2009

Pearl River Basin

Characterization Report

Louisiana State Reservoir Priority
and Development Program

moffatt & nichol

LOUISIANA'S ON THE MOVE... DOTD BUILDS THE WAY

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2009

Pearl River Basin

Characterization Report

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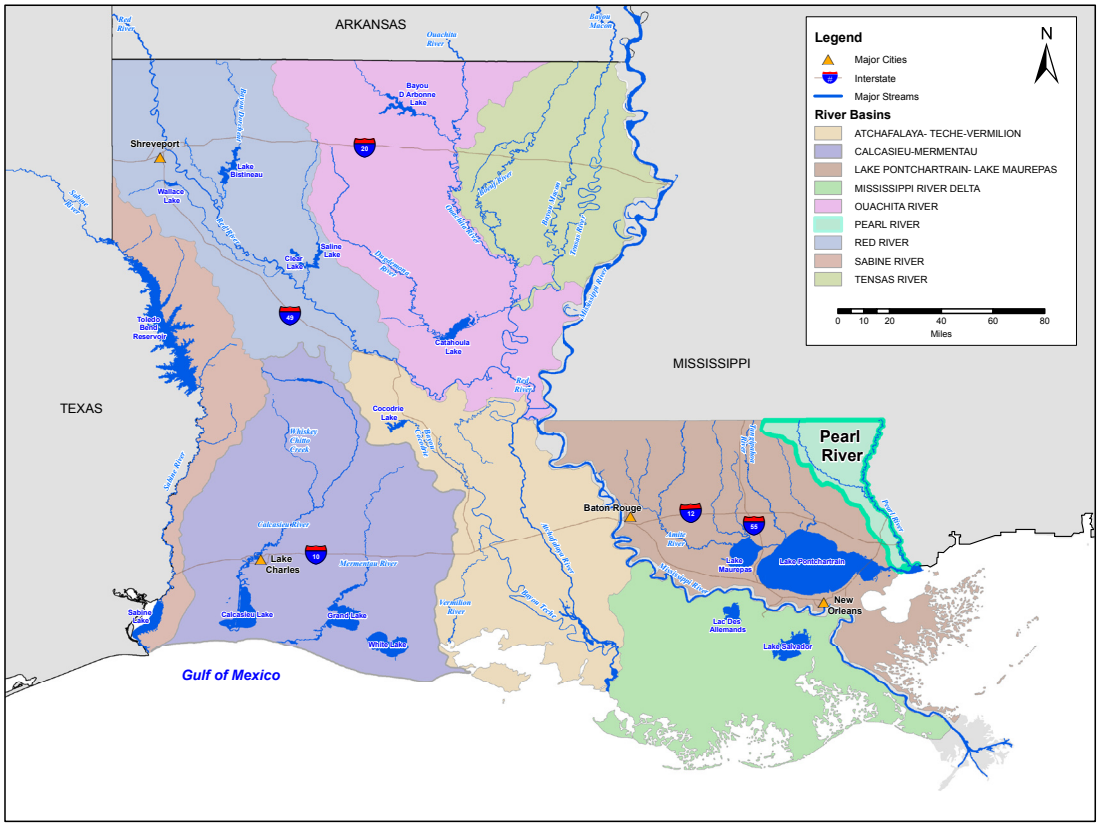
BASIN CHARACTERIZATION REPORT FOR THE PEARL RIVER BASIN

The Louisiana Department of Transportation and Development (DOTD) is responsible for reviewing and prioritizing proposed reservoir projects for which State of Louisiana (State) funding is being sought, and then recommending projects to the State Legislature. To support reservoir project review, prioritization, and recommendation efforts, DOTD has prepared characterization reports of water resources conditions in each of the nine principal surface water basins in the State. These characterization reports provide an overview of water uses, needs, and concerns, and can be used by applicants for State funding, and by State agencies as they evaluate the applications. The basin characterization reports also contain extensive references that interested parties can use to find more information from Federal, State, and local agencies or other sources. The reports represent a "snapshot" of conditions in early 2009 (or when the references cited in the reports were published).

Based on available data, this basin characterization report provides an overview of the water uses, needs, and key water resources concerns for the Pearl River Basin (PRB) (**Map 1**). Additional technical information on important issues may be provided in separate technical reports.

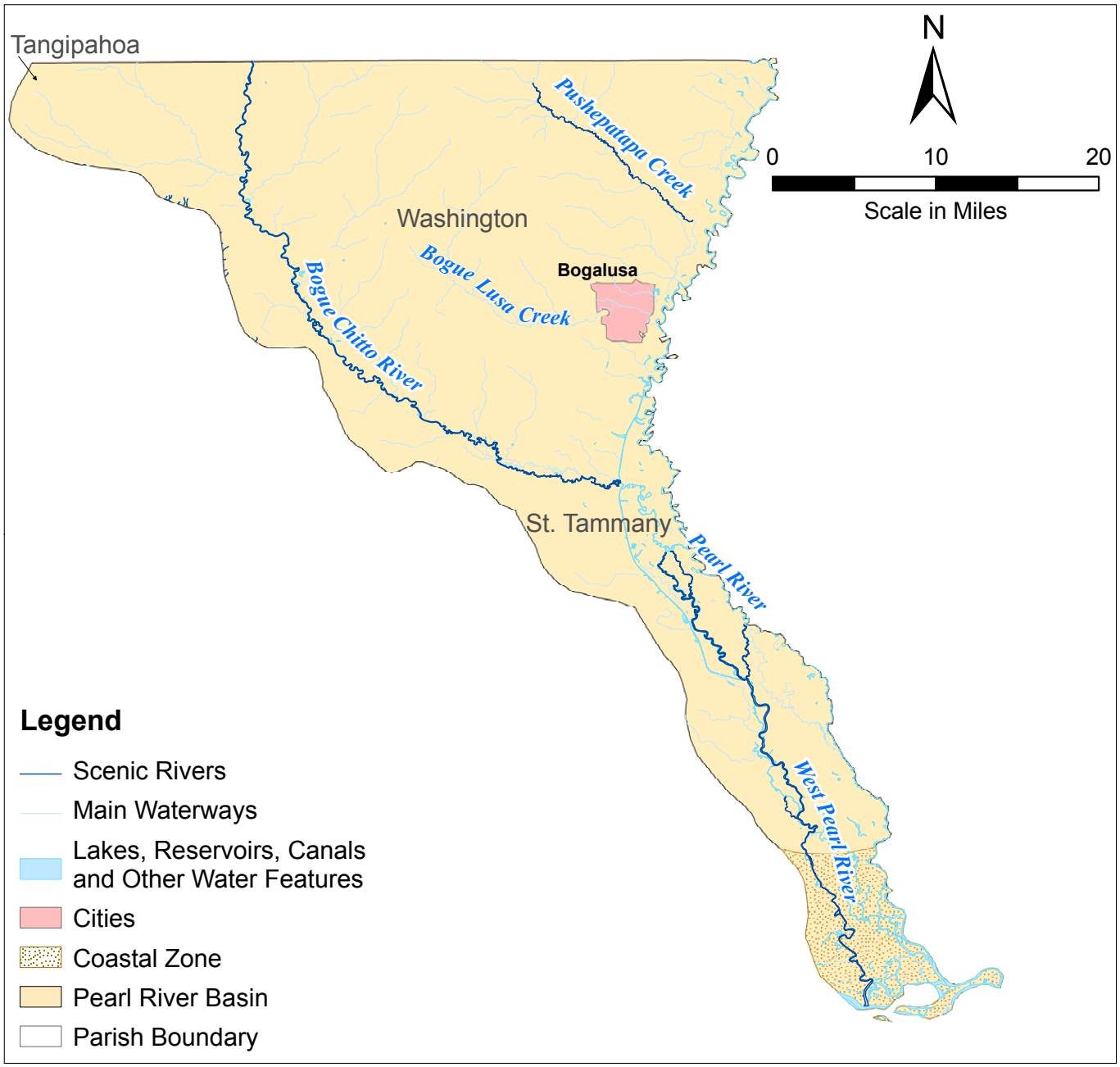
Report Topics **Page**



Map 1. Major Surface Water Basins of Louisiana[1]

BASIN OVERVIEW

The PRB is located in southeastern Louisiana and has an area of 2,400 square miles[2] (**Map 2**). The PRB is bounded by the Mississippi-Louisiana State line to the north and east, the Lake Pontchartrain-Lake Maurepas Basin to the west, and the Gulf of Mexico to the south. The PRB consists of the Louisiana portion of the upland terraces and valleys of the Pearl River and its tributaries. The southern PRB is in the Coastal Zone, as delineated by the Louisiana Department of Natural Resources (LDNR).



Map 2. Parishes, Main Waterways, and City Boundaries[3]

Bogalusa is the largest city in the PRB. Estimated total population in the PRB in 2005 was 69,834. **Table 1** shows the 2005 population distribution in the PRB by parish. Most of Washington Parish and small parts of St. Tammany and Tangipahoa parishes are located in the PRB. **Figure 1** shows historical basin population from 1960 to 2005. The population of the PRB grew steadily from 1970 through 2005.

