

Executive Summary

The Nonpoint Source Unit within the Louisiana Department of Environmental Quality (LDEQ) has prepared the 2004 NPS Annual Report to comply with Section 319(h) (11) of the Clean Water Act. This Section of the Act requires that each state report to the Administrator of USEPA on an annual basis concerning (A) its progress in meeting the schedule of milestones submitted pursuant to the subsection (b)(2)(C) of this section and (B) to the extent that the appropriate information is available, reductions in nonpoint source pollutant loading and improvements in water quality for those waters or watersheds within the state which were identified pursuant to subsection (a)(1)(A) of this section resulting from implementation of the management program.

In order to comply with (A)(b)(2)(c), the NPS Management Plan included a table of milestones and dates related to development of total maximum daily loads (TMDLs), watershed plans, and implementation of those plans in order to reduce nonpoint source pollution and improve water quality. The State of Louisiana has met those milestones during 2004, completing the TMDLs that were required through the federal court order for the Barataria Basin, developing watershed plans for the Ouachita River Basin, and implementing projects in 25 watersheds within the state.

In order to comply with (B) (a) (1) (A), a section has been included in the report, which provides data and information on the status of water quality within each of the state's major river basins. In addition to data presented in the Water Quality Section, data from several of the watershed projects has also been included in order to document the types of load reductions that occur with implementation of best management practices.

This NPS Annual Report also includes highlights of implementation projects, maps and information from the watershed plans for the Ouachita River Basin. One of the strengths of Louisiana's NPS Management Program is the cooperative effort that the federal and state agencies, cities, universities and local soil and water conservation districts provide to implementation. Through the USDA Farm Bill Programs, the Section 319 program and funds provided by the cities, universities and non-profit organizations, real progress is being made in implementing a watershed approach to reduce nonpoint source pollution. There are still real challenges to address in order to restore designated uses to Louisiana's impaired water bodies, but this report documents the accomplishments that have been made toward this goal during 2004.

Two of the major accomplishments of 2004 have been a dialogue with the Concrete and Aggregate Association on development of a set of best management practices for the sand and gravel industry. During 2005, LDEQ anticipates a draft BMP manual, which will outline and describe the types of practices that can be implemented to reduce the level of sediments leaving the site during the early stages of the operations. Another important effort that has been initiated during 2004 has been the Governor's Science Working Group on Coastal Forestry. LDEQ has participated in this collaborative effort that will result in recommendations to the Governor in 2005 on the steps that should be taken to ensure that Louisiana's coastal wetland forests are maintained and managed for long-term sustainability.

Revised Schedule of Milestones for Louisiana’s NPS Management Program

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Mermentau	Black Stripes	Light Grey	Green	Green	Green	Black Stripes	Yellow	Yellow	Yellow	Yellow	Black Stripes	Blue	Blue	Blue	Blue	Black Stripes	Blue	Blue	Blue
Vermilion	Black Stripes	Light Grey	Green	Green	Green	Black Stripes	Yellow	Yellow	Yellow	Yellow	Black Stripes	Blue	Blue	Blue	Blue	Black Stripes	Blue	Blue	Blue
Calcasieu	Light Grey	Black Stripes	Light Grey	Light Grey	Light Grey	Green	Black Stripes	Yellow	Yellow	Yellow	Black Stripes	Blue	Blue	Blue	Blue	Blue	Black Stripes	Blue	Blue
Ouachita	Light Grey	Black Stripes	Light Grey	Light Grey	Light Grey	Green	Black Stripes	Yellow	Yellow	Yellow	Black Stripes	Blue	Blue	Blue	Blue	Blue	Black Stripes	Blue	Blue
Barataria	Light Grey	Light Grey	Black Stripes	Light Grey	Light Grey	Light Grey	Light Grey	Black Stripes	Green	Green	Yellow	Yellow	Black Stripes	Yellow	Blue	Blue	Blue	Black Stripes	Blue
Terrebonne	Light Grey	Light Grey	Black Stripes	Light Grey	Light Grey	Light Grey	Light Grey	Black Stripes	Light Grey	Light Grey	Green	Green	Black Stripes	Yellow	Yellow	Yellow	Yellow	Black Stripes	Blue
Pontchartrain	Light Grey	Light Grey	Light Grey	Black Stripes	Light Grey	Light Grey	Light Grey	Light Grey	Black Stripes	Green	Green	Green	Yellow						
Pearl	Light Grey	Light Grey	Light Grey	Black Stripes	Light Grey	Light Grey	Light Grey	Light Grey	Black Stripes	Yellow	Yellow	Yellow	Black Stripes						
Red	Light Grey	Light Grey	Light Grey	Light Grey	Black Stripes	Light Grey	Light Grey	Light Grey	Black Stripes	Black Stripes	Black Stripes	Green	Green	Green	Yellow	Black Stripes	Yellow	Yellow	Blue
Sabine	Light Grey	Light Grey	Light Grey	Light Grey	Black Stripes	Light Grey	Light Grey	Light Grey	Black Stripes	Black Stripes	Black Stripes	Green	Green	Green	Yellow	Black Stripes	Yellow	Yellow	Blue
Mississippi	Light Grey	Light Grey	Light Grey	Black Stripes	Light Grey	Light Grey	Light Grey	Light Grey	Black Stripes	Green	Green	Yellow	Black Stripes						
Atchafalaya	Light Grey	Light Grey	Light Grey	Light Grey	Black Stripes	Light Grey	Light Grey	Light Grey	Black Stripes	Black Stripes	Black Stripes	Black Stripes	Green	Green	Black Stripes	Yellow	Yellow	Yellow	Yellow

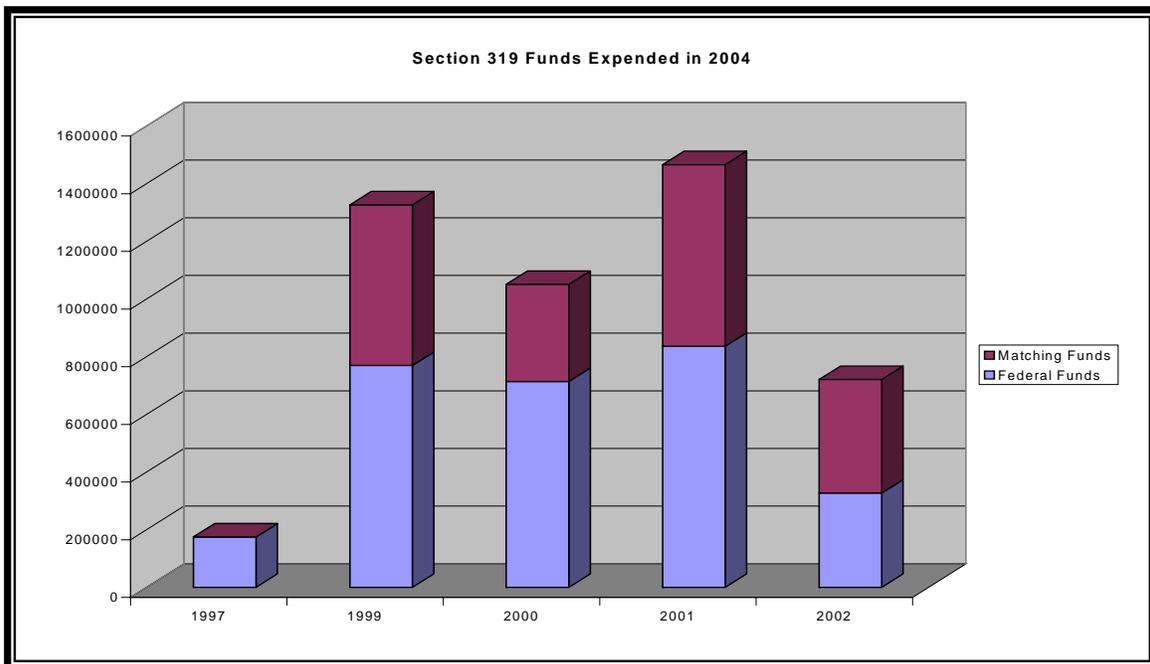
- 1- Black Stripes = Collect Water Quality Data to Develop Total Maximum Daily Loads (TMDLs) and to Track Water Quality Improvement at the Watershed Level [Objective 1]
- 2- Light Grey = Develop Total Maximum Daily Loads for the Watersheds on the 303(d) List [Objective 2]
- 3- Green = Develop Watershed Management Plans to Implement the NPS Component of the TMDL [Objective 3]
- 4- Yellow = Implement the Watershed Management Plans [Objectives 4-8]
- 5- Blue = Develop and Implement Additional Corrective Actions Necessary to Restore the Designated Uses to the Water Bodies [Objectives 9-10]

Funds Expended for the NPS Program in 2004

The Louisiana Department of Environmental Quality (LDEQ) expended \$4.7 million of Section 319 funds during 2004 to implement more than 50 projects directed at reducing nonpoint source pollution and improving water quality within the state of Louisiana. Of these funds, \$2,821,048 were federal funds from 5 separate grants (FY 1997, 1999, 2000, 2001 and 2002) and \$1,907,199 was provided as matching funds, resulting in \$4,728,247 in total funds. In addition to the funds that were expended by LDEQ, the Louisiana Department of Agriculture and Forestry expended \$250,000 of Section 319 funds and \$750,000 of federal funds from the U.S. Farm Bill to support the Local Soil and Water Conservation Districts who provide technical support to the farmers and landowners across the state on implementation of BMPs. The U.S. Department of Agriculture expended \$14,680,900 of federal funds for the Environmental Quality Incentive Program, \$16,865,000 for the Wetland Reserve Program, \$587,000 for the Wildlife Habitat Incentive Program and \$715,000 for the Grasslands Reserve Program. Therefore, there has been approximately \$48,576,147 spent during 2004 on implementation of best management practices and programs which target reducing nonpoint source pollutants.

Grant Year	Federal	Match	Total
1997	\$174,879	\$0	\$174,879
1999	\$769,417	\$556,972	\$1,326,389
2000	\$713,814	\$336,767	\$1,050,581
2001	\$836,231	629,608	\$1,465,839
2002	\$326,707	\$394,101	\$720,808
Total	\$2,821,048	\$1,907,199	\$4,728,247

The chart provided illustrates the amount of federal and matching funds that were expended from each of the 5 Section 319 grants.



Water Quality Improvements

The Louisiana Department of Environmental Quality (LDEQ) outlined a 15-year timeline within the 2000 NPS Management Plan to implement a watershed strategy for the state. Within that timeline, LDEQ anticipated that it would take three cycles of water quality data collection over those 15 years to see water quality improvements as a result of watershed implementation. Data was collected in the Mermentau and the Vermilion-Teche River Basins during 1998, the Calcasieu and Ouachita River Basins in 1999 and the Barataria and Terreboone Basins in 2000, Lake Pontchartrain and Pearl Basins in 2001 and the Red and Sabine Basins in 2002. The cycle began again in 2003 for many of the water bodies in the Mermentau and Vermilion Basins and continued into 2004 for the Mermentau, Vermilion, Ouachita and the Barataria Basins. Therefore much of the data presented represents the first 5-year cycle of that 15-year timeline.

These tables include annual averages for dissolved oxygen and fecal coliform bacteria from selected water bodies within each of the basins in which nonpoint source projects have been or are in the process of being implemented. It is important to note that 1998 and 1999 were drought years in Louisiana, so much of the variability that is seen in these data may be attributed to that rather than to an in-stream response to BMP implementation. However, the data also indicate that there is stability in the water bodies from year to year, with only minor fluctuations in dissolved oxygen conditions. There is a wider variation in fecal coliform concentrations from year to year, with drought years producing lower numbers and rainy years producing higher numbers. However, as more practices are implemented at the watershed level, the nonpoint source pollutant load should decrease and the water bodies should eventually respond, so that in-stream water quality improvements can be detected and measured.

Mermentau River Basin

During 2004, LDEQ continued to focus on the water quality problems that exist in the southwestern part of Louisiana, where rice fields, sugarcane and crawfish ponds dominate the landscape. These are difficult water bodies to work in because of the low flow, sluggish conditions and the naturally high organic levels that exist within the bayous. The historical water quality data for the water bodies within the Mermentau River Basin indicated declining trends in the concentration of dissolved oxygen between 1978 and 1998, but higher values of oxygen in the several of the water bodies from 1998 through 2004. Dissolved oxygen concentration relates to the protection of the water body for fish and wildlife propagation.

Average Dissolved Oxygen Concentrations Measured in mg/L for the Water Bodies in the Mermentau River Basin

Water Body	1998	2003	2004*
Mermentau River	3.63	3.43	4.08
Bayou Queue de Tortue	2.08	2.84	2.04
Bayou Lacassine	3.92	3.91	no data
Bayou Plaquemine Brule	3.65	3.54	3.00
Bayou Des Cannes	4.60	no data	4.31
Bayou Nezpique	4.35	4.37	no data

*partial year through September 2004

LDEQ collects monthly water quality data each year for the Mermentau River, but samples the other water bodies on a cyclic basis, recently changed to a 4-year cycle. The total maximum daily loads (TMDLs) for these water bodies indicated that there would need to be a 30-100% reduction, depending on the water body, of nonpoint source pollutant loading before these water bodies would meet the water quality standard for dissolved oxygen during critical conditions. The NPS Management Plan outlined a 15-year schedule to improve water quality and will sample these water bodies again in 2008 to determine if the watershed implementation strategy has been effective in improving water quality.

Average Fecal Coliform Concentrations measured in cells per 100 mL sample for the water bodies within the Mermentau River Basin

Water Body	1998	2003	2004*
Mermentau River	467.08	4152.33	1443.0
Bayou Queue de Tortue	268.53	577.5	968
Bayou Lacassine	248.05	192.09	no data
Bayou Plaquemine Brule	235.54	14,024	843
Bayou Des Cannes	1067	no data	364
Bayou Nezpique	444.95	655.58	no data

*partial year through September 2004

The data for fecal coliform did not indicate that any of the water bodies had improved between 1998 and 2003, except for Bayou Lacassine. The 2004 data did indicate that fecal coliform had declined within many of the water bodies since 2003, but had not yet reached the same levels as existed in 1998. Since 1998-2000 were drought years within Louisiana, this may partially explain the lower numbers during those years since rainfall events would not have delivered the fecal bacteria to the water bodies. These data relate to protection of the primary and secondary contact recreation use.

Vermilion-Teche River Basin

LDEQ continued to focus resources and time within the Vermilion-Teche River Basin during 2004, and collected water quality data during 2003 and 2004 to determine whether water quality was improving as a result of these activities. Water quality data will be collected again during 2008 to determine whether the watershed projects that have been implemented have resulted in reductions of nonpoint source pollutants and improvements in water quality.

Average Dissolved Oxygen Concentrations Measured in mg/L for the Water Bodies in the Vermilion-Teche River Basin

Water Body	1998	2003	2004*
Vermilion River	7.32	4.61	3.74
Bayou Teche	6.47	6.71	3.79
Bayou Cocodrie	5.15	no data	5.28
Chicot Lake	5.30	no data	6.25

*partial year through September 2004

The water quality trends within the Vermilion River Basin indicated that water quality has improved between 1978 and 2004 for Bayou Cocodrie, Chicot Lake, Bayou Teche and the Vermilion River. The water quality data for the Vermilion River and Bayou Teche indicate that the average dissolved oxygen concentrations has not improved in the Vermilion River since 1998, but had improved slightly in Bayou Cocodrie and Chicot Lake.

Average Fecal Coliform Concentrations measured in cells per 100 mL sample for the water bodies within the Vermilion-Teche River Basin

Water Body	1998	2003	2004*
Vermilion River	4904	1193	1767
Bayou Teche	851	1024.83	1500
Bayou Cocodrie	142.28	681.17	207.33
Chicot Lake	98.17	289	182.33

*partial year through September 2004

The water quality data for fecal coliform indicated improvements in the Vermilion River since 1998, and in Bayou Cocodrie and Chicot Lake since 2003, but higher values in the Vermilion River and Bayou Teche in 2004. The range of fecal coliform levels is higher for three of the water bodies in 2003-2004 than in 1998, but since that was a drought year there would have been a lower number of runoff events and consequently lower in-stream concentrations of bacteria.

