Nonpoint Source PROGRAM

2010 Annual Report

DEQ LOUISIANA

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Acronyms and Abbreviations

BMP.....Best Management Practice
BTNEP.....Barataria Terrebonne National Estuary Program
CNPCP.....Coastal Nonpoint Pollution Control Program
CREP.....Conservation Reserve Enhancement Program
CRP.....Conservation Reserve Program
CSP.....Conservation Security Program
DO.....Dissolved Oxygen
EPA.....Environmental Protection Agency
EQIP.....Environmental Quality Incentive Program
ERC.....Environmental Regulatory Code
FBMP.....Forestry Best Management Practice
FY.....Fiscal Year
GIS.....Geographic Information System
GOMA.....Gulf of Mexico Alliance
GOMP.....Gulf of Mexico Program
GRP.....Grasslands Reserve Program
IR.....Integrated Report
LDAF.....Louisiana Department of Agriculture and Forestry
LDEQ.....Louisiana Department of Environmental Quality
LDHH.....Louisiana Department of Health and Hospitals
LDNR.....Louisiana Department of Natural Resources
LMRCC.....Lower Mississippi River Conservation Committee
LPBF.....Lake Pontchartrain Basin Foundation
MOU.....Memorandum of Understanding
MRBI.....Mississippi River Basin Initiative
MUS.....Marsh Upwelling System
NPS.....Nonpoint Source
RC&D.....Resource Conservation and Development
SWCD.....Soil and Water Conservation District
TMDL.....Total Maximum Daily Load
USDA.....U.S. Department of Agriculture
WHIP.....Wildlife Habitat Incentive Program
WRP.....Wetlands Reserve Program

1.0 Executive Summary

The Federal Fiscal Year (FFY) 2010 Nonpoint Source (NPS) Annual Report has been prepared in compliance with Section 319 of the Clean Water Act (CWA). The purpose of the report is to provide an overview of progress made in reducing nonpoint source pollution and improving water quality within the State of Louisiana. NPS pollution comes from a number of activities, including agricultural production, forestry, sand and gravel mining, urban storm water runoff, construction and individual home sewage systems. Although LDEQ has been designated as the lead agency for the NPS Program, many other agencies and organizations partner to implement the statewide program and watershed programs intended to improve water quality. This interagency coordination is the strength of Louisiana's NPS Program, resulting in water quality improvement and success stories for the state.

During FFY 2010, the State of Louisiana continued to make progress in implementing the NPS Management Plan. The revised NPS Plan was provided to the public for review and comment, as well as to the U.S. Environmental Protection Agency (USEPA) Region 6 for review, comment, and final approval. The revised NPS Plan includes goals, tasks and milestones designed to describe the types of activities that LDEQ and its partners will need to implement between now and 2015. The revised plan is available online at http://www.deq.la.gov.

In addition to revising the NPS Management Plan, LDEQ published a success story for the Bayou Plaquemine Brule watershed. This story that can be accessed at USEPA's national website (http://www.epa.gov/nps/Success319/) indicates that Bayou Plaquemine Brule was fully meeting the primary and secondary contact recreational uses in accordance with the 2008 Integrated Report (IR). This success resulted from many partners collaborating on efforts to reduce pollution from individual home sewage systems and pasture lands in the watershed. Additionally, the draft 2010 IR indicates there have been significant water quality improvements made in many other water bodies in the state. Therefore, LDEQ plans to prepare and submit additional success stories in 2011 to USEPA.

One example of an effective partnership is with the Office of Soil and Water Conservation (OSWC) within the Louisiana Department of Agriculture and Forestry (LDAF). This partnership has resulted in a targeted approach for working on nonpoint source problems associated with agricultural production. In agricultural watersheds with total maximum daily loads (TMDLS) and watershed implementation plans (WIPs) completed, USEPA provides Section 319 funds to OSWC to implement best management practices (BMPs). To improve water quality, U.S. Department of Agriculture (USDA) provides technical assistance to farmers who implement agricultural BMPs on their lands. This working partnership allows the state to leverage CWA funds with Farm Bill funds to expand the level of BMP implementation in watersheds where water quality problems are associated with agricultural NPS pollution.

In addition to agricultural NPS pollution, LDEQ is focusing on water quality problems associated with urban storm water runoff, construction activities on roads and highways, individual home sewage systems and sand and gravel mining operations in the state. The Source Water Protection Program (SWPP) has collaborated with the NPS Program to replace, update and/or remove failing sewage systems and educate the public on the importance of maintaining their systems. Highlights of these programs are included in this report. Numerous areas of Louisiana have experienced rapid growth and development, therefore emphasis has been placed on working with these parishes to establish new ordinances that require the use of BMPs for all new development and home sewage systems.

The NPS program has made progress in reducing nonpoint source pollution in order to improve water quality, and will continue to target additional watersheds for inclusion in the program. As stated, the success of the program is largely attributed to effective collaboration of federal, state, and local governments

partnering with universities, non-profit organizations, and the public. These partnerships will continue to be the basis for watershed and statewide efforts during 2011.

Highlights of the State's NPS Management Program for FFY 2010 included:

- LDEQ published a success story for Bayou Plaquemine Brule watershed;
- LDEQ continued implementing 28 projects in the state to reduce the amount of NPS pollution entering the state's water bodies;
- LDEQ continued working with nine (9) watershed coordinators that are located throughout the state;
- LDEQ continued working through their GIS Center on detailed satellite imagery classification of land-uses for the Calcasieu River Basin and the Vermilion-Teche River Basin. This data will be utilized for planning and implementation in impaired watersheds as well as protection of those watersheds that have healthy waters;
- LDEQ partnered with USDA on the Mississippi River Basin Initiative (MRBI) to prioritize three watershed areas in Louisiana for nutrient reduction strategies;
- LDEQ updated the NPS website with additional 319 projects, watershed plans and NPS tools;
- LDEQ worked on 18 WIPs for impaired water bodies with completed TMDLs in the Calcasieu, Red, Ouachita, Mermentau, Lake Pontchartrain, Terrebonne and Vermilion-Teche Basins;
- LDEQ managed approximately $5.7 million of Section 319 grant funds in order to implement projects to reduce NPS pollution and improve water quality;
- LDEQ held meetings with the Office of Conservation at the Louisiana Department of Natural Resources (LDNR) and the Nature Conservancy targeting sand and gravel mining activities for NPS pollution reduction;
- LDEQ collaborated with the Office of Coastal Protection and Restoration (OCPR) on the Coastal Impact Assistance Program (CIAP) to protect coastal cypress-tupelo forests;
- LDEQ participated in the Gulf of Mexico Program's Nutrient Reduction Strategy for gulf coast states; and
- LDEQ participated in planning meetings for USEPA's New Healthy Watershed Initiative.

In FFY 2011, LDEQ will continue to work in priority watersheds with watershed coordinators and will also expand the program to include new partnerships. The NPS Program has been moved into the Office of Secretary to work through the Business Community Outreach & Incentives Division (BCOID). This Division includes the Small Business Assistance Program (SBAP) and the Clean Water State Revolving Loan Fund (CWSRF) Program. This new structure allows for closer coordination with the SBAP to work with cities needing assistance with urban storm water pollution problems. There will also be additional opportunities to focus on watersheds where the CWSRF Program has worked with municipalities and parishes on improvements to their sewage systems. These combined efforts should result in more water quality improvements in the state.

2.0 Water Quality Improvement

2.1 Improvements shown in 2010 Draft Integrated Report

In FFY 2010, LDEQ compiled the 2010 IR, which provided information on water quality of all water bodies within the state (based on water quality data from 2007 to 2009). The IR is prepared biennially and is currently posted on LDEQ's website at http://www.deq.la.gov. The 2008 IR indicated that water quality had improved (i.e. one or more causes of impairment had been removed) (Table 2.1). The 2010 Draft IR indicated that an additional 135 causes of impairments had been removed since 2008, thereby improving water quality.

River Basin (Basin Number)	*Number of Impairments Removed in 2008 IR*	*Number of Impairments Removed in 2010 IR*
Atchafalaya (01)	2	3
Barataria (02)	9	15
Calcasieu (03)	6	15
Pontchartrain (04)	29	3
Mermentau (05)	8	11
Vermilion-Teche (06)	24	8
Mississippi River (07)	1	4
Ouachita River (08)	8	28
Pearl River (09)	7	5
Red River (10)	16	23
Sabine River (11)	7	0
Terrebonne (12)	12	20
Total	**129**	**135**

Table 2.1: Number of water quality impairments removed, as reflected in the 2008 and the 2010 IRs

The 2010 Draft IR indicated that water quality improvements were made in water bodies designated for primary (PCR) and secondary contact recreation (SCR) and also for fish and wildlife propagation (FWP). The graph below illustrates that PCR and SCR continued to climb toward full attainment from 2000 through 2010. The graph also illustrates the percentage of water bodies in full compliance with the FWP use.

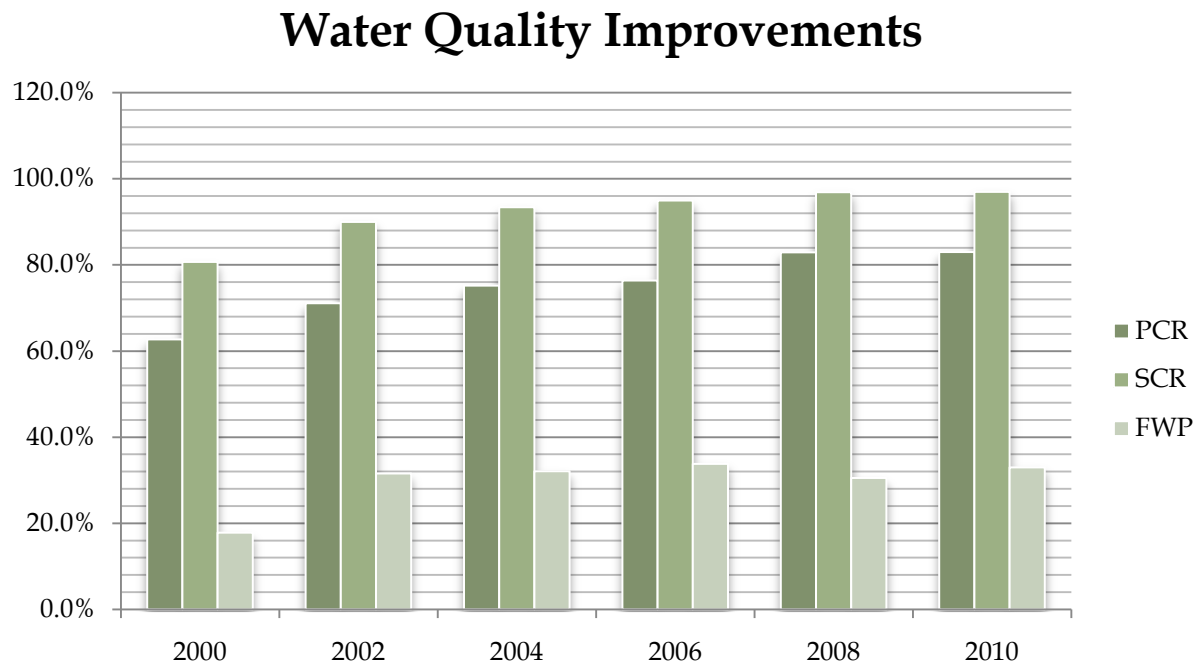

Figure 2.1: Percentage of water bodies meeting their designated use for primary contact (PCR) and secondary contact (SCR) recreation and fish and wildlife propagation (FWP) over the past 10 years

In order to continue progress toward water quality improvement, LDEQ hired watershed coordinators to work with stakeholders at the local level. In FFY 2010, LDEQ worked with these coordinators to expand on the watershed activities initiated in 2009. As a result, local task force meetings have been held, projects have been implemented and extensive education and outreach has been conducted to inform the public about water quality.

2.2 Organizing Watershed Coordinators

During FFY 2010, LDEQ's NPS Unit continued to partner with watershed coordinators representing the Resource Conservation & Development Councils (R.C&Ds) and the Lake Pontchartrain Basin Foundation (LPBF). The watershed coordinators organized local stakeholder groups to address nonpoint source problems in their respective watersheds. Local stakeholder groups are key to implementing NPS related activities in their watershed. LDEQ's staff and coordinators hold bi-monthly meetings to evaluate progress and share information and ideas relating to water quality.

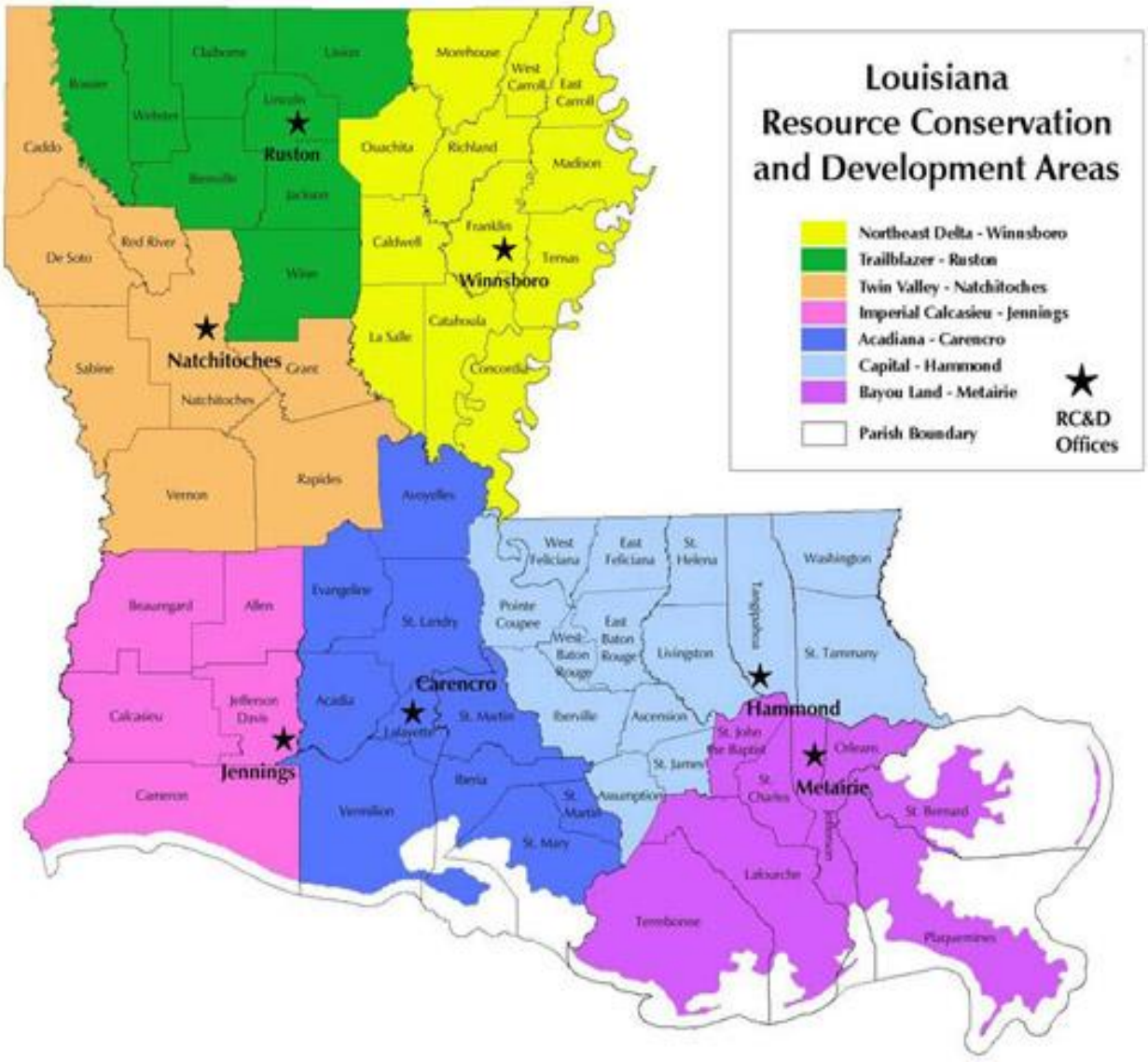

Figure 2.2: Resource Conservation and Development Areas

3.0 NPS Program

The NPS Program leverages funds that it receives through Section 319 (h) of the CWA with other funds, such as USDA or Gulf of Mexico, to implement the goals and objectives of the program. Congress allocates Section 319 CWA funds to the states through USEPA for nonpoint source-related activities. LDEQ and LDAF apply for these funds. The 319 base funds awarded to LDEQ are available for a number of activities, including partnering with cities, parishes and local organizations. LDEQ's portion of the grant is used to fund specific nonpoint source activities to improve water quality and protect the state's drinking water supplies. In addition to the specific projects, LDEQ utilizes a portion of Section 319 funds for NPS program administration.

Incremental funds are received by LDAF for implementation of agriculture and forestry BMPs in watersheds where WIPs and TMDLs have been completed. In FFY 2010, the LDAF Office of Soil and Water Conservation (OSWC) implemented $553,396 of 319 funds for agricultural BMPs in the Mermentau and Ouachita River Basins. In addition to these federal funds, $672,248 were provided as matching funds from the landowners. Descriptions of the type and extent of agricultural practices that LDAF has implemented are included in the Basin Sections of this report.

LDEQ expended approximately $3.8 million of Section 319 base funds during FFY 2010 (Table 3.1) to implement 28 projects directed at reducing NPS pollution and improving water quality. This expenditure of base funds required that LDEQ provide approximately $1.89 million of matching funds dedicated from overhead and indirect costs by LDEQ and its partners. Therefore LDEQ expended approximately $5.76 million for NPS activities during FFY 2010.

Grant Year	*Federal*	*Match*	*Total*
2004	1,577,803	868,212	2,446,015
2005	576,820	465,971	1,042,791
2007	101,130	35,118	136,248
2008	1,617,210	521,088	2,138,298
Total	**3,872,963**	**1,890,389**	**5,763,352**

Table 3.1: LDEQ Section 319 Funds Expended in FFY2010 (October 2009 – September 2010)

Expenditure of these funds resulted in implementation of 28 projects during FFY 2010. Approximately 25% of these projects focused on statewide activities, while 75% of the projects focused on watershed specific activities (Figure 3.1) in seven basins of the state. Descriptions of these projects and/or activities have been included in this report.

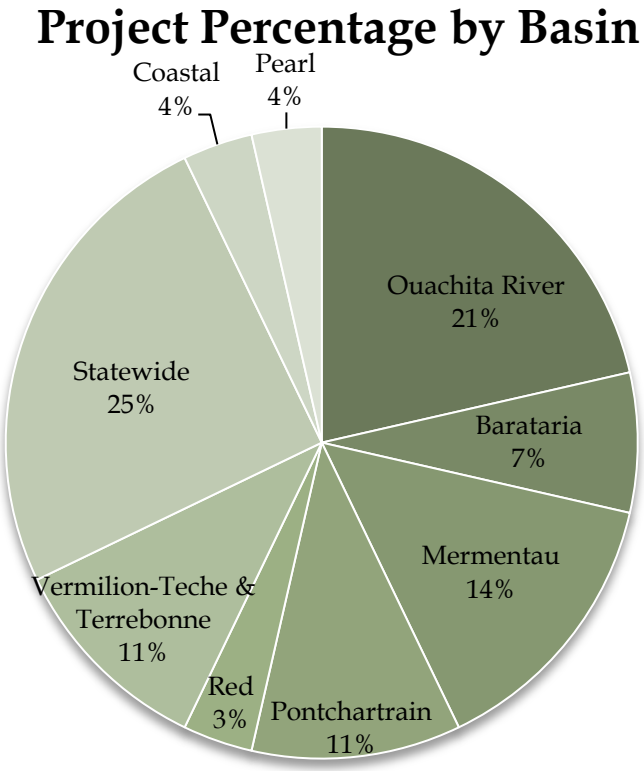

Figure 3.1: Percent of projects in each river basin.

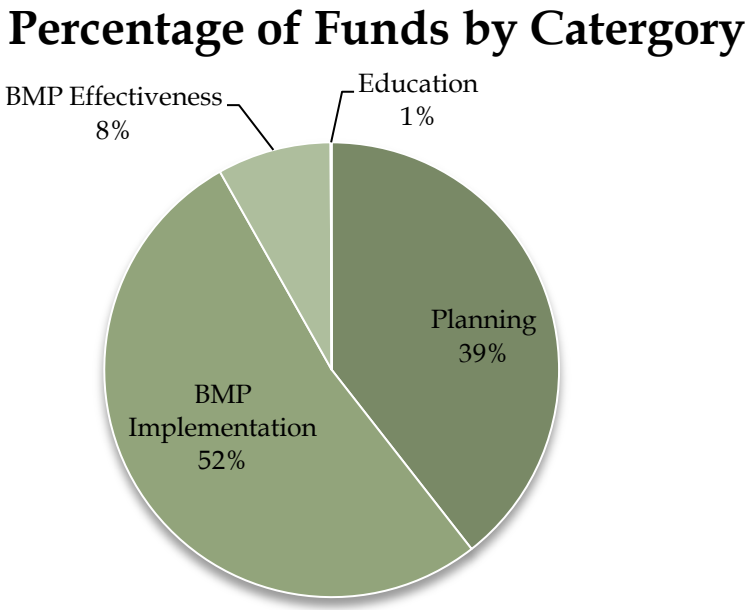

Figure 3.2: Illustrates how federal and matching funds were distributed between two major categories of projects: Planning and Implementation

4.0 Meeting the NPS Milestones

Figure 4-1: NPS Staff providing educational information on NPS problems to ULL students during the University's Earth Day Celebration

The NPS Management Plan included a set of tasks and a timeline to meet those tasks. Progress made on implementing the tasks is described within the watershed and statewide sections of the report. In 2004, LDEQ through its Clean Waters Program (CWP) established quantifiable goals of restoring 25% of the impaired waters in the state. This goal has been the basis for establishing tasks and projects funded by LDEQ and LDAF during FFY 2010. As indicated in the draft 2010 IR significant progress has been made toward meeting these water quality goals. In fact, the water quality goals for those water bodies impaired for contact recreation have already been met. LDEQ will continue to focus on improving of water quality across the state during FFY 2011 and beyond.

