

**FOURTH FIVE-YEAR REVIEW REPORT**



**BAYOU SORREL SITE  
IBERVILLE PARISH, LOUISIANA**

Performed by:


U.S. Environmental Protection Agency  
Region 6  
Dallas, Texas

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EPA SUPERFUND DIVISION CONCURRENCE PAGE  
FOURTH FIVE-YEAR REVIEW REPORT - BAYOU SORREL SITE  
IBERVILLE PARISH, LOUISIANA  
EPA ID No. LAD980745541

  
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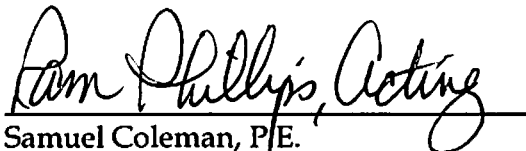
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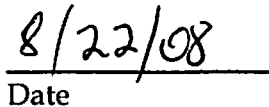
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**COMPREHENSIVE PROTECTIVENESS STATEMENT**  
(as required by OSWER Directive No. 9355.7-03B-P, June 2001)

I have determined that the remedial actions at the Bayou Sorrel Site are protective of human health and the environment and therefore the site is protective of human health and the environment.



Samuel Coleman, P/E.  
U.S. Environmental Protection Agency, Region 6  
Director, Superfund Division



Date

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## *LIST OF ACRONYMS*

ATSDR	Agency for Toxic Substances and Disease Registry
ARAR	Applicable or Relevant and Appropriate Requirement
BSSC	Bayou Sorrel Steering Committee
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
EPA	United States Environmental Protection Agency
EPAC	Environmental Purification Advancement Corporation
ERM	Environmental Resources Management
GWSP	Ground Water Statistics Plan
LDEQ	Louisiana Department of Environmental Quality
LOPH	Louisiana Office of Public Health
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
NCP	National Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
OSWER	Office of Solid Waste and Emergency Response
OU	Operable, or Operating, Unit
PCY	Post-Construction Year
PRP	Potentially Responsible Party
QAPP	Quality Assurance Project Plan
RA	Remedial Action
RAO	Remedial Action Objective
RCD	Remedial Concept Design
RCRA	Resource Conservation and Recovery Act
RD	Remedial Concept Design
RI/FS	Remedial Investigation/Feasibility Study

***LIST OF ACRONYMS (CONTINUED)***

ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
SDWA	Safe Drinking Water Act
SOW	Statement of Work
USGS	United States Geological Survey
VOC	Volatile Organic Compound

## *EXECUTIVE SUMMARY*

This document presents a summary of the Fourth Five-Year Review for the Bayou Sorrel Site (the Site) located in Iberville Parish, Louisiana. This review was conducted pursuant to Section 121 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA); Section 300.430(f)(4)(ii) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP); and the Office of Solid Waste and Emergency Response (OSWER) Directive No. 9355.7-03B-P, June 2001. The trigger for this review was the Third Five-Year Review signed on September 11, 2003.

This Fourth Five-Year Review is organized to provide background information, including site location and description, site hydrogeology, and site history; and an evaluation of remedial goals/objectives, applicable or relevant and appropriate requirements (ARARs) and land/resource use.

The Record of Decision (ROD) for the Site, signed on November 14, 1986, required the construction of a slurry wall/clay cap containment system and an extensive post-construction ground water monitoring program. The ground water monitoring program was initiated to monitor the remedy's ability to contain the wastes and mitigate the potential for future migration of site constituents into the ground water.

Based on a review of site conditions and data generated from October 16, 1990, to May 31, 2008, the United States Environmental Protection Agency (EPA) concludes that the Site poses no significant threat to public health, welfare, or the environment and, therefore, further remedial measures pursuant to CERCLA are no longer appropriate. Post-construction (of the final remedy) Operation and Maintenance (O&M) activities will continue to be performed in accordance with the requirements of the O&M Plan dated December 14, 1988. Because the remedial actions at the site are protective of human health and the environment, the site is protective of human health and the environment.



FOURTH FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site name: Bayou Sorrel Site		
EPA ID: EPA ID No. LAD980745541		
Region: 6	State: LA	County: Iberville Parish
SITE STATUS		
NPL status: <input type="checkbox"/> Final <input checked="" type="checkbox"/> Deleted <input type="checkbox"/> Other (specify)		
Remediation status (choose all that apply): <input type="checkbox"/> Under Construction <input type="checkbox"/> Operating <input checked="" type="checkbox"/> Complete		
Multiple OUs?* <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	Construction completion date: <u>8</u> / <u>28</u> / <u>1988</u>	
Has site been put into reuse? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
REVIEW STATUS		
Lead agency: <input checked="" type="checkbox"/> EPA <input type="checkbox"/> State <input type="checkbox"/> Tribe <input type="checkbox"/> Other Federal Agency		
Author name: Laura Stankosky		
Author title: Remedial Project Manager	Author affiliation U.S. EPA	
Review period:** June 1, 2003 to May 31, 2008		
Date(s) of site inspection: March 28, 2008		
Type of review: <div style="text-align: right; margin-top: 5px;"> <input checked="" type="checkbox"/> Post-SARA   <input type="checkbox"/> Pre-SARA   <input type="checkbox"/> NPL-Removal only  <input type="checkbox"/> Non-NPL Remedial Action Site   <input type="checkbox"/> NPL State/Tribe-lead  <input type="checkbox"/> Regional Discretion)         </div>		
Review number: <input type="checkbox"/> 1 (first) <input type="checkbox"/> 2 (second) <input type="checkbox"/> 3 (third) <input checked="" type="checkbox"/> 4 (fourth) <input type="checkbox"/> Other (specify)		
Triggering action: <input type="checkbox"/> Actual RA Onsite Construction at OU # ___ <input type="checkbox"/> Actual RA Start at OU# <u>NA</u> <input type="checkbox"/> Construction Completion <input checked="" type="checkbox"/> Previous Five-Year Review Report <input checked="" type="checkbox"/> Other (specify) OSWER Directive No. 9355.7-03B-P, June 2001		
Triggering action date: September 11, 2003		
Due date (five years after triggering action date): September 11, 2008		

\* ["OU" refers to operable unit.]

\*\* [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

*FOURTH FIVE-YEAR REVIEW SUMMARY FORM (CONTINUED)*

**ISSUES**

No major issues were noted during the review.

**RECOMMENDATIONS AND FOLLOW-UP ACTIONS**

Based on a review of the site conditions and data generated from June 1, 2003 to May 31, 2008 the Bayou Sorrel Steering Committee (BSSC) plans to continue post-construction (of the final remedy) operation and maintenance activities at the Site in accordance with the requirements of the Operation and Maintenance Plan. The BSSC will continue to monitor ground water in accordance with the Sampling and Analysis Plan(s) (S&A Plan(s)), assimilate data from each well to continue building the database for the statistical analysis in accordance with the Ground Water Statistics Plan (GWSP), and conduct engineering specifications of the Site pursuant to the O&M Plan. No additional remedial actions are necessary since the remedial action implemented at this Site remains protective of human health and the environment.

**PROTECTIVE STATEMENT(S)**

The remedy selected for the Bayou Sorrel Site remains protective of human health and the environment.

**LONG-TERM PROTECTIVENESS**

The BSSC will continue to monitor ground water in accordance with the S&A Plan(s), assimilate data from each well to continue building the database for the statistical analysis in accordance with the GWSP, and conduct engineering inspections of the Site pursuant to the O&M Plan.

**OTHER COMMENTS**

None.

## I. INTRODUCTION

The purpose of this Fourth Five-Year Review is to evaluate the continued effectiveness of the Remedial Action (RA) subsequent to completion of the third Five-Year Review and to assess whether the RA remains protective of both human health and the environment. The methods, findings, and conclusions are documented in this Five-Year Review report

This Five-Year Review was conducted pursuant to Section 121 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA); Section 300.430(f)(4)(ii) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP); and the Office of Solid Waste and Emergency Response (OSWER) Directive No. 9355.7-03B-P, June 2001.

The Agency is preparing this Five-Year Review report pursuant to CERCLA §121 and the National Contingency Plan (NCP). CERCLA §121 states:

*If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

The Agency interpreted this requirement further in the NCP; 40 CFR §300.430(f)(4)(ii) states:

*If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

Although the EPA generally conducts five-year reviews, EPA Region 6 offered the Bayou Sorrel Steering Committee (BSSC) the opportunity to participate in the Fourth Five-Year Review at this Site. Environmental Resources Management (ERM) was part of the team that conducted this Fourth Five-Year Review of the site on behalf of the BSSC. The EPA conducted the site inspection for the Fourth Five-Year Review assisted by the Louisiana Department of Environmental Quality (LDEQ) and ERM. The EPA also conducted information gathering through interviews with the ERM project manager, the LDEQ project manager, local official, and local resident and business owner. Representatives from ERM and the BSSC attended a project scoping meeting with the EPA Remedial Project Manager on October 31, 2007 in Dallas, Texas to finalize the Draft Statement of Work (SOW). On November 5, 2007, the BSSC submitted the final SOW for performance of work for the Fourth Five-Year Review that incorporated revisions to the document based on the outcome of the aforementioned meeting. A draft Fourth Five-Year Review was sent to the EPA in May 2008.

This review is a statutory review conducted five years after completion of the third Five-Year Review, dated September 2003. The five-year review is required due to the fact that hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure.

II. *SITE CHRONOLOGY*

**Table 1: Chronology of Site Events**

Event	Date
Initial discovery of problem or contamination	12/8/1978
Pre-NPL responses	N/A
NPL listing	9/21/1984
Removal assessments - (no removal action necessary)	7/3/1990 & 12/22/1992
Remedial Investigation/Feasibility Study complete	11/27/1985 & 1/31/1986
ROD signature	11/14/1986
ROD Amendments or ESDs	N/A
Enforcement documents (CD, AOC, Unilateral Administrative Order)	7/26/1989 & 8/5/1988
Remedial design start	9/30/1987
Remedial design complete	1/4/1989
Superfund State Contract, Cooperative Agreement, or Federal Facility Agreement signature	CA - 7/29/1997
Actual remedial action start	7/11/1988
Construction start date	10/1/1988
Construction completion date	9/30/1990
Final Close-out Report	5/26/1992
Deletion from NPL	9/29/1997
Previous five-year reviews	9/30/1993, 9/22/1998 & 9/11/2003

### **III. BACKGROUND**

#### **A. PHYSICAL CHARACTERISTICS**

As shown in Figure 1, the Site is located in Iberville Parish, Louisiana, approximately 20 miles southwest of Baton Rouge (not shown on the figure), and about six miles northwest of the town of Bayou Sorrel. The western border of the Site is bound by the Borrow River, a man-made drainage feature. This river was formed during the construction of the Atchafalaya Basin Protection Levee, which is located approximately 100 yards to the west. The north and east sides of the Site are bordered by the Upper Grand River and Pats Bayou, respectively. Undeveloped swamp land is adjacent to the Site to the south. Access to the Site from the north is along an unpaved levee road, 17 miles south of its intersection with Interstate 10 in Ramah, Louisiana. Access to the Site from the south is along the same unpaved levee road, and is approximately six miles north of the town of Bayou Sorrel.

The Bayou Sorrel site is a "T" shaped, relatively flat parcel of land encompassing about 265 acres. Approximately 50 of the 265 acres were actually used for waste disposal. The waste disposal areas consisted of four landfills including a spent lime cell and a crushed drum cell, four covered liquid waste ponds, and one land farm. A 50 acre lake and a one acre pond, probably former borrow pits, are situated along the north border of the site. Outside of the North and South area caps, dense brush and trees generally cover the site. The site (particularly the south end) and surrounding areas can best be described as having marshy bayou-type environment and are prone to periodic flooding and poor drainage.

#### **B. SITE HYDROGEOLOGY**

On a regional scale, the first aquifer of significance is the Plaquemine aquifer, which is expected to be present at a depth of about 100 to 125 feet beneath the ground surface at the Site. The total thickness of the Plaquemine aquifer in this area is about 600 feet which, in the vicinity of the Site, consists of sand and gravel with a few, thin, lenticular interbeds of silt and clay. The Plaquemine aquifer is confined, with the clays and silts of the overlying top stratum (100 to 125 feet thick) comprising the upper confining unit.

The direction of ground water flow within the Plaquemine aquifer will vary on a seasonal basis as a result of recharge from or discharge to the Mississippi River. This is due to the subsurface hydraulic connection between the Mississippi River and the uppermost section of the Plaquemine aquifer in several areas where the river has completely cut through the clay and silt deposits of the top stratum. Additional hydraulic connections between the river and the aquifer are provided by the sandy point-bar deposits, which occur in the immediate vicinity of the river.

Although ground water is present within the clays and silts of the top stratum, which immediately underlie the Site, this shallow saturated zone is not considered a potential source for domestic use because of the low available yield and poor regional ground water quality. The shallow saturated zone is not useable as a drinking water supply due to its low transmissivity (the clay and

silty deposits of the top stratum are typically in the range of  $10^{-6}$  to  $10^{-8}$  cm/sec) and its inability to satisfy primary or secondary drinking water standards (analytical results have consistently reported concentrations of chloride and sulfate in excess of these standards). Furthermore, there are no known users or potential users of shallow ground water proximal to the Site.

Ground water in the shallow saturated zone is analyzed in accordance with the requirements of the Sampling and Analysis (S&A) Plan and is the only relatively transmissive zone above the Plaquemine aquifer. Results of the analyses of ground water from this zone, reported from the fourth quarter of Post-Construction Year (PCY) 2 through PCY 17, are summarized in Section VI. D. of this review and listed in Appendix D. Monitor well and staff gauge locations used to define shallow ground water flow directions and gradients (within the shallow saturated zone) across the North and South Area Caps are provided in Appendix A, Figures 2 and 3, respectively, and shallow ground water flow directions proximal to the North and South Area Caps are depicted in Appendix A, Figures 4 and 5, respectively. In general, shallow ground water flow direction in the vicinity of each cap is radial, away from the caps.

Due to the relatively large distance, approximately 13 miles, between the Site and the Mississippi River (Appendix A, Figure 1), the effects of seasonal fluctuations in river stage on the shallow saturated zone are not believed to be significant. This is due to the very low gradient in this area, which results in a very slow rate of ground water movement through this zone. Constant fluctuations of the Mississippi River stage affect the water table in the area of the Site, but only to a minor extent.

Surface gradients and the presence of a high density polyethylene geomembrane liner on each cap significantly reduce the potential for migration of storm water through the cap and promote sheet flow into perimeter drainage swales designed to accommodate runoff from rainfall events. The swales discharge directly (via culverts installed beneath the Site access roads) into the North and South Runoff Ponds illustrated on Figures 2 through 5 of Appendix A.

### **C. LAND AND RESOURCE USE**

The site began operation as a hazardous waste landfill operated by the Environmental Purification Advancement Cooperation (EPAC) in early 1977. Approximately 50 of the 265 acres were actually used for waste disposal. Wastes were disposed in two sludge pits, four liquid waste ponds, two drum burial cells (one crushed drum/one filled drum), and one landfarm area. The facility has been closed since the summer of 1978.

A Servitude Agreement and Declaration of Restriction for the site exists between the landowners and the BSSC that severely restricts unauthorized access and use of the site and surrounding property. Currently, no persons other than the BSSC representatives/contractors and authorized EPA and LDEQ officials are allowed access to the Site without permission and the Site is not currently being utilized for any purposes other than activities associated with ongoing, post-construction O&M monitoring. No future land uses (other than post-construction O&M

monitoring) are anticipated by the BSSC at this time. Site institutional controls are discussed more fully in Section IV, A. & B. of this review.

The following information is based on data from the 2000 United States Census. Approximately 33,320 people live in Iberville Parish, Louisiana; although no one lives on the Superfund site or directly adjacent to it. There are approximately 30 seasonal fishing camps located across the Upper Grand River from the North Area Cap. The Borrow River lies between the site and the Atchafalaya River Basin levee. The population of the City of Plaquemine, which lies 13 miles to the northeast of the site, is 7,064. The town of Bayou Sorrel is six miles south of the site and due north of the Bayou Sorrel waterway. Approximately 1,000 residents live along the bayou and within the town of Bayou Sorrel.

Although ground water is present within the clays and silts of the top stratum, which immediately underlies the site, this shallow saturated zone is not considered a potential source for domestic use because of the low available yield and poor regional ground water quality. The shallow saturated zone is not useable as a drinking water supply due to its low transmissivity (the clay and silty deposits of the top stratum are typically in the range of  $10^{-6}$  to  $10^{-8}$  cm/sec) and its inability to satisfy primary or secondary drinking water standards (analytical results have consistently reported concentrations of chloride and sulfate in excess of these standards). Furthermore, there are no known users or potential users of shallow ground water proximal to the site.

#### **D. HISTORY OF CONTAMINATION**

The Bayou Sorrel Site began operation in early 1977. It was operated by Environmental Purification Advancement Corporation (EPAC). A sister firm, Clean Land Air Water (CLAW, Inc. ) operated an injection well approximately six miles south of the site, in the town of Bayou Sorrel.

EPAC operations included land farming, open liquid impoundments, drum burial, and landfilling of "chemically fixated" wastes. The LDEQ officials report that all of these except the open pond were permitted by the State. The fixation process was unknown but may have included lime, cement, and native soils. EPAC was supposedly a separate operation from CLAW. However, court testimony by former employees suggests that wastes were diverted from the injection well to the EPAC site when process problems at the well caused a bottleneck. Therefore, both injection-well waste records and EPAC records were included in summarizing wastes possibly present at the site.

According to records retained by the Potentially Responsible Parties (PRP) Group, the majority of wastes disposed of at the Site fell into three categories:

- Process wastes from chemical manufacture;
- Sulfide-containing wastes (scrubber blowdown and spent caustic) from hydrocarbon processing and exploration activities; and
- Spent wash solutions from boiler-cleaning and equipment-cleaning contractors.



In the summer of 1978, State and Federal regulatory officials inspected the site following an incident occurring at the site. The investigation revealed the presence of large open, unpermitted ponds containing unknown materials. As a result of the governmental investigation, the 18th Judicial District Court ordered the closure of the site to eliminate all health hazards.

#### **E. INITIAL RESPONSE**

The Site was operated by EPAC until the summer of 1978 when it implemented a court-ordered closure of the Site from September 1978 through June 1979. During this closure, conducted under the oversight of the State of Louisiana, the contents of Ponds 1, 2, and 3 (South Area Cap) were reportedly pumped to Pond 4 (North Area Cap) where solids were concentrated by enhancing evaporation and landfarming pond supernatant. These ponds were then filled and covered with soil. Pond 4 was closed by the use of enhanced evaporation within the pond. The remaining Pond 4 contents were then covered with native soils. Sampling activities were performed concurrent with the closure which resulted in the detection in onsite soils of various organic compounds, heavy metals, phenols, oil and grease, asbestos, cyanide, sulfide, and other inorganics.

During the transfer of material to Pond 4 from Ponds 1-3, there may have been some spill-over of material to the periphery of Pond 4. Closure activities were completed in the spring of 1979, and later that year EPA placed the site on inactive status. The quantity of wastes remaining on site was estimated to be 1 million cubic feet (36,400 cubic yards) (Remedial Investigation (RI) report). After closure, the State received complaints about odor and surface contamination in the south of the site. The State contracted Resource Technology, Inc. in 1981 for a preliminary site investigation, and a further Investigation by Woodward-Clyde Consultants was completed in 1982. These studies included installation of a total of 12 groundwater monitoring wells, although only three of these were sampled. Definitive pesticide surface contamination evidence was collected, but ground water data were inconclusive. Based on the aforementioned information, the site was placed on the NPL on December 20, 1982.

Results from the RI sampling indicated that surface and subsurface soil contamination, including herbicides, other organic compounds, and some cadmium compounds, was found in several areas of the site. Most of these areas are located in the former sludge pits and disposal ponds located in two distinct areas of the site: the sludge pit and Ponds 1, 2, and 3 in the South Area Cap and Pond 4 and the crushed drum cell in the North Area Cap. There was estimated to be 1,000,000 cubic feet of contaminated soils in these areas that were deemed to present a current or potential risk if left unmanaged. Some actual waste material (able to liberate hydrogen sulfide) was found in the North Area Cap as well. Unless the soil cover that was placed in the pits in the earlier closure activities was penetrated, no air emissions were detected anywhere during the investigation.

**F. BASIS FOR TAKING ACTION**

Contaminants – Hazardous substances that have been released at the site in each media include:

**Soil**

Arsenic  
Cadmium  
Chromium  
Mercury  
Methylene chloride  
1,1,2-trichloroethylene

**Storm Water & Seeps**

Arsenic  
Mercury  
Benzene  
1,2-dichloroethane  
1,1,2-trichloroethane

**Fish, Shellfish & Wildlife**

Arsenic  
Cadmium  
Chromium  
Lead  
Mercury

**Surface Water & Groundwater**

Arsenic  
Cadmium  
Lead  
Mercury  
Chromium  
1,1-dichloroethylene  
Methylene chloride  
Pentachlorophenol

A December 1985 Endangerment Assessment, prepared by EPA contractors, concluded that the most significant endangerment to human health at the site was direct contact with hazardous wastes at the site. Unrestricted access to the site by hunters, fishermen and petrochemical workers coupled with documented contamination of the soils at the site and evidence of seeps around the waste disposal areas was sufficient to support a finding of potential endangerment to human health from direct contact with contaminants at the site. The potential also existed for both surface and subsurface contaminant migration and subsequent contamination of ground water and surface waters at the site. The potential for surface water contamination of the swamp to the south of the site and other adjacent water bodies (Upper Grand River, Pat Bayou and the Borrow River and Lake) could result from overland flow of contaminated runoff or flood waters from the site and subsurface migration of contaminants from the site into the ground water. Thus, the potential existed for human exposure to contaminants by the ingestion of aquatic life, incidental ingestion or by dermal exposure from these potentially contaminated waters. However, the expected intake of contaminants via these pathways was expected to be minimal, both because of limited exposure to the potentially contaminated areas and limited if migration did occur.

**IV. REMEDIAL ACTION**

**A. REMEDY SELECTION**

The Acting Regional Administrator signed the Record of Decision (ROD) for the Site on November 14, 1986. The overall Remedial Action Objective (RAO) is the protection of public health, welfare, and environment. However, site-specific remedial objectives were established prior to the collection of RI data for the

receptor media identified at the site. The Feasibility Study (FS) developed these objectives that follow:

- Minimize the threat to public health, if any, from use of or contact with onsite surface water bodies, which include the lake and small pond, as well as the back swamp in the wet season. Protect the environmental quality of these water bodies from degradation due to contaminants;
- Minimize the threat to public health from use of or contact with off-site surface water bodies which include the back swamp, the Upper Grand River, Grand River, Pat Bay, and Pat Bayou, and protect the environmental quality of these water bodies from degradation due to contaminants;
- Minimize the threat to public health from direct use of the shallow ground water and protect the quality of the Plaquemine Aquifer and surface water bodies which might receive discharges from the shallow groundwater;
- Minimize adverse effects of present and potential users of the Plaquemine Aquifer from contaminants migrating from the site;
- Isolate contaminated materials from direct contact with surface soils and sediments to minimize migration of contamination;
- Limit the potential for air releases from the site that would have adverse effects on human health and limit onsite concentrations of hydrogen sulfide, cyanide, and other hazardous air pollutants to within OSHA standards.

Based on the data collected, active remediation was required to meet all of the objectives. The objectives served as the basis for the environmental assessment in the remedial alternatives evaluation. By combining the applicable remedial action technologies and considering the pathways of migration in accordance with 40 CFR 300.68(f) 13 remedial alternatives were developed for the Bayou Sorrel Site.

It was determined that controlling the source of contamination, such that ingestion or contact was no longer possible, would reduce the endangerment to human health and the environment. The ROD and subsequent remedial design required the following:

- Regrading of the Site to control runoff thus limiting erosion of the existing soil layers covering the waste areas, limiting surface water ponding, and diverting storm water from waste areas;
- Covering former waste disposal areas with RCRA topsoil/geomembrane/clay caps, regardless of their current condition resulting from the closure activities conducted in 1979;
- Installing a sand/geofabric porewater drainage layer (above the wastes and below the caps) connected to a system of pipes, manholes, pumps, and tanks to collect and store any liquids from this layer;

- Installing a gas venting system in the caps to reduce the accumulation of methane and other gases beneath the caps;
- Consolidating all miscellaneous wastes outside existing covered waste disposal areas under the new caps for grading and fill purposes;
- Installing a slurry wall approximately 30 feet deep (keyed into the underlying natural clay layer found at that depth) around the former landfill area (South Area Cap) and installing a more shallow slurry wall around the former Pond 4 area (North Area Cap);
- Installing fences around all newly capped areas to restrict access to the disposal areas and constructing gravel access roads around the fenced areas to allow continued recreational use of adjacent lands and the borrow lake while diverting traffic around and away from the disposal areas; and
- Installing a ground water monitoring system to monitor the effectiveness of the remedy

While the site Consent Decree (CD) does not require institutional controls, a Servitude Agreement and Declaration of Restriction for the site exists between the landowners and the BSSC that severely restricts unauthorized access and use of the site and surrounding property. The Servitude Agreement dated September 15, 1987, was filed in Iberville Parish in Conveyance Book 417, Entry 204. Additionally, the BSSC has a 99-year lease on the site with property landowners, also dated September 15, 1987, filed in Iberville Parish in Conveyance Book 417, Entry 205. The CD is an exhibit to the lease. This Servitude Agreement instrument, the BSSC's 99-year lease of the property and the site CD limit property access to the BSSC and their contractors, the EPA, and the LDEQ. Additional site access controls are discussed more fully in Section VI, E. of this review.

## **B. REMEDY IMPLEMENTATION**

EPA initiated a fund-lead RI/FS at the site to define the nature and extent of the contamination and to obtain data to develop and analyze remedial alternatives. The EPA conducted the field sampling portion of the RI from March to May 1984, collecting and analyzing soil, sediment, ground water, surface water and biological samples. In March 1985, additional ground water samples were collected and analyzed. The final RI Report was completed in December 1985, and the FS Report was completed in February 1986.

In October 1983, representatives of the PRPs also began remedial investigation activities. This investigation primarily paralleled EPA's; however, coordination between the two studies was maintained to minimize duplication of effort. The PRP conducted RI was completed in November 1984.

Negotiations between EPA and a PRP Steering Committee, through much of 1987, resulted in the signing of a CD, effective March 17, 1988, that required the PRPs to conduct the Remedial Design/Remedial Action and at least 30 years of O&M in accordance with the ROD. The CD contained a SOW that described the necessary tasks to be completed to comply with the objectives of the ROD.

The EPA approved SOW for Remedial Design (RD), submitted by the PRPs on July 15, 1987, outlined the pre-design activities, the design elements, and the deliverables. The final, approved RD was outlined in two separate documents. Remedy construction was planned for the 1989 and 1990 construction seasons after pre-construction site preparation work at the Site, which began in July 1988, was completed.