Calcasieu River Basin

During 2004, LDEQ continued to collect and analyze water quality data for the Calcasieu River Basin to determine if water quality had improved since 1999, which was the last cycle when data was collected. The most recent data does indicate that water quality has improved for dissolved oxygen in Indian Bayou, Mill Creek, Little River and remained constant in Barnes Creek.

Average Dissolved Oxygen Concentrations Measured in mg/L for the Water Bodies in the Calcasieu River Basin

Water Body	1999	2004*
Barnes Creek	5.41	5.36
Bayou Serpent	3.80	no data
Marsh Bayou	2.76	no data
Indian Bayou	2.35	4.18
Mill Creek	2.92	3.82
Little River	3.01	3.85

*partial year data in 2004

The data for fecal coliform indicated lower values for Barnes Creek in 2004 than in 1999 but higher values for Indian Bayou, Mill Creek and the Little River.

Average Fecal Coliform Concentrations measured in cells per 100 mL sample for the water bodies within the Calcasieu River Basin

Water Body	1999	2004*
Barnes Creek	2050.83	200
Bayou Serpent	71	no data
Marsh Bayou	349.75	no data
Indian Bayou	223.33	500
Mill Creek	243.33	1350
Little River	379.75	690

*partial year data in 2004

Ouachita River Basin

During 2004, emphasis was placed on developing watershed plans for each of the water bodies that have had TMDLs developed for them. Through this process, historical data is analyzed to determine whether water quality improvements have been made as a result of implementation of nonpoint source activities. The Ouachita River Basin is bisected by the Ouachita River which enters Louisiana from the Arkansas and flows south until it joins with the Red River. The eastern portion of the basin is dominated by cropland while forestry dominates the western portion of the basin. LDEQ collected water quality data for these water bodies during 2003 or 2004 to determine whether there had been improvements since 1999. These data indicate that the water quality has improved in the Ouachita River, Big Creek and the Bayou D'Arbonne watersheds, but has declined in Castor Creek. The data for fecal coliform indicated that the Ouachita River and the Bayou d'Arbonne had remained constant and that Bayou Bartholomew had improved.

Average Dissolved Oxygen Concentrations Measured in mg/L for the Water Bodies in the Ouachita River Basin

Water Body	1999	2004*
Ouachita River	6.175	7.78
Bayou Bartholomew	6.53	6.51
Boeuf River	5.91	no data
Bayou Lafourche	6.28	no data
Joe's Bayou	6.11	no data
Tensas River	6.03	5.48
Bayou Macon	7.09	no data
Big Creek	6.78	9.28
Flat Creek	4.74	no data
Bayou D'Arbonne, Middle Fork Bayou D'Arbonne, Corney Bayou	7.06	7.35
Castor Creek	6.13	4.72

*partial year data in 2004

Average Fecal Coliform Concentrations measured in cells per 100 mL sample for the water bodies within the Ouachita River Basin

Water Body	1999	2004*
Ouachita River	40.583	46.67
Bayou Bartholomew	334.33	140
Boeuf River	402.83	no data
Bayou Lafourche	148.17	no data
Joe's Bayou	543.33	no data
Tensas River	140.67	336.67
Bayou Macon	217.42	no data
Big Creek	249.08	no data
Flat Creek	98.09	no data
Bayou D'Arbonne, Middle Fork Bayou C'Arbonne, Corney Bayou	80.2	80.0
Castor Creek	195.67	no data

*partial year data in 2004

Barataria-Terrebonne Basin

The TMDLs for the Barataria Basin were completed in 2004 and staff within the NPS Unit has begun to work on the watershed plans for these 6 watersheds. Data was collected in 2000 and again in 2004 in order to determine whether water quality has improved. The 2004 data indicated that the concentration of dissolved oxygen was higher in Bayou des Allemands and Bayou Lafourche than it was in 2000. The Terrebonne Basin is the next area to be targeted for TMDL development with the deadline for completion in 2007.

Average Dissolved Oxygen Concentrations Measured in mg/L for the Water Bodies in the Barataria and Terrebonne Basins

Water Body	2000	2004*
Bayou Boeuf-Halpin Canal, Theriot Canal and Lake Boeuf	3.79	3.33
Bayou Verret, Bayou Chevreuil, Bayou Citamon, Grand Bayou	3.21	2.90
Bayou des Allemands	5.84	6.63
Bayou Segnette	5.67	4.52
St. Charles Canals	5.67	no data
Bayou Lafourche	5.75	6.57

*partial year data in 2004

Average Fecal Coliform Concentrations measured in cells per 100 mL sample for the Water

Water Body	2000	2004*
Bayou Boeuf-Halpin Canal, Theriot Canal and Lake Boeuf	202.5	211.5
Bayou Verret, Bayou Chevreuil, Bayou Citamon, Grand Bayou	341.64	183.33
Bayou des Allemands	110	19.3
Bayou Segnette	535	2116.67
St. Charles Canals	7271.67	no data
Bayou Lafourche	128.18	500

Bodies in the Barataria and Terrebonne Basins

*partial year data in 2004

The data for fecal coliform indicated water quality improvements in the Bayou Verret, Chevreuil, Citamon, Grant Bayou watershed system and in Bayou des Allemands, but higher levels of bacteria in the Bayou Segnette watershed.

Red-Sabine Basins

All of the water bodies within the Red and Sabine River Basins were sampled during 2002, stream surveys are planned during 2005 for TMDL development. The schedule for completion of the TMDLS is 2007. LDEQ has implemented several projects within these watersheds to address the types of nonpoint source pollutant problems that exist there. These data indicate that the dissolved oxygen concentrations have improved in the Flat Creek and Red Chute Bayou since

1995, but are lower than they were in 1998. Wallace Lake and Cross Lake were added to the ambient water quality sampling network in 2002.

Average Concentrations of Dissolved Oxygen for Selected Water Bodies in the Red River and Sabine Basins

Water Body	1995	1996	1997	1998	2002
Flat Creek	5.05	6.11	7.63	8.68	5.45
Red Chute Bayou	5.81	7.04	8.05	9.94	7.91
Wallace Lake	no data	no data	no data	no data	5.67
Cross Lake	no data	no data	no data	no data	9.92

The concentration of fecal coliform has actually increased from 1995 to 2002, but projects have been implemented within these two watersheds to address these types of water quality problems. Highlights of these projects have been included within the NPS Annual Report.

Average Concentrations of Fecal Coliform Bacteria for Selected Water Bodies in the Red River and Sabine Basins

Water Body	1995	1996	1997	1998	2002
Flat Creek	82.17	172.5	1531.5	41	210.25
Red Chute Bayou	115.83	430.33	1831.17	59.5	456.08
Wallace Lake	no data	no data	no data	no data	48.25
Cross Lake	no data	no data	no data	no data	104.48

Lake Pontchartrain-Pearl Basins

During 2004, LDEQ continued to collect water quality data for many of the water bodies within the Lake Pontchartrain and Pearl River Basins. Data from several of these water bodies have been included here to provide information on the whether the water quality is improving or not. As the data indicates the average concentrations of dissolved oxygen for all of the water bodies except Bayou Manchac indicate good water quality, with the dissolved oxygen levels exceeding the water quality standard for fish and wildlife propagation. LDEQ has a project, working with East Baton Rouge Parish Planning Commission and Louisiana State University to improve water quality in the Bayou Manchac watershed. Highlights of that project are presented within the next section of this Annual Report.

Average Concentrations of Dissolved Oxygen for Selected Water Bodies in the Lake Pontchartrain and Pearl River Basins

Water Body	2000	2001	2002	2003	2004*
Tickfaw River	8.09	7.34	7.69	7.67	8.04
Tangipahoa River	8.38	7.67	7.83	8.12	8.94
Water Body	1996	1997	1998	2001	
Pearl River	8.84	9.73	7.95	7.39	
Bayou Manchac	3.46	3.38	3.41	3.87	
Tchefuncte River	8.83	8.68	8.73	7.77	
Amite River	5.53	6.31	6.35	8.06	

*partial year data in 2004

The fecal coliform data indicated a wide range of values with no real trends to determine whether the water body was improving or remaining relatively constant, fluctuating with rain fall events. Again, the Bayou Manchac indicated higher levels of fecal coliform bacteria and has been targeted for a watershed project. Projects have also been implemented in these other water bodies, highlights of which have been presented in the following sections of this report.

Average Concentrations of Fecal Coliform Bacteria for Selected Water Bodies in the Lake Pontchartrain and Pearl River Basins

Water Body	1996	1997	1998	2001	2004*
Pearl River	143.65	483.33	3854	108.18	509.17
Bayou Manchac	10,150	4305	3244	3132	no data
Tchefuncte River	433	676	6007	722	no data
Amite River	290.83	732.5	511.6	854.42	no data

*partial year data in 2004

Water Body	2000	2001	2002	2003	2004*
Tickfaw River	113.5	644.17	2998.89	717.3	3700
Tangipahoa River	100	526.7	280	1998	6500

*partial year data in 2004

Statewide Projects

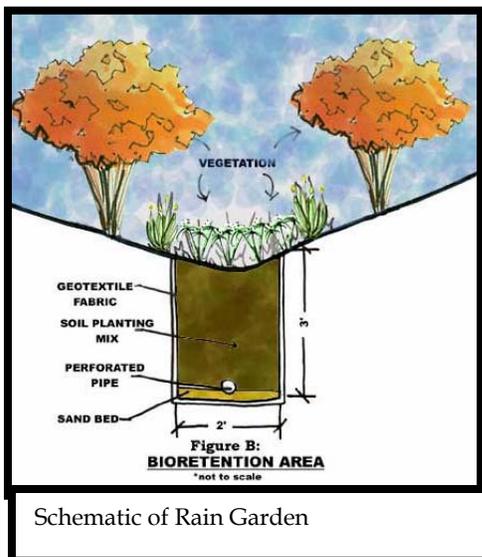
Urban

Statewide Urban and Residential NPS Pollution

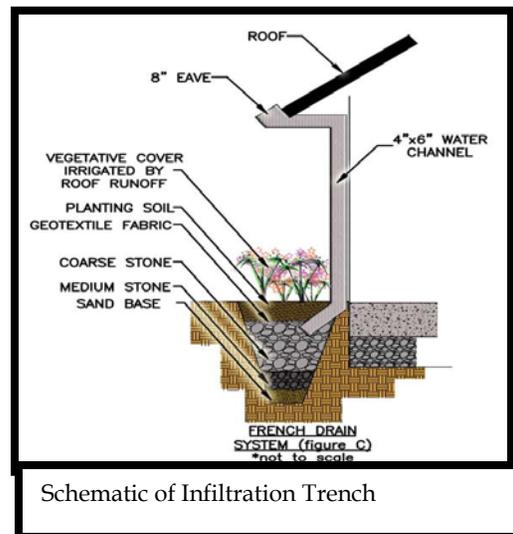
One of the areas that LDEQ has focused on during 2004 has been an emphasis to implement projects aimed at reducing urban nonpoint source pollutants and improving water quality within the urban environment. Many urban communities throughout Louisiana have landscape codes for new construction, but have not yet factored storm water controls into these designs. This project, *Model Landscaping Code for Communities in Louisiana*, provides information that city engineers, planners and landscape architects can utilize and adapt to new developments.

The project began in February 2004 and is developing model landscaping codes/ordinances that are best suited for Louisiana, that is, they will take Louisiana's unique landscape into account. The emphasis is NPS BMPs and use of natural landscape features (preservation, creation, and/or simulation) and indigenous plants. The benefits are numerous such as, reduced amounts of storm water actually leaving the site, lower pollutant levels in the runoff waters, lower costs, improved wildlife benefits, and preservation of the local landscape, thus retaining a "sense of place". After all, that is what makes Louisiana so unique. See the project website at <http://www.abbey-associates.com/splash-splash> for more information.

The model code will apply to new and redeveloped multi-family, commercial, institutional and industrial properties under the regulations of community zoning law. The model is expected to address land clearing, tree preservation, site planting, parking lot design, sediment control during construction, low impact development procedures, and on site storm water control for new and redeveloped projects, which can be permitted under the general rules of zoning law or other organized efforts where communities can manage storm water runoff. The following is an example "rain garden" and "infiltration trench".



Schematic of Rain Garden



Schematic of Infiltration Trench

NPS Pollution Website/ ArcIMS Application

The goal of LDEQ is to provide the public with an internet based application that provides a user-friendly approach for obtaining information related to LDEQ's NPS Pollution 319 Projects.

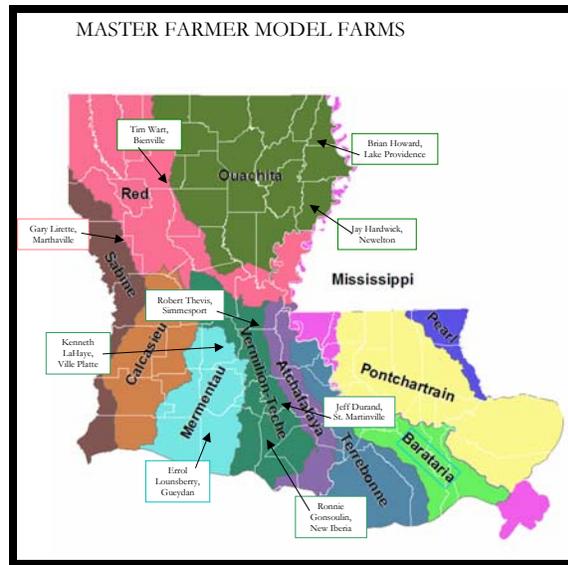
The NPS ArcIMS application will be designed to provide the end user with a user-friendly way to utilize a map, consisting of many GIS data layers, to locate LDEQ NPS 319 projects and other water quality information related to the project area. The application will present the user with multiple options to find the project of interest. Once the project of interest is selected, various documents (i.e final reports, abstracts, quality assurance project plans) will be available to view online or download to a local computer. This project has been recently approved and is in its initial stages.



Agriculture

Promoting the Adoption of Best Management Practices Through the Use of Model Farms and the Master Farmer Program

One of the most successful new programs in Louisiana is the Master Farmer Program, which provides farmers with a unique opportunity to learn more about the Clean Water Act, TMDLs and nonpoint source pollution. Growing concern that agriculture's pollution contribution was increasing water quality problems in Louisiana caused the LSU AgCenter, NRCS, Louisiana Department of Agriculture and Forestry, and Farm Bureau to create the Master Farmer Program. This voluntary program targets all agricultural producers to address environmental issues related to production agriculture. This is accomplished through completing three phases of the program, including 8 hours of environmental lecture, touring of a "Model Farm", and the development and completion of a comprehensive conservation plan. Agricultural producers are located across the state and so this program could not be offered at one centralized location.



After initiating the program in 2001, Phase I of the program has continued to be taught within several basins across the state. In 2004, 14 Master Farmer trainings were conducted in the Mermentau, Vermilion-Teche, Ouachita, Red River, Calcasieu, and most recently, the Pontchartrain watersheds. Approximately 192 agricultural producers enrolled in the program during the past year.

One aspect of the Master Farmer Program is a set of model farms which they can tour and see what types of BMPs should be applied for their specific type of farming operation. Model Farm applications were mailed to the 908 agricultural producers enrolled in the Master Farmer Program in the four Basins included in this project (Mermentau, Ouachita, Red River, and Vermilion/Teche). There were 35 producers who submitted applications. The cooperator

worked with LSU AgCenter county agents and watershed agents to set up farm visits with these producers to rank their individual operations. The NRCS also visited these operations and ranked them. After all sites were visited, a meeting was held in March 2004 between the cooperator and NRCS at which the Model Farms were selected.

Parish	Watershed	Commodities
Evangeline	Mermentau	Rice/Crawfish
Vermilion	Mermentau	Rice/Crawfish
E. Carroll	Ouachita	Cotton, Corn, Soybeans, Wheat
Bienville	Ouachita	Beef Cattle/Poultry
Tensas	Ouachita	Wheat, Soybeans, Corn, Grain Sorghum, Cotton
Natchitoches	Red River	Beef Cattle/Poultry
Iberia	Vermilion/Teche	Sugarcane
St. Martin	Vermilion/Teche	Rice/Crawfish
Avoyelles	Vermilion/Teche/Atchafalaya	Soybeans, Wheat, Rice, Corn, Milo

After the model farms were selected, a Cooperative Agreement between the AgCenter and the Model Farmers was developed. The cooperator, LDEQ, and the landowners then made the identification of BMPs, fields, and/or pastures to be used for monitoring on each of the Model Farms. The purpose of monitoring in this project is to verify the effectiveness of the BMPs and allow the producers to see how the BMPs perform on farms similar to theirs.