In FFY 2010, LDEQ's Water Quality Modeling section developed TMDLs for nine water bodies and USEPA developed 27 TMDLs for water bodies in Louisiana. The TMDLs developed by LDEQ included Bayou Liberty (040905 & 040906), Bayou Bonfouca (040907 & 040908), Bayou LaCombe (040901 & 040902), Bayou Manchac (040201), Lower Amite River (040303), Bayou Cane (040903 & 040904), Grays Creek (040304), Colyell Creek (040305), and Selser's Creek (040603). The TMDL reports can be found on LDEQ's website http://www.deq.louisiana.gov/portal/DIVISIONS/WaterPermits/TotalMaximumDailyLoadTMDLProgram.aspx. These reports will be the basis for WIPs and implementation activities.

5.0 Source and Ground Water Program

5.1 Source Water Protection Strategy

LDEQ's Source Water Protection Strategy is implemented through the BCOID. LDEQ's Source Water Protection Program (SWPP) is officially known in Louisiana as the Drinking Water Protection Program, however for this document, it will be referred to as the SWPP to be consistent with EPA's nomenclature. The main goal of LDEQ's SWPP is to protect all sources of potable water (groundwater and surface water) from contamination at public water systems. Through the SWPP, LDEQ has located all public water supply sources and evaluated their susceptibility to contamination. Information derived from this program has been used by LDEQ and outside agencies to partner with parishes on SWPP implementation.

Key elements of Louisiana's Source Water Protection Strategy include:

- Maintaining and updating Source Water Assessment Program (SWAP) data, which includes information on sources of drinking water (wells or intakes) and potential sources of contamination near those drinking water sources;
- Developing contingency plans for all water systems in each targeted community in the event of an emergency or loss of the water supply;
- Implementing a public education/awareness campaign to inform the public about their source of drinking water, why it's important and how it can be protected;
- Forming the Source Water Protection Committees consisting of local residents from the targeted parishes. Each committee is trained on its role in drinking water source protection within its community and applicable BMPs to control pollution near their drinking water sources. Each committee establishes and implements its own set of source water protection goals;
- Educating businesses that are potential sources of contamination about BMPs and/or activities that can be implemented (identified by the SWAP);
- Developing and distributing educational and outreach material for the community to protect its drinking water;
- Addressing the most potentially threatening sources of contamination in each community;
- Addressing specific issues identified by the committee and the community to protect drinking water sources;
- Addressing specific NPS contamination identified as affecting water supplies; and
- Working with each committee to adopt a local ordinance to further protect their drinking water source.

Implementation of scheduled source water protection strategies over the past year included:

- Signage: 61 Drinking Water Protection Area Signs were delivered to communities in Concordia, Iberia, Iberville, and LaSalle parishes for placement on highways at the boundaries of Drinking Water Protection Areas. These signs inform the public of areas that are designated as a drinking water protection area which could be subject to restrictive activities;
- Workshops: 2 community meetings, 19 local committee meetings in 6 parishes (Caddo, Concordia/Tensas, Iberia, LaSalle and Lincoln);
- Public Education and Outreach: visiting 497 potential sources of contamination, primarily in urban areas, by committee members and Drinking Water Protection staff; informing citizens about potential pollution of their local drinking water source, emphasizing NPS;
- Ordinances: partnering with 17 local governments in 6 parishes to adopt an ordinance limiting specific NPS activities near public drinking water wells; and

- Wellhead Protection Programs/ Contingency Plans: 24 contingency plans were received by SWPP staff. Staff strives to address specific NPS contamination affecting drinking water sources, particularly in surface waters. However, ground water sources can also be impacted by NPS pollutants; therefore, SWPP targets these pollutants as well. Typical projects to address NPS contamination include education programs to encourage used oil recycling and visiting businesses that are potential sources of contamination. LDEQ's SWPP and NPS staff partnered their outreach activities to inform communities on importance of maintaining individual sewage treatment systems.

5.2 Ground Water Strategy

LDEQ's groundwater monitoring strategy is implemented through its Aquifer Sampling and Assessment Program, also known as the ASSET Program. The ASSET Program is an ambient groundwater monitoring program designed to determine and monitor the quality of groundwater in Louisiana's principal freshwater aquifers. The monitoring of aquifers (groundwater) is equally important as monitoring surface water bodies due to the interaction of the two. A contaminated aquifer could be a NPS of contamination to surface water drinking water sources.

Approximately 200 water wells are included in a statewide well grid. This number varies over time depending on owner participation, which is voluntary, and the operational status of each well. The water wells are located in fourteen of Louisiana's major aquifers and aquifer systems which are sampled by LDEQ at no cost to the well owner. The sampling process is designed to allow all fourteen aquifers and aquifer systems to be monitored on a three-year cycle; therefore each well is sampled every three years.

A well density goal of at least one well per 400 square miles is maintained for each aquifer. An effort is made to distribute the wells evenly in the areal extent of each aquifer, and select the wells in accordance with the use types. This selection process helps ensure data derived from sampling activities are representative of the aquifer. The types of wells selected for monitoring include: domestic, public supply, industrial, irrigation, observation, power generation, and monitoring wells.

For each well, samples are collected and analyzed for the following parameters: water quality, metals, nutrients, volatile organic compounds, semi-volatile organic compounds, pesticides, and PCBs. The following field parameters are also recorded at the time of sampling: temperature, pH, specific conductance, salinity, and beginning in March of 2003, total dissolved solids (TDS). In addition to these, the geographic location (latitude and longitude) of each well is determined using real-time differentially corrected GPS.

After all the wells assigned to each aquifer are sampled and all field and analytical data are completed and validated, an aquifer summary is prepared. These summary reports provide data interpretation for the aquifer. All summaries are used to complete a triennial report, summarizing the three-year monitoring cycle. The Triennial Report and aquifer summaries are posted on LDEQ's website.

Field and laboratory results from the wells sampled are provided to well owners. Additionally, the data derived from the ASSET Program is available to interested parties.

The goal of the ASSET Program is to determine and monitor the quality of groundwater in the major aquifers of Louisiana, in a systematic manner in order to provide scientifically defensible data. The ASSET Program attempts to achieve this goal through implementation of the following strategies:

- Maintain a well grid of at least 180 wells;
- Sample at least 60 wells per year;
- Report data to well owners;
- Produce aquifer summary reports and the Triennial Report;

- Review and revise as necessary the ASSET Program Quality Assurance Project Plan (QAPP) to reflect programmatic and organizational changes; and
- Biennially, produce the groundwater portion (Part 4) of the IR.

Based on these key strategies, the following activities were successfully completed by the ASSET Program for FFY 2010:

Maintain a well grid of at least 180 wells

The ASSET Program currently maintains a network of 203 active water wells. Of these 203 water wells, one is classified as Monitoring, Recovery, and "Other"; two are classified as Power Generation; five wells are classified as Observation; 19 classified as Irrigation; 45 are classified as Domestic; and 99 wells are classified as Public Supply. The LDOTD originally registered and classified these wells, based on their usages. This responsibility has been transferred to LDNR.

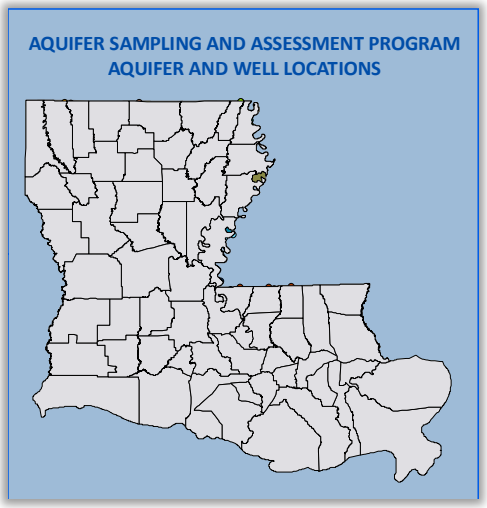

Figure 5.1: Map of Aquifer and Well Locations

Sample at least 60 wells per year

For calendar year 2010, the ASSET Program sampled 66 wells, including seven new wells added and sampled for the first time this year. See Appendix A.

Figure 5.2: Well Sampling Performed by AEP Staff

Report data to well owners

Laboratory analytical reports were reviewed and validated, then reports were prepared and sent to well owners.

Produce aquifer summary reports and the Triennial Report

Ten aquifer summaries were prepared and submitted for peer review this year. Of these ten, nine have been finalized and posted on the Department's web site. The Triennial Report was completed last year.

Review and revise as necessary the ASSET Program Quality Assurance Project Plan (QAPP)

The ASSET Program QAPP has been reviewed and necessary revisions have been made. It is currently under review at LDEQ. As soon as that process has been completed, it will be submitted to USEPA Region XI for review/approval.

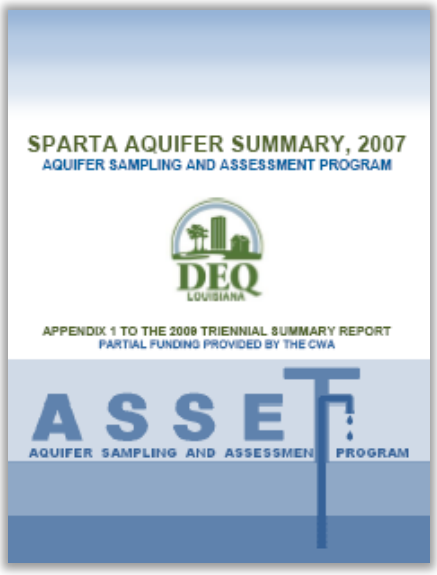

Figure 5.3: Aquifer Summary Report

Biennially, produce the groundwater portion (Part 4) of the Integrated Report

Data derived from the Aquifer Sampling and Assessment Program was used to prepare the groundwater portion (Part 4) of the IR, which is required by Congress every two years. For this reporting period, data from wells sampled and analyzed in the Mississippi River Alluvial Aquifer was used.

6.0 Watershed Planning and Implementation

6.1 Watershed Coordination & Implementation Plans

Louisiana's NPS Program focused much of its efforts on watershed planning and implementation in order to improve water quality in water bodies not fully meeting their designated uses. This watershed management approach utilizes TMDLs combined with detailed land-use classification from satellite imagery and watershed characterization to target specific areas in the watershed where BMPs should be implemented. All of the TMDLs that have been completed are available on LDEQ's website at: http://www.deq.louisiana.gov/portal/default.aspx?tabid=1563.

During FFY 2010, LDEQ's NPS staff partnered with the watershed coordinators to revise or initiate 18 WIPs in the Ouachita, Vermilion-Teche, Red, Mermentau, Terrebonne, Calcasieu, Sabine, and Lake Pontchartrain Basins. LDEQ's GIS staff completed detailed land-use classification for the Vermilion-Teche Basin and is currently finalizing classification for the Calcasieu Basin. WIPs are available on LDEQ's NPS Program website at: http://nonpoint.deq.louisiana.gov/wqa/WaterShedPlanning.htm.

Implementation Plans Focused on in FFY 2010	
Basin	**Sub-segment**
Ouachita	Bayou Lafourche (080904)
Ouachita	Big Creek (080903)
Ouachita	Joe's Bayou (081002)
Ouachita	Tensas River (081201)
Ouachita	Lake St. Joseph (081202)
Vermilion-Teche	Vermilion River (060801,060802)
Vermilion-Teche	Bayou Teche (060301,060401)
Lake Pontchartrain	Ponchatoula Creek (040505)/ Yellow Water River (040504)
Lake Pontchartrain	Abita River/Bogue Falaya River (040804)
Red	Flat River (100406)
Calcasieu	Marsh Bayou (030603)
Terrebonne	Bayou Terrebonne (120301)
Sabine	Vinton Waterway (110601)
Red	Cane River (101101)
Ouachita	Dugdemona (081401)
Mermentau	Bayou Lacassine (050601)
Mermentau	Bayou Nezpique (050301)

Table 6.1: List of watersheds and their respective basins in which a WIP is being initiated or revised

WIPs are organized according to USEPA's nine key elements, which provide a systematic approach to target critical areas in the watershed for implementation activities to restore water quality. The nine key elements include:

1. Identify the causes and sources of nonpoint pollution
2. Estimate the load reductions needed
3. Describe the management measures needed
4. Describe the technical and financial assistance needed
5. Develop a strategy to provide information and education
6. Develop an implementation schedule
7. Identify interim milestones
8. Develop criteria to determine load reductions
9. Develop a plan to monitor effectiveness

WIPs are developed by LDEQ's NPS staff and watershed coordinators that compile information and data from local experts who live in the watershed and understand their local water quality problems. WIPs are implemented by partners in cities and parishes, landowners, drainage boards and other stakeholders in the watershed. A few examples of these watershed activities have been included in this report.

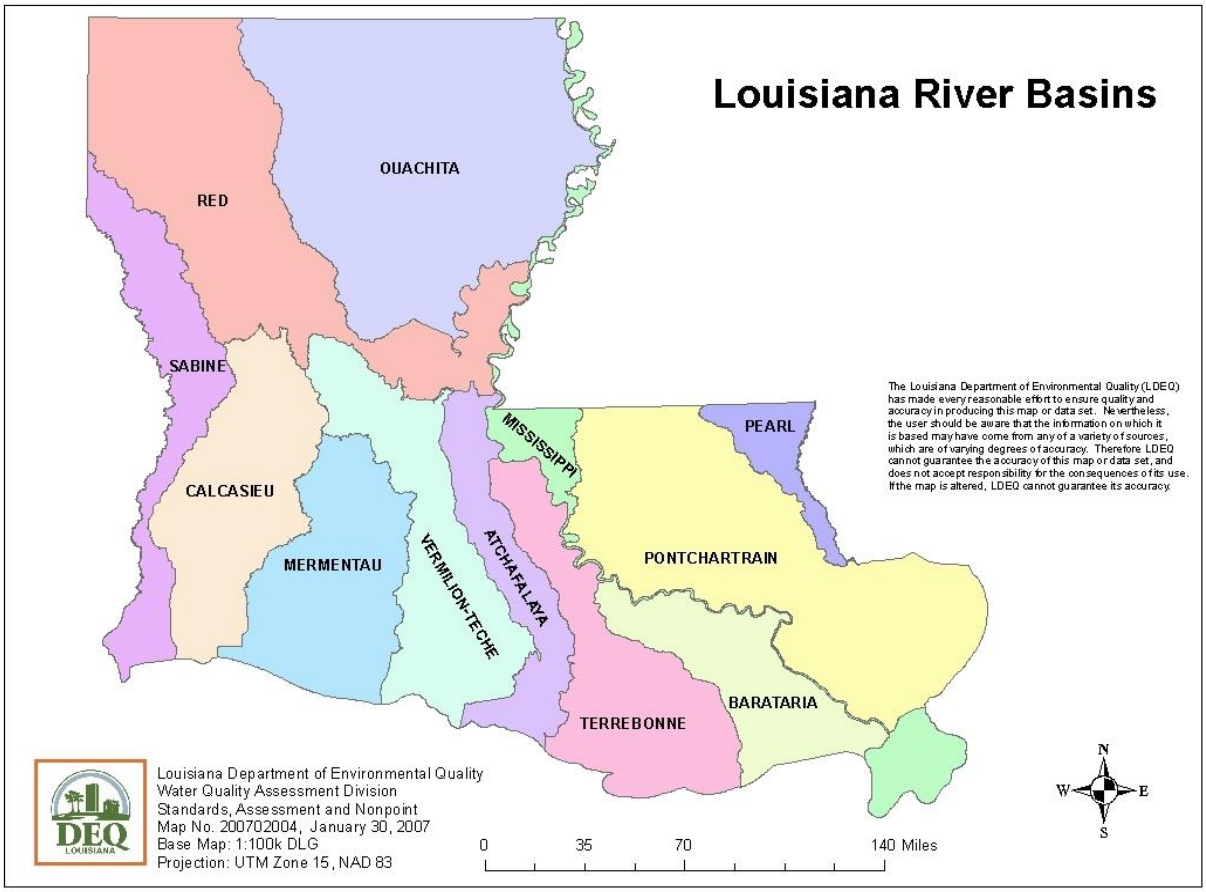

Figure 6.1: Map of Louisiana's major river basins

Improving Water Quality through an Integrated Watershed Approach in the Lake Pontchartrain, Terrebonne, Pearl, and Mississippi Basins

The LDEQ has continued to work with a watershed coordinator who is responsible for watershed activities related to NPS pollution in the Lake Pontchartrain, Terrebonne, Pearl and Mississippi Basins. The watershed coordinator has completed a number of tasks, including:

Figure 6.1.1: Watershed coordinator providing environmental education to elementary school students in Tangipahoa Parish

- implementation of Hammond's new storm water ordinance;
- participation in anti-litter education for schools in Hammond;
- assistance with Keep Hammond Beautiful Clean-Up;
- performing water quality monitoring on Ponchatoula Creek and Yellow Water River;
- participated in hazardous waste day in Hammond;
- participated in various storm water workshops;
- coordinated outreach activities with students at Global Wildlife Center in Folsom;
- participated in Tangi Clean Trash Bash in Hammond;
- worked with LPBF going door to door, checking for LPDES permits;
- monitored various activities in the watershed such as floatable pollution during high flow, assessed current storm water BMPs in anticipation of storm water ordinance and documented waste water infiltration and illegal bypasses;
- met with parish president to discuss issues in Ponchatoula Creek and Yellow Water River;
- met with local stakeholders in the City of Hammond; and
- participated in monthly stakeholder meetings.

The coordinator is working on a WIP for Ponchatoula Creek and Yellow Water River. She has also participated in various meetings and educational programs with state and local agencies, nonprofit organizations and the public.

Improving Water Quality through an Integrated Watershed Approach in the Mermentau and Calcasieu Basins

This watershed coordinator has worked on numerous public outreach meetings, focusing on education and building a network of stakeholders. The watershed coordinator continues to meet with potential stakeholders and participates in many local events, in an effort to bring additional partners to work on the projects. Some of the activities that the watershed coordinator has been involved in during FFY 2010 included:

Figure 6.1.2: Watershed Coordinator planting bullwhips in an area that had bank scour

- planting California bulrush on two main tributaries that drain into the Vinton Waterway and a third site along the bank of

the waterway itself;

- holding meetings with landowners and local city employees about ways to get NPS information to the public;
- becoming a member of the newly chartered Keep Vinton Beautiful group;
- conducting watershed model demonstrations at the library for children and their parents;
- producing a brochure for NPS pollution and applicable BMPs for the watershed;
- surveying the waterway to identify areas of concern;
- collecting data on BMPs implemented on Choupique Bayou;
- consulting with NRCS, LDAF, and LSU AgCenter about Choupique Bayou;
- providing NPS demonstrations at local libraries;
- meeting with local stakeholders with the City of Vinton to discuss WIP;
- characterizing the Vinton Waterway watershed;
- monitoring progress of newly installed storm drains;
- consulting with engineers on the water quality impacts of dredging on the Vinton Waterway;
- attending Gulf Coast Soil and Water Conservation District monthly meeting to gather information on the watershed and agricultural BMPs;
- investigating potential project sites;
- collaborating with NRCS on the Migratory Bird Habitat Initiative; and
- presenting watershed demonstrations for local schools.

A draft copy of the Vinton Waterway WIP has been submitted to LDEQ for review. The watershed coordinator is in the process of selecting and preparing an implementation plan for another water body.

Improving Water Quality through an Integrated Approach in the Lake Pontchartrain and Pearl River Basins

The Lake Pontchartrain Basin Foundation (LPBF) continues to work with the St. Tammany Task Force on water quality issues and potential solutions to these issues to be included in the WIP for Bogue Falaya and Abita Rivers. The task force meets monthly to discuss environmental issues and to work on the plan. The watershed coordinator and the task force identified these critical areas:

Figure 6.1.3: Water quality data collection on Bogue Falaya River

Bogue Falaya

- Water monitoring by LPBF indicated that the highest fecal coliform concentrations were observed upstream of urban areas. This was confirmed by a watershed model performed by the LPBF;
- The watershed model also indicated high nitrogen and carbon loads, and fecal coliform in Simalusa Creek. The land-use in this watershed area is classified as low-density residential to rural. All homes are on individual sewer systems, a vast majority of which are not functioning properly; and
- High total suspended solids (TSS) and phosphorus were observed in the downstream segment, indicating cumulative input from upstream sources (and input from Abita).

Critical areas for Bogue Falaya watershed are:

- Simalusa Creek from excessive sanitary waste loading;
- Bogue Falaya River from high fecal concentrations from upstream urban areas; and
- Downstream portion of Bogue Falaya River from cumulative loading effects of the Municipal Separate Storm Sewer System (MS4).

Abita River

- LPBF water monitoring indicates that the greatest fecal counts were downstream of the Town of Abita. The model confirms this for fecal and indicates a similar trend for most other parameters;
- Ammonia and fecal loads were high upstream in the rural areas and developing portions of the watershed, indicating possible waste water discharges; and
- Lower Abita Watershed has a high number of homes with improperly functioning septic systems.

Critical areas in the Abita Watershed are:

- MS4 areas; and
- Upstream reaches of the Abita watershed from sanitary wastewater.

The watershed coordinator and stakeholders prioritized the issues:

Storm Water Point and Nonpoint Sources:

Storm Water-Point Sources

1. Sediments, chemicals and trash from new construction sites;
2. Infiltration and inflow from large wastewater collection systems;
3. Sediments and trash from road construction sites; and
7. Urban storm water from MS4 areas.

Storm Water-Nonpoint Sources

4. Storm water and wastewater from unsewered neighborhoods during rain events;
5. Oil, gas, chemicals, and trash from parking lots/impervious surfaces;
6. Animal waste and fertilizers from small animal farms drainage;
8. Oil, gas and litter from road drainage;
9. Fertilizer and sediment from small crop drainage; and
10. Timber site drainage.

Wastewater Point and Nonpoint Sources:

Wastewater-Point Sources

1. Poorly treated effluent and/or effluent that has not been disinfected from small commercial package plants and community systems;
2. Leaks in municipality systems;
3. Industry- industrial chemicals, waste products, or other wastes; and
4. Leaks in regional collection systems.

Wastewater-Nonpoint Sources

1. Poorly treated effluent and/or effluent that has not been disinfected from unsewered subdivisions;
2. Poorly treated effluent and/or effluent that has not been disinfected from individual home systems;
3. Animal wastes and fertilizers from horse, cattle, goat farms, and boarding facilities; and
4. Fertilizer and sediment from agricultural farms and nurseries.