Principal economic activities in the PRB include the timber industry and the manufacture of wood products. Also, the lower Pearl River's healthy marsh complex helps maintain a viable fisheries industry in Louisiana and Mississippi.[5] The primary future economic growth areas of this basin are not clearly defined.

Table 1. PRB Population by Parish in 2005[4]

Parish	Population
St. Tammany*	26,063
Tangipahoa*	1,249
Washington*	42,523
TOTAL	69,834

*Parish is located in more than one basin; population estimated for the area within the PRB.

PRB=Pearl River Basin

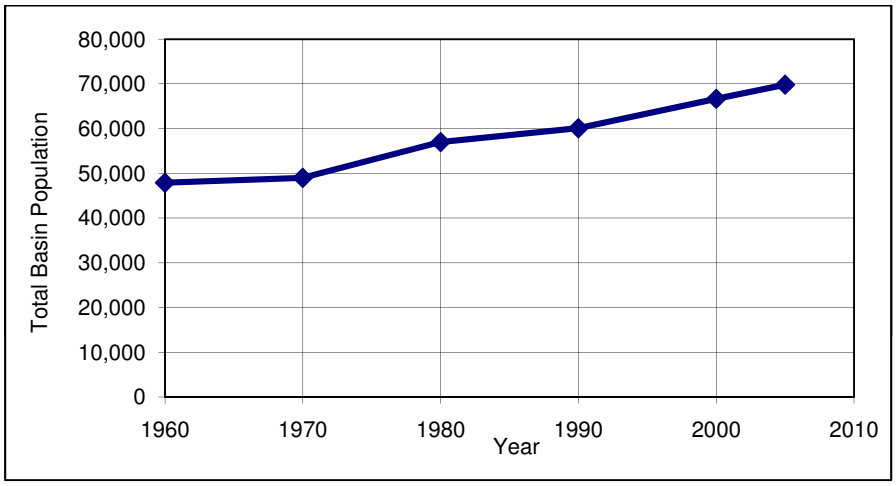
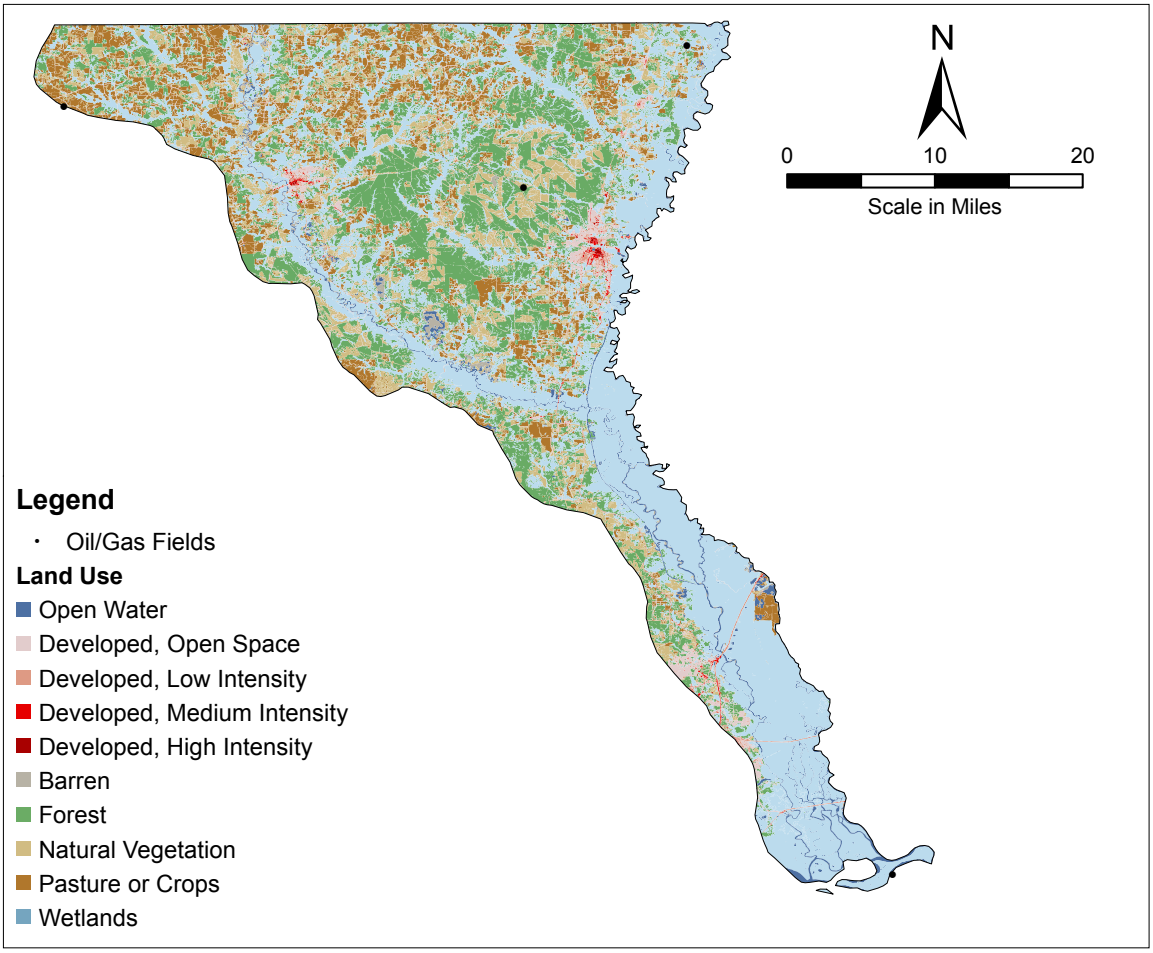


Figure 1. Historical PRB Population[4]

LAND USE AND LEGAL ENTITIES

Map 3 shows 2003 land uses in the PRB. The principal land use is wetlands, with interspersed agricultural and forested land areas in the northwest and central regions of the basin. Economic modeling for the 1992 to 2020 period indicates that forested land uses may decrease slightly in the PRB, and that a large increase in urban land uses is expected.[6] The PRB contains some land considered Prime Farmland by the Federal Natural Resources Conservation Service (NRCS).[7] The NRCS must be contacted regarding proposed irreversible conversion of any Prime Farmland for reservoir construction and water storage. **Table 2** lists legal entities in the PRB that may affect or be affected by water resources development.



Map 3. PRB Land Uses in 2003[8]

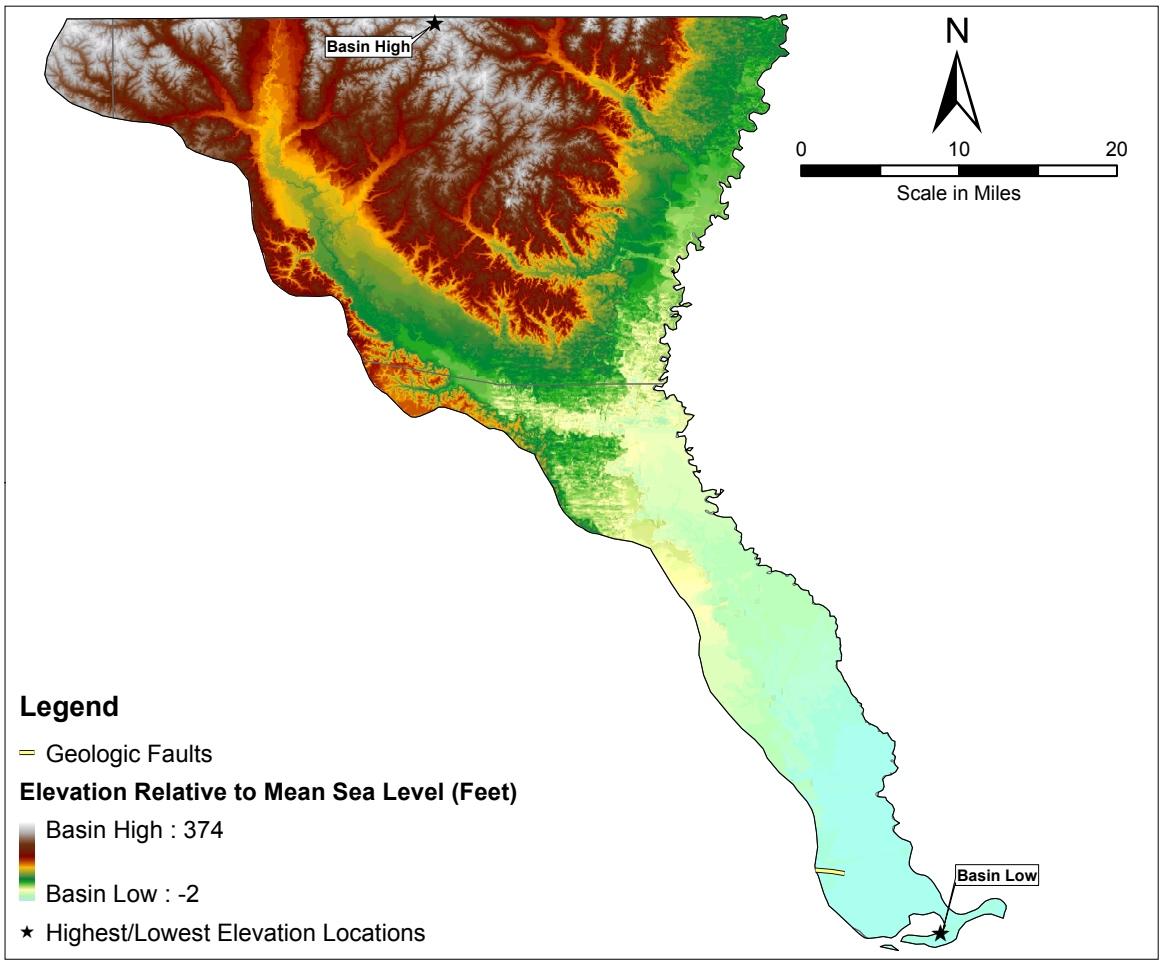
Table 2. PRB Water Resources Legal Entities