Training sessions for agents and other AgCenter personnel who will be assisting in the collection of water samples from the Model Farms was held in October 2004. Water quality sampling for each of the farms is scheduled to begin in 2005, following approval of the QAPP.

To date, more than 1500 agricultural producers have enrolled in the Master Farmer Program, representing approximately 1.5 million agricultural acres of land. Because the program is consistently promoted at field days, production meetings, and state-wide conferences, it is becoming a more widely recognized program throughout the South. Other states have acknowledged the beginning success of the program and have begun initiation in Mississippi, Arkansas, and Texas. Because of additional interest, a program template was begun in 2004 for use in the southern region of the United States.

Some state and federal agencies, along with numerous commodity groups, have shown tremendous support of the program since its inception. Many of these agencies, such as Natural Resource Conservation Service (NRCS), the Louisiana Dept. of Agriculture and Forestry (LDAF), and Louisiana Dept. of Environmental Quality (LDEQ) assist in the Master Farmer trainings that are conducted throughout the watersheds. The Natural Resource Conservation Service (NRCS) is very involved with the LSU AgCenter and the Master Farmer Program in a couple of ways. They

assist in teaching the instructional portion of Phase I and are also involved in the development and implementation of conservation plans on producers' operations. In late 2004, NRCS stated that they, as an agency, will award producers who are applying for cost share through EQIP, an additional 2 points in their ranking system. This will assist some producers in acquiring additional funding for BMP implementation on their operations.

The growing success of the program throughout the state and even on a multi-state level shows that producers are becoming more aware of agriculture's contribution to some of the state's water quality concerns and how they are impacting that. These producers are also showing a proactive, versus reactive, approach to addressing their own farming operation's contribution to these concerns.

Forestry

Synthesis and Implementation of Education Resources about Best Management Practices for Louisiana Forestry

According to the statewide AgSummary from the Louisiana Agricultural Center (LSU AgCenter), revenue from forestry products grossed \$ 956,351,993.00 in 2003. This represented 5,259,976 cords of pulpwood and 1,116,383,390 board ft of saw timber as well as other forestry products. Forestry is a major industry in Louisiana and BMP implementation is critical to managing water quality in Louisiana streams. LDEQ is currently working with the LSU AgCenter to develop an interactive website dealing specifically with Forestry BMPs. This website is modeled after the Louisiana Forestry BMP manual and can be accessed at <http://www.lsuagcenter.com/forestrybmp>. This project is also developing video footage, demonstrating the implementation of these BMPs. The website is expected to be completed in the spring at which time it will be presented to the Louisiana Forestry Council for evaluation.

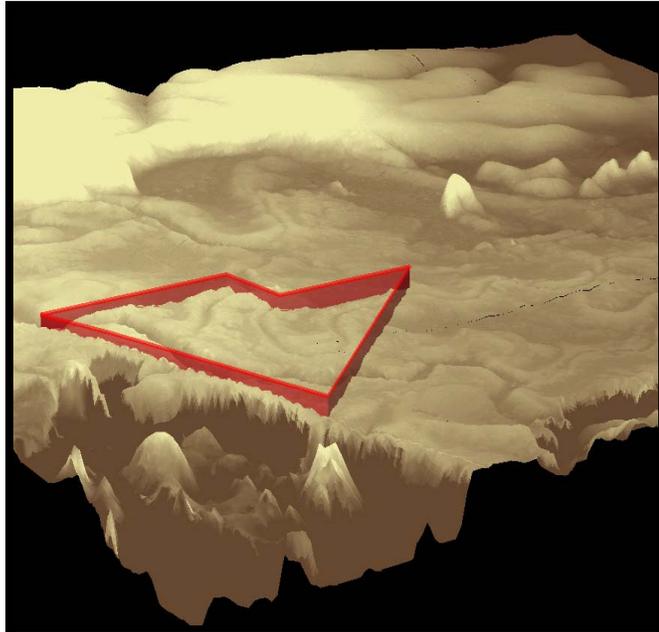


Capturing Video Footage of Forest Roads

Sand and Gravel Mining

LDEQ and the sand and gravel industry have been meeting and working together on the development of a new set of "best management practices" (BMPs) for sand and gravel mining in Louisiana. The BMPs are intended to reduce the water quality impacts that often result from sand and gravel mining. A Sand and Gravel Mining BMP Handbook is being developed and will eventually be distributed to all the various entities involved in sand and gravel mining within Louisiana. The BMPs can serve as an operational standard for the industry.

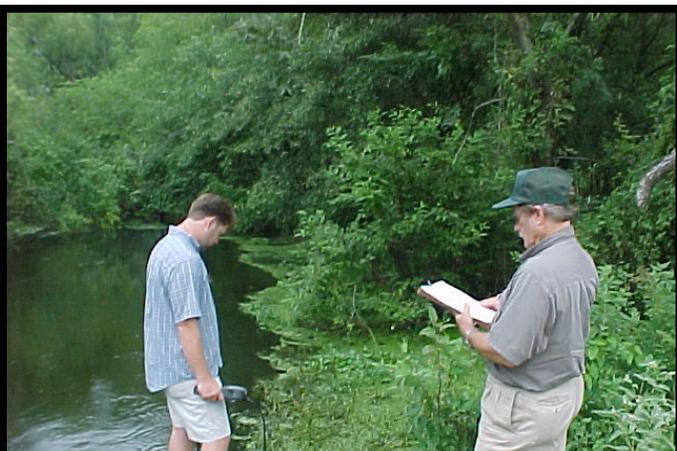
In conjunction with developing a BMP Handbook for Sand and Gravel Mining Operations, the LDEQ Nonpoint Source Program has been working with the LDEQ GIS Group to investigate the potential uses of GIS mapping for minimizing negative water quality impacts from sand and gravel mining sites. In turn, LDEQ is introducing and sharing GIS mapping techniques useful for management of on-site water quality impacts. Some of the GIS mapping data includes, but is not limited to the 1998 and 2004 satellite land use maps, viewing the Hi-Resolution Digital Ortho Quarter Quadrangles (DOQQs) maps for much of the lower watershed area, and "LIDAR" land elevation mapping. LDEQ also provided a hands-on display of their "Make-a-Map" GIS mapping service that is available and free for public use. The beneficial uses of GIS mapping by the Sand and Gravel Industry is making determinations of site hydrology, location of existing watercourse and proximity to receiving waters, flood stage estimates, identification of sensitive areas, during the planning stages of the project. This type information helps determine what type of BMPs will be needed and where, thereby insuring their effectiveness. LDEQ believes these types of tools can be utilized for managing potential water quality impacts occurring from sand and gravel mine sites.



"LIDAR" mapping can be a very important tool during the planning phase of sand and gravel mining used for determining site hydrology, wetlands, and direction of water courses, and BMP strategies.

Ecoregions

Relationship Between Nutrients, Dissolved Oxygen Conditions, Habitat and Fish Assemblage in Louisiana Streams



LDEQ and LSU investigate potential sites for data collection

A critical part of the TMDL process in Louisiana is establishing the linkage between the dissolved oxygen (D.O.) concentration and the fish and wildlife propagation use. Data are needed to evaluate the suitability of the 5 ppm D.O. criterion for determination of stream impairment in sub-tropical stream systems, the effects of reduced D.O. levels on fish community structure, and the appropriate metrics for determining fish community impacts. LDEQ is cooperating with Louisiana State University (LSU) in an effort to better

understand these relationships. Approximately 16 streams located in the 4 major DEQ inland ecosystems have been selected for assessment of water quality conditions and fish assemblage. In the fall of 2004, LDEQ and LSU conducted a site survey to identify and select target streams for this study. The QAPP is in the final stages of development and it is expected that it will be submitted to EPA in January 2005. Stream surveys and fish collection is expected to begin in early summer.

In addition to the Section 319 projects that have been funded, the USDA has implemented the Farm Bill programs and the Louisiana Forestry Association has implemented their forestry training programs. Both of these programs target a large percentage of the landowners within the state of Louisiana and result in increased implementation of agricultural and forestry best management practices.

During 2004, the Louisiana Forestry Association (LFA) held 19 continuing education classes within different parts of the state. Through these classes, 846 individual were trained on a variety of topics related to their Master Logger Certification. Since 1996, more than 13,000 people have been trained through the Master Logger Program. This type of training has been one of the major factors in the increased level of utilization of best management practices (BMPs) for forestry operations within Louisiana. A statewide survey of forested sites was conducted during 2003 and the results of the survey have recently been compiled into a report, which documents the extent of BMP implementation across Louisiana. The data and information presented within the report indicated that 145 sites were sampled within 24 parishes in Louisiana. Several types of forestry operations were examined through the survey, including: clear cut, thinning, regeneration cut, and site preparation. Of the 145 sites surveyed, over half were on privately owned land, the remainder was corporate and industry owned or public lands. Evaluations were done on whether BMPs were utilized on streamside management zones, permanent access roads, timber harvesting, site preparation and reforestation and fire line construction. The results of the survey indicated that there was a range of BMP compliance from 89 - 100% depending on the region of the state. This information will be beneficial to see which regions of the state should be targeted for additional training and/or inspections.

During 2004, USDA Programs resulted in conservation system plans being written on 155, 102 acres of cropland and 77,403 acres of grazing land. Practices were applied on 49,488 acres of grazing land and 36,672 acres of forest stand improvement. There were 107 comprehensive nutrient management plans written, of which 51 were applied on 1389 acres of land. There were 16, 687 acres of wetland restored within the state. Appendix A includes a Table of plans written or applied by parish. An estimate of acres planned or applied by river basin has also been included in each of the respective sections of the annual report.

Acres or Numbers of BMPs Implemented within Louisiana During 2004

Acres of Conservation System Plans Written, Croplands	155,102 acres
Acres of Conservation System Plans Written, Grazing Lands	77,403 acres
Acres of Grazing Lands, Practices Applied	49,488 acres
Acres of Forest Stand Improvement	36,672 acres
Number of Comprehensive Nutrient Management Plans Written	107
Number of Comprehensive Nutrient Management Plans Applied	51
Acres of Comprehensive Nutrient Management Plans Applied	1389 acres
Acres of Wetlands Created or Restored	16,687 acres

Mermentau River Basin

During 2004, LDEQ has continued to implement several projects within the Mermentau River Basin, including:

- Soybean BMP Demonstration and Education Project
- Mermentau River Basin Monitoring and Tracking Project
- Watershed Restoration Action Strategy for Bayou Plaquemine Brule
- Reducing NPS Pollution in Bayou Wickoff Sub-Watershed
- Reducing NPS Pollution in Cole Gully Sub-Watershed

Soybean BMP Demonstration and Education Project

Many of the water bodies within the Mermentau River Basin have an impaired designated use for fish and wildlife propagation. TMDLs have been developed for eleven of the Mermentau River Basin watersheds with NPS pollutant load reductions ranging from 30% to 95%. The suspected cause is excess sediment, nutrients, and pesticides. Throughout the Mermentau River Basin, agriculture is the primary type of land use, and rice is the primary type of agricultural crop. However, rice is often rotated with soybeans. LDEQ, in cooperation with the LSU Wetland Biogeochemistry Institute and the LSU Experimental Rice Research Station, continues to collect “edge of field” water quality data from soybean fields. The edge of field water quality data is expected to demonstrate what type of soybean tillage practice is most effective in reducing NPS pollutants from entering the waterways where soybean agricultural production occurs in the Mermentau River Basin and throughout the State.

To date, a total of twelve runoff events have been collected and analyzed. The data shows significant reductions of nutrients and sediment from the “stale seedbed” soybean fields. This could be attributed to the increased amount of residue remaining on the fields before and during planting. The “conventional tillage” fields were also lower in nutrients when compared to the “no-till” plots. It is believed that plowing used in conventional tillage allows the nutrients to enter the sub-soil layers reducing the amounts of nutrient loss to surface runoff. On the other hand, the data shows higher levels of total suspended solids (TSS) from the conventional tillage fields compared to the other two tillages. The “no-till” fields had the highest amount of nutrient runoff, but lower TSS values. Preliminary conclusions indicated “stale seedbed” soybean tillage was most efficient, that is less runoff and less NPS loading than the other practices. Upon receipt of the project final report, LDEQ anticipates a complete statistical analysis of the project data.



A slurry of sediment runoff exits the “conventional tillage” soybean plots.

Watershed Restoration Action Strategy for the Bayou Plaquemine Brule

LDEQ has worked with federal, state and local agencies and two universities on implementation of the Bayou Plaquemine Brule Watershed Project. There are several aspects of the project, including in-stream monitoring for the main stem of Bayou Plaquemine Brule, and edge-of-field monitoring in two sub-watersheds, Bayou Wikoff and Cole Gully, plus technical and cost-share assistance for increased BMP implementation within the two sub-watersheds. During 2004, the in-stream monitoring program on the main stem of Bayou Plaquemine Brule continued and showed seasonal and spatial variation in the dissolved oxygen concentrations. Although average dissolved oxygen levels for the summer months was 5.12 mg/L, which is much higher than the seasonal standard of 3.0 mg/L, the oxygen values did frequently drop below the standard, especially at the downstream sites. During the winter months, the average concentration of oxygen was 8.65 which exceeded the seasonal standard of 5.0 mg/L.

Surface water quality declined from the upstream to the downstream sites and appeared to be highly associated with land-use types, with pastures dominating the upstream portion and soybeans and rice/crawfish and sugarcane dominating the lower portions of the watershed.

Watershed Restoration Action Strategy for Bayou Wikoff and Cole Gully Sub-Watersheds

Bayou Plaquemine Brule flows 55 miles through Acadia and St. Landry parishes and is one of the tributaries of the Mermentau River. Due to low relief, water flow in Plaquemine Brule and its tributaries, including Cole Gully and Bayou Wikoff, is sluggish and reaeration potential is low. The primary land use in this region is agriculture. The Bayou Wickoff sub-watershed is dominated by pasture and sugarcane. LDEQ worked with the LSU Ag Center, the USDA and the Local Soil and Water Conservation Districts to select 9 sampling sites within the Cole Gully Sub-Watershed. These sites include:

- upstream monitoring site
- downstream monitoring site
- pristine site
- 2 pasture sites with BMPs
- 4 sugarcane sites with BMPs



Water Quality Sampling Station in the Cole Gully Sub-Watershed

During 2004, data was collected at these sites during rainfall events and samples were analyzed for sediments, nutrients, turbidity and BOD. The pristine and pasture sites exhibited the lowest concentrations of sediments. The data from the sugarcane sites indicated that the best management practices were effective in reducing sediments and nutrients when compared to the conventional practices. Total suspended solids in the storm water events was 0.50 g/L if all sugarcane fields utilized BMPs compared to 2.26 g/L if all of the fields utilized conventional practices. Another way to report this data is that an annual average soil loss of 4.04 tons/acre per year with conventional sugarcane practices compared to 0.10 ton/acre per year with BMPs.

The Cole Gully watershed is dominated by rice, soybean, crawfish and grain sorghum. Surface runoff, flood release or storm overflow from these crops are the major source of flow in the Cole Gully. Water quality monitoring sites were located at:

- paired rice fields with and without BMPs
- soybean fields with and without BMPs
- grain sorghum fields with and without BMPs
- in-stream sites

During 2004, water quality data was collected for samples after rainfall events and was analyzed for sediments, nutrients, turbidity and BOD. The data has indicated that when the BMPs are applied that the dissolved oxygen levels did not fall below the 3.0 mg/L seasonal standard so the TMDL goal could be met.

In addition to water quality data collection, the BMP implementation portion of the project resulted in a total of 40 conservation plans on 4,438.7 acres being implemented within the Cole Gully sub-watershed. Land use within Bayou Wikoff is primarily dominated by grazing although sugarcane and soybeans are also grown there. By December, 2004, a total of 23 conservation plans were implemented on 883 acres within the Bayou Wickoff Sub-Watershed. Resource management plans were develop for each of the farms that participated in the project and there was a savings of 2 tons per acre per year as a result of the practices being implemented.

