PART III: SURFACE WATER ASSESSMENT

Chapter 1: Surface Water Monitoring Program

The LDEQ, OEA surface water monitoring program is designed to measure progress towards achieving water quality goals at the State and National levels, to gather baseline data used in establishing and reviewing the state water quality standards, and to provide a data base for use in determining the assimilative capacity of the waters of the state. Information is also used to establish permit limits for wastewater discharges.

The surface water monitoring program consists of a fixed station long-term network, intensive surveys, special studies, and wastewater discharge compliance sampling. Each of these components of the state monitoring program is addressed below.

Fixed Station Long-Term Surface Water Quality Network and Comprehensive Monitoring Strategy

Louisiana's Department of Environmental Quality and its predecessor agencies have maintained a surface water quality monitoring program since the 1950's. This program has consisted of collecting water samples from designated points on waters across the state on a monthly or bimonthly basis. These samples are analyzed for 29 different conventional parameters and for fecal coliforms. In addition to the conventional parameters, volatile organic compounds (VOCs) are sampled at some sites. A priority pollutant scan is run quarterly on samples from Mississippi River sites. All parameters monitored for water quality purposes are listed in Table 3.1.1. The purposes of this program are to provide baseline or background data on a water body and to monitor long-term trends in water quality. Over the years, monitoring stations have been discontinued or added as needs or conditions changed.

The U.S. EPA has recommended that States take a watershed approach with their water quality programs. In light of these issues, the LDEQ has focused its water quality monitoring efforts o water bodies where there is a lack of water quality data within target watersheds, or basins.

The revised monitoring program operates on a five-year cycle with sample collections occurring in two or three basins each year and rotating from year to year. In this manner, the entire state will have been covered by the end of the five years. Upon completion of the first five-year period, the cycle will start again. The target watersheds were prioritized based on the State's 1996 list of impaired waters, also known as the § 303(d) list. The monitoring strategy will be to conduct focused monitoring efforts within the selected basins each year. Water bodies lacking water quality data will be given priority for monitoring. Water quality monitoring at selected long-term trend sites on larger rivers, bayous and Lake Pontchartrain will be continued statewide, but other routine sampling will be discontinued except in the targeted basins. All sites are sampled on a monthly basis. This approach will allow for intensive monitoring in previously unsampled water bodies and continued trend monitoring of the major rivers of the state, providing comprehensive monitoring of the state's surface waters over a five-year cycle. The sampling schedule for each basin is listed in Table 3.1.2.

Samples collected from the stations are analyzed in the LDEQ laboratory (conventionals and organics), Louisiana Department of Health and Hospitals laboratory (fecals), or a contract lab (metals) using procedures detailed in the State and EPA approved Quality Assurance Project Plan (LDEQ, 1994a). A listing of ambient water quality monitoring stations utilized in this assessment is provided in Appendix E.

Table 3.1.1

Parameters monitored under Louisiana's ambient water quality monitoring network. Not all parameters are monitored at all sites. As of March 2002.

Conventional analysis (all sites)

pH	temperature
dissolved oxygen	salinity
alkalinity	hardness
turbidity	field conductivity
specific conductance	true color
sulfates	chlorides
Secchi disk	sodium
total dissolved solids	total suspended solids
arsenic*	cadmium*
chromium*	copper*
mercury*	lead*
nickel*	nitrate and nitrite nitrogen
ammonia nitrogen	total Kjeldahl nitrogen
total phosphorous	total organic carbon
coliform bacteria	

*Metals sampling and analysis is done quarterly

Volatile organic analysis (All sites)

Bromodichloromethane	Carbon Tetrachloride
1,2-Dichloroethane (EDC)	Bromoform
Chloroform	Toluene
Benzene	Chlorobenzene
Dibromochloromethane	Chloroethane
Ethylbenzene	Bromomethane
Chloromethane	Methylene Chloride
Tetrachloroethene	Trichlorofluoromethane
1,1-Dichloroethane	1,1-Dichloroethene
1,1,1-Trichloroethane	1,1,2-Trichloroethane
1,1,2,2-Tetrachloroethane	1,2-Dichlorobenzene
1,2-Dichloropropane	trans-1,2-Dichloroethene
1,3-Dichlorobenzene	1,4-Dichlorobenzene
trans-1,3-Dichloropropene	cis-1,3-Dichloropropene
Vinyl Chloride	Trichloroethene
Methyl Tertiary Butyl Ether (MTBE)	

Table 3.1.1 (Continued)

Parameters monitored under Louisiana's ambient water quality monitoring network. Not all parameters are monitored at all sites. As of March 2002.

Semivolatile organic analysis (Mississippi River sites only)

Acenaphthalene	Acenaphthene	Anthracene
Benzo(b)Flouranthene	Benzo(k)Flouranthene	Benzo(a)Pyrene
bis(2-Chloroethyl) ether	bis(2-Chloroethoxy) Methane	bis(2-Chloroisopropyl)ether
butyl Benzyl Phthalate	Chlorobenzene	Chrysene
Diethylphthalate	Dimethylphthalate	Fluoranthene
Fluorene	Hexachlorocyclopentadiene	Hexachloroethane
indeno(1,2,3,-cd)Pyrene	Isophorone	n-Nitroso-di-n-Propylamine
n-Nitrosodiphenylamine	n-Nitrosodimethylamine	Nitrobenzene
4-Chloro-3-Methylphenol	Phenanthrene	Pyrene
Dibenzo(g,h,i)Perylene	Benzo(a)Anthracene	1,2-Dichlorobenzene
1,2,4-Trichlorobenzene	Dibenzo(a,h)Anthracene	1,3-Dichlorobenzene
1,4-Dichlorobenzene	2-Chloronaphthalene	Chlorophenol
2-Nitrophenol	di-n-Octylphthalate	2,4-Dichlorophenol
2,4-Dimethylphenol	2,4-Dinitrotoluene	2,4-Dinitrophenol
2,4,6-Trichlorophenol	2,6-Dinitrotoluene	3,3'-Dichlorobenzidine
4-Bromophenylphenyl Ether	4-Chlorophenylphenyl ether	4-Nitrophenol
2-Methyl-4,6-Dinitrophenol	Phenol	Naphthalene
Pentachlorophenol, (PCP)	bis(2-Ethylhexyl)Phthalate	di-n-Butyl Phthalate
Benzidine	Hexachlorobenzene	Hexachlorobutadiene
1,2,3-Trichlorobenzene	1,3,5-Trichlorobenzene	1,2,4,5-Tetrachlorobenzene
1,2,3,4-Tetrachlorobenzene	Pentachlorobenzene	

Pesticides (Mississippi River sites only)

delta-Benzene Hexachloride	Endosulfan Sulfate
Endosulfan II	Endosulfan I
Endrin Aldehyde	4,4'-DDT
4,4'-DDD	4,4'-DDE
Aldrin	alpha-Benzene Hexachloride
beta-Benzene Hexachloride	gamma-Benzene Hexachloride
Chlordane	Dieldrin
Endrin	Toxaphene
Heptachlor	Heptachlor epoxide
Endrin Ketone	Methoxychlor

Polychlorinated biphenyls (Mississippi River sites only)

Aroclor 1016 (PCB)	Aroclor 1221 (PCB)
Aroclor 1232 (PCB)	Aroclor 1242 (PCB)
Aroclor 1248 (PCB)	Aroclor 1254 (PCB)
Aroclor 1260 (PCB)	

Table 3.1.2

Five-year sampling schedule for Louisiana's ambient water quality monitoring network.

Basin	First Calendar Year	Second Calendar Year
Mermentau River	1998	2003
Vermilion-Teche	1998	2003
Calcasieu River	1999	2004
Ouachita River	1999	2004
Barataria	2000	2005
Terrebonne	2000	2005
Mississippi River	2001	2006
Lake Pontchartrain	2001	2006
Pearl River	2001	2006
Red River	2002	2007
Sabine River	2002	2007
Atchafalaya River	2002	2007

Water Quality Data Storage

Following water quality sample collection and laboratory analysis, the resulting data is input by personnel with the Environmental Planning Division, Planning and Assessment Section. Personnel with the regional offices, Surveillance Section, conduct all ambient sample collection. Data from the LDEQ laboratory is currently transferred electronically to an Access database developed by personnel with the Office of Environmental Assessment. The current Access database will soon be converted into an Oracle system with Access front-end and query features. Metals and fecal coliform data is currently hand entered into the Access database, but it is hoped this can be converted to electronic data transfer in the near future. Data is retrieved using Access queries and SAS, Access or Excel programs are used for data analysis. All data is checked and verified twice during entry to assure accuracy.

Stage/Flow and Hydrology

The Environmental Planning Division (EPD) obtains stage and flow data from the U.S. Geological Survey (USGS) for 16 stations in the fixed station network. USGS provides this information to EPD through an interagency agreement. USGS also provides assistance in gathering flow/discharge data for additional stream surveys as needed.

Toxic Substances Monitoring Program

Environmental Surveillance Division (ESD) activities include collection of environmental samples for analyses of toxic substances including pesticides and other anthropogenic organic compounds. Samples analyzed to date encompass various environmental matrices including ambient water, industrial and municipal effluents, fish, shellfish and sediments. Due to limited State funding, emphasis is placed on areas of known contamination and the basins in the current rotation. Other areas with potential toxic substance concerns are also included as part of special studies. A few of these are listed below.