Legal Entity	Responsibilities
Capital Region Planning Commission	Planning and development in south central Louisiana
Regional Planning Commission for Jefferson, Orleans, Plaquemines, St. Bernard and St. Tammany Parishes	Planning and development in southeast Louisiana

PRB=Pearl River Basin

PHYSIOGRAPHIC AND CLIMATIC INFORMATION

Map 4 shows general basin topography. The PRB is dominated by the Pine Hills physiographic division, which is characterized by undulating hills covered by pine and hardwood forests. The southern PRB encompasses flat coastal marshes subject to tidal flooding. The lowest elevation within PRB, at the southern end of the basin, is 2 feet below mean sea level. The highest point, 374 feet above mean sea level, is located in Washington Parish, on the northern basin boundary.



Map 4. PRB Topography[9]

Soils in the Pine Hills physiographic region are dominated by loamy, fluvial deposits.[10] Average annual rainfall in the PRB is 64 inches per year throughout the entire basin.[11] **Figure 2** shows historical annual precipitation at Bogalusa, which varies between about 40 and 80 inches per year, with a historical average of about 61 inches. Average annual temperature generally increases from north to south from 66 to 68 degrees Fahrenheit (°F) in the PRB.[11] Average high temperature at Bogalusa in the warmest month, July, is 92°F; average low temperature in the coldest month, January, is 38°F.[12]

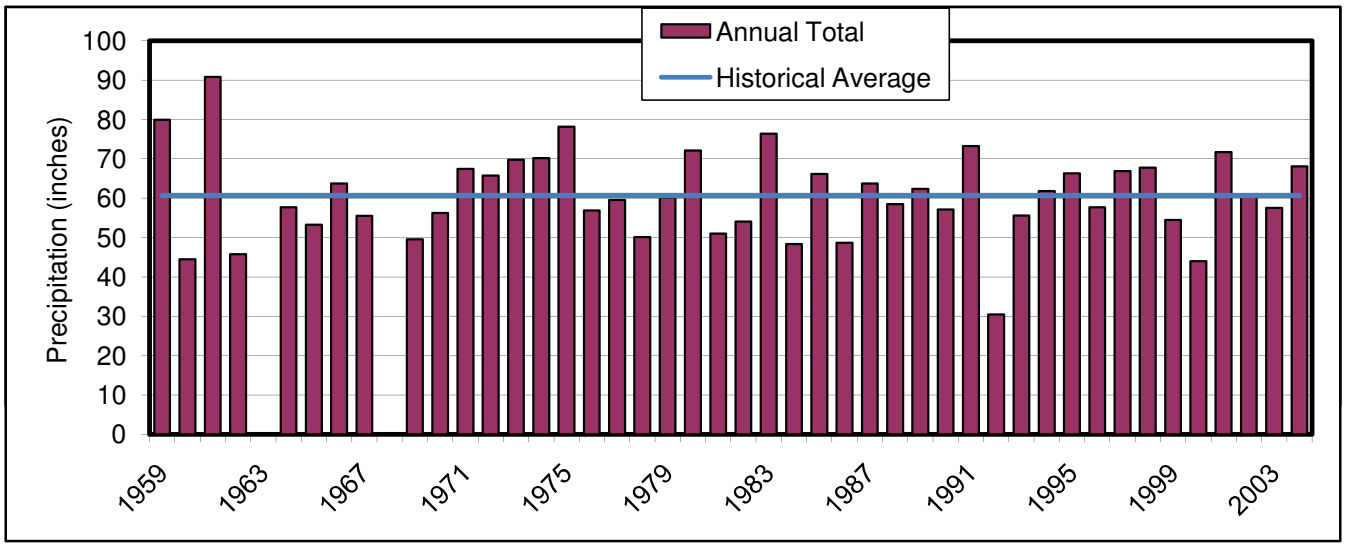


Figure 2. Historical Annual Precipitation at Bogalusa[11]

WATER USE

Water use in the PRB in 2005 is summarized in **Table 3** by sector, water type, and parish. **Table 3** is based on water withdrawal data, which may be greater than total water consumptive use. For example, water withdrawn for irrigation is not entirely consumed by crops, allowing a percentage of the water to be returned to a waterway. Groundwater served as the major water source in the PRB in 2005. Industry and public supply used this supply nearly equally in 2005: the sectors used 14.9 million gallons per day (mgd) and 13.5 mgd, respectively. The only public water supplier that reported water use exceeding 2 mgd in 2005 was the Bogalusa Water System, which used nearly 10 mgd. Nearly all surface water used in the basin, exclusively from Bogue Lusa Creek, was dedicated to industrial purposes, mainly for manufacturing paper products. Because groundwater use is not reported by surface water basin, individual parish groundwater use was estimated by multiplying total parish groundwater use by the percentage of total parish population within the PRB (**Table 3**); actual groundwater use by parish may differ from this estimation.

Figure 3 shows trends in surface water and groundwater use in the PRB at 5-year intervals from 1990. Public supply use of groundwater increased from 6.2 mgd in 1990 to 13.5 mgd in 2005. Total industrial water use increased from 13.7 mgd in 1990 to 20.5 mgd in 2005.

Per capita water use in 2005 (based on reported rural domestic and public supply uses by parish and population) for PRB parishes varied from 103 gallons per capita (person) per day (gpcd) in St. Tammany Parish to 301 gpcd in Washington Parish.[13] The large differences between parishes suggest that water may have been withdrawn in some parishes, but mainly used in others. More representative per capita water use estimates could likely be calculated based on municipal water service provider data.

Table 3. Water Use in the PRB in 2005[13]

Sector	Surface Water (mgd)	Groundwater (mgd)
Aquaculture	0.0	0.0
General irrigation	0.1	0.2
Industrial	5.6	14.9
Livestock	0.2	0.2
Power generation	0.0	0.0
Public supply	0.0	13.5
Rice irrigation	0.0	0.0
Rural domestic	0.0	2.0
TOTAL	5.8	30.7

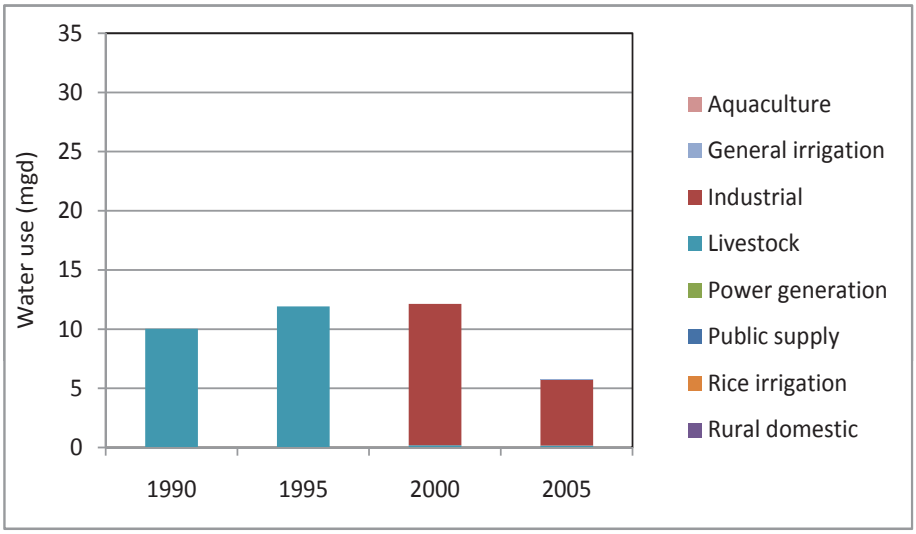
Parish	Surface Water (mgd)	Groundwater* (mgd)
St. Tammany	0.0	2.7
Washington	5.6	28.0
TOTAL	5.6	33.6

*Groundwater use estimated for parishes with at least five percent of their population within the PRB.