Mermentau River Watershed Protection Project

This watershed protection project targets the Bayou Nezpique, Bayou Blue, Bayou Lacassine, Bayou Chene and the Mermentau River for implementation of agricultural best management practices. The project is sponsored by the Office of Soil and Water Conservation at the Louisiana Department of Environmental Quality (LDEQ). There are approximately 176,000 acres of farmland within these watersheds, with an average farm size of 372 acres and approximately 317 farms. Irrigated rice production accounts for approximately 58,000 acres, non-irrigated soybean production for 16,000 acres, sugarcane acreage is 5,000 acres, 3,000 acres of wheat and 94,000 acres of idle land (crawfish, pasture, fallow land). Excessive soil erosion is currently occurring on lands with rice and soybean production because of excessive use of irrigation, lack of BMPs and high average rain fall events in excess of 52 inches per year.

The TMDLs for these watersheds indicate that there will need to be 30-90% reduction in nonpoint source pollutant loading in order to meet the water quality standard for dissolved oxygen concentration. In order to reduce nonpoint source pollutant loading, there will need to be a reduction in sediments, nutrients, pesticides and organic material. The types of BMPs that will be implemented through this project will include:

- grade stabilization structures
- irrigation land-leveling
- nutrient management
- pest management

Resource Management Systems (RMS) will be developed for each of the farms that participate in the project. A ranking criteria was developed for which farms qualify for the project and was approved by the Jefferson David Soil and Water Conservation District. Articles were placed in the local newspaper and in the LSU Extension Service newsletter about the project and 61 applications were received during the sign-up period for the project. After review of all of the applications that were received, 26 applications were selected for inclusion in the project and

caps were placed on the level of funding that could be provided for each of the practices, such as *irrigation land-leveling, dry seeded rice, and residue management, nutrient and pest management, upland wildlife habitat management, shallow water management for wildlife and prescribed grazing.*

A field visit was made to each of the 26 farms to discuss the resource management system and BMPs for each site. All 26 of the plans have been completed and contracts signed with the landowners to implement the practices. The project has resulted in 19,890.4 acres of cropland treated with BMPs. A wetland awareness day was held in Lake Arthur and Lake Charles and field days have been held to provide information to other farmers in the area about the project. The project has been viewed as a success.

In addition to the projects funded through the Section 319 grants, USDA funds cost-share and technical assistance to farmers through the Farm Bill. These are the lists of practices that were implemented within this part of the state during 2004 through the Farm Bill Programs.

**Practices Implemented in the Mermentau River Basin during 2004 through
the Farm Bill Programs**

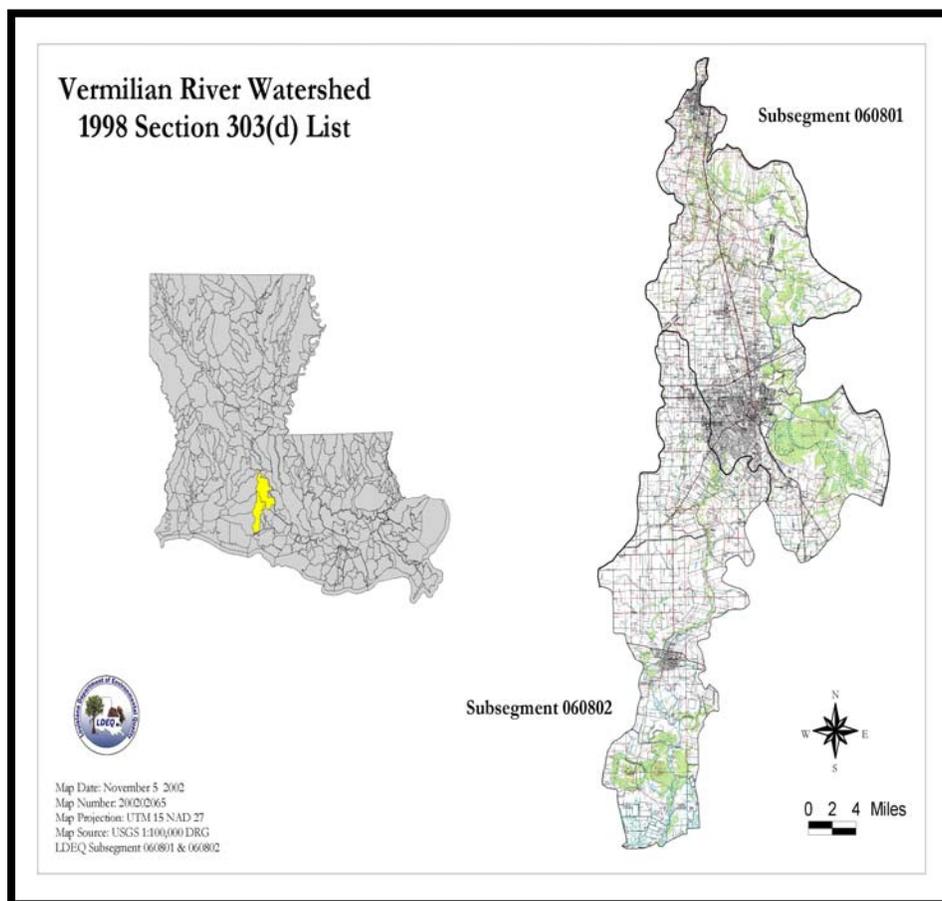
Practices	Planned	Applied
Brush Management (acres)	188	105
Conservation Cover (acres)	63	
Conservation Crop Rotation (acres)	5703	6577
Fencing (feet)	240,244	59,337
Field Borders (feet)	340,300	127,200
Fish Raceway or Tank	27	15
Forest Management (acre)	206	76
Grade Stabilization Structure (no.)	601	280
Heavy Use Protection (acre)	333	81
Irrigation Land Leveling (acre)	13,420	3420
Irrigation Water Conveyance (feet)	198,546	63,950
Irrigation Water Management (acre)	2706	7029
Nutrient Management (acre)	6105	5369
Pasture and Hayland Planting (acre)	637	299
Pest Management (acre)	5418	5259
Pipeline (feet)	144,067	21,754
Precision Land Forming (acre)	13	
Prescribed Burning (acre)	250	
Prescribed Grazing (acre)	13,633	4781
Residue Management (acre)	5797	7016
Upland Wildlife Habitat Management (acre)	338	952
Use Exclusion (no)	6	61

Vermilion-Teche River Basin

During 2004, LDEQ implemented several projects within the Vermilion-Teche River Basin, aimed at reducing and controlling NPS pollutant problems that exist there, including:

- Vermilion-Teche Watershed Restoration Project
- Model Sustainable Farm for Practical Water Quality Management (Cade Farm)
- Vermilion-Teche River Basin Water Quality Monitoring Project
- Lower Vermilion River Watershed NPS Project

The Vermilion River lies within the state's water body sub-segments 060801 and 060802. Both sub-segments are identified on the state's 303(d) list for not meeting the designated uses for "fishing and swimming". Low levels of dissolved oxygen and high levels of fecal coliform bacteria are suspected to have caused the impairments. The TMDL recommends a 50% reduction in oxygen demanding substances to address the low oxygen levels and a 88% reduction in fecal coliform bacteria from May to October and a 70% reduction from November to April in order to meet the designated uses.



The Nonpoint Source (NPS) program continues to implement best management practices (BMPs) by funding projects in the form of cooperative agreements and partnerships throughout the Vermilion River Watershed. The water quality data has shown water quality improvements in the Vermilion River based on the new 2004 water quality data. The levels of turbidity, total suspended solids (TSS), and total dissolved solids (TDS) in the Vermilion River have decreased. The average values of turbidity declined from 70.25 to 64.67, measured as nephelometric turbidity units (NTU). The average concentration of total suspended solids declined from 88.08 to 44.14 mg/L and the average concentration of total dissolved solids declined from 264.75 mg/L to 145.00 mg/L. These parameters provide evidence of sediment and/or other substances suspended in the water column, which can reduce water clarity and consume dissolved oxygen. Decreases of these type oxygen consuming substances could be a cue that levels of dissolved

oxygen in the river will begin to increase in the near future. As the NPS Program continues to educate, demonstrate and implement NPS BMPs in the Vermilion River Watershed, LDEQ expects more water quality improvements.

Vermilion-Teche Watershed Restoration Project

On December 31, 2004 the project may have come to an end, but the attitudes of people who live in the “Heartland of Acadiana” have been changed forever. It was early March 2002, when LDEQ began the cooperative agreement with the Lafayette Parish Bayou Vermilion District (BVD) in an effort to reduce NPS loading and improve the water quality of the Vermilion River. Formerly known as the “third most polluted river in the nation” during the early 1970s, the Vermilion River has again become a cultural asset. With this project, there has been an enormous proactive campaign of NPS Education, BMP Implementation, and River Clean-up throughout the Vermilion River Watershed. The focus was to educate everyone in the Vermilion River Watershed about the water quality and nonpoint source pollution. As a result, stakeholders became more aware of the river. In addition to the educational campaign, the Lafayette Parish BVD launched another effort to inform and educate the local stakeholders about solutions, i.e. what they can do to make a difference and about implementing

best managements practices (BMPs). Many of the locals felt the river was too far gone and could not be brought back. LDEQ helped BVD to take it in their own hands and implement a massive river clean-up. With their outpost/offices strategically located directly on the Vermilion River, BVD was able to utilize boats to patrol up and down the Vermilion River and pick up trash/litter/waterborne debris. During the course of the project, BVD acquired more boats, a barge outfitted with a grapple, and fine tuned their river clean-up efforts into an art, if there was one. Picking up large volumes of floating trash was easier when concentrated in one location. To facilitate such a process, BVD would utilize floatable “oil spill” collection booms stretched across tributaries to the Vermilion River known to contribute large volumes of trash. As a result BVD was able to prevent and collect more trash from the river. LDEQ worked with BVD to implement a program to quantify and recycle the different types of trash collected from the river. The response from the local public has been more than welcoming. Many local attitudes have changed and public participation has noticeably increased. A local tax proposed for continuing funding of the BVD river clean-up efforts was recently approved by 60%. Some of the totals for 2004 are presented in the table provided.



Clearing Debris from the Vermilion River

Large Trash Items Removed From the Vermilion River During 2004

Large Size Trash Items for 2004	Number	2003 + 2004 Numbers
Appliances	40	55
Furniture	41	50
Tires	148	214
Trash Cans, Tanks, Drums	81	116
Buckets, Containers, Flower Pots, Etc.	80	106
Construction Materials, Lumber, Etc.	90	120
Ice Chests	28	48
Miscellaneous	135	190
Total	643	899
Number of "55-Gallon Barrels" of Trash Collected in 2003	986.25	

To date, 99% of all domestic trash piles located on the Vermilion River within Lafayette Parish have been removed by BVD through the efforts of this project.

Pastureland Grazing was the second component of the project targeted by educating, demonstrating, and implementing BMPs. Pasturelands occupy a large percent of the land use in the watershed. Some of the project accomplishments have been:

- Pastureland BMPs installed on sixteen (16) different properties within the watershed;
- 20,000 feet, or nearly 4 miles of fencing installed along streamside pasturelands;
- 40 "pipe-drops" installed with related backfilling of eroded areas, diversion levees, grassed berms, and grassed waterways;
- 6 concrete cattle troughs, each surrounded with concrete pads for heavy use;
- 6 bridges across local streams.



Pastureland Grazing Sites Along the Vermilion River

BMP implementation on all the selected properties was in accordance with developed Resource Management Plans and the specifications of the NRCS/SWCD. Each site has been inspected and approved by the Lafayette Parish Soil and Water Conservation District. BVD developed a database of BMPs that address pastureland grazing, home ranch, and home lawn/garden. The link is "Improving Our Watershed" www.bayouvermilion.org. A tour of the pastureland demonstration sites was provided to numerous LDEQ staff, cattlemen, and other entities including Walter Poole of America's Clean River's Foundation.

Individual Home Sewage Treatment Systems (IHSTS) was the third component of the project to address "Individual Home Sewage Treatment Systems" (IHSTS) within Lafayette Parish. BVD compiled a database identifying the location and types of individual home sewage treatment systems. An overlay of the municipal area was utilized during the process to help identify these sites by process of elimination. Over 24,093 parish residents/entities are identified and entered into the database. Efforts to increase local awareness included hosting several public workshops,

television and newspaper interviews, public service announcement, billboard advertisement notices, and an educational video titled “Bayou Blues”. These educational efforts have set the stage for implementation of a ordinance for Lafayette Parish that would require routine inspection and maintenance of IHSTS. The ordinance is presently with town officials for final commenting. BVD expects it will pass soon. Now, the parish municipality plans to include another type ordinance for package treatment plants. It is possible the two different ordinances could be combined and passed in the near future.

Cade Farm Project – Phase 2

This project evaluated the effectiveness of grazing, crawfish and sugarcane BMPs for water quality improvement. This project also evaluated the effectiveness of filter strips to mitigate soil runoff from sugarcane fields. Total forage production in the managed grazing plots was 14 5 greater than that in traditionally managed pastures. Runoff from managed grazing plots represented a decrease of 20 % compared to the traditionally managed pasture. No significant differences in total nitrogen, nitrate-nitrite, ammonia, phosphorus or BOD were observed although runoff from the managed grazing was 11 % less than the traditionally managed plots. No significant difference was also noted in fecal coliform counts. However, there were 134 extra grazing days in the managed plots with no significant increases in fecal coliform compared to the control.

Sugarcane Compost BMP Project

In the sugarcane project, the BMP practice of amending soil with compost influenced water quality negatively as it increased levels of nitrogen and phosphorus in surface water. The BMP of amending soil with compost or by raking the green cane trash blanket into the furrow did not reduce levels of TSS, TCS or NH₄ during the duration of the project. However, more sugarcane per acre was produced in the plots receiving the compost BMP.



Compost Applied to Sugarcane Demonstration Site



Crawfish Ponds at Cade Farm

Crawfish BMP Project

The element of the project focusing on BMPs for crawfish production demonstrated that the conserving water treatment produced a similar amount of crawfish per acre to conventional management. However, this treatment used much less water in both years of study resulting in a decrease in the amount of water discharged to nearby streams.

Vegetative Filter Strip Project

The vegetative filter strip BMP was probably the most effective aspect of this project. At the conclusion of the project, the total area of the filter strip was re-graded to the original elevation. A total of 5.0 inches of soil was removed representing a total of 5,865.6 cubic feet (220.9 tons) of sediment accumulated during the 3 years of the project.



Sediment Left from Vegetative Filter Strip After the Project Had Been Completed

Vermilion-Teche River Basin Water Quality Monitoring Project

The goal of the Vermilion-Teche River Basin Monitoring project is to assess nonpoint source pollution from sugarcane fields, pasturelands, and residential areas through a water quality monitoring project. This project evaluated the effectiveness of BMPs for pasture, sugarcane and residential runoff. There are a total of 6 sites with a control and a BMP site for each land use type. Sugarcane fields and pasture lands were managed by the farmers.



Sampling Sites on the Lower Vermilion River for pastureland grazing



Signage for the Water Quality Sampling Sites on the Lower Vermilion River

All six sites were fully instrumented with Flow meters (4250 and 3230 models) and automated ISCO samplers (6700 model). Four sites had culverts and AV probes while two sites had 18"flumes and bubbler gauges. Each site was equipped with a standard rain gauge. Surface runoff water samples were collected for most of the rain events. Water samples were analyzed for total suspended solids (TSS), total combustible solids (TCS), biological oxygen demand (BOD5), nitrate/nitrite-N (NO3/NO2-N), total nitrogen (TN), soluble reactive phosphate (SRP), total phosphorus (TP) and pH. Random composite soil samples (0-15 cm depth) were collected from each site in the beginning of the project and were analyzed for bulk density, pH, total carbon (TC), TN, TP, cation exchange capacity (CEC), and textural classes. Soils for the six sites showed either loam or silt loam textural classes, and bulk density ranged between 1.41 to 1.55 g

cm⁻³. Statistical comparisons of BMP implementation vs. standard practices showed that BMP implementation did not show a clear effect on surface runoff water quality.