The Mississippi River Toxics Inventory Project (MRTIP) was a three-year study of fish and shellfish tissues begun in 1990. It was designed to test for the presence of a variety of organic and inorganic contaminants in fish tissue. This study concluded that no fish consumption advisories were required for the Mississippi River.

In addition to the MRTIP, LDEQ maintains an ambient water monitoring network of three sites on the Mississippi River. This network tests samples of Mississippi River water for the presence of volatile organic compounds, polychlorinated biphenyls (PCBs), acid/base neutrals (ABNs), chlorinated organics, phenols and organochlorine pesticides at all three sites on a quarterly basis. From January 2000 to December 2001, 98 sites in 97 subsegments across the state were sampled for the above compounds, including the three Mississippi River sites.

Fish Tissue Monitoring Activities

With the exception of a statewide mercury study, the ESD does not maintain a regular fish tissue monitoring program. However, fish are frequently sampled in response to significant complaints, as a result of enforcement actions, or in response to other problems as they occur. For example, fish sampling and tissue analysis was done as part of the Mississippi River Toxics Inventory Project. Fish taken from Bayou d'Inde and the Calcasieu River near Lake Charles, and Sibley Lake near Natchitoches are being analyzed as a result of enforcement actions taken against companies discharging to these two water bodies. Results of these tissue analyses are forwarded to the LDEQ and LDHH for statistical and risk assessment analysis.

The LDEQ is currently conducting a statewide study to locate water bodies where some fish species have been contaminated with mercury. To date well over 350 sites have been tested, resulting in fish consumption advisories due to mercury on twenty water bodies. These and other advisory water bodies can be found in Part 3, Chapter 7. Up-to-date water quality advisory information can be found on the LDEQ Website at www.deq.state.la.us or by calling 1-888-293-7020.

In addition to the sampling efforts described above, the LDEQ keeps abreast of fish contamination research done in Louisiana and other states. The current mercury study is a prime example of this. In this instance, research done in Wisconsin and Florida was used to assist in setting priorities for which water bodies are to be sampled and in what order. This enabled LDEQ to target those water bodies that are both popular fishing areas and most at risk to contain mercury contaminated fish. As of October 2002, all major water bodies in the state have been sampled at least once. The sampling team is now focusing on smaller water bodies as well as resampling water bodies with known mercury problems.

Intensive Water Quality Surveys

The Environmental Evaluation Division (EED) of the OEA conducts intensive stream surveys to provide physical, chemical and some biological data necessary to define water quality problems and to calibrate and verify mathematical models for development of total maximum daily loads (TMDLs) and wasteload allocations (WLAs). Data acquired through these surveys is also used to assess and revise water quality standards. These surveys provide a part of the basic water quality data required for the development and revision of the state water quality management plan. The LDEQ has set up a program of reference stream sampling to provide data to assist in the assessment and revision of water quality standards and to provide background data for TMDLs and WLAs on impacted streams.

TMDL Status

The Environmental Technology Division (ETD) has focused on TMDL development for water bodies listed on the § 303(d) list and will continue to do so until all water bodies requiring a TMDL have been addressed. TMDLs have been completed for the Mermentau and Vermilion-Teche River Basin water bodies that were listed for dissolved oxygen, and reported in the 2000 *Water Quality Inventory*. The ETD is currently working with EPA to complete dissolved oxygen TMDLs for the Ouachita and Calcasieu River Basins. These water bodies and their status are listed in Table 3.1.3. Based upon an agreement between LDEQ and U.S. EPA, some TMDLs are developed by U.S. EPA and/or U.S. EPA contractors. These TMDLs are submitted to LDEQ for review. The ETD is also currently developing TMDLs for several water bodies in the Calcasieu River basin that were listed for lead.

Table 3.1.3

Louisiana Department of Environmental Quality, Environmental Technology Division, Engineering Services Group 2 total maximum daily load progress for FY 2000-2001.

Stream Name	Status	Date Completed
English Bayou	Approved TMDL	12/30/1997
Calcasieu River (030101)	In Progress	N/A
Mill Creek (030104)	Draft report submitted to EPA	12/13/01
Lake Charles (030302)	In Progress	N/A
Contraband Bayou (030305)	In Progress	N/A
Barnes Creek (030601, 030602)	In Progress	N/A
Marsh Bayou (030603)	Draft report submitted to EPA	9/25/01
Bayou Serpent (030701)	Draft report submitted to EPA	12/13/01
West Fork Calcasieu (030801)	In Progress	N/A
Little River (030804)	Technically approved, Final report submitted to EPA	3/30/01
Indian Bayou (030805)	Technically approved, Final report submitted to EPA	3/30/01
Houston River (030806)	Draft report submitted to EPA	9/25/01
Bear Head Creek (030807)	Draft report submitted to EPA	12/13/01
Ouachita River (080101)	In Progress	N/A
Bayou Chauvin (080102)	Draft report submitted to EPA	12/7/01
Castor Creek (081501)	Draft report submitted to EPA	9/28/01
Flat Creek (081504)	Approved TMDL	11/13/01
Beaucoup Creek (081503)	Approved TMDL	2/25/00
Middle Fork Bayou D'Arbonne	Draft report received from EPA	10/6/01
Bayou D'Arbonne (080603)	Draft report received from EPA	10/6/01
Corney Bayou (080607)	Draft report received from EPA	10/6/01
Bayou Desiard (080701)	In Progress	N/A
Boeuf River (080901)	In Progress	N/A
Big Creek (080903)	Draft report submitted to EPA	9/25/01
Turkey Creek (080906)	In Progress	N/A
Crew Lake (080909)	Draft report submitted to EPA	12/7/01
Dugdemona River (081401)	Draft report submitted to EPA	12/7/01

- **Note: The TMDLs completed for the water bodies listed in Table 3.1.3 are for oxygen-demanding substances.**

Special Studies

The OEA and OEC plan or conduct special studies in reported or known problem areas or concerning particular issues. Some of these studies have included fish tissue contamination with mercury, nonpoint source pollution studies, a study of the closure of oyster harvesting areas, acid deposition, and studies of toxics-contaminated water bodies.

Biotoxicity Monitoring Summary

In the past, LDEQ's Bioassay Laboratory analyzed eight random water samples on a monthly basis (one from each regional office) and two specific water samples (from the Mississippi River at St. Francisville and Pointe a la Hache). In the year 2000 three samples were analyzed per month from the Mississippi River. The Plaquemine site was recently added to the monthly sampling of the Mississippi River. In addition to the monthly testing, ambient water samples are collected as a result of fish kills, complaints, spills or special studies. Generally, a chronic vertebrate test and a chronic invertebrate test are initiated on fresh water samples. A chronic vertebrate test and an acute vertebrate test are usually initiated on saline samples. The test species

utilized and the methods used follow U.S. EPA protocols as closely as possible. Acute testing, utilizing both a vertebrate and an invertebrate species, are initiated on most fish kills, complaints and spills. Acute and chronic tests are initiated in special studies depending on the scope of the study. Acute tests can be either static renewal, in which the sample water is replaced daily; or static non-renewal, in which the organisms are exposed to the same water for the entire testing period. Acute tests run for 24, 48 or 96 hours. Chronic tests are static renewal and run for approximately one week.

Since the Bioassay Laboratory only analyzes three or four random sites monthly, individual sites are not tested frequently. Therefore, caution should be exercised when interpreting bioassay data. If a test result is positive for toxicity it does not by itself indicate that a water body is toxic to aquatic organisms. Problems in some streams may be incidental in nature. Every effort is made to retest sites where toxicity has been found. Also, Regional Coordinators are contacted, as they have the most knowledge about activities and problems in their regions. The LDEQ recognizes that a potential for false readings exists. On occasion, samples may be found to be toxic when in actuality outside factors caused the test to fail. Factors such as stress on the organisms, poor synthetic water quality conditions or environmental factors that act synergistically with certain elements can cause water quality degradation in the sample. This degradation may lead to false toxicity results. For example, the toxicity threshold of metals has a linear response in relation to the hardness of water. As hardness is lowered the toxicity of many metals increases and can directly impact the organisms in the lab.

Based on the above discussion, it is important to note that biotoxicity monitoring cannot be utilized as the only determinant of the existence of pollution in a water body. Rather, biotoxicity monitoring must be considered along with other reliable data sources such as water quality monitoring, sources of pollution, and water sample test results for organic and inorganic contaminants. The LDEQ will continue to perform biotoxicity monitoring as an additional tool for the determination of water quality.