The stakeholder group identified the "best first projects" to implement in these watersheds:

Best First Projects - Stakeholders
1. Addressing small wastewater package plants;
2. Implementing construction storm water BMPs (programs, education, support, incentives);
3. Conducting home system inspections and providing education on properly operating and maintaining the system;
4. Implementing a horse program (Equine Water Quality Education Series);
5. I & I assessment (LRWA); and
6. Stream Restoration.

LPBF began biweekly monitoring at ten sites within the Bogue Falaya and Abita watersheds, testing bacteriological and nutrient water quality data. This data provided a baseline from which to gauge success. Additionally, the LPBF is calculating load duration curves based on long-term data they have collected, and are also reviewing and using a comprehensive load model created for St. Tammany Parish. LPBF has also been collaborating with the LDAF to obtain data on rural land practices in the 12 digit HUCs for which they are writing a WIP. LPBF is currently compiling a map that will include the following layers: WIP critical areas, conservation areas (river corridors), preservation areas, future sewer regionalization areas, new sample sites (including nutrient sampling), urban areas (MS4), horse farm locations, and unsewered subdivisions. The map will be used to spatially examine the area of focus for BMPs in the Bogue Falaya and Abita River watersheds. LPBF has coordinated with their stakeholders to map areas targeted for further sampling to identify sources of pollution. These areas have been ground-truthed, mapped and sampled once. Education and outreach activities are continuous elements of this project as the LPBF meets with parish and local agencies to inform them on process and outcomes of the WIP.

Improving Water Quality through an Integrated Approach in the Red River, Sabine, Upper Calcasieu and Upper Vermilion-Tech River Basins

In this project, Twin Valley RC&D has been tasked with facilitating and conducting activities in the Red, Sabine, Upper Calcasieu and Upper Vermilion-Teche River Basins to reduce NPS pollution and improve water quality. Twin Valley RC&D's activities have included the following tasks:

- developed field contacts;
- identified a priority watershed;
- identified activities that impact water quality within the watershed;
- compiled and analyzed chemical water quality data;
- identified nonpoint sources of pollution; and
- developed education materials.

Figure 6.1.4: Cane River Lake control structure

Additionally the watershed coordinator has attended the Texas Watershed Planning Short Course, the Nonpoint Source Monitoring Conference, LDEQ's project review meeting, as well as bi-monthly watershed coordinator meetings.

Improving Water Quality through an Integrated Watershed Approach in the Red River and Ouachita Basins

Trailblazer RC&D hired a new watershed coordinator this year to facilitate and conduct nonpoint source related activities in watersheds in the Ouachita and Red River Basins. There are numerous sub-segments in these basins which are not meeting the designated uses for PCR and FWP and are listed as impaired due to excessive levels of one or more pollutants.

The coordinator was responsible for many planning and outreach activities related to water quality improvement in 2010, including:

- participating in and presenting water quality information and materials at Lake Bistineau Task Force meetings;
- writing water quality-related press releases for the Lake Bistineau Task Force;
- participating in and presenting water quality information and materials at LDEQ, NRCS, SWCD, and Police Jury meetings;
- presenting water quality information and materials to area schools, businesses, 4-H clubs, and libraries;
- presenting water quality information and materials to students at the Lincoln Parish Water Festival;
- delivering handbooks on recycling and water quality materials to area schools, libraries, and extension offices;
- demonstrating water quality testing to students at a local school;
- establishing a recycling exhibit at the Lincoln Parish Library for Earth Day;
- creating a local cable television advertisement for water quality presentations;
- writing water quality articles for the Trailblazer RC&D newsletter; and
- developing a WIP for the Dugdemona River sub-segment.

This project is a significant part of Louisiana's NPS Management Plan – the coordinator is partnering with stakeholders to improve and restore water quality.

Improving Water Quality through an Integrated Watershed Approach in the Lake Pontchartrain, Terrebonne and Barataria Basins

The Bayou Land Resource Conservation & Development (RC&D) Council initiated this project in June of 2008, by hiring a watershed coordinator to facilitate and conduct NPS activities within Lake Pontchartrain, Terrebonne and Barataria Basins. The Bayou Land RC&D watershed coordinator continues to be involved in activities and meet with several local stakeholders in development of the WIP, which will be utilized for restoration of Upper Bayou Terrebonne Watershed. The watershed coordinator participated in several education and outreach activities including:

- successfully enrolled Bayou Land RC&D in the Community Partner/Service Learning Program at Tulane University, with the goal of connecting interns more with the community;
- held water quality demonstrations at Earth Fest at Audubon Zoo;
- participated in T.R.E.E., Teaching Responsible Earth Education; and
- interviewed with Fox Studios to discuss Bayou Land RC&D's program and utilization of Christmas trees for wetland restoration.

Through efforts of the watershed coordinator, Bayou Land RC&D was awarded grant funds to build a watershed education program for urban restoration in the Greater New Orleans area. With assistance of local stakeholders, the coordinator toured Port Fourchon and Elmer's Island to plan restoration of the beachfront. She also partnered with the Crescent Soil and Water Conservation District on wetland planting in St. Bernard Parish.

Improving Water Quality through an Integrated Watershed Approach in the Mermentau and Vermilion Teche Basins

The Acadiana RC&D employed a watershed coordinator to facilitate and conduct activities in the Mermentau and Vermilion Teche Basins for the purpose of reducing NPS pollution.

Figure 6.1.5: Watershed coordinators tour Bayou Teche

During FFY 2010, the watershed coordinator continued to make progress on Bayou Teche. She gathered various partners to join watershed planning efforts to reduce NPS pollution. Mayors, parish presidents, parish governments, Kiwanis Club, SWCDs, BVD, and the TECHE Project are just a few of the organizations that have been involved in these watershed activities. These groups, along with other partners, have come together to create a task force that has identified some of the problems in the watershed. A trash pick-up was organized on the Teche resulting in two tons of trash being removed from the bayou. There was also a canoe/kayak race, Tour due Teche, where information about NPS pollution was distributed to the public. A Water Quality Sampling Workshop on Bayou Teche was organized with the Sierra Club and TECHE Project; sampling teams were created and shown a video explaining water quality sampling. Teams learned how to conduct streamside sampling for dissolved oxygen, pH, temperature, conductivity and nitrates. This project will continue to provide educational outreach to homeowners and municipalities in the area on how to reduce NPS pollution. The watershed coordinator is continually meeting with new stakeholders to discuss activities to be implemented in the watershed.

Improving Water Quality through an Integrated Approach in the Ouachita River Basin

The Northeast Delta RC&D watershed coordinator facilitated and conducted activities in the Ouachita Basin. Coordination activities included hosting local task force meetings, initiating activities consistent with key elements of the WIP, revising the WIP for Joe's Bayou and compiling water quality data that provides clearer understanding of potential solutions to water quality impairments.

Since initiation of the project, the Northeast Delta RC&D has continued with data collection activities in the Bayou Macon watershed and Joe's Bayou sub-watershed. Initially the project focused on Bayou Macon, which is a 6 digit HUC, but was reduced to include only Joe's Bayou, which is a 12 digit HUC in the Bayou Macon watershed. A 12 digit HUC is more realistic for implementing BMPs and improving water quality within the timeline for the project. Data that has been compiled is utilized to characterize the watershed, identify critical areas and develop the WIP.

By partnering with University of Louisiana at Monroe (ULM), LDEQ and Northeast Delta RC&D collaborate with other stakeholders in the watershed on a water quality monitoring strategy for Joe's Bayou.

Water quality data collected from Joe's Bayou will assist in identifying sources of impairment and also in developing management strategies that address these impairments. Water quality data combined with flow measurements will result in pollutant load calculations and also provide an indication of water quality changes that occur in response to BMP implementation.

Through collaboration with USDA, LDEQ and LDAF selected priority watersheds for the Mississippi River Basin Healthy Watershed Initiative (MRBI). This initiative provides $320 million in USDA funds to implement BMPs over the next four years in order to reduce nutrient pollution from these watersheds. Two of the three priority watersheds in Louisiana are located in the Ouachita River Basin. Bayou Macon and Boeuf River were two of the priority watersheds chosen through MRBI and will include additional water quality monitoring coordinated with BMP implementation. USDA, EPA Region 6, LDAF and LDEQ will be partnering on activities in these watersheds in order to accomplish nutrient reduction goals for MRBI in Louisiana.

The Northeast Delta RC&D continues to collaborate with local stakeholders on Joe's Bayou WIP in order to address the nine key elements and gather support for watershed implementation.

6.2 Barataria Basin

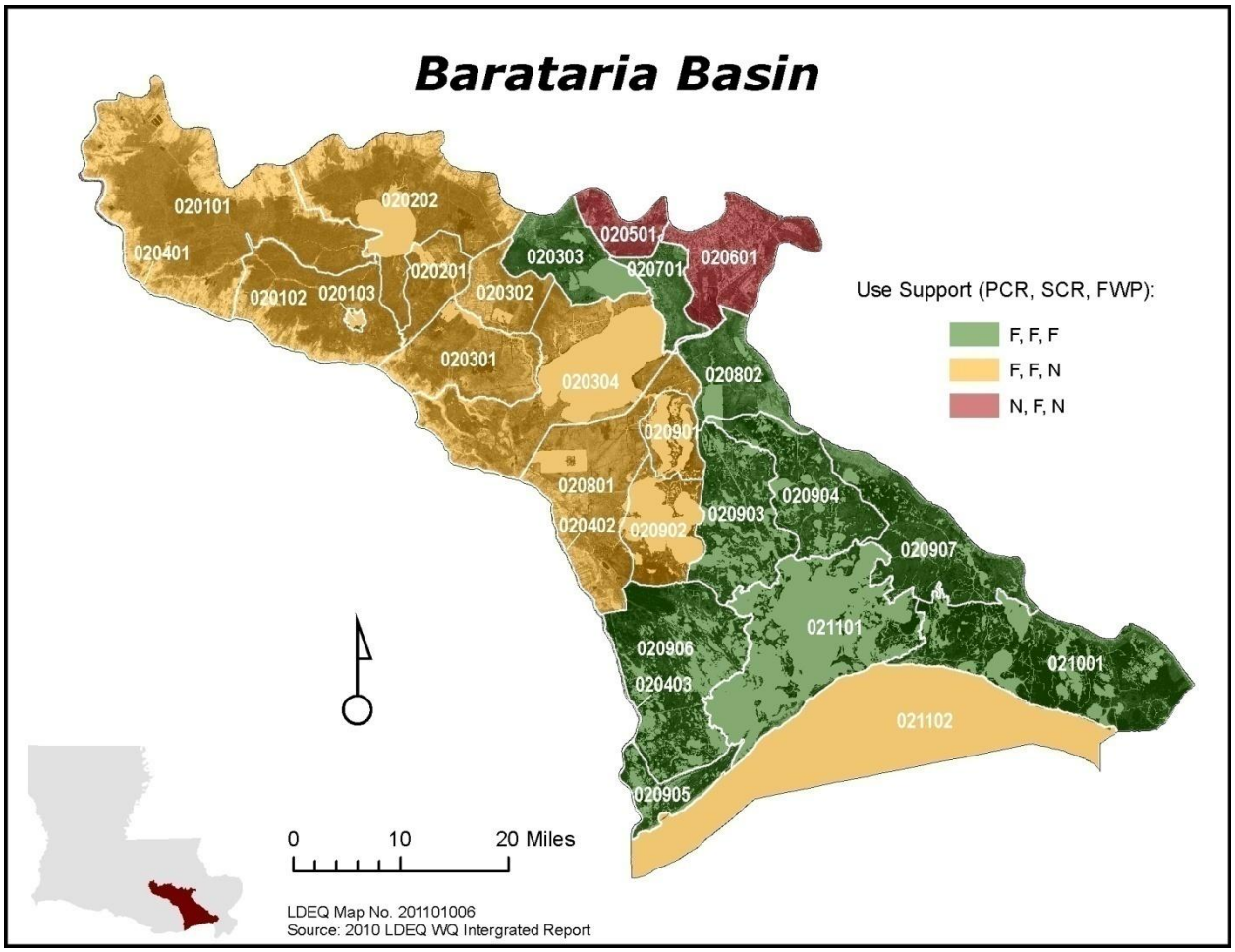

Figure 6.2 – Key for the above map is as follows: PCR-Primary Contact Recreation; SCR-Secondary Contact Recreation; FWP-Fish and Wildlife Propagation; F=Fully Supporting, N=Not Supporting

The 2010 Draft IR indicated that three sub-segments in Barataria basin were not fully meeting PCR compared to four in 2008. Lake Cataouatche met fecal coliform criteria and was no longer impaired for PCR. During this same timeframe, four additional sub-segments were included as impaired for FWP. The water quality data for Bayou Lafourche indicated that annual average dissolved oxygen and fecal coliform concentrations have met water quality standards since 2004 and 2009, respectively.

Average Dissolved Oxygen Concentrations Measured in mg/L for Selected Water Bodies in Barataria Basin							
Water Body (subsegment)	2004	2005	2006	2007	2008	2009	2010
Bayou Lafourche (020401)	6.94	6.66	6.71	6.38	6.68*	7.78	7.63
***partial year data**							

Average Fecal Coliform Concentrations Measured in Cells per 100 mL Sample for Selected Water Bodies in Barataria Basin							
Water Body (subsegment)	2004	2005	2006	2007	2008	2009	2010
Bayou Lafourche (020401)	357	323	265	796	463*	198	239
***partial year data**							

USDA Programs

During FFY 2010, the USDA implemented approximately 17,733 acres of practices in the Barataria Basin through its programs. Two of the Farm Bill Programs that resulted in BMP implementation on agricultural lands were Environmental Quality Incentive Program (EQIP: 1,083 acres) and Wildlife Habitat Incentive Program (WHIP: 104 acres).

Water Quality Modeling to Support the Use of Nonpoint Source Pollution to Restore Natural Wetlands in Barataria Basin

The LDEQ completed TMDLs for Barataria Basin in 2003. The TMDL for Bayou Boeuf, Halpin Canal, Theriot Canal (020102) and Lake Boeuf (020103) indicated that in order to meet the water quality standard for dissolved oxygen, NPS pollutants would need to be reduced by 100% during summer months and 92% during winter months. The model also indicated that natural background loads would need to be reduced by 37% during summer months. The no-load scenario (i.e. no reductions in natural background loads) yielded minimum dissolved oxygen values of 3.5 mg/L for summer months and 5.6 mg/L for winter months. The two major land-use types in sub-segment 020102 are wetland forests and agriculture, while land-use in 020103 is primarily fresh marsh and open water.

Figure 6.2.1: Dr. Rob Lane collecting water quality samples at one of the emergent wetland sites

It may not be possible to achieve NPS load reductions that are necessary to meet water quality standards for dissolved oxygen in these two sub-segments. The traditional approach would be to partner with sugarcane farmers to implement BMPs that reduce sediment, nutrients and organic material entering bayous in these watersheds. Since the watersheds are prioritized for coastal restoration projects that divert water, nutrients and sediment from the Mississippi River to wetlands, a more innovative approach for managing NPS pollution may be necessary.

This project provides LDEQ with data and information on potential beneficial uses of NPS runoff (i.e. sediment and nutrients) from agricultural fields. Water quality modeling has provided estimates of the extent that nutrient reduction and assimilation in wetlands will occur. Many of these wetlands are subsiding and would benefit from the addition of sediment and nutrients combined with fresh water. The bayous that currently receive these nutrient and sediment loads should also improve as a result of wetland assimilation. This management approach may be effective for solving NPS problems in coastal watersheds.

During FFY 2010, water quality sampling and analysis has taken place at selected sites (twelve open water sites, two forested sites and two emergent wetland sites) on a monthly basis. Soil cores were also taken from the forested and emergent wetland sites to measure rates nitrogen accumulation and denitrification. Water level and velocity measurements have been taken at seven locations. Spoil banks have been mapped to provide a conceptual plan for hydrologic modifications that may be necessary to restore the wetlands. In addition to the hydrologic modeling aspect of the project, water quality sampling has been completed. An extensive literature review for historical and current indicators of ecological health and water quality was also an important component of the project. The results of this project will be shared with the Office of Coastal Protection and Restoration (OCPR) and will be incorporated into the state's Nutrient Reduction Strategy.

Source Water Protection Program in Assumption, Lafourche, and Terrebonne Parishes

Bayou Lafourche Fecal Coliform Sources Project

The final report for fecal coliform sampling by Nicholls State University was approved by USEPA on December 10, 2009. LDEQ has utilized the data from this project to identify critical areas of fecal coliform loading in Bayou Lafourche watershed. During FFY 2010, LDEQ's SWPP staff met with LDHH, BTNEP, Bayou Lafourche Fresh Water District and local officials in Ascension, Assumption, Lafourche, and Terrebonne Parishes to develop an implementation strategy for addressing critical areas that were identified through the bacterial sampling project.

Figure 6.2.2: Home septic system pipe discharging into Bayou Lafourche

The strategy that resulted from these meetings focuses on neighborhoods that contribute fecal coliform to Bayou Lafourche, all of which lie within the jurisdiction of the Lafourche Parish Council. LDEQ has met with Lafourche Parish officials to explain the results of the project and convince them to assist in addressing the sewage issues in their jurisdiction. LDEQ also met with LDHH's regional staff to discuss opportunities for use of community development block grants to address the non-sewered communities. The parish engineer from Assumption Parish explained that Assumption Parish has utilized block grants during the past few years to address non-sewered communities, so a similar program could probably be implemented in Lafourche Parish. The block grants covered the cost of regional, community-based sewage systems. LDEQ is now working with the regional LDHH block grant official, the Assumption parish engineer, and Lafourche Parish officials to pursue the possibility of utilizing block grants to address these sewage issues. LDEQ is also looking into alternate sources of funding to assist with future repairs, replacements, connections to or development of community systems.

In order to help move this process forward, LDEQ's executive staff has been involved in discussions with Lafourche Parish Government. A summary of progress that has been made on this project, including solutions that have been identified for each critical area, has been incorporated into a presentation for stakeholders that assist LDEQ in restoring the Bayou Lafourche watershed.

SWPP staff has also met with LDEQ's regional office supervisor to discuss results from the project. Prior to the initial sampling project, LDEQ's regional staff had inspected every facility along Bayou Lafourche in order to ensure all sewage systems were in compliance with state regulations. SWPP staff provided information to LDEQ's regional staff on those critical areas that were identified as contributing high fecal coliform loads to the bayou. LDEQ's regional staff will inspect the facilities in these areas and will re-inspect the facilities that were inspected during the initial sweep along Bayou Lafourche. A new contractual agreement with Nicholls State University, to do similar fecal coliform sampling, is being reviewed and should begin in January of 2011.

6.3 Calcasieu Basin

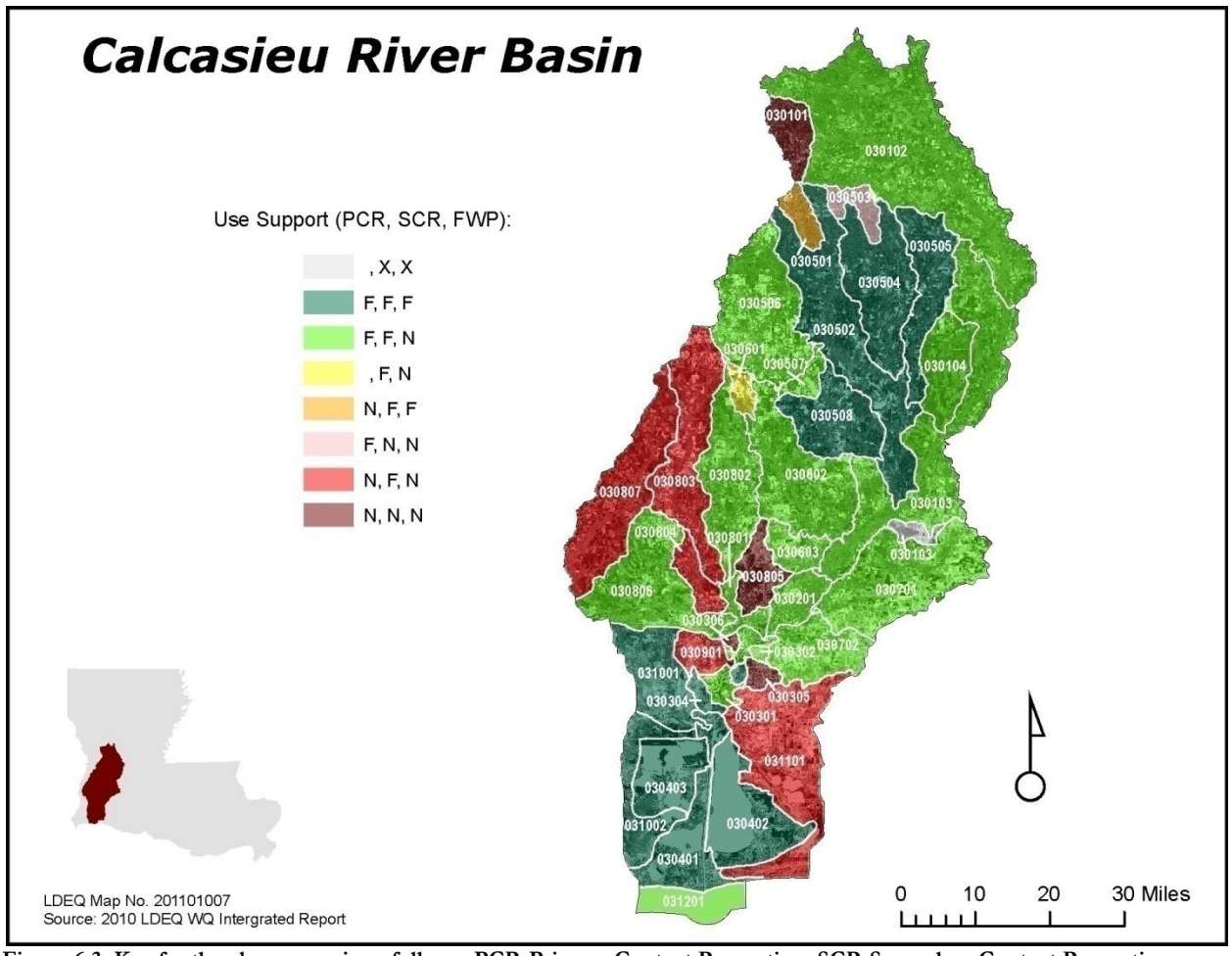

Figure 6.3: Key for the above map is as follows: PCR-Primary Contact Recreation; SCR-Secondary Contact Recreation; FWP-Fish and Wildlife Propagation; F=Fully Supporting, N=Not Supporting, X=No Data, Blank=Use N/A

The 2010 draft IR indicated that fourteen sub-segments were not fully meeting PCR in Calcasieu Basin, compared to eleven in 2008. Several subsegments were added or removed, with an overall gain of three impaired sub-segments.