Land Use	TSS	BOD5	TN
Sugarcane	1193.5 mg L ⁻¹	6.7 mg L ⁻¹	5.08 mg L ⁻¹
Pasture	88.7 mg L ⁻¹	7.7 mg L ⁻¹	3.46 mg L ⁻¹
Residential	83.5 mg L ⁻¹	5.3 mg L ⁻¹	2.64 mg L ⁻¹

Overall averages for each land-use for selected constituents

While 55.5% of water samples from controlled pasture showed fecal coliform count (100 mL) of <2, only 17.6% of the total number of water samples representing BMP pasture showed fecal coliform count (100 mL) of < 2. In pasture lands, TN concentration for 48001-96000 gallon interval (6.56 mg L⁻¹) was significantly greater compared to TN concentration for earlier flow intervals.

Lower Vermilion River Agricultural BMP Implementation Project

Within the “Lower Vermilion River Watershed”, LDEQ is cooperating with the Vermilion Parish Soil and Water Conservation District (SWCD). The project area comprises the state’s water body sub-segment 060802, referred to as the “Lower Vermilion Watershed”. The designated uses in this sub-segment are listed as “impaired”, and agriculture is the primary land use throughout the entire area. The project is taking a proactive approach to implement agricultural BMPs known to reduce the amount of NPS loads from agriculture sites containing oxygen-consuming substances and high levels of fecal coliform bacteria to Lower Vermilion River.

The project is targeting agricultural producers that are identified as high priority sites. Priority is based on the amount of farm acreage, the types of BMPs planned to be implemented, and the proximity of the farms to the Vermilion River and/or its tributaries. To date, the SWCD agents have selected targeted BMPs including cost share and incentive rates, developed a Priority Scoring Worksheet, and devised an Application Evaluation Worksheet. LDEQ worked with the SWCD to include an additional factor for prioritizing farms sites by suggesting use of a “multiplier” be added to the Priority Scoring Worksheet for those farms sites located in close proximity, or one-half mile distance to the Vermilion River and/or its tributaries. The initial solicitation for farm participants yielded 26 individuals applicants. Each applicant will have “resource management plans” (RMPS) developed by the SWCD for their farm. Another solicitation is expected in the near future to recruit more applicants to reach the targeted goal of 50 farm applicants, or until all project funds have been expended. Some of the common problems causing NPS loading from these sites include a lack of nutrient and pest management, conservation tillage practices, streamside buffers, heavy-use areas, barren soils and drainage ditches.



Heavy-use areas in pasturelands can contribute excess nutrients, sediment, and fecal coliform bacteria to local drainages to the Vermilion River.

In addition to the projects that have been funded with Section 319 funds, USDA provides cost-share and technical assistance to farmers to implement management practices through the Farm

Bill. These are the practices that have been implemented within this part of the state through the Farm Bill Programs.

Practices Implemented Through the Farm Bill Programs in the Vermilion-Teche River Basin

Practices	Planned	Applied
Conservation Cover (acres)	118	50
Conservation Crop Rotation (acres)	6636	1983
Fencing (feet)	77,896	1,786
Field Borders (feet)	502,210	180,269
Forest Management (acre)	300	148
Grade Stabilization Structure (no.)	341	269
Heavy Use Protection (acre)	177	5
Irrigation Land Leveling (acre)	702	334
Irrigation Water Conveyance (feet)	21,869	15,783
Irrigation Water Management (acre)	2156	1403
Land Smoothing	536	
Nutrient Management (acre)	7525	912
Pasture and Hayland Planting (acre)	188	45
Pest Management (acre)	7294	810
Pipeline (feet)	52,191	
Precision Land Forming (acre)	727	506
Prescribed Burning (acre)	2931	2931
Prescribed Grazing (acre)	2575	931
Residue Management (acre)	4783	3161
Surface Drainage (feet)	25,225	
Tree/Shrub Establishment (acre)	190	68
Upland Wildlife Habitat Management (acre)	371	140
Use Exclusion (no)	82	
Water Well	6	2
Watering Facility	69	3
Wetland Restoration	287	111
Wetland Wildlife Habitat	5805	4237

Calcasieu River Basin

During 2004, LDEQ continued to implement one project and the Office of Soil and Water Conservation at the Louisiana Department of Agriculture and Forestry implemented a watershed project.

- Central Calcasieu River Watershed Project
- Marsh Bayou, English Bayou, Bayou Serpent Watershed Project

Central Calcasieu River Watershed 319 Nonpoint Source Project

The Allen Soil and Water Conservation District is providing financial and technical assistance to landowners in the Kinder area of Allen Parish. In return for cost-share funds, local farmers have agreed to adopt specific conservation practices. Their lands will also be available to serve as demonstration sites.

Approximately ten landowners signed up to participate and 4255 acres have been included in the project, mostly rice farms. Three-year agreements are presently in progress. Project participants continue to adopt various conservation practices on their lands as BMPs are implemented. Practices include *Nutrient Management*, *Prescribed Grazing Management* and *Irrigation Land Leveling*. Approximately ten landowners are participating. Cost-share and technical assistance are provided to project participants. As of June 2004, approximately 5,118 tons of soil has been saved as a result of BMP implementation on contracted acres.

Marsh Bayou, English Bayou, Bayou Serpent Watershed Project

The Office of Soil and Water Conservation implemented a watershed project that targeted Marsh Bayou, Bayou Serpent, and English Bayou. The land-use in these three watersheds is primarily agricultural, with approximately 80,000 acres farmed on 100 farms. The average farm size is 350 acres with irrigated rice production accounting for 22,000 acres and non-irrigated soybean production accounting for 8,000 acres. The remaining cropland acres consist of 2000 acres of sugarcane, 1000 acres of wheat and 47,000 acres of idle land (crawfish, pasture, fallow land). Excessive soil erosion is currently occurring on lands with rice and soybean production as a result of extensive use of irrigation and a high average annual rainfall, which is in excess of 52 inches. Lack of use of BMPs by the farmers also contributes to the amount of pollution associated with agriculture products in the project area. Soil particles, nutrients, pesticides and organic material are entering the water bodies as a result of rice irrigation return flows and runoff caused by heavy rainfall events.

LDEQ did a TMDL for Bayou Serpent and it indicated that there would need to be a 90% reduction in nonpoint source loading to meet the 5.0 ppm dissolved oxygen standard during the summer months and 50% reduction to meet the standard during the winter months. Therefore, the Bayou Serpent is the first priority watershed for this project area.

EPA Region 6 completed a TMDL for turbidity and total suspended solids for English Bayou, which indicated that the NTU standard was exceeded 30% of the time. Most of these exceedances occurred during the winter months and approximately 64% of the watershed is utilized for agricultural crop production. Therefore, English Bayou will be the second priority for funding through this watershed project.

During this same time period, LDEQ completed a TMDL for dissolved oxygen for the Marsh Bayou, which indicated that there would need to be a 37% reduction in nonpoint source loads to meet the dissolved oxygen water quality standard. Approximately 45% of the Marsh Bayou watershed is utilized for implementation of BMPs.

In order to reduce the agricultural pollutants entering these three watersheds, site specific BMPs will be implemented, such as:

- grade stabilization structures
- irrigation land leveling
- nutrient management
- pest management

A ranking criteria has been selected for which tracts of land best quality for participation in the project. Points have been awarded for certain BMPs, with a higher priority given to rice farms. A Resource Management System (RMS) will be developed for each of the farms where BMPs are applied. Participants have been selected for the project and a GPS surveying system has been purchased to conduct land surveys for the irrigation land leveling of rice fields. A soybean BMP demonstration tour was held in September 2004 within the project area to discuss the project and practices with the local farmers.

In addition to the projects that have been funded with Section 319 funds, USDA provides cost-share and technical assistance to farmers to implement management practices through the Farm Bill. These are the practices that have been implemented within this part of the state through the Farm Bill Programs.

Practices Implemented Through the Farm Bill Programs in the Calcasieu River Basin

Practices	Planned	Applied
Access Road (feet)	20	20
Animal Trails and Walkways	2620	
Brush Management	1178	1477
Composting Facility	3	
Conservation Cover (acres)		1429
Conservation Crop Rotation (acres)		936
Critical Area Planting	226	34
Dike	4510	
Fencing (feet)	232,804	77,137
Field Borders (feet)	450	
Firebreak	516,320	168,204
Fishpond Management	14	1
Forest Management (acre)	2722	570
Irrigation Land Leveling (acre)	5098	1098
Irrigation System (feet)	44,220	7015
Irrigation Water Management (acre)	1283	740
Nutrient Management (acre)	7037	2463
Pasture and Hayland Planting (acre)	57	29
Pest Management (acre)	6343	2841
Pond	1072	26
Pipeline (feet)	30,135	8060
Precision Land Forming (acre)	727	506
Prescribed Grazing (acre)	2937	819
Residue Management (acre)	6716	6019
Tree/Shrub Establishment (acre)	667	280
Upland Wildlife Habitat Management (acre)	1900	1862
Use Exclusion (no)	387	2395
Waste Storage Facility	4	1
Waste Utilization	100	
Water Well	5	2
Watering Facility	47	17
Wetland Restoration	83	1737
Wetland Wildlife Habitat		1530

Ouachita River Basin

During 2004, LDEQ and LDAF's Office of Soil and Water Conservation continued to implement projects which targeted specific watersheds where nonpoint source pollution needed to be reduced. These projects included:

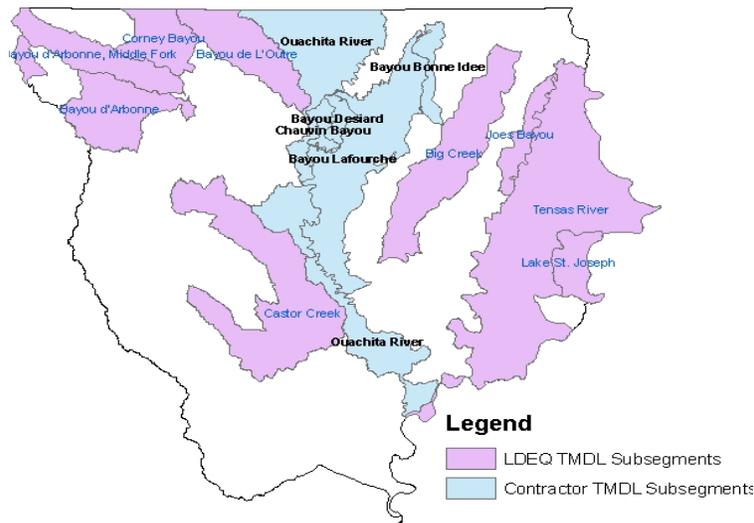
- Utilization of Annualized NPS Model (AnnAGNPS) in the Ouachita River Basin and LDEQ Watershed Implementation Plans
- Joe's Bayou Watershed Protection Project
- Turkey Creek Watershed Project
- Delta Technical Assistance Program for BMP Implementation and Reduction of NPS Pollution
- Evaluation of Effectiveness of Forestry BMPs for Water Quality Improvement
- Reduction of Nutrient and Pesticide Runoff from the Chennault Park Golf Course in the Ouachita River Basin

Utilization of Annualized Agricultural Nonpoint Source Pollution Model (AnnAGNPS) in the Ouachita River Basin and LDEQ Implementation Plans

United States Department of Agriculture, Agricultural Research Service (USDA-ARS) was contracted by LDEQ to write six implementation plans for the six watersheds located in the Ouachita River Basin (Figure 1) using the Annualized Agricultural Nonpoint Source watershed model (AnnAGNPS). The six watersheds are Ouachita River, Bayou Chauvin, Ouachita River, Bayou Desiard, Bayou Bonne Idee, and Bayou LaFourche.

The TMDL implementation plans to be completed by USDA-ARS, are provided in Table 1. The specific goals (tasks) include: (1) collect data needed to model the watersheds using AnnAGNPS model (2) simulate the six watersheds with AnnAGNPS model using the current land use and operational practices (3) write draft implementation plans for each watershed and (4) provide quarterly and annual progress reports and final implementation plans.

TMDLs Subsegments in the Ouachita Basin



The Louisiana Department of Environmental Quality (LDEQ) has made every reasonable effort to ensure quality and accuracy in producing this map or data set. Nevertheless, the user should be aware that the information on which this data display is based may have come from any of a variety of sources, with one or varying degrees of accuracy. Therefore, LDEQ cannot guarantee the accuracy of this map or data set, and does not accept any responsibility for the consequences of its use.

LDEQ and Contractor TMDLs Watersheds in Ouachita River Basin

Contractor TMDL Watersheds in the Ouachita River Basin

Name of Watershed	Sub-segment Number	TMDL Constituent
Ouachita River	080101	DO
Bayou Chauvin	080102	DO and Nutrients
Ouachita River	080201	DO and Nutrients
Bayou Desiard	080701	DO
Bayou Bonne Idee	080902	DO and Nutrients
Bayou LaFourche	080904	DO and Nutrients

Joe's Bayou Watershed Protection Project

The Office of Soil and Water Conservation has utilized Section 319 funds to implement the Joe's Bayou Watershed Protection Project. Joe's Bayou has had a TMDL developed for it which indicated that in order to meet the dissolved oxygen standard, there would need to be an 89% reduction in nonpoint source loading to the bayou. Some of the suspected causes of impairment are total suspended solids, turbidity, and carbofuran. The two suspected sources of these

pollutants are irrigated and non-irrigated crop production. Currently, there are 130 landowners and approximately 64 operators within the watershed. The crops that are produced include corn, cotton, grain sorghum, rice and soybeans. The average farm size is 200 acres. Soils in the area range from level to gently undulating soils with sheet and rill erosion rates, range from slightly above the soil tolerance level of 5 tons to less than 5 tons per acre per year. Gully erosion is a concern along Joe's Bayou and on the many drainage mains and lateral that drain into Joe's Bayou. The erosion rate from the large gullies is in the amount of 64 tons per gully and the erosion rate from the smaller gullies on the main and lateral is two tons per gully. In order to reduce the deposition of these materials, the annual sediment load coming from the agricultural fields must be reduced. The bayou is approximately 21 miles long in East Carroll Parish. Gully erosion is also severe along many of the farm mains and laterals that drain into Joe's Bayou. In order to reduce the amount of sediment entering the bayou, there will need to increased implementation of site-specific BMPs, such as:

- grade stabilization structures
- irrigation land leveling
- nutrient management
- pest management

In order to inform the landowners about the watershed project, flyers were mailed to 64 participants within the Joe's Bayou Watershed announcing the sign-up and which practices would be offered. A ranking criteria was developed to prioritize which farms would be eligible to participate in the project. An article was also provided to the local newspaper to inform the public about the project. The project received 58 total applications during the sign-up period. Due to the overabundance of acres applied for, the East Carroll Soil and Water Conservation District placed a cap on the amount of funds that each participant could receive. This would allow for 37 participants to be included in the watershed project. Site visits were made to each participant to discuss the Resource Management System (RMS) and to date, 29 contracts have been signed and planned written for each project participant.

Turkey Creek Watershed Project

Louisiana's 2002 305(b) Report indicated that Turkey Creek (080905) was not meeting the secondary contact recreation use at the headwaters to Turkey Creek Cutoff to Big Creek. From Turkey Creek Cutoff to Turkey Creek Lake, the water is not supporting the fish and wildlife propagation use. The causes for the water quality impairment include total dissolved solids, dissolved oxygen and chlorides. From Turkey Creek Lake to Turkey Creek, the water body is fully meeting the contact recreation use, but is not meeting the fish and wildlife propagation use.

Currently within the Turkey Creek Watershed, there are approximately 200 landowners and 400 operators. The crops that are produced within this watershed include corn, cotton, grain sorghum, rice and soybeans. The average size farm within the watershed is 100 acres. Sheet and rill erosion rates prior to project implementation range from slightly above the soil loss tolerance of 5 tons per acre to less than 5 tons per acre. Gully erosion is a concern along Turkey Creek and on the many drainage mains and laterals that drain into Turkey Creek. The annual erosion rate from the large gullies is in the amount of 64 tons per gully and the erosion rate from the smaller gullies on the main and lateral is 2 tons per gully.