Chapter 2: Assessment Methodology and Summary Data

2002 Water Quality Assessment Procedures

Assessment procedures used by Louisiana have been developed over a number of years for use in previous § 305(b) reports and § 303(d) lists. Procedures follow EPA guidance documents for § 305(b) assessments, as well as Louisiana's surface water quality standards, Environmental Regulatory Code (ERC) 33:IX.1101-1123. Sampling and assessment for the 2002 § 305(b) Report and subsequent § 303(d) focused on waterbodies in four watershed basins and 21 statewide long-term sites. In an effort to obtain more detailed information on the quality of Louisiana waters, more individual waterbodies within each of the twelve basins of Louisiana are being sampled on a rotating basis. As a result, new, detailed water quality information will be available on nearly every waterbody subsegment within each of the twelve basins every five years. The four basins targeted for monitoring during the past two years were Barataria and Terrebonne Basins (2000 rotation), and Pontchartrain, Pearl and Mississippi Basins (2001 rotation). The current (2002) monitoring rotation of the Atchafalaya, Red and Sabine Basins ends in December 2002. Louisiana's rotating basin approach addresses the problem of an insufficient amount of information on many of the state's waterbodies, and the consequent gaps in assessments found in earlier § 305(b) reports. Assessment information on the eight basins not sampled extensively during 2000 and 2001 was carried over from the previous, 1998 or 2000, § 305(b) reports, as needed. For more information on LDEQ's new surface water quality monitoring program please see Part 3, Chapter 1.

For this assessment, field staff collected field analysis and laboratory samples monthly. Laboratory samples were sent to LDEQ's water laboratory in Baton Rouge (conventional parameters), one of several Louisiana Department of Health and Hospitals (LDHH) laboratories (fecal coliform), or a contract lab (metals). Data from the LDEQ laboratory was entered into a LIMS system by laboratory staff. After receiving datasheets from the laboratory, data was entered into a FOCUS database on the central computer by the Standards, Assessment and Nonpoint Source Section, Office of Environmental Assessment. Data from LDHH and the contract laboratory was also entered into the central database at LDEQ.

At the beginning of this assessment cycle, FOCUS and SAS programs were reviewed and updated as necessary to reflect changes in time frame, subsegments, criteria, and assessment methods. A SAS statistical program was then utilized to compare ambient numerical data to criteria for each waterbody and designated use. Louisiana Water Quality Standards define eight designated uses for surface waters: primary contact recreation (PCR), secondary contact recreation (SCR), fish and wildlife propagation (FWP), drinking water supply (DWS), shellfish propagation (SFP), agriculture (AGR), outstanding natural resource (ONR), and limited aquatic and wildlife use (LAW). Designated uses and criteria and for each waterbody subsegment are listed in the Louisiana Environmental Regulatory Code (ERC) 33:IX.1123. Each waterbody was evaluated as fully supporting, partially supporting, or not supporting each of its designated use(s), using the decision process shown in Table 1. However, assessments resulting in partial support were reported as not supporting for § 305(b) and § 303(d) purposes. Where more than one parameter and criteria defines a designated use, support for each designated use was defined by its poorest performing (most severely impaired) parameter. Likewise, where data from more than one sample station was available, the most severely impaired station was used to make the assessment.

Table 3.2.1

Decision process for evaluating use support, showing measured parameters for each designated use; Louisiana's 2002 § 305(b) Report.

Designated Use	Measured Parameter	Support Classification for Measured Parameter		
		Fully Supporting	Partially	Not Supporting
Primary Contact Recreation (PCR) (Designated swimming months of May-October, only.)	Fecal coliform[1]	0-25% do not meet criteria	-	>25% do not meet criteria
	Temperature	0-30% do not meet criteria	>30-75% do not meet criteria	>75% do not meet criteria
Secondary Contact Recreation (SCR) (All months)	Fecal coliform[1]	0-25% do not meet criteria	-	>25 % do not meet criteria
Fish and Wildlife Propagation (FWP)	Dissolved oxygen[2]	0-10% do not meet minimum of 3.0 ppm and median > criteria of 5.0 ppm	-	>10% do not meet minimum of 3.0 ppm or median < criteria of 5.0 ppm
	Dissolved oxygen[3]	0-10% do not meet criteria	>10-25% do not meet criteria	>25% do not meet criteria
	Temperature, pH, chloride, sulfate, TDS	0-30% do not meet criteria	>30-75% do not meet criteria	>75% do not meet criteria
	Metals[4] and Toxics	< 2 exceedances of chronic or acute criteria in **most recent consecutive** 3-year period, or 1-year period for newly tested waters	-	2 or more exceedances of chronic or acute criteria in **most recent consecutive** 3-year period, or 1-year period for newly tested waters
Drinking Water Source (DWS)	Color, Fecal coliform	0-30% do not meet criteria	>30-75% do not meet criteria	>75% do not meet criteria
	Metals and Toxics	< 2 exceedances of drinking water criteria in **most recent consecutive** 3-year period, or 1-year period for newly tested waters		2 or more exceedances of drinking water criteria in the **most recent consecutive** 3-year period, or 1-year period for newly tested waters
Outstanding Natural Resource (ONR)	Turbidity	0-10% do not meet criteria	>10-25% do not meet criteria	>25% do not meet criteria
Agriculture (AGR)	None	-	-	-
Oyster Production (SFP)	Fecal coliform[1]	0-25% do not meet criteria	-	>25% do not meet criteria
Limited Aquatic and Wildlife (LAW)	Dissolved oxygen[3]	0-10% do not meet criteria	>10-25% do not meet criteria	>25% do not meet criteria

Table 3.2.1

Decision process for evaluating use support, showing measured parameters for each designated use; Louisiana's 2002 § 305(b) Report.

1. For most waterbodies, criteria is as follows: PCR, 400 colonies/100 mL; SCR, 2,000 colonies/100 mL; DWS, 2,000 colonies/100 mL, SFP, 43 colonies/100 mL (see LAC 33:IX.1123).
2. Waterbodies without a special study to establish specific criteria for D.O.
3. Waterbodies for which a special study has been conducted to establish criteria for D.O.
4. Marine metals criteria were used for all water bodies with the designated use of shellfish propagation. Freshwater metals criteria were used for all other water bodies.

Numerical data collected over the past five years, where available, was compiled for each assessment. The range of data used for the 2002 305(b) Report was 1 January 1997 to 31 December 2001. For many sampling sites, however, (e.g. new sites, added under the rotating basins monitoring plan), only six to twelve months of data were available at reporting time. For most parameters and criteria, at least five samples were required for the assessment to be considered valid. Ambient data used for analysis depended on designated use(s) for each waterbody and the availability of numerical water quality criteria. Parameters used could include any or all of the following: dissolved oxygen, temperature, pH, turbidity, fecal coliform bacteria, chloride, sulfate, total dissolved solids, and metals. Because metals samples were only collected a maximum of four times during each basins ambient monitoring rotation, three samples were considered acceptable for assessment screening purposes based on the Quality Assurance Project Plan developed by LDEQ and approved by EPA Region 6. If metals criterion exceedances were noted, additional sampling using clean metals techniques would be initiated. Organic and inorganic compound data were not incorporated into the SAS assessment programs described above. However, where available this type of information was considered in the assessments. Although most waterbodies only had one year of data available for assessment purposes some long-term trend sites had additional data available. EPA guidance recommends the use of up to three years of data, when available, for assessing metals and organic or inorganic compounds. Therefore, where additional data for metals and organic or inorganic compounds was available the range of data used in the 2002 § 305(b) Report was 1 January 1999 to 31 December 2001.

While water quality data is collected for nitrogen and phosphorus, numerical criteria have not yet been established for these nutrients. Therefore, numerical assessments could not be conducted on those waterbodies suspected of having nutrient impairments. These waterbodies were classified as CALM Category 2 due to a lack of information needed to make a valid assessment. When numerical criteria become available nutrient data will be reexamined to determine use support related to nutrients.

Numerical turbidity criteria have only been established for outstanding natural resources waters, lakes, estuarine waters, and selected larger rivers. As a result, turbidity could only be assessed for those waterbodies for which numerical turbidity criteria have been established. Where siltation and or total suspended solids were also suspected as impairments in EPA's Attachment A, turbidity was used as a surrogate indicator of use support for these parameters where numerical turbidity criteria were available.

In order to get results more representative of Louisiana waters, LDEQ's modified assessment procedure was used when assessing dissolved oxygen (DO) in most waterbodies. To allow for natural fluctuations in DO data, a two-value assessment procedure was utilized in the year 2000 and 2002 assessment. As shown in Table 3.2.1, both a minimum value and the median value were utilized. In this manner, waterbodies were checked for sufficient dissolved oxygen to sustain aquatic life, yet were allowed to exhibit natural fluctuations characteristic of Louisiana waters. For waterbodies that have been studied individually in order to set site specific DO criteria, the assessment method found in EPA guidance was utilized.

In addition to use of numerical data, LDEQ regional staff members were asked for input regarding suspected significant sources of impairment, or if impairment was actually occurring. It was anticipated that numerical data alone might suggest impairment for some Louisiana waterbodies when in fact there was no impairment or the impairment was due exclusively to natural causes. In all cases, regional staff more familiar with the area would be able to suggest one or more suspected sources for a waterbody's

impairment. Using the best professional judgment of regional staff provides valuable input regarding the quality of individual waterbodies.

All resulting assessment information, including waterbody name, size, type, designated uses, use support, suspected causes and suspected sources of impairment were entered into an Access database developed for the U.S. EPA by Research Triangle Institute. States are being encouraged by EPA to use this database, known as Assessment Database (ADB), in order to provide more consistent reporting at a national level.