During the first construction season, April through November of 1989, the following remedial construction activities were completed:

- Slurry walls around the North and South Areas - The trenching, slurry mixing and backfilling were conducted around both former waste areas in accordance with approved specifications. The only deviation from the original plans was in a small portion of the South Area, where slight modifications (approved by EPA) in the slurry wall constructions methods eliminated sloughing problems that occurred due to unusually heavy rains and slightly differing geotechnical conditions that were encountered in that area.
- Porewater Collection System - Construction of the porewater collection trenches, collection lines, geofabric, and storage manholes was completed in accordance with the plans and specifications.
- Clay Caps - Following initial contouring with attic fill, the base clay cap lift (24" thick) was installed at both the North and South areas. The attic fill, clay materials, placement methods, and compaction requirements were all compliant with the plans and specifications. It was initially planned to place a temporary layer of topsoil on this base lift of clay for protection during the off-season. The temporary topsoil layer was deemed unnecessary, however, and not installed because full demobilization did not occur, leaving equipment and manpower available to respond to any erosion problems encountered between the construction seasons.

During the second and last construction season, April through September 1990, the following remedial construction activities were completed:

- Final Clay Lift - The final clay lift of the cap was installed. Clay materials, placement, compaction and preparation of the clay caps were all completed in accordance with the plans and specifications. The caps were prepared as smooth surfaces, free of irregularities (sticks, rocks, etc.), for placement of the overlying geomembrane.
- Gas Venting System, Geomembrane Layer, Sand Layer, Topsoil - Materials and placement of the 30 mil geomembrane, the surface water drainage layer of sand (6" thick), and the topsoil layer (12" - 18" thick.) were conducted at both the North and South Cap Areas in accordance with the plans and specifications. Modifications in the materials and placement of the gas vent system were necessary because the slots in the gas vent pipe were different than originally designed. Because of this minor difference, concerns were raised about the possibility that the overlying geomembrane would cover the

slots and prevent any accumulated gas from entering the pipes. Therefore, the gas vent piping was placed in a pea gravel bed to provide a space between the top of the piping and the geomembrane, which will allow space for gas to enter the piping.

- Porewater Irrigation System - The original plans called for the off-site disposal of porewater generated from the settling of the unconsolidated clays in the caps. At the time of the preparation of the final CD, it was anticipated that porewater, based on its composition, might not be able to be managed onsite. Initial monitoring of this porewater both during and after construction of the caps has shown that it has consistently met State storm water discharge standards; therefore, an alternate, on site irrigation discharge system was proposed by the PRPs and approved by EPA. This system will spray any generated porewater onto the vegetative cover of the cap to provide moisture during dry periods.
- General Engineering - Seeding of the newly covered clay caps, access road construction, and fencing of the site were completed in accordance with the plans and specifications.
- Monitoring Wells - In accordance with the CD, a total of 43 monitoring wells were installed at the site, 15 in the North Area, and 28 in the South Area. The monitoring wells were constructed in accordance with the Remedial Concept Design Addendum to the approved Bayou Sorrel SOW and were approved by EPA and the State.

As required by the CD, the PRPs submitted a draft Remedial Action Report on October 30, 1990. The final RA Report was formally approved on April 16, 1991, after a joint EPA and LDEQ inspection indicated that the requirements for conducting the Remedial Action had been met. This inspection, conducted on March 25 & 26, 1991, was the first Semi-Annual Engineering Inspection required as part Construction O&M Plan.

With the May 26, 1992, Site Close Out Report, EPA and the State determined that all areas of concern described in the NPL listing of the Bayou Sorrel Site had been adequately addressed. The remedial activities specified in the ROD had been implemented. All onsite wastes had been consolidated in an onsite slurry wall/clay cap. Confirmatory sampling verified that the site is protective of human health and the environment across all pathways of exposure. The remedy was operational and functional and performing according to the engineering design. A stringent O&M and ground water monitoring program was established to ensure that protectiveness is maintained in the future. The EPA, in consultation with the State of Louisiana, determined that all appropriate response actions required to ensure the protectiveness of human health and the environment at the Bayou Sorrel Site had been taken and that no further response action was warranted at that time.

### **C. SYSTEM OPERATIONS/OPERATION AND MAINTENANCE**

As stated in the ROD and Site Close Out Report, the selected remedy inhibits the migration of the wastes by providing a barrier to shallow ground water flow in

all directions. The slurry wall keys into the aforementioned clay unit (100 to 125 feet thick), which reduces the potential for lateral migration of the potentially affected materials. The combination of the natural upward gradient existing between the Plaquemine aquifer and shallow saturated zone, and the clay unit underlying the Site, effectively mitigates the potential for the vertical migration of potentially affected materials. The clay cap inhibits infiltration, surface water exposure, and direct contact.

Because wastes were left onsite, the ROD required an extensive O&M program to document that the constructed remedy remained protective of human health and the environment. As a result, the aforementioned O&M Plan, dated December 14, 1988, was developed, which outlined the activities to be implemented subsequent to completion of the remedy. O&M activities will be conducted for a period of 30 years from completion of construction of the remedy, at which time EPA will assess if additional O&M activities are necessary.

O&M activities continue to be conducted in accordance with the O&M Plan. These activities include:

- Weekly site inspections by the Site caretaker;
- Mowing the Site six times per year beginning in late March/early April;
- Inspecting the caps for erosion and other surface damage after significant flooding events;
- Viewing the surface of the caps after mowing for signs of ponding and/or disruption of proper drainage patterns;
- Inspection of cap vegetative cover and re-vegetation to keep cover properly established;
- Inspecting and maintaining the components of the porewater collection and monitor well systems; and
- Amending any significant deficiencies to the Site access roads by regrading or filling with limestone.

The continued presence of the BSSC contractors at the Site enables any potential issues to be addressed quickly and efficiently. The primary feature of the O&M Plan centers on the strict monitoring of the ground water immediately outside the slurry wall/clay cap. Forty-three monitor wells provide a triggering mechanism whereby frequent sampling and analysis of the wells is used to identify any sudden degradation of the quality of the area's ground water before potentially affected materials can migrate offsite.

The other major feature of the O&M Plan is the semi-annual engineering inspections. These inspections focus on the physical features of the clay caps, surface water drainage, porewater collection and irrigation systems, and other physical features of the remedy. Subsequent to each inspection, a report documenting the findings is generated. Any deficient areas are addressed promptly under guidance from the EPA.

Overall the site remains in very good condition with no significant maintenance or operational deficiencies. The presence of several, small burrow holes is noted

periodically (during routine site inspections) beneath and within the limits of the perimeter fence on both caps and fire ant mounds at the base of the gas vents. These burrow holes, presumed to be from armadillos, are filled with on-site borrow soil as part of ongoing maintenance activities. Inspection of the holes within the fence continues to show that the burrowing animals stop digging when they reach the sand layer and do not approach the geomembrane liner.

O&M costs include site inspections and maintenance, annual ground water, storm water, and porewater sampling and analysis, reports, and meetings. Moderate cost increases at the site are due to an increased frequency in the mowing of the area caps, refurbishing the on-site maintenance building, repairing monitoring well pads, and repairing the site access roads and bridge. The O&M costs incurred by the BSSC at the site from October 2002 through September 2007 are presented in Table 2.

**Table 2 - Annual System Operations/O&M Costs**

<b>Dates</b>		<b>Total Costs rounded to nearest \$1,000</b>
<b>From</b>	<b>To</b>	
10/2002	9/2003	\$234,000
10/2003	9/2004	\$246,000
10/2004	9/2005	\$310,000
10/2005	9/2006	\$257,000
10/2006	9/2007	\$245,000

**V. PROGRESS SINCE THE LAST FIVE-YEAR REVIEW**

This is the Fourth Five-Year Review for the Bayou Sorrel Site. Based on a review of the site conditions and data generated from June 1, 2003 through May 31, 2008, the BSSC plans to continue site operation and maintenance in accordance with the requirements of the O&M Plan. No additional remedial actions are necessary since the remedial action implemented at the site remains protective of human health and the environment. The BSSC will continue to monitor the ground water in accordance with the S&A Plan and assimilate data from each well to continue building the database for the statistical analysis in accordance with the GWSP.

**VI. FIVE-YEAR REVIEW PROCESS**

**A. ADMINISTRATIVE COMPONENTS**

Although the EPA generally conducts five-year reviews, EPA Region 6 offered the BSSC the opportunity to participate in the Fourth Five-Year Review at this Site. ERM was part of the team that conducted this Fourth Five-Year Review of the site on behalf of the BSSC. The EPA conducted the site inspection for the Fourth Five-Year Review assisted by the Louisiana Department of Environmental Quality (LDEQ) and ERM. The EPA also conducted information gathering through interviews with the ERM project manager, the LDEQ project manager, local official, and local resident and business owner. Representatives from ERM and the BSSC attended a project scoping meeting with the EPA Remedial Project Manager on October 31, 2007 in Dallas, Texas to finalize the Draft Statement of Work (SOW). On November 5, 2007, the BSSC submitted the



final SOW for performance of work for the Fourth Five-Year Review that incorporated revisions to the document based on the outcome of the aforementioned meeting. A draft Fourth Five-Year Review was sent to EPA in May 2008.

The Bayou Sorrell Five-Year Review Team was led by Laura Stankosky (U.S. EPA - Region 6), Laurie Peacock (LDEQ) and was assisted by the BSSC.

## **B. COMMUNITY INVOLVEMENT**

The EPA and the BSSC have encouraged public participation during the planning, preparation, and performance phases of the remedy selected for the Site. Opportunities for public involvement have included numerous public meetings and comment periods.

As part of the Fourth Five-Year Review, a public notice was published in two local newspapers, the Post South, a weekly newspaper based in Plaquemine, Louisiana on June 26, 2008, and The Advocate, a daily newspaper based in Baton Rouge, Louisiana on June 24, 2008. Proof of publication and copies of the public notices are included in Appendix B. The public notices informed the community that the Fourth Five-Year Review of the Site would be conducted and listed a contact name and telephone number for further information. A period of at least 30 days was allowed to pass prior to finalizing this Fourth Five-Year Review Report. No comments were received.

Public Notices will be sent to both of the aforementioned newspapers informing the community that the Fourth Five-Year Review of the Site has been conducted and will list a contact name and telephone number for further information. This notice will inform the community that the Fourth Five-Year Review of the Site is complete and that the results of the review and the report are available at the Bayou Sorrel Public Repository located in Plaquemine, Louisiana at the city public library.

Fact sheets describing the five-year review process and the Bayou Sorrel Site were distributed to the Bayou Sorrel Branch of the Iberville Parish public library, Dale's Trading Post, Jack Miller's Landing and the Main Branch of the Iberville Parish public library. The fact sheet was also distributed to a mailing list consisting of parish officials and local community contacts.

## **C. DOCUMENT REVIEW**

Appendix C provides a list of documents that were examined in conjunction with the Fourth Five-Year Review. The objective of this task was to review the effectiveness of the selected remedial action technologies and the ability of these components to protect human health and the environment. Documents reviewed included the official file of record for the Site, which is maintained at the EPA Region 6 headquarters in Dallas, Texas; the file of record maintained electronically at the LDEQ's headquarters in Baton Rouge, Louisiana; and the file of record maintained by the BSSC's contractor (ERM) in Metairie, Louisiana.

The only area of concern identified in the First Five-Year Review was the reported concentrations of arsenic in the shallow ground water (in the

aforementioned shallow saturated zone). At the request of EPA Region 6, and on behalf of the BSSC, ERM generated a report, dated December 6, 1995, that discussed the presence of arsenic in shallow ground water as it related to the Bayou Sorrel Site. The information includes a discussion of the general shallow ground water conditions at the Site, a historical summary of arsenic concentrations in ground water at the Site, and information on the prevalence of arsenic in ground water in south Louisiana.

In summary, the arsenic concentrations, which have been reported in data generated for the First Five-Year Review through routine ground water well sampling at the site, have been higher than the Maximum Contaminant Level (MCL) of 50 parts per billion (ppb). The MCL was reduced in 2001 to 10 ppb. However, these detections were reported in areas of the Site where no historical waste handling activities were known to occur as well as in the ground water monitoring system. The shallow ground water at the Site has a very limited potential for receptors and higher concentrations of arsenic in shallow ground water have been documented in the upgradient monitor wells on the Site and at numerous other locations in south Louisiana.

In a memorandum from Jon D. Rauscher, Ph.D., EPA Toxicologist, dated January 15, 1997, Dr. Rauscher concluded that arsenic detected in the ground water at the site appeared to be naturally occurring and recommended that the delisting of this Site from the NPL proceed. His conclusion was based on a review of the following documents:

- 1) Regional arsenic ground water information submitted by ERM on December 6, 1995;
- 2) Bayou Sorrel Health Consultation by the Louisiana Office of Public Health (LOPH)/Agency for the Toxic Substance and Disease Registry (ATSDR) dated May 8, 1995; and
- 3) EPA Five-Year Review dated September 30, 1993.

On May 8, 1995, the Louisiana Office of Public Health – Section of Environmental Epidemiology (LOPH) in conjunction with the Agency for Toxic Substances and Disease Registry (ATSDR) issued a Health Consultation for the Bayou Sorrel Site. The 1995 Health Consultation addressed the following issues and included the following conclusions:

- Sampling and analysis of local fish to determine if site-related contaminants migrated offsite and currently pose a public health threat via fish consumption; and

Based on the information and the data reviewed, the LOPH concluded that the only inorganic compound detected at elevated levels was mercury, which was detected at various levels in several species of fish sampled for the consultation. Mercury is considered a common fish contaminant; however, its presence is not related to historical Site Activities.

- A private water well survey and sampling to determine if ground water has been affected by site contaminants.

Water sampled and analyzed from an existing private well in the town of Bayou Sorrel, Louisiana did not indicate any elevated levels of arsenic or other contaminants. Public water for the Bayou Sorrel area is supplied by the Iberville Waterworks #3 and met all federal requirements for primary drinking water standards at the time of the LOPH study.

Based on the above information and the results of subsequent document reviews conducted as part of the Second, Third and Fourth Five-Year Reviews of the Site, the BSSC believes that the presence of arsenic in shallow ground water at the Site is not attributable to the waste areas of the Site. Therefore, this issue is not a concern relative to on-going post-construction activities, especially since the shallow ground water is not utilized as a source of drinking water. Ground water data collected subsequent to the aforementioned report dated December 6, 1996, continue to demonstrate that the arsenic present is indicative of natural conditions and is not associated with the migration of potentially affected materials from the cap/slurry wall containment systems. These data are summarized in annual Ground Water Monitoring Reports and subsequently evaluated in corresponding Ground Water Statistics Reports. Based on this document review, the remedy continues to remain protective of human health and the environment.

#### **D. DATA REVIEW**

This section provides a summary of the analytical history of the site from completion of the third Five-Year Review Report, dated September 2003 through May 31, 2008, as well as a summary of continued O&M activities at the site. This summary includes the ground water data collected up to and including the PCY 17 annual monitoring event. The annual ground water sampling event for PCY 18 was conducted from April 21-24, 2008. While the final analytical report has not yet been issued, the preliminary results are consistent with reported results of previous sampling events. All of the existing data, collected as part of the post-construction O&M program, are located in the site file at the USEPA Region 6 headquarters in Dallas, Texas. The file is continually updated and copies of select files are available for review in the Bayou Sorrel Public Repository located in Plaquemine, Louisiana at the city public library.

Ground water sampling activities have been conducted in accordance with the EPA-approved S&A Plan, which is based on the requirements outlined in the QAPP. The S&A Plan is revised on a frequent basis primarily to establish specific sampling schedules. The analytical parameters were selected based on negotiations conducted prior to issuance of the ROD and the constituents known to be present onsite. At the end of each post-construction year, a ground water statistics report is generated that statistically relates the changes in ground water quality over time.

All corroborating ground water, storm water, and porewater data from the fourth quarter of PCY 2 (at the latest) through PCY 17 are summarized in Appendix D, Tables 1-4. Table 1 presents the results for the ground water indicator and water quality parameters from monitoring wells installed to monitor the North Area cap. Table 2 presents the results for the ground water indicator and water quality parameters from monitoring wells installed to monitor the South Area cap. A review of the ground water data collected

through PCY 17 continues to indicate that the remedy selected for the Site remains protective of human health and the environment. As reported in the statistical evaluation performed during PCY 17, the arsenic concentrations which have been reported at the Bayou Sorrel Site have been higher than the MCL at areas of the Site where no historical waste handling activities have been known to occur; 2) the shallow ground water conditions at the Site are such that there are no potential receptors for ground water with arsenic present; and 3) the presence of arsenic at higher levels than those found at the Site have been documented at numerous other locations in south Louisiana (including areas in geographic proximity to the Bayou Sorrel Site). Therefore, although results of the statistical evaluation performed during PCY 17 concluded some statistically significant differences and trends exist, there is no potential long- or short-term threat from ground water.

Table 3 of Appendix D presents the results for the analysis of porewater indicator and water quality parameters. Samples from each porewater chamber are analyzed for pH, specific conductivity, total dissolved solids, and total organic carbon. The results for porewater chamber 10 (PC-10) represent a flow-weighted composite sample of porewater chambers 1 - 9. As stated in the S&A Plan PCY 16 - 19, if the characteristics of the composite porewater sample exceed the porewater water quality criteria (listed in the S&A Plan) for any parameter or compound, a sample from each porewater chamber and associated storm water system would be collected during the next scheduled sampling event and analyzed for the full suite of parameters performed for the flow weighted composite. As shown in Table 3, this full suite sampling event has not been required. As described in the S&A Plan PCY 6-9, during the sampling event for PCY 5 porewater chambers 1 - 9 were analyzed for the full suite of parameters so that an engineering evaluation could be undertaken to determine if the porewater system operation should be continued. Based on the results of the engineering evaluation, pumping activities for the porewater collection chambers system were suspended during 1996. The BSSC decided to reinstate operation of the porewater management system in 1997 in the manner that it was operated prior to the evaluation period. Porewater pumped from the porewater management system is used to irrigate the caps during dry periods.

Table 4 of Appendix D presents the results for the analysis of storm water indicator and water quality parameters. Storm water sampling requirements are found in the O&M Plan, 1988, which required a frequency of one per five years. Additionally, as described in the S&A Plan PCY 15 and the S&A Plan PCYs 16-19, in order to effectively coordinate the sampling and analysis activities related to the storm water monitoring requirements, storm water sampling is conducted in conjunction with the schedule established for ground water monitoring at the site (i.e., one storm water sampling event in post construction year 15). However, if a storm event does not occur (weather conditions documented) during the ground water monitoring event, storm water sampling will be postponed until the next scheduled sampling event. A storm event took place during the ground water sampling event for PCY 5 in 1995; those results are found in Table 4. The next scheduled storm water sampling event was scheduled for PCY 10 in 2000. No storm event occurred during the scheduled ground water monitoring events for PCY 10 through PCY 18; therefore, the storm water sampling event will be postponed until the PCY 19 sampling event.

The Fourth Five-Year Review process also included a review of a Memorandum (December 2005) that documented the EPA's evaluation of the effects of Hurricane Katrina that made landfall on the southeast Louisiana coast on August 29, 2005 at the Site. The EPA Region 6 Superfund Division conducted assessment activities at the Site to determine if Hurricane Katrina affected the integrity of the remedies at the Site. Based on EPA's evaluation of the environmental data collected from the Site, EPA concluded that the Site's integrity was not affected by the hurricane.

**E. SITE INSPECTION**

EPA conducted its most recent site visit on March 28, 2008, to conduct the Site Inspection for the Fourth Five-Year Review. The LDEQ and ERM assisted in the Site Inspection. An Inspection Team Roster and the Fourth Five-Year Review Site Inspection Checklist are provided as Appendix E. During the visit, the Site appeared in excellent condition with no significant maintenance or operational deficiencies. Operation and maintenance activities continue to be conducted each week in accordance with the requirements of the O&M Plan. ERM, on behalf of the BSSC, completed the first semi-annual engineering inspection of PCY 18 for the Site on March 28, 2008. Specific areas of the inspection are summarized below:

- The North and South Area Caps were covered with generally rich growths of bahia, bermuda, and other shallow rooted grasses and remain in good condition. There were isolated areas where small plants and sparse weed growth were evident; however, there was no evidence of active erosion.
- No signs of differential settlement on either cap were observed or measured. Historical settlement plate elevation monitoring has shown that no differential cap settlement has occurred and current settlement is essentially non-measurable.
- The roads at the site remain in excellent condition with no signs of degradation due to weathering and/or infrequent vehicular traffic.
- Inspection of the perimeter fence and the warning signs around both the North and South Area Caps indicated that the security system for each cap remains in good condition. Locks on the perimeter fence gates and monitor well protective casings remain in excellent condition and weathered locks are replaced as necessary in a timely manner to maintain security at the Site. Two gates with locks restrict access to the site via the main access road located proximal to the Atchafalaya Basin levee. The north and south area caps and associated storm water runoff ditches are surrounded by a six-foot high chain-link fence with an additional one foot of barbed wire (3 strands) at the top. Pedestrian and vehicle gates in the fence were installed at select locations. These gates provide access to the caps and are secured by locks. Monitor wells outside the cap areas are individually fenced and have access gates. Both the access gates and the monitor wells are secured with locks.

- A total of 35 warning signs are attached to the inside of the north and south area cap fences. The language on each sign reads, "Danger, Environmental Hazard, Unauthorized Personnel, Keep Out."
- The presence of several small burrow holes was noted beneath and within the limits of the perimeter fence on both caps and fire ant mounds at the base of the gas vents. These burrow holes, presumed to be from armadillos, are similar to those which were noted in the last inspections and are filled with onsite borrow soil as part of routine maintenance activities. Inspection of the holes within the fence continues to show that the burrowing animals stop digging when they reach the sand layer and do not approach the geomembrane liner.
- The ditches and culverts at the Site remain in excellent condition, with no signs of erosion or excess siltation. Standing water was observed in the perimeter drainage ditches on the South Area Cap near the culverts that convey surface water into adjacent water bodies. The presence of this water was a result of recent rainfall events and is not unusual.
- The monitor well and porewater collection systems remain in excellent condition. Soil was recently added adjacent to and beneath the concrete pads surrounding several monitor wells where small burrow holes (presumed to be from armadillos) were noted and where the presence of fire ant mounds and the apparent washing of soil had reduced the stability of the surface completions. The well pads at these and all other locations on the North and South Area Caps were inspected and remain stable.

Photographs showing the condition of the cap, monitoring wells, and site access roads are provided in Appendix F and illustrate the current conditions of both caps.

## *F. INTERVIEWS*

Since activities associated with the operation and maintenance of the Site are carried out by the BSSC through ERM, the performance evaluation of the remedy also included work efforts to interview the individuals within State and Federal agencies responsible for the oversight of these activities. A local public official and a local resident and business owner were also interviewed. These individuals were asked some or all of the following questions:

1. What is your overall impression of the project (general sentiment)?
2. What effects have post-construction site activities in the last five years had on the surrounding community?
3. Are you aware of any community concerns regarding the ongoing O&M activities at the site? If so, please give details.
4. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency response from local authorities? If so, please give details.

5. Do you feel well informed about the site's activities and progress?
6. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?
7. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the site? If so, please give purpose and results.
8. Have there been any complaints, violations, or other incidents related to the site requiring a response by your office? If so, please give details of the events and results of the responses.
9. Is the remedy functioning as expected? How well is the remedy performing?
10. Is there a continuous onsite O&M presence? If so, please describe staff and activities. If there is not a continuous onsite presence, describe staff and frequency of site inspections and activities.
11. Have there been any significant changes in the O&M requirements, maintenance schedules, or sampling routines in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.
12. Have there been unexpected O&M difficulties or costs at the site in the last five years? If so, please give details.
13. Have there been opportunities to optimize O&M, or sampling efforts? Please describe changes and resultant or desired cost savings or improved efficiency.

The interviewees included:

- Ms. Laurie K. Peacock, Louisiana Department of Environmental Quality;
- Mr. Prasad S. Shetty, Environmental Resources Management (consultant to the BSSC);
- Mr. Ed Reeves, Iberville Parish Councilman; and
- Mr. Sammy Carville, Iberville Parish resident and Bayou Sorrel businessman.

Each individual's answers to the interview questions (Appendix G) reaffirmed that the remedy selected for the Site remains protective of human health and the environment and that no concerns have been expressed by members of the community to those individuals most likely to be contacted.

## **VII. TECHNICAL ASSESSMENT**

**A. QUESTION A: IS THE REMEDY FUNCTIONING AS INTENDED BY THE DECISION DOCUMENTS?**

The review of documents, risk assumptions, and the results of the site inspection and monitoring indicate that the remedy is functioning as intended by the ROD. While the ROD requirements addressed human health risk management, the remedy also remains protective of ecological receptors. The capping of contaminated wastes and soils and containment through installation of the slurry walls has achieved the remedial objectives to minimize the migration of contaminants to groundwater and surface water and prevent direct contact with, or ingestion of contaminants by human or ecological receptors. The cap's topsoil layer and sand layer also prevent potential ecological exposure to waste material.

Maintenance of the north and south area caps and drainage features has been effective. The presence of several, small burrow holes is noted periodically (during routine site inspections) beneath and within the limits of the perimeter fence on both caps and fire ant mounds at the base of the gas vents. These burrow holes, presumed to be from armadillos, are filled with on-site borrow soil as part of ongoing maintenance activities. Inspection of the holes within the fence continues to show that the burrowing animals stop digging when they reach the sand layer and do not approach the geomembrane liner. Routine monitoring of ground water provides a triggering mechanism whereby frequent sampling and analysis of the wells is used to identify any sudden degradation of the quality of the area's ground water before potentially affected materials can migrate offsite. The remedy of capping, slurry walls, hydraulic controls, and containment is functioning as designed. Contaminants in the storage cells is wholly contained and not observed outside the cells. The containment is judged to be effective. O&M annual costs are consistent with original estimates and there are no indications of any difficulties with the remedy.

Site operation and maintenance activities, which include weekly inspections, minor maintenance, semi-annual engineering inspections, site mowing, porewater management, and other miscellaneous activities as directed by the BSSC, should continue in order to maintain the long-term effectiveness of the remedy. At this time, the BSSC is not planning to significantly modify the scope of these activities.

The fencing, signs, and other access and institutional controls are adequate to maintain site security. The site location is remote and both vehicular and pedestrian traffic is infrequent.

**B. QUESTION B: ARE THE EXPOSURE ASSUMPTIONS, TOXICITY DATA, CLEANUP LEVELS, AND REMEDIAL ACTION OBJECTIVES (RAOS) USED AT THE TIME OF THE REMEDY STILL VALID?**

There have been no changes in the physical conditions of the site that would affect the protectiveness of the remedy.