USEPA Region 6 developed a TMDL for fecal coliform for the upper portions of Turkey Creek and for TSS and turbidity for 13 sub-segments in the Ouachita River Basin, including Big Creek. The TMDL for the upper portion of Turkey Creek indicated that in order for the water body to meet the water quality standard for secondary contact recreation, there would need to be a 86.6% reduction of fecal coliform bacteria during May to October and a 56.9% reduction during November to April. Turkey Creek was listed on the 1999 court ordered list as not fully

supporting the water quality standard for primary contact recreation use (swimming). Approximately 62% of the Turkey Creek Watershed is utilized for crops and pastures. Therefore, this watershed has been targeted for a nonpoint source watershed project to reduce fecal coliform loading to Turkey Creek.

In order to address the turbidity and TSS problems, Turkey Creek has been targeted for implementation of best management practices to reduce erosion from the agricultural fields. The watershed plan that is currently being developed by LDEQ and USDA's ARS will be utilized to guide where within the watershed that these practices will be implemented. The project targets sediments, nutrients, pesticides and organic materials through implementation of BMPs, such as: *grade stabilization structures, nutrient management and pest management*. A ranking criteria has been developed for the project and the Northeast Soil and Water Conservation District has begun taking applications for the watershed project.

Delta Technical Assistance Program (TAP) for BMP Implementation and Reduction of NPS Pollution

The Northeast Delta Resource Conservation and Development Area covers twelve parishes in three river basins, including two thirds of the Ouachita River Basin, the southeast portion of the Red River Basin, and the Northern portion of the Mississippi River Basin. Within the Ouachita River Basin; Bayou Chauvin, Ouachita River, Bayou Louis, Bayou Bartholomew, Black River, Little Bayou Boeuf, Boeuf River, Bayou Bonne Idee, Big Creek, Colewa Bayou, Bayou Lafourche, Turkey Creek, Bayou Macon, Joes Bayou, Tensas River, Tensas Bayou, Lake St. Joseph, Lake Bruin, Catahoula Lake, and Black River were all listed on the 1999 court ordered 303(d) list.



Pastureland Grazing Site in the Eastern Ouachita River Basin



Tree and Shrub Establishment in Eastern Ouachita River Basin Project

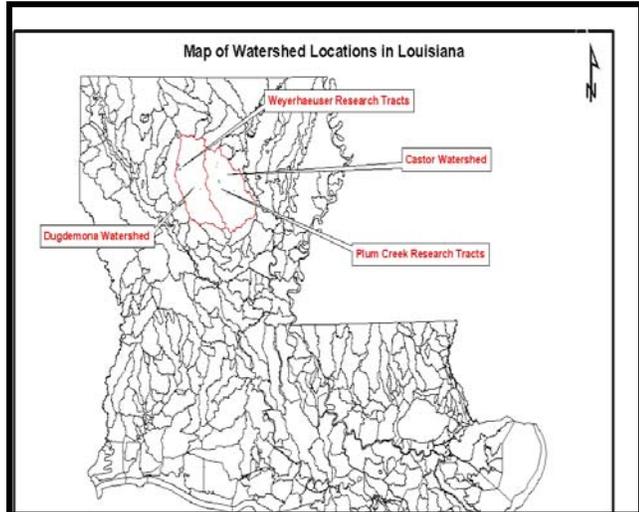
Specific water quality problems that were identified included dissolved oxygen, nutrients, fecal coliform bacteria, turbidity, total suspended solids, and pesticides. Since greater than 50% of the land use within the project area is utilized for agricultural crop production, implementation of agricultural BMPs should reduce these types of pollutants and result in improved water quality. USDA programs, such as Environmental Quality Incentive Program, Wetland Reserve Program, and Wildlife Habitat Incentive Program, provide

funds to farmers and producers for the implementation of the needed BMPs for control of nonpoint source pollution.

This project has funded the hiring of eight technicians to help provide the technical assistance to write farm plans and implement the needed BMPs. The technicians have determined the types of BMPs that are needed for impaired water bodies throughout the Delta and assisted in developing conservation plans for farmers. Newsletters have been published and sent to producers and landowners, and workshops, meetings, and educational events were conducted to increase conservation awareness. Preliminary RUSLE results indicate that the BMPs implemented as a result of this project have reduced soil loss by 3,296 tons/acre/year. Lake Bruin, which was listed on the 1999 court ordered 303(d) list, is report as fully meeting its designated uses on the 2004 305(b).

Evaluation of Effectiveness of Forestry BMPs for Water Quality Improvement

LDEQ is working with Louisiana Tech University in conjunction with Plum Creek to evaluate the effectiveness of Forestry BMPs in the Dugdemona and Castor Creek Watersheds. Castor Creek Watershed (sub-segment 081501) was listed on the Court Ordered 303(d) List as not supporting the water quality standard for propagation of fish and wildlife as a result of elevated levels of chlorides and total dissolved solids (TDS) and low dissolved oxygen. The TMDL report estimated that a 75% reduction of total nonpoint loading, 38.6 % reduction of total chlorides, and 47.1% reduction of TDS in Castor Creek Watershed is needed. Implementation plans are currently begin developed for dissolved oxygen and for chlorides



Map which Identifies the Two Watersheds in the Ouachita River Basin where the Forestry BMP Project is being implemented.



Forestry BMP Evaluation Project with Louisiana Tech University

and total dissolved solids. An analysis of factors causing low dissolved oxygen in Castor Creek showed that sediment oxygen demand (SOD) is the major contributor. This project will be important to the TMDL process by providing data on the effectiveness of BMPs on reducing nonpoint pollution loading, particularly sediment, to this stream.

Water quality sampling will be conducted before and after timber harvesting to compare sites with

BMPs to sites without BMP implementation. All of the sampling stations have been instrumented with ISCO automated samplers. The Quality Assurance Project Plan (QAPP) was submitted to EPA in early December. Sampling for the project should begin in 2005.

Reduction of Nutrient and Pesticide Runoff from the Chennault Park Golf Course in the Ouachita Basin

Chennault Golf Course is located east of Monroe, LA on Millhaven Road in Ouachita Parish. Drainage from this golf course is directly into Bayou Lafourche. Bayou LaFourche (subsegment 080904) is listed in the 2000 Nonpoint Source Management Plan and the 2000 305(b) report as only partially meeting the designated uses fish and wildlife propagation. In order to restore its use, nonpoint pollutants need to be removed.

Seven water sampling events and one sediment sampling event have been conducted to date. There were three water sampling events conducted in 2004. Results indicated that the simazine applied during the winter months is persistent and present in elevated concentrations in pond 4 and the discharge ditch. Tracking this compound after application will provide evidence of the success of the BMP once it has been implemented. Sediment bioassays and chemical analyses of bulk sediment concentrations do not indicate historical contamination in pond 4 and the two sites in the proposed wetland area. However, bioassays indicated toxicity in sediments in the discharge ditch and the wetland area entering the ditch. The source of the apparent toxicity is currently unknown but may represent contamination (perhaps from the airport runoff) back flowing into the wetland area. Backflow is a problem due to the relatively low decrease in elevation from the beginning of the drainage ditch to approximately 100 yards downstream (only 1-3% difference in elevation).

In addition to the projects that have been funded with Section 319 funds, USDA provides cost-share and technical assistance to farmers to implement management practices through the Farm Bill. These are the practices that have been implemented within this part of the state through the Farm Bill Programs.

Practices Implemented Through the Farm Bill in the Ouachita River Basin

Practices	Planned	Applied
Access Road (feet)	193,087	
Brush Management	555	248
Composting Facility	57	14
Conservation Cover (acres)	19,708	15,538
Conservation Crop Rotation (acres)	2880	2255
Cover Crop (acres)	6079	2455
Critical Area Planting	1065	190
Deep Tillage	369	
Dike	66,872	65,402
Fencing (feet)	539,411	100,095
Field Borders (feet)	188,743	17,800
Filter Strip (feet)	669	53
Firebreak	1,629,159	429,660
Fishpond Management	1	1
Forest Management (acre)	24,259	21,520
Irrigation Land Leveling (acre)	8652	1337
Irrigation Water Conveyance	160,143	35,277
Irrigation Water Management (acre)	1337	244
Land Smoothing	1265	695
Mulching	409	49
Nutrient Management (acre)	13,152	3,069
Pasture and Hayland Planting (acre)	3249	1196
Pest Management (acre)	10,199	553
Pond	59	12
Pipeline (feet)	186,706	22,964
Precision Land Forming (acre)	986	1674
Prescribed Burning	654	302
Prescribed Grazing (acre)	8092	5699
Range Planting	235	68
Residue Management (acre)	9863	6349
Tree/Shrub Establishment (acre)	23,722	24,919
Upland Wildlife Habitat Management (acre)	24,111	12,654
Use Exclusion (no)	32,125	17,099
Waste Storage Facility	77	251
Waste Utilization	2632	615
Water Well	50	13
Watering Facility	291	28
Wetland Restoration	10,699	11,080
Wetland Wildlife Habitat	6,883	5,653

Barataria-Terrebonne Basins

During 2004, LDEQ continued to implement projects within the Barataria and Terrebonne Basins to reduce the types of nonpoint source pollutants that contribute to water quality impairment in that part of the state.

- Urban BMP Training and Education for Construction Runoff and Home Sewage Education Awareness
- Water Quality of Upper Barataria Basin: Impact of Nonpoint Source Pollution Associated with Sugarcane Production

Urban BMP Training and Education for Construction Runoff and Home Sewerage Education Awareness

The South Central Planning and Development Commission's (SCPDC) district area encompasses the six parishes of Assumption, Lafourche, St. Charles, St. James and St. John the Baptist and Terrebonne. The total area of the South Central District exceeds 3,400 square miles. The boundaries of the SCPDC region contain two particularly sensitive ecosystems that have experienced severe water quality problems.

Water quality problems in the estuary stem from a combination of causes, most notably poor sewage treatment and untreated water runoff or nonpoint source pollution. The aim of the SCPDC is to reduce the high fecal concentrations from poorly maintained sewerage systems. The public is poorly informed about sources of urban runoff.

SCPCC staff members met with LDEQ for the groundbreaking ceremony on March 12, 2004. Construction of the building began with the groundbreaking on March 12, after a winning bidder was awarded. This process took longer than expected because in part to a large demand in building construction. Silt fencing and hay bales were used to try to keep the existing surface material and exposed soil on site. The building construction is now nearly complete. The parking lot was completed on January 5, 2005.



Ground Breaking Ceremony at New Building

The exterior of the building has been completed and the interior is almost complete.



Pouring Concrete at the Parking Lot for the New Building



Cross-section of parking lot

The presentation for the construction BMPs have begun and the video of the building progress will be used in this presentation. To date, there is over an hour of video footage that has been recorded.

Temporary workers will start field work of delivering door hangers to areas in Lafourche parish that have a large amount of individual septic systems in early 2005. This task will take approximately three months upon approval of the door hanger design from LDEQ.

Water Quality of Upper Barataria Basin: Impact of Nonpoint Source Pollution Associated with Sugarcane Production

This project will assess the run-off from two sugarcane fields in St. James Parish. Water sampling equipment has been installed at two locations adjacent to private sugarcane fields. The automatic water samplers at each site have been calibrated for several rainfall events. Although the two sites are located within 10 miles of one another, large variations in rainfall and flow have already been seen.

Three additional sites have been established for grab sample collection. The three sites for grab samples include Bayou Chevreuil near the LA 20 bridge (site downstream from fields representing assimilation), St. James Canal (receives runoff from sugarcane fields), and swamp drainage site east of Baker Canal (somewhat pristine swamp forest). These grab samples will be used for comparison.

Discussions with the two farmers regarding cultural practices are ongoing. Sampling has not yet begun.



Water sampling equipment at two locations in St. James Parish sugarcane fields. Run-off from these two fields will be analyzed and compared to grab samples from three other sites away from the agricultural fields.

In addition to the projects that have been funded with Section 319 funds, USDA provides cost-share and technical assistance to farmers to implement management practices through the Farm Bill. These are the practices that have been implemented within this part of the state through the Farm Bill Programs.

Practices Implemented Through the Farm Bill Programs in the Barataria-Terrebonne Basins

Practices	Planned	Applied
Access Road (feet)	1200	1200
Brush Management	60	60
Conservation Crop Rotation (acres)	7946	583
Cover Crop (acres)	379	2455
Critical Area Planting	29	2
Dike		1402
Fencing (feet)	38,690	28,935
Field Borders (feet)	38,270	23,175
Forest Management (acre)	502	514
Grade Stabilization (no.)	439	232
Heavy Use Protection	79	4
Nutrient Management (acre)	20,940	6,643
Pasture and Hayland Planting (acre)	248	310
Pest Management (acre)	13,599	6013
Pipeline (feet)	53,001	18,168
Precision Land Forming (acre)	986	1674
Prescribed Grazing (acre)	2780	5560
Residue Management (acre)	16,925	4645
Shallow Water Management (acre)	43	
Streambank/Shoreline Protection	100,000	2614
Structure for Water Control	12	8
Surface Drainage - Field Ditch	187,400	1400
Tree/Shrub Establishment (acre)	164	367
Upland Wildlife Habitat Management (acre)	686	934
Use Exclusion (no)	188	182
Water Well	6	5
Watering Facility	62	20
Wetland Enhancement	23,429	16,000
Wetland Restoration	86	393
Wetland Wildlife Habitat	25,441	19,440

Red-Sabine River Basins

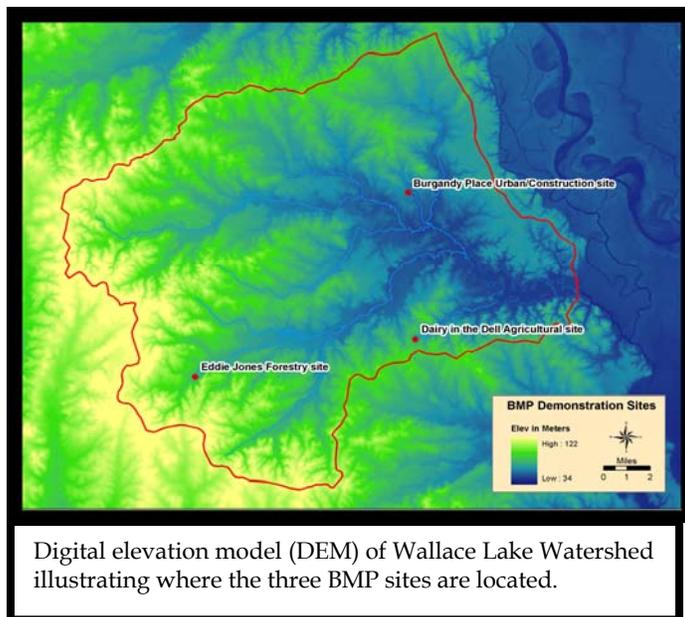
During 2004, LDEQ continued to implement projects within the Red and Sabine River Basins that targeted the types of land-use activities that the nonpoint source pollutants that contribute to the water quality problems that exist there:

- Wallace Lake Watershed Project
- Water Conservation District Dairy Waste System Cleanout
- Constructed Wetland for Farm Runoff

Wallace Lake Watershed Project

Wallace Lake is one of the impaired water bodies that was identified in the 1998 305(b) Report and the 2000 NPS Management Plan. These reports indicated that Wallace Lake was not meeting the contact recreation or the fish and wildlife designated uses. The land-use within the watershed has been estimated as 37.2% agriculture, 4.3% urban, 58.2% forestry and 0.3% resource extraction or mining.

In the Wallace Lake watershed, urban development is spreading out of the City of Shreveport into the rural areas that were historically agriculture and forestry. Dairy and forestry operations also exist, so each of these areas has been targeted for data collection and BMP utilization through the project.