Twelve sub-segments were meeting criteria for FWP in the 2010 draft IR which was consistent with the 2008 IR. Prien Lake was added to the list of impaired water bodies in the 2008 IR but was removed in the draft 2010 draft IR.

USDA Programs

During FFY 2010, USDA implemented approximately 34,344 acres of BMPs in Calcasieu Basin. This included 12,364 acres implemented through EQIP, 26 acres implemented through Conservation Reserve Program (CRP), 35 acres implemented through Wetland Reserve Program (WRP) and 4,429 implemented through WHIP.

A watershed coordinator is implementing educational outreach programs in Calcasieu Basin, and LDAF is implementing a project with incremental Section 319 funds on agricultural lands. LDEQ will be implementing a project with Calcasieu Parish government and LDHH to address home sewage issues that contribute to water quality problems listed on the state's 303(d) list for PCR. This project is funded through FFY 2009 Section 319 base funds. LDEQ is developing a Success Story for Bayou Chopique that should be finalized and provided to USEPA Region for review and comment in 2011.

6.4 Mermentau River Basin

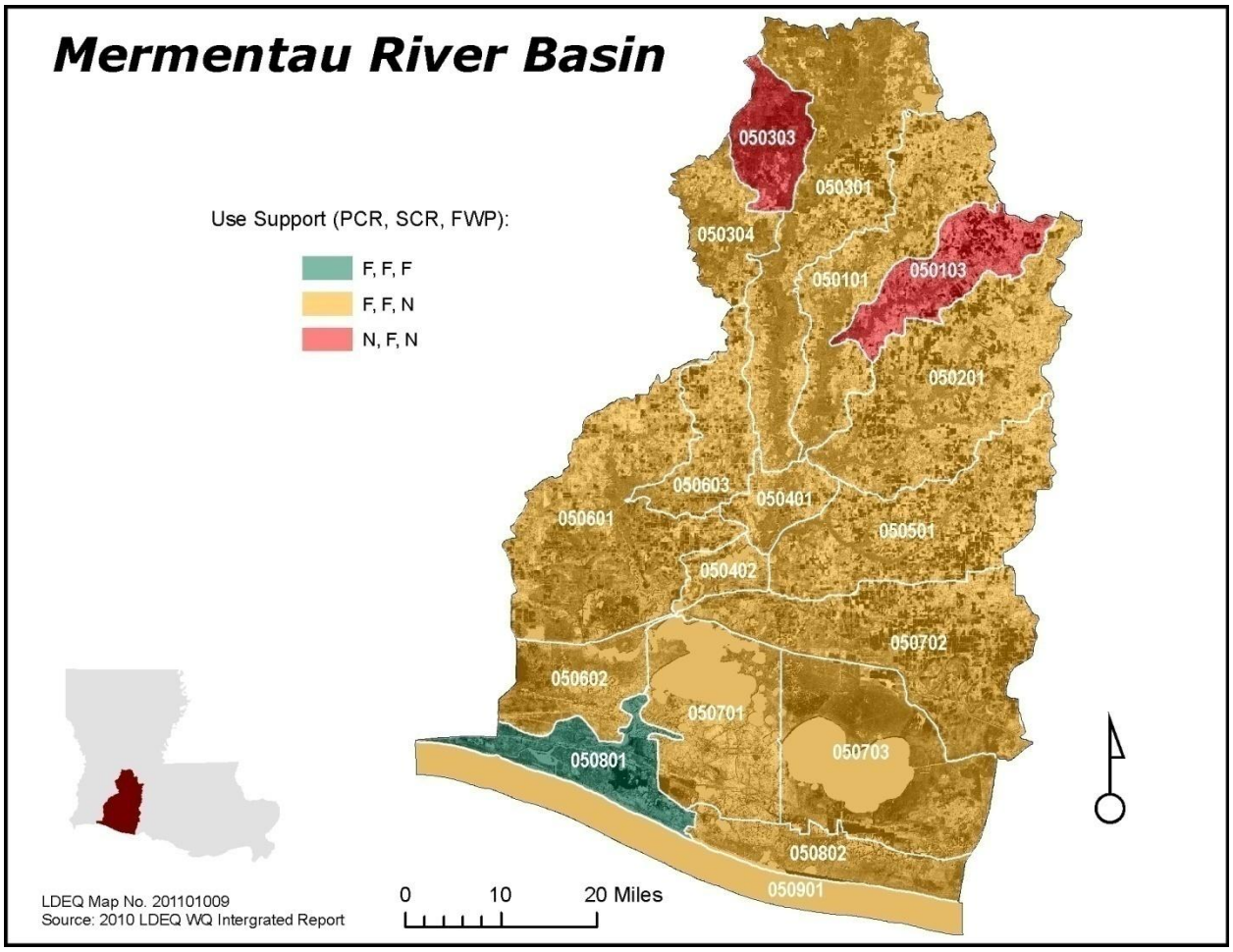

Figure 6.4: Key for the above map is as follows: PCR-Primary Contact Recreation; SCR-Secondary Contact Recreation; FWP-Fish and Wildlife Propagation; F=Fully Supporting, N=Not Supporting

The draft 2010 IR indicated that two watersheds in Mermentau Basin were not meeting PCR, compared to only one in the 2008 IR. Bayou Mallet was added to Castor Creek as watersheds not meeting PCR.

The draft 2010 IR indicated that the number of watersheds in Mermentau Basin not meeting FWP has remained consistent since 2006. The Mermentau River from Catfish Point Control Structure to Gulf of Mexico is the only water body in this basin that meets FWP. D.O. concentrations have improved in this lower part of the Mermentau River since 2007. In this same section of the river, concentrations of fecal coliform bacteria have declined between 2003 and 2008, but increased since 2009. It is still in compliance with PCR, but sources of bacteria need to be examined to prevent the river from being listed as impaired.

Average Dissolved Oxygen Concentrations Measured in mg/L for Selected Water Bodies in the Mermentau River Basin							
Water Body (subsegment)	**2003**	**2004**	**2006**	**2007**	**2008**	**2009**	**2010**
Mermentau River (050401)	3.43	4.1	3.65	2.62	3.91*	4.04	4.96
***partial year data**							

Average Fecal Coliform Concentrations Measured in Cells per 100 mL Sample for Selected Water Bodies in the Mermentau River Basin								
Water Body (subsegment)	**2003**	**2004**	**2006**	**2007**	**2008**	**2009**	**2010**	
Mermentau River (050401)	4530	474	82	124	116*	405	492	
***partial year data**								

LDEQ continues to implement projects in Mermentau Basin related to agricultural BMPs and revision of WIPs. The results of these data and projects are included in WIPs that are being revised or developed for watersheds in this basin.

Modeling Nonpoint Source Pollution and Land Use Types in Bayou Plaquemine Brule Watershed

LDEQ and LSU AgCenter have collected water quality data for Bayou Wikoff and Cole Gully sub-watersheds within the Bayou Plaquemine watershed. These two sub-watersheds have had agricultural BMPs implemented to reduce sediment and nutrient loads from sugarcane, rice, soybeans and pastures. These are the major crops grown not only in the Bayou Plaquemine Brule watershed but in much of the Mermentau River Basin. Therefore LDEQ has invested time and resources to quantify the water quality benefits of these agricultural BMPs. The project goal is to determine whether BMPs can reduce NPS loads by 30-50%, which was estimated through the TMDL as necessary to reach instream standards for dissolved oxygen (DO).

Figure 6.4.1: Water quality sampling by grab method in Bayou Plaquemine Brule Watershed

Cole Gully sub-watershed lies in the upper portion of Bayou Plaquemine Brule watershed. This sub-watershed has been the site of intensive watershed monitoring and BMP implementation. Seven monitoring sites were selected for the project, including a "control" or pristine site, pasture sites, and sugarcane sites. Monitoring was done at two in-stream locations; one up-stream from the edge-of-field sites and another downstream from these field sites that were instrumented with flow meters and ISCO samplers. During FFY 2010, effluent samples from all seven sampling sites were analyzed by LSU's Agricultural Chemistry Laboratory. Results of water quality analysis from edge of field and in-stream sites have been provided to LDEQ.

Bayou Wikoff Sub-Watershed of Bayou Plaquemine Brule Watershed Project

LSU AgCenter has collected water quality data for Bayou Wikoff sub-watershed project. This sub-watershed project is representative of the type of land-use that exists in upper portions of Bayou Plaquemine Brule watershed. The major land-use type is agricultural production, specifically sugarcane and pastures. Through implementation of this project, LDEQ will be able to determine whether BMPs for these two types of agriculture will be sufficient to reduce NPS

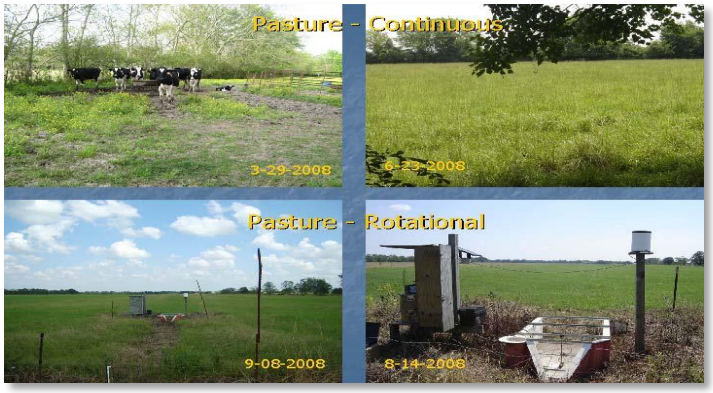

Figure 6.4.2: Continuous and rotational pasture sites along Bayou Wikoff

loads and meet water quality standards.

The Coulee Baton Microwatershed Nonpoint Source Pollution Monitoring and Modeling Project

Figure 6.4.3: Dr. Poudel standing next to one of the seven ISCO samplers in the Coulee Baton watershed

The Vermilion SWCD became interested in a microwatershed project after attending an Industry-Led Solutions (ILS) meeting on hypoxia in the Gulf of Mexico. Agricultural leaders wanted to be involved in finding solutions to the problem through nutrient management at the sub-watershed scale. After this meeting, the Vermilion SWCD contacted Texas Institute for Applied Environmental Research (TiAER), who developed Planned Intervention Microwatershed Approach (PIMA), as a model for addressing agricultural nonpoint source pollution. TiAER defined a microwatershed as an area within a watershed that was 3,000 to 20,000 acres. Through prioritization of these small areas, project coordinators could reduce land-use variables and identify sources of pollutant loads more effectively.

The Vermilion SWCD partnered with other entities in the district to identify a micro-watershed that was diverse in topography, drainage and land-use. The Coulee Baton micro-watershed was selected. The objectives of the project included: (1) monitor field and surface water quality parameters for at least five locations in the Coulee Baton micro-wathershed; (2) quantify contribution of land-use types such as agriculture, forestry, and residential areas to NPS loading in Coulee Baton microwatershed; (3) identify critical areas of NPS in the micro-watershed and share the information with Vermilion SWCD; (4) Assist producers with implementing BMPs through cost-share programs; (5) establish water quality baseline information from which to quantify effectiveness of BMPs in reducing pollution loads.

During FFY 2010, seven sites were selected to monitor in the Coulee Baton micro-watershed. Each site had a box installed to house a sampler and flow meter. Solar panels and rain gages were also installed at all seven sites. Weather data and land-use information have been collected, analyzed and will be utilized as inputs for the SWAT model.

The SWAT Model with ARC-GIS interface has been identified as an appropriate model for water quality modeling in the micro-watershed. Lack of flow data for the model has been a problem; therefore, an ADCP Doppler will be utilized for flow measurements.

Coulee Baton Micro Watershed Rural Sewer System Improvement Project

Figure 6.4.4: Picture of installed home sewage system

The Coulee Baton Microwatershed Rural Sewer Improvement Project was funded through the FFY 2004 319 grant. The project was initiated in June 2008, and the final report for the project was approved by USEPA in September 2010.

The project was developed in response to a larger plan focusing on the Gulf of Mexico Hypoxic Zone using a

micro-watershed management strategy. The Coulee Baton micro-watershed received no drainage inputs from up-stream sources – its inputs are generated from within – making it an ideal watershed to improve water quality. Failing home septic systems in the micro-watershed were identified as a major contributor to NPS pollution. An evaluation of the micro-watershed indicated approximately 70% of the homes were discharging undertreated sewerage into drainageways. The Coulee Baton Microwatershed Rural Sewer Improvement Project was designed to minimize these onsite sewage loads to the bayou.

Project tasks included goals consistent with Louisiana's NPS Management Plan. The project provided educational outreach to homeowners about their septic systems and their responsibility to maintain them in order to protect water quality in local bayous. The project demonstrated three effluent reduction (ER) systems, which have been mandated for all new septic system installations in recent years. The project offered homeowners cost-share assistance for repair or replacement of their aging, failing home sewer systems if they utilized LDHH approved ER systems. The Coulee Baton micro-watershed was an ideal location for a project of this kind because it is small and predominately residential. The results of the project can be replicated in other small watersheds that are predominately residential or adapted for larger commercial sewer treatment facilities.

The first contractual agreement for the project was finalized in July 2008, with cost-share rates of 60/40 federal funds to the homeowners. The project was amended to include higher cost share rates of 90/10 for the homeowners. The initial project goal was to replace 115 home sewer systems in Coulee Baton micro-watershed, but 80 systems were actually replaced, which was 69% of the goal. The project ended in September 2010 and the increased cost-share rate was a key factor in the success of the project. In regional discussions with other states, New Mexico and Oklahoma have implemented cost-share programs to assist low income residents replace their onsite sewage systems. Their cost-share rates have also been approximately 90/10 for the homeowners.

Through this micro-watershed project, residential sewage and agricultural nonpoint source problems will continue to be addressed. Homeowner educational activities included field days, workshops and town hall meetings. Innovative technologies were implemented with effluent reduction system demonstration projects. Water quality improvements should result from cost share programs that replaced aged and failing septic systems. Since nearly 70% of the homes with failing sewage systems were replaced, it was logical to assume that NPS loads would be reduced. LDEQ partnered with LDHH, NRCS, Vermilion SWCD staff and board members, and Acadiana RC&D Council members and staff. Building these partnerships with state and federal agencies and the non-profit organizations was an added benefit to the program. The final report was approved by USEPA in November 2010.

USDA and LDAF Programs

During FY 2010, USDA implemented approximately 57,528 acres of BMPs in Mermentau Basin. This included implementation of 19,086 acres through EQIP, 308 acres of practices through CRP, and 985 acres of practices through WHIP. LDAF also implemented practices in the basin. Those practices included: Irrigation Land Leveling - 2,616 ac., Grade Stabilization Structures - 16, Residue Management - 2,404.6 ac., Shallow Water for Wildlife - 1,383.1 ac., Dry Seeding of Rice - 2,564.4 ac., Irrigation Water Management - 1,386.9 ac., Nutrient Management - 5,578.1 ac., Pest

6.5 Ouachita River Basin

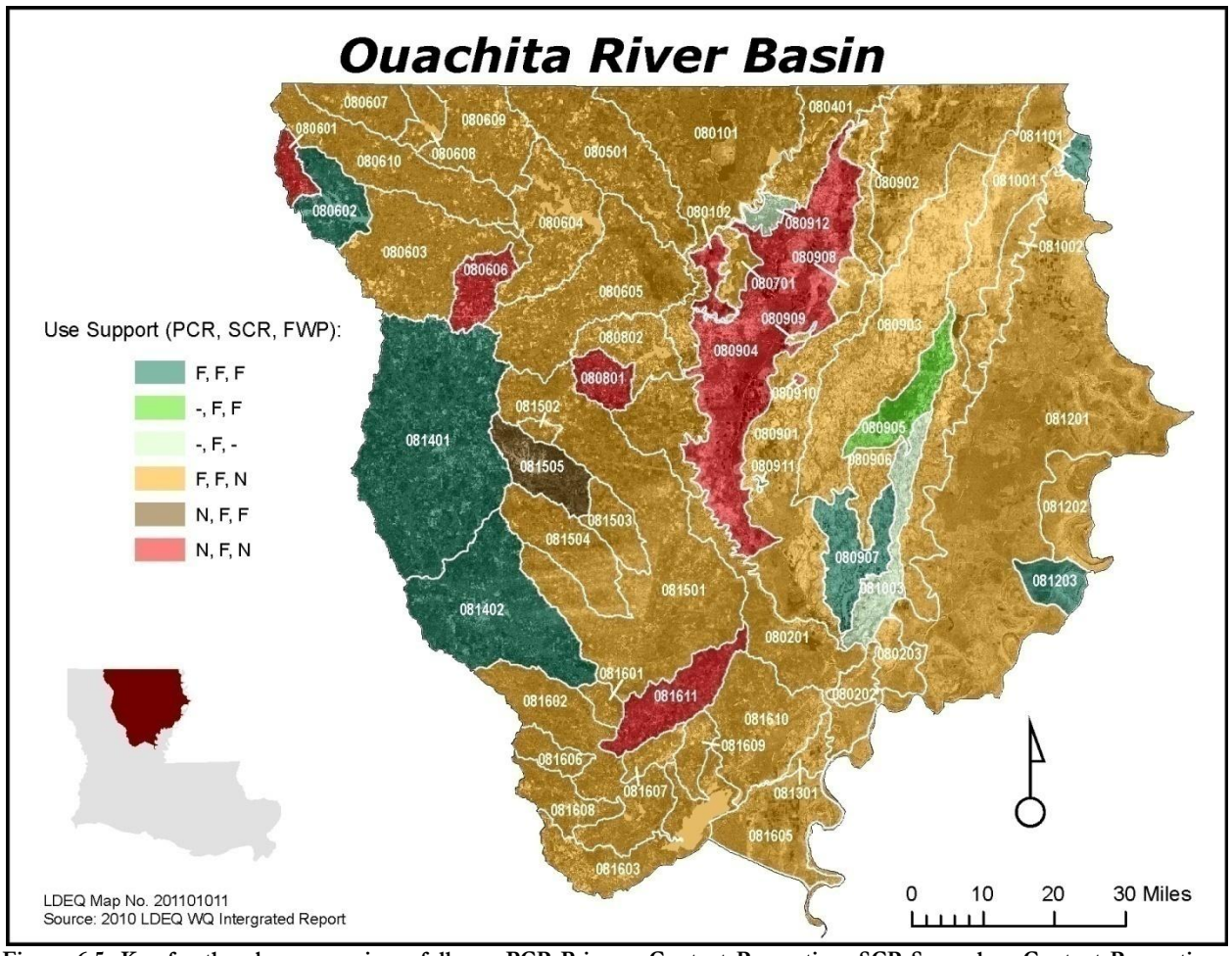

Figure 6.5: Key for the above map is as follows: PCR-Primary Contact Recreation; SCR-Secondary Contact Recreation; FWP-Fish and Wildlife Propagation; F=Fully Supporting, N=Not Supporting, Blank=Use N/A

The draft 2010 IR indicated that eight watersheds were not meeting PCR, compared to twelve in the 2008 IR. This means that there was a net loss of four watersheds that did not meet PCR between 2008 and 2012.
The draft 2010 IR indicated only nine sub-segments fully met FWP, compared to eight in the 2008 IR, which meant that there was a net gain of one sub-segment that fully met this use between 2008 and 2010.

LDEQ collected water quality data for the Ouachita River and the Tensas River during 2009, with both water bodies indicating good water quality. The average concentration for DO met or exceeded water quality standards and continued to improve since 2008. Fecal coliform concentrations increased since 2008, but continued to meet water quality standards for PCR. Water quality problems in Ouachita Basin are primarily from forestry, agriculture and urban storm water runoff. WIPs have been written for many impaired waters in this basin, but additional data on effectiveness of BMPs and watershed implementation is being collected for these WIPs. LDEQ has selected projects to examine forestry BMPs and to focus on agricultural and urban watersheds in the Ouachita Basin.

Establishment of Baseline Conditions at Mollicy Farms of Upper Ouachita River National Wildlife Refuge

THe Mollicy Farms Project of Upper Ouachita National Wildlife Refuge is the largest floodplain restoration effort in the lower Mississippi Valley. The site has been identified as contributing significant sedimentation to the Ouachita River. The Nature Conservancy, U.S. Fish and Wildlife Service and other partners initiated strategic levee removal and stream reconnection at this site that in order to re-establish the hydrology and restore natural floodplain functions and processes.

Figure 6.5.1: Water quality sampling equipment set up on the Mollicy Farm project area on the Ouachita River

Extraordinary hydrologic conditions resulted from three flood events with magnitude and duration greater than those typical of a 10-year flood, causing two breeches in the existing levee. These breeches subjected the project area to prolonged flooding and resulted in changes to the monitoring strategy. Sampling occurred on both the heavily disturbed eastern floodplain in Mollicy Farms and the relatively intact forested floodplain immediately west of the Ouachita River. A network of 26 grab samples was designed to determine a baseline condition for water quality from a variety of surface water bodies in the project area.

These baseline data indicated consistent patterns of sediment, oxidized nitrogen and soluble phosphorus (TSS, nitrate/nitrite, and ortho-P) in the project area. The apparent correlation between increased turbidity and nutrients with the last stage of the flood period, suggests flood recession may be a time of significant release of NPS contaminants from Mollicy Farms to the Ouachita River. Aquatic invertebrates and fishes are important measures of biological integrity for aquatic habitats and were sampled throughout the year to capture a variety of hydrologic conditions. A total of 96 aquatic invertebrate taxa were collected and nearly all were found on the west bank of the river which is forested, whereas only 45 taxa occurred on Mollicy Farms. An assessment of current hydrologic conditions indicated that land clearing, construction of drainage ditches and canals, and development of row-crop agriculture had significantly altered the internal hydrology of Mollicy Farms. The constructed levee isolated the eastern floodplain and eliminated direct connection of several major bayous and sloughs with the Ouachita River.