Changes in Standards and To Be Considereds (TBC)

The ROD identified the Resource, Conservation, and Recovery Act (RCRA), 42 U.S.C. Section 6901 et. seq., as the primary Applicable or Relevant and



Appropriate Requirements (ARARs) governing remedial activities at the Site. Specifically, the ROD states that the selected remedy would comply with RCRA capping requirements, as well as all other applicable or relevant and appropriate standards, requirements, criteria, or limitations per Section 121(d) of CERCLA. There were no chemical specific ARARs identified by the ROD. There have been no changes in these ARARs and no new standards or TBCs affecting the protectiveness of the remedy.

Changes in Exposure Pathways, Toxicity, and Other Contaminant Characteristics

Arsenic MCL in drinking water has changed from 50 ppb to 10 ppb, however, the standards in the ROD are still protective. As stated previously, in a memorandum from Jon D. Rauscher, Ph.D., EPA Toxicologist, dated January 15, 1997, Dr. Rauscher concluded that arsenic detected in the ground water at the site appeared to be naturally occurring. The remedy of containment prevents contaminant migration, so the remedy is still valid.

There have been no notable changes in land use on or near the site and no new routes of exposure have developed for the site. The suite of contaminants remains the same as before with no new toxic byproducts. Site conditions remain unchanged.

There are no known changes in toxicity factors or contaminant characteristics at the site. The assessment of risk remains valid and the remedy is functioning as designed.

**C. QUESTION C: HAS ANY OTHER INFORMATION COME TO LIGHT THAT COULD CALL INTO QUESTION THE PROTECTIVENESS OF THE REMEDY?**

There is no information that has come to light to call into question the protectiveness of the remedy.

**D. TECHNICAL ASSESSMENT SUMMARY**

According to the data reviewed, the site inspection, and the interviews, the remedy is functioning as intended by the ROD. There have been no changes in the physical conditions of the site that would affect the protectiveness of the remedy. The RCRA ARARs for cap construction cited in the ROD have been met. There is no other information that calls into question the protectiveness of the remedy.

**VIII. ISSUES, RECOMMENDATIONS AND FOLLOW-UP ACTIONS**

The only current site issue is the presence of several, small burrow holes noted periodically (during routine site inspections) beneath and within the limits of the perimeter fence on both caps and fire ant mounds at the base of the gas vents. These burrow holes, presumed to be from armadillos, are filled with on-site borrow soil as part of ongoing maintenance activities. Inspection of the holes within the fence continues to show that the burrowing animals stop digging when they reach the sand layer and do not approach the geomembrane liner. The holes are filled with on-site borrow soil as a follow-up action and as part of

the continuing maintenance of the cap. The presence of these holes prior to being filled does affect the current or future protectiveness of the remedy.

**IX. PROTECTIVENESS STATEMENT(S)**

Based on a review of site conditions and data generated from October 16, 1990, to May 31, 2008, the United States Environmental Protection Agency (EPA) concludes that the Site poses no significant threat to public health, welfare, or the environment and, therefore, further remedial measures pursuant to CERCLA are no longer appropriate. Post-construction (of the final remedy) Operation and Maintenance (O&M) activities will continue to be performed in accordance with the requirements of the O&M Plan dated December 14, 1988. Because the remedial actions at the site are protective of human health and the environment, the site is protective of human health and the environment.

All threats at the site have been addressed through stabilization and capping of contaminated waste and the installation of fencing and warning signs, and the implementation of institutional controls. Long-term protectiveness of the remedial action will be verified by continuing to perform O&M in accordance with the O&M Plan. Current monitoring data indicate that the remedy is functioning as required.

**X. NEXT REVIEW**

The next (fifth) Five-Year Review for the Bayou Sorrel Site is required by September 2013, five years from the date of this review.

## **Site Figures**

### *Appendix A*

#### List of Figures

*Figure 1 - Site Location Map*

*Figure 2 - Monitor Well and Staff Gauge Locations: North Area Cap*

*Figure 3 - Monitor Well and Staff Gauge Locations: South Area Cap*

*Figure 4 - Potentiometric Surface Map – April 23, 2007: North Area Cap*

*Figure 5 - Potentiometric Surface Map – April 23, 2007: South Area Cap*



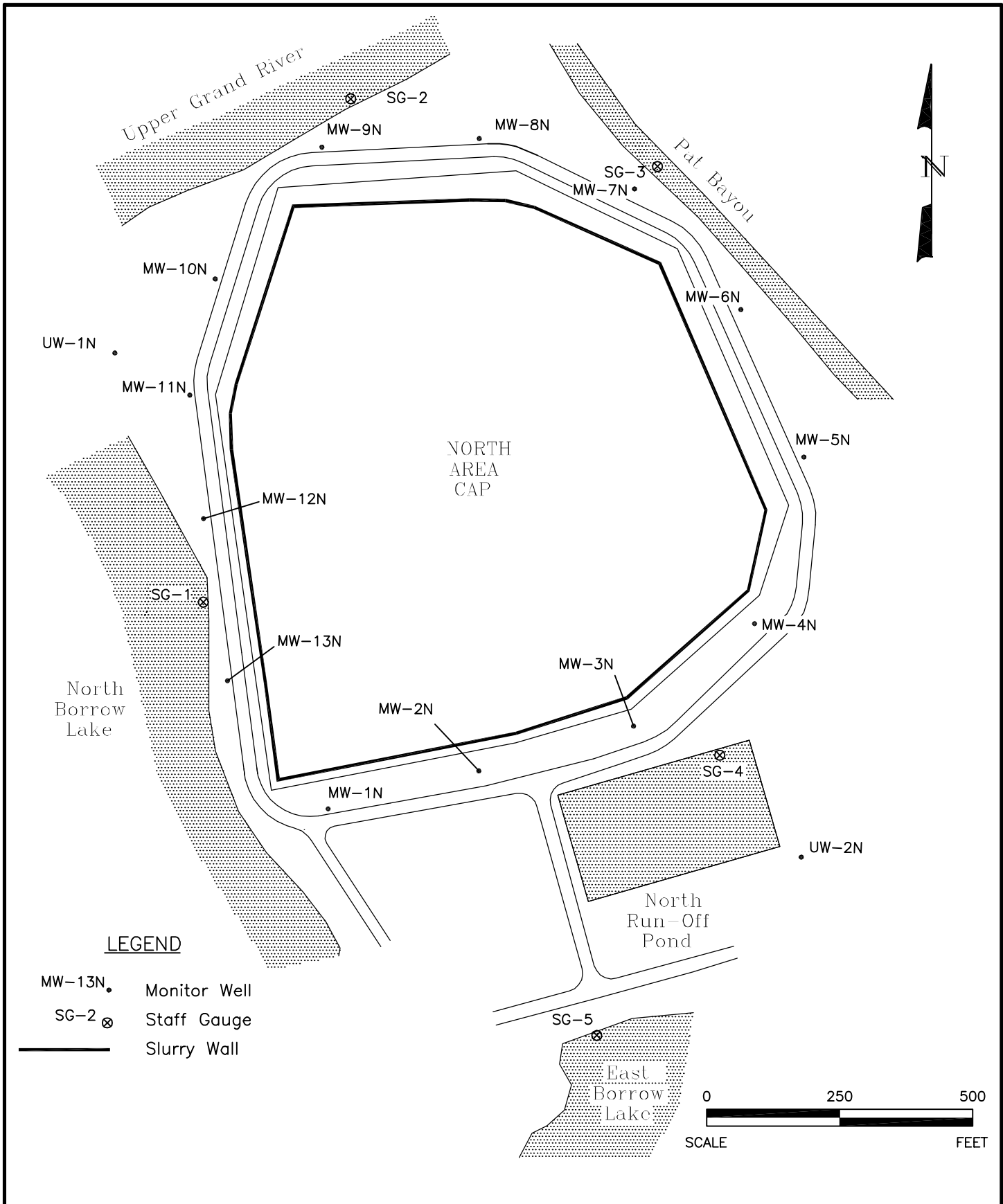
# Environmental Resources Management

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DATE: 5/9/2008	SCALE: AS SHOWN	REV.:
PROJ. NO.: H:\DWG\2008\IE08\0054736A205.dwg, 5/20/2008 2:44:54 PM		

FIGURE 1  
SITE LOCATION MAP

Bayou Sorrel Site  
Iberville Parish, Louisiana





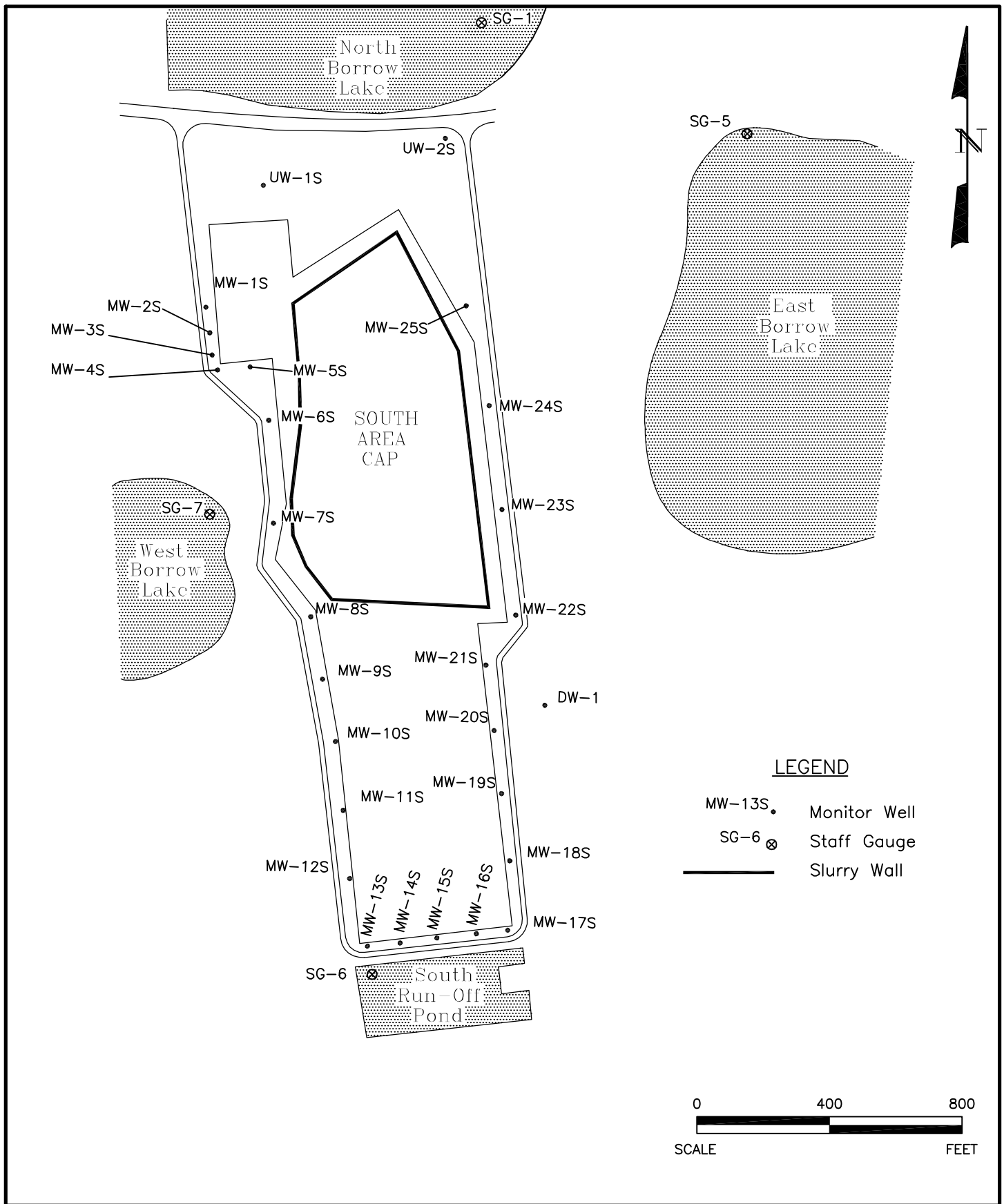
## Environmental Resources Management

FIGURE 2  
MONITOR WELL AND STAFF GAUGE LOCATIONS

North Area Cap  
Bayou Sorrel Site  
Iberville Parish, Louisiana



DESIGN: PSS	DRAWN: MHB	CHKD.: PSS/JMB
DATE: 5/9/2008	SCALE: AS SHOWN	REV.:
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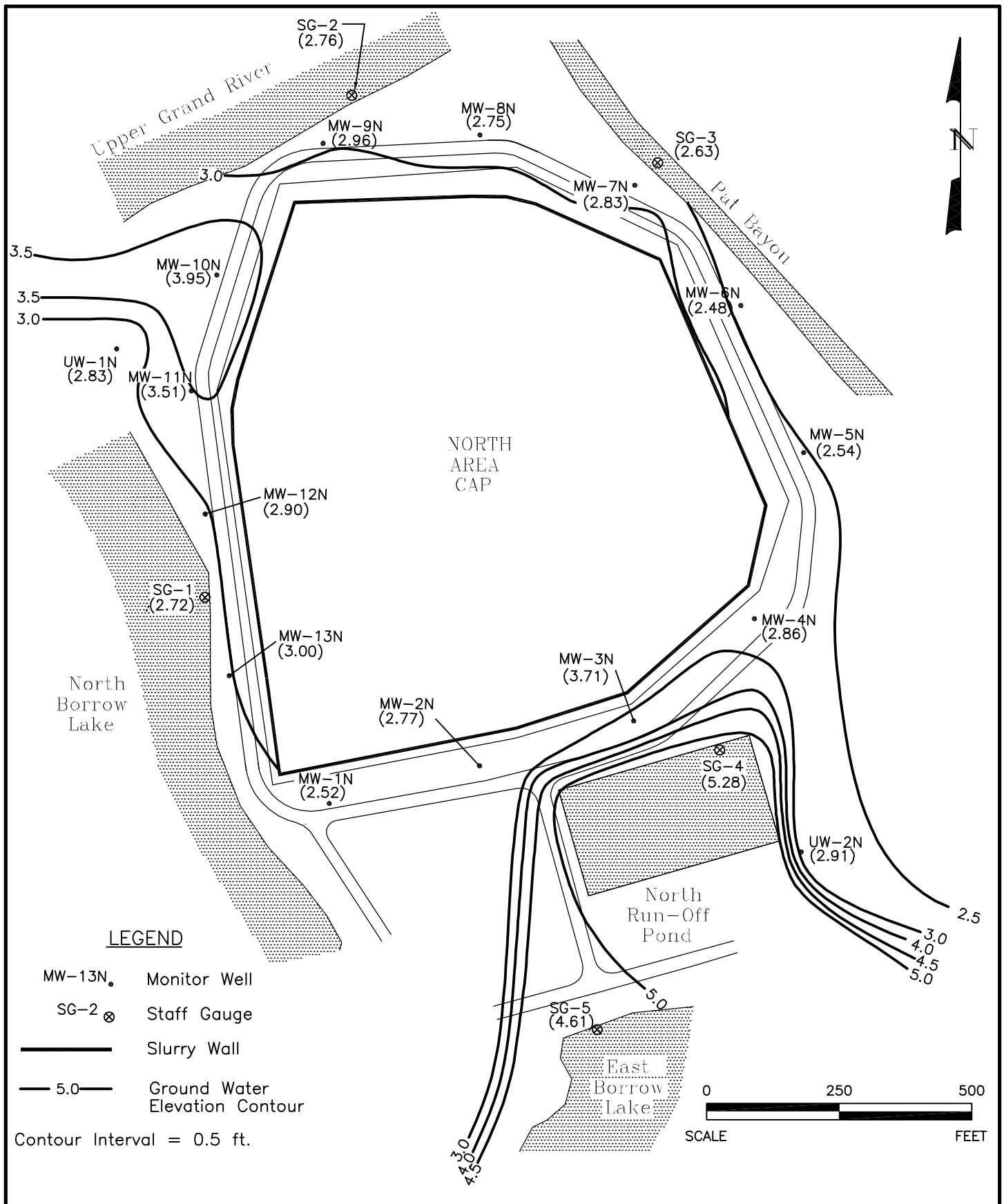
## Environmental Resources Management

FIGURE 3  
MONITOR WELL AND STAFF GAUGE LOCATIONS

South Area Cap  
Bayou Sorrel Site  
Iberville Parish, Louisiana



DESIGN: PSS	DRAWN: MHB	CHKD.: PSS/JMB
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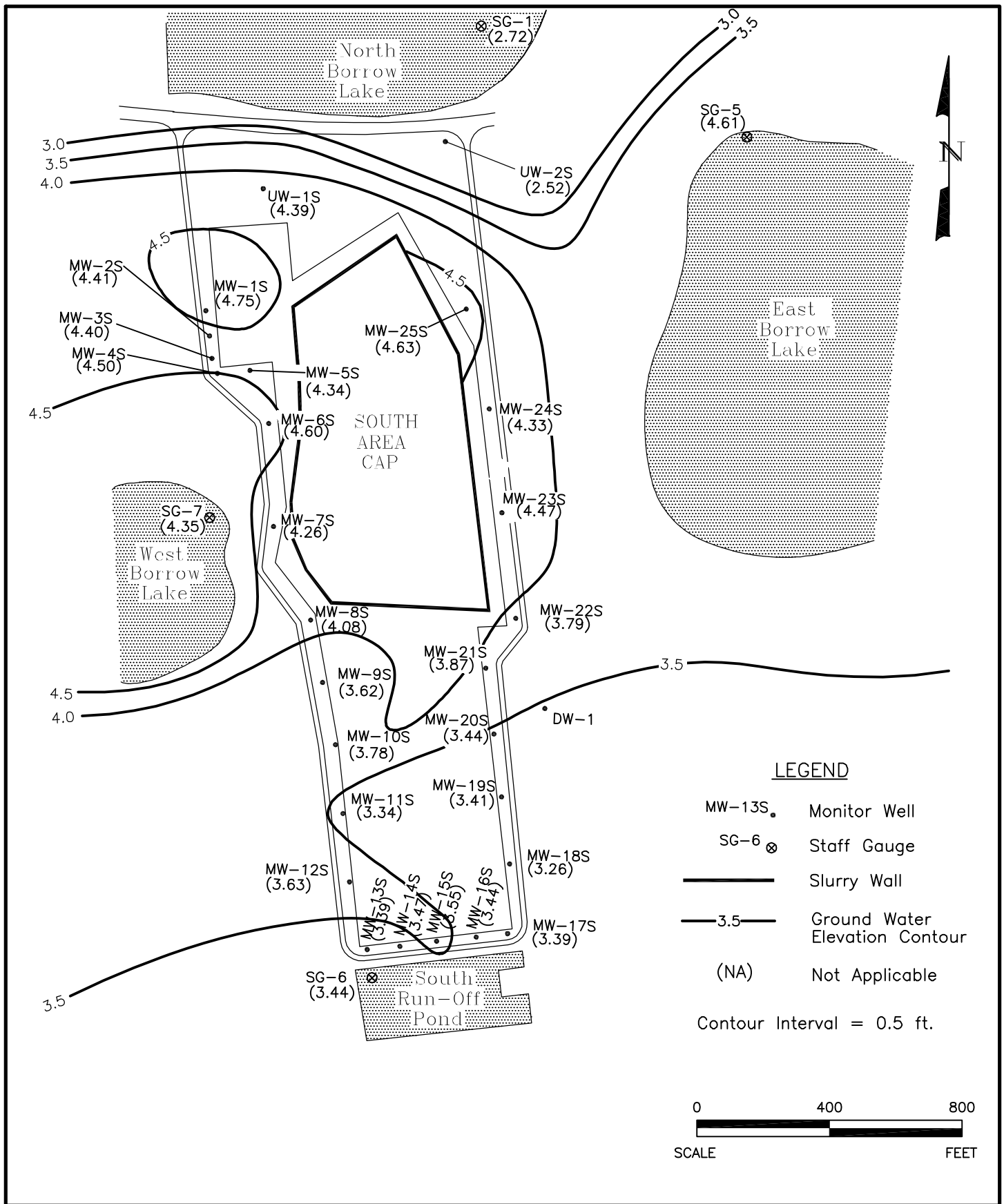
## Environmental Resources Management

**FIGURE 4**  
**POTENTIOMETRIC SURFACE MAP**  
 April 23, 2007  
 North Area Cap  
 Bayou Sorrel Site  
 Iberville Parish, Louisiana



**ERM**

DESIGN: PSS	DRAWN: MHB	CHKD.: PSS/JMB
DATE: 5/9/2008	SCALE: AS SHOWN	REV.:
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## Environmental Resources Management

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DATE: 5/9/2008	SCALE: AS SHOWN	REV.:
PROJ. NO.: H:\DWG\2008\E08\0054736A204.dwg, 5/9/2008 9:25:56 AM		

FIGURE 5  
 POTENTIOMETRIC SURFACE MAP  
 April 23, 2007  
 South Area Cap  
 Bayou Sorrel Site  
 Iberville Parish, Louisiana





**Five-Year Review Public Notices and Fact Sheet**  
*Appendix B*

# CAPITAL CITY PRESS

Publisher of  
**THE ADVOCATE**

## PROOF OF PUBLICATION

The hereto attached notice was published in **THE ADVOCATE**, a daily newspaper of general circulation published in Baton Rouge, Louisiana, and the official Journal of the State of Louisiana, the City of Baton Rouge, and the Parish of East Baton Rouge, in the following issues:

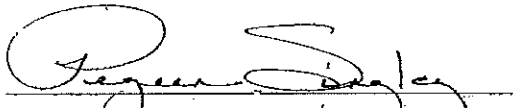
06/24/08



Susan A. Bush, Public Notices Clerk

Sworn and subscribed before me by the person whose signature appears above:

June 24, 2008



Pegen Singley, Notary Public, #66565  
My Commission Expires: Indefinite  
Baton Rouge, Louisiana

### PUBLIC NOTICE

The U.S. Environmental Protection Agency (EPA) announces its plans to conduct the fourth Five-Year Review for the Bayou Sorrel Site located in Iberville Parish, Louisiana. The purpose of this review is to evaluate the performance of the site remedy and determine whether it remains protective of human health and the environment. The Bayou Sorrel Site remedy consists of a slurry wall/clay cap containment system and an extensive ground water monitoring program that was initiated to monitor the remedy's ability to contain the waste, which consisted primarily of material from manufacturing and cleaning operations and petrochemical processing and exploration activities.

The EPA encourages community participation in the decisions and actions that affect the Bayou Sorrel Site and it is EPA's hope that the community continues to participate in any future decisions regarding the site. The scheduled completion date for the fourth Five-Year Review is September 30, 2008. The previous five-year reviews proved that the remedy for this site was protective of human health and the environment. The results of this five year review will be published once completed. If you have any questions, please contact either of the individuals listed below.

Ms. Laura Stankosky  
Remedial Project Manager (Mail Code 6SF-RL)  
U.S. Environmental Protection Agency, Region 6  
1445 Ross Avenue, Suite 1200  
Dallas, Texas 75202  
Phone: (214) 665-7525

Ms. Laurie Peacock  
Louisiana Department of Environmental Quality  
Remediation Services Division  
602 North Fifth Street  
Baton Rouge, LA 70802  
Phone: (225) 219-3412

3907674-jun 24-11



ERM - METAIRIE

3907674

PRASAD SHETTY

3838 N CAUSEWAY BLVD STE 2725

METAIRIE

LA 70002

# POST SOUTH

Post Office Box 589  
Plaquemine, LA 70765-0589

## PROOF OF PUBLICATION

*Public Notice - F.P.A.*

*Prison Social Security*

The hereto attached notice was published in the Post/South, a weekly newspaper of general circulation published in Plaquemine, Louisiana, and the official Journal of the State of Louisiana, City of Plaquemine, and the Parish of Iberville, in the following issues:

*Thursday, June 26, 2008*

Tear Sheets Attached

*Elizabeth Troxclair*

ELIZABETH TROXCLAIR

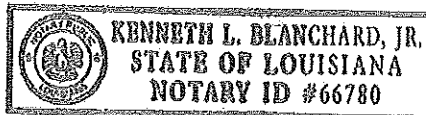
Legal/Public Notices Representative

SWORN TO AND SUBSCRIBED BEFORE ME

This 23<sup>rd</sup> day of July, 2008

*K.L. Blanchard*

Notary Public

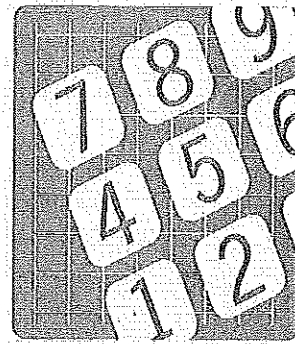


to exceed the prior year's maximum.

variety of community projects, including numerous school projects.

### POLITICAL ANNOUNCEMENT

**JOEL DUCOTE**  
will be a candidate  
for the Plaquemine  
City Council,  
representing  
District 5.  
I will be looking  
forward to visiting  
with our local  
citizens during the  
campaign.



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#### PUBLIC NOTICE

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The EPA encourages community participation in the decisions and actions that affect the Bayou Sorrel Site and it is EPA's hope that the community continues to participate in any future decisions regarding the site. The scheduled completion date for the fourth Five-Year Review is September 30, 2008. The previous five-year reviews proved that the remedy for this site was protective of human health and the environment. The results of this five year review will be published once completed. If you have any questions, please contact either of the individuals listed below.

Ms. Laura Stankosky  
Remedial Project Manager (Mail Code 6SF-RL)  
U.S. Environmental Protection Agency, Region 6  
1445 Ross Avenue, Suite 1200  
Dallas, Texas 75202  
Phone: (214) 665-7525

Ms. Lawrie Peacock  
Louisiana Department of Environmental Quality  
Remediation Services Division  
602 North Fifth Street  
Baton Rouge, LA 70802  
Phone: (225) 219-3412

# EPA Begins Fourth Five-year Review of Site Remedy

**Bayou Sorrel Site**  
Iberville Parish, Louisiana

June 2008

## The five-year review is:

- A regular inspection of a Superfund or former Superfund site;
- Conducted at sites that need continued monitoring;
- A way to determine if a cleanup is protecting public health and the environment; and
- A chance for you to tell EPA about site activities.

## Checking up on sites: the five-year review

After a National Priorities List (NPL) site cleanup action is completed, the U.S. Environmental Protection Agency (EPA) conducts regular inspections, called five-year reviews, at selected Superfund sites. The EPA has begun a fourth, five-year review of the Bayou Sorrel Site located in Iberville Parish, Louisiana. The purpose of this review is to evaluate the performance of the site remedy and determine whether it remains protective of human health and the environment.

The Bayou Sorrel Site is located six miles north-northwest of the community of Bayou Sorrel along the Atchafalaya Basin Protection Levee. The Bayou Sorrel Site remedy consists of a slurry wall/clay cap containment system and an extensive ground water monitoring program that was initiated to monitor the remedy's ability to contain the waste, which consisted primarily of material from manufacturing and cleaning operations and petrochemical processing and exploration activities.