mgd=million gallons per day

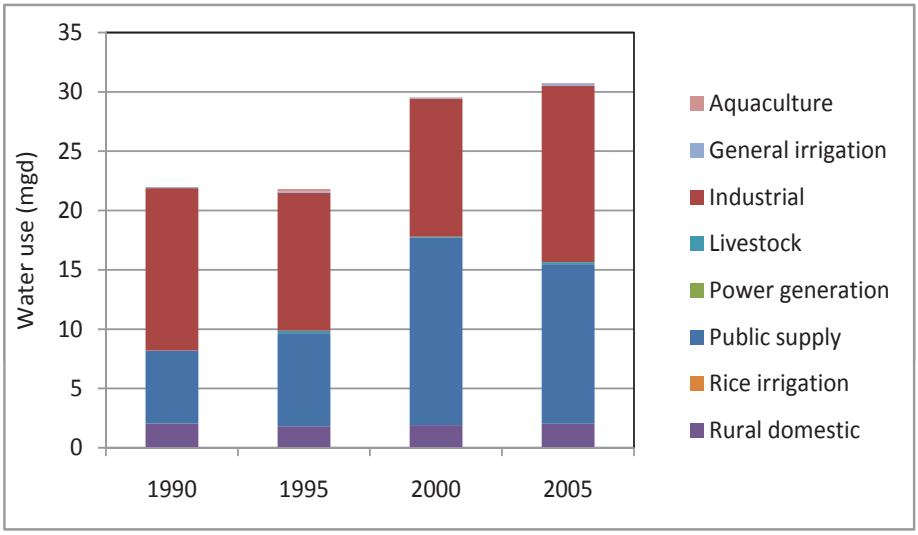
PRB=Pearl River Basin

Recent Historical Surface Water Use



mgd=million gallons per day

Recent Historical Groundwater Use

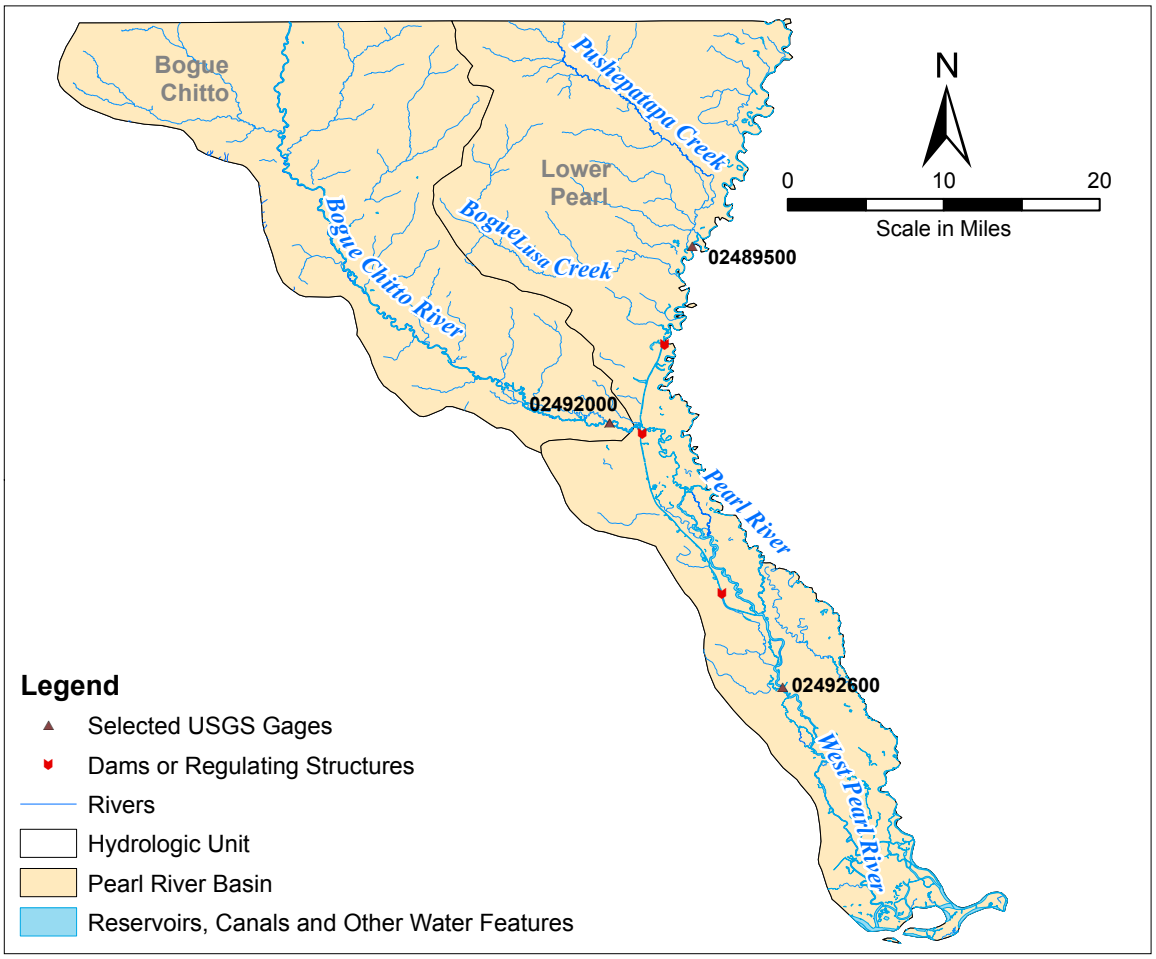


mgd=million gallons per day

Figure 3. Trends in Water Use in PRB by Sector[14]

SURFACE WATER

Primary surface water features in the PRB include rivers and bayous, such as the Pearl River and Bogue Chitto River (**Map 5**). **Map 5** also shows the two subwatersheds, or hydrologic units, delineated by the U.S. Geological Survey (USGS), and stream gages referenced in this report.



Map 5. Surface Water Features[15]

Extensive surface water and groundwater data for Louisiana, including gaged streamflows and lake levels, are available through the USGS National Water Information System (NWIS) Web site.[16] Some gages in the PRB are affected by wind and/or tide. Furthermore, some gages only record river stage and lack reliable stage-discharge relationships. Streamflow statistics for the two gages with recent streamflow data are shown in **Table 4**. Monthly average flows at these two gages are shown in **Figure 4**. Although average flow in the Pearl River is about five times larger than in the Bogue Chitto River, both rivers exhibit a similar seasonal runoff pattern, with highest flows occurring in winter and spring, and minimal runoff occurring in late summer and early fall.

Statistics summarized **Table 4** can be useful for various purposes. The 7-day low flow with a recurrence interval of 10 years (7Q10) is the statistic used to calculate available dilution in surface water discharge permits. Neither the Pearl River nor the Bogue Chitto River has extended low flows, with 7Q10 flows of 1,410 and 485 cubic feet per second (cfs), respectively. Peak flows, including the maximum instantaneous discharge and the streamflow exceeded by only 10 percent of flows, are useful for characterizing flooding and high flow conditions.

The PRB contains 259 miles of streams designated under Louisiana's Natural and Scenic River System (**Map 2**), as created by the Louisiana Natural and Scenic River Act. These waterways are protected by a permit process and certain restrictions, including prohibitions against channelization, impoundment construction, and channel realignment.[19] There are no major lakes or reservoirs in the PRB.[20]

Table 4. Historical Streamflow Statistics for Selected Gages[17]

Stream Gage Informaiton			Period of Record Streamflow Statistics (cfs)				Percent of Streamflows Exceed (cfs)		
				Instantaneous					
Location (USGS Gage)	Drainage Area (mi^2)	Period of Record	Annual Average	Max. Peak (date)	Low Flow (date)	7Q10[18]	10	50	90
Pearl River near Bogalusa, LA (02489500)	6,573	1938-present	10,060	129,000 4/24/79	1,020 10/30/63	1,400	27,900	4,610	1,860
Bogue Chitto River near Bush, LA (02492000)	1,213	1938-present	2,018	132,000 4/8/83	366 10/22/68	485	3,830	1,140	647

7Q10=7-day low flow with 10-year recurrence
cfs=cubic foot per second
LA=Louisiana
mi^2=square mile
USGS=U.S. Geological Survey