Section 303(d) List of Impaired Water Bodies

Section 303(d) of the Clean Water Act requires the identification, listing, and ranking for development of Total Maximum Daily Loads (TMDLs) for waters that do not meet applicable water quality standards after implementation of technology-based controls. The 2002 э 303(d) List was prepared using existing and readily available water quality related data and information in order to comply with rules and regulations under э 303(d) of the Federal Water Pollution Control Act (CWA) (33 U.S.C. э 1313 and 40 CFR Chapter 1 э 130.7). In most cases, water quality assessments and possible § 303(d) listing are based on specific subsegments as defined in Louisiana's Environmental Regulatory Code (ERC) 33:IX.1123, Table 3.

In April 2002 EPA entered into a Consent Decree regarding the development of Louisiana's § 303(d) List and a schedule for subsequent development of TMDLs in Louisiana. As part of this Consent Decree, EPA created "Attachment A." Under terms of the Consent Decree, Louisiana's CWA § 303(d) List was represented in its entirety by Attachment A. However, provisions of the Consent Decree made it clear that subsequent § 303(d) Lists created by Louisiana would supercede Attachment A of the Consent Decree. Therefore, as required by the CWA § 303(d) Louisiana prepared a new 2002 § 303(d) list using the assessment procedures and CALM guidance described in this chapter. As of this writing, the 2002 § 303(d) list is in 30-days public notice and will be submitted to U.S. EPA following completion of the 30-day period and LDEQ's response to comments.

2002 § 303(d) List Development

The 2002 § 303(d) List represents a compilation of four different sources of information. The starting point for the 2002 § 303(d) List was EPA's Attachment A taken from the 2002 Consent Decree. Second, all delisting or TMDL activities that occurred after creation of Attachment A were taken into account. Third, all waterbodies under a fish consumption or swimming advisory were noted. Finally, data assessment results from Louisiana's 2002 § 305(b) Report were accounted for. If there was no 2002 § 305(b) data assessment for a specific waterbody but valid data assessments were available from previous § 305(b) reports, these assessments were considered in determining use support. In rectifying these sources, EPA's current guidance on Consolidated Assessment and Listing Methodology (CALM) was used to determine what waterbodies were formally included on Louisiana's 2002 § 303(d) List. Using CALM guidance, all suspected waterbody/impairment combinations identified by Attachment A or the 2002 § 305(b) Report were assigned to one of seven categories (Table 2).

Table 3.2.2

Environmental Protection Agency Consolidated Assessment and Listing Methodology (CALM) guidance categories used to categorize waterbody/pollutant combinations for Louisiana's 2002 § 303(d) list.

CALM Category	CALM Category Description
Category 1	Waterbody or formerly listed impairment is now attaining all uses and standards.
Category 2	Waterbody is meeting some uses and standards but there is insufficient data to determine if other formerly listed impairments are attaining uses and standards.
Category 3	There is insufficient data to determine if any uses and standards are being attained.
Category 4a	Waterbody is impaired for one or more uses, but a TMDL has been completed for the specific impairment.
Category 4b	Waterbody is impaired for one or more uses, but other control measures are expected to result in attainment of designated uses.
Category 4c	Waterbody is impaired for one or more uses, but a pollutant does not cause the impairment.
Category 5	Waterbody is impaired for one or more uses, and a TMDL is required for the specific impairment.

CALM guidance was used to assign entire waterbody subsegments to the 2002 § 303(d) List. However, CALM guidance was also used to categorize specific suspected waterbody/impairment combinations in order to narrow the focus on what impairments require development of a TMDL for each assessed waterbody subsegment. Suspected waterbody/impairment combinations not placed on the 2002 § 303(d) List are accounted for in the full 2002 § 305(b) Report. If necessary, these suspected waterbody/impairment combinations will be addressed with additional monitoring to determine if use impairment is occurring, or the suspected impairment will be addressed by corrective actions other than development of a TMDL. In the case of known impairments to small waterbodies that lie within a larger regulatory subsegment, the smaller waterbody was also named in the 2002 § 303(d) List. Impairments of this nature are waterbody specific advisories not directly related to the overall subsegment.

In the process of rectifying EPA's Attachment A with 2002 § 305(b) Report assessments, along with other related information, a series of scenarios developed that required decisions on how to categorize each waterbody impairment. All assessment information was ultimately placed in EPA's Assessment Database (ADB) for use as part of Louisiana's § 305(b) Report submittal to EPA. An Excel spreadsheet (2002 Consolidated Report) was also developed to allow categorization of all previously identified impairments from Attachment A, as well as new impairments identified by the 2002 § 305(b) assessment process. Waterbody/impairment combinations previously identified in Attachment A but now found to be in Category 1 were omitted from ADB and placed in Category 1 of the Excel spreadsheet. Waterbody/impairment combinations found to be in Categories 2-5 were placed in ADB, with the appropriate category noted in the comments field of the impairment input screen. Louisiana's 2002 § 303(d) List consists of only those waterbody/impairment combinations found in Category 5 of the Excel spreadsheet.

Decision Process for 2002 305(b)/303(d)
CALM Category Listing

1. All impairments (CALM Categories 2-5) found in either U.S. EPA's Consent Decree Attachment A § 303(d) list (Attachment A), or through the 2002 § 305(b) assessment process are recorded in both the ADB (Assessment Database) and the 2002 Consolidated Report (ConRep) spreadsheet. CALM Categories assigned to each impairment should be the same for both ADB and ConRep.

2. If Attachment A reports an impairment(s) **without** supporting data or criteria on which to base the listing, record that impairment(s) in ADB and in ConRep as CALM Category 2 for insufficient data. ADB does not contain a field for CALM Categories for each individual impairment; therefore, the CALM Category number is to be placed in the comments field under impairments.
3. If Attachment A reports an impairment(s) for which Louisiana has a data-based assessment from the 1998, 2000 or 2002 § 305(b) reports showing full support for that parameter, record in ADB and ConRep as fully supported, CALM Category 1.
4. If "mercury" is reported as an impairment based on the presence of a fish consumption advisory, record fish and wildlife propagation (FWP) as "Not Supported" with CALM Category 5, and sources of impairment as "atmospheric deposition" and "source unknown."
5. If Attachment A reports generic "metals", "organics", "nonpriority organics", "nutrients", etc. do not include the impairment in ADB because there are no appropriate generic impairment categories in ADB. Report the impairment as Category 2 in ConRep because there is insufficient data to make a determination of what specific impairment, if any, is present in the waterbody.
6. All impairments due to specific metals such as "mercury", "cadmium", "copper" and "lead" are listed as "source unknown" unless the impairment is due to a mercury advisory or a known industrial discharge is suspected as causing the impairment.
7. If Attachment A reports a generic category along with a specific category, i.e. "nutrients"/"nitrogen" or "phosphorus", record "nitrogen" or "phosphorus" in ADB and ConRep, as required. Specify Category 2 or 5, depending on the specific circumstances of the category. If a specific listing for "nitrogen" and or "phosphorus" is made, CALM Category 2 should be used because there are no numeric nutrient criteria. If a specific metal or chemical is reported, the category is based on the availability of data or advisory information.
8. Drought related sources of impairment, as determined by regional personnel are recorded as Category 4c in ADB and ConRep. ADB impairment question of "Pollutant?" should be selected as "NO". Drought related criteria exceedances for "sulfates", "chlorides", and "total dissolved solids" (TDS) do not require a TMDL to correct. ADB sources and ConRep comment note the drought. This is consistent with the Louisiana water quality standards, which make exceptions for natural conditions.
9. "Noxious aquatic plants" and "exotic species" listed in Attachment A should be reported as Category 4c in ADB and ConRep. These categories are not pollutants, and the Louisiana Department of Wildlife and Fisheries has programs in place to address these problems, along with a recently created Nuisance Aquatics Task Force.
10. "Oil and grease" listed in Attachment A should be recorded as fully supporting, Category 1, in ADB and ConRep unless specific visual inspections have shown oil and grease to be present and causing impairment of fish and wildlife propagation. All assessed waterbodies in the Mermentau and Vermilion/Teche Basins previously identified for oil and grease problems have been inspected for the presence of oil and grease and found to be meeting the narrative Louisiana criteria for oil and grease. All other assessed waterbodies in Louisiana have been visually inspected for oil and grease as part of the rotating basins monitoring program. Regional staff has noted no instances of oil and grease impairment.
11. If Attachment A reports "siltation", "total suspended solids" (TSS), or "turbidity" and no water quality data and/or criteria are available for an assessment these categories should be recorded as Category 2 in ADB and ConRep. Source listed as unknown. If data and criteria are available for "turbidity", Category 1 or 5 should be used for ADB and Con Rep, as appropriate, for any or all of the three categories present in Attachment A. Assessment result for "turbidity" is also applied to "siltation" and "TSS" as needed in ADB and ConRep.
12. All "radiation" impairments listed in Attachment A should be reported as Category 1 in ADB and ConRep. All "radiation" listings were originally present due to produced water discharges. Following the original listings of "radiation", all produced water discharges were eliminated by Louisiana regulation.
13. All impairments reported as coming exclusively from "natural sources" by the regional staff should be recorded as Category 4c in ADB and ConRep. Impairment field "Pollutant?" should specify, "NO." This is consistent with the Louisiana water quality standards, which make exceptions for natural conditions.