Since EPA provided oversight of the cleanup at the Bayou Sorrel Site, EPA will perform site reviews every five years to determine if the cleanup at the site is still protecting public health and the environment.

During the review, EPA studies information on the site, including the cleanup and the laws that apply, inspects the site, and may interview people in the nearby area. The EPA considers any information or concerns that people may have about the site during the review. If you are familiar with the site, you may know things that can help the review team. Here are some examples:

- Broken fences, illegal dumping, or other problems;
- Buildings or land being used in new ways around the site;
- Any unusual activities at the site such as vandalism or trespassing; and
- How the cleanup at the site has helped the area.

This fact sheet will tell you more about five-year reviews.

## The five-year review: protecting you and the environment

The EPA's Remedial Project Manager (RPM) is working with State and Federal scientists and engineers to evaluate the site. The fourth, five-year review began in October 2007. The RPM collected information about the site from a variety of sources including historical information. The site was inspected on March 28, 2008. Information gained during the site inspection showed that the remedy continues to function properly and the site is well maintained. In May 2008 the RPM talked to local officials to see if they have any concerns or if there have been any changes in local policy or zoning that might affect the original cleanup. The EPA also contacted businesses near the site to see if they have any information or concerns about the site. Additional people may be contacted with a mailed survey, a phone call, or an interview. The RPM will use the information collected to decide whether or not the cleanup continues to be protective of human health and the environment.

A report will be made available to the public once the fourth, five-year review is complete. The report will include historical information on the site and cleanup activities, site inspection results, data review and analysis, conclusions and recommendations. A copy of the report will be made available to the public at the Iberville Parish Library in Plaquemine, Louisiana. You will be notified when the report is finished through notices in The Advocate and Post South. The previous five-year reviews proved that the remedy for this site was protective of human health and the environment.

## What happens after the review?

The EPA will address any problems identified by the review. Since wastes or contaminants that prevent unlimited

use and unrestricted exposure remain onsite, EPA will return every five years for another review. The EPA and the State will also keep an eye on the site between reviews. If at any time you have concerns or questions about the site, please let EPA know. You can contact EPA through the RPM, at 1-800-533-3508 (Toll-Free Number).

### **For more information, please contact...**

#### **Laura Stankosky, Remedial Project Manager**

U.S. EPA Region 6  
1445 Ross Avenue (6SF-RL)  
Dallas, TX 75202  
214-665-7525  
800-533-3508  
[stankosky.laura@epa.gov](mailto:stankosky.laura@epa.gov)

#### **Donn Walters, EPA Public Liaison**

U.S. EPA Region 6  
1445 Ross Avenue (6SF-TS)  
Dallas, TX 75202  
214-665-6483  
800-533-3508  
[walters.donn@epa.gov](mailto:walters.donn@epa.gov)

#### **David Bary, EPA Region 6 Press Office**

U.S. EPA Region 6  
1445 Ross Avenue (6XA-CE)  
Dallas, TX 75202  
214-665-2208  
800-533-3508  
[bary.david@epa.gov](mailto:bary.david@epa.gov)

#### **Louisiana Department of Environmental Quality**

##### **Laurie Peacock**

Louisiana Department of Environmental Quality  
Environmental Technology Division  
P.O. Box 4314  
Baton Rouge, LA 70821-4314  
225-219-3412  
[laurie.peacock@la.gov](mailto:laurie.peacock@la.gov)

### **Information Repositories**

Ms. Betsy Bensen  
Iberville Parish Library  
24605 J. Gerald Berret Boulevard  
Plaquemine, Louisiana 70764  
(225) 687-4397

#### **Hours of Operation:**

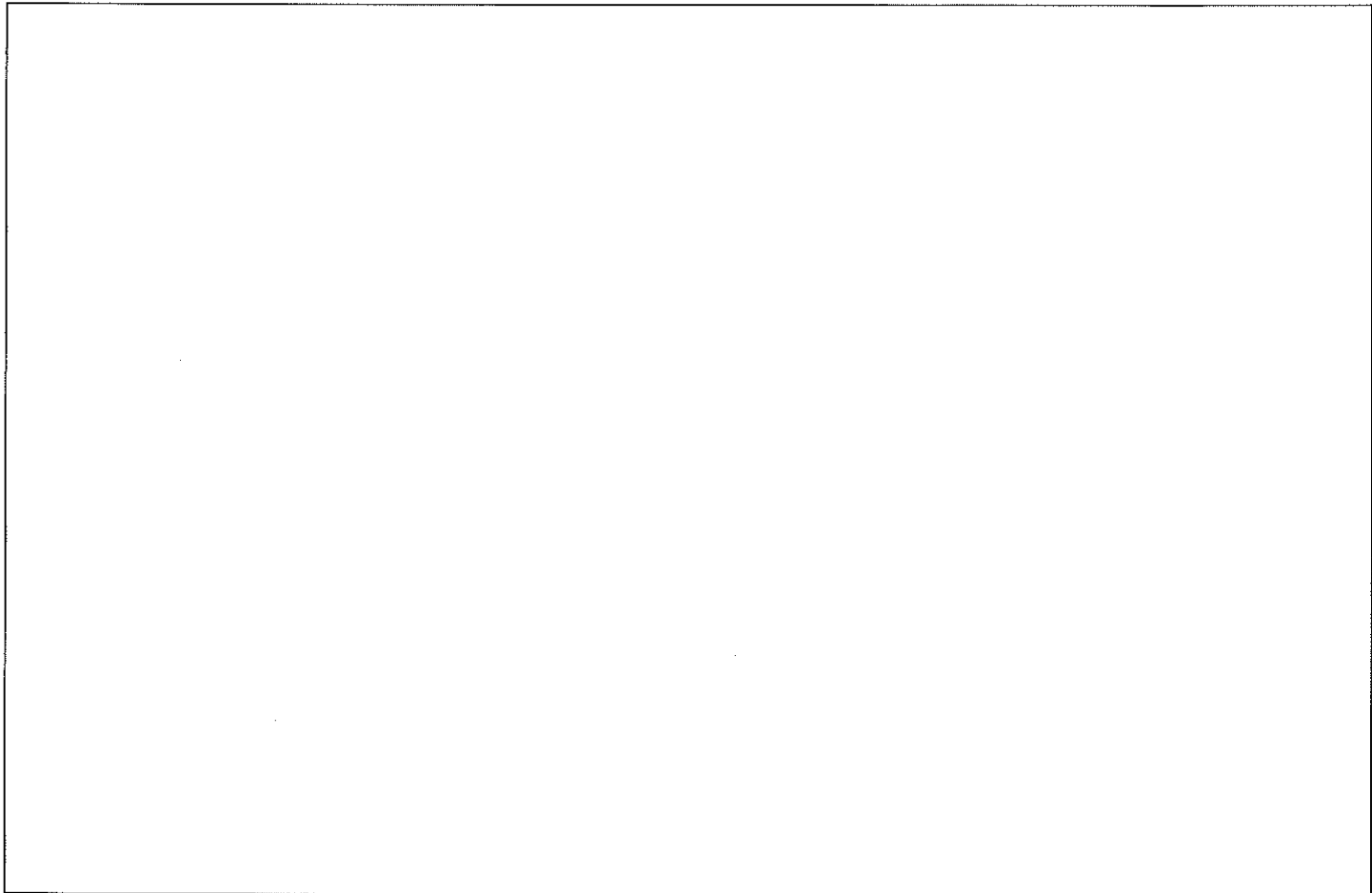
Monday - Thursday 8:30 a.m. to 6:30 p.m.  
Friday 8:30 a.m. to 5:00 p.m.  
Saturday 9:00 a.m. to 4:00 p.m.

### **U.S. EPA on the Internet**

U.S. EPA Headquarters  
[www.epa.gov](http://www.epa.gov)

U.S. EPA Region 6  
[www.epa.gov/region6](http://www.epa.gov/region6)

U.S. EPA Region 6 Superfund  
[www.epa.gov/region6/superfund](http://www.epa.gov/region6/superfund)



Region 6  
1445 Ross Ave (6SF-RL)  
Dallas, TX 75202

**File Inventory**  
*Appendix C*



EPA, LDEQ, AND ERM FILE INVENTORY  
FOURTH FIVE-YEAR REVIEW  
June 1, 2003 through May 31, 2008  
(Inventory was generated on May 7, 2008)

2003

- Second Semi-Annual Inspection and Maintenance Report; Post-Construction Year 13.
- Ground Water Statistics Report; Post-Construction Year 13.
- Monitoring and Maintenance Report; Post-Construction Year 13.
- Third Five-Year Review Report.

2004

- First Semi-Annual Inspection and Maintenance Report; Post-Construction Year 14.
- Second Semi-Annual Inspection and Maintenance Report; Post-Construction Year 14.
- Ground Water Statistics Report; Post-Construction Year 14.
- Monitoring and Maintenance Report, Post-Construction Year 14.

2005

- First Semi-Annual Inspection and Maintenance Report; Post-Construction Year 15.
- Second Semi-Annual Inspection and Maintenance Report; Post-Construction Year 15.
- Ground Water Statistics Report; Post-Construction Year 15.
- Monitoring and Maintenance Report; Post-Construction Year 15.
- Sampling and Analysis Plan; Post-Construction Year 15.
- Hurricane Katrina Evaluation Report (December 2005).

2006

- First Semi-Annual Inspection and Maintenance Report; Post-Construction Year 16.
- Second Semi-Annual Inspection and Maintenance Report; Post-Construction Year 16.
- Ground Water Statistics Report; Post-Construction Year 16.
- Monitoring and Maintenance Report; Post-Construction Year 16.
- Sampling and Analysis Plan; Post-Construction Years 16-19.

2007

- First Semi-Annual Inspection and Maintenance Report; Post-Construction Year 17.
- Second Semi-Annual Inspection and Maintenance Report; Post-Construction Year 17.
- Ground Water Statistics Report; Post-Construction Year 17.
- Monitoring and Maintenance Report; Post-Construction Year 17.

2008

- First Semi-Annual Inspection and Maintenance Report; Post-Construction Year 18.

# Site Monitoring Data Tables

## *Appendix D*

### List of Tables

*List of Technical Abbreviations*

*Table 1 - Ground Water Database: North Area Cap*

*Table 2 - Ground Water Database: South Area Cap*

*Table 3 - Porewater Indicator and Water Quality Parameters Database*

*Table 4 - Storm Water Indicator and Water Quality Parameters Database*

TABLE 1

INDICATOR AND WATER QUALITY PARAMETERS DATABASE  
 POST-CONSTRUCTION YEARS 1 THROUGH 17  
 NORTH AREA CAP

Bayou Sorrel Site  
 Bayou Sorrel, Louisiana

Well Name	Well Code	Cluster Code	pH	SC	Sample Date	Cadmium	Chromium	Lead	Arsenic	TOC	Chloride	Sulfate	Ethyl-benzene	Phenol
MW-1N	51	24	5.71	1640	10/30/90	0.01	0.02	0.2	0.010	5	135	4	0.001	0.0025
MW-1N	51	24	6.57	1690	02/12/91	0.01	0.02	0.2	0.010	4	140	5	0.001	0.0025
MW-1N	51	24	5.98	1760	05/01/91	0.01	0.02	0.2	0.010	7	128	9	0.001	0.0025
MW-1N	51	24	7.30	1100	07/23/91	0.01	0.02	0.2	0.010	6	133	3	0.001	0.0025
MW-1N	51	24	6.56	1350	11/05/91	0.01	0.02	0.2	0.010	8	202	6	0.001	0.0025
MW-1N	51	24	6.53	1840	05/05/92	0.01	0.02	0.2	0.015	9	205	5	0.001	0.0025
MW-1N	51	24	6.60	1830	11/10/92	0.01	0.02	0.2	0.019	23	158	4	0.001	0.0025
MW-1N	51	24	6.44	1960	05/04/93	0.01	0.02	0.2	0.012	8	139	5	0.001	0.0025
MW-1N	51	24	6.54	1570	11/16/93	0.01	0.02	0.2	0.015	8	157	4	0.001	0.0025
MW-1N	51	24	6.62	2100	04/25/94	0.01	0.02	0.2	0.013	9	139	5	0.001	0.0025
MW-1N	51	24	6.61	1816	11/08/94	0.02	0.04	0.2	0.010	8	147	6	0.001	0.0025
MW-1N	51	24	6.41	1820	05/02/95	0.02	0.04	0.2	0.020	9	175	4	0.001	0.0025
MW-1N	51	24	6.72	1820	05/14/96	0.02	0.04	0.2	0.010	8	171	2	0.001	0.0025
MW-1N	51	24	6.86	1830	06/24/97	0.005	0.01	0.01	0.010	10	169.0	2.48	0.001	0.0025
MW-1N	51	24	6.98	1860	05/05/98	0.005	0.01	0.01	0.020	9	180.0	1.63	0.001	0.0063
MW-1N	51	24	6.78	1640	05/11/99	0.005	0.01	0.01	0.020	11	182.0	2.58	0.001	0.0063
MW-1N	51	24	6.66	1770	05/09/00	0.005	0.01	0.01	0.010	10	67.0	2.00	0.001	0.0063
MW-1N	51	24	6.74	1780	04/17/01	0.005	0.01	0.01	0.022	11.60	195.0	4.90	0.001	0.0063
MW-1N	51	24	6.81	1750	04/16/02	0.005	0.01	0.01	0.023	10.80	182.0	3.98	0.001	0.0063
MW-1N	51	24	6.79	1390	04/21/03	0.005	0.01	0.01	0.021	8.90	191.0	3.29	0.001	0.005
MW-1N	51	24	6.77	1430	04/20/04	0.005	0.01	0.01	0.016	8.80	191.0	1.77	0.001	0.0063
MW-1N	51	24	6.78	1540	04/19/05	0.005	0.01	0.01	0.020	10.40	178.0	2.31	0.001	0.006
MW-1N	51	24	7.14	1770	04/19/06	0.005	0.01	0.01	0.014	14.80	198.0	1.25	0.001	0.006
MW-1N	51	24	6.67	1730	04/24/07	0.005	0.01	0.01	0.005	9.71	188.0	1.89	0.001	0.006
MW-2N	52	21	5.71	1480	10/30/90	0.01	0.02	0.2	0.010	5	125	5	0.001	0.0025
MW-2N	52	21	6.48	1640	02/12/91	0.01	0.02	0.2	0.010	6	118	6	0.001	0.0025
MW-2N	52	21	6.15	1850	05/01/91	0.01	0.02	0.2	0.010	8	123	3	0.001	0.0025
MW-2N	52	21	6.80	1000	07/23/91	0.01	0.02	0.2	0.010	7	119	4	0.001	0.0025
MW-2N	52	21	6.71	1570	11/05/91	0.01	0.02	0.2	0.010	8	188	1	0.001	0.0025
MW-2N	52	21	6.62	1910	05/05/92	0.01	0.02	0.2	0.019	10	132	4	0.001	0.0025
MW-2N	52	21	6.68	1850	11/10/92	0.01	0.02	0.2	0.010	15	141	4	0.001	0.0025
MW-2N	52	21	6.47	2010	05/04/93	0.01	0.02	0.2	0.012	9	121	2	0.001	0.0025
MW-2N	52	21	6.65	1490	11/16/93	0.01	0.02	0.2	0.010	10	133	4	0.001	0.0025
MW-2N	52	21	6.62	2000	04/25/94	0.01	0.02	0.2	0.010	9	111	6	0.001	0.0025
MW-2N	52	21	6.72	1980	11/08/94	0.02	0.04	0.2	0.010	10	122	3	0.001	0.0025
MW-2N	52	21	6.47	1930	05/02/95	0.02	0.04	0.2	0.020	11	141	5	0.001	0.0025
MW-2N	52	21	6.73	1897	05/14/96	0.02	0.04	0.2	0.010	11	141	2	0.001	0.0025
MW-2N	52	21	6.80	1880	06/24/97	0.005	0.01	0.01	0.030	13	130.0	1.27	0.001	0.0025
MW-2N	52	21	7.08	1820	05/05/98	0.005	0.01	0.01	0.010	12	123.0	1.88	0.001	0.0063
MW-2N	52	21	6.83	1550	05/11/99	0.005	0.01	0.01	0.020	13	123.0	4.33	0.001	0.0063
MW-2N	52	21	6.68	1700	05/09/00	0.005	0.01	0.01	0.020	13	75.0	0.90	0.001	0.0063
MW-2N	52	21	6.78	1560	04/17/01	0.005	0.01	0.01	0.027	12.80	96.5	2.10	0.001	0.0063
MW-2N	52	21	6.91	1530	04/16/02	0.005	0.01	0.01	0.025	12.70	79.0	0.89	0.001	0.0063
MW-2N	52	21	6.89	1800	04/21/03	0.005	0.01	0.01	0.030	13.20	75.8	1.10	0.001	0.005
MW-2N	52	21	6.87	944	04/20/04	0.005	0.01	0.01	0.028	11.50	56.6	2.66	0.001	0.0063
MW-2N	52	21	6.87	1240	04/19/05	0.005	0.01	0.01	0.024	14.60	75.6	3.00	0.001	0.0062
MW-2N	52	21	7.25	1500	04/19/06	0.005	0.01	0.01	0.018	18.00	95.1	1.53	0.001	0.006
MW-2N	52	21	6.89	1420	04/24/07	0.005	0.01	0.01	0.028	13.30	79.9	3.88	0.001	0.006
MW-3N	53	21	5.81	1630	10/30/90	0.01	0.02	0.2	0.010	4	200	30	0.001	0.0025
MW-3N	53	21	6.28	1840	02/12/91	0.01	0.02	0.2	0.010	3	203	26	0.001	0.0025
MW-3N	53	21	5.96	2080	05/01/91	0.01	0.02	0.2	0.010	6	196	28	0.001	0.0025
MW-3N	53	21	7.00	1100	07/23/91	0.01	0.02	0.2	0.010	5	201	27	0.001	0.0025
MW-3N	53	21	6.46	1770	11/05/91	0.01	0.02	0.2	0.010	6	207	32	0.001	0.0025
MW-3N	53	21	6.67	1970	05/05/92	0.01	0.02	0.2	0.010	7	197	27	0.001	0.0025
MW-3N	53	21	6.55	2000	11/10/92	0.01	0.02	0.2	0.010	20	211	24	0.001	0.0025
MW-3N	53	21	6.47	2140	05/04/93	0.01	0.02	0.2	0.010	7	206	23	0.001	0.0025
MW-3N	53	21	6.78	1050	11/16/93	0.01	0.02	0.2	0.010	9	72	107	0.001	0.0025
MW-3N	53	21	6.65	1500	04/25/94	0.01	0.02	0.2	0.010	6	72	49	0.001	0.0025
MW-3N	53	21	6.74	1563	11/08/94	0.02	0.04	0.2	0.010	7	86	41	0.001	0.0025
MW-3N	53	21	6.44	1220	05/02/95	0.02	0.04	0.2	0.010	5	90	30	0.001	0.0025
MW-3N	53	21	6.69	1370	05/14/96	0.02	0.04	0.2	0.010	7	83	24	0.001	0.0025
MW-3N	53	21	6.90	1340	06/24/97	0.005	0.01	0.01	0.010	8	84.6	24.30	0.001	0.0025
MW-3N	53	21	7.06	1350	05/05/98	0.005	0.01	0.01	0.010	6	94.9	18.90	0.001	0.0063
MW-3N	53	21	6.72	1390	05/11/99	0.005	0.01	0.01	0.010	8	112.0	19.90	0.001	0.0063
MW-3N	53	21	6.60	1500	05/09/00	0.005	0.01	0.01	0.010	7	46.0	15.80	0.001	0.0063
MW-3N	53	21	6.81	1190	04/17/01	0.005	0.01	0.01	0.005	6.53	73.2	13.80	0.001	0.0063
MW-3N	53	21	6.98	745	04/16/02	0.005	0.01	0.01	0.005	4.82	28.4	14.30	0.001	0.0063
MW-3N	53	21	6.82	986	04/21/03	0.005	0.01	0.01	0.005	6.17	53.1	13.1	0.001	0.005
MW-3N	53	21	6.77	999	04/20/04	0.005	0.01	0.01	0.005	5.66	70.4	11.3	0.001	0.0063
MW-3N	53	21	6.73	1160	04/19/05	0.005	0.01	0.01	0.005	7.68	71.5	10.7	0.001	0.0062
MW-3N	53	21	7.21	1650	04/19/06	0.005	0.01	0.01	0.005	12.2	124	9.33	0.001	0.006
MW-3N	53	21	6.69	1240	04/24/07	0.005	0.01	0.01	0.005	7.44	75	13	0.001	0.006

TABLE 1 (CONTINUED)

INDICATOR AND WATER QUALITY PARAMETERS DATABASE  
POST-CONSTRUCTION YEARS 1 THROUGH 17  
NORTH AREA CAP

Bayou Sorrel Site  
Bayou Sorrel, Louisiana

Well Name	Well Code	Cluster Code	pH	SC	Sample Date	Cadmium	Chromium	Lead	Arsenic	TOC	Chloride	Sulfate	Ethyl-	
													benzene	Phenol
MW-4N	54	21	5.88	1680	10/30/90	0.01	0.02	0.2	0.012	6	145	5	0.001	0.0025
MW-4N	54	21	6.69	1960	02/12/91	0.01	0.02	0.2	0.010	7	138	9	0.001	0.0025
MW-4N	54	21	6.19	2010	05/01/91	0.01	0.02	0.2	0.010	11	139	12	0.001	0.0025
MW-4N	54	21	6.80	1000	07/23/91	0.01	0.02	0.2	0.014	10	140	7	0.001	0.0025
MW-4N	54	21	6.54	1980	11/05/91	0.01	0.02	0.2	0.016	12	203	10	0.001	0.0025
MW-4N	54	21	6.73	2230	05/05/92	0.01	0.02	0.2	0.021	13	170	6	0.001	0.0025
MW-4N	54	21	6.72	2080	11/10/92	0.01	0.02	0.2	0.021	27	146	4	0.001	0.0025
MW-4N	54	21	6.64	2290	05/04/93	0.01	0.02	0.2	0.012	12	129	5	0.001	0.0025
MW-4N	54	21	6.67	1970	11/16/93	0.01	0.02	0.2	0.022	13	151	1	0.001	0.0025
MW-4N	54	21	6.68	2410	04/26/94	0.01	0.02	0.2	0.028	13	165	5	0.001	0.0025
MW-4N	54	21	6.72	2400	11/08/94	0.02	0.04	0.2	0.041	14	145	3	0.001	0.0025
MW-4N	54	21	6.62	2440	05/02/95	0.02	0.04	0.2	0.030	13	171	2	0.001	0.0025
MW-4N	54	21	6.75	2440	05/14/96	0.02	0.04	0.2	0.030	13	192	1	0.001	0.0025
MW-4N	54	21	6.91	2060	06/24/97	0.005	0.01	0.01	0.040	15	130.0	0.89	0.001	0.0025
MW-4N	54	21	7.03	1780	05/04/98	0.005	0.01	0.01	0.030	13	116.0	0.96	0.001	0.0063
MW-4N	54	21	7.00	1650	05/11/99	0.005	0.01	0.01	0.040	14	110.0	1.63	0.001	0.0063
MW-4N	54	21	6.72	1800	05/09/00	0.005	0.01	0.01	0.030	14	95.0	0.40	0.001	0.0063
MW-4N	54	21	6.85	1820	04/17/01	0.005	0.01	0.01	0.008	14.90	141.0	1.19	0.001	0.0063
MW-4N	54	21	6.98	1580	04/16/02	0.005	0.01	0.01	0.034	15.30	80.6	0.68	0.001	0.0063
MW-4N	54	21	6.89	1570	04/21/03	0.005	0.01	0.01	0.027	13.20	98.3	0.51	0.001	0.005
MW-4N	54	21	6.83	1380	04/20/04	0.005	0.01	0.01	0.045	12.40	96.1	0.20	0.001	0.0063
MW-4N	54	21	6.93	1570	04/19/05	0.005	0.01	0.01	0.024	12.40	89.7	0.43	0.001	0.0061
MW-4N	54	21	7.25	1690	04/19/06	0.005	0.01	0.01	0.044	16.70	118.0	0.42	0.001	0.006
MW-4N	54	21	6.91	1780	04/24/07	0.005	0.01	0.01	0.005	14.70	141.0	0.51	0.001	0.006
MW-5N	55	22	6.30	2030	10/30/90	0.01	0.02	0.2	0.010	3	290	38	0.001	0.0025
MW-5N	55	22	6.48	2150	02/12/91	0.01	0.02	0.2	0.010	2	272	49	0.001	0.0025
MW-5N	55	22	6.06	2240	05/01/91	0.01	0.02	0.2	0.010	6	245	41	0.001	0.0025
MW-5N	55	22	7.10	1000	07/23/91	0.01	0.02	0.2	0.010	6	258	37	0.001	0.0025
MW-5N	55	22	6.36	2110	11/05/91	0.01	0.02	0.2	0.010	7	345	35	0.001	0.0025
MW-5N	55	22	6.65	2520	05/05/92	0.01	0.02	0.2	0.010	9	366	27	0.001	0.0025
MW-5N	55	22	6.64	2250	11/10/92	0.01	0.02	0.2	0.010	18	329	31	0.001	0.0025
MW-5N	55	22	6.57	2410	05/04/93	0.01	0.02	0.2	0.010	7	322	31	0.001	0.0025
MW-5N	55	22	6.66	2080	11/16/93	0.01	0.02	0.2	0.010	8	323	26	0.001	0.0025
MW-5N	55	22	6.61	2900	04/26/94	0.01	0.02	0.2	0.010	7	259	25	0.001	0.0025
MW-5N	55	22	6.79	2200	11/08/94	0.02	0.04	0.2	0.012	8	338	21	0.001	0.0025
MW-5N	55	22	6.49	2240	05/02/95	0.02	0.04	0.2	0.010	7	362	19	0.001	0.0025
MW-5N	55	22	6.65	2600	05/14/96	0.02	0.04	0.2	0.010	9	361	15	0.001	0.0025
MW-5N	55	22	6.86	2220	06/24/97	0.005	0.01	0.01	0.020	10	285.0	15.40	0.001	0.0025
MW-5N	55	22	7.24	2040	05/05/98	0.005	0.01	0.01	0.010	7	247.0	16.70	0.001	0.0063
MW-5N	55	22	6.73	2010	05/11/99	0.005	0.01	0.01	0.030	10	291.0	16.60	0.001	0.0063
MW-5N	55	22	6.62	2700	05/09/00	0.005	0.01	0.01	0.020	15	323.0	12.20	0.001	0.0063
MW-5N	55	22	6.78	2250	04/17/01	0.005	0.01	0.01	0.028	10.50	312.0	17.50	0.001	0.0063
MW-5N	55	22	6.83	2090	04/16/02	0.005	0.01	0.01	0.020	10.70	355.0	7.40	0.001	0.0063
MW-5N	55	22	6.80	2100	04/22/03	0.005	0.01	0.01	0.008	8.20	275.0	11.70	0.001	0.005
MW-5N	55	22	6.71	2430	04/20/04	0.005	0.01	0.01	0.030	10.40	407.0	3.76	0.001	0.0063
MW-5N	55	22	6.71	2520	04/19/05	0.005	0.01	0.01	0.007	10.20	371.0	7.49	0.001	0.0061
MW-5N	55	22	7.10	3480	04/19/06	0.005	0.01	0.01	0.063	20.70	669.0	3.74	0.001	0.006
MW-5N	55	22	6.83	2250	04/24/07	0.005	0.01	0.01	0.022	10.20	302.0	12.80	0.001	0.006
MW-6N	56	22	6.30	3090	10/30/90	0.01	0.02	0.2	0.010	2	685	55	0.001	0.0025
MW-6N	56	22	7.01	3270	02/12/91	0.01	0.02	0.2	0.010	2	572	72	0.001	0.0025
MW-6N	56	22	6.36	3810	05/01/91	0.01	0.02	0.2	0.010	6	578	64	0.001	0.0025
MW-6N	56	22	7.20	1500	07/23/91	0.01	0.02	0.2	0.010	4	646	63	0.001	0.0025
MW-6N	56	22	6.49	3610	11/05/91	0.01	0.02	0.2	0.010	8	714	44	0.001	0.0025
MW-6N	56	22	6.69	3730	05/05/92	0.01	0.02	0.2	0.010	10	727	39	0.001	0.0025
MW-6N	56	22	6.64	3670	11/10/92	0.01	0.02	0.2	0.014	21	792	38	0.001	0.0025
MW-6N	56	22	6.58	3720	05/04/93	0.01	0.02	0.2	0.010	8	634	34	0.001	0.0025
MW-6N	56	22	6.64	3480	11/16/93	0.01	0.02	0.2	0.014	8	625	35	0.001	0.0025
MW-6N	56	22	6.61	4000	04/26/94	0.01	0.02	0.2	0.010	7	590	37	0.001	0.0025
MW-6N	56	22	6.76	3800	11/08/94	0.02	0.04	0.2	0.029	10	801	21	0.001	0.0025
MW-6N	56	22	6.53	3520	05/02/95	0.02	0.04	0.2	0.030	8	714	32	0.001	0.0025
MW-6N	56	22	6.66	3900	05/14/96	0.02	0.04	0.2	0.030	11	696	19	0.001	0.0025
MW-6N	56	22	6.84	3510	06/24/97	0.005	0.01	0.01	0.040	11	681.0	22.10	0.001	0.0025
MW-6N	56	22	7.36	3490	05/05/98	0.005	0.01	0.01	0.020	10	661.0	17.80	0.001	0.0063
MW-6N	56	22	6.78	3360	05/11/99	0.005	0.01	0.01	0.040	12	727.0	11.60	0.001	0.0063
MW-6N	56	22	6.60	3960	05/09/00	0.005	0.01	0.01	0.020	16	395.0	4.40	0.001	0.0063
MW-6N	56	22	6.71	3520	04/17/01	0.005	0.01	0.01	0.031	15.00	527.0	14.00	0.001	0.0063
MW-6N	56	22	6.76	3560	04/16/02	0.005	0.01	0.01	0.057	13.20	609.0	8.76	0.001	0.0063
MW-6N	56	22	6.74	3660	04/22/03	0.005	0.01	0.01	0.022	10.80	668.0	8.69	0.001	0.005
MW-6N	56	22	6.66	3640	04/20/04	0.005	0.01	0.01	0.031	12	712	3.27	0.001	0.0063
MW-6N	56	22	6.68	3740	04/19/05	0.005	0.01	0.01	0.056	14.8	748	4.25	0.001	0.006
MW-6N	56	22	7.24	2560	04/19/06	0.005	0.01	0.01	0.058	19.9	417	3.9	0.001	0.006
MW-6N	56	22	6.92	3450	04/24/07	0.005	0.01	0.01	0.061	14.4	643	4.37	0.001	0.006