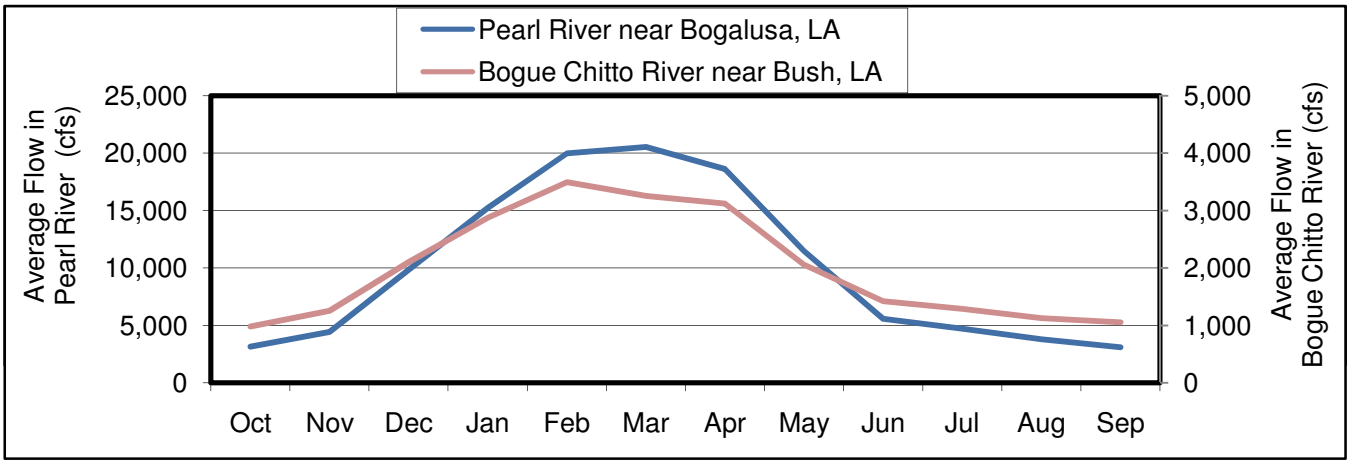
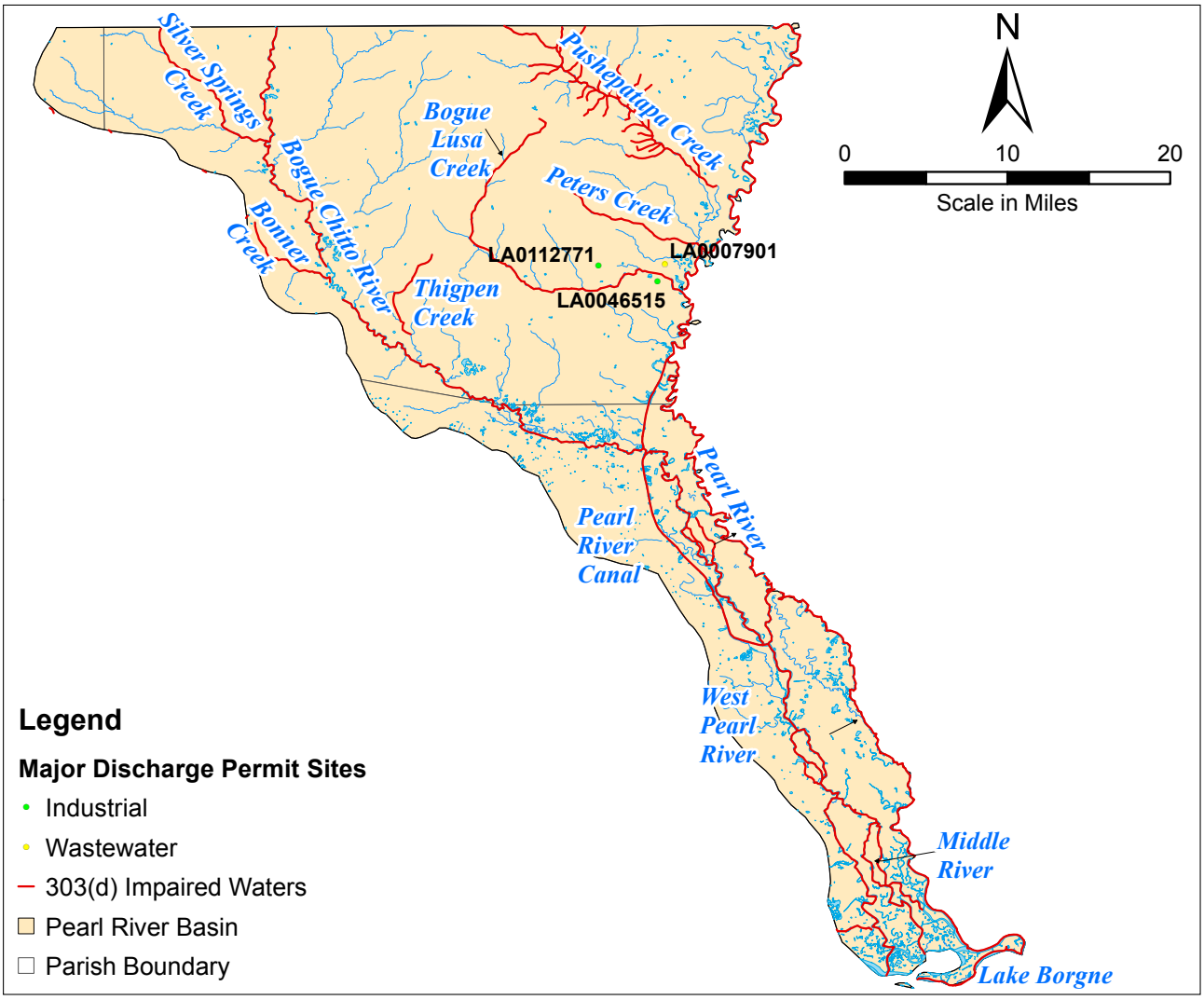


Figure 4. Historical Monthly Average Streamflow for Selected Gages[17]

Surface Water Quality

The 303(d) list (named after Section 303(d) of the Federal Clean Water Act) included in Louisiana's Integrated Water Quality Report provides an overview of surface water locations where water quality standards are not met.[21] In these cases, designated uses of the water bodies, such as fish and wildlife propagation, recreation, or drinking water supply may be impaired. Stream sub-segments on the 2006 303(d) list for the PRB are shown in **Map 6**. The larger streams in the PRB are considered impaired. Design of new reservoirs either impounding impaired waters or discharging to impaired waters would need to consider these water quality challenges and any ongoing or planned water quality improvement projects.



Map 6. PRB Impaired Waters from 303(d) List and Major Permitted Discharge Sites[22]

Table 5 summarizes the number of stream sub-segments in the PRB that are on the 2006 303(d) list, and identifies impaired uses and parameters causing impairment. Fish and wildlife propagation is the most frequently affected use in the PRB.

Mercury in fish tissue, leading to fish consumption advisories, is the most common parameter causing impairment. The Louisiana Department of Environmental Quality (LDEQ) has been investigating the mercury problem throughout the State since fish tissue data for the Ouachita River first resulted in a fish consumption advisory in 1992.[23] No single source has been identified as the cause of mercury impairment in the PRB.

The presence of bacteria, as indicated by fecal coliform, affects recreational uses of some surface waters in the PRB. Several of the fecal coliform impairments are attributed to insufficient wastewater treatment, either from municipal discharges or septic tanks.[21]

Table 5. Summary of PRB Surface Water Quality Impairments[21]

Impaired Use	Sub-segments
Fish and wildlife propagation	29
Primary contact recreation	9
Outstanding natural resource	3
Secondary contact recreation	2

Parameter Causing Impairment (affected use)	Sub-segments
Mercury (FWP and ONR)	16
Fecal Coliform (PCR and SCR)	11
Turbidity (FWP and ONR)	5
Dissolved Oxygen (FWP)	4
Low pH (FWP)	4
Chloride (FWP)	2
Sulfate (FWP)	1

FWP=fish and wildlife propagation
ONR=outstanding natural resource
PCR=primary contact recreation (swimming)
PRB=Pearl River Basin
SCR=secondary contact recreation (boating)

Permitted Surface Water Discharges

The LDEQ issues permits for discharges of municipal and industrial wastewater. Permitted discharges classified as "major" by the U.S. Environmental Protection Agency (USEPA) (generally those with flow greater than 1 mgd) are shown in **Map 6**. Major discharges are summarized in **Table 6**. Additional information on all dischargers in Louisiana can be obtained from LDEQ through their public records request process.[24]

The City of Bogalusa's wastewater treatment facility is the largest municipal discharge at 15 mgd, followed by Temple Island at 9.7 mgd. The only industrial discharger within the basin is the Washington Parish Energy Center. Discharge permit conditions are based on receiving-water low-flow quantity and quality. Future water development projects that change low-flow quantity or quality at the discharge location could affect the ability of permit holders to comply with permit conditions.

Table 6. Major Discharge Permits in the PRB[25]

Discharger	Permit Number	Permitted Discharge (mgd)	Receiving Water	Parish
Bogalusa, City of Wastewater Treatment Plant	LA0046515	15	Pearl River and/or Bogue Lusa Creek	Washington
Temple Island Wastewater Treatment Plant	LA0007901	9.71	Pearl River	Washington
Washington Parish Energy Center	LA0112771	NA	Bogue Lusa Creek	Washington

