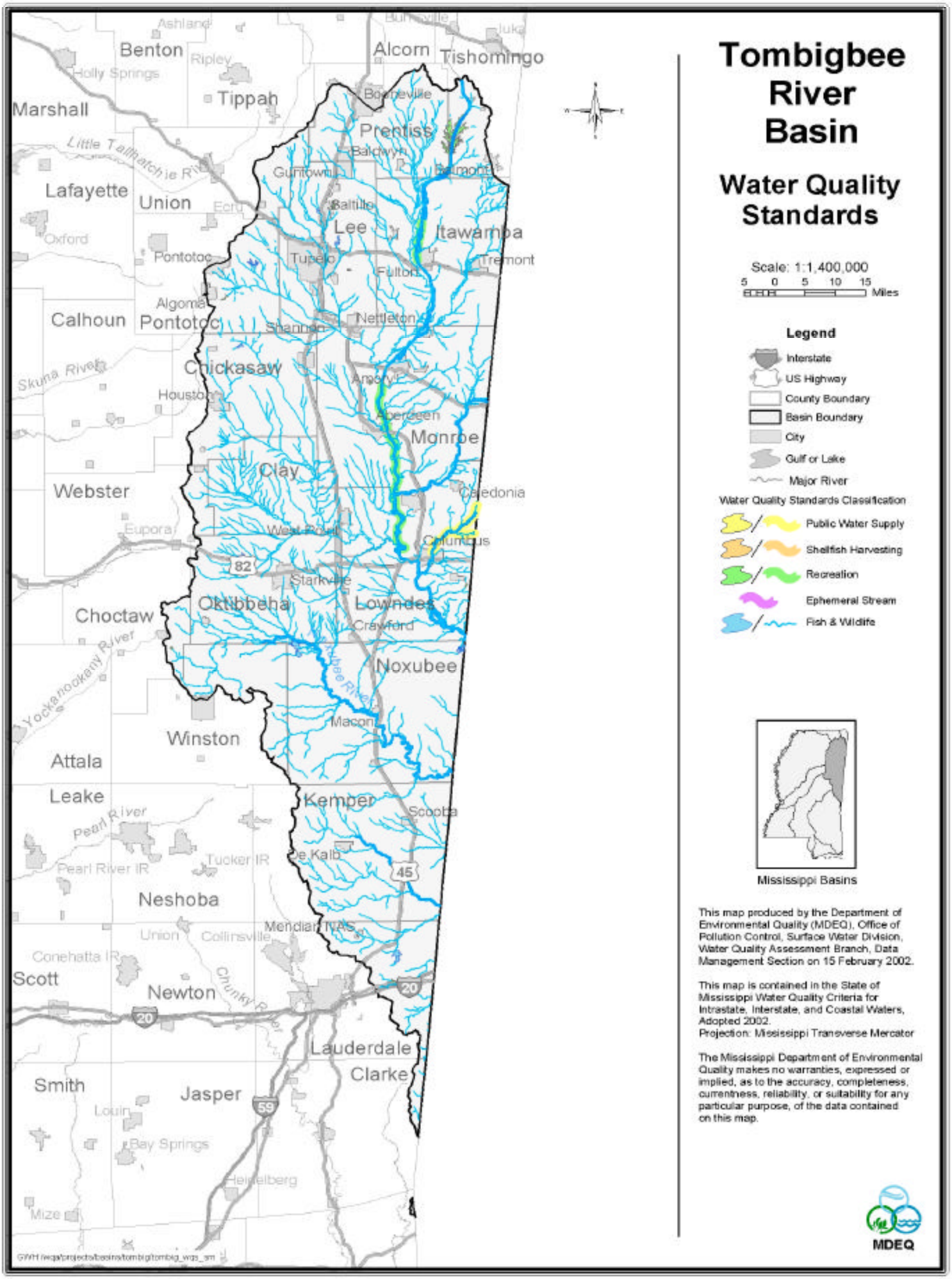
Legend

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	From	To	Classification
Aberdeen Lake Tenn-Tom Waterway	Mile 355.5 Normal Pool Elev 190.0	Mile 364.3	Recreation
Bay Springs Lake Tenn-Tom Waterway	Mile 410.0 Normal Pool Elevation 414.0	Mile 419.0	Recreation
Canal Section Pool "C" Tenn-Tom Waterway	Mile 389.0 Normal Pool Elev 270.0	Mile 396.4	Recreation
Chiwapa Reservoir	Pontotoc County		Recreation
Choctaw Lake	Choctaw County		Recreation
Columbus Lake Tenn-Tom Waterway	Mile 332.9 Normal Pool Elevation 163.0	Mile 355.5	Recreation
Davis Lake	Chickasaw County		Recreation
Lake Lamar	Bruce Lee County		Recreation
Lake Lowndes	Lowndes County		Recreation
Lake Monroe	Monroe County		Recreation
Lake Tom Bailey	Lauderdale County		Recreation
Luxapalila Creek	MS – AL State Line	Highway 50	Public Water Supply
Oktibbeha County Lake	Oktibbeha County		Recreation
Tombigbee State Park Reservoir	Lee County		Recreation
Yellow Creek	MS – AL State Line	Luxapalila 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