14. “Taste and odor” listings in Attachment A should be placed in Category 4c because this impairment is not present in ADB, and because “taste and odor” are not pollutants and cannot be addressed by a TMDL. In many cases “taste and odor” was assigned to waterbodies without the designated use of drinking water. “Taste and odor” was intended to apply to waterbodies with the designated use of drinking water.
15. If EPA completed a TMDL for a waterbody/impairment combination considered fully supported by LDEQ assessments the impairment was not reported in ADB and was recorded as Category 1 in ConRep.

Chapter 3: River and Stream Water Quality Assessment

Summary of River and Stream Water Quality Assessments

The figures reported in Table 3.3.1 are based upon the level of use support for all applicable designated uses, as determined through monitored assessments. The miles of impaired waterbodies identified as being affected by various suspected causes of impairment are shown in Table 3.3.2. The miles affected by various suspected sources of impairment are shown in Table 3.3.3. These last two tables referenced suspected causes and sources of impairment for those waterbodies, which were assessed as not supporting designated uses. The tables are not ranked by order of impact.

Table 3.3.1

Summary of designated use support for Louisiana rivers and streams, 2002 § 305(b) assessment. (Reported in miles (water body count)).

Designated Use	Size Fully Supporting	Size Not Supporting	Insufficient Data	Not Assessed	Total Size for Designated Use
Primary Contact Recreation	4,977 (191)	3,244 (92)	404 (14)	735 (42)	9,360 (339)
Secondary Contact Recreation	7,653 (262)	689 (28)	265 (12)	910 (49)	9,517 (351)
Fish and Wildlife Propagation	1,836 (71)	6,483 (218)	552 (21)	565 (36)	9,436 (346)
Drinking Water Source	1,182 (18)	0	0	129 (6)	1,311 (24)
Outstanding Natural Resource	1,042 (35)	426 (18)	8 (2)	111 (6)	1,587 (61)
Shellfish Propagation	262 (15)	147 (12)	131 (4)	7 (1)	547 (32)
Agriculture	1,543 (40)	0	0	498 (20)	2,041 (60)
Limited Aquatic Life/Wildlife	55 (2)	0	17 (2)	9 (1)	81 (5)

Suspected Causes of Non-Support of Designated Uses

Table 3.3.2

Total sizes of Louisiana rivers and streams not fully supporting designated uses due to various suspected causes of impairment, 2002 § 305(b) assessment. (Reported in miles (water body count)).

Impairment (Cause) Name	Total Miles
1,1,1,2-Tetrachloroethane	12 (1)
1,2-Dichloroethane	8 (1)
Atrazine	43 (1)
Bromoform	12 (1)
Cadmium	785 (12)
Carbofuran	969 (24)
Chloride	633 (34)
Chlorine	6 (1)
Copper	566 (16)
DDT	749 (6)
Dioxin (including 2,3,7,8-TCDD)	307 (2)
Hexachlorobenzene	12 (1)
Hexachlorobutadiene	12 (1)
Lead	864 (23)
Mercury	1,565 (54)
Methoxychlor	8 (1)
Methyl Parathion	43 (1)
Nickel	8 (1)
Nitrogen, ammonia (Total Ammonia)	334 (12)
Nitrogen, Nitrite	748 (9)
Non-Native Aquatic Plants	403 (24)
Oil and Grease	336 (10)
Oxygen, Dissolved	3,137 (118)
PH	314 (13)
Phenols	8 (1)
Phosphorus, Elemental	569 (9)
Polychlorinated biphenyls	79 (5)
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	29 (2)
Sedimentation/Siltation	2,011 (60)
Sulfates	1,144 (39)
Temperature, water	23 (1)
Total Dissolved Solids	1,201 (50)
Total Fecal Coliform	4,459 (145)
Total Suspended Solids (TSS)	2,578 (67)
Toxaphene	420 (2)
Turbidity	2,719 (80)
Zinc	8 (1)

Suspected Sources of Non-Support of Designated Uses

Table 3.3.3

Total sizes of Louisiana rivers and streams not fully supporting designated uses due to various suspected sources of impairment, 2002 § 305(b) assessment. (Reported in miles (water body count)).

Source Name	Total Miles
Above Ground Storage Tank Leaks (Tank Farms)	51 (1)
Atmospheric Deposition – Toxics	1,130 (39)
Channelization	250 (1)
Dairies (Outside Milk Parlor Areas)	66 (2)
Discharges from Municipal Separate Storm Sewer Systems (MS4)	246 (12)
Drainage/Filling/Loss of Wetlands	217 (6)
Drought-related Impacts	597 (31)
Flow Alterations from Water Diversions	211 (8)
Forced Drainage Pumping	71 (6)
Impacts from Hydrostructure Flow Regulation/modification	135 (3)
Industrial Point Source Discharge	840 (16)
Irrigated Crop Production	1,856 (50)
Managed Pasture Grazing	120 (4)
Marina/Boating Sanitary On-vessel Discharges	59 (4)
Mine Tailings	30 (1)
Municipal (Urbanized High Density Area)	156 (6)
Municipal Point Source Discharges	1,422 (49)
Natural Conditions - Water Quality Standards Use Attainability Analyses Needed	1,635 (71)
Non-irrigated Crop Production	1,526 (48)
On-site Treatment Systems (Septic Systems and Similar Decencentralized Systems)	2,108 (72)
Package Plant or Other Permitted Small Flows Discharges	358 (21)
Petroleum/natural Gas Activities (Legacy)	101 (2)
Petroleum Gas Production Activities (Permitted)	51 (1)
Residential Districts	25 (1)
Sand/gravel/rock Mining or Quarries	59 (2)
Sanitary Sewer Overflows (Collection System Failures)	375 (15)
Sediment Resuspension (Clean Sediment)	21 (2)
Silviculture Plantation Management	235 (10)
Site Clearance (Land Development or Redevelopment)	61 (5)
Source Unknown	6,329 (228)
Sources Outside State Jurisdiction or Borders	458 (6)
Total Retention Domestic Sewage Lagoons	86 (8)
Upstream Source	491 (6)
Waterfowl	134 (4)
Wet Weather Discharges (Point Source and Combination of Stormwater, SSO or CSO)	12 (1)
Wildlife Other than Waterfowl	491 (13)

Chapter 4: Lake Water Quality Assessment

Summary of Lake Water Quality Assessments

The figures reported in Table 3.4.1 are based upon the level of use support for all applicable designated uses, as determined through monitored assessments. The acres of impaired waterbodies identified as being affected by various suspected causes of impairment are shown in Table 3.4.2. The acres affected by various suspected sources of impairment are shown in Table 3.4.3. These last two tables referenced suspected causes and sources of impairment for those waterbodies, which were assessed as not supporting designated uses. The tables are not ranked by order of impact.

Table 3.4.1

Summary of designated use support for Louisiana lakes, 2002 § 305(b) assessment. (Reported in acres (water body count)).

Designated Use	Size Fully Supporting	Size Not Supporting	Insufficient Data	Not Assessed	Total for Designated Use
Primary Contact Recreation	525,485 (37)	39,630 (7)	282 (1)	94,887 (20)	660,284 (65)
Secondary Contact Recreation	528,927 (41)	36,188 (3)	0	95,169 (21)	660,284 (65)
Fish and Wildlife Propagation	36,738 (11)	553,580 (38)	282 (1)	69,684 (15)	660,284 (65)
Drinking Water Supply	205,373 (6)	0	0	46,344 (4)	251,717 (10)
Agriculture	353,952 (7)	0	0	72,046 (9)	425,998 (16)

Suspected Causes of Non-Support of Designated Uses

Table 3.4.2

Total sizes of Louisiana lakes not fully supporting designated uses due to various suspected causes of impairment, 2002 § 305(b) assessment. (Reported in acres (water body count)).

Impairment (Cause) Name	Total Acres
Cadmium	20,208 (4)
Chloride	126,740 (5)
Copper	20,595 (3)
Lead	31,203 (6)
Mercury	248,518 (11)
Nitrogen, ammonia (Total Ammonia)	89,939 (2)
Non-Native Aquatic Plants	319,163 (16)
Oil and Grease	40,120 (4)
Oxygen, Dissolved	73,400 (11)
PH	26,240 (2)
Polychlorinated biphenyls	2,284 (4)
Sedimentation/Siltation	163,386 (5)
Sulfates	68,800 (3)
Temperature, water	4,500 (2)
Total Dissolved Solids	131,905 (7)
Total Fecal Coliform	73,790 (9)
Total Suspended Solids (TSS)	155,383 (6)
Turbidity	171,033 (8)

Suspected Sources of Non-Support of Designated Uses

Table 3.4.3

Total sizes of Louisiana lakes not fully supporting designated uses due to various suspected sources of impairment, 2002 § 305(b) assessment. (Reported in acres (water body count)).