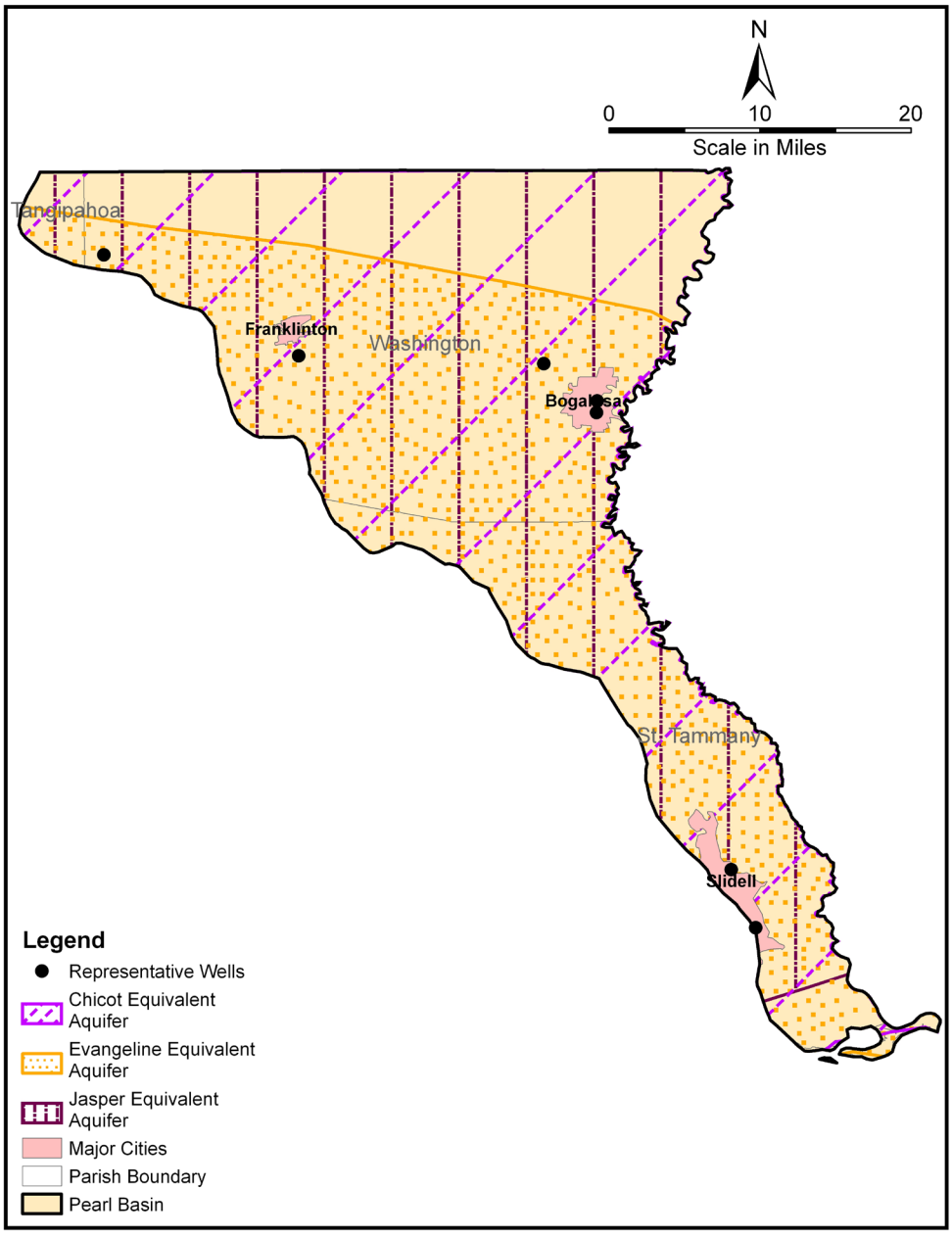
Information presented in this table is directly from USEPA (2009a). For detailed explanation, this reference should be consulted.
mgd=million gallons per day
NA=not available
PRB=Pearl River Basin

GROUNDWATER

According to the 1984 Water Resources Study Commission's Report to the Legislature, the PRB "possesses a vast groundwater resource".[26] The State has registered about 250 water wells in the PRB.[16] The following major aquifers underlie portions of the PRB:

- Upland Terrace Aquifer
- Chicot Equivalent Aquifer
- Evangeline Equivalent Aquifer
- Jasper Equivalent Aquifer

The Chicot Equivalent, Evangeline Equivalent, and Jasper Equivalent aquifers collectively make up the Southern Hills Aquifer System. Aquifers in this system are recognized independently and are locally divided. Local names have been given to the aquifer units based on location and depth.[27] Principal aquifers of the PRB are shown in **Map 7** and their characteristics are summarized in **Table 7**. Aquifer areas overlap because the aquifers occur at different depths. Although the Chicot Equivalent Aquifer (Upper Ponchatoula Aquifer unit[28]) extends into the PRB, the aquifer is not heavily used in this basin. **Figure 5** shows water levels in the most heavily used aquifers in the PRB, where data are available. Few wells located in the PRB provide data spanning the past 20 years, making it difficult to report historical trends in groundwater levels.

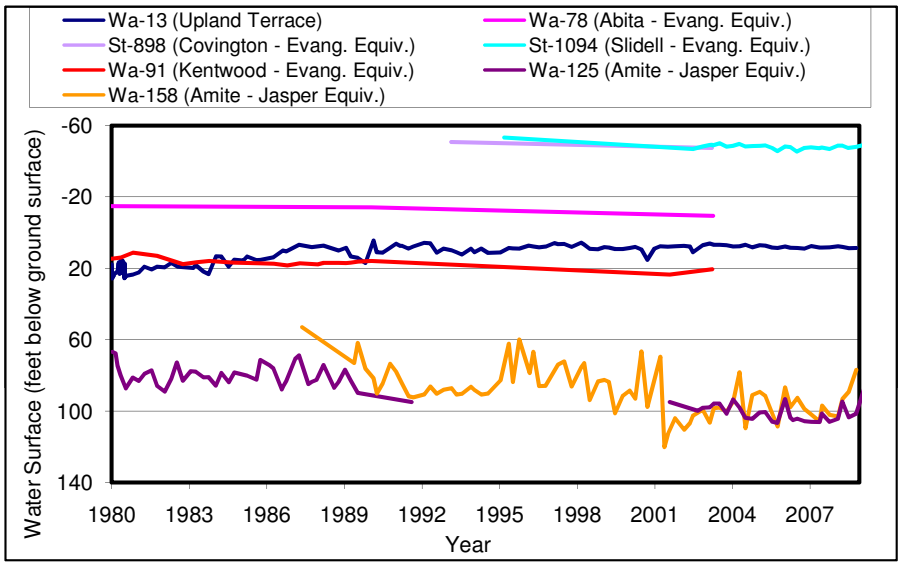


Map 7. Spatial Extents of Major PRB Aquifers[29]

Table 7. Overview of PRB Major Aquifer Characteristics[2]

Aquifer System	Range of Thickness of Freshwater Interval (feet)	Typical Well Yields (gpm)	Hydraulic Conductivity (feet/day)	Specific Capacity (gal/min/ft of drawdown)	Depth to Groundwater in 2005 (feet)[16]
Upland Terrace	25 – 240	100 – 1,700	150 – 270	1 – 50	-13* – 10
Chicot Equivalent	50 – 1,100	500 – 1,000 3,500 (large capacity)	10 – 200	10 – 200	NA
Evangeline Equivalent	50 – 1,000	200 – 4,000	10 – 200	10 – 200	-50 – 100
Jasper Equivalent	1,200 – 2,350	200 – 3,400	10 – 200	10 – 200	40 – 100

*Negative values indicate artesian wells
gal/min/ft = gallons per minute per foot of drawdown
gpm=gallons per minute
NA=not available
PRB=Pearl River Basin



Negative numbers on the y-axis scale indicate elevations above land surface.

Figure 5. Historical Trends in PRB Groundwater Levels in Representative Wells[16]

Historical data from well Wa-13, completed in the Upland Terrace Aquifer in Washington Parish, indicates that groundwater levels have been stable in this aquifer since 1990. Within this overall trend, groundwater levels in the Upland Terrace Aquifer exhibit distinct fluctuations due to seasonal rainfall variation, which is characteristic of surficial aquifers.

The Lower Ponchatoula, Kentwood, Abita, Covington, and Slidell aquifer units of the Evangeline Equivalent Aquifer are used in the PRB.[28] Overall, groundwater levels in the Evangeline Equivalent Aquifer have declined at a rate of less than 1 foot per year (wells Wa-91, Wa-78, St-898, and St-1094 in **Figure 5**).

In the PRB, the Jasper Equivalent Aquifer includes the Tchefuncte, Hammond, Amite, Franklinton, and Ramsay aquifer units.[28] In Washington Parish, groundwater levels in some parts of the Amite aquifer unit declined in the 1980s, although groundwater levels have increased in the past 5 years (wells Wa-125 and Wa-158 in **Figure 5**).

Groundwater levels in the Amite aquifer unit decreased from 1999 to 2000, when a moderate to severe drought affected southern Louisiana. Comparison of USGS data from 1996 and 2005 indicates that groundwater levels in the Amite aquifer unit declined 20 feet in the eastern PRB during that time. In the western basin, Amite aquifer unit groundwater levels declined 5 to 15 feet during the same period.[16]

Groundwater Quality

Groundwater quality issues identified in the 2005 and 2006 LDEQ Baseline Monitoring Program reports are summarized by aquifer in **Table 8**.[30] Federal primary drinking water standards were not exceeded in any of the wells tested in the major PRB aquifers, although water in some wells exceeded secondary standards for pH, total dissolved solids (TDS), color, chloride, and iron. Although no Federal or State standard has been established for chloroform, a volatile organic compound, it was detected at very low levels in one Chicot Equivalent Aquifer well outside the PRB. Water in wells completed in the Jasper Equivalent Aquifer did not exceed the water quality standard for chloride, but the aquifer does show an increasing trend for this constituent.