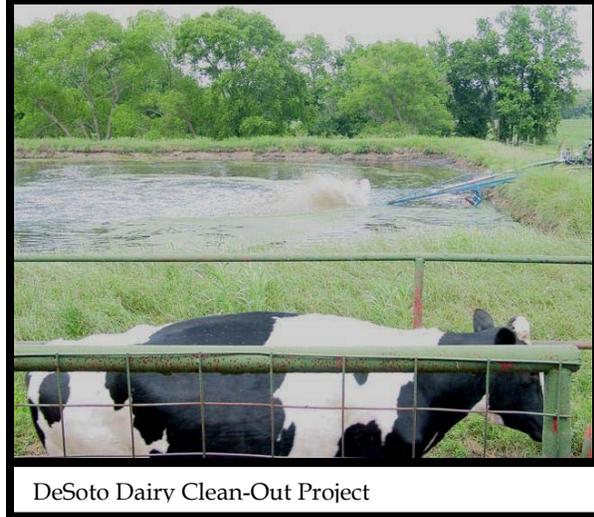
In order to address some of these problems, LDEQ has worked with LSU in Shreveport on a Wallace Lake Watershed Project. The specific objectives of the project include:

- Demonstrate the effectiveness of BMPs on agriculture, forestry and urban lands
- Quantify the pollutant load from each of these three land-use types for use in the TMDL and watershed plan that will be developed for the watershed
- Determine whether BMPs are an effective management tool for reducing the nonpoint source pollutants that exist within the watershed.

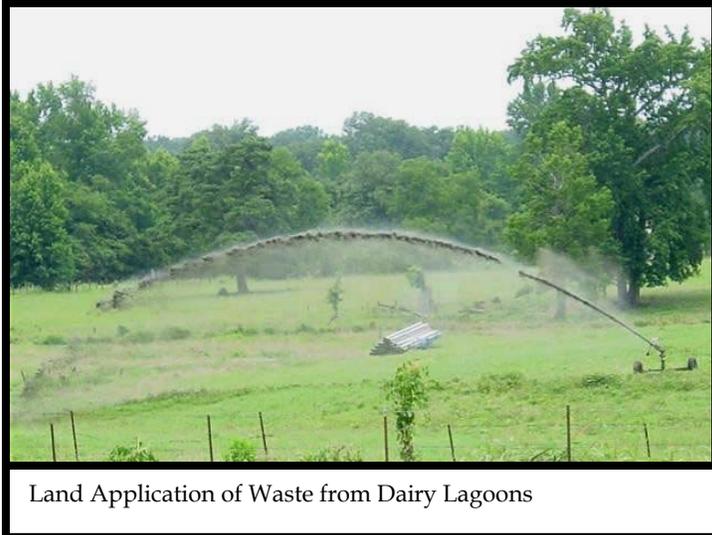
During 2004, the drainage area for each of the three sampling sites was determined and instrumentation installed for water quality data collection. The Wallace Lake Watershed was delineated with digital elevation model for use in determining drainage patterns and hydrology of the area.

Water Conservation District Dairy Waste System Cleanout

In Desoto Parish, approximately 27 dairy producers are located in the Bayou Pierre and Toledo Bend Watersheds and have an average herd size of 177 head. A 1200 lb animal produces 104 lbs of waste per day and these animals are confined 30% of each day. Since the animals are confined for these extended periods of time, an average of 31 lbs of waste is produced daily by each animal while in confinement. This waste is then drained into containment lagoons. The waste accumulates in the lagoons and eventually the solids that have accumulated need to be removed to prevent lagoon overflow that can lead to water quality problems.



DeSoto Dairy Clean-Out Project



Land Application of Waste from Dairy Lagoons

Several impaired water bodies are within the project area. Bayou Pierre, which is in the Red River Basin, was listed on the 1998 Louisiana 303(d) list for not meeting its designated uses of Primary Contact Recreation, Secondary Contact Recreation, and Fish and Wildlife Propagation. Also within the Red River Basin, Lake Edwards and Smithport Lake, are listed on the 303(d) list for not meeting the designated use of fish and wildlife propagation. The suspected causes of these impairments are organic enrichment/low DO, cadmium, copper, lead, and mercury. In the Sabine River Basin, Toledo Bend Reservoir is partially meeting its designated uses due to fecal coliform and is a drinking water source for many residents of Desoto Parish. Causes of fecal coliform pollution are suspected to be from sewers, storm sewers, and livestock operations.

The goal of this project is to provide dairy producers with an economical option for pumping out their dairy lagoons. Before pump out is conducted, a waste management plan must be written for the operation that specifies where and how much manure can be applied to minimize environmental effects.

To promote participation in the program, an educational and informational meeting was held for dairy producers and the general public explaining the program goals, procedures, and the value of the waste as a fertilizer. Following the meeting, a dairy lagoon cleanout demonstration was held. Since that time, Desoto SWCD has conducted preliminary surveys of eight farms to estimate the volume of waste to be removed from dairy lagoons, identified possible land application sites to ensure that sufficient land area is available and that land application will not

result in any off site environmental problems or environmental nuisance to neighbors, completed waste management plans for 5 dairies, and cleaned out four dairy lagoons.

Constructed Wetlands to Improve Water Quality for Whole-Farm Operations

The LSU AgCenter's Red River Research Station located in northwest Louisiana was chosen as a site for investigating the effectiveness of a constructed wetland system in improving water quality of runoff from agricultural land. The site was ideal for this project because over 400 acres of land drain into one corner of the area and then into the Flat River, which is on the 303d list of impaired water bodies in Louisiana. The primary suspected cause of the impairment of the Flat River is agricultural runoff. Using historical rainfall records, engineers with the USDS-NRCS designed a constructed wetland that would accommodate runoff from the research station. The land area is sub-divided into 4 to 8-acre research blocks where various crops are grown. The crops grown include cotton, soybean, corn, grain sorghum, and wheat. All blocks are maintained according to Louisiana State University Cooperative Extension Service guidelines and are similar to practices on conventional arable land in the area.



Water Quality Sampling Equipment at Constructed Wetland Project



Field Day at Constructed Wetland Project, where Wetland Plants were Discussed

Construction of the wetland system began in December of 2003 and was completed in April of 2004. In the spring of 2003, personnel from the Red River Research Station, USDA-NRCS, and volunteer youth from Shreveport Green collected native aquatic plants under the supervision of Scott Edwards, the plant materials specialist for USDA-NRCS. Plants were transferred to the Red River Research Station, transplanted in pots, then placed in a nursery near the area where the constructed wetland was to be located.

Following the completion of wetland construction, personnel from the Red River Research Station, USDA-NRCS, LDEQ, and volunteers from the LSU AgCenter's Master Gardner program removed the aquatic plants from the nursery and transplanted them to the shallow constructed wetland area. In addition to the native plants, Scott Edwards provided three wetland grass species from the USDA-NRCS Golden Meadow Plant Materials Center located in Galliano,

Louisiana. Over the summer of 2004, metal platforms were constructed along the path of runoff through the constructed wetland system. The platforms were used to place, 4 Isco Avalanche transportable refrigerated samplers. One sampler was located at a point where runoff from the agricultural acreage could be sampled before it entered the constructed wetland system. Water samples from this location will provide information regarding what constituents are entering the wetland system. Another sampler was positioned further downstream where drainage from a pasture was received. Water collected from this sampler will provide information regarding fecal content received from the pasture. The remaining samplers were positioned to sample water leaving the first, shallow stage of the wetland, and the final deep stage of the wetland system. These two samplers will determine the effectiveness of each stage of the constructed wetland system. Each of these locations will also be monitored with two separate Hach Minisonde 4a Hydrolabs. The hydrolabs will constantly monitor pH, temperature, turbidity, conductivity, and dissolved oxygen. The final draft of the Quality Assurance Project Plan was submitted for approval in July of 2004 and was approved by the EPA in January of 2005. Hence, analysis of water samples can begin in January of 2005. This platform holds the sampler that monitors water quality as water passes from the shallow pond to the deep portion of the constructed wetland.

In addition to the projects that have been funded with Section 319 funds, USDA provides cost-share and technical assistance to farmers to implement management practices through the Farm Bill. These are the practices that have been implemented within this part of the state through the Farm Bill Programs.

Practices Implemented Through the Farm Bill Programs in the Red and Sabine River Basins

Practices	Planned	Applied
Access Road (feet)	9532	9500
Brush Management	203	168
Composting Facility	4	3
Conservation Cover	640	
Conservation Crop Rotation (acres)	237	204
Critical Area Planting	248	39
Dike	8100	1402
Fencing (feet)	284,827	103,365
Field Borders (feet)	23,083	8780
Filter Strip (feet)	2	
Firebreak	5970	
Fishpond Management	1	
Forest Management (acre)	3985	4584
Grade Stabilization (no.)	7	9
Grassed Waterway	3	22
Heavy Use Protection	81	3
Irrigation Land Leveling	769	650
Irrigation Water Conveyance	21,380	5085
Irrigation Water Management		194
Mulching	44	
Nutrient Management (acre)	4527	4989
Pasture and Hayland Planting (acre)	1298	460
Pest Management (acre)	2272	2876
Pipeline (feet)	74,850	11,074
Pond	54	33
Prescribed Burning (acre)	654	302
Prescribed Grazing (acre)	8092	5699
Range Planting (acre)	235	68
Residue Management (acre)	9863	6349
Riparian Forest Buffers (acre)	1,154	815
Shallow Water Management (acre)	815	379
Structure for Water Control	82	31
Tree/Shrub Establishment (acre)	23,722	24,919
Upland Wildlife Habitat Management (acre)	24,111	12,657
Use Exclusion (no)	32,125	17,099
Water Storage Facility	77	25
Waste Utilization	2632	615
Water Well	50	13
Watering Facility	291	28
Wetland Restoration	10,699	11,080
Wetland Wildlife Habitat	6,883	5,653

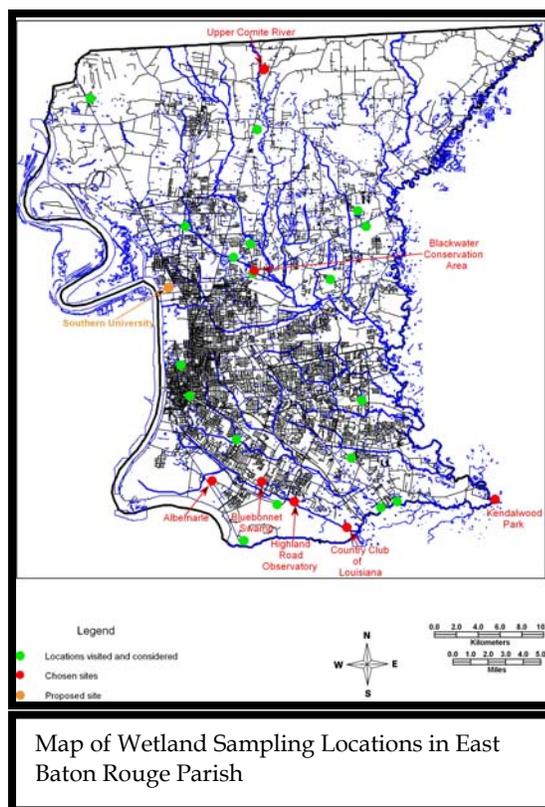
Lake Pontchartrain-Pearl River Basins

During 2004, LDEQ continued to implement projects within the Lake Pontchartrain and Pearl River Basins that targeted urban runoff, home sewage systems, sand and gravel operations and wetland protection.

- Mitigating NPS Pollution in Urban Watersheds with Spatial Modeling, BMPs and Community Outreach
- Mandeville Neighborhoods Project
- St. Tammany Parish Tchefuncte and Bogue Falaya Watershed Implementation Project
- St. Tammany Parish Watershed Coordinator
- Nonpoint Source Pollution Abatement Program through the Inspection of Existing On-Site Sewage Disposal Systems and Education Outreach for St. Tammany Parish
- Public Outreach for NPS Pollution in the Lake Pontchartrain Basin
- Modeling and Monitoring of NPS Pollutants in the Tickfaw and Blind Rivers
- Eastern Florida Parishes Water Quality and Grazing Land Management 39 Demonstration Project

Mitigating NPS Pollution in Urban Watersheds with Spatial Modeling, BMPs and Community Outreach

EBRP is a roughly rectangular area bounded on three sides by natural waterways. The Mississippi River defines the western boundary and receives drainage from the northwestern part of the parish and downtown Baton Rouge. Bayou Manchac, a former Mississippi River distributary marks the southern limit, and receives water from the most rapidly developing areas south of the central business district and LSU. Most runoff generated in EBRP, including that flowing into Bayou Manchac and the Comite River ultimately ends up in the north to south flowing Amite River that defines the eastern border. The northern boundary, in contrast to all of the others, is drawn along a latitudinal line (roughly 30.7° north latitude) that is not defined by a drainage feature. The parish covers 455.7 square miles (292,000 acres) and is home to about 400,000 people. The first year of this grant has been completed. An action taken by EBRP during year one has significantly enhanced the likelihood of success in meeting project goals. It has also resulted in an important shift in focus for the LSU research team with the establishment of the Wetlands Steering Committee. The mission of the Wetlands Steering Committee is “to support the efforts of the EBRP Wetlands Program by promoting community understanding and awareness, and facilitating resources to mitigate nonpoint source pollution for the purpose of improving wetlands conditions and functionality in EBRP”.



LSU have collected all available digital data for EBRP that might be useful to connect development, hydrology, wetlands and, ultimately, water quality. Where possible, the 5 m LiDAR digital elevation model (DEM) commissioned by the Louisiana Oil Spill Commissioner's Office (LOSCO) as the GIS base (www.atlas.lsu.edu). First, this is the most recent high-resolution elevation information available. Second, it includes many built hydrologic barriers that do not show up in typical 30 m USGS DEMs. Third, the utility of the data is improved for hydrologic

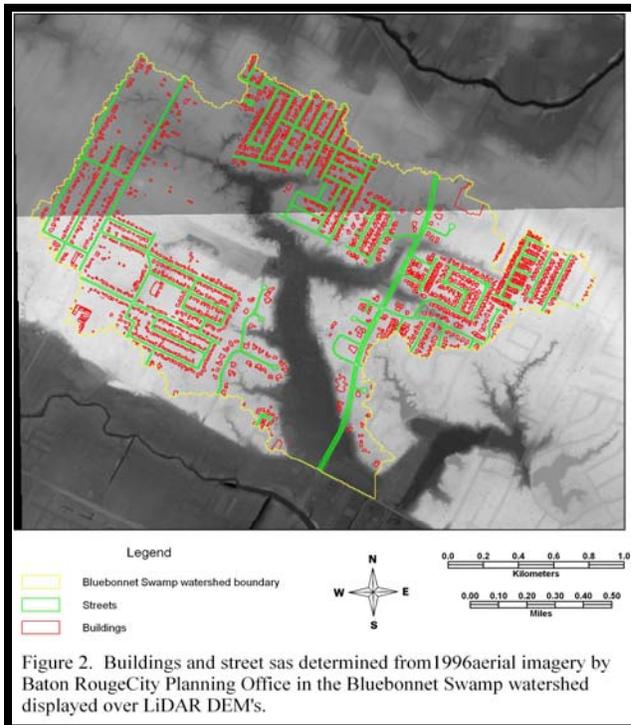


Figure 2. Buildings and street sas determined from 1996 aerial imagery by Baton Rouge City Planning Office in the Bluebonnet Swamp watershed displayed over LiDAR DEM's.

analyses because LiDAR DEM protocol calls for digital removal of bridge decks. A variety of software was used to generate project watersheds from the 5 m LiDAR DEM within the LDEQ subsegment/terrace regions. Watershed Modeling System (WMS, v 7.0), a product of the Brigham Young University Environmental Modeling Laboratory (www.emrl.byu.edu/wms), was used to generate the drainage network necessary to service areas as small as 10 acres. Global Mapper software (v. 6.0) was used to impose the terraces (www.globalmapper.com). Intergraph Geomedia Grid (v. 5.2) was used iteratively to create watersheds accumulating from different drainage areas until a match was reached to the boundaries developed in WMS

(www.imgs.intergraph.com/geomedia).

The watersheds created were exported to feature classes, and then converted to shape files and coverages. Viewpoint (v. 703)

developed by Delta Data Systems (www.deltadatasytems.com) was then used to overlay these shape files on the LiDAR data. Information about the size of polygons within the Manchac Alluvium and Terrace 1 was collected and sample watersheds were extracted from each. A number of locations were visited to determine suitability and eight were established in July, August and September, 2004, and are producing data. Ultimately, the LSU research team expects to expand this network to 12 monitoring sites. Two sites that drain to the Mississippi River on the campus of Southern University have been prioritized for installation early in 2005, and will be maintained with assistance from professors in urban forestry at the Southern University Agricultural Research & Extension Center.