General hydrologic characteristics of the Ouachita River were determined in an effort to better understand the hydrologic conditions at Mollicy Farms. The analysis suggests that small and large flood events can be routinely expected at Mollicy Farms, and that the duration of the flood event will be significant. A series of filters were employed to identify a natural stream segment in the vicinity of the project area that could be used as a reference from which to develop stream statistics for stream channel restoration in Mollicy Farms. A suitable reference location was selected east of the project area and was typed as a C6c-stream type, which is typically found in a setting like Mollicy Farms. Additionally, stream segments in the west bank floodplain were examined, as were degraded stream channel remnants in the project area, and both analyses supported that most, if not all, of the Mollicy Farm channels were historically C-type channels. The baseline information gathered through this project is now being used in the reintroductory phase of the project. This project has been completed and the final report has been approved by USEPA.

Hydrologic and Water Quality Response to River Reintroduction in Restored Bottomland Hardwood Forests of the Upper Ouachita River Watershed

Figure 6.5.2: Reconnection of the natural hydrology for a bayou within the Mollicy Farms to the Ouachita River

This phase of the project began April 1, 2010 and ends March 30, 2013. The QAPP was approved by USEPA on July 19, 2010. The Nature Conservancy continues to serve as coordinator in all phases of the project. The final QAPP was distributed to partners so that they could familiarize themselves with it prior to field work. A meeting was held with USFWS to discuss removal of the levee and to discuss portions of the project that would require boat access to the monitoring stations. Numerous meetings have also been held with other partners, including ULM and LSU, to discuss project progress and coordination. All monitoring equipment has been tested and prepared in anticipation of monitoring activities during the upcoming flood pulse. The field stations are installed. ISCOs will be moved to field stations upon initiation of the flood pulse.

In regards to development of an Internal Hydrological Restoration Plan for Mollicy Tract, this task is on-going and will continue through the duration of the project. Precipitation and evaporation data from a monitoring station in the project area has periodically been downloaded for storage and analysis. Data has been uploaded from automated recorders that compile data on a daily (24 hour) basis. The historic and current internal hydrologic condition of Mollicy Farms has been determined, analyzed and mapped. This grant is the second phase at Mollicy Farms and used much of the equipment purchased in the first phase of the project. A Rainwise rain gauge, evaporation gauge, and data logger were installed to collect precipitation and evaporation data. The task of collecting evaporation and precipitation data is ongoing throughout the duration of the project. The equipment is routinely visited (2 weeks on average), maintained and data is uploaded and stored for inclusion in the final report

Source Water Protection Program Work in Grant Parish

Big Creek Fecal Coliform Project

Figure 6.5.3: Section of Big Creek

The final report for this project was submitted on September 14, 2009 and has been approved by USEPA. Big Creek was sampled over a period of one year by ULM, with one sampling site consistently showing elevated levels of fecal coliforms during rain events and non-rain events. Site 6d was described as a drainage ditch emanating from a group of trailer homes off of Dyson Creek Road. Subsequent to final report approval, a joint inspection by LDEQ and LDHH of the area behind the trailer homes resulted in identification of a pipe which lead from the trailer park down the bank toward the creek. As a follow up, LDHH checked their registration database and found all registrations were in place except for one. A letter was sent to this individual, regarding required registration of home on-site sewage systems. The individual was required to get a permit and did install a home sewage system. Sewage systems from the other trailer parks/areas are functioning properly and are being maintained.

During rain events, several areas adjacent to pasturelands were identified as potential contributors of high fecal coliform concentrations to Big Creek. Fecal coliform from adjacent pasturelands were identified as potential critical areas to be investigated by the watershed coordinator is that area. The final report for this sampling effort was sent to the watershed coordinator for Big Creek (Twin Valley RC&D), making her aware of the sites where educational outreach and BMP implementation were needed. After BMP implementation, additional sampling at these critical areas should be conducted to determine if the water quality had improved.

Source Water Protection Program in LaSalle Parish

The LDEQ Drinking Water Protection Team began work in LaSalle Parish in July 2009. Staff members visited with representatives of the local water systems and other government officials to introduce the Drinking Water Protection Program. LaSalle Parish has sixteen active public community water systems. All of the systems are ground water systems. Four systems are purchasing systems. A community meeting was held to introduce the program to the public and to solicit volunteers for a committee. Ten people attended the meeting and all ten volunteered to join the committee.

Figure 6.5.4: Volunteers at a LaSalle Parish Household Hazardous Material Collection Day

The committee met on January 21, 2010 for a presentation on how to conduct a household hazardous materials collection day. Keep Cenla Beautiful, a local non-profit organization, was awarded a grant from LDEQ to hold a collection day in LaSalle parish. The committee elected to organize this event and host the organizational meetings.

The first organizational meeting for LaSalle Parish Household Hazardous Materials Collection Day was hosted by the committee on February 18, 2010. A press release was delivered to local media markets inviting anyone interested in donating materials or volunteering to work. Twenty-six people attended the meeting and April 10, 2010 was set as the date for the collection day.

The second organizational meeting for LaSalle Parish Household Hazardous Materials Collection Day was hosted by the committee on March 18, 2010. A press release was sent out for this meeting as well. The donations list was reviewed to ensure that necessary materials were in place and the volunteer work schedule was finalized.

The LaSalle Parish Household Hazardous Materials Collection Day was held on April 10, 2010 from 8:00 a.m. until 12:00 p.m. in the Town of Jena. Forty-three vehicles dropped off waste from 48 households. The participants heard about the event primarily from the newspaper, radio and television. Eighty-seven percent of the participants were from Jena, nine percent from other areas in LaSalle Parish and four percent were from outside of the parish. Persons over 55 years of age comprised the largest group of participants (68 percent). The materials that were collected included:

Materials collected at LaSalle Parish Household Hazardous Materials Collection Day

Material	*Amount Collected*
Pesticide Liquids	195 pounds
Oil Based Paint (Bulked)	1607 pounds
Flammable Solids (Adhesives)	108 pounds
Pesticide Solids	108 pounds
Corrosive Liquids, Acids	16 pounds
Corrosive Liquids, Bases	87 pounds
Aerosols	132 pounds
Alkaline Batteries	16 pounds
NiCad Batteries	6 pounds
Lithium Batteries	3 pounds
Propane	5 each
Mercury (thermometers)	3 pounds
Fluorescent Light Bulbs	6 pounds
Latex Paint	450 pounds
Oxidizing Solid	5 pounds
PCB Ballasts	8 pounds
Used Oil	395 gallons
CPUs	44 units, 1320 pounds
Monitors	35 units, 1050 pounds
Printers	33 units, 660 pounds
Mixed breakage	12 units, 240 pounds
Laptops	2 units, 16 pounds
Miscellaneous Gaylords	1 unit, 600 pounds

The final committee meeting was held on April 15, 2010 to review and discuss results of the Household Hazardous Materials Collection Cay. Certificates were awarded to members for their participation and contribution to a successful committee.

Visits to local businesses identified as Significant Potential Sources of Contamination are complete. The Town of Jena adopted the drinking water protection ordinance on October 6, 2009 and the Town of Olla adopted the ordinance on January 12, 2010. Contingency Plans have been completed for all water systems.

Source Water Protection Program in Lincoln Parish

The LDEQ Drinking Water Protection Team began work in Lincoln Parish in November 2009. Staff members visited with representatives of local water systems and other government officials to introduce the Drinking Water Protection Program. The model ordinance to protect water wells was introduced to various local governments as well. Lincoln Parish has twenty active public community water systems. All of the systems are groundwater systems. Three systems are purchasing systems.

Figure 6.5.5: Source Water Staff discussing water conservation ideas with students at Lincoln Parish Water Festival

A community meeting to introduce the program to the public and solicit volunteers to form a committee was held on January 14, 2010. Twenty-four people attended, with four signing up for the committee.

The committee held its first meeting on March 11, 2010. In this orientation meeting, conducted by LDEQ's Drinking Water Protection Team, the goals of the committee and any specific environmental concerns they had were discussed.

On April 8, 2010 the Committee was trained on how to conduct educational visits to potential sources of contamination that are located near the water wells in Lincoln Parish. The number of potential sources that were determined, by LDEQ, as "visitable" was 144. These were the facilities that would have someone there to talk to and provide information to on BMPs, for example, gas stations but not cemeteries. Both the Committee and LDEQ worked on this project.

On May 6, 2010 a discussion was held on progress made for site visits to potential contamination sources. After this discussion, LDEQ introduced the model ground water protection ordinance it had already introduced to all of the political entities in the parish. The next item on the agenda was a discussion of public education materials and topics of interest for which a speaker could be obtained. The idea of a list of places that recycle used oil or other materials was provided. The Committee decided that a list of the places that accept recyclable material should be completed.

The next meeting was held on June 3. At this meeting, potential contamination source visits were discussed again. Following this discussion, the list of recycling centers for Lincoln Parish was distributed for review and discussion. The topic of the meeting involved concerns about poultry farms. Lincoln Parish has several poultry farms within its boundaries and some of these are located near public water wells. Ideas of what should be done to assure these farms do not contaminate these water wells were shared. It was decided that local agricultural extension offices and poultry farmer associations should be contacted to ensure that BMPs are utilized at these operation.

During the July 15, 2010 meeting, the Lincoln Parish Drinking Water Protection Committee discussed what should be done to provide local poultry farmers, whose facilities are located near public water wells, the opportunity to receive education on protecting water supplies. There were several wells that had poultry farms located near them in Lincoln Parish. The local extension agent attended the meeting to assist in this discussion. As it turned out, many of these farmers took part in environmental education opportunities several years ago during the time that poultry BMPs were adopted. However, the extent that these practices were still in place or whether their proximity to public water wells had been identified was unknown. It was decided that the Extension Agent would lead the effort to ensure poultry farms near public supply wells were using appropriate BMPs. LDEQ followed up on this effort and USDA gave a presentation on available funding to assist with proper closure of abandoned water wells. Abandoned water wells have been a continuing concern for the Committee and for Lincoln Parish Police Jury as several of these wells have been identified in Lincoln Parish.

The August 19, 2010 Committee meeting was the final committee meeting for Lincoln Parish. At this meeting, Tony Duplechin with LDNR presented Louisiana's Ground Water Management Program. The presentation outlined efforts LDNR takes to protect the quantity of water available to Louisiana's citizens. He also gave an update to LDNR's response to abandoned water supply wells for oil/gas operations in Lincoln Parish. The Committee provided LDNR with a list of these wells with their location which allowed LDNR the necessary information to inspect these wells. LDNR continues to examine options to assure proper closure of these abandoned wells. Jesse Means of the DWPP team discussed the DWPP accomplishments for Lincoln Parish and provided certificates of appreciation to committee members.

During FFY 2010, contingency plans were completed for all water systems, visits to all of the local businesses identified as Significant Potential Sources of Contamination were completed and LDEQ worked with local

government entities on passage of the model ordinance to protect water wells from contamination. The City of Grambling and Lincoln Parish Police Jury adopted the Drinking Water Protection Ordinance.

Source Water Protection Program in Tensas and Concordia Parishes

The LDEQ Drinking Water Protection Team met with Tensas-Concordia SWCD in September to introduce the program and ascertain if LDEQ could leverage their support for/assistance in completing routine goals for the program in Tensas Parish. This SWCD is also collaborating with LDEQ's NPS staff on Lake St. Joseph WIP and has been interested in similar efforts for Lake Bruin, which is a drinking water supply and economic resource for Tensas Parish. The SWCD voted to officially become involved with the DWPP.

LDEQ's DWPP Team met with Tensas-Concordia SWCD in November to introduce source water assessment data for Tensas and Concordia Parishes (as requested by the SWCD). The DWPP team invited Chris Soileau, the Regional Engineer for LDHH's Office of Public Health (OPH) Central Region 6 Office, Greg Hill, the Regional Sanitarian for LDHH/OPH Northwest Region 8 Office, and Brandon Graugnard, the Sanitarian Parish Manager for Franklin, Madison & Tensas parishes. The OPH/DHH guests answered questions regarding home sewage systems, specifically in reference to questions regarding camps around Lake Bruin.

Upon conclusion of the meeting, the SWCD committed to determine if there were any facilities in Tensas Parish that accepted used oil for recycling. If no such facilities exist, the SWCD may decide to build one. The DWPP team will send environmental/drinking water protection articles to the SWCD for a media blitz in the St. Joseph newspaper. The SWCD expressed interest in a community meeting in the future.

The DWPP Team met with water systems to update source water assessment data and to complete contingency plans. They also met with Mayors of the City of Vidalia and the Town of Ridgecrest to discuss the program and the drinking water protection ordinance. In Tensas Parish, the Team trained five 4-H volunteers on how to conduct visits to potential sources of contamination, which will count toward their service hours.

6.6 Pearl River Basin

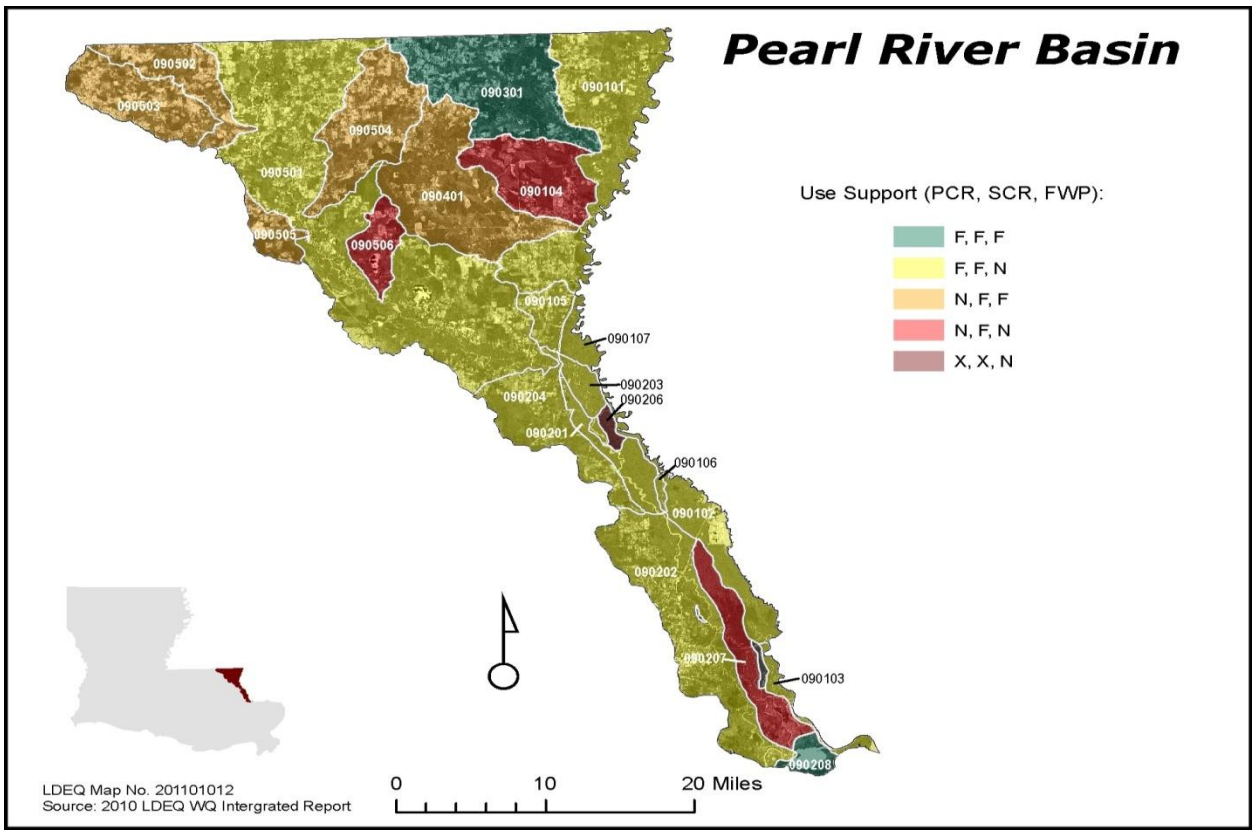

Figure 6.6: Key for the above map is as follows: PCR-Primary Contact Recreation; SCR-Secondary Contact Recreation; FWP-Fish and Wildlife Propagation; F=Fully Supporting, N=Not Supporting, X=No Data

Both the draft 2010 IR and the 2008 IR indicated that eight watersheds were not meeting PCR.

The draft 2010 IR indicated that seven water bodies fully met FWP compared to eight in the 2008 IR. Peters Creek from its headwaters to the Pearl River was added to the list of impaired waters for the draft 2010 IR.

Water quality data continued to indicate that Pearl River met water quality standards for DO and FWP. These data also indicated average annual concentration of fecal coliform bacteria met water quality standards for PCR. No new data was collected in 2009 so the most recent data was from 2008.

The water quality is relatively good in Pearl River, but there have been TMDLs completed which indicated that turbidity and sedimentation has been a problem. Therefore, LDEQ partnered with Louisiana Nature Conservancy to examine sources of sediment in order to implement the TMDL. This was a collaborative effort with Mississippi Nature Conservancy and a team of experts who want to protect and manage the Pearl River basin for its high ecological significance.

Pearl River Watershed Monitoring and Source Identification

The overall goal of the Pearl River Watershed Monitoring Project was to conduct preliminary assessment of channel stability and sediment regime to document current conditions of the lower Pearl River and Bogue Chitto River. This project provided baseline information for subsequent, focused evaluation of sources of stress to the basin, and critical issues that impace the basin at a watershed-scale. The objectives of

this project were to 1) locate and analyze maps, drawings, and aerial photos that illustrated historic channel conditions and configurations of the Pearl River, 2) develop a timeline of natural and anthropogenic events and actions that have affected channel stability and sediment regime of the Pearl River basin,
3) document and assess rates of change in channel conditions within the lower Pearl River basin, 4) develop nested estimates of sediment generation rates from stable and unstable reaches of the lower Pearl River, 5) identify, rank, and document locations of major sources of nonpoint sediment to the mainstem of the lower Pearl River, 6) validate estimates of sediment yield to the mainstem of the lower Pearl River derived from channel condition and stability analysis, 7) assess general applicability of the channel condition and stability methodology to estimate sediment yield throughout the lower Pearl River basin, and 8) produce a summary document that contains key data, findings, and synthesis of the results that will support implementation of future sediment reduction, conservation, and restoration activities.

Figure 6.6.1: Stream bank erosion along the Pearl River

Tasks for this project included gathering and analyzing historical and current data on geomorphology of the Pearl River and its major tributaries and conducting field-based assessment of channel stability and sediment flux of the lower Pearl River. The results of the project determined how the river channel has changed over time and highlighted river reaches that were most unstable and probably generated the most sediment.

The results produced by this project will help The Nature Conservancy, the Louisiana and Mississippi DEQs and other partners to more accurately focus application of BMPs and NPS reduction programs for the Pearl River. Data from this project will be utilized for WIP of the Pearl River, while ensuring continued availability of water resources for ecologically compatible human uses. The final report was submitted and approved by EPA in January 2010.

During FFY 2010, LDEQ met with the Office of Conservation at LDNR to discuss collaboration with the Nature Conservancy on improving management of active mine sites and restoration of abandoned sites. The Office of Conservation has developed a GIS database of all mined sites in Louisiana. Each site was examined to determine the type of reclamation needed for safety and environmental concerns. The data and information that the Nature Conservancy has produced through this project is beneficial to both agencies working together to restore and protect this resource in Louisiana.

USDA Programs

During FFY 2010, USDA implemented approximately 7,830 acres of BMPs in the Pearl Basin. Some of the programs that led to this implementation included 2,152 acres implemented through EQIP, 316 acres implemented through the CRP, and 1,568 acres implemented through WHIP.

6.7 Pontchartrain Basin

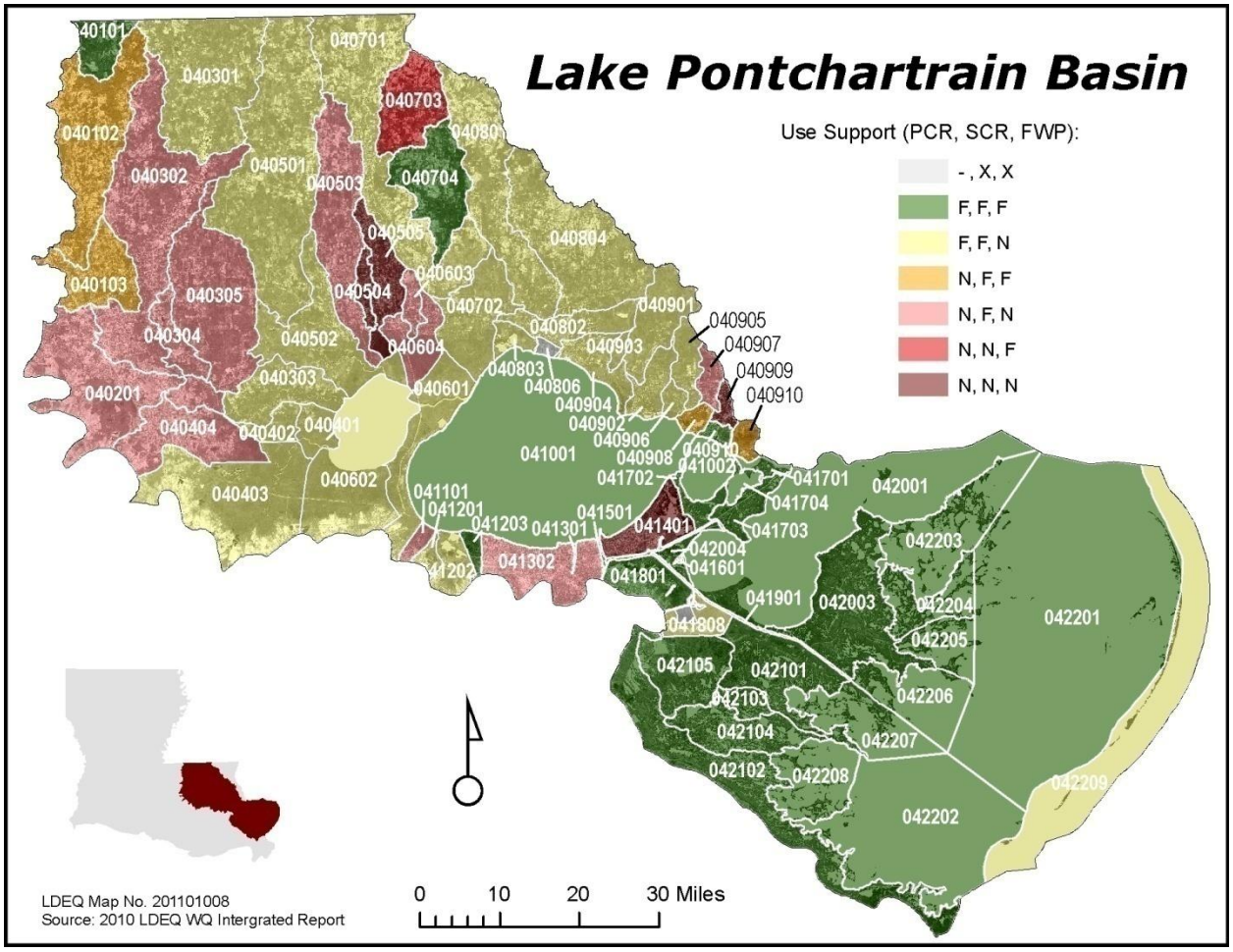

Figure 6.7: Key for the above map is as follows: PCR-Primary Contact Recreation; SCR-Secondary Contact Recreation; FWP-Fish and Wildlife Propagation; F=Fully Supporting, N=Not Supporting, X=No Data, Blank=Use N/A

The draft 2010 IR indicated 20 sub-segments impaired for PCR, which is the same number reported in the 2008 IR.