Table 8. Secondary Drinking Water Standards Exceedences in Major PRB Aquifers

Aquifer	pH	TDS	Color	Chloride	Iron
Upland Terrace	■	■		■	■
Chicot Equivalent	■	■	■	■	■
Evangeline Equivalent	■		■		■
Jasper Equivalent	■		■		

■ – One or more wells exceeded the secondary standard
PRB=Pearl River Basin
TDS=total dissolved solids

FLOODING

Areas within the PRB subject to the greatest flood hazard are situated in the floodplains of the Pearl River, the Bogue Chitto River, and Pushepatapa Creek. The Pearl River caused major flooding in the Slidell area in the 1980s. A USACE feasibility study recommended levees for Slidell, but design and construction did not progress because of cost sharing problems.[31]

The PRB is located almost entirely within the St. Tammany and Washington parishes, both of which have become participants in the National Flood Insurance Program (NFIP) offered through the Federal Emergency Management Agency (FEMA). As part of the NFIP, FEMA prepares Flood Insurance Studies (FIS) and Flood Insurance Rate Maps (FIRM) for rivers and bayous prone to damaging floods in a parish; member communities regulate development in floodplains. These studies and maps document flooding problems within parishes and delineate 100-year flood zones along major waterways. Some 100-year flood zone maps are available as digital geographic information system layers and detailed maps and reports can be obtained from FEMA.[32]

USGS estimated flood flow magnitudes for different return periods at streamflow gages throughout the State. Gages in the PRB where significant historical data have been collected are listed in **Table 9**, along with their estimated peak discharges for various recurrence intervals. The USGS analysis is only valid for rural, unaltered waterways. Also included in **Table 9** are peak discharges for major waterways, as reported in the FISs reviewed as part of this basin characterization.

Table 9. Peak Flow Discharges in the PRB[33]

Source	Location		Flood Magnitude (cfs)			
	Gage Number	Name	2-year	10-year	100-year	500-year
USGS	02489500	Pearl River near Bogalusa, LA	40,500	59,900	80,400	92,700
	02490105	Bogue Lusa Creek at Bogalusa, LA	2,440	7,480	18,400	29,300
FIS	Bogue Chitto River upstream from State Route 21		NA	42,500	87,500	128,000
	West Pearl River at confluence with Old Channel		NA	NA	150,000	NA
	Bogue Chitto River downstream from Isabel Hwy		NA	46,500	98,200	134,500
	Pushepatapa Creek downstream from Mt. Olive Cemetery Road		NA	23,300	83,400	157,000

cfs=cubic feet per second
FIS=Flood Insurance Study
LA=Louisiana
NA=not available
PRB=Pearl River Basin
USGS=U.S. Geological Surve

ENVIRONMENTAL AND CULTURAL ISSUES

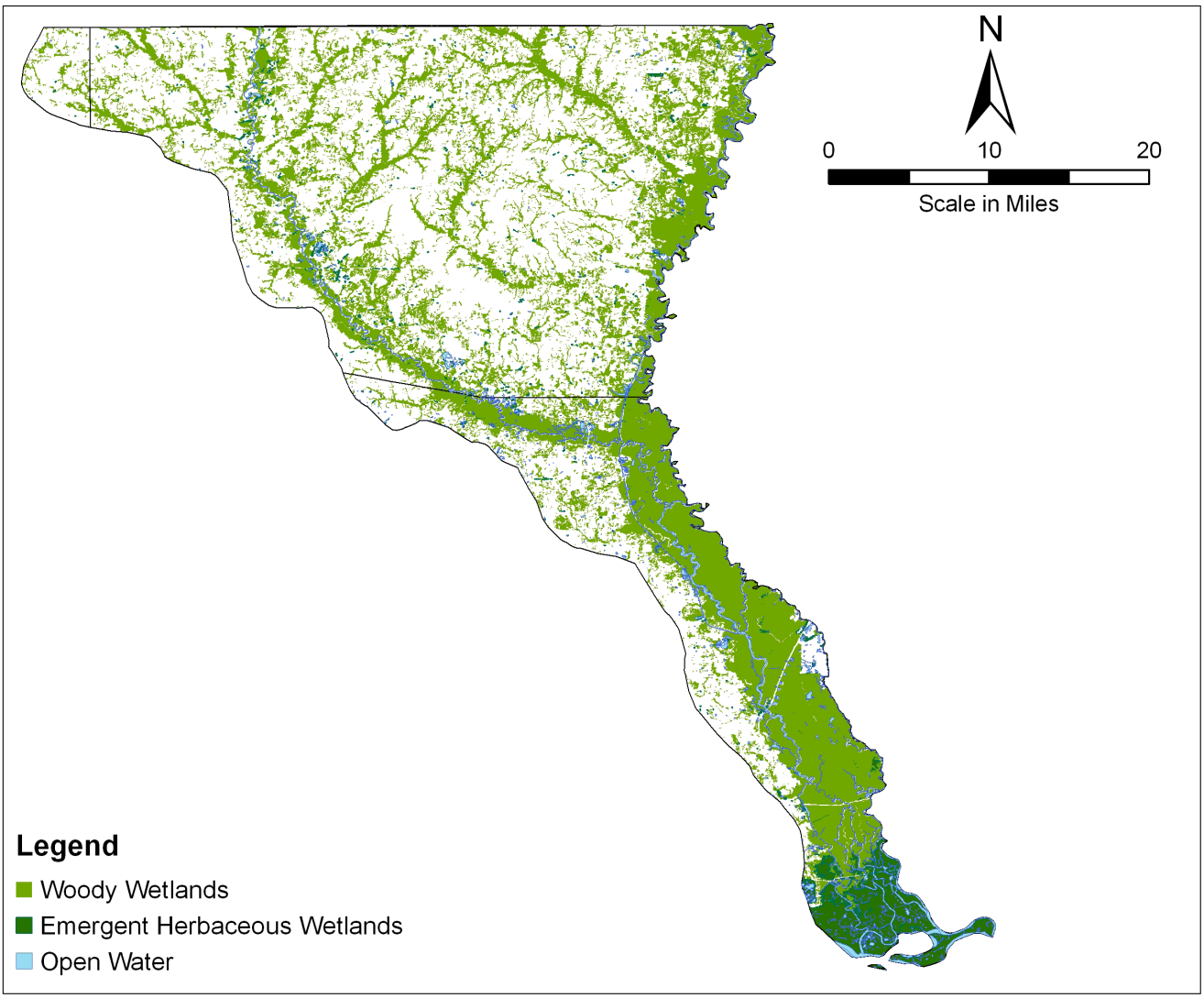
Environmental and cultural resources are important elements of the quality of life in Louisiana, and can affect siting and operation of water resources facilities, as regulated by Federal and State permitting requirements. As shown in **Map 2**, the southern area of the PRB is designated by LDNR as Coastal Zone. Existing environmental issues in the Coastal Zone, such as loss of wetlands and land subsidence, can affect water resources facilities, such as reservoirs.[34]

Habitat and Wildlife

The PRB includes parts of the Southeastern Plains ecoregion, as designated by USEPA.[35] Each ecoregion contains a range of habitats, some of which are associated with species of conservation concern. The Louisiana Wildlife Action Plan prioritizes particular terrestrial habitat types within each ecoregion for conservation.[19] Terrestrial species Federally listed as threatened or endangered that may reside in the PRB include the Louisiana black bear, and interior least tern.[36] The Federal Endangered Species Act gives the U.S. Fish and Wildlife Service (USFWS) the authority to protect listed species and their habitat. USFWS has not mapped critical terrestrial habitat in the PRB.[37]

Aquatic habitats in the PRB support about 108 species of freshwater fishes, 20 species of mussels, and 15 species of crawfish.[19] State species of concern include 3 crustacean, 13 freshwater fish, 5 mussel, and 5 reptile species. The State regulates aquatic habitat through surface water quality standards in water bodies designated for fish and wildlife propagation. The Louisiana Wildlife Action Plan does not prioritize aquatic habitats for conservation. USFWS has identified subwatersheds within the PRB containing surface waters important for conservation of the Alabama heelsplitter mussel, Gulf sturgeon, Louisiana quillwort, and ringed map (sawback) turtle, which are species Federally listed as threatened or endangered.[39]

Wetlands are an important environmental resource throughout the United States, especially in Louisiana. Alteration of these areas often requires a Federal Section 404 permit through USACE. **Map 8** shows areas of wetlands in the PRB. About 37 percent of the PRB's surface area, or 329 square miles, is woody wetlands (i.e., areas where forest or shrubland vegetation accounts for a large portion of the cover, and the soil is periodically saturated or inundated). Only 3.5 percent of the PRB is emergent herbaceous wetlands (i.e., areas where perennial herbaceous vegetation accounts for most of the cover, and the soil is periodically saturated or inundated).[40]