The Mandeville Neighborwoods Project

St. Tammany Parish, located along the north shores of Lake Pontchartrain, is in the midst of an unprecedented residential building boom. The area continues to lure people to its natural and pristine landscape in search of a better quality of life. In 2003, the parish reported 2,457 new homes, and as of November 2004 new housing totaled 2,577, an increase of five percent. That's 5,000 new homes in two years. In anticipation of water quality impacts in the Lake Pontchartrain Basin due to increasing NPS loadings occurring from new residential and urban developments, LDEQ partnered with the City of Mandeville to set aside a 22 acre high-quality natural area of undeveloped land located directly on the north shores of Lake Pontchartrain, in perpetuity.

The project began in November 2004. LDEQ will utilize the site to demonstrate how "green space" can be used to manage NPS storm water runoff from residential and urban areas while also functioning for local flood control, provide passive recreation, wildlife viewing

opportunities, NPS education and activities. The *Mandeville Neighborwoods* site is already covered with bottomland hardwoods and pines, but will also be enhanced with various other indigenous plants, aquatic vegetation, and natural hydrologic features. Various “wetland theme gardens” that are known to function as micro-detention areas, will be showcased throughout the site. A walking path will traverse throughout the site and allow people to view interpretive signage provided for each different type “wetland theme garden”. *Mandeville Neighborwoods* will be open for public use. LDEQ anticipates the people who visit the park will get a “natural-feel” from the area and become educated about innovative and cost-effective BMPs they could easily incorporate into their new or existing residential home site.

An additional component of the *Mandeville Neighborwoods* project site is to redirect and capture the local storm water runoff occurring from adjacent residential subdivisions to encourage natural filtering and infiltration before entering Lake Pontchartrain. Presently, this runoff drains directly into Lake Pontchartrain. Treatment effectiveness at the site will be measured by monitoring water quality, water levels, and vegetation productivity. Quality control of all monitoring at the site will be in accordance with an LDEQ/EPA approved quality assurance project plan (QAPP). A project steering committee was held in January 2005. Coursework for the QAPP has begun, a site engineering and survey map prepared, educational course work planned, landscape architectural plans began, and a project website planned.

The *Mandeville Neighborwoods* project site is located within the State’s Watershed Subsegment 040803. The area encompasses the *Lower Tchefuncte River from LA Hwy 22 to Lake Pontchartrain*. It is described as an “estuarine” environment. The project site drains into an unnamed drainage ditch, which drains into Bayou Chinchuba, and into the Tchefuncte River near its mouth, thence into Lake Pontchartrain. The State’s 2000 303 (d) List of “impaired” water bodies indicates the designated uses for subsegment 040803 are not being met. LDEQ anticipates this project will provide NPS load reductions currently occurring from the adjacent residential subdivision. Additionally by preserving the 22 acre site in perpetuity there should be no future degradation and NPS loading from this site despite increased demands for new residential and urban development.

The goal is to encourage spreading of runoff waters to traverse occasionally flooded bottomlands and more frequently flooded wetlands in relatively shallow, slow moving flows. This maximizes contact with the vegetated perimeter, while maintaining a high degree of aeration to encourage denitrification. These lands would eventually be placed in a



conservation easement that would limit development, but could in some places be used for enhancement of recreation opportunities.

St. Tammany Parish Tchefuncte and Bogue Falaya Watershed Implementation Project

St. Tammany Parish covers approximately 720,000 acres and lies within two water quality management basins, the Pearl River Management Basin and the Pontchartrain Management basin. These two management basins have been further divided into 36 sub-basins, each of which has been given unique identification codes.

The Bogue Falaya and the Tchefuncte rivers are included in the Louisiana Natural and Scenic River System. The section of the Bogue Falaya included in the Scenic Rivers System extends from the headwaters to Louisiana Highway 437 just to the north west of Covington. The included sections of the Tchefuncte River are from its headwaters to the confluence with the Bogue Falaya, and then from the Bogue Falaya to Louisiana Highway 22. Inclusion in the Louisiana Natural and Scenic Rivers System influences the designated uses of a river. As well as primary and secondary contact recreation and propagation of fish and wildlife designated uses, these rivers have an outstanding natural resource waters designation. The designated uses of a river determine its pollutant criteria for chlorides, sulfates, dissolved oxygen, bacteria and total dissolved solids. Restrictions apply to rivers in the Natural and Scenic Rivers System.

Within the parish, a data gap exists for the Tchefuncte River and Bogue Falaya River watersheds, upstream of Lake Pontchartrain. The assessment of these developing watersheds is essential for correctly identifying appropriate watershed management strategies and Best Management Practices (BMPs) that will allow for the improvement of water quality throughout the entire parish.

CH2M HILL Staff has had meetings with St. Tammany Parish staff and technical experts, Mr. Jim Cruise/University of Alabama-Huntsville and Dr. Donald Barbe/University of New Orleans to discuss delineation of the watershed areas, surveying requirements for modeling, and types of models needed for characterization of the watershed. CH2M HILL staff has met with University of New Orleans staff and been conducting searches of existing data. GIS information has been gathered with support and cooperation of St. Tammany Parish staff. Hydrologic Unit Codes (HUCs) associated with the watershed including sub-segments have been gathered.

A technical memorandum summarizing existing data and gaps will be submitted at the completion of the task. Based on the data gaps, the location of sampling site(s) for water quality testing will be determined at which point an appropriate Quality Assurance Project Plan (QAPP) will be submitted for approval. Review of potential sites and locations for sampling has begun. A site visit to the entire project area has been conducted by CH2M HILL staff and with St. Tammany technical experts to observe watershed conditions and review potential locations.

St. Tammany Parish Watershed Coordinator

An on-site inspection program for residential and commercial development relative to storm water management has been developed in St. Tammany Parish.

A basic inspection document was developed for use by the watershed coordinator/inspector. This document was gleaned from existing regulations and guidelines relative to sediment control, placement of fill material in critical drainage areas and development of best management practices for residential and commercial construction within the established coastal zone management area.

A watershed coordinator has been hired and inspections of residential and commercial development have begun. The coordinator is utilizing the basic inspection document when conducting plan reviews and field inspections.

The coordinator reviews design summary packages submitted by developers and builders of commercial and residential properties to ensure required sediment control measures discussed above are met.

The coordinator also conducts field inspections to ensure that submitted plans for sediment control are implemented on-site. Post inspection, the coordinator sends a letter to the builder detailing any insufficiencies and, if necessary, takes appropriate enforcement action if sediment control measures are not properly followed.

Nonpoint Source Pollution Abatement Program through the Inspection of Existing On-site Sewage Disposal Systems and Educational Outreach for St. Tammany Parish

Inspectors have been hired and empowered by local ordinance (St. Tammany Parish) to verify proper function of an existing on-site sewage disposal system for all residences in the parish. Inspections are now required prior to the issuance of a Certificate of Occupancy and/or connection (transfer) of electrical power service.

Two full time inspectors are employed by St. Tammany Parish government and in the field conducting inspections. During 2004 the inspectors conducted approximately 2,100 inspections. 1,797 permits were issued and 390 new systems were required to be installed.



Small Lift Station That Pumped Sewage into the Woods



New Mechanical Plant that was Installed to Replace the Lift Station

Inspections may be conducted for general maintenance issues (i.e.: repairs) as well as for system installation. It is common for an inspector to return two or three times for separate inspections when a new system is installed. (The parish would only charge for one inspection.) Follow-up inspections are conducted to insure the system is properly installed. Large facilities such as trailer parks and apartment complexes are also inspected. These may require ten to twenty inspection visits because of the complex issues present. Sometimes the parish will require a whole new treatment plant for these large facilities.

The Parish project team attends meetings of homeowners and business groups to provide educational outreach and discuss the Parish laws regarding on-site wastewater treatment systems. The project team also works with the City of Mandeville at their education center, which is on-site at the City's wastewater treatment plant. Here the team provides instruction on the workings of individual wastewater treatment systems, their operation and maintenance, in relation to community systems.

Presently being developed is a financial assistance program for qualified needy residents. This will be a needs-based program. It is hoped that it will be initiated in 2005. When inspectors first visited the site in Slidell, the trailer park had a small lift station that pumped the raw sewage into the woods. This "treatment" had been in use for over 20 years. Because of the St. Tammany Parish sewage inspection program, a new mechanical plant has been installed.

Public Outreach Program for NPS Pollution in the Lake Pontchartrain Basin

This project involves demonstration projects at three sites: one each in Orleans, Jefferson and East Baton Rouge Parishes. Each site will educate the public about residential BMPs. Construction is already underway at the Louisiana House on the LSU campus (East Baton Rouge Parish). A cistern has been donated for rainwater collection. A pond is collecting runoff from the site. A landscape plan is under development.



Site where Permeable Pavement is Planned

Tentative public sites have been identified for the demonstration projects in Jefferson and Orleans Parish. Lafreniere Park, in Jefferson Parish, is a large community park with ball fields and a walking track. Permeable pavement, filter strips, gutters are planned for an area near and adjacent to the administration building.

Workmen regularly travel this stretch of Lafreniere Park in heavy vehicles. Permeable pavement is proposed, to spare the turf while still allowing water to infiltrate.

In Orleans Parish, the City Park Botanical Gardens may have a few sites where demonstration projects will be implemented. A rain garden with permeable pavers is planned for the Plano Garden area.

Modeling and Monitoring of Nonpoint Source Pollutants in the Tickfaw and Blind Rivers

Delineation of the Blind and Tickfaw River watersheds has been done. LIDAR data, DEM data, USGS 1:24,000 scanned topographic maps, National Hydrograph Dataset (NHD) and DOQQ images have all been used to help with delineation.

The contractor has decided to use the HSPF model instead of SWAT for this project. The HSPF model has been created from the delineation of the Tickfaw River. It has been executed both with

and without modifications for the hydrology and hydraulic parameters. Calibration is now underway for the Tickfaw River. The model based upon the Blind River delineation was executed but calibration is still pending.

Eastern Florida Parishes Water Quality and Grazing Land Management 319 Demonstration Project

During this year, the Project has had tremendous success. A total of one hundred and four (104) livestock Producers have developed Resource Management Systems or Conservation Plans on their farms and ranches throughout the Eastern Florida Parishes Project Area (Pearl River and Lake Pontchartrain Basins). Conservation plans that address natural resource concerns specific to the farm have been developed on 4,257 acres this past year, for a current project total of 9,964 acres. Best Management Practices; such as Prescribed Grazing, Nutrient Management, Pest Management, and Pasture and Hayland Planting were implemented on thirty four (34) farms and ranches this past year; for a current project total of 61 conservation plans implemented.

Prescribed grazing is the controlled harvest of vegetation with grazing animals, managed with the intent to maintain or improve water quality and to reduce soil erosion and improve soil condition for sustainability of the resource. Facilities and structures, such as fences, watering facilities, and pipelines, are often needed to effectively achieve prescribed grazing. This project has helped fund and install 145,308 feet of fencing, 34,389 feet of pipeline, and constructed 44 watering facilities for a grand total of 2,285 acres of Prescribed Grazing Management implemented.

This project has also implemented nutrient management on 2,426 acres and pest management on 2,242 acres. Nutrient management implementation is achieved when nutrients are applied to a particular land unit or farm based on recommendations from Louisiana State University for production of a specific crop, or based on a nutrient cycle that is developed using nutrient inputs and nutrient removal rates from the grazing system. Pest management is the use of environmentally sensitive prevention, avoidance, monitoring, and suppression strategies to manage weeds and insects. Pest management is applied as part of a resource management system to enhance the quantity and quality of farm commodities and to minimize the impacts of pest control on soil resources, water resources, air resources, plant resources, and/or humans. NRCS's Windows Pesticide Screening Tool (WIN-PST) is used evaluate soil/pesticide interactions.



Practices Implemented with Farm Bill Programs in the Lake Pontchartrain Basin

Practices	Planned	Applied
Access Road (feet)	115	3000
Brush Management	794	202
Conservation Cover	940	660
Conservation Crop Rotation (acres)	4237	268
Contour Farming (acres)	71	
Cover Crop (acres)	100	100
Critical Area Planting	116	18
Fencing (feet)	208,446	63,517
Field Borders (feet)	950	
Filter Strip (feet)	15,580	3
Firebreak	7	4
Fish Passage	15,000	
Fishpond Management	4	1
Forest Management (acre)	4199	2739
Grade Stabilization (no.)	6	1
Heavy Use Protection	137	11
Irrigation Water Conveyance	7440	2405
Nutrient Management (acre)	9213	2419
Pasture and Hayland Planting (acre)	877	196
Pest Management (acre)	9735	1602
Pipeline (feet)	45,900	4584
Planned Grazing (acre)	7,100	
Pond	50	8
Prescribed Burning	212	279
Prescribed Grazing (acre)	7272	5943
Residue Management (acre)	4579	651
Riparian Forest Buffer	79	27
Streambank/Shoreline Protection	100,200	3194
Structure for Water Control	2	2
Tree/Shrub Establishment (acre)	1361	1202
Upland Wildlife Habitat Management (acre)	3009	3208
Use Exclusion (no)	1363	1236
Waste Utilization	292	349
Water Well	13	8
Watering Facility	77	20
Wetland Enhancement	23,431	16,150
Wetland Wildlife Habitat	23,481	17,511

Appendix A

(Table of BMPs Planned and Applied Through the USDA Farm Bill in 2004)

Parishes	Cropland Conservation Plans (acres)	Grazing Land Plans Written (acres)	Grazing Land Plans Applied (acres)	Forest Stand Improvement (acres)	CNMPs Written (no)	CNMPs Applied (no)	CNMPs Applied (acres)	Wetlands Restored/ Created (acres)
Acadia	7083	205	165					
Allen	3775	570	1471	20				
Ascension	5332	226	719					
Assumption	6263		29					
Avoyelles	3858	3556	229	1043				291
Beauregard	2893	3032	1990	523				
Bienville	40	978	435		2	3	55	221
Bossier	30	1135	661	390				504
Caddo	693	936	1197	144				
Calcasieu	3973	3415	1990					54
Caldwell	447	213	115	436				1530
Cameron	1416	1909	434					439
Catahoula	3009	218	228	1745				
Claiborne	65	2339	1193		8	3	98	3238
Concordia	1417	648	1009	3266				
DeSoto	470	4044	1573	120	1			
East Baton Rouge Parish	173	729	590	232				
East Carroll	7105			1797				
East Feliciana	542	247	1137	338				
Evangeline	5244	1178	680	682				
Franklin	9776	1758	422	2844				
Grant	955	904	380	1401				1740
Iberia	2754	647	112	68				111
Iberville	6702	427	443					
Jackson		408	275					
Jefferson								
Jefferson Davis	20,763	1772	701	58				
LaSalle		240	165	260				23
Lafayette	1630	1161	382					
Lafourche	670	2988	2658					
Lincoln		947	344					
Livingston	63	232	185	641				
Madison	3751	129	89	3009				2834
Morehouse	5929	85	1024	540				
Natchitoches	1619	3064	3569	2091				1242
Orleans		317						
Ouachita	2371	375	303	473				327
Plaquemines		44						
Pointe Coupee	4579	2057	2250	367				393
Rapides	1391	755	1106	603				249
Red River	506	4440	2144	749				468

Parishes	Cropland Conservation Plans (acres)	Grazing Land Plans Written (acres)	Grazing Land Plans Applied (acres)	Forest Stand Improvement (acres)	CNMPs Written (no)	CNMPs Applied (no)	CNMPs Applied (acres)	Wetlands Restored/ Created (acres)
Richland	5349	3127	915	1616				254
Sabine		1363	1254	1666				
St. John the Baptist		697	697					
St. Bernard								
St. Charles		438						
St. Helena	21	1621	996	46				
St. James	3608		59					328
St. Landry	5946	1902	1302	562				
St. Martin	1637	110	42					
St. Mary	1845	613	613					
St. Tammany	9	1182	30					
Tangipahoa	490	2001	980	369				
Tensas	2799	458		3497				2376
Terrebonne	331	4						
Union		910	288	56				
Vermilion	5982	5982	4174					
Vernon		1428	673	87				
Washington	470	1563	1186	604				
Webster	94	1313	1222					
West Baton Rouge	1447	18	459					68
West Carroll	9407	3998	1508	4102				
West Feliciana	201	145	1279	227				
Winn		184	114	2				