TABLE 1 (CONTINUED)

INDICATOR AND WATER QUALITY PARAMETERS DATABASE  
 POST-CONSTRUCTION YEARS 1 THROUGH 17  
 NORTH AREA CAP

Bayou Sorrel Site  
 Bayou Sorrel, Louisiana

Well Name	Well Code	Cluster Code	pH	SC	Sample Date	Cadmium	Chromium	Lead	Arsenic	TOC	Chloride	Sulfate	Ethyl-benzene	Phenol
MW-7N	57	22	6.33	1940	10/30/90	0.01	0.02	0.2	0.010	2	285	37	0.001	0.0025
MW-7N	57	22	6.60	1750	02/12/91	0.01	0.02	0.2	0.010	1	205	49	0.001	0.0025
MW-7N	57	22	6.13	1920	05/01/91	0.01	0.02	0.2	0.010	4	240	41	0.001	0.0025
MW-7N	57	22	7.40	1100	07/23/91	0.01	0.02	0.2	0.010	3	426	21	0.001	0.0025
MW-7N	57	22	6.40	2320	11/05/91	0.01	0.02	0.2	0.010	6	524	19	0.001	0.0025
MW-7N	57	22	6.69	2560	05/05/92	0.01	0.02	0.2	0.010	7	515	9	0.001	0.0025
MW-7N	57	22	6.59	2310	11/10/92	0.01	0.02	0.2	0.010	15	471	19	0.001	0.0025
MW-7N	57	22	6.56	2240	05/04/93	0.01	0.02	0.2	0.010	5	289	27	0.001	0.0025
MW-7N	57	22	6.62	2310	11/16/93	0.01	0.02	0.2	0.010	6	423	16	0.001	0.0025
MW-7N	57	22	6.64	3000	04/26/94	0.01	0.02	0.2	0.010	5	320	23	0.001	0.0025
MW-7N	57	22	6.73	2300	11/08/94	0.02	0.04	0.2	0.010	7	436	16	0.001	0.0025
MW-7N	57	22	6.47	2090	05/02/95	0.02	0.04	0.2	0.010	5	320	26	0.001	0.0025
MW-7N	57	22	6.63	2740	05/14/96	0.02	0.04	0.2	0.020	8	465	2	0.001	0.0025
MW-7N	57	22	6.82	2200	06/24/97	0.005	0.01	0.01	0.010	7	330.0	17.30	0.001	0.0025
MW-7N	57	22	7.14	2290	05/05/98	0.005	0.01	0.01	0.010	6	358.0	15.40	0.001	0.0063
MW-7N	57	22	6.74	2260	05/11/99	0.005	0.01	0.01	0.020	8	418.0	14.30	0.001	0.0063
MW-7N	57	22	6.63	2430	05/09/00	0.005	0.01	0.01	0.020	7	273.0	14.60	0.001	0.0063
MW-7N	57	22	6.75	2460	04/17/01	0.005	0.01	0.01	0.016	8.37	417.0	16.10	0.001	0.0063
MW-7N	57	22	6.79	2230	04/16/02	0.005	0.01	0.01	0.022	7.19	328.0	16.80	0.001	0.0063
MW-7N	57	22	6.58	2590	04/22/03	0.005	0.01	0.01	0.018	7.31	436.0	6.56	0.001	0.005
MW-7N	57	22	6.66	2420	04/20/04	0.005	0.01	0.01	0.028	8.23	531.0	6.02	0.001	0.0063
MW-7N	57	22	6.69	2640	04/19/05	0.005	0.01	0.01	0.015	9.83	502.0	7.81	0.001	0.006
MW-7N	57	22	7.09	2530	04/19/06	0.005	0.01	0.01	0.055	15.20	446.0	5.04	0.001	0.0063
MW-7N	57	22	6.82	2450	04/24/07	0.005	0.01	0.01	0.034	9.87	457.0	8.59	0.001	0.0062
MW-8N	58	23	6.44	1920	10/30/90	0.01	0.02	0.2	0.010	6	420	16	0.001	0.0025
MW-8N	58	23	6.22	2290	02/13/91	0.01	0.02	0.2	0.010	4	404	51	0.001	0.0025
MW-8N	58	23	6.06	2830	05/01/91	0.01	0.02	0.2	0.010	16	441	9	0.001	0.0025
MW-8N	58	23	7.00	1100	07/23/91	0.01	0.02	0.2	0.011	7	400	13	0.001	0.0025
MW-8N	58	23	6.41	2400	11/05/91	0.01	0.02	0.2	0.013	13	432	10	0.001	0.0025
MW-8N	58	23	6.57	2480	05/05/92	0.01	0.02	0.2	0.011	15	420	12	0.001	0.0025
MW-8N	58	23	6.53	2570	11/10/92	0.01	0.02	0.2	0.019	24	455	11	0.001	0.0025
MW-8N	58	23	6.50	2660	05/04/93	0.01	0.02	0.2	0.013	15	413	8	0.001	0.0025
MW-8N	58	23	6.63	2450	11/16/93	0.01	0.02	0.2	0.010	12	435	7	0.001	0.0025
MW-8N	58	23	6.56	2700	04/26/94	0.01	0.02	0.2	0.012	14	412	6	0.001	0.0025
MW-8N	58	23	6.76	2430	11/08/94	0.02	0.04	0.2	0.014	14	425	9	0.001	0.0025
MW-8N	58	23	6.48	2430	05/02/95	0.02	0.04	0.2	0.010	12	517	7	0.001	0.0025
MW-8N	58	23	6.58	2580	05/14/96	0.02	0.04	0.2	0.020	15	401	4	0.001	0.0025
MW-8N	58	23	6.68	2420	06/24/97	0.005	0.01	0.01	0.010	17	422.0	3.46	0.001	0.0025
MW-8N	58	23	6.92	2380	05/05/98	0.005	0.01	0.01	0.010	13	383.0	4.27	0.001	0.0063
MW-8N	58	23	6.91	2260	05/11/99	0.005	0.01	0.01	0.030	14	413.0	5.92	0.001	0.0063
MW-8N	58	23	6.64	2490	05/09/00	0.005	0.01	0.01	0.020	18	277.0	2.00	0.001	0.0063
MW-8N	58	23	6.58	2300	04/17/01	0.005	0.01	0.01	0.024	17.90	455.0	6.17	0.001	0.0063
MW-8N	58	23	6.75	2380	04/16/02	0.005	0.01	0.01	0.030	18.00	405.0	3.24	0.001	0.0063
MW-8N	58	23	6.50	2470	04/22/03	0.005	0.01	0.01	0.012	14.60	428.0	1.77	0.001	0.005
MW-8N	58	23	6.62	2290	04/20/04	0.005	0.01	0.01	0.032	13.90	370.0	2.20	0.001	0.0063
MW-8N	58	23	6.71	2180	04/19/05	0.005	0.01	0.01	0.033	15.00	350.0	4.17	0.001	0.006
MW-8N	58	23	7.01	2310	04/19/06	0.005	0.01	0.01	0.037	18.50	366.0	1.65	0.001	0.006
MW-8N	58	23	6.86	2230	04/24/07	0.005	0.01	0.01	0.025	14.90	382.0	3.17	0.001	0.006
MW-9N	59	23	5.98	2900	10/31/90	0.01	0.02	0.2	0.010	4	665	55	0.001	0.0025
MW-9N	59	23	6.21	2970	02/13/91	0.01	0.02	0.2	0.025	2	697	51	0.001	0.0025
MW-9N	59	23	6.23	3680	05/01/91	0.01	0.02	0.2	0.031	10	734	35	0.001	0.0025
MW-9N	59	23	6.39	3220	07/23/91	0.01	0.02	0.2	0.052	4	730	35	0.001	0.0025
MW-9N	59	23	6.53	3200	11/05/91	0.01	0.02	0.2	0.062	11	698	61	0.001	0.0025
MW-9N	59	23	6.63	3250	05/05/92	0.01	0.02	0.2	0.045	11	667	50	0.001	0.0025
MW-9N	59	23	6.64	3440	11/10/92	0.01	0.02	0.2	0.089	20	647	36	0.001	0.0025
MW-9N	59	23	6.59	3450	05/04/93	0.01	0.02	0.2	0.044	11	624	29	0.001	0.0025
MW-9N	59	23	6.79	3210	11/16/93	0.01	0.02	0.2	0.084	9	667	28	0.001	0.0025
MW-9N	59	23	6.72	3200	04/26/94	0.01	0.02	0.2	0.055	11	612	20	0.001	0.0025
MW-9N	59	23	6.80	3170	11/08/94	0.02	0.04	0.2	0.062	10	623	17	0.001	0.0025
MW-9N	59	23	6.48	3030	05/02/95	0.02	0.04	0.2	0.080	10	703	37	0.001	0.0025
MW-9N	59	23	6.90	3380	05/14/96	0.02	0.04	0.2	0.070	11	589	11	0.001	0.0025
MW-9N	59	23	6.95	3200	06/24/97	0.005	0.01	0.01	0.090	12	607.0	17.50	0.001	0.0025
MW-9N	59	23	7.39	3100	05/05/98	0.005	0.01	0.01	0.040	11	588.0	17.10	0.001	0.0063
MW-9N	59	23	6.93	3000	05/11/99	0.005	0.01	0.01	0.070	12	670.0	4.48	0.001	0.0063
MW-9N	59	23	6.62	3200	05/09/00	0.005	0.01	0.01	0.090	13	556.0	11.90	0.001	0.0063
MW-9N	59	23	6.81	3060	04/17/01	0.005	0.01	0.01	0.140	12.70	571.0	37.30	0.001	0.0063
MW-9N	59	23	6.85	3170	04/16/02	0.005	0.01	0.01	0.111	12.00	571.0	19.60	0.001	0.0063
MW-9N	59	23	6.74	3250	04/22/03	0.005	0.01	0.01	0.059	10.60	616.0	15.30	0.001	0.005
MW-9N	59	23	6.74	2780	04/20/04	0.005	0.01	0.01	0.150	9.37	571	20.6	0.001	0.0063
MW-9N	59	23	6.78	2730	04/19/05	0.005	0.01	0.01	0.140	10.6	572	23.9	0.001	0.006
MW-9N	59	23	7.10	2900	04/19/06	0.005	0.01	0.01	0.150	16.3	579	11.1	0.001	0.006
MW-9N	59	23	6.84	2950	04/24/07	0.005	0.01	0.01	0.180	12.2	554	13.5	0.001	0.006

TABLE 1 (CONTINUED)

INDICATOR AND WATER QUALITY PARAMETERS DATABASE  
 POST-CONSTRUCTION YEARS 1 THROUGH 17  
 NORTH AREA CAP

Bayou Sorrel Site  
 Bayou Sorrel, Louisiana

Well Name	Well Code	Cluster Code	pH	SC	Sample Date	Cadmium	Chromium	Lead	Arsenic	TOC	Chloride	Sulfate	Ethylbenzene	Phenol
MW-10N	60	23	6.16	1970	10/31/90	0.01	0.02	0.2	0.010	3	385	74	0.001	0.0025
MW-10N	60	23	6.34	2290	02/13/91	0.01	0.02	0.2	0.010	2	349	70	0.001	0.0025
MW-10N	60	23	6.14	2780	05/01/91	0.01	0.02	0.2	0.010	5	341	70	0.001	0.0025
MW-10N	60	23	7.10	1200	07/23/91	0.01	0.02	0.2	0.010	4	368	66	0.001	0.0025
MW-10N	60	23	6.52	2560	11/05/91	0.01	0.02	0.2	0.010	7	456	66	0.001	0.0025
MW-10N	60	23	6.67	2800	05/05/92	0.01	0.02	0.2	0.010	7	475	48	0.001	0.0025
MW-10N	60	23	6.67	2660	11/10/92	0.01	0.02	0.2	0.010	16	455	51	0.001	0.0025
MW-10N	60	23	6.62	2720	05/04/93	0.01	0.02	0.2	0.010	6	380	69	0.001	0.0025
MW-10N	60	23	6.68	2380	11/16/93	0.01	0.02	0.2	0.010	7	366	52	0.001	0.0025
MW-10N	60	23	6.67	2700	04/26/94	0.01	0.02	0.2	0.010	6	309	65	0.001	0.0025
MW-10N	60	23	6.84	2810	11/08/94	0.02	0.04	0.2	0.012	9	404	45	0.001	0.0025
MW-10N	60	23	6.49	2470	05/02/95	0.02	0.04	0.2	0.010	6	339	61	0.001	0.0025
MW-10N	60	23	6.70	2790	05/14/96	0.02	0.04	0.2	0.010	9	388	43	0.001	0.0025
MW-10N	60	23	6.89	2480	06/24/97	0.005	0.01	0.01	0.020	7	321.0	57.00	0.001	0.0025
MW-10N	60	23	7.15	2500	05/05/98	0.005	0.01	0.01	0.010	8	299.0	47.90	0.001	0.0063
MW-10N	60	23	6.90	2290	05/11/99	0.005	0.01	0.01	0.020	8	303.0	40.00	0.001	0.0063
MW-10N	60	23	6.88	2440	05/10/00	0.005	0.01	0.01	0.020	9	199.0	27.00	0.001	0.0063
MW-10N	60	23	6.80	2380	04/17/01	0.005	0.01	0.01	0.026	7.50	277.0	46.40	0.001	0.0063
MW-10N	60	23	6.82	2340	04/16/02	0.005	0.01	0.01	0.033	6.92	224.0	35.10	0.001	0.0063
MW-10N	60	23	6.82	2330	04/22/03	0.005	0.01	0.01	0.024	6.40	266.0	30.60	0.001	0.005
MW-10N	60	23	6.81	2090	04/20/04	0.005	0.01	0.01	0.013	5.44	275.0	28.10	0.001	0.0063
MW-10N	60	23	6.82	1890	04/19/05	0.005	0.01	0.01	0.026	7.29	224.0	27.10	0.001	0.0062
MW-10N	60	23	7.43	2080	04/19/06	0.005	0.01	0.01	0.071	11.30	204.0	21.30	0.001	0.006
MW-10N	60	23	7.00	1860	04/24/07	0.005	0.01	0.01	0.018	7.36	185.0	26.00	0.001	0.006
MW-11N	61	24	5.86	1870	10/31/90	0.01	0.02	0.2	0.010	2	305	38	0.001	0.0025
MW-11N	61	24	6.14	1770	02/13/91	0.01	0.02	0.2	0.010	1	276	41	0.001	0.0025
MW-11N	61	24	5.86	1640	05/02/91	0.01	0.02	0.2	0.010	4	267	39	0.001	0.0025
MW-11N	61	24	7.20	1000	07/23/91	0.01	0.02	0.2	0.013	3	332	24	0.001	0.0025
MW-11N	61	24	6.29	2010	11/05/91	0.01	0.02	0.2	0.010	5	546	20	0.001	0.0025
MW-11N	61	24	6.43	2140	05/05/92	0.01	0.02	0.2	0.013	9	392	20	0.001	0.0025
MW-11N	61	24	6.39	2220	11/10/92	0.01	0.02	0.2	0.010	13	458	21	0.001	0.0025
MW-11N	61	24	6.35	2330	05/04/93	0.01	0.02	0.2	0.010	5	355	21	0.001	0.0025
MW-11N	61	24	6.48	2010	11/16/93	0.01	0.02	0.2	0.010	5	385	19	0.001	0.0025
MW-11N	61	24	6.47	2600	04/26/94	0.01	0.02	0.2	0.010	6	381	11	0.001	0.0025
MW-11N	61	24	6.60	2240	11/08/94	0.02	0.04	0.2	0.010	7	424	15	0.001	0.0025
MW-11N	61	24	6.17	1740	05/02/95	0.02	0.04	0.2	0.010	6	344	14	0.001	0.0025
MW-11N	61	24	6.59	2450	05/13/96	0.02	0.04	0.2	0.030	7	435	5	0.001	0.0025
MW-11N	61	24	6.61	2040	06/24/97	0.005	0.01	0.01	0.010	8	384.0	10.50	0.001	0.0025
MW-11N	61	24	6.89	2080	05/05/98	0.005	0.01	0.01	0.010	8	392.0	7.11	0.001	0.0063
MW-11N	61	24	6.59	2080	05/11/99	0.005	0.01	0.01	0.030	10	483.0	3.20	0.001	0.0063
MW-11N	61	24	6.60	2090	05/10/00	0.005	0.01	0.01	0.010	7	294.0	11.80	0.001	0.0063
MW-11N	61	24	6.46	2140	04/17/01	0.005	0.01	0.01	0.024	10.60	473.0	7.43	0.001	0.0063
MW-11N	61	24	6.61	2190	04/16/02	0.005	0.01	0.01	0.027	8.38	422.0	4.33	0.001	0.0063
MW-11N	61	24	6.48	2260	04/22/03	0.005	0.01	0.01	0.029	7.97	435.0	3.30	0.001	0.005
MW-11N	61	24	6.52	1950	04/20/04	0.005	0.01	0.01	0.030	7.87	391.0	3.51	0.001	0.0063
MW-11N	61	24	6.53	2070	04/19/05	0.005	0.01	0.01	0.020	8.23	380.0	5.19	0.001	0.0061
MW-11N	61	24	7.01	2180	04/19/06	0.005	0.01	0.01	0.048	13.00	385.0	1.87	0.001	0.006
MW-11N	61	24	6.66	2140	04/24/07	0.005	0.01	0.01	0.029	8.65	429.0	3.43	0.001	0.006
MW-12N	62	24	6.20	1820	10/31/90	0.01	0.02	0.2	0.010	7	250	3	0.001	0.0025
MW-12N	62	24	6.14	2070	02/13/91	0.01	0.02	0.2	0.010	5	259	2	0.001	0.0025
MW-12N	62	24	6.03	2200	05/02/91	0.01	0.02	0.2	0.010	12	235	2	0.001	0.0025
MW-12N	62	24	6.51	1990	07/24/91	0.01	0.02	0.2	0.014	7	248	1	0.001	0.0025
MW-12N	62	24	6.63	2040	11/05/91	0.01	0.02	0.2	0.015	11	333	1	0.001	0.0025
MW-12N	62	24	6.75	2310	05/05/92	0.01	0.02	0.2	0.012	13	350	2	0.001	0.0025
MW-12N	62	24	6.75	2170	11/10/92	0.01	0.02	0.2	0.012	22	303	3	0.001	0.0025
MW-12N	62	24	6.66	2430	05/04/93	0.01	0.02	0.2	0.027	13	307	2	0.001	0.0025
MW-12N	62	24	6.71	2160	11/16/93	0.01	0.02	0.2	0.019	13	275	3	0.001	0.0025
MW-12N	62	24	6.70	2500	04/26/94	0.01	0.02	0.2	0.010	13	307	5	0.001	0.0025
MW-12N	62	24	6.86	2380	11/08/94	0.02	0.04	0.2	0.015	12	302	3	0.001	0.0025
MW-12N	62	24	6.39	2310	05/02/95	0.02	0.04	0.2	0.020	14	341	3	0.001	0.0025
MW-12N	62	24	6.84	2350	05/13/96	0.02	0.04	0.2	0.020	14	337	2	0.001	0.0025
MW-12N	62	24	6.91	2360	06/24/97	0.005	0.01	0.01	0.020	15	297.0	0.20	0.001	0.0025
MW-12N	62	24	6.86	2350	05/05/98	0.005	0.01	0.01	0.020	15	329.0	0.21	0.001	0.0063
MW-12N	62	24	6.86	2200	05/11/99	0.005	0.01	0.01	0.020	15	306.0	0.20	0.001	0.0063
MW-12N	62	24	6.71	2630	05/10/00	0.005	0.01	0.01	0.010	15	371.0	0.30	0.001	0.0063
MW-12N	62	24	6.72	2370	04/17/01	0.005	0.01	0.01	0.012	18.30	370.0	0.20	0.001	0.0063
MW-12N	62	24	6.82	2290	04/16/02	0.005	0.01	0.01	0.041	18.20	278.0	0.28	0.001	0.0063
MW-12N	62	24	6.82	2230	04/22/03	0.005	0.01	0.01	0.021	14.40	233.0	0.20	0.001	0.005
MW-12N	62	24	6.73	2150	04/20/04	0.005	0.01	0.01	0.012	12.2	395	0.2	0.001	0.0063
MW-12N	62	24	6.78	2280	04/19/05	0.005	0.01	0.01	0.013	14.9	280	0.2	0.001	0.006
MW-12N	62	24	7.12	2420	04/19/06	0.005	0.01	0.01	0.041	18.9	407	0.368	0.001	0.006
MW-12N	62	24	6.91	1870	04/24/07	0.005	0.01	0.01	0.013	14	205	0.2	0.001	0.006

TABLE 1 (CONTINUED)