MDEQ

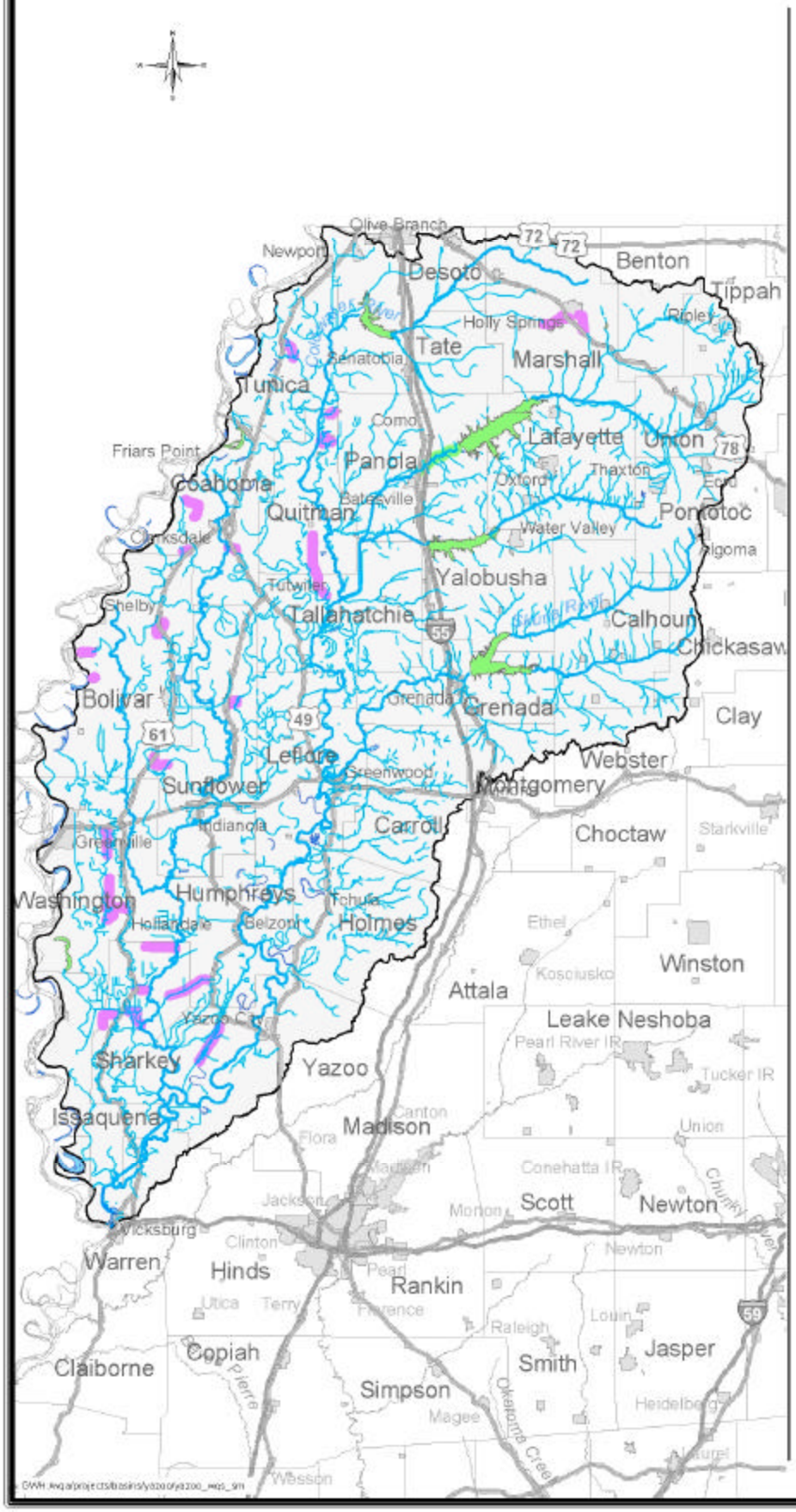
YAZOO RIVER BASIN

Waters	From	To	Classification
Arkabutla Reservoir	DeSoto-Tate Counties		Recreation
Canal #12	Delta City	Big Sunflower River	Ephemeral
Chewalla Reservoir	Marshall County		Recreation
Drainage Ditch #3	Rosedale	Lane Bayou	Ephemeral
Enid Reservoir	Panola-Lafayette-Yalobusha Counties		Recreation
Grenada Reservoir	Grenada County		Recreation
Lake Dumas	Tippah County		Recreation
Lake Washington	Washington County		Recreation
Little Tallahatchie River	Sardis Reservoir	U.S. Hwy. 51	Recreation
Moon Lake	Coahoma County		Recreation
Nunnally Creek	Holly Springs (Lagoons A & #1)	Pigeon Roost Creek	Ephemeral
Sardis Reservoir	Panola-Lafayette Counties		Recreation
Straight Bayou Drainage Main Ditch "A"	Louise	Dowling Bayou	Ephemeral
Tillatoba Lake	Yalobusha County		Recreation
Unnamed Drainage Canal	Anguilla	Big Sunflower River	Ephemeral
Unnamed Drainage Ditch	Town of Arcola	Black Bayou	Ephemeral
Unnamed Drainage Ditch	Town of Beulah	Leban Bayou	Ephemeral
Unnamed Drainage Ditch	Bobo	Annis Brake	Ephemeral
Unnamed Drainage Ditch	Crenshaw	David Bayou	Ephemeral

Waters	From	To	Classification
Unnamed Drainage Ditch (Hollandale)	Farm Fresh Catfish	Black Bayou	Ephemeral