Source Name	Total Acres
Atmospheric Deposition – Toxics	418,977 (9)
Contaminated Sediments	24 (1)
Discharges from Municipal Separate Storm Sewer Systems (MS4)	2,226 (3)
Drought-related Impacts	74,900 (4)
Forced Drainage Pumping	2,112 (1)
Impacts from Hydrostructure Flow Regulation/modification	27,981 (2)
Industrial Point Source Discharge	2,200 (2)
Industrial/Commercial Site Stormwater Discharge (Permitted)	84 (2)
Irrigated Crop Production	84,048 (2)
Managed Pasture Grazing	53,760 (2)
Natural Conditions - Water Quality Standards Use Attainability Analyses Needed	128,082 (11)
Non-irrigated Crop Production	101,460 (3)
On-site Treatment Systems (Septic Systems and Similar Decencentralized Systems)	4,448 (5)
Package Plant or Other Permitted Small Flows Discharges	2,112 (1)
Sanitary Sewer Overflows (Collection System Failures)	24 (1)
Source Unknown	704,152 (49)
Upstream Source	24 (1)
Waterfowl	27,840 (2)

Chapter 5: Estuary and Coastal Water Quality Assessment

Summary of Estuary and Coastal Water Quality Assessments

The figures reported in Table 3.5.1 are based upon the level of use support for all applicable designated uses, as determined through monitored assessments. The square miles of impaired waterbodies identified as being affected by various suspected causes of impairment are shown in Table 3.5.2. The square miles affected by various suspected sources of impairment are shown in Table 3.5.3. These last two tables referenced suspected causes and sources of impairment for those waterbodies, which were assessed as not supporting designated uses. The tables are not ranked by order of impact.

Table 3.5.1

Individual use support summary for Louisiana estuaries, 2002 § 305(b) assessment. (Reported in square miles (water body count)).

Designated Use	Size Fully Supporting	Size Not Supporting	Insufficient Data	Not Assessed	Total for Designated Use
Primary Contact Recreation	3,581 (46)	559 (1)	291(2)	522 (3)	4,953 (52)
Secondary Contact Recreation	4,231 (48)	0	200 (1)	522 (3)	4,953 (52)
Fish and Wildlife Propagation	2,359 (28)	2,507 (23)	0	87 (1)	4,953 (52)
Shellfish Propagation	3,463 (32)	83 (4)	200 (1)	522 (3)	4,268 (40)

Suspected Causes of Non-Support of Designated Uses

Table 3.5.2

Total sizes of Louisiana estuaries not fully supporting designated uses due to various suspected causes of impairment, 2002 § 305(b) assessment. (Reported in square miles (water body count)).

Impairment (Cause) Name	Total Square miles
Carbofuran	187 (1)
Copper	7 (1)
Mercury	1,726 (11)
Nitrogen, ammonia (Total Ammonia)	6 (1)
Nitrogen, Nitrite	964 (4)
Non-Native Aquatic Plants	91 (1)
Oil and Grease	5 (1)
Oxygen, Dissolved	11 (3)
Phosphorus, Elemental	964 (4)
Polychlorinated biphenyls	71 (4)
Sedimentation/Siltation	6 (1)
Total Fecal Coliform	642 (5)
Total Suspended Solids (TSS)	6 (1)
Turbidity	46 (3)

Suspected Sources of Non-Support of Designated Uses

Table 3.5.3

Total sizes of Louisiana estuaries not fully supporting designated uses due to various suspected sources of impairment, 2002 § 305(b) assessment. (Reported in square miles (water body count)).

Source Name	Total Square Miles
Atmospheric Deposition – Toxics	2,641 (15)
Discharges from Municipal Separate Storm Sewer Systems (MS4)	4 (2)
Industrial Point Source Discharge	142 (7)
Irrigated Crop Production	193 (2)
Marina/Boating Sanitary On-vessel Discharges	55 (1)
Natural Conditions - Water Quality Standards Use Attainability Analyses Needed	22 (2)
Non-irrigated Crop Production	193 (2)
On-site Treatment Systems (Septic Systems and Similar Decencentralized Systems)	7 (1)
Package Plant or Other Permitted Small Flows Discharges	7 (1)
Sanitary Sewer Overflows (Collection System Failures)	563 (3)
Sediment Resuspension (Clean Sediment)	20 (1)
Source Unknown	3,468 (23)
Sources Outside State Jurisdiction or Borders	252 (1)
Total Retention Domestic Sewage Lagoons	7 (1)
Upstream Source	252 (1)
Waterfowl	20 (1)
Wildlife Other than Waterfowl	56 (2)

Chapter 6: Wetlands Water Quality Assessment

Summary of Wetland Water Quality Assessments

The figures reported in Table 3.6.1 are based upon the level of use support for all applicable designated uses, as determined through monitored assessments. The acres of impaired waterbodies identified as being affected by various suspected causes of impairment are shown in Table 3.6.2. The acres affected by various suspected sources of impairment are shown in Table 3.6.3. These last two tables referenced suspected causes and sources of impairment for those waterbodies, which were assessed as not supporting designated uses. The tables are not ranked by order of impact.

Table 3.6.1

Individual use support summary for Louisiana wetlands, 2002 § 305(b) assessment. (Reported in acres (water body count)).

Designated Use	Size Fully Supporting	Size Not Supporting	Insufficient Data	Not Assessed	Total for Designated Use
Primary Contact Recreation	544,000 (3)	0	86,400 (1)	394,880 (2)	1,025,280 (6)
Secondary Contact Recreation	551,040 (5)	0	86,400 (1)	398,848 (4)	1,036,288 (10)
Fish and Wildlife Propagation	543,360 (4)	206,720 (2)	86,400 (1)	199,808 (3)	1,036,288 (10)
Drinking Water Supply	464,000 (1)	0	0	0	464,000 (1)

Suspected Causes of Non-Support of Designated Uses

Table 3.6.2

Total sizes of Louisiana wetlands not fully supporting designated uses due to various suspected causes of impairment, 2002 § 305(b) assessment. (Reported in acres (water body count)).

Impairment (Cause) Name	Total Acres
Chloride	7,680 (1)
Mercury	199,040 (1)
Oxygen, Dissolved	199,040 (1)
Sedimentation/Siltation	285,440 (2)
Sulfates	7,680 (1)
Total Dissolved Solids	7,680 (1)
Total Fecal Coliform	172, 800 (2)
Total Suspended Solids	86,400 (1)
Turbidity	199,040 (1)

Suspected Sources of Non-Support of Designated Uses

Table 3.6.3

Total sizes of Louisiana wetlands not fully supporting designated uses due to various suspected sources of impairment, 2002 § 305(b) assessment. (Reported in acres (water body count)).

Source Name	Total Acres
Atmospheric Deposition – Toxics	398,080 (2)
Drought-related Impacts	7,680 (1)
Source Unknown	487,040 (4)

Chapter 7: Public Health/Aquatic Life Concerns

Fishing and Swimming Advisories Currently in Effect

The LDEQ currently issues fish consumption and swimming advisories in conjunction with the Louisiana Department of Health and Hospitals (LDHH). Fish consumption advisories are set using a risk assessment based method that establishes consumption levels designed to prevent adverse effects on public health. Risk assessments are used to determine safe consumption levels for different segments of the population. For example, children and pregnant or lactating women are often considered separately in developing risk assessments because this population is generally considered to be at greater risk from consumption of contaminated seafood. Therefore, limited consumption advisories will often be stricter for this population.

Swimming advisories are generally established due to fecal coliform contamination of a water body. However, a limited number of swimming advisories have been based on chemical contamination of water or sediments. Fecal coliform contamination of a water body can be caused by a number of possible sources including absent or inadequate sewage systems, poorly maintained septic tanks, direct sewage discharges from camps, and pasture and animal holding area runoff. Efforts are being made to correct these problems statewide, particularly in the Tangipahoa River basin. Table 3.7.2 provides a complete listing of fishing and swimming advisories currently in effect. Fishing and swimming advisory information was correct at the time of report preparation in November 2002. For the latest information on advisories, please contact the Department of Environmental Quality, Environmental Planning Division at (225) 765-0280. You can also refer to LDEQ's website at http://www.deq.state.la.us/surveillance/mercury/fishadvi.htm.

Table 3.7.2

Current Louisiana fish consumption and swimming advisories as of November 2002.
For the most up-to-date information on fish consumption and swimming advisories please refer to LDEQ's Website at http://www.deq.state.la.us/surveillance/mercury/fishadvi.htm.