INDICATOR AND WATER QUALITY PARAMETERS DATABASE  
 POST-CONSTRUCTION YEARS 1 THROUGH 17  
 NORTH AREA CAP

Bayou Sorrel Site  
 Bayou Sorrel, Louisiana

Well Name	Well Code	Cluster Code	pH	SC	Sample Date	Cadmium	Chromium	Lead	Arsenic	TOC	Chloride	Sulfate	Ethyl-benzene	Phenol
MW-13N	63	24	5.94	2420	10/31/90	0.01	0.02	0.2	0.010	6	665	3	0.001	0.0025
MW-13N	63	24	6.08	2740	02/13/91	0.01	0.02	0.2	0.010	1	702	2	0.001	0.0025
MW-13N	63	24	5.82	3130	05/02/91	0.01	0.02	0.2	0.010	6	708	4	0.001	0.0025
MW-13N	63	24	6.43	2560	07/24/91	0.01	0.02	0.2	0.016	4	730	1	0.001	0.0025
MW-13N	63	24	6.48	2890	11/05/91	0.01	0.02	0.2	0.021	8	741	1	0.001	0.0025
MW-13N	63	24	6.54	3370	05/05/92	0.01	0.02	0.2	0.021	8	760	2	0.001	0.0025
MW-13N	63	24	6.58	3440	11/10/92	0.01	0.02	0.2	0.022	16	805	1	0.001	0.0025
MW-13N	63	24	6.54	3670	05/04/93	0.01	0.02	0.2	0.019	9	765	2	0.001	0.0025
MW-13N	63	24	6.64	3230	11/16/93	0.01	0.02	0.2	0.023	9	750	1	0.001	0.0025
MW-13N	63	24	6.67	3600	04/26/94	0.01	0.02	0.2	0.022	9	678	4	0.001	0.0025
MW-13N	63	24	6.66	3400	11/08/94	0.02	0.04	0.2	0.024	9	653	4	0.001	0.0025
MW-13N	63	24	6.35	3300	05/02/95	0.02	0.04	0.2	0.010	9	798	2	0.001	0.0025
MW-13N	63	24	6.77	3140	05/13/96	0.02	0.04	0.2	0.030	12	517	1	0.001	0.0025
MW-13N	63	24	6.84	2660	06/24/97	0.005	0.01	0.01	0.030	13	408.0	0.26	0.001	0.0025
MW-13N	63	24	7.18	2430	05/05/98	0.005	0.01	0.01	0.010	12	383.0	0.22	0.001	0.0063
MW-13N	63	24	6.87	2350	05/11/99	0.005	0.01	0.01	0.030	12	394.0	0.20	0.001	0.0063
MW-13N	63	24	6.93	2410	05/10/00	0.005	0.01	0.01	0.020	12	277.0	0.20	0.001	0.0063
MW-13N	63	24	6.71	2310	04/17/01	0.005	0.01	0.01	0.065	17.20	335.0	0.20	0.001	0.0063
MW-13N	63	24	6.83	2240	04/16/02	0.005	0.01	0.01	0.041	13.80	291.0	0.26	0.001	0.0063
MW-13N	63	24	6.75	2240	04/22/03	0.005	0.01	0.01	0.020	13.60	278.0	0.34	0.001	0.005
MW-13N	63	24	6.76	1930	04/20/04	0.005	0.01	0.01	0.037	12.1	235	2.35	0.001	0.0063
MW-13N	63	24	6.76	2140	04/19/05	0.005	0.01	0.01	0.045	13.1	243	0.2	0.001	0.0061
MW-13N	63	24	7.15	1900	04/19/06	0.005	0.01	0.01	0.058	19.5	203	0.359	0.001	0.006
MW-13N	63	24	6.92	1850	04/24/07	0.005	0.01	0.01	0.015	13.4	227	0.322	0.001	0.006
UW-1N	70	30	6.19	2400	10/30/90	0.01	0.02	0.2	0.010	4	385	42	0.001	0.0025
UW-1N	70	30	6.65	2410	02/12/91	0.01	0.02	0.2	0.010	2	340	55	0.001	0.0025
UW-1N	70	30	6.81	2540	05/01/91	0.01	0.02	0.2	0.010	6	328	45	0.001	0.0025
UW-1N	70	30	6.30	2400	07/23/91	0.01	0.02	0.2	0.010	7	345	45	0.001	0.0025
UW-1N	70	30	6.54	2580	11/05/91	0.01	0.02	0.2	0.010	9	380	39	0.001	0.0025
UW-1N	70	30	6.68	2650	05/05/92	0.01	0.02	0.2	0.010	10	440	35	0.001	0.0025
UW-1N	70	30	6.61	2390	11/10/92	0.01	0.02	0.2	0.014	23	435	33	0.001	0.0025
UW-1N	70	30	6.67	2810	05/04/93	0.01	0.02	0.2	0.010	8	369	38	0.001	0.0025
UW-1N	70	30	6.69	2520	11/16/93	0.01	0.02	0.2	0.010	9	405	25	0.001	0.0025
UW-1N	70	30	6.64	3400	04/26/94	0.01	0.02	0.2	0.010	8	357	21	0.001	0.0025
UW-1N	70	30	6.78	2740	11/08/94	0.02	0.04	0.2	0.010	9	323	38	0.001	0.0025
UW-1N	70	30	6.57	2520	05/02/95	0.02	0.04	0.2	0.010	8	380	27	0.001	0.0025
UW-1N	70	30	6.67	2720	05/14/96	0.02	0.04	0.2	0.010	9	395	17	0.001	0.0025
UW-1N	70	30	6.84	2560	06/24/97	0.005	0.01	0.01	0.010	9	371.0	20.90	0.001	0.0025
UW-1N	70	30	7.08	2350	05/04/98	0.005	0.01	0.01	0.040	9	379.0	19.00	0.001	0.0063
UW-1N	70	30	6.93	1580	05/11/99	0.005	0.01	0.01	0.020	10	442.0	13.40	0.001	0.0063
UW-1N	70	30	6.96	2690	05/10/00	0.005	0.01	0.01	0.010	10	368.0	14.30	0.001	0.0063
UW-1N	70	30	6.72	2570	04/17/01	0.005	0.01	0.01	0.019	11.10	413.0	19.70	0.001	0.0063
UW-1N	70	30	6.83	2610	04/16/02	0.005	0.01	0.01	0.013	10.00	381.0	20.00	0.001	0.0063
UW-1N	70	30	6.87	2380	04/21/03	0.005	0.01	0.01	0.017	7.94	356.0	45.20	0.001	0.005
UW-1N	70	30	6.80	2150	04/20/04	0.005	0.01	0.01	0.005	8.28	354.0	22.90	0.001	0.0063
UW-1N	70	30	6.86	2300	04/19/05	0.005	0.01	0.01	0.005	8.46	335.0	24.70	0.001	0.0063
UW-1N	70	30	7.69	2420	04/19/06	0.005	0.01	0.01	0.028	9.51	407.0	9.97	0.001	0.006
UW-1N	70	30	6.78	2710	04/24/07	0.005	0.01	0.01	0.005	8.40	406.0	14.90	0.001	0.006
UW-2N	71	30	5.77	1610	10/30/90	0.01	0.02	0.2	0.010	4	170	11	0.001	0.0025
UW-2N	71	30	6.57	1830	02/12/91	0.01	0.02	0.2	0.010	5	160	13	0.001	0.0025
UW-2N	71	30	6.06	1630	05/01/91	0.01	0.02	0.2	0.010	9	158	12	0.001	0.0025
UW-2N	71	30	6.14	2200	07/23/91	0.01	0.02	0.2	0.010	9	176	8	0.001	0.0025
UW-2N	71	30	6.33	1810	11/05/91	0.01	0.02	0.2	0.010	10	318	13	0.001	0.0025
UW-2N	71	30	6.47	2120	05/05/92	0.01	0.02	0.2	0.015	12	250	6	0.001	0.0025
UW-2N	71	30	6.62	1780	11/10/92	0.01	0.02	0.2	0.013	27	187	6	0.001	0.0025
UW-2N	71	30	6.54	2100	05/04/93	0.01	0.02	0.2	0.010	10	191	7	0.001	0.0025
UW-2N	71	30	6.63	1730	11/16/93	0.01	0.02	0.2	0.010	12	175	8	0.001	0.0025
UW-2N	71	30	6.56	2500	04/26/94	0.01	0.02	0.2	0.010	11	155	10	0.001	0.0025
UW-2N	71	30	6.74	1940	11/08/94	0.02	0.04	0.2	0.010	11	159	9	0.001	0.0025
UW-2N	71	30	6.49	1860	05/02/95	0.02	0.04	0.2	0.010	10	167	5	0.001	0.0025
UW-2N	71	30	6.65	1894	05/13/96	0.02	0.04	0.2	0.010	11	151	6	0.001	0.0025
UW-2N	71	30	6.83	1830	06/24/97	0.005	0.01	0.01	0.010	11	164.0	3.89	0.001	0.0025
UW-2N	71	30	6.77	1760	05/04/98	0.005	0.01	0.01	0.010	11	158.0	3.27	0.001	0.0063
UW-2N	71	30	6.76	1740	05/11/99	0.005	0.01	0.01	0.020	12	168.0	4.43	0.001	0.0063
UW-2N	71	30	6.84	1850	05/10/00	0.005	0.01	0.01	0.010	12	183.0	2.40	0.001	0.0063
UW-2N	71	30	6.65	1880	04/17/01	0.005	0.01	0.01	0.014	14.20	188.0	7.43	0.001	0.0063
UW-2N	71	30	6.72	1860	04/18/02	0.005	0.01	0.01	0.010	12.90	133.0	4.15	0.001	0.0063
UW-2N	71	30	6.73	1860	04/21/03	0.005	0.01	0.01	0.008	12.50	189.0	2.38	0.001	0.005
UW-2N	71	30	6.68	1640	04/20/04	0.005	0.01	0.01	0.015	12.1	212	1.18	0.001	0.0063
UW-2N	71	30	6.72	1710	04/19/05	0.005	0.01	0.01	0.021	14.1	183	1.75	0.001	0.0061
UW-2N	71	30	7.06	1620	04/19/06	0.005	0.01	0.01	0.028	21.7	148	1.46	0.001	0.006
UW-2N	71	30	6.72	1700	04/24/07	0.005	0.01	0.01	0.017	12.7	165	5.2	0.001	0.006

TABLE 2

INDICATOR AND WATER QUALITY PARAMETERS DATABASE  
POST-CONSTRUCTION YEARS 1 THROUGH 17  
SOUTH AREA CAP

Bayou Sorrel Site  
Bayou Sorrel, Louisiana

Well Name	Well Code	Cluster Code	pH	SC	Sample Date	Cadmium	Chromium	Lead	Arsenic	TOC	Chloride	Sulfate	Ethyl-benzene	Phenol
MW-1S	1	1	6.31	3190	10/16/90	0.01	0.02	0.2	0.031	7	744	1	0.001	0.0025
MW-1S	1	1	6.76	2800	02/15/91	0.01	0.02	0.2	0.150	4	768	11	0.001	0.0025
MW-1S	1	1	6.49	3270	05/04/91	0.01	0.02	0.2	0.108	8	782	2	0.001	0.0025
MW-1S	1	1	6.41	3190	07/25/91	0.01	0.02	0.2	0.047	6	754	2	0.001	0.0025
MW-1S	1	1	6.52	2960	11/07/91	0.01	0.02	0.2	0.100	10	969	2	0.001	0.0025
MW-1S	1	1	6.11	2780	05/07/92	0.01	0.02	0.2	0.157	18	777	2	0.001	0.0025
MW-1S	1	1	6.66	3070	11/11/92	0.01	0.02	0.2	0.122	13	772	1	0.001	0.0025
MW-1S	1	1	6.75	3650	05/05/93	0.01	0.02	0.2	0.100	10	760	4	0.001	0.0025
MW-1S	1	1	6.70	2520	11/18/93	0.01	0.02	0.2	0.113	9	764	1	0.001	0.0025
MW-1S	1	1	6.72	3110	04/27/94	0.01	0.02	0.2	0.152	8	722	2	0.001	0.0025
MW-1S	1	1	6.80	3160	11/08/94	0.02	0.04	0.2	0.117	7	682	4	0.001	0.0025
MW-1S	1	1	6.50	3470	05/02/95	0.02	0.04	0.2	0.150	9	744	2	0.001	0.0025
MW-1S	1	1	6.82	3390	05/15/96	0.02	0.04	0.2	0.130	11	714	1	0.001	0.0025
MW-1S	1	1	6.78	3200	06/24/97	0.005	0.01	0.01	0.190	12	761.0	0.20	0.001	0.0025
MW-1S	1	1	7.18	3080	05/05/98	0.005	0.01	0.01	0.130	11	733.0	0.20	0.001	0.0063
MW-1S	1	1	6.91	3120	05/12/99	0.005	0.01	0.01	0.160	12	757.0	0.20	0.001	0.0063
MW-1S	1	1	6.82	3180	05/10/00	0.005	0.01	0.01	0.150	11	665.0	0.20	0.001	0.0063
MW-1S	1	1	6.77	3240	04/18/01	0.005	0.01	0.01	0.180	13.40	742.0	0.20	0.001	0.0063
MW-1S	1	1	6.78	3190	04/18/02	0.005	0.01	0.01	0.152	13.20	669.0	0.21	0.001	0.0063
MW-1S	1	1	6.70	3250	04/23/03	0.005	0.01	0.01	0.171	10.30	689.0	0.26	0.001	0.005
MW-1S	1	1	6.75	3100	04/21/04	0.005	0.01	0.01	0.120	10.10	655.0	0.20	0.001	0.0063
MW-1S	1	1	6.78	2910	04/20/05	0.005	0.01	0.01	0.150	12.30	681.0	0.20	0.001	0.006
MW-1S	1	1	6.79	2850	04/18/06	0.005	0.01	0.01	0.067	10.50	666.0	0.24	0.001	0.006
MW-1S	1	1	6.81	3010	04/25/07	0.005	0.01	0.01	0.150	11.5	699	0.317	0.001	0.006
MW-2S	2	1	6.18	2890	10/16/90	0.01	0.02	0.2	0.027	7	675	2	0.001	0.0025
MW-2S	2	1	6.72	2620	02/15/91	0.01	0.02	0.2	0.047	3	700	3	0.001	0.0025
MW-2S	2	1	6.28	2940	05/04/91	0.01	0.02	0.2	0.040	8	685	2	0.001	0.0025
MW-2S	2	1	6.37	2800	07/25/91	0.01	0.02	0.2	0.012	8	672	4	0.001	0.0025
MW-2S	2	1	6.47	2680	11/07/91	0.01	0.02	0.2	0.042	10	846	2	0.001	0.0025
MW-2S	2	1	6.15	2900	05/07/92	0.01	0.02	0.2	0.036	22	667	3	0.001	0.0025
MW-2S	2	1	6.57	2740	11/11/92	0.01	0.02	0.2	0.044	14	690	1	0.001	0.0025
MW-2S	2	1	6.67	3330	05/05/93	0.01	0.02	0.2	0.088	10	609	2	0.001	0.0025
MW-2S	2	1	6.69	2210	11/18/93	0.01	0.02	0.2	0.037	10	654	1	0.001	0.0025
MW-2S	2	1	6.69	3100	04/27/94	0.01	0.02	0.2	0.036	9	635	7	0.001	0.0025
MW-2S	2	1	6.78	2950	11/08/94	0.02	0.04	0.2	0.037	8	635	12	0.001	0.0025
MW-2S	2	1	6.61	3070	05/02/95	0.02	0.04	0.2	0.020	11	592	35	0.001	0.0025
MW-2S	2	1	6.75	2950	05/15/96	0.02	0.04	0.2	0.020	11	244	9	0.001	0.0025
MW-2S	2	1	6.76	2820	06/24/97	0.005	0.01	0.01	0.020	12	624.0	6.22	0.001	0.0025
MW-2S	2	1	6.92	2760	05/05/98	0.005	0.01	0.01	0.030	11	600.0	25.80	0.001	0.0063
MW-2S	2	1	6.76	2740	05/12/99	0.005	0.01	0.001	0.020	12	604.0	19.90	0.001	0.0063
MW-2S	2	1	6.71	2820	05/10/00	0.005	0.01	0.01	0.010	12	464.0	9.90	0.001	0.0063
MW-2S	2	1	6.68	2760	04/18/01	0.005	0.01	0.01	0.029	13.70	638.0	1.70	0.001	0.0063
MW-2S	2	1	6.80	2740	04/18/02	0.005	0.01	0.01	0.025	13.60	542.0	1.22	0.001	0.0063
MW-2S	2	1	6.70	2770	04/23/03	0.005	0.01	0.01	0.037	10.80	609.0	0.47	0.001	0.005
MW-2S	2	1	6.66	2600	04/21/04	0.005	0.01	0.01	0.057	10.80	561.0	0.47	0.001	0.0063
MW-2S	2	1	6.73	2540	04/20/05	0.005	0.01	0.01	0.057	12.10	585.0	2.85	0.001	0.006
MW-2S	2	1	6.86	2450	04/18/06	0.005	0.01	0.01	0.049	11.10	528.0	0.44	0.001	0.006
MW-2S	2	1	6.74	2600	04/25/07	0.005	0.01	0.01	0.040	12.00	611.0	1.03	0.001	0.006
MW-3S	3	1	6.22	2920	10/17/90	0.01	0.02	0.2	0.010	15	656	19	0.001	0.0025
MW-3S	3	1	6.74	2590	02/15/91	0.01	0.02	0.2	0.010	5	711	11	0.001	0.0025
MW-3S	3	1	6.47	2990	05/04/91	0.01	0.02	0.2	0.010	10	693	10	0.001	0.0025
MW-3S	3	1	6.37	2880	07/25/91	0.01	0.02	0.2	0.010	8	707	4	0.001	0.0025
MW-3S	3	1	6.45	2770	11/07/91	0.01	0.02	0.2	0.011	11	796	4	0.001	0.0025
MW-3S	3	1	6.14	2350	05/07/92	0.01	0.02	0.2	0.014	19	717	4	0.001	0.0025
MW-3S	3	1	6.60	2840	11/11/92	0.01	0.02	0.2	0.010	15	687	2	0.001	0.0025
MW-3S	3	1	6.59	3540	05/05/93	0.01	0.02	0.2	0.010	11	695	3	0.001	0.0025
MW-3S	3	1	6.63	2740	11/18/93	0.01	0.02	0.2	0.010	10	731	4	0.001	0.0025
MW-3S	3	1	6.63	2950	04/27/94	0.01	0.02	0.2	0.010	10	697	6	0.001	0.0025
MW-3S	3	1	6.87	2900	11/08/94	0.02	0.04	0.2	0.010	8	696	4	0.001	0.0025
MW-3S	3	1	6.64	3150	05/02/95	0.02	0.04	0.2	0.010	11	761	2	0.001	0.0025
MW-3S	3	1	6.74	3140	05/15/96	0.02	0.04	0.2	0.010	12	735	1	0.001	0.0025
MW-3S	3	1	6.75	3000	06/24/97	0.005	0.01	0.01	0.010	13	756.0	0.35	0.001	0.0025
MW-3S	3	1	6.81	2910	05/05/98	0.005	0.01	0.01	0.010	18	711.0	1.94	0.001	0.0063
MW-3S	3	1	6.76	3070	05/12/99	0.005	0.01	0.01	0.010	13	780.0	0.55	0.001	0.0063
MW-3S	3	1	6.75	3130	05/10/00	0.005	0.01	0.01	0.010	12	707.0	0.40	0.001	0.0063
MW-3S	3	1	6.70	3120	04/18/01	0.005	0.01	0.01	0.011	14.50	799.0	0.67	0.001	0.0063
MW-3S	3	1	6.70	3160	04/18/02	0.005	0.01	0.01	0.012	13.80	749.0	0.25	0.001	0.0063
MW-3S	3	1	6.77	2290	04/23/03	0.005	0.01	0.01	0.010	11.20	230.0	12.80	0.001	0.005
MW-3S	3	1	6.67	3020	04/21/04	0.005	0.01	0.01	0.008	11.8	714	0.2	0.001	0.0063
MW-3S	3	1	6.65	2960	04/20/05	0.005	0.01	0.01	0.009	12.5	752	0.2	0.001	0.006
MW-3S	3	1	6.78	2950	04/18/06	0.005	0.01	0.01	0.013	11.6	730	0.599	0.001	0.006
MW-3S	3	1	6.79	3010	04/25/07	0.005	0.01	0.01	0.011	12.6	684	0.284	0.001	0.006



TABLE 2 (CONTINUED)

INDICATOR AND WATER QUALITY PARAMETERS DATABASE  
POST-CONSTRUCTION YEARS 1 THROUGH 17  
SOUTH AREA CAP

Bayou Sorrel Site  
Bayou Sorrel, Louisiana

Well Name	Well Code	Cluster Code	pH	SC	Sample Date	Cadmium	Chromium	Lead	Arsenic	TOC	Chloride	Sulfate	Ethylbenzene	Phenol
MW-4S	4	1	6.20	3050	10/17/90	0.01	0.02	0.2	0.047	8	748	12	0.001	0.0025
MW-4S	4	1	6.68	2980	02/15/91	0.01	0.02	0.2	0.059	3	765	21	0.001	0.0025
MW-4S	4	1	6.20	3090	05/04/91	0.01	0.02	0.2	0.044	9	757	19	0.001	0.0025
MW-4S	4	1	6.34	3070	07/25/91	0.01	0.02	0.2	0.036	7	742	27	0.001	0.0025
MW-4S	4	1	6.41	2770	11/07/91	0.01	0.02	0.2	0.062	12	893	10	0.001	0.0025
MW-4S	4	1	6.12	2930	05/07/92	0.01	0.02	0.2	0.058	23	747	10	0.001	0.0025
MW-4S	4	1	6.63	3050	11/11/92	0.01	0.02	0.2	0.079	16	750	11	0.001	0.0025
MW-4S	4	1	6.70	3750	05/05/93	0.01	0.02	0.2	0.038	10	740	8	0.001	0.0025
MW-4S	4	1	6.68	2600	11/18/93	0.01	0.02	0.2	0.010	9	744	11	0.001	0.0025
MW-4S	4	1	6.71	3200	04/27/94	0.01	0.02	0.2	0.068	9	700	19	0.001	0.0025
MW-4S	4	1	6.83	3200	11/08/94	0.02	0.04	0.2	0.062	7	745	22	0.001	0.0025
MW-4S	4	1	6.68	3140	05/02/95	0.02	0.04	0.2	0.050	10	724	22	0.001	0.0025
MW-4S	4	1	6.70	3340	05/15/96	0.02	0.04	0.2	0.060	12	728	16	0.001	0.0025
MW-4S	4	1	6.76	3070	06/24/97	0.005	0.01	0.01	0.070	12	715.0	12.00	0.001	0.0025
MW-4S	4	1	6.79	2960	05/05/98	0.005	0.01	0.01	0.060	11	674.0	24.20	0.001	0.0063
MW-4S	4	1	6.79	3050	05/12/99	0.005	0.001	0.01	0.060	12	726.0	9.62	0.001	0.0063
MW-4S	4	1	6.67	3160	05/10/00	0.005	0.01	0.01	0.030	12	599.0	9.10	0.001	0.0063
MW-4S	4	1	6.71	2970	04/18/01	0.005	0.01	0.01	0.072	13.50	741.0	3.88	0.001	0.0063
MW-4S	4	1	6.68	3080	04/18/02	0.005	0.01	0.01	0.064	12.90	662.0	9.79	0.001	0.0063
MW-4S	4	1	6.69	3080	04/23/03	0.005	0.01	0.01	0.081	10.60	683.0	6.28	0.001	0.005
MW-4S	4	1	6.61	2980	04/21/04	0.005	0.01	0.01	0.082	10.10	651.0	10.10	0.001	0.0063
MW-4S	4	1	6.51	2920	04/20/05	0.005	0.01	0.01	0.080	12.20	687.0	7.56	0.001	0.006
MW-4S	4	1	6.70	2140	04/18/06	0.005	0.01	0.01	0.012	10.20	665.0	9.07	0.001	0.006
MW-4S	4	1	6.64	2920	04/25/07	0.005	0.01	0.01	0.080	11.50	614.0	7.02	0.001	0.006
MW-5S	5	2	6.17	2530	10/17/90	0.01	0.02	0.2	0.010	9	567	6	0.001	0.0025
MW-5S	5	2	6.64	2420	02/15/91	0.01	0.02	0.2	0.010	6	529	6	0.001	0.0025
MW-5S	5	2	6.16	2490	05/04/91	0.01	0.02	0.2	0.010	11	467	16	0.001	0.0025
MW-5S	5	2	6.33	2480	07/25/91	0.01	0.02	0.2	0.010	12	424	19	0.001	0.0025
MW-5S	5	2	6.38	2550	11/07/91	0.01	0.02	0.2	0.014	11	639	6	0.001	0.0025
MW-5S	5	2	6.11	2530	05/07/92	0.01	0.02	0.2	0.013	19	522	10	0.001	0.0025
MW-5S	5	2	6.48	2630	11/11/92	0.01	0.02	0.2	0.014	14	590	3	0.001	0.0025
MW-5S	5	2	6.58	3060	05/05/93	0.01	0.02	0.2	0.010	12	446	13	0.001	0.0025
MW-5S	5	2	6.54	2410	11/18/93	0.01	0.02	0.2	0.010	12	339	62	0.001	0.0025
MW-5S	5	2	6.66	2510	04/27/94	0.01	0.02	0.2	0.010	12	282	64	0.001	0.0025
MW-5S	5	2	6.77	2500	11/08/94	0.02	0.04	0.2	0.010	8	443	25	0.001	0.0025
MW-5S	5	2	6.55	2280	05/02/95	0.02	0.04	0.2	0.010	13	308	27	0.001	0.0025
MW-5S	5	2	6.73	2550	05/15/96	0.02	0.04	0.2	0.010	12	293	22	0.001	0.0025
MW-5S	5	2	6.78	2270	06/24/97	0.005	0.01	0.01	0.010	13	270.0	32.60	0.001	0.005
MW-5S	5	2	6.82	2190	05/05/98	0.005	0.01	0.01	0.010	12	252.0	32.70	0.001	0.0063
MW-5S	5	2	6.83	2250	05/12/99	0.005	0.01	0.01	0.010	13	272.0	24.20	0.001	0.0063
MW-5S	5	2	6.82	2260	05/10/00	0.005	0.01	0.01	0.010	12	225.0	41.00	0.001	0.0063
MW-5S	5	2	6.72	2220	04/18/01	0.005	0.01	0.01	0.006	13.80	235.0	29.80	0.001	0.0063
MW-5S	5	2	6.79	2300	04/18/02	0.005	0.01	0.01	0.008	13.40	207.0	25.10	0.001	0.0063
MW-5S	5	2	6.71	3130	04/23/03	0.005	0.01	0.01	0.009	12.60	737.0	0.47	0.001	0.005
MW-5S	5	2	6.66	2160	04/21/04	0.005	0.01	0.01	0.006	10.80	191.0	21.50	0.001	0.0063
MW-5S	5	2	6.61	2130	04/20/05	0.005	0.01	0.01	0.008	13.00	182.0	20.10	0.001	0.0061
MW-5S	5	2	6.78	2060	04/18/06	0.005	0.01	0.01	0.010	10.60	182.0	15.50	0.001	0.006
MW-5S	5	2	6.67	2150	04/25/07	0.005	0.01	0.01	0.010	11.50	176.0	14.00	0.001	0.006
MW-6S	6	2	6.34	1760	10/17/90	0.01	0.02	0.2	0.010	18	210	30	0.001	0.0025
MW-6S	6	2	6.80	1890	02/15/91	0.01	0.02	0.2	0.010	9	234	22	0.001	0.0025
MW-6S	6	2	6.20	1980	05/04/91	0.01	0.02	0.2	0.010	11	212	19	0.001	0.0025
MW-6S	6	2	6.43	1900	07/25/91	0.01	0.02	0.2	0.010	13	191	21	0.001	0.0025
MW-6S	6	2	6.55	1880	11/07/91	0.01	0.02	0.2	0.010	12	311	14	0.001	0.0025
MW-6S	6	2	6.17	1950	05/07/92	0.01	0.02	0.2	0.012	26	325	11	0.001	0.0025
MW-6S	6	2	6.56	1920	11/11/92	0.01	0.02	0.2	0.011	21	247	1	0.001	0.0025
MW-6S	6	2	6.69	2360	05/05/93	0.01	0.02	0.2	0.010	14	267	7	0.001	0.0025
MW-6S	6	2	6.58	1980	11/18/93	0.01	0.02	0.2	0.010	13	221	42	0.001	0.0025
MW-6S	6	2	6.67	2350	04/27/94	0.01	0.02	0.2	0.010	12	205	16	0.001	0.0025
MW-6S	6	2	6.75	2100	11/08/94	0.02	0.04	0.2	0.010	10	219	12	0.001	0.0025
MW-6S	6	2	6.59	2200	05/02/95	0.02	0.04	0.2	0.010	12	212	11	0.001	0.0025
MW-6S	6	2	6.63	2470	05/15/96	0.02	0.04	0.2	0.010	12	207	10	0.001	0.0025
MW-6S	6	2	6.78	2290	06/24/97	0.005	0.01	0.01	0.010	15	225.0	9.04	0.001	0.005
MW-6S	6	2	6.92	2330	05/05/98	0.005	0.01	0.01	0.010	12	211.0	9.43	0.001	0.0063
MW-6S	6	2	6.81	2270	05/12/99	0.005	0.01	0.01	0.010	13	188.0	24.50	0.001	0.0063
MW-6S	6	2	6.79	2250	05/10/00	0.005	0.01	0.01	0.010	12	184.0	14.80	0.001	0.0063
MW-6S	6	2	6.70	2110	04/18/01	0.005	0.01	0.01	0.007	14.30	199.0	18.90	0.001	0.0063
MW-6S	6	2	6.71	2180	04/18/02	0.005	0.01	0.01	0.009	13.60	172.0	7.08	0.001	0.0063
MW-6S	6	2	6.70	2170	04/23/03	0.005	0.01	0.01	0.005	12.20	178.0	4.41	0.001	0.005
MW-6S	6	2	6.65	2110	04/21/04	0.005	0.01	0.01	0.007	11.4	164	3.24	0.001	0.0063
MW-6S	6	2	6.68	2080	04/20/05	0.005	0.01	0.01	0.005	14.1	148	3.63	0.001	0.0062
MW-6S	6	2	6.76	2080	04/18/06	0.005	0.01	0.01	0.011	11.9	157	4.87	0.001	0.006
MW-6S	6	2	6.68	2140	04/25/07	0.005	0.01	0.01	0.016	12.3	156	2.7	0.001	0.006