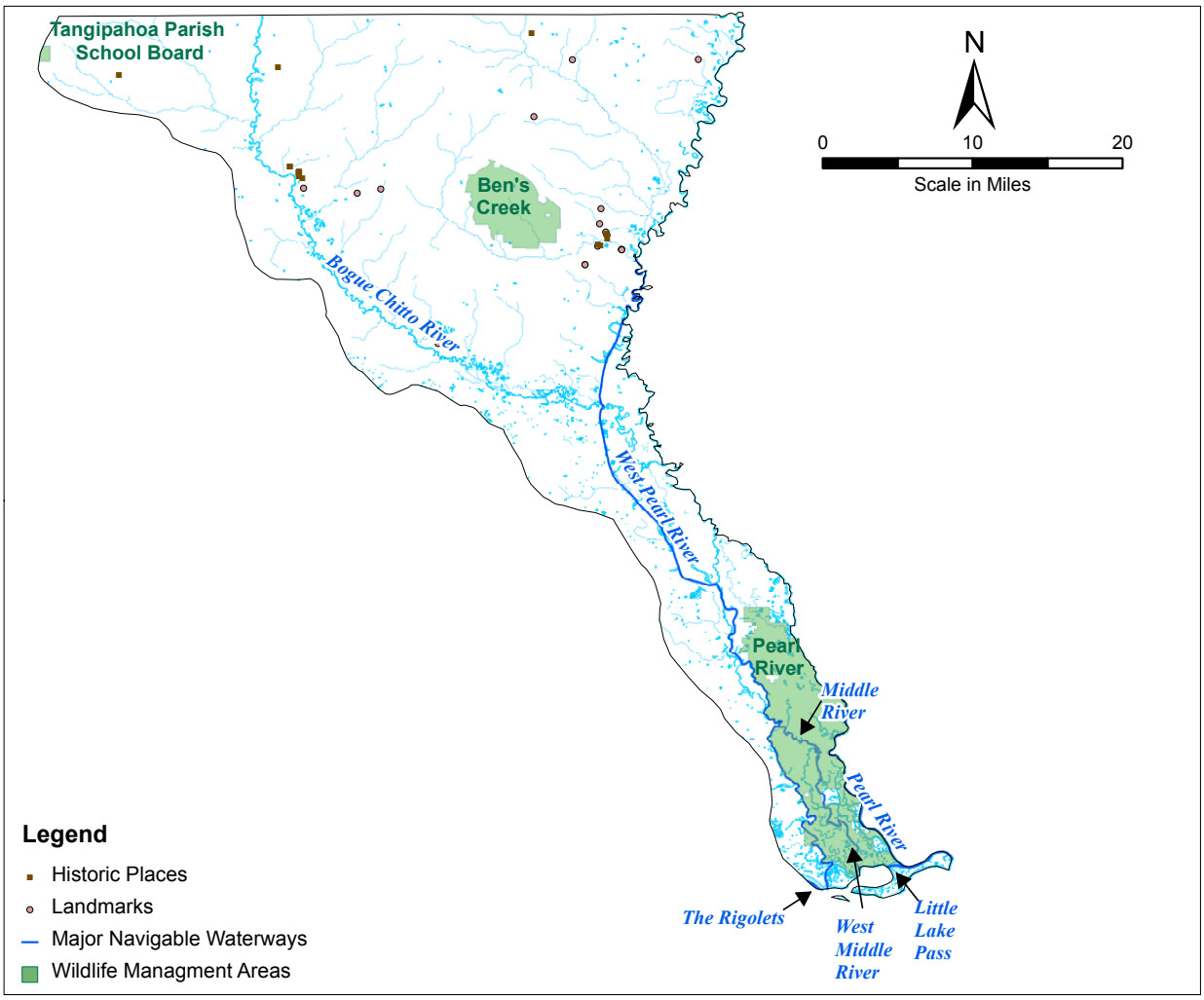
Map 8. Wetlands in the PRB[25]

Cultural Resources

Information on cultural issues and resources is provided by parish-level organizations. Prehistorical (before European colonization) and historical sites are registered with the Louisiana Department of Culture, Recreation, and Tourism (LCRT) and the National Register of Historic Places (NRHP).

Fourteen historic points are located in the PRB (**Map 9**). No archaeological sites in the PRB are listed in the NRHP.[41] Generalized locations of known cultural resources that could affect reservoir siting or operations are available from the NRHP. Additional information is available from the LCRT, Office of Cultural Development, Division of Historic Preservation.

Potentially affected Native American tribes must be notified of any proposed reservoir plans. No Federally or State-recognized tribes are found in the PRB.[42]



Map 9. Cultural and Recreational Resources and Navigable Waterways in the PRB[3]

RECREATION, NAVIGATION, AND HYDROPOWER

The PRB is used extensively for water-oriented recreation. Fishing, swimming, and canoeing are popular recreational activities in the area.[26] There are three Wildlife Management Areas in the PRB; these areas serve as hunting and camping grounds for the general public. Specific recreational resources of regional value are shown in **Map 9**.

One recognized navigable waterway is present within the PRB, the West Pearl River. However, commercial traffic in the basin has decreased, and the waterway is primarily used for recreational purposes.[31] No ports are located in the PRB.

No hydropower projects exist in the basin, although the U.S. Department of Energy has identified several potential sites for small hydropower projects (between 1 and 30 megawatts) and microhydropower projects (less than 100 kilowatts) in the PRB, including on the Pearl and West Pearl rivers.[43]

INTERBASIN AND INTERSTATE ISSUES

No interstate compacts affect water resources in the PRB. Coastal issues, which are not described in detail here, are concerns in the PRB as well as other in basins and states along the Gulf of Mexico.[34]

SUMMARY OF WATER RESOURCES NEEDS

To identify and prioritize statewide water resources issues, a needs assessment of each of the nine major surface water basins within Louisiana was performed. Because the needs assessment provides the foundation for developing reservoir priority evaluation criteria, it focuses on needs that can be addressed by surface water reservoirs. At the same time, the integrated nature of water resources management requires evaluating issues that could not necessarily be solved by, but could be affected by, a reservoir.

Based on the existing compiled information, eight categories of State water resources needs that could be addressed or affected by construction of surface water reservoirs were identified and evaluated. Evaluation criteria were developed for each category to allow interbasin comparison of the needs. To maintain objectivity in the evaluation process, evaluation criteria were developed based on factors that could be evaluated as quantitatively as possible across all basins. High, medium, and low levels of current need were defined based on differences in these factors between basins. Future needs in each basin were assessed by determining whether each current need is increasing, constant, or decreasing. The evaluation criteria are described in detail in the main body of the Statewide Perspective on Water Management Report, to which this basin characterization is an appendix.

The assessed needs in the PRB are summarized below. Details of the assessed needs for all nine major Louisiana surface water basins, as well as a comparison of statewide needs by issue, are presented in the Statewide Perspective on Water Management Report.

Assessed needs in the PRB are shown in **Table 10**, and are discussed below in general order of need, from high-level needs (colored red in **Table 10**) to low-level needs (colored green in **Table 10**). With a small population and little commercial or industrial development, no high-level needs were identified in the basin.

Surface water quality was ranked as a medium-level need in the PRB. Several of the major PRB surface waters are considered impaired by LDEQ. Mercury, fecal coliform, and turbidity are common causes of impairment, the latter two commonly being caused by insufficient septic system or municipal wastewater treatment. Only 6 mgd of surface water are used in the PRB, and surface water supply was ranked as a low-level need.

In the PRB, 31 mgd of groundwater are used, and groundwater supply and quality were ranked as medium-level needs with increasing importance in the future. Up to 30 feet of groundwater level decline has been documented in some aquifers, particularly in the Jasper Equivalent Aquifer. Saltwater intrusion due to over-pumping has already been documented in most of the Southern Hills aquifers, and chloride levels in the Jasper Equivalent Aquifer have been steadily increasing over the past 10 years.

Environmental protection was evaluated as a medium-level need. Several environmental issues constrain future development of additional water supplies, including wetlands and naturally vegetated areas covering nearly 80 percent of the basin; areas considered Prime Farmland by NRCS; 259 miles of State-designated Natural and Scenic Rivers; and the presence of four aquatic and several terrestrial threatened and endangered species.

Flood control was evaluated as a medium-level need as well. Flood risk is recognized in the PRB, although no major population or development centers are threatened. Although levees have been recommend for the Pearl River in the Slidell area, these levees have not been constructed.

Table 10. Assessed Water Resources Needs in the PRB

Category	Current	Future
Surface Water Supply	low	–
Surface Water Quality	medium	↑
Groundwater Supply	medium	↑
Groundwater Quality	medium	↑
Flood Control	medium	–
Environmental Protection and Enhancement	medium	↑
Recreation	low	–
Navigation	low	↑

PRB=Pearl River Basin
Red = high-level need; Yellow=medium-level need; Green=low-level need
↑ = increasing importance
– = same importance
↓ = decreasing importance

Recreation was ranked as a low-level need. The Pearl River is a major recreational facility in the basin, and the low population exhibits little demand.

Navigation was ranked as a low-level need with increasing importance in the future. There are 62 miles of navigable waterway in the PRB, although they are not actively dredged because of lack of traffic and environmental concerns. A proposed flood control project in Jackson, Mississippi, that entails dredging and damming portions of the lower Pearl River could potentially have navigation benefits that would draw additional commercial traffic to the PRB if the project is carried out.

ABBREVIATIONS

°F	degrees Fahrenheit
7Q10	7-day low flow with a recurrence interval of 10 years
cfs	cubic feet per second
DOTD	Louisiana Department of Transportation and Development
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
gpcd	gallons per capita per day
LCRT	Louisiana Department of Culture, Recreation, and Tourism
LDEQ	Louisiana Department of Environmental Quality
LDNR	Louisiana Department of Natural Resources
mgd	million gallons per day
NFIP	National Flood Insurance Program
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWIS	National Water Information System
PRB	Pearl River Basin
State	State of Louisiana
TDS	total dissolved solids
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

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