Water body	Causative Pollutants	Type of Advisory	Recommendation	Approximate Size Affected	Date Established
Fish consumption and swimming advisories related primarily to organic contamination.					
Calcasieu River, Estuary to Gulf of Mexico **(Calcasieu and Cameron)**	Hexachlorobenzene, Hexachloro-1,3-butadiene, PCBs	Informational advisory fish contamination	Caution advised on fish consumption due to low levels of chemical contamination.	37.0 miles	04/07/92 reviewed 10/94 and 1995
Bayou d'Inde **(Calcasieu)**	Hexachlorobenzene, Hexachloro-1,3-butadiene, PCBs	Advisory fish consumption, advisory swimming	Limit fish and seafood consumption to TWO MEALS PER MONTH. Avoid swimming and sediment contact	6.0 miles	04/07/92 reviewed 10/94 and 1995
Bayou Olsen at Lake Charles **(Calcasieu)**	Priority organics	Advisory sediment contamination	Avoid swimming and sediment contact.	0.5 mile	01/17/89 reviewed 10/94
Bayou Bonfouca **(St. Tammany)**	Priority organics (creosote)	Advisory swimming	Avoid swimming or sediment contact	7.0 miles	11/24/87 revised 12/10/98
Devil's Swamp, Devil's Swamp Lake, and Bayou Baton Rouge **(East Baton Rouge)**	Hexachlorobenzene, Hexachloro-1,3-butadiene, PCBs, lead, mercury, arsenic	Advisory fish consumption, advisory swimming	Avoid swimming, limit fish consumption to TWO MEALS PER MONTH.[1]	7.0 sq. miles	07/09/93

Water body	Causative Pollutants	Type of Advisory	Recommendation	Approximate Size Affected	Date Established
Capitol Lake **(East Baton Rouge)**	Priority organics (PCBs)	Advisory fish consumption, sediment contamination	No fish consumption.	0.12 mile	08/24/83
Wham Brake **(Winn)**	Dioxin	Advisory fish consumption	No fish consumption.	7.2 sq. miles	11/23/87 reviewed 3/94, 11/96, and 11/01
Sibley Lake **(Natchitoches)**	Priority organics (PCBs)	Advisory fish consumption	No consumption of gar, shad, carp. Skin and trim fat from other fish. Broil, grill or bake fish. Do not fry fish. Within any one month period consumption should be limited to ONLY one of the following: One meal/week of largemouth bass or crappie. OR one meal/month of channel catfish, striped bass.[1]	3.4 sq. miles	02/16/89 revised 01/31/96
Tensas River **(Madison, Tensas, Catahoula)**	DDT, Toxaphene	Advisory fish consumption	Long-term fish consumption may cause health risk.	83 miles	02/19/92
Bayou Lafourche: from Hwy. 80 overpass to I-20 **(Ouachita)**	Dioxin	Advisory fish consumption	Limit consumption to TWO MEALS PER MONTH for all species.[1]	2 miles	Revised 11/96, Reviewed 11/01
Fish consumption advisories related to mercury contamination.					

Water body	Causative Pollutants	Type of Advisory	Recommendation	Approximate Size Affected	Date Established
Ouachita River LA/AR border to lock at Columbia **(Morehouse, Ouachita, and Caldwell)**	Mercury	Advisory fish consumption	Pregnant/breast-feeding women and children <7 years of age should consume no bass (all species), and limit consumption of all other species to TWO MEALS PER MONTH. Non-pregnant women, men, and children >=7 years of age should limit bass to TWO MEALS PER MONTH with no limit on other species.[1]	102 miles	07/29/92 reviewed 8/94
Henderson Lake area including Lake Bigeux **(St. Martin)**	Mercury	Advisory fish consumption	Pregnant/breast-feeding women and children <7 years of age limit consumption of largemouth bass, crappie, and freshwater drum to ONE MEAL PER MONTH. No limit on other species or for the general population.[1]	37.8 square miles	03/04/96

Water body	Causative Pollutants	Type of Advisory	Recommendation	Approximate Size Affected	Date Established
Bayou Plaquemine Brule **(St. Landry, Acadia)**	Mercury	Advisory fish consumption	Pregnant/breast-feeding women and children <7 years of age consume no bowfin (choupique), and limit consumption of largemouth bass, crappie, or freshwater drum to ONE MEAL PER MONTH. Non-pregnant women, men, and children >=7 years of age should limit bowfin to TWO MEALS PER MONTH, with no limit on other species.	40 miles- Origin near Opelousas to Mermentau River	10/96
Black Lake **(Red River, Natchitoches)**	Mercury	Advisory fish consumption	Pregnant/breast-feeding women and children <7 years of age consume no bowfin (choupique), and limit consumption of largemouth bass, white bass, or crappie to ONE MEAL PER MONTH. Non-pregnant women, men, and children >=7 years of age should limit bowfin to TWO MEALS PER MONTH, with no limit on other species.	8 square miles	10/96

Water body	Causative Pollutants	Type of Advisory	Recommendation	Approximate Size Affected	Date Established
Bogue Chitto River **(Washington, St. Tammany)**	Mercury	Advisory fish consumption	Pregnant/breast-feeding women and children <7 years of age should limit consumption of bass (all species) or bowfin (choupique) to ONE MEAL PER MONTH. There is no consumption limit on any species for non-pregnant women, men, and children >=7 years of age.	35 miles- From the MS/LA state line to the Pearl River Navigation Canal	8/96
Pearl River **(Washington, St. Tammany)**	Mercury	Advisory fish consumption	Pregnant/breast-feeding women and children <7 years of age should consume no bowfin (choupique), and limit consumption of bass (all species), freshwater drum or bigmouth buffalo to ONE MEAL PER MONTH. Non-pregnant women, men, and children >=7 years of age should CONSUME NO BOWFIN, with no consumption limit on other species.[1]	57 miles- This advisory includes the entire Pearl River	2/97

Water body	Causative Pollutants	Type of Advisory	Recommendation	Approximate Size Affected	Date Established
Bayou Liberty (St. Tammany)	Mercury	Advisory fish consumption	Pregnant/breast-feeding women and children <7 years of age should limit consumption of largemouth bass, white/black crappie, and freshwater drum to ONE MEAL PER MONTH.[1] This same group should limit consumption of redear sunfish to TWO MEALS PER MONTH. There is no consumption limit on any species for non-pregnant women, men, and children >=7 years of age.	10 miles- From origin to Lake Pontchartrain	2/97
Chicot Lake (Evangeline)	Mercury	Advisory fish consumption	Pregnant/breast-feeding women and children <7 years of age should consume no bowfin (choupique), and limit consumption of largemouth bass to ONE MEAL PER MONTH. Non-pregnant women, men, and children >=7 years of age should limit consumption of bowfin to TWO MEALS PER MONTH. There is no consumption limit on other species.[1]	2.54 square miles	5/27/97

Water body	Causative Pollutants	Type of Advisory	Recommendation	Approximate Size Affected	Date Established
Seventh Ward Canal **(Vermilion)**	Mercury	Advisory fish consumption	Pregnant/breast-feeding women and children <7 years of age should eat no more than a total of ONE MEAL PER MONTH of these fish combined: bowfin (choupique), white crappie (sac-a-lait), flathead catfish and freshwater drum.1 There is no consumption limit on other species of fish.1 There is no consumption limit on any species for non-pregnant women, men, and children >=7 years of age.[1]	11.5 miles – From origin at Moulan Canal to ICWW	6/25/97

Water body	Causative Pollutants	Type of Advisory	Recommendation	Approximate Size Affected	Date Established
Lake Vernon **(Vernon)**	Mercury	Advisory fish consumption	Pregnant/breast-feeding women and children <7 years of age should eat no more than a total of ONE MEAL PER MONTH of the following fish, combined: largemouth bass, flathead catfish, redear and bluegill sunfish (bream). There is no consumption limit on other species of fish. There is no consumption limit on any species for non-pregnant women, men, and children >=7 years of age.[1]	4,224 acres	8/5/97

Water body	Causative Pollutants	Type of Advisory	Recommendation	Approximate Size Affected	Date Established
Gulf of Mexico off Louisiana Coast **(N/A)**	Mercury	Advisory fish consumption	For king mackerel 39 inches or less in total length: Pregnant/breast-feeding women and children <7 years of age should eat no more than ONE MEAL PER MONTH. 1 Non-pregnant women, men, and children >=7 years of age should limit consumption to TWO MEALS PER MONTH. For king mackerel greater than 39 inches in total length: No consumption for all individuals. There is no consumption limit on other species of fish. [1]	Approximated Area Affected: 1,191 Square Miles	9/4/97

Water body	Causative Pollutants	Type of Advisory	Recommendation	Approximate Size Affected	Date Established
Bayou des Cannes **(Evangeline)**	Mercury	Advisory fish consumption	Pregnant/breast-feeding women and children <7 years of age should eat no more than ONE MEAL PER MONTH of the following fish, combined: bowfin (choupique), black crappie or freshwater drum (gaspergou). There is no consumption limit on other species of fish. There is no consumption limit on any species for non-pregnant women, men, and children >=7 years of age. [1]	54 miles- From origin near Ville Platte to the Mermentau River	10/9/97

Water body	Causative Pollutants	Type of Advisory	Recommendation	Approximate Size Affected	Date Established
Blind River **(St. John the Baptist, St. James)**	Mercury	Advisory fish consumption	Pregnant/breast-feeding women, women planning to be pregnant, and children < 7 years of age should limit their consumption of bowfin (choupique) to ONE MEAL PER MONTH. There is no consumption limit on other species of fish. There is no consumption limit on any species of fish for non-pregnant women, women not breast-feeding or planning to become pregnant, men, and children >=7 years of age. [1]	25 miles- From origin to Lake Maurepas	04/27/98
Bayou Bartholomew **(Morehouse)**	Mercury	Advisory fish consumption	Pregnant/breast-feeding women, women planning to be pregnant, and children < 7 years of age should limit their consumption of all fish species to ONE MEAL PER MONTH. There is no consumption limit on any species of fish for non-pregnant women, women not breast-feeding or planning to become pregnant, men, and children >=7 years of age. [1]	69 miles – From Arkansas State Line to Ouachita River	01/21/99