TABLE 2 (CONTINUED)

INDICATOR AND WATER QUALITY PARAMETERS DATABASE  
 POST-CONSTRUCTION YEARS 1 THROUGH 17  
 SOUTH AREA CAP

Bayou Sorrel Site  
 Bayou Sorrel, Louisiana

Well Name	Well Code	Cluster Code	pH	SC	Sample Date	Cadmium	Chromium	Lead	Arsenic	TOC	Chloride	Sulfate	Ethylbenzene	Phenol
MW-7S	7	2	6.15	3180	10/17/90	0.01	0.02	0.2	0.031	8	763	2	0.001	0.0025
MW-7S	7	2	6.64	3120	02/15/91	0.01	0.02	0.2	0.035	3	805	1	0.001	0.0025
MW-7S	7	2	6.37	3550	05/03/91	0.01	0.02	0.2	0.059	8	797	19	0.001	0.0025
MW-7S	7	2	6.31	3250	07/25/91	0.01	0.02	0.2	0.054	9	792	1	0.001	0.0025
MW-7S	7	2	6.44	3220	11/07/91	0.01	0.02	0.2	0.050	10	936	2	0.001	0.0025
MW-7S	7	2	5.96	3280	05/07/92	0.01	0.02	0.2	0.058	20	875	2	0.001	0.0025
MW-7S	7	2	6.48	3040	11/11/92	0.01	0.02	0.2	0.058	16	607	1	0.001	0.0025
MW-7S	7	2	6.43	3530	05/05/93	0.01	0.02	0.2	0.043	10	836	3	0.001	0.0025
MW-7S	7	2	6.53	3060	11/18/93	0.01	0.02	0.2	0.058	9	780	5	0.001	0.0025
MW-7S	7	2	6.66	3500	04/27/94	0.01	0.02	0.2	0.049	8	740	6	0.001	0.0025
MW-7S	7	2	6.59	3250	11/09/94	0.02	0.04	0.2	0.071	7	754	4	0.001	0.0025
MW-7S	7	2	6.55	3220	05/02/95	0.02	0.04	0.2	0.050	10	792	2	0.001	0.0025
MW-7S	7	2	6.56	3040	05/15/96	0.02	0.04	0.2	0.050	11	737	2	0.001	0.0025
MW-7S	7	2	6.94	3230	06/25/97	0.005	0.01	0.01	0.060	11	782.0	2.04	0.001	0.005
MW-7S	7	2	6.96	2950	05/06/98	0.005	0.01	0.01	0.050	10	749.0	3.58	0.001	0.0063
MW-7S	7	2	6.78	3140	05/12/99	0.005	0.01	0.01	0.060	12	786.0	1.28	0.001	0.0063
MW-7S	7	2	6.70	3260	05/10/00	0.005	0.01	0.01	0.030	11	617.0	9.00	0.001	0.0063
MW-7S	7	2	6.83	3140	04/18/01	0.005	0.01	0.01	0.064	13.60	746.0	3.71	0.001	0.0063
MW-7S	7	2	6.70	3210	04/18/02	0.005	0.01	0.01	0.066	12.80	683.0	3.17	0.001	0.0063
MW-7S	7	2	6.72	3310	04/23/03	0.005	0.01	0.01	0.006	11.10	706.0	2.39	0.001	0.005
MW-7S	7	2	6.61	3140	04/21/04	0.005	0.01	0.01	0.029	10.30	673.0	1.22	0.001	0.0063
MW-7S	7	2	6.70	3030	04/20/05	0.005	0.01	0.01	0.040	12.10	688.0	2.39	0.001	0.006
MW-7S	7	2	6.76	2770	04/18/06	0.005	0.01	0.01	0.033	10.30	686.0	0.02	0.001	0.006
MW-7S	7	2	6.68	3060	04/25/07	0.005	0.01	0.01	0.060	11.00	650.0	3.13	0.001	0.006
MW-8S	8	2	6.39	2910	10/17/90	0.01	0.02	0.2	0.014	9	621	22	0.001	0.0025
MW-8S	8	2	6.77	3050	02/15/91	0.01	0.02	0.2	0.017	4	654	11	0.001	0.0025
MW-8S	8	2	6.52	3280	05/03/91	0.01	0.02	0.2	0.041	9	669	5	0.001	0.0025
MW-8S	8	2	6.42	2970	07/25/91	0.01	0.02	0.2	0.038	9	644	5	0.001	0.0025
MW-8S	8	2	6.56	3000	11/07/91	0.01	0.02	0.2	0.025	14	701	7	0.001	0.0025
MW-8S	8	2	5.97	3050	05/07/92	0.01	0.02	0.2	0.040	20	715	9	0.001	0.0025
MW-8S	8	2	6.73	3000	11/11/92	0.01	0.02	0.2	0.051	20	665	6	0.001	0.0025
MW-8S	8	2	6.60	3320	05/05/93	0.01	0.02	0.2	0.045	10	644	6	0.001	0.0025
MW-8S	8	2	6.72	2880	11/18/93	0.01	0.02	0.2	0.060	8	659	7	0.001	0.0025
MW-8S	8	2	6.19	3240	04/27/94	0.01	0.02	0.2	0.055	10	682	11	0.001	0.0025
MW-8S	8	2	6.77	3180	11/09/94	0.02	0.04	0.2	0.029	7	642	9	0.001	0.0025
MW-8S	8	2	6.67	2680	05/02/95	0.02	0.04	0.2	0.040	10	662	7	0.001	0.0025
MW-8S	8	2	6.67	2780	05/15/96	0.02	0.04	0.2	0.030	11	656	9	0.001	0.0025
MW-8S	8	2	6.94	3110	06/25/97	0.005	0.01	0.01	0.020	11	677.0	10.90	0.001	0.005
MW-8S	8	2	7.44	2890	05/06/98	0.005	0.01	0.01	0.020	10	635.0	18.50	0.001	0.0063
MW-8S	8	2	6.96	3070	05/12/99	0.005	0.01	0.01	0.040	12	667.0	12.60	0.001	0.0063
MW-8S	8	2	6.91	3270	05/10/00	0.005	0.01	0.01	0.010	11	568.0	28.00	0.001	0.0063
MW-8S	8	2	7.00	3220	04/18/01	0.005	0.01	0.01	0.062	13.30	704.0	11.80	0.001	0.0063
MW-8S	8	2	6.98	3240	04/18/02	0.005	0.01	0.01	0.036	13.30	619.0	12.70	0.001	0.0063
MW-8S	8	2	6.88	3300	04/23/03	0.005	0.01	0.01	0.028	10.40	655.0	12.50	0.001	0.005
MW-8S	8	2	6.81	3130	04/21/04	0.005	0.01	0.01	0.032	10.30	608.0	14.20	0.001	0.0063
MW-8S	8	2	6.87	3030	04/20/05	0.005	0.01	0.01	0.036	11.90	634.0	23.20	0.001	0.0061
MW-8S	8	2	6.93	2790	04/18/06	0.005	0.01	0.01	0.032	10.50	643.0	9.29	0.001	0.0063
MW-8S	8	2	6.80	3120	04/25/07	0.005	0.01	0.01	0.040	11.10	606.0	7.69	0.001	0.0063
MW-9S	9	3	6.33	2850	10/17/90	0.01	0.02	0.2	0.065	7	577	8	0.001	0.0025
MW-9S	9	3	6.77	2990	02/15/91	0.01	0.02	0.2	0.054	3	613	4	0.001	0.0025
MW-9S	9	3	6.48	3110	05/03/91	0.01	0.02	0.2	0.062	8	616	5	0.001	0.0025
MW-9S	9	3	6.43	2930	07/25/91	0.01	0.02	0.2	0.078	8	599	7	0.001	0.0025
MW-9S	9	3	6.59	2940	11/07/91	0.01	0.02	0.2	0.010	11	637	7	0.001	0.0025
MW-9S	9	3	5.94	2900	05/07/92	0.01	0.02	0.2	0.084	21	665	7	0.001	0.0025
MW-9S	9	3	6.65	2880	11/11/92	0.01	0.02	0.2	0.129	24	790	8	0.001	0.0025
MW-9S	9	3	6.61	3210	05/05/93	0.01	0.02	0.2	0.129	8	617	6	0.001	0.0025
MW-9S	9	3	6.75	2700	11/18/93	0.01	0.02	0.2	0.170	7	604	7	0.001	0.0025
MW-9S	9	3	6.82	3190	04/27/94	0.01	0.02	0.2	0.097	8	605	7	0.001	0.0025
MW-9S	9	3	6.61	2700	11/09/94	0.02	0.04	0.2	0.075	7	580	9	0.001	0.0025
MW-9S	9	3	6.75	3160	05/03/95	0.02	0.04	0.2	0.110	8	611	9	0.001	0.0025
MW-9S	9	3	6.64	2710	05/15/96	0.02	0.04	0.2	0.120	10	607	6	0.001	0.0025
MW-9S	9	3	6.94	3050	06/25/97	0.005	0.01	0.01	0.080	10	611.0	7.51	0.001	0.005
MW-9S	9	3	7.17	2820	05/06/98	0.005	0.01	0.01	0.090	9	593.0	7.10	0.001	0.0063
MW-9S	9	3	6.97	2960	05/12/99	0.005	0.01	0.01	0.150	11	623.0	6.45	0.001	0.0063
MW-9S	9	3	6.96	3150	05/10/00	0.005	0.01	0.01	0.070	10	511.0	8.00	0.001	0.0063
MW-9S	9	3	6.86	3100	04/18/01	0.005	0.01	0.01	0.170	11.50	624.0	14.40	0.001	0.0063
MW-9S	9	3	6.91	3080	04/18/02	0.005	0.01	0.01	0.157	11.40	557.0	8.58	0.001	0.0063
MW-9S	9	3	6.88	3160	04/23/03	0.005	0.01	0.01	0.124	9.19	591.0	7.60	0.001	0.005
MW-9S	9	3	6.86	3000	04/21/04	0.005	0.01	0.01	0.130	9.07	553	5.75	0.001	0.0063
MW-9S	9	3	6.90	2860	04/20/05	0.005	0.01	0.01	0.260	10.4	591	4.29	0.001	0.0061
MW-9S	9	3	6.98	2780	04/18/06	0.005	0.01	0.01	0.140	9.08	582	9.09	0.001	0.006
MW-9S	9	3	6.85	2970	04/25/07	0.005	0.01	0.01	0.150	9.4	545	10.4	0.001	0.006

TABLE 2 (CONTINUED)

INDICATOR AND WATER QUALITY PARAMETERS DATABASE  
 POST-CONSTRUCTION YEARS 1 THROUGH 17  
 SOUTH AREA CAP

Bayou Sorrel Site  
 Bayou Sorrel, Louisiana

Well Name	Well Code	Cluster Code	pH	SC	Sample Date	Cadmium	Chromium	Lead	Arsenic	TOC	Chloride	Sulfate	Ethylbenzene	Phenol
MW-10S	10	3	6.72	2900	10/18/90	0.01	0.02	0.2	0.010	8	280	413	0.001	0.0025
MW-10S	10	3	6.76	2950	02/15/91	0.01	0.02	0.2	0.010	5	377	391	0.001	0.0025
MW-10S	10	3	6.47	3350	05/03/91	0.01	0.02	0.2	0.010	8	567	400	0.001	0.0025
MW-10S	10	3	6.38	3070	07/25/91	0.01	0.02	0.2	0.010	8	341	389	0.001	0.0025
MW-10S	10	3	6.52	2940	11/07/91	0.01	0.02	0.2	0.010	8	399	47	0.001	0.0025
MW-10S	10	3	6.07	3340	05/07/92	0.01	0.02	0.2	0.010	28	435	400	0.001	0.0025
MW-10S	10	3	6.65	3040	11/11/92	0.01	0.02	0.2	0.010	20	327	406	0.001	0.0025
MW-10S	10	3	6.59	3460	05/05/93	0.01	0.02	0.2	0.010	9	815	392	0.001	0.0025
MW-10S	10	3	6.68	2740	11/18/93	0.01	0.02	0.2	0.010	8	314	344	0.001	0.0025
MW-10S	10	3	6.76	3320	04/27/94	0.01	0.02	0.2	0.010	7	382	327	0.001	0.0025
MW-10S	10	3	6.63	2900	11/09/94	0.02	0.04	0.2	0.010	6	307	389	0.001	0.0025
MW-10S	10	3	6.78	3360	05/03/95	0.02	0.04	0.2	0.010	9	367	343	0.001	0.0025
MW-10S	10	3	6.63	2920	05/15/96	0.02	0.04	0.2	0.010	9	383	391	0.001	0.0025
MW-10S	10	3	6.90	3150	06/25/97	0.005	0.01	0.01	0.010	10	334.0	297.00	0.001	0.005
MW-10S	10	3	7.18	3040	05/06/98	0.005	0.01	0.01	0.010	9	364.0	286.00	0.001	0.0063
MW-10S	10	3	6.94	3130	05/12/99	0.005	0.01	0.01	0.010	9	332.0	280.00	0.001	0.0063
MW-10S	10	3	6.82	3270	05/10/00	0.005	0.01	0.01	0.010	9	277.0	259.00	0.001	0.0063
MW-10S	10	3	6.93	3270	04/18/01	0.005	0.01	0.01	0.005	11.70	394.0	290.00	0.001	0.0063
MW-10S	10	3	6.81	3340	04/17/02	0.005	0.01	0.01	0.006	10.90	401.0	266.00	0.001	0.0063
MW-10S	10	3	6.82	3290	04/23/03	0.005	0.01	0.01	0.005	9.30	366.0	0.20	0.001	0.005
MW-10S	10	3	6.82	3230	04/21/04	0.005	0.01	0.01	0.005	8.52	363.0	257.00	0.001	0.0063
MW-10S	10	3	6.80	3030	04/20/05	0.005	0.01	0.01	0.032	11.60	349.0	228.00	0.001	0.006
MW-10S	10	3	6.86	3080	04/18/06	0.005	0.01	0.01	0.005	8.96	373.0	236.00	0.001	0.006
MW-10S	10	3	6.82	3280	04/25/07	0.005	0.01	0.01	0.005	13.10	422.0	236.00	0.001	0.006
MW-11S	11	3	6.75	2540	10/18/90	0.01	0.02	0.2	0.030	7	405	60	0.001	0.0025
MW-11S	11	3	6.92	2520	02/15/91	0.01	0.02	0.2	0.068	4	408	45	0.001	0.0025
MW-11S	11	3	6.45	2780	05/03/91	0.01	0.02	0.2	0.029	6	409	51	0.001	0.0025
MW-11S	11	3	6.49	2560	07/25/91	0.01	0.02	0.2	0.080	8	409	53	0.001	0.0025
MW-11S	11	3	6.65	2530	11/07/91	0.01	0.02	0.2	0.057	7	613	66	0.001	0.0025
MW-11S	11	3	6.28	2540	05/06/92	0.01	0.02	0.2	0.057	9	425	56	0.001	0.0025
MW-11S	11	3	6.77	2480	11/11/92	0.01	0.02	0.2	0.057	18	405	64	0.001	0.0025
MW-11S	11	3	6.66	2840	05/05/93	0.01	0.02	0.2	0.066	7	428	62	0.001	0.0025
MW-11S	11	3	6.76	2310	11/18/93	0.01	0.02	0.2	0.090	7	409	81	0.001	0.0025
MW-11S	11	3	6.79	2750	04/27/94	0.01	0.02	0.2	0.088	7	432	49	0.001	0.0025
MW-11S	11	3	6.87	2660	11/09/94	0.02	0.04	0.2	0.086	6	365	55	0.001	0.0025
MW-11S	11	3	6.80	2800	05/03/95	0.02	0.04	0.2	0.050	7	408	58	0.001	0.0025
MW-11S	11	3	6.62	2300	05/15/96	0.02	0.04	0.2	0.080	8	408	64	0.001	0.0025
MW-11S	11	3	7.05	2620	06/25/97	0.005	0.01	0.01	0.130	8	407.0	62.00	0.001	0.005
MW-11S	11	3	7.13	2470	05/06/98	0.005	0.01	0.01	0.120	8	402.0	45.00	0.001	0.0063
MW-11S	11	3	7.09	2620	05/12/99	0.005	0.01	0.01	0.140	8	415.0	59.00	0.001	0.0063
MW-11S	11	3	6.94	2590	05/10/00	0.005	0.01	0.01	0.050	7	340.0	58.00	0.001	0.0063
MW-11S	11	3	6.75	2650	04/18/01	0.005	0.01	0.01	0.110	8.30	435.0	60.00	0.001	0.0063
MW-11S	11	3	6.88	2700	04/17/02	0.005	0.01	0.01	0.154	8.98	417.0	47.20	0.001	0.0063
MW-11S	11	3	6.93	2640	04/23/03	0.005	0.01	0.01	0.091	7.62	445.0	51.20	0.001	0.005
MW-11S	11	3	6.87	2590	04/21/04	0.005	0.01	0.01	0.120	6.76	384.0	47.70	0.001	0.0063
MW-11S	11	3	6.95	2560	04/20/05	0.005	0.01	0.01	0.059	8.16	414.0	58.50	0.001	0.0061
MW-11S	11	3	7.01	2550	04/18/06	0.005	0.01	0.01	0.061	6.63	403.0	68.90	0.001	0.006
MW-11S	11	3	6.91	2660	04/25/07	0.005	0.01	0.01	0.050	9.19	428.0	80.30	0.001	0.006
MW-12S	12	3	6.83	3620	10/18/90	0.01	0.02	0.2	0.053	6	670	433	0.001	0.0025
MW-12S	12	3	6.94	3730	02/15/91	0.01	0.02	0.2	0.052	2	682	348	0.001	0.0025
MW-12S	12	3	6.36	4070	05/03/91	0.01	0.02	0.2	0.083	6	673	280	0.001	0.0025
MW-12S	12	3	6.38	3770	07/25/91	0.01	0.02	0.2	0.087	7	672	365	0.001	0.0025
MW-12S	12	3	6.50	3650	11/07/91	0.01	0.02	0.2	0.072	8	879	369	0.001	0.0025
MW-12S	12	3	6.21	3420	05/06/92	0.01	0.02	0.2	0.122	9	685	324	0.001	0.0025
MW-12S	12	3	6.62	3580	11/11/92	0.01	0.02	0.2	0.055	16	705	347	0.001	0.0025
MW-12S	12	3	6.59	3980	05/05/93	0.01	0.02	0.2	0.109	7	750	340	0.001	0.0025
MW-12S	12	3	6.63	3710	11/18/93	0.01	0.02	0.2	0.041	7	681	380	0.001	0.0025
MW-12S	12	3	6.70	4100	04/27/94	0.01	0.02	0.2	0.058	7	705	338	0.001	0.0025
MW-12S	12	3	6.71	3940	11/09/94	0.02	0.04	0.2	0.073	6	594	414	0.001	0.0025
MW-12S	12	3	6.67	4000	05/03/95	0.02	0.04	0.2	0.050	7	708	448	0.001	0.0025
MW-12S	12	3	6.54	3550	05/15/96	0.02	0.04	0.2	0.050	9	656	351	0.001	0.0025
MW-12S	12	3	6.79	3830	06/25/97	0.005	0.01	0.01	0.060	9	705.0	326.00	0.001	0.005
MW-12S	12	3	6.98	3600	05/06/98	0.005	0.01	0.01	0.040	8	673.0	351.00	0.001	0.0063
MW-12S	12	3	6.97	3750	05/12/99	0.005	0.01	0.01	0.060	9	694.0	368.00	0.001	0.0063
MW-12S	12	3	6.75	4050	05/10/00	0.005	0.01	0.01	0.020	8	574.0	422.00	0.001	0.0063
MW-12S	12	3	6.80	3850	04/18/01	0.005	0.01	0.01	0.047	9.44	714.0	351.00	0.001	0.0063
MW-12S	12	3	6.72	4010	04/17/02	0.005	0.01	0.01	0.054	12.60	637.0	337.00	0.001	0.0063
MW-12S	12	3	6.76	3830	04/23/03	0.005	0.01	0.01	0.029	7.86	659.0	362.00	0.001	0.005
MW-12S	12	3	6.63	3940	04/21/04	0.005	0.01	0.01	0.017	7.36	620	373	0.001	0.0063
MW-12S	12	3	6.71	3530	04/20/05	0.005	0.01	0.01	0.018	12	652	296	0.001	0.006
MW-12S	12	3	6.82	3690	04/18/06	0.005	0.01	0.01	0.032	7.46	656	331	0.001	0.006
MW-12S	12	3	6.71	3830	04/25/07	0.005	0.01	0.01	0.020	6.2	629	310	0.001	0.006

TABLE 2 (CONTINUED)