Unnamed Drainage Ditch	Farrell	Overcup Slough	Ephemeral
Unnamed Drainage Ditch	Holly Springs (Lagoon A)	Nunnally Creek	Ephemeral
Unnamed Drainage Ditch	Holly Springs (Lagoon #1)	Nunnally Creek	Ephemeral
Unnamed Drainage Ditch	Holly Springs (Lagoon #3)	Big Spring Creek	Ephemeral
Unnamed Drainage Ditch	Lambert	Muddy Bayou	Ephemeral
Unnamed Drainage Ditch	Leland	Black Bayou	Ephemeral
Unnamed Drainage Ditch	Lurand	Big Sunflower River	Ephemeral
Unnamed Drainage Ditch	Rolling Fork (East Lagoon)	Little Sunflower River	Ephemeral
Unnamed Drainage Ditch	Rolling Fork (West Lagoon)	Indian Bayou	Ephemeral
Unnamed Drainage Ditch	Ruleville	Quiver River	Ephemeral
Unnamed Drainage Ditch	Shaw	Porter Bayou	Ephemeral
Unnamed Drainage Ditch	Shelby	Mound Bayou	Ephemeral
Unnamed Drainage Ditch	Simmons Farm Raised Catfish (Yazoo County)	Lake George	Ephemeral
Unnamed Drainage Ditch	Sledge	David Bayou	Ephemeral
Unnamed Drainage Ditch	Town of Tunica	Whiteoak Bayou	Ephemeral
Unnamed Drainage Ditch	Winstonville	Mound Bayou	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
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Mississippi Basins

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