The draft 2010 IR indicated that there were extensive water quality problems with FWP, with over 50% of its watersheds impaired. LDEQ and USEPA will be finalizing TMDLs for the impaired water bodies in the LPB during 2011. These TMDLs will be the basis for watershed planning and management as next steps for improving the water quality.

Average Dissolved Oxygen Concentrations Measured in mg/L Sample for Selected Water Bodies in the Pontchartrain Basin											
Water Body (subsegment) (DO)	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Tickfaw River (040501)	8.09	7.36	7.69	7.67	7.60	8.17	8.06	8.18	7.98*	8.26	8.30
Tangipahoa River (040701)	8.43	7.67	7.83	8.12	8.08	7.80	8.36	8.55	8.30*	8.51	8.75

Average Fecal Coliform Concentrations Measured in Cells per 100 mL Sample for Selected Water Bodies in the Pontchartrain Basin											
Water Body (subsegment) (FC)	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Tickfaw River (040501)	114	644	2308	717	1399	814	579	207	735*	20.68	68
Tangipahoa River (040701)	100	282	3078	1998	2589	680	1203	240	2161*	35.86	11

Water quality data for Tickfaw and Tangipahoa Rivers has indicated that average annual DO concentrations continued to meet water quality standards since 2000. Concentrations of fecal coliform bacteria have improved in these two rivers since 2008.

There have been water quality improvements made on the north shore of Lake Pontchartrain, but this basin is one of the most rapidly developing areas of the state. Therefore, LDEQ continues to partner with local governments and organizations to find solutions for these water quality problems. Schools, churches and parks could utilize their green infrastructure as stable places in a community where people spend a great deal of time. These areas can be utilized for educational outreach and demonstration of the types of practices that could be implemented in urban landscapes. The results of these projects will be incorporated into WIPs for urban watersheds.

In addition to urban parts of the watersheds, there are also rural areas that need new technology applied to reduce erosion from pastures and agricultural fields. The watershed coordinators in the RC&D Offices assist LDEQ to select which projects are necessary to improve operations and reduce NPS pollution from rural lands.

Storm Water Best Management Practices (BMPs) in Wetland Landscape Design: Planning, Constructing, and Monitoring BMPs in Partnership with Woodlawn High School, Baton Rouge, LA

This project involved construction of a wetland/retention pond on the campus of Woodlawn High School as a BMP and an environmental educational tool. A former detention pond that received storm water runoff from the school parking lot and nearby dairy farm was re-designed to contain the first flush of the 10-year rainfall event. Approximately 1,600 plants and trees were planted (>90%survived) on-site to generate a functional wetland for pollutant removal.

Figure 6.7.1: Stages of progression of constructed wetland at Woodlawn High School from 2008 to 2010

During FFY 2010, water velocity meters were installed and post-construction water data was collected and analyzed to determine BMP efficiency regarding water flux and quality. Flux measurements were taken for three events during April and May and indicated that, as during pre-construction monitoring, peak flow for the two inlet sites was always greater than the outlet site, though there appears to be considerable backflow at the

outlet site. The data suggest that the backflow originated from a field south of the project area and entered the site through an adjacent drainage channel. The principal investigator believes that this problem can be eliminated by dredging the channel.

Post-construction water quality samples measured multiple parameters - NO_x, NH_4, TKN, PO_4, TP, TSS, DO, temperature and conductivity. For nitrate-nitrite, ammonium, phosphate and total phosphorus, concentrations exiting the wetland were generally lower than those entering the site. Concentrations of total kjeldahl nitrogen indicated higher concentrations exited the wetland than entered it during the warmer months. Total suspended solids and DO concentrations did not display a consistent pattern. Temperature values varied according to season as expected and conductivity values were typically inversely related to temperature. The project had a one-year, no-cost extension during FFY 2010 due to site access issues as a result of construction of an Elementary School adjacent to the project site. The project was completed on September 30, 2010.

Grain Drills on Highly Erodible Lands

The Capital RC&D in Hammond received funds from Section 319 to address nonpoint source pollution on highly erodible soils in the following parishes: St. Helena, East Baton Rouge, East Feliciana, West Feliciana and Tangipahoa. It has been estimated that there is 143,000 acres of highly erodible soils in these parishes. These soils are disked in the winter for preparation of ryegrass and wheat crops for approximately 2100 beef, dairy and horse producers that have approximately 220,000 acres in production. This disking of highly erodible soils has contributed to excessive soil erosion and runoff of nutrients and pesticides. Average annual soil loss estimates of 10 tons per acre per year are more than 3 times the level that should be tolerated (3 tons per acre) annually to maintain productive farmland. This level of soil erosion results in water quality problems in streams and lakes in these parishes.

Figure 6.7.2: Stakeholders with a grain drill utilized in the project

Three no-till grain drills were purchased for use in parishes selected for the project. The grain drills were placed at Farmers Co-ops and landowners signed up to rent the grain drills. The project was completed with excellent results in 12 months. There were 76 landowner rentals with an estimated 17,570 tons of soil retained in pastures instead of running off into Louisiana's water bodies.

Environmental objectives included reducing soil erosion and the amount of fertilizer applied in order to improve water quality in areas affected by livestock north of Lake Pontchartrain. The use of grain drills allowed for direct seeding of the pasture without tilling the landscape. This BMP lowered estimated annual soil loss to one ton per acre. Reducing annual soil loss to 90% in these five parishes, along with educating farmers on environmentally sustainable practices were the benefits that resulted from implementation of this project. This project reduced nutrient and pesticide runoff by 60 % or more in some cases.

Each year the number of acres that are planted with these BMPs will contribute to less soil erosion and improved water quality. This program became self sustaining after the initial purchase of the three grain drills. The Capital RC&D developed a press release introducing the program. All three Co-ops along with the SWCDs and Cattlemen's organizations in the five parishes were involved with an opening ceremony for the Grain Drill Rental Program. This opening ceremony was held on November 16, 2009.

Pasture Renovators on Highly Erodible Lands

The Capital RC&D in Hammond received funds from Section 319 to address NPS pollution on highly erodible soils in the following parishes in Southeast Louisiana: Washington, St. Tammany, St. Helena and Tangipahoa. These soils are used primarily for pasture production by approximately 1100 beef, dairy and horse producers which have approximately 220,000 acres of land. Many of the highly erodible soils in these four parishes have become compacted due to years of livestock traffic, resulting in excessive rain water runoff, poor plant vigor and plant productivity. Rain water can not penetrate through the root zone because of the compaction layer that has formed. This process is leading to water quality problems in nearby streams and lakes in these watersheds, with as estimated 98,000 acres of highly erodible soils.

Figure 6.7.3: Stakeholders with two renovators utilized in the project

Water sample results have indicated that several stream segments in these parishes are not meeting their designated use. Reasons for the streams not meeting their use range from total dissolved solids, dissolved oxygen, the presence of chloride, sulfates, nitrate/nitrite, phosphorus, fecal coliform and sediment. All results shown here would be addressed by having pasture renovators available to fracture the compacted layer of soil.

Four renovators were purchased for use in St. Helena, Washington, St. Tammany and Tangipahoa parishes. Environmental objectives included improving water quality with reduced runoff of rain water; improving animal health and productivity due to improved quality of forages and better infiltration of soil amendments. The use of pasture renovators fractures the root zone caused by many years of cattle traffic with the specific objective of reducing NPS pollution in receiving waters. Each year the number of acres that are renovated under this program would contribute to these results. A press release was developed and an opening ceremony was held on Tuesday, August 31, 2010.

USDA Programs

During FFY 2010, USDA implemented approximately 30,856 acres of BMPs in the Pontchartrain Basin. Some of the programs that were utilized for implementation included 6,252 acres implemented through EQIP, 1,930 implemented acres through CRP, and 1,502 acres implemented through WHIP.

6.8 Red River Basin

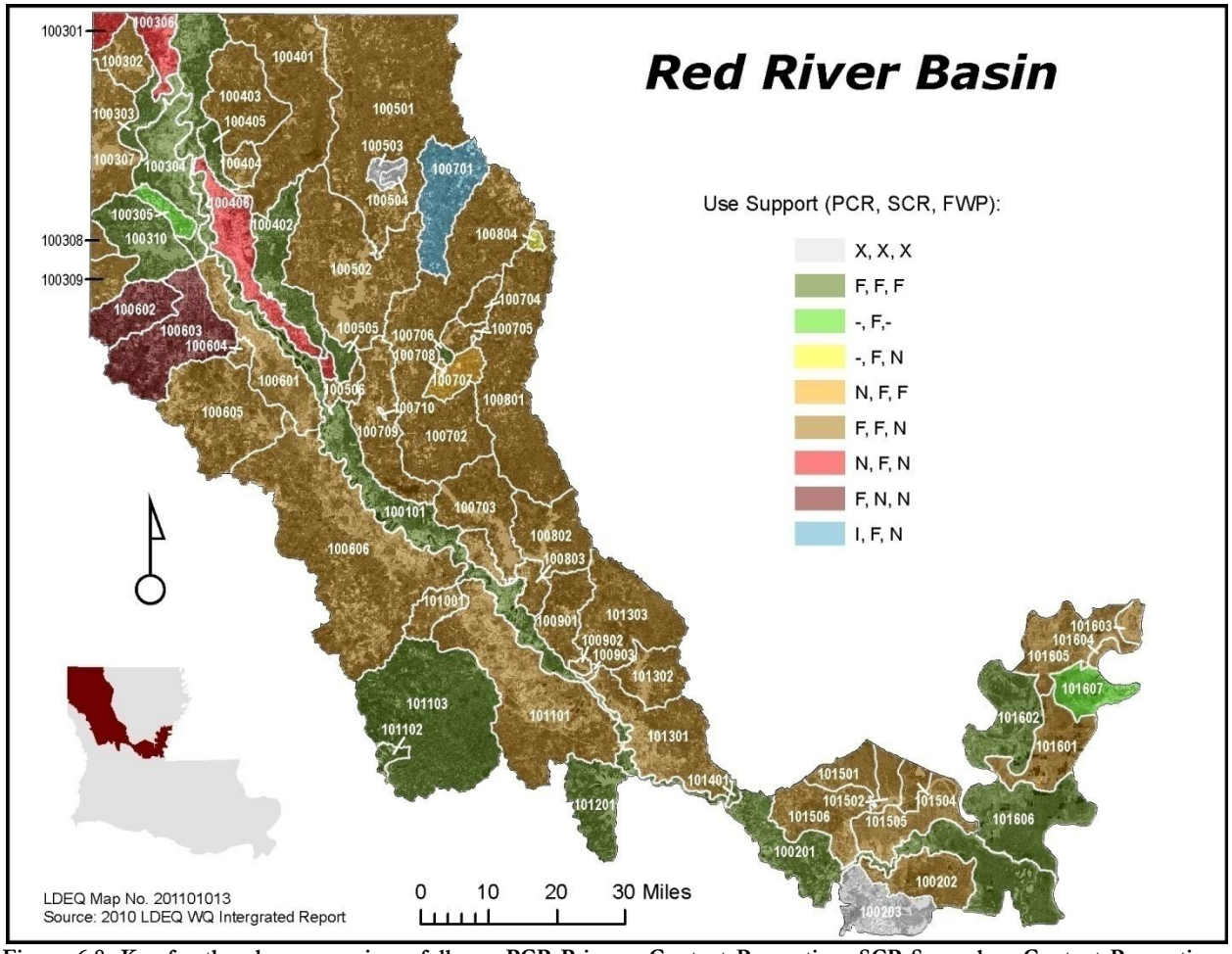

Figure 6.8: Key for the above map is as follows: PCR-Primary Contact Recreation; SCR-Secondary Contact Recreation; FWP-Fish and Wildlife Propagation; F=Fully Supporting, N=Not Supporting, I=Insufficient Data, X=No Data, Blank=Use N/A

The draft 2010 IR indicated only four watersheds as impaired for PCR, compared to eight in the 2008 IR, which means there was a net improvement of four watersheds that met PCR The 2010 draft IR indicated that approximately half of the basin is impaired for FWP.

In addition to agriculture and forestry activities, urban storm water and highway runoff causes sedimentation in streams. There have been areas along I-49, Highway 167 and Highway 171 that have caused erosion problems with complaints from the public and agencies. Therefore, LDEQ agreed to partner with LDOTD and LSU on a project to examine erosion control methods for highway projects in Louisiana. These BMPs can be incorporated in State's Erosion Control Manual for Highways and Bridges.

USDA Programs

During FFY 2010, USDA implemented approximately 55,785 acres of BMPs in Red River Basin. Some of the programs that led to this implementation included 34,220 acres implemented through EQIP, 4,491 acres implemented through CRP, 55 acres implemented through WRP and 1,218 acres implemented through WHIP.

Highway Right-of-Way Erosion Remediation: Implementation of a Residue Management BMP

Figure 6.8.1: Mulch BMP site on I-49 south of Alexandria

The goal of this project was to implement and quantify the use of mulch/compost as an erosion control BMP for right-of-way areas. During FFY 2010, a mulch/compost mix (50% wood chips/50% compost) was generated and mulch/compost blankets were applied via a blower truck to four sets of paired plots on four highway right-of-way sites which were specifically selected to represent a range of slopes and soil types. Two depths (2" and 4") of the mulch/ compost mix were applied to different plots, which were bordered by a metal boundary that was inserted into the soil surface, and two of the eight plots were designated as control plots and received no mulch/compost. Light tillage with an autotiller was also performed on selected plots. The sites were located on State Highway 61 (one site, just south of St. Francisville) and I-49 (three sites, south of Alexandria between exits 61 and 63). The three sites on I-49 were located in soils which had been destabilized and were actively being eroded. A total of eight auto samplers and eight H-flumes were obtained and placed on the sites. Data loggers and moisture probes were also installed at each of the sites.

All sites have been carefully monitored and runoff samples, mulch, and other parameters (temperature, water content, pH, EC, TDS, turbidity, TSS, VSS, and BOD) from these sites have been collected and analyzed after rainfall events and at regular intervals in order to determine effectiveness of the BMPs. Areas with surface-applied compost (no tillage) appeared to be largely stabilized and had little erosion, while tilled sites were typically developing rills. Two inches of mulch/compost appeared to be sufficient to prevent erosion at most sites. Results from data loggers indicated that plots with mulch/compost retained more moisture within the soil and caused soil temperature to remain cooler than the untreated control plots. Runoff has been collected at some sites following heavy rainfall events, but other sites had yet to yield samples. This could be due to enhanced infiltration as a result of mulch/compost application, and/or variability in rainfall patterns. Sample collection tubes on control plots occasionally experienced problems with clogging, so cheesecloth was wrapped around the inlet port. The principal investigators chose to do this to prevent clogging during intense rainfall events, though they admit that this may have reduced TSS values. A few minor areas with berms have been established, and more will be placed once new areas of erosion emerge. Controlled runoff events and site seeding may be performed in 2011. The principal investigators will collaborate with the LDOTD on an outreach and education campaign to promote the results and accomplishments of this project.

Lexington Elementary Environmental Education Wetland / Control of NPS Pollutants from Facility Runoff

The goal of this project was to produce an outdoor environmental teaching facility that also reduced NPS pollutant loads and runoff. The outdoor structure, which received roof and lawn runoff from a 36,000 square-foot building, connects students to their environment and teaches them that we always have an impact – positive or negative – on our natural resources. Construction of the facility at Lexington Elementary School in Monroe, LA began late in FFY 2010 and should be completed by February 2011.

Figure 6.8.2: Construction of outdoor classroom at Lexington Elementary

Source Water Protection Program in Caddo Parish

On January 21, 2010, the expert on giant *Salvinia* spoke to Caddo Drinking Water Protection Committee. Also in attendance were various local officials from the City of Shreveport and from the Louisiana Department of Wildlife and Fisheries (LDWF). After the presentation, officials from Shreveport and LDWF coordinated activities to mitigate *Salvinia* on Cross Lake which is the City of Shreveport's water supply.

Figure 6.8.3: Community members voice their concerns at a drinking water protection meeting

The meeting on February 25, 2010 included a presentation by a local gas exploration company on their operations and how they try to keep contaminants from drilling operations from getting out into the environment. A discussion of these activities and the roles of LDEQ and LDNR on regulating them followed the presentation. The meeting included a status report on educational visits to potential sources of contamination around the water wells and surface water intakes and a status report on passage of the ordinance in the various locations in Caddo Parish.

On March 25, 2010, Gary Hanson from Red River Waterways Management Institute presented a project that he coordinated on with Caddo Parish Commission and Louisiana Geological Survey. They conduct monitoring of several wells in Caddo, Bossier, and DeSoto parishes to ascertain if increased gas drilling from Haynesville Shale has contributed contaminants to local aquifers. The attendance for this meeting was very large because Mr. Hanson advertised free sampling of domestic water wells, so he could get more wells in their well monitoring project. Due to high attendance at the meeting of interested participants in the water well monitoring project, the remaining agenda topics were postponed for the next meeting.

On April 29, 2010, DEQ gave the Committee an overview of topics for which a speaker could be obtained and reviewed educational material that were available for the Committee. This meeting resulted in

Committee members taking educational materials back to their local areas for distribution. There was also extensive discussion at the end of the meeting about the recent gas well blowout, which occurred in southern Caddo parish and resulted in evacuation of several local citizens. LDEQ gave a brief status report on what was found was being done during in response to the event. A local geologist with the gas company responsible for the blowout explained what happened and the environmental consequence that resulted from it. A lengthy discussion followed these two reports.

For the meeting on May 27, 2010, LDEQ gave an overview of the aquifer monitoring program. In this program LDEQ's Aquifer Evaluation and Protection Section monitors background levels of the aquifers in Louisiana. The presentation included a review of what the program has found in aquifers of Caddo parish. LDHH also gave a presentation on the ways in which they protect public water systems in Louisiana. LDHH regulates water system operations and infrastructure to assure safe potable water supply for citizens of Louisiana. This is different from what LDEQ does to protect actual sources of water (the aquifers and surface water sources) while LDHH oversees treatment of water after it has been withdrawn from its source. LDNR also provided educational materials from their water quantity management program to the Committee. The purpose of these presentations was to illustrate to the public how their water supplies are protected from contamination.

LDEQ and the Committee collaborated throughout the spring to complete educational visits to local businesses identified as Significant Potential Sources of Contamination. Also during the year, LDEQ partnered with local government entities on passage of model ordinances to protect water wells from contamination.

The Caddo Parish Drinking Water Protection Committee held its final meeting on July 8, 2010. Included below is a summary list of activities/accomplishments for Caddo Parish.

- One community meeting, eight committee meetings, 23 committee members and several other people attended various meetings (every meeting had a large turnout);
- Presentations given to committee – aquifer designation/use/background, Haynesville Shale, LDNR oil/gas regulations, giant salvinia, presentation by a natural gas driller, LDEQ's well sampling program, LDNR water quantity management, LDHH public water system protection;
- Around 200 significant potential sources of contamination were identified and business owners were educated on types of BMPs which could be implemented to protect water sources;
- Six ordinances to protect water wells were introduced, three ordinances were passed;
- Coordinated with Louisiana Geological Survey to include volunteer wells in the study of local aquifers to determine effects of natural gas exploration;
- Committee field trip to a well fracturing event;
- Educational materials distributed;
- Several open discussions were held by the Committee, especially on Haynesville Shale. This Committee was a good venue for the public to learn about local issues and express their opinions on these issues;
- LDEQ GPS'd new wells and potential sources of contamination;
- LDEQ and Louisiana Rural Water Association completed contingency plans for water systems in the parish; and
- LDEQ participated in local avenues for public education on drinking water protection. This included presentations at Centenary College, Louisiana Greater Caddo Lake Association, American Water Works Association Southwest Conference and a local TV morning program and a radio program.

SWPP staff also assisted LDEQ regional office staff with questions about a local gas well blowout, assisted the Town of Ida with information to help drill a new water well, and assisted the Town of Blanchard with information they needed to close out an old water treatment facility.