Water body	Causative Pollutants	Type of Advisory	Recommendation	Approximate Size Affected	Date Established
West Fork Calcasieu River **(Calcasieu)**	Mercury	Advisory fish consumption	Pregnant women, breast-feeding women, women planning to be pregnant, and children less than seven years of age should NOT consume largemouth bass, bowfin, or freshwater drum from the advisory area. There are no limits on other species. Non-pregnant women, women not planning to become pregnant, men, and children seven years of age and older should consume no more than TWO MEALS PER MONTH of bowfin, largemouth bass, and freshwater drum combined from the advisory area. There are no limits on other species.[1]	16.5 Miles– West Fork Calcasieu River from the junction of Hickory Creek and Beckwith Creek to the confluence with the Calcasieu River	11/20/00

Water body	Causative Pollutants	Type of Advisory	Recommendation	Approximate Size Affected	Date Established
Ivan Lake **(Bossier)**	Mercury	Advisory fish consumption	Pregnant women, breast-feeding women, women planning to be pregnant, and children less than seven years of age should NOT consume bowfin from the advisory area and should consume no more than ONE MEAL PER MONTH of largemouth bass. There are no limits on other species. Non-pregnant women, women not planning to become pregnant, men, and children seven years of age and older should consume no more than TWO MEALS PER MONTH of bowfin but do not have to limit consumption of other species.	369 Acres	11/20/00

Water body	Causative Pollutants	Type of Advisory	Recommendation	Approximate Size Affected	Date Established
The Little River at Bodie's Landing (including Catahoula Lake) **(Grant, LaSalle)**	Mercury	Advisory fish consumption	Pregnant women, breast-feeding women, women planning to be pregnant, and children less than seven years of age should NOT consume largemouth bass, freshwater drum, flathead catfish, or bowfin from the advisory area and should consume no more than TWO MEAL PER MONTH of white crappie. There are no limits on other species. Non-pregnant women, women not planning to become pregnant, men and children seven years of age and older should consume no more than TWO MEALS PER MONTH of largemouth bass, freshwater drum, flathead catfish, and bowfin combined from the advisory area. There are no limits on other species.	58.25 miles– Hwy 500 to Catahoula Lake 18797.36 Acres- Catahoula Lake 11 miles- Little River from Catahoula Lake to weir near Archie	11/20/00

Water body	Causative Pollutants	Type of Advisory	Recommendation	Approximate Size Affected	Date Established
Bayou De Loutre and Associated Lakes **(Union)**	Mercury	Advisory Fish Consumption	Pregnant women, breast-feeding women, women planning to be pregnant, and children less than seven years of age should NOT consume any species of fish form the advisory area. Non-pregnant women, women not planning to become pregnant, men, and children seven years of age and older should consume no more than TWO MEALS PER MONTH of any species of fish combined form the advisory area.[1]	Not Determined From Hwy. 33 to the Ouachita River, including Phillips Lake, Hatley Lake, and Hudson Lake	11/20/00

Water body	Causative Pollutants	Type of Advisory	Recommendation	Approximate Size Affected	Date Established
The Toledo Bend Reservoir **(Sabine, De Soto)** **This advisory supersedes two previous advisories issued for this water body on November 17, 1997.**	Mercury	Advisory Fish Consumption	Pregnant women, breast-feeding women, women planning to be pregnant, and children less than seven years of age should NOT consume bowfin from the advisory area and should consume no more than ONE MEAL PER MONTH of largemouth bass or freshwater drum. There are no limits on other species. Non-pregnant women, women not planning to become pregnant, men, and children seven years of age and older should consume no more than TWO MEALS PER MONTH of bowfin, but do not have to limit consumption of other species from the advisory area.	The Toledo Bend Reservoir north of the Sabine River Authority Recreation Site 15 located at Pleasure Point Road. The waters south of the Recreation Site 15 (including South Toledo Bend State Park) are not included in this advisory. 148.3 Square Miles	7/19/01

Water body	Causative Pollutants	Type of Advisory	Recommendation	Approximate Size Affected	Date Established
Tickfaw River Drainage Basin **(Livingston, Tangipahoa, and St. Helena)**	Mercury	Advisory Fish Consumption	Pregnant women, breast-feeding women, women of childbearing age, and children less than seven years of age should consume no more than ONE MEAL PER MONTH of freshwater drum, largemouth bass, bowfin, and white crappie combined from the advisory area.[1] There are no limits on other specie. There are NO CONSUMPTION LIMITS on any species for non-pregnant women, women not planning to become pregnant, men, and children seven years of age and older.	The advisory area includes the following bodies of water: the Tickfaw River from the Mississippi-Louisiana state line to Lake Maurepas; the Natalbany River; the Blood River; Lizard Creek; and Ponchatoula Creek.	7/8/02
Swimming advisories related to fecal coliform contamination.					
Tchefuncte River	Fecal coliform	Advisory swimming	Avoid swimming and other primary contact sports.	18 miles	02/04/91
Bogue Falaya	Fecal coliform	Advisory swimming	Avoid swimming and other primary contact sports.	12 miles	02/04/91
Lake Pontchartrain	Fecal coliform	Advisory swimming	Avoid swimming and other primary contact sports.	South shore beaches	06/01/85

Water body	Causative Pollutants	Type of Advisory	Recommendation	Approximate Size Affected	Date Established
Tangipahoa River	Fecal coliform	Advisory swimming, tubing, skiing, canoeing	Avoid swimming and other primary or secondary contact sports.	79 miles	03/22/88

Shellfish Restrictions/Closures Currently In Effect

Within LDHH, Office of Public Health (OPH), the Molluscan Shellfish Program is responsible for establishing and maintaining a classification system that determines the suitability of shellfish growing areas for harvest activity. The National Shellfish Sanitation Program (NSSP) establishes the criteria.

Throughout coastal Louisiana, OPH has established 26 prohibited areas. For the last ten years the seasonal and conditional management classification lines have been fairly stable, with minor seasonal fluctuations. Classifications of Molluscan Shellfish Waters are issued by OPH on a seasonal basis: November through February, March through April, May through August, and September through October. Maps showing the closed areas are made publicly available for each season. Shellfish cannot be harvested from such areas for any purposes. Areas may be classified as prohibited based on either actual bacteriological data analysis or the potential for a pollution source to affect the harvest area. Also, the state Health Officer has established a 150 feet closure area around all man-made habitable structures that have a waste discharge. The harvest of shellfish is not allowed from these waters for any purposes.

OPH has also classified some waters as restricted. Shellfish within waters which are classified as restricted may be used only for relay or transplant purposes. They are not allowed to be used for direct market harvest. Special permits must be obtained prior to conducting relay or transplant operations. The necessary permits may be obtained from the OPH Commercial Sanitary Seafood Program.

Other environmental changes that are negatively impacting the harvesting grounds are salt-water intrusion, marsh erosion, nonpoint source pollution, sewage discharges from camps and subsidence (1996 Water Quality Inventory).

Restrictions on Swimming

Areas where swimming advisories are in effect include Bogue Falaya River, Lake Pontchartrain south shore, Tangipahoa River, and Tchefuncte River. These are all closed due to bacteria counts that exceed the water quality standard for swimming (primary contact recreation). Also, additional areas are closed due to sediment contamination, these are: Bayou Bonfouca, Bayou d'Inde and Devil's Swamp.

Restrictions on Surface Drinking Water Supplies for Fiscal Years 2000-2001

In Louisiana, there are 79 public water supplies (community and non-community) that utilize either surface water or combined surface and ground water as their source of drinking water. These 79 systems have treatment plants and are required by state law to filter and disinfect the raw water.

According to LDHH during fiscal years 2000-2001, a total of 28 contaminant violations of state drinking water regulations occurred among 20 water supplies. These numbers do not include treatment technique violations

by the water supplier. Calendar year data was not available for all of 2001. A total of 18 violations of the coliform MCL (maximum contaminant level), 9 violations of the turbidity MCL, and 1 violation of the lead and copper MCL occurred.

Incidence of Waterborne Illnesses

Physicians are required by state law to report to the parish health unit any confirmed or suspected cases of a reportable disease that he or she is attending or has examined. In addition, all other health care professionals are now required to report confirmed cases of reportable diseases to their local health units. The reportable disease list includes illnesses that are caused by waterborne bacteria and viruses. In 2000, 41 cases of Giardiasis and 14 cases of Cryptospor were reported to the Infectious Disease Epidemiology Section, Office of Public Health. In 2001, 12 cases of Giardiasis and 7 cases of Cryptospor were reported.

Toxic and Non-toxics Related Concerns

There were no significant changes with regard to toxics and non-toxics related concerns. Therefore, the reader is encouraged to refer to the *1996 Water Quality Inventory* or the LDEQ Website at www.deq.state.la.us for more information.