6.9 Terrebonne Basin

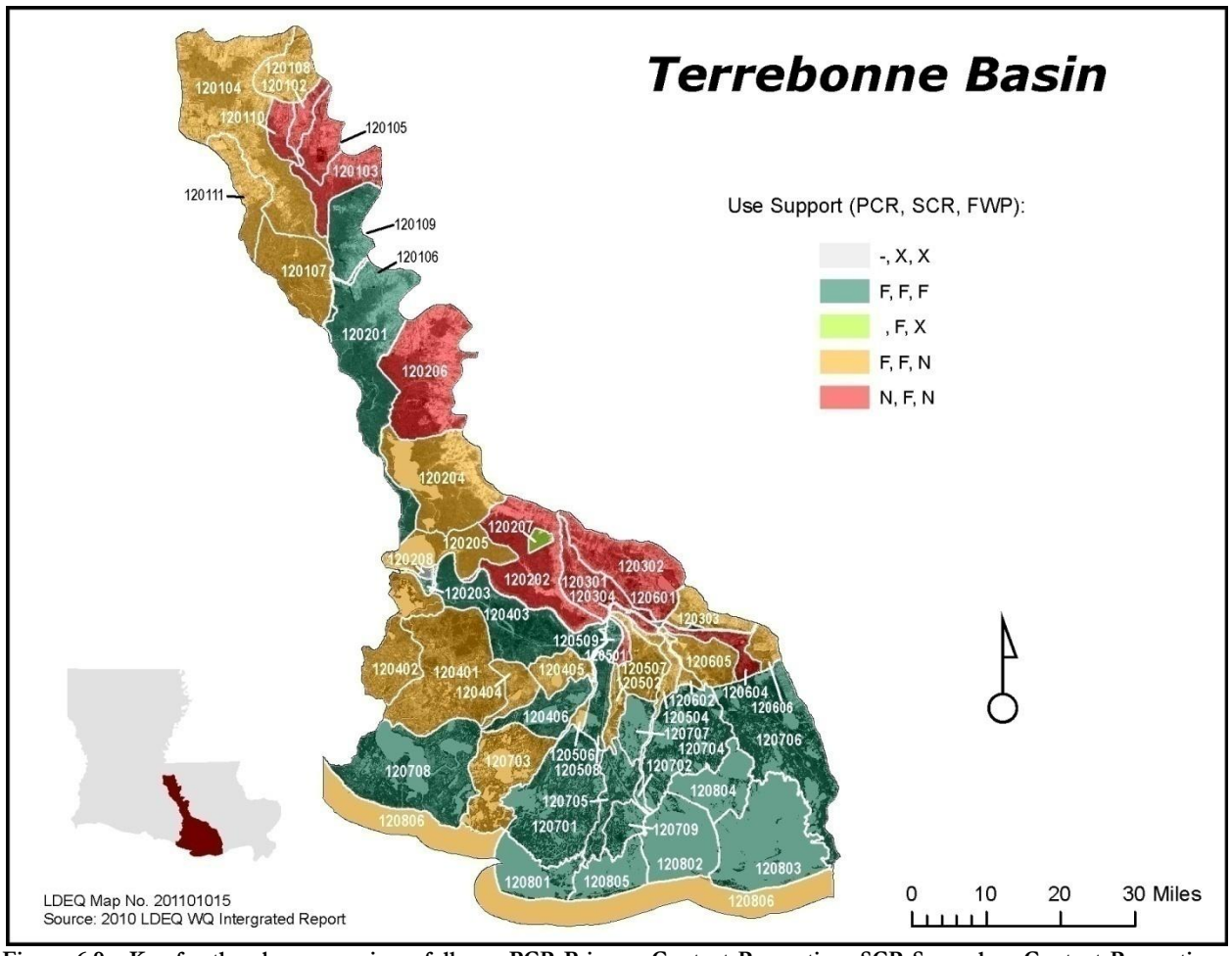

Figure 6.9 - Key for the above map is as follows: PCR-Primary Contact Recreation; SCR-Secondary Contact Recreation; FWP-Fish and Wildlife Propagation; F=Fully Supporting, N=Not Supporting, X=No Data, Blank=Use N/A

The draft 2010 IR indicated no change in the number of watersheds impaired for PCR from the 2008 IR. The draft 2010 IR also indicated many sub-segments did not meet FWP, but a few had improved and were removed from the impairment list.

The primary problems are low DO and high levels of turbidity. EPA and LDEQ completed a Use Attainability Analysis (UAA) for water bodies in Terrebonne Basin to determine appropriate water quality criteria for DO. Through the UAA process, chemical and biological data were examined to determine if the use was being met.

USDA Programs

During FFY 2010, USDA implemented approximately 24,455 acres of BMPs in Terrebonne Basin. Some of the programs that led to this implementation included 3,337 acres implemented through EQIP, 61 acres implemented through WRP, 75 acres implemented through WHIP.

Upper Terrebonne Water Quality Improvement Project

The Upper Terrebonne Basin (UTB) Initiative was formed by the Tri-Parish Partnership (TPP) between Iberville, Pointe Coupee West Baton Rouge parishes. This partnership started out as the Atchafalaya East Watershed (AEW), but UTB is now the appropriate name for this watershed project. The UTB is the uppermost portion of Terrebonne Basin and is part of Barataria-Terrebonne National Estuary and part of Atchafalaya Basin National Heritage Trace. This partnership was formed to identify solutions and implement them in UTB. The water resource problems include erosion, sedimentation, loss of fisheries, and flooding.

Figure 6.9.1: Iberville Parish's Environmental Manager, John Clark explains the objectives of the 319 Nonpoint Project to the Lower Delta Soil and Water Conservation District

The goals of the project were to address NPS pollution in UTB, develop a WIP and initiate projects which could result in improved water quality and source water protection. This will be accomplished by building partnerships with stakeholders, identifying NPS critical areas and solutions.

In April 2010, Iberville Parish Environmental Manager was the key note speaker for the Lower Delta SWCD banquet. At that event, the UTB project was discussed with emphasis on importance of cooperation with local farmers. Iberville parish also partnered with LDEQ's SWPP to implement source water protection activities.

At the 2010 Keep Louisiana Beautiful State Conference, the Iberville Parish Environmental Manager presented the UTB project, describing the Tri-Parish Partnership. He reiterated how stakeholders partnering with local and state governments can improve water quality and reduce waterborne debris.

Iberville parish is aiding in the implementation of TMDLs in UTB that address point source and NPS pollutant loads in water bodies, refining WIPs for NPS loads, and eliminating unpermitted discharges of waste water. Iberville parish also responded to complaints regarding potentially unpermitted sanitary waste water discharges.

Source Water Protection Program in Iberville Parish

The LDEQ SWPP Team began working with Iberville Parish in June 2010. Staff visited with representatives of local water systems and other government officials to introduce the Drinking Water Protection Program. Iberville Parish has fourteen active public community water systems. All of the systems are ground water systems with the exception of Iberville Waterworks District #3, which is a combination system. The source of surface water for this system is Lower Grand River. Five systems are purchasing systems.

Local officials have opted not to proceed with a formal community meeting at this time. However, LDEQ continued its partnership with Iberville parish by conducting meetings with local officials on source water protection ordinances and providing educational outreach in schools. Twenty-eight ULL volunteer students were trained by SWPP staff to conduct visits with owners and operators of businesses that are a potential source of contamination. The students provided information on ways to protect drinking water. SWPP staff

made a presentation to a geology class at ULL on September 22, 2010, encouraging students to volunteer for the project. The students were given the option of partnering with LDEQ on drinking water protection activities in lieu of writing a 10-page paper. Eighty-two percent of the students opted to partner with LDEQ on the project in Iberville Parish.

Contingency plans have been completed for all water systems in Iberville parish and SWPP staff provided sample ordinances to Maringouin and Rosedale for possible adoption at a later date.

6.10 Vermilion-Teche River Basin

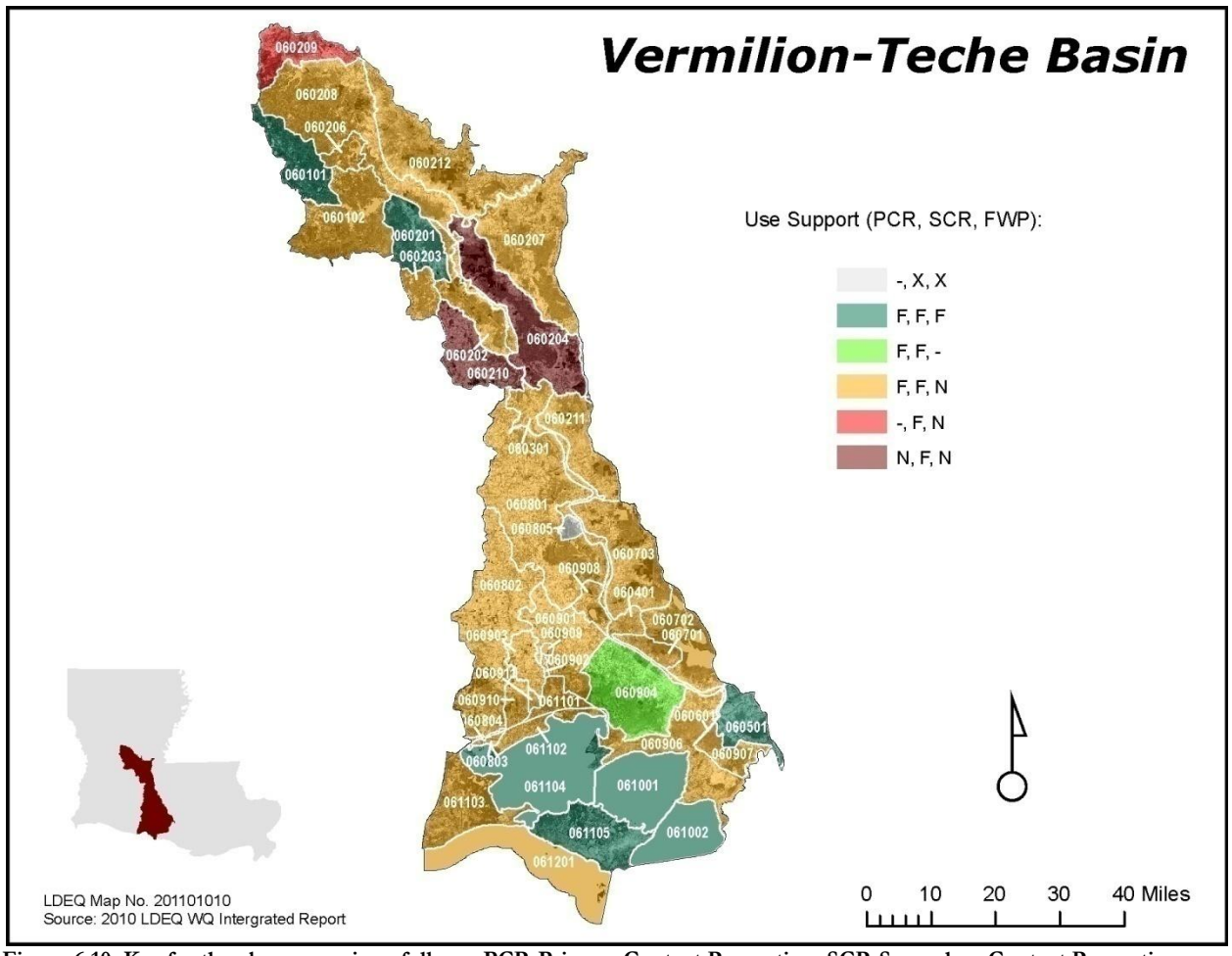

Figure 6.10: Key for the above map is as follows: PCR-Primary Contact Recreation; SCR-Secondary Contact Recreation; FWP-Fish and Wildlife Propagation; F=Fully Supporting, N=Not Supporting, X-No Data, Blank=Use N/A

The draft 2010 IR indicated that water quality in Vermilion-Teche Basin has remained consistent since 2008; two water bodies were not meeting PCR. LDEQ has partnered with Acadiana RC&D, Bayou Vermilion District (BVD), SWCDs and NRCS to implement BMPs in rural areas and provide educational outreach materials for homeowners with onsite sewage systems.

The draft 2010 IR indicated improvements in the number of watersheds listed for FWP compared to the 2008 IR.

Water quality monitoring data shows DO improvements; however, there were significant increases in fecal coliform bacteria for Vermilion River and Bayou Teche.

Average Fecal Coliform Concentrations Measured in Cells per 100 mL Sample for Selected Water Bodies in the Vermilion-Teche River Basin								
Water Body (subsegment)	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Vermilion River (060802)	1412	2861	239	137	168	752*	527	2630
Bayou Teche (060401)	943	480	439	152	136	213*	757	2035
***partial year data**								

Average Dissolved Oxygen Concentrations Measured in mg/L for Selected Water Bodies in the Vermilion-Teche River Basin								
Water Body (subsegment)	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Vermilion River (060802)	4.31	4.03	4.83	4.98	4.05	4.14*	5.03	5.07
Bayou Teche (060401)	4.10	4.70	4.89	4.51	4.59	5.09*	4.19	5.25
***partial year data**								

In Vermilion-Teche Basin, TMDLs have been completed and WIPs developed, however BMPs should be implemented in agricultural and urban areas. During FFY 2010, a project was implemented to examine NPS pollution problems in Bayou Courtableau.

A Comprehensive Strategy for Implementing Best Management Practices to Improve the Quantity and Quality of Storm Water Entering the Vermilion River

The Vermilion River and its tributaries receive storm water from portions of Lafayette, St. Landry and upper St. Martin parishes. As a result, it receives NPS pollution from the watershed. The pollution load includes turbidity, high fecal coliform and BOD, resulting in low DO. The Louisiana NPS Management Plan indicated sub-segments 060801 and 060802 were threatened and only partially met their designated uses. A TMDL was developed for Vermilion River in 2001 for DO. EPA also developed the TMDLs for fecal coliform, total suspended solids and sulfates in 2002-2003. The BVD identified sediment loads from stream banks as a major problem in the river. This project demonstrates how to reduce the concentration of suspended solids caused by erosion of stream banks and also from homes along the edge of the river. Runoff from construction sites was addressed by parish government through local ordinances and NPDES phase II storm water regulations. Storm water runoff from homes along Vermilion River was not addressed. The BVD can reduce the suspended solids, organic material, nutrients and stream bank erosion through construction and installation of wetland plants, detention ponds and rain gardens. Native wetland plants are effective at protecting stream banks from erosion. These wetland plants can armor the stream banks against increased runoff during rain events, restoring the waterway's natural look and function. Typically native wetland plants are not readily available locally. As a result, those who wish to implement small NPS improvement projects are often discouraged due to lack of availability of appropriate plants. The BVD has created and is maintaining a wetland plant nursery and demonstration area. Since BVD is financially supported by a parish-wide property tax millage, the nursery will allow BVD to provide free wetland plants to the residents of Lafayette Parish. This could encourage residents to implement BMPs to reduce NPS storm water runoff.

Figure 6.10.1: Rain garden under construction

The specific goal of this project is to develop demonstration sites for erosion control and runoff from residences along the Vermilion River, as a way to filter the water that runs directly into the river. The techniques to be implemented have four primary goals:

- To reduce runoff volume through infiltration, retention, and evaporation;
- To improve runoff quality through the creation of infiltration sites on previously impervious surfaces;

- To identify beneficial usages for storm water; and
- To inform the public about BMPs to improve water quality, including beneficial uses of native wetland plants.

The objectives of this project were to:

- Establish a wetland plant propagation nursery, which will include a greenhouse and a wetland plant demonstration area;
- Increase bioretention in an existing detention pond;
- Design and construct a demonstration rain garden;
- Design and construct a demonstration parking zone of pervious pavement/surfaces;
- Implement a rainwater catchment outreach program by constructing and distributing rain barrels; and
- Develop "tip sheets" specific to each type of BMP, including outreach materials and activities to promote the use of wetland plants, detention ponds, rain gardens, pervious pavement/surfaces, and rain barrels in new and established neighborhoods.

Source Water Protection Program in Iberia Parish

The SWPP began work in Iberia Parish in August 2010. Staff visited with representatives of the local water systems and other government officials to introduce the DWPP. Iberia Parish has fourteen active public community water systems. All of the systems are ground water systems; one system is a purchasing system. Eight systems serve trailer parks or subdivisions.

A community meeting was held on September 30, 2010 in New Iberia, LA to introduce the program to the public and solicit volunteers to form a committee. Twenty people attended the meeting, five volunteered to join the committee. The first committee meeting was held on October 28, 2010 with seven people in attendance. Laura Downey from the Iberia Parish Office of Homeland Security and Emergency Preparedness was elected to chair the committee. The major concerns the committee identified are salt water intrusion, individual onsite waste water treatment, and abandoned water wells. The next meeting will be held in January 2011.

Twenty–one student volunteers from ULL that were trained by SWPP staff, visited owners and operators of significant potential sources of contamination to inform them of the sources of their drinking water and how protect them. Louisiana Water Company (LAWCO) serving the City of New Iberia has a comprehensive contingency plan already in place.

SWPP staff gave a presentation to twenty students at Westgate High School in New Iberia on December 6, 2010.

USDA Programs

During FFY 2010, USDA implemented approximately 43,512 acres of BMPs in Vermilion-Teche Basin. Some of the programs that led to this implementation included 11,556 acres implemented through EQIP, 607 acres implemented through CRP, 195 acres implemented through WRP and 972 acres implemented through WHIP.

6.11 Statewide Activities

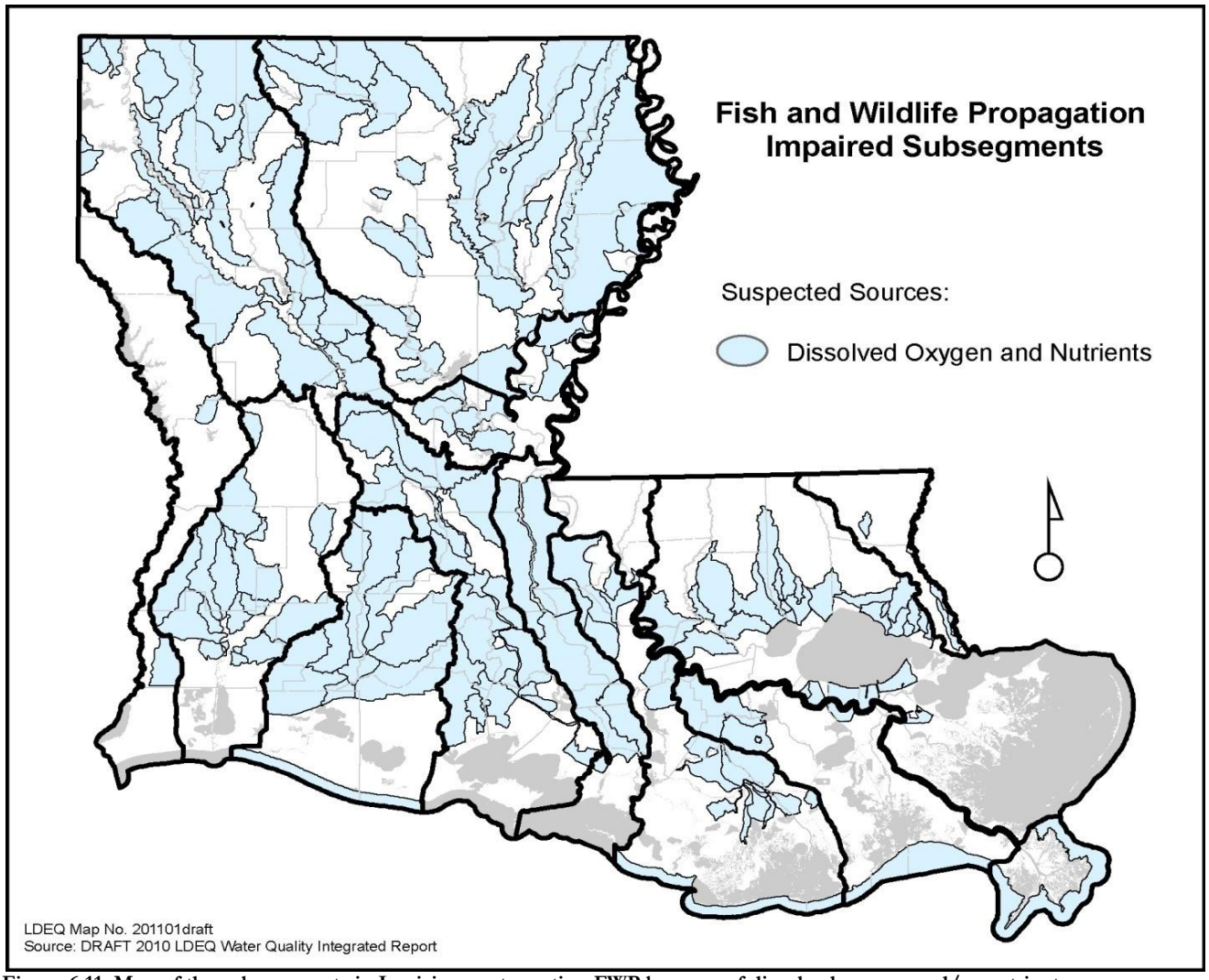

Figure 6.11: Map of the sub-segments in Louisiana not meeting FWP because of dissolved oxygen and/or nutrient impairments

In addition to watershed NPS projects (localized), other activities targeting statewide NPS issues were implemented in FFY 2010. The NPS Management Plan included tasks and milestones for statewide implementation activities, consisting of agriculture, forestry, urban runoff, home sewage, hydromodification, construction and resource extraction.

Standards Development for Nutrient Criteria for Wetlands

The goal of this project was to work toward development of nutrient criteria for freshwater wetlands in Louisiana. Specifically the tasks included: 1) A wetland classification scheme was reviewed and modified to develop nutrient criteria in wetlands; 2) Existing data for nutrient assimilative capacity was compiled and reviewed. These data included: response to nutrient loading rates, nutrient fate (e.g., denitrification, permanent burial), and other variables, including seasonal relationships relevant to nutrients in wetlands. Data gaps and areas of future research were identified; 3) A procedure to determine best attainable

conditions for each wetland classification was identified or developed; 4) Appropriate parameters for monitoring and assessing wetland response to nutrients were determined; 5) A statistical analysis of data to develop best attainable nutrient conditions in each class of wetland was conducted.

The final report was received in October 2010, and has been sent to EPA for approval. LDEQ will utilize this report as one source of a scientific basis for development of numerical criteria for wetlands.

Mapping Coastal Wetland Forests in Coastal Louisiana

The goals and objectives of the project were to create a dataset on the health of coastal wetland forests, specifically cypress-tupelo forests in two coastal areas: 1) *Western Terrebonne – Lower Atchafalaya*--South of Bayou Black and west of Bayou Lafourche to Cypremort Point, and 2) Lake Maurepas – Pontchartrain—north of the Mississippi River and New Orleans and south of the Pleistocene Terraces of the Florida parishes. The dataset were utilized to train the computer to recognize three condition types of cypress-tupelo forests, using satellite imagery to create a map of healthy and stressed forest areas. These maps can be utilized for watershed management strategies by introducing fresh water, nutrients and sediment into forests stressed by saltwater intrusion. These data could also be utilized for sediment pipeline delivery projects in areas where large amounts of sediment are necessary to restore the coastal forests.

Figure 6.11.1: Map depicting wetland forest sites in Lake Maurepas and the Atchafalaya Basin

The final report provided to LDEQ included maps and statistical data on the health of coastal cypress tupelo forests. The final product will be utilized by the Coastal Impact Assistance Program (CIAP). A LDEQ representative has been serving on the Advisory Committee for that program. CIAP provides incentives to landowners who opt to participate in this program.

Model Landscape Code Design Standards: A Technical Document for Designers & Developers

To restore and protect local streams from NPS water pollution, LDEQ NPS Program has developed a Model Landscape Code designed specifically for Louisiana's unique environment. The model code is available to municipalities, parishes, developers, landscapers, and the public as a guide for environmentally friendly landscaping. Following completion of Louisiana's Model Landscape Code, a design standard was developed that illustrated and described the creation and implementation of different types of BMPs. These design standards are used by architects, engineers, landscape architects, developers, builders and public officials. These standards described how the Model Landscape Code could be calibrated to reduce urban NPS water pollution.

This model is available on the internet at: http://www.abbey-associates.com/splash-splash/.

USDA Programs

Throughout the state of Louisiana, the USDA implemented approximately 17,113 acres of BMPs through the CRP, 8,050 acres through the WRP, 199,709 through the EQIP, and 10,598 acres through the WHIP. The following chart shows approximately the total number of acres of implemented BMPs per basin.

Basin	Acres of USDA Implemented BMPs
Barataria	3,199
Calcasieu	13,171
Mermentau	32,921
Mississippi	1,419
Ouachita	96,996
Pearl	1,453
Pontchartrain	13,190
Red	37,737
Sabine	4,164
Terrebonne	14,823
Vermilion-Teche	16,397

Education and Outreach Activities

The NPS Staff participated in educational outreach programs to inform the public about NPS water quality problems, including storm drain marking programs. Because storm drains ultimately discharge to lakes, rivers, and bayous without prior treatment, storm drain marking is an essential element of the state's educational program. Storm water runoff transports street litter, yard waste, fertilizers, pesticides, pet waste, and oils and fluids from driveways and streets. The first inch of runoff from a storm generally carries ninety percent of the pollution that is responsible for at least half of the water quality problems. The storm drain marking program is a hands-on project for volunteers who are interested in educating the public about NPS pollution prevention. The markers are placed on storm drain inlets to remind citizens of the importance of protecting our waters. The overall success of NPS pollution prevention activities relies upon participation and cooperation of the general public. Other educational activities conducted by the NPS Staff included:

Figure 6.11.2: Watershed concepts being taught to a group of Girl Scouts using the NPS Walnut Bayou River Model

- Earth Day
- Envirothon
- Wild Woods Wanderings
- Hurst Wetland Watchers
- Ocean Commotion

- Hunting and Fishing Day
- La Fete d'Ecologie
- World Water Monitoring Day
- Girl Scouts and Boy Scouts
- Science Fun for Everyone
- Environmental Education Symposium
- Lincoln Parish Water Festival
- Bayou Cleanups
- School Presentations
- Attending Stakeholder and Committee Meetings
- Attending Annual Nonpoint Source Conference
- Attending numerous other NPS related meetings

The staff also attended conferences, and gave presentations at workshops and in classrooms to educate others.

Appendix A

Appendix A: ASSET Wells sampled during calendar year 2010

Well ID	Sample Date	Owner Name	Use	Aquifer
1823 / AV-441	1/19/2010	Town of Evergreen	Public Supply	Evangeline Aquifer
1809 / R-1350	1/19/2010	Country Pines Nursery	Irrigation	Evangeline Aquifer
1703 / AL-120	1/19/2010	City of Oakdale	Public Supply	Evangeline Aquifer
1841 / EV-858	1/19/2010	Savoy Swords Water System	Public Supply	Evangeline Aquifer
1879 / AL-373	1/20/2010	Town of Oberlin	Public Supply	Evangeline Aquifer
1927 / AL-391	1/20/2010	Fairview Water System	Public Supply	Evangeline Aquifer
1926 / V-668	1/20/2010	LDWF/Fort Polk WMA HQ	Other	Evangeline Aquifer
1842 / AL-363	1/26/2010	West Allen Parish Water District	Public Supply	Evangeline Aquifer
1928 / CU-1362	1/26/2010	LAWCO (La. Water Co.)	Public Supply	Evangeline Aquifer
1843 / BE-512	1/26/2010	Singer Water District	Public Supply	Evangeline Aquifer
1774 / BE-405	1/26/2010	Boise Cascade	Industrial	Carnahan Bayou Aquifer
1775 / BE-410	1/26/2010	Boise Cascade	Industrial	Evangeline Aquifer
3985 / *CT-118	2/22/2010	City of Jonesville	Public Supply	Catahoula Aquifer
1846 / LS-278	2/22/2010	Rogers Water System	Public Supply	Catahoula Aquifer
3445 / R-1113	2/22/2010	Pollock Area Water System	Public Supply	Catahoula Aquifer
1931 / OU-5524Z	3/4/2010	Private Owner	Domestic	North Louisiana Terrace Aquifer
1849 / MO-124	3/4/2010	Texas Gas	Public Supply	North Louisiana Terrace Aquifer
1727 / MO-364	3/4/2010	Peoples Water Service	Public Supply	North Louisiana Terrace Aquifer
3984 / *V-434	3/17/2010	Town of Anacoco	Public Supply	Catahoula Aquifer
1844 / V-5065Z	3/17/2010	Private Owner	Domestic	Evangeline Aquifer
1790 / RR-254	3/29/2010	East Cross Water System	Public Supply	North Louisiana Terrace Aquifer
1798 / BO-434	3/29/2010	Red Chute Utilities	Public Supply	North Louisiana Terrace Aquifer
3456 / BO-578	3/29/2010	Village Water System	Public Supply	North Louisiana Terrace Aquifer
1850 / BI-208	3/30/2010	Private Owner	Domestic	North Louisiana Terrace Aquifer
1848 / LS-264	3/30/2010	City of Jena	Public Supply	North Louisiana Terrace Aquifer
1710 / G-432	3/30/2010	Central Grant Water System	Public Supply	North Louisiana Terrace Aquifer
1768 / G-342	3/30/2010	Vanguard Synfuels, LLC	Industrial	North Louisiana Terrace Aquifer
1716 / V-496	4/12/2010	U.S. Army/Fort Polk	Public Supply	Carnahan Bayou Aquifer
1933 / V-8102Z	4/12/2010	Private Owner	Domestic	Carnahan Bayou Aquifer

Appendix A

1890 / V-656	4/12/2010	East Central Vernon Water System	Public Supply	Carnahan Bayou Aquifer
1853 / V-566	4/12/2010	Alco-Hutton VFD	Public Supply	Carnahan Bayou Aquifer
1712 / R-1210	4/13/2010	City of Alexandria	Public Supply	Carnahan Bayou Aquifer
1852 / R-1001	4/13/2010	Gardener Water System	Public Supply	Carnahan Bayou Aquifer
1898 / R-1172	4/13/2010	Cleco-Rodemacher	Power Generation	Carnahan Bayou Aquifer
1817 / CO-47	4/14/2010	City of Vidalia	Public Supply	Carnahan Bayou Aquifer
3457 / G-5178Z	4/14/2010	Private Owner	Domestic	Carnahan Bayou Aquifer
3988 / *BO-7896Z	5/18/2010	Private Owner	Domestic	North Louisiana Terrace Aquifer
1861 / SMN-33	7/7/2010	LDOTD, Lafayette District	Public Supply	Mississippi River Alluvial
3639 / AV-1256	7/7/2010	Hamburg Mills	Domestic	Mississippi River Alluvial
1855 / AV-5135Z	7/7/2010	Private Owner	Domestic	Mississippi River Alluvial
2881 / AV-462	7/7/2010	La. Delta Plantation	Irrigation	Mississippi River Alluvial
1859 / EB-885	7/8/2010	La. State University	Irrigation	Mississippi River Alluvial
2871 / IB-363	7/8/2010	Syngenta Crop Protection, Inc.	Industrial	Mississippi River Alluvial
1857 / IB-5427Z	7/8/2010	Private Owner	Domestic	Mississippi River Alluvial
1858 / IB-COM	7/8/2010	Private Owner	Domestic	Mississippi River Alluvial
2997 / WC-527	7/27/2010	Private Owner	Irrigation	Mississippi River Alluvial
1893 / MO-871	7/27/2010	Private Owner	Irrigation	Mississippi River Alluvial
1935 / RI-730	7/27/2010	Start Water System	Public Supply	Mississippi River Alluvial
1786 / RI-48	7/27/2010	Rayville Water Department	Public Supply	Mississippi River Alluvial
1856 / CO-YAKEY	7/29/2010	Private Owner	Domestic	Mississippi River Alluvial
2882 / CT-489	7/29/2010	La. Delta Plantation	Irrigation	Mississippi River Alluvial
1862 / CT-DENNIS	7/29/2010	Private Owner	Domestic	Mississippi River Alluvial
4009 /*PC-5515Z	9/15/2010	Private Owner	Domestic	Mississippi River Alluvial
3359 / *TS-61	9/16/2010	Town of St. Joseph	Public Supply	Mississippi River Alluvial
3587 / FR-1358	9/16/2010	Macon Ridge Research Station	Irrigation	Mississippi River Alluvial
1825 / RI-469	9/16/2010	Liddieville Water System	Public Supply	Mississippi River Alluvial
3582 / MA-206	9/27/2010	Tallulah Water Service	Public Supply	Mississippi River Alluvial
1864 / EC-370	9/27/2010	Hollybrook Land	Irrigation	Mississippi River Alluvial
2999 / WC-91	9/27/2010	New Carroll Water Assn.	Public Supply	Mississippi River Alluvial
1937 /CA-35	11/3/2010	City of Columbia	Public Supply	Cockfield
3360 / *G-441	11/3/2010	Red Hill Water System	Public Supply	Cockfield
1873 / W-198	11/3/2010	Atlanta Water System	Public Supply	Cockfield
4010 / *W-5239Z	11/15/2010	Private Owner	Domestic	Cockfield
1940 / OU-FRITH	11/15/2010	Private Owner	Domestic	Cockfield
1936 / RI-450	11/15/2010	River Road Waterworks	Public Supply	Cockfield
1805 / RI-127	11/15/2010	Delhi Waterworks	Public Supply	Cockfield

Appendix B

Appendix B: List of projects that were active during FFY 2010.

Improving Water Quality Through an Integrated Watershed Approach in the Basins	*2004*	*Basin/Statewide*
Improving Water Quality through an Integrated Watershed Approach in the Red River and Ouachita Basins	2004	Statewide
Technical assistance for Watershed Monitoring and Quality Assurance in the NPS Program	2004	Statewide
Improving Water Quality Through an Integrated Watershed Approach in the Mermentau and Vermilion-Teche River Basins	2004	Statewide
Improving water quality through an integrated watershed approach in the Ouachita River Basin	2004	Statewide
Coulee Baton Home Sewage Micro-watershed Project	2004	Mermentau River Basin
Big Creek Coliform Sources	2004	Ouachita River Basin
Monitoring the Effectiveness of Forestry BMP Implementation in the Flat Creek, Phase 2	2004	Ouachita River Basin
Improving Water Quality through an Integrated Watershed Approach in the Lake Pontchartrain, Terrebonne, Pearl and Mississippi Basins	2004	Statewide
Louisiana Forestry Best Management Practices Education Project Phase 2	2004	Statewide
GIS Analysis for Watershed Planning and Management	2004	Statewide
Nutrients, Dissolved Oxygen Conditions, Habitat and Fish Assemblage	2004	Statewide
Model Landscape Code Design Standards	2004	Statewide
Standards Development for Nutrient Criteria for Wetlands	2004	Statewide
Mapping Coastal Wetland Forests in Coastal Louisiana	2004	Statewide
Watershed monitoring in the Ouachita River Basin	2004	Ouachita River Basin
Water Quality Modeling to Support the Use of Natural Wetlands to Treat Non-point Source Pollution as a Restoration Goal for the Barataria Basin – Planning Project.	2005	Barataria Basin
Storm Water BMPs in Wetland Landscape Design Planning, Construction at Woodlawn High School	2005	Lake Pontchartrain Basin
Modeling NPS and Land-Use in Bayou Plaquemine Brule	2005	Mermentau River Basin
The Coulee Baton Microwatershed Nonpoint Source Pollution Monitoring and Modeling Project	2005	Mermentau River Basin
Bayou Wikoff Sub-Watershed of Bayou Plaquemine Brule Watershed Project	2005	Mermentau River Basin
Lexington Elementary Environmental Education Wetland / Control of NPS Pollutants from Facility Runoff	2005	Ouachita River Basin
Grain Drills on Highly Erodible Lands	2005	Lake Pontchartrain Basin
Establishment of Baseline Conditions at the Mollicy Farms Unit of Upper Ouachita River National Wildlife Refuge	2005	Ouachita River Basin
Bayou Vermilion District	2005	Vermilion-Teche River Basin and Mermentau
Pasture Renovators on Highly Erodible Lands	2007	Lake Pontchartrain Basin
Technical assistance for Watershed Monitoring and Quality Assurance in the NPS Program	2007	Statewide

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Improving Water Quality Through an Integrated Watershed Approach in the Basins	*2004*	*Basin/Statewide*
GIS Analysis for Watershed Planning and Management	2007	Statewide
Highway Right-of-Way Erosion Remediation: Implementation of a Residue Management Plan	2008	Red River and Mississippi
Hydrologic and Water Quality Response to River Reintroduction in Restored Bottomland Hardwood Forests of the Upper Ouachita River Watershed	2008	Ouachita River Basin
Identification and reduction of NPS pollutants to Bayou Desiard in the Ouachita River Basin	2008	Ouachita River Basin
Water Quality Improvements for the Upper Terrebonne Basin	2008	Terrebonne Basin

Appendix C

Appendix C: List of improved water bodies based on 2010 Draft IR.

Subsegment	*Water body*	*Impairment Removed*
LA010801_00	Lower Atchafalaya River-ICWW to Atchafalaya Bay	Oxygen, Dissolved
LA010802_00	Wax Lake Outlet-From US-90 bridge to Atchafalaya Bay	Oxygen, Dissolved
LA010803_00	Intracoastal Waterway-From Bayou Boeuf Lock to Bayou Sale	Oxygen, Dissolved
LA020201_00	Bayou Des Allemands-From Lac Des Allemands to old US-90	Oxygen, Dissolved
LA020202_00	Lac Des Allemands	Oxygen, Dissolved
LA020301_00	Bayou Des Allemands-From US-90 to Lake Salvador	Oxygen, Dissolved
LA020302_00	Bayou Gauche	Oxygen, Dissolved
LA020303_00	Lake Cataouatche and Tributaries	Fecal Coliform
LA020303_00	Lake Cataouatche and Tributaries	Oxygen, Dissolved
LA020401_00	Bayou Lafourche-From Donaldsonville to ICWW at Larose	Oxygen, Dissolved
LA020701_00	Bayou Segnette-From headwaters to Bayou Villars	Oxygen, Dissolved
LA030302_00	Lake Charles	Fecal Coliform
LA030303_00	Prien Lake	Fecal Coliform
LA030303_00	Prien Lake	Oxygen, Dissolved
LA030401_00	Calcasieu River-From below Moss Lake to the Gulf of Mexico	Fecal Coliform
LA030502_00	Whiskey Chitto Creek-South of Fort Polk to Calcasieu River	Turbidity
LA030603_00	Marsh Bayou-From headwaters to Calcasieu River	Fecal Coliform
LA030701_00	Bayou Serpent	Total Dissolved Solids
LA030801_00	West Fork Calcasieu River-From Beckwith to Calcasieu River	Oxygen, Dissolved
LA030802_00	Hickory Branch-From headwaters to West Fork Calcasieu River	Fecal Coliform
LA031101_00	Intracoastal Waterway-Calcasieu Lock to E Calcasieu Basin	Fecal Coliform
LA050103_00	Bayou Mallet-From headwaters to Bayou Des Cannes	Oxygen, Dissolved
LA050301_00	Bayou Nezpique-From headwaters to Mermentau River	Total Dissolved Solids
LA050402_00	Lake Arthur and Lower Mermentau River to Grand Lake	Sedimentation/Siltation
LA050402_00	Lake Arthur and Lower Mermentau River to Grand Lake	Total Suspended Solids (TSS)
LA050402_00	Lake Arthur and Lower Mermentau River to Grand Lake	Turbidity
LA060201_00	Bayou Cocodrie-US-167 to Bayou Boeuf-Cocodrie Div. Canal	Oxygen, Dissolved
LA060801_00	Vermilion River-Headwaters to LA-3073 bridge	Fecal Coliform
LA060801_00	Vermilion River-Headwaters to LA-3073 bridge	Sedimentation/Siltation
LA060801_00	Vermilion River-Headwaters to LA-3073 bridge	Total Suspended Solids (TSS)
LA060801_00	Vermilion River-Headwaters to LA-3073 bridge	Turbidity
LA070203_00	Devil's Swamp Lake and Bayou Baton Rouge	Fecal Coliform
LA070501_00	Bayou Sara-From Mississippi state line to Mississippi River	Fecal Coliform
LA070502_00	Thompson Creek-Mississippi state line to Mississippi River	Fecal Coliform
LA080301_00	Black River-From Jonesville to COE Control Structure	Fecal Coliform
LA080401_00	Bayou Bartholomew-From Arkansas state line to Ouachita River	Oxygen, Dissolved
LA080605_00	Bayou D'Arbonne-From Bayou D'Arbonne Lake to Ouachita River	Oxygen, Dissolved
LA080902_00	Bayou Bonne Idee-From headwaters to Boeuf River	Oxygen, Dissolved
LA080906_00	Turkey Creek-From Turkey Creek Cutoff to Turkey Creek Lake	Fecal Coliform

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Subsegment	Water body	Impairment Removed
LA080906_00	Turkey Creek-From Turkey Creek Cutoff to Turkey Creek Lake	Total Dissolved Solids
LA080908_00	Lake LaFourche	Oxygen, Dissolved
LA081301_00	Little River-From Archie Dam to Ouachita River	Oxygen, Dissolved
LA081402_00	Dugdemona River-From Big Creek to Little River	Fecal Coliform
LA081503_00	Beaucoup Creek-From headwaters to Castor Creek	Fecal Coliform
LA081602_00	Little River-From Bear Creek to Catahoula Lake	Fecal Coliform
LA081603_00	Catahoula Lake	Fecal Coliform
LA081603_00	Catahoula Lake	Oxygen, Dissolved
LA081607_00	Trout Creek-From headwaters to Little River	Fecal Coliform
LA081607_00	Trout Creek-From headwaters to Little River	Turbidity
LA081608_00	Big Creek-From headwaters to Little River	Fecal Coliform
LA081609_00	Hemphill Creek-From headwaters to Catahoula Lake	Fecal Coliform
LA081610_00	Old River-From Catahoula Lake to Little River	Oxygen, Dissolved
LA090101_00	Pearl River-From Miss state line to Pearl River Nav Canal	Oxygen, Dissolved
LA100303_00	Black Bayou-Black Bayou Lake spillway to Twelve Mile Bayou	Oxygen, Dissolved
LA100303_00	Black Bayou-Black Bayou Lake spillway to Twelve Mile Bayou	Total Dissolved Solids
LA100304_00	Twelve Mile Bayou-From headwaters to Red River	Oxygen, Dissolved
LA100307_00	Caddo Lake-From Texas state line to spillway	Oxygen, Dissolved
LA100309_00	Cross Bayou-From Texas state line to Cross Lake	Fecal Coliform
LA100310_00	Cross Lake	Total Dissolved Solids
LA100601_00	Bayou Pierre-From headwaters to Wallace Lake	Fecal Coliform
LA100602_00	Boggy Bayou-From headwaters to Wallace Lake	Oxygen, Dissolved
LA100603_00	Wallace Lake	Oxygen, Dissolved
LA101001_00	Sibley Lake	Oxygen, Dissolved
LA101101_00	Cane River-From above Natchitoches to Red River	Fecal Coliform
LA101103_00	Bayou Kisatchie-From Kisatchie National Forest to Old River	Fecal Coliform
LA101103_00	Bayou Kisatchie-From Kisatchie National Forest to Old River	Total Dissolved Solids
LA120102_00	Bayou Poydras-From headwaters to Bayou Choctaw	Oxygen, Dissolved
LA120104_00	Bayou Grosse Tete-From headwaters to ICWW near Wilbert Canal	Fecal Coliform
LA120104_00	Bayou Grosse Tete-From headwaters to ICWW near Wilbert Canal	Total Dissolved Solids
LA120106_00	Bayou Plaquemine-From Plaquemine Lock to ICWW	Oxygen, Dissolved
LA120109_00	Intracoastal Waterway-Port Allen Locks to Bayou Sorrel Locks	Oxygen, Dissolved
LA120110_00	Bayou Cholpi - Headwaters to Bayou Choctaw	Oxygen, Dissolved
LA120111_00	Bayou Maringouin-Headwaters to E Atchafalaya Basin Levee	Fecal Coliform
LA120201_00	Lower Grand River and Belle River	Oxygen, Dissolved
LA120204_00	Lake Verret and Grassy Lake	Oxygen, Dissolved
LA120303_00	Lake Long	Oxygen, Dissolved
LA120304_00	Intracoastal Waterway-From Houma to LaRose	Fecal Coliform
LA120304_00	Intracoastal Waterway-From Houma to LaRose	Oxygen, Dissolved
LA120403_00	Intracoastal Waterway-From Bayou Boeuf Locks to Bayou Black	Oxygen, Dissolved

Appendix C

Subsegment	*Water body*	*Impairment Removed*
LA120404_00	Lake Penchant	Oxygen, Dissolved
LA120509_00	Houma Navigation Canal-From Houma to Bayou Pelton	Oxygen, Dissolved
LA120604_00	Bayou Blue-From ICWW to Grand Bayou Canal	Oxygen, Dissolved
LA120803_00	Timbalier Bay	Oxygen, Dissolved
LA120805_00	Lake Pelto	Oxygen, Dissolved