INDICATOR AND WATER QUALITY PARAMETERS DATABASE  
POST-CONSTRUCTION YEARS 1 THROUGH 17  
SOUTH AREA CAP

Bayou Sorrel Site  
Bayou Sorrel, Louisiana

Well Name	Well Code	Cluster Code	pH	SC	Sample Date	Cadmium	Chromium	Lead	Arsenic	TOC	Chloride	Sulfate	Ethyl-benzene	Phenol
MW-13S	13	4	6.72	2830	10/18/90	0.01	0.02	0.2	0.134	8	460	200	0.001	0.0025
MW-13S	13	4	6.82	2850	02/15/91	0.01	0.02	0.2	0.143	4	481	89	0.001	0.0025
MW-13S	13	4	6.54	2920	05/03/91	0.01	0.02	0.2	0.159	8	479	86	0.001	0.0025
MW-13S	13	4	6.45	2850	07/25/91	0.01	0.02	0.2	0.101	9	451	148	0.001	0.0025
MW-13S	13	4	6.65	2760	11/07/91	0.01	0.02	0.2	0.128	9	618	168	0.001	0.0025
MW-13S	13	4	6.29	2800	05/06/92	0.01	0.02	0.2	0.193	10	515	94	0.001	0.0025
MW-13S	13	4	6.80	2770	11/11/92	0.01	0.02	0.2	0.221	18	554	115	0.001	0.0025
MW-13S	13	4	6.64	2880	05/05/93	0.01	0.02	0.2	0.240	9	471	70	0.001	0.0025
MW-13S	13	4	6.76	2540	11/18/93	0.01	0.02	0.2	0.107	9	485	94	0.001	0.0025
MW-13S	13	4	6.75	3200	04/26/94	0.01	0.02	0.2	0.227	12	522	61	0.001	0.0025
MW-13S	13	4	6.88	2560	11/09/94	0.02	0.04	0.2	0.240	7	413	107	0.001	0.0025
MW-13S	13	4	6.85	2950	05/03/95	0.02	0.04	0.2	0.220	9	504	62	0.001	0.0025
MW-13S	13	4	6.49	2560	05/15/96	0.02	0.04	0.2	0.200	9	494	98	0.001	0.0025
MW-13S	13	4	6.92	2880	06/25/97	0.005	0.01	0.01	0.210	10	478.0	83.80	0.001	0.0025
MW-13S	13	4	7.17	2740	05/06/98	0.005	0.01	0.01	0.130	9	479.0	67.70	0.001	0.0063
MW-13S	13	4	7.09	2800	05/12/99	0.005	0.01	0.01	0.160	9	491.0	99.00	0.001	0.0063
MW-13S	13	4	6.96	2990	05/10/00	0.005	0.01	0.01	0.040	10	360.0	178.00	0.001	0.0063
MW-13S	13	4	6.90	2840	04/18/01	0.005	0.01	0.01	0.100	10.10	441.0	220.00	0.001	0.0063
MW-13S	13	4	7.01	3000	04/17/02	0.005	0.01	0.01	0.208	11.20	457.0	135.00	0.001	0.0063
MW-13S	13	4	6.91	2820	04/23/03	0.005	0.01	0.01	0.101	9.41	483.0	150.00	0.001	0.005
MW-13S	13	4	6.91	2970	04/21/04	0.005	0.01	0.01	0.130	8.94	431.0	126.00	0.001	0.0063
MW-13S	13	4	7.04	2690	04/20/05	0.005	0.01	0.01	0.110	10.40	482.0	104.00	0.001	0.0062
MW-13S	13	4	7.02	3000	04/18/06	0.005	0.01	0.01	0.100	8.89	440.0	160.00	0.001	0.006
MW-13S	13	4	6.95	2930	04/25/07	0.005	0.01	0.01	0.140	9.15	453.0	176.00	0.001	0.006
MW-14S	14	4	6.74	3520	10/18/90	0.01	0.02	0.2	0.080	4	645	205	0.001	0.0025
MW-14S	14	4	6.78	2840	02/14/91	0.01	0.02	0.2	0.079	2	589	149	0.001	0.0025
MW-14S	14	4	6.49	3010	05/03/91	0.01	0.02	0.2	0.043	5	595	161	0.001	0.0025
MW-14S	14	4	6.43	3040	07/25/91	0.01	0.02	0.2	0.071	7	594	136	0.001	0.0025
MW-14S	14	4	6.57	3000	11/07/91	0.01	0.02	0.2	0.078	7	736	110	0.001	0.0025
MW-14S	14	4	6.26	3010	05/06/92	0.01	0.02	0.2	0.074	8	640	124	0.001	0.0025
MW-14S	14	4	6.70	3030	11/11/92	0.01	0.02	0.2	0.105	13	691	91	0.001	0.0025
MW-14S	14	4	6.65	3260	05/05/93	0.01	0.02	0.2	0.068	7	659	87	0.001	0.0025
MW-14S	14	4	6.76	2570	11/18/93	0.01	0.02	0.2	0.063	7	664	94	0.001	0.0025
MW-14S	14	4	6.69	3400	04/26/94	0.01	0.02	0.2	0.090	7	690	78	0.001	0.0025
MW-14S	14	4	6.78	3100	11/09/94	0.02	0.04	0.2	0.091	4	64	90	0.001	0.0025
MW-14S	14	4	6.80	3490	05/03/95	0.02	0.04	0.2	0.080	6	718	103	0.001	0.0025
MW-14S	14	4	6.71	3130	05/15/96	0.02	0.04	0.2	0.080	8	704	111	0.001	0.0025
MW-14S	14	4	6.88	3840	06/26/97	0.005	0.01	0.01	0.090	5	751.0	14.70	0.001	0.0025
MW-14S	14	4	7.19	3160	05/06/98	0.005	0.01	0.01	0.020	7	712.0	86.80	0.001	0.0063
MW-14S	14	4	7.38	3360	05/12/99	0.005	0.01	0.01	0.080	8	794.0	118.00	0.001	0.0063
MW-14S	14	4	6.96	3670	05/10/00	0.005	0.01	0.01	0.050	7	665.0	147.00	0.001	0.0063
MW-14S	14	4	6.91	3810	04/18/01	0.005	0.01	0.01	0.039	8.57	879.0	183.00	0.001	0.0063
MW-14S	14	4	6.90	3820	04/17/02	0.005	0.01	0.01	0.039	9.78	762.0	174.00	0.001	0.0063
MW-14S	14	4	6.87	3650	04/23/03	0.005	0.01	0.01	0.008	5.33	828.0	204.00	0.001	0.005
MW-14S	14	4	6.88	3780	04/21/04	0.005	0.01	0.01	0.009	7.32	756.0	199.00	0.001	0.0063
MW-14S	14	4	6.94	3450	04/20/05	0.005	0.01	0.01	0.018	9.54	813.0	195.00	0.001	0.0063
MW-14S	14	4	6.91	3930	04/18/06	0.005	0.01	0.01	0.034	6.38	850.0	236.00	0.001	0.006
MW-14S	14	4	6.88	3900	04/25/07	0.005	0.01	0.01	0.030	7.88	800.0	256.00	0.001	0.006
MW-15S	15	4	6.99	3820	10/18/90	0.01	0.02	0.2	0.011	8	660	48	0.001	0.0025
MW-15S	15	4	6.85	3480	02/14/91	0.01	0.02	0.2	0.016	5	652	42	0.001	0.0125
MW-15S	15	4	6.39	4040	05/03/91	0.01	0.02	0.2	0.013	9	687	60	0.001	0.0025
MW-15S	15	4	6.38	3670	07/25/91	0.01	0.02	0.2	0.016	14	654	63	0.001	0.0025
MW-15S	15	4	6.59	3550	11/07/91	0.01	0.02	0.2	0.014	12	793	37	0.001	0.0025
MW-15S	15	4	6.23	3640	05/06/92	0.01	0.02	0.2	0.018	13	650	25	0.001	0.0025
MW-15S	15	4	6.67	3750	11/10/92	0.01	0.02	0.2	0.016	18	675	10	0.001	0.0025
MW-15S	15	4	6.60	3780	05/05/93	0.01	0.02	0.2	0.011	10	659	21	0.001	0.0025
MW-15S	15	4	6.71	3110	11/18/93	0.01	0.02	0.2	0.015	10	634	23	0.001	0.0025
MW-15S	15	4	6.65	2400	04/26/94	0.01	0.02	0.2	0.016	22	675	18	0.001	0.0025
MW-15S	15	4	6.76	3910	11/09/94	0.02	0.04	0.2	0.014	6	584	18	0.001	0.0025
MW-15S	15	4	6.80	4150	05/03/95	0.02	0.04	0.2	0.020	24	654	32	0.001	0.0025
MW-15S	15	4	6.75	3880	05/15/96	0.02	0.04	0.2	0.030	17	630	15	0.001	0.0025
MW-15S	15	4	6.81	3360	06/25/97	0.005	0.01	0.01	0.030	15	573.0	101.00	0.001	0.0025
MW-15S	15	4	7.02	3590	05/06/98	0.005	0.01	0.01	0.020	14	541.0	19.40	0.001	0.0063
MW-15S	15	4	7.12	3750	05/12/99	0.005	0.01	0.01	0.020	18	558.0	20.70	0.001	0.0063
MW-15S	15	4	6.92	3780	05/11/00	0.005	0.01	0.01	0.020	13	472.0	33.00	0.001	0.0063
MW-15S	15	4	6.95	3910	04/18/01	0.005	0.01	0.01	0.013	22.80	535.0	52.30	0.001	0.0063
MW-15S	15	4	6.93	3920	04/17/02	0.005	0.01	0.01	0.014	19.60	498.0	31.00	0.001	0.0063
MW-15S	15	4	6.85	3610	04/23/03	0.005	0.01	0.01	0.011	4.56	534.0	37.60	0.001	0.005
MW-15S	15	4	6.87	3680	04/21/04	0.005	0.01	0.01	0.009	13.7	479	31	0.001	0.0063
MW-15S	15	4	6.99	3270	04/20/05	0.005	0.01	0.01	0.015	25.1	480	38.6	0.001	0.0061
MW-15S	15	4	7.01	3730	04/18/06	0.005	0.01	0.01	0.018	10.2	496	29.8	0.001	0.006
MW-15S	15	4	6.85	3670	04/25/07	0.005	0.01	0.01	0.010	17.4	481	32.1	0.001	0.006

TABLE 2 (CONTINUED)

INDICATOR AND WATER QUALITY PARAMETERS DATABASE  
POST-CONSTRUCTION YEARS 1 THROUGH 17  
SOUTH AREA CAP

Bayou Sorrel Site  
Bayou Sorrel, Louisiana

Well Name	Well Code	Cluster Code	pH	SC	Sample Date	Cadmium	Chromium	Lead	Arsenic	TOC	Chloride	Sulfate	Ethylbenzene	Phenol
MW-16S	16	4	6.70	3430	10/18/90	0.01	0.02	0.2	0.077	5	625	334	0.001	0.0025
MW-16S	16	4	6.59	3510	02/14/91	0.01	0.02	0.2	0.046	3	690	391	0.001	0.0025
MW-16S	16	4	6.25	3990	05/03/91	0.01	0.02	0.2	0.042	7	690	310	0.001	0.0025
MW-16S	16	4	6.23	3430	07/25/91	0.01	0.02	0.2	0.047	8	633	295	0.001	0.0025
MW-16S	16	4	6.37	3330	11/07/91	0.01	0.02	0.2	0.058	9	941	257	0.001	0.0025
MW-16S	16	4	6.15	3400	05/06/92	0.01	0.02	0.2	0.055	9	645	312	0.001	0.0025
MW-16S	16	4	6.57	3320	11/10/92	0.01	0.02	0.2	0.083	16	629	257	0.001	0.0025
MW-16S	16	4	6.42	3490	05/05/93	0.01	0.02	0.2	0.065	7	619	234	0.001	0.0025
MW-16S	16	4	6.53	2900	11/18/93	0.01	0.02	0.2	0.042	7	639	282	0.001	0.0025
MW-16S	16	4	6.46	3000	04/26/94	0.01	0.02	0.2	0.051	7	631	306	0.001	0.0025
MW-16S	16	4	6.69	3560	11/09/94	0.02	0.04	0.2	0.049	5	587	316	0.001	0.0025
MW-16S	16	4	6.60	3910	05/03/95	0.02	0.04	0.2	0.030	14	674	326	0.001	0.0025
MW-16S	16	4	6.32	3520	05/15/96	0.02	0.04	0.2	0.030	13	670	297	0.001	0.0025
MW-16S	16	4	6.84	4090	06/26/97	0.005	0.01	0.01	0.030	11	694.0	405.00	0.001	0.0025
MW-16S	16	4	6.92	3900	05/06/98	0.005	0.01	0.01	0.050	11	679.0	409.00	0.001	0.0063
MW-16S	16	4	6.85	4060	05/12/99	0.005	0.01	0.01	0.060	14	706.0	428.00	0.001	0.0063
MW-16S	16	4	6.63	4270	05/11/00	0.005	0.01	0.01	0.030	8	612.0	425.00	0.001	0.0063
MW-16S	16	4	6.68	4200	04/18/01	0.005	0.01	0.01	0.032	16.70	598.0	415.00	0.001	0.0063
MW-16S	16	4	6.66	4170	04/17/02	0.005	0.01	0.01	0.046	15.40	612.0	375.00	0.001	0.0063
MW-16S	16	4	6.72	1650	04/23/03	0.005	0.01	0.01	0.005	3.73	287.0	4.07	0.001	0.005
MW-16S	16	4	6.66	3820	04/21/04	0.005	0.01	0.01	0.028	11.10	589.0	342.00	0.001	0.0063
MW-16S	16	4	6.71	3280	04/20/05	0.005	0.01	0.01	0.049	18.70	614.0	283.00	0.001	0.0063
MW-16S	16	4	6.70	3880	04/18/06	0.005	0.01	0.01	0.050	9.40	605.0	322.00	0.001	0.006
MW-16S	16	4	6.73	3830	04/25/07	0.005	0.01	0.01	0.050	13.50	561.0	325.00	0.001	0.006
MW-17S	17	5	6.51	2360	10/18/90	0.01	0.02	0.2	0.016	12	410	87	0.001	0.0025
MW-17S	17	5	6.66	2280	02/14/91	0.01	0.02	0.2	0.010	7	418	78	0.001	0.0025
MW-17S	17	5	6.71	2410	05/03/91	0.01	0.02	0.2	0.014	11	410	65	0.001	0.0025
MW-17S	17	5	6.23	2280	07/25/91	0.01	0.02	0.2	0.011	10	403	59	0.001	0.0025
MW-17S	17	5	6.45	2130	11/07/91	0.01	0.02	0.2	0.016	10	561	30	0.001	0.0025
MW-17S	17	5	6.13	2210	05/06/92	0.01	0.02	0.2	0.017	12	395	37	0.001	0.0025
MW-17S	17	5	6.58	2190	11/10/92	0.01	0.02	0.2	0.016	20	385	19	0.001	0.0025
MW-17S	17	5	6.41	2250	05/05/93	0.01	0.02	0.2	0.012	11	390	20	0.001	0.0025
MW-17S	17	5	6.55	2290	11/17/93	0.01	0.02	0.2	0.010	10	402	62	0.001	0.0025
MW-17S	17	5	6.55	2400	04/26/94	0.01	0.02	0.2	0.017	12	391	27	0.001	0.0025
MW-17S	17	5	6.95	2300	11/09/94	0.02	0.04	0.2	0.010	11	407	31	0.001	0.0025
MW-17S	17	5	6.65	2430	05/03/95	0.02	0.04	0.2	0.010	10	395	31	0.001	0.0025
MW-17S	17	5	6.59	2420	05/14/96	0.02	0.04	0.2	0.010	12	381	24	0.001	0.0025
MW-17S	17	5	6.77	2290	06/26/97	0.005	0.01	0.01	0.020	11	384.0	32.00	0.001	0.0025
MW-17S	17	5	6.94	2280	05/06/98	0.005	0.01	0.01	0.010	11	400.0	36.60	0.001	0.0063
MW-17S	17	5	6.75	2340	05/13/99	0.005	0.01	0.01	0.010	12	409.0	44.00	0.001	0.0063
MW-17S	17	5	6.66	2280	05/11/00	0.005	0.01	0.01	0.010	12	341.0	52.00	0.001	0.0063
MW-17S	17	5	6.72	2350	04/18/01	0.005	0.01	0.01	0.010	14.00	415.0	43.80	0.001	0.0063
MW-17S	17	5	6.71	2350	04/17/02	0.005	0.01	0.01	0.012	11.60	409.0	33.30	0.001	0.0063
MW-17S	17	5	6.64	2380	04/23/03	0.005	0.01	0.01	0.007	10.70	415.0	44.00	0.001	0.005
MW-17S	17	5	6.65	2270	04/21/04	0.005	0.01	0.01	0.005	10.60	366.0	41.40	0.001	0.0063
MW-17S	17	5	6.88	1960	04/20/05	0.005	0.01	0.01	0.010	12.60	402.0	31.20	0.001	0.0061
MW-17S	17	5	6.80	2320	04/18/06	0.005	0.01	0.01	0.012	10.80	397.0	32.00	0.001	0.006
MW-17S	17	5	6.76	2330	04/25/07	0.005	0.01	0.01	0.010	11.30	410.0	35.70	0.001	0.006
MW-18S	18	5	6.55	1930	10/18/90	0.01	0.02	0.2	0.017	13	310	2	0.001	0.0025
MW-18S	18	5	6.69	1780	02/14/91	0.01	0.02	0.2	0.016	7	315	2	0.001	0.0025
MW-18S	18	5	5.99	1890	05/02/91	0.01	0.02	0.2	0.023	14	316	3	0.001	0.0025
MW-18S	18	5	6.30	1820	07/25/91	0.01	0.02	0.2	0.021	14	318	3	0.001	0.0025
MW-18S	18	5	6.51	1770	11/06/91	0.01	0.02	0.2	0.013	13	456	1	0.001	0.0025
MW-18S	18	5	6.10	1890	05/06/92	0.01	0.02	0.2	0.027	15	340	6	0.001	0.0025
MW-18S	18	5	6.56	1820	11/10/92	0.01	0.02	0.2	0.025	21	317	1	0.001	0.0025
MW-18S	18	5	6.57	1950	05/04/93	0.01	0.02	0.2	0.036	15	639	2	0.001	0.0025
MW-18S	18	5	6.53	1650	11/17/93	0.01	0.02	0.2	0.015	14	310	1	0.001	0.0025
MW-18S	18	5	6.58	2000	04/26/94	0.01	0.02	0.2	0.022	14	314	10	0.001	0.0025
MW-18S	18	5	7.01	1600	11/09/94	0.02	0.04	0.2	0.010	14	313	1	0.001	0.0025
MW-18S	18	5	6.76	1910	05/03/95	0.02	0.04	0.2	0.010	14	337	3	0.001	0.0025
MW-18S	18	5	6.67	1984	05/14/96	0.02	0.04	0.2	0.020	14	305	1	0.001	0.0025
MW-18S	18	5	6.82	1870	06/26/97	0.005	0.01	0.01	0.020	15	309.0	0.23	0.001	0.0025
MW-18S	18	5	6.91	1820	05/06/98	0.005	0.01	0.01	0.020	14	309.0	0.32	0.001	0.0063
MW-18S	18	5	6.86	1890	05/13/99	0.005	0.01	0.01	0.020	14	327.0	0.20	0.001	0.0063
MW-18S	18	5	6.65	1950	05/11/00	0.005	0.01	0.01	0.020	15	269.0	0.20	0.001	0.0063
MW-18S	18	5	6.70	1940	04/18/01	0.005	0.01	0.01	0.025	16.80	338.0	0.23	0.001	0.0063
MW-18S	18	5	6.71	1940	04/17/02	0.005	0.01	0.01	0.021	14.40	337.0	0.40	0.001	0.0063
MW-18S	18	5	6.71	2040	04/22/03	0.005	0.01	0.01	0.024	13.60	353.0	0.24	0.001	0.005
MW-18S	18	5	6.65	1890	04/21/04	0.005	0.01	0.01	0.017	13.4	306	0.2	0.001	0.0063
MW-18S	18	5	6.69	1800	04/19/05	0.005	0.01	0.01	0.019	16.8	278	0.272	0.001	0.0062
MW-18S	18	5	7.03	1920	04/19/06	0.005	0.01	0.01	0.013	20.8	312	0.342	0.001	0.006
MW-18S	18	5	6.65	1920	04/24/07	0.005	0.01	0.01	0.025	12.9	338	0.276	0.001	0.006

TABLE 2 (CONTINUED)

INDICATOR AND WATER QUALITY PARAMETERS DATABASE  
POST-CONSTRUCTION YEARS 1 THROUGH 17  
SOUTH AREA CAP

Bayou Sorrel Site  
Bayou Sorrel, Louisiana

Well Name	Well Code	Cluster Code	pH	SC	Sample Date	Cadmium	Chromium	Lead	Arsenic	TOC	Chloride	Sulfate	Ethylbenzene	Phenol
MW-19S	19	5	5.98	2460	10/19/90	0.01	0.02	0.2	0.024	12	460	6	0.001	0.0025
MW-19S	19	5	6.64	2250	02/14/91	0.01	0.02	0.2	0.012	11	478	3	0.001	0.0025
MW-19S	19	5	6.18	2640	05/02/91	0.01	0.02	0.2	0.030	13	463	3	0.001	0.0025
MW-19S	19	5	6.40	2380	07/25/91	0.01	0.02	0.2	0.032	12	457	3	0.001	0.0025
MW-19S	19	5	6.58	2350	11/06/91	0.01	0.02	0.2	0.014	13	641	7	0.001	0.0025
MW-19S	19	5	6.19	2440	05/06/92	0.01	0.02	0.2	0.030	14	480	7	0.001	0.0025
MW-19S	19	5	6.66	2510	11/10/92	0.01	0.02	0.2	0.031	20	470	1	0.001	0.0025
MW-19S	19	5	6.61	2540	05/04/93	0.01	0.02	0.2	0.042	13	554	3	0.001	0.0025
MW-19S	19	5	6.59	2100	11/17/93	0.01	0.02	0.2	0.022	12	424	1	0.001	0.0025
MW-19S	19	5	6.61	2700	04/26/94	0.01	0.02	0.2	0.026	13	436	5	0.001	0.0025
MW-19S	19	5	6.39	2090	11/10/94	0.02	0.04	0.2	0.017	12	447	1	0.001	0.0025
MW-19S	19	5	6.72	2550	05/03/95	0.02	0.04	0.2	0.020	13	492	4	0.001	0.0025
MW-19S	19	5	6.69	2580	05/14/96	0.02	0.04	0.2	0.030	14	442	2	0.001	0.0025
MW-19S	19	5	6.83	2450	06/26/97	0.005	0.01	0.01	0.020	14	458.0	2.25	0.001	0.0025
MW-19S	19	5	6.92	2390	05/06/98	0.005	0.01	0.01	0.030	12	449.0	1.62	0.001	0.0063
MW-19S	19	5	6.79	2510	05/13/99	0.005	0.01	0.01	0.030	13	460.0	1.40	0.001	0.0063
MW-19S	19	5	6.92	2620	05/11/00	0.005	0.01	0.01	0.030	14	392.0	1.80	0.001	0.0063
MW-19S	19	5	6.76	2490	04/18/01	0.005	0.01	0.01	0.041	16.30	476.0	1.02	0.001	0.0063
MW-19S	19	5	6.77	2490	04/17/02	0.005	0.01	0.01	0.037	14.80	458.0	0.66	0.001	0.0063
MW-19S	19	5	6.74	2600	04/22/03	0.005	0.01	0.01	0.038	12.90	488.0	0.57	0.001	0.005
MW-19S	19	5	6.77	2390	04/21/04	0.005	0.01	0.01	0.036	13.60	419.0	0.62	0.001	0.0063
MW-19S	19	5	6.70	2550	04/19/05	0.005	0.01	0.01	0.031	18.40	449.0	0.65	0.001	0.0063
MW-19S	19	5	7.12	2430	04/19/06	0.005	0.01	0.01	0.019	22.70	423.0	0.42	0.001	0.006
MW-19S	19	5	6.76	2470	04/24/07	0.005	0.01	0.01	0.043	13.00	457.0	0.26	0.001	0.006
MW-20S	20	5	5.88	2380	10/19/90	0.01	0.02	0.2	0.010	15	430	2	0.001	0.0025
MW-20S	20	5	6.38	2470	02/14/91	0.01	0.02	0.2	0.010	11	410	23	0.001	0.0025
MW-20S	20	5	6.18	2590	05/02/91	0.01	0.02	0.2	0.010	18	396	13	0.001	0.0025
MW-20S	20	5	6.32	2470	07/25/91	0.01	0.02	0.2	0.010	17	406	8	0.001	0.0025
MW-20S	20	5	6.37	2370	11/06/91	0.01	0.02	0.2	0.010	17	451	4	0.001	0.0025
MW-20S	20	5	6.16	2500	05/06/92	0.01	0.02	0.2	0.011	19	415	6	0.001	0.0025
MW-20S	20	5	6.65	2320	11/10/92	0.01	0.02	0.2	0.010	26	445	1	0.001	0.0025
MW-20S	20	5	6.00	2900	05/04/93	0.01	0.02	0.2	0.010	17	375	4	0.001	0.0025
MW-20S	20	5	6.54	2250	11/17/93	0.01	0.02	0.2	0.010	17	453	1	0.001	0.0025
MW-20S	20	5	6.60	2700	04/26/94	0.01	0.02	0.2	0.010	18	401	3	0.001	0.0025
MW-20S	20	5	6.22	2120	11/10/94	0.02	0.02	0.2	0.010	17	432	1	0.001	0.0025
MW-20S	20	5	6.65	2840	05/03/95	0.02	0.02	0.2	0.010	17	447	4	0.001	0.0025
MW-20S	20	5	6.62	2620	05/14/96	0.02	0.02	0.2	0.010	18	422	1	0.001	0.0025
MW-20S	20	5	6.85	2610	06/26/97	0.005	0.02	0.01	0.010	18	478.0	0.30	0.001	0.0025
MW-20S	20	5	6.95	2470	05/06/98	0.005	0.02	0.01	0.010	17	400.0	0.38	0.001	0.0063
MW-20S	20	5	6.78	2520	05/13/99	0.005	0.02	0.01	0.010	19	450.0	0.48	0.001	0.0063
MW-20S	20	5	6.84	2690	05/11/00	0.005	0.01	0.01	0.010	19	366.0	0.60	0.001	0.0063
MW-20S	20	5	6.68	2820	04/18/01	0.005	0.01	0.01	0.009	19.70	406.0	0.24	0.001	0.0063
MW-20S	20	5	6.71	2850	04/17/02	0.005	0.01	0.01	0.008	19.30	414.0	0.29	0.001	0.0063
MW-20S	20	5	6.71	2970	04/22/03	0.005	0.01	0.01	0.005	17.20	393.0	0.29	0.001	0.005
MW-20S	20	5	6.67	2630	04/20/04	0.005	0.01	0.01	0.008	15.60	403.0	0.99	0.001	0.0063
MW-20S	20	5	6.66	2760	04/19/05	0.005	0.01	0.01	0.010	26.70	421.0	0.20	0.001	0.0063
MW-20S	20	5	7.03	2650	04/19/06	0.005	0.01	0.01	0.013	28.30	408.0	0.49	0.001	0.006
MW-20S	20	5	6.66	2920	04/24/07	0.005	0.01	0.01	0.016	18.30	384.0	0.20	0.001	0.006
MW-21S	21	6	5.90	2150	10/19/90	0.01	0.02	0.2	0.046	17	425	2	0.001	0.0025
MW-21S	21	6	6.08	2160	02/14/91	0.01	0.02	0.2	0.029	11	455	1	0.001	0.0025
MW-21S	21	6	6.00	2340	05/02/91	0.01	0.02	0.2	0.037	19	421	2	0.001	0.0025
MW-21S	21	6	6.37	2110	07/24/91	0.01	0.02	0.2	0.026	8	421	2	0.001	0.0025
MW-21S	21	6	6.46	2090	11/06/91	0.01	0.02	0.2	0.041	18	570	1	0.001	0.0025
MW-21S	21	6	6.05	2220	05/06/92	0.01	0.02	0.2	0.040	20	430	6	0.001	0.0025
MW-21S	21	6	6.51	2240	11/10/92	0.01	0.02	0.2	0.035	26	430	1	0.001	0.0025
MW-21S	21	6	6.48	2390	05/04/93	0.01	0.02	0.2	0.035	18	430	2	0.001	0.0025
MW-21S	21	6	6.46	1950	11/17/93	0.01	0.02	0.2	0.035	17	412	2	0.001	0.0025
MW-21S	21	6	6.47	2300	04/26/94	0.01	0.02	0.2	0.041	19	417	6	0.001	0.0025
MW-21S	21	6	6.41	2170	11/10/94	0.02	0.04	0.2	0.024	18	431	5	0.001	0.0086
MW-21S	21	6	6.51	2320	05/04/95	0.02	0.04	0.2	0.020	18	465	3	0.001	0.0025
MW-21S	21	6	6.53	2350	05/14/96	0.02	0.04	0.2	0.030	19	411	1	0.001	0.0086
MW-21S	21	6	6.78	2160	06/26/97	0.005	0.01	0.01	0.030	18	423.0	0.20	0.001	0.0025
MW-21S	21	6	7.04	2060	05/06/98	0.005	0.01	0.01	0.040	17	421.0	0.20	0.001	0.0063
MW-21S	21	6	6.67	2180	05/13/99	0.005	0.01	0.01	0.040	21	459.0	0.20	0.001	0.0063
MW-21S	21	6	6.64	2310	05/11/00	0.005	0.01	0.01	0.040	20	409.0	0.20	0.001	0.0063
MW-21S	21	6	6.67	2200	04/18/01	0.005	0.01	0.01	0.036	20.30	440.0	0.20	0.001	0.0063
MW-21S	21	6	6.68	2240	04/17/02	0.005	0.01	0.01	0.035	21.30	441.0	0.23	0.001	0.0063
MW-21S	21	6	6.61	2300	04/22/03	0.005	0.01	0.01	0.037	17.70	423.0	0.23	0.001	0.005
MW-21S	21	6	6.61	2160	04/20/04	0.005	0.01	0.01	0.037	17.6	390	0.525	0.001	0.0063
MW-21S	21	6	6.66	2280	04/19/05	0.005	0.01	0.01	0.039	23.8	420	0.2	0.001	0.0062
MW-21S	21	6	7.09	2220	04/19/06	0.005	0.01	0.01	0.057	23.9	419	0.32	0.001	0.006
MW-21S	21	6	6.62	2230	04/24/07	0.005	0.01	0.01	0.037	18.9	435	0.299	0.001	0.006

TABLE 2 (CONTINUED)

INDICATOR AND WATER QUALITY PARAMETERS DATABASE  
 POST-CONSTRUCTION YEARS 1 THROUGH 17  
 SOUTH AREA CAP

Bayou Sorrel Site  
 Bayou Sorrel, Louisiana

Well Name	Well Code	Cluster Code	pH	SC	Sample Date	Cadmium	Chromium	Lead	Arsenic	TOC	Chloride	Sulfate	Ethylbenzene	Phenol
MW-22S	22	6	6.01	1630	10/19/90	0.01	0.02	0.2	0.010	12	255	3	0.001	0.0025
MW-22S	22	6	6.07	1340	02/14/91	0.01	0.02	0.2	0.010	19	284	7	0.001	0.0025
MW-22S	22	6	6.03	1680	05/02/91	0.01	0.02	0.2	0.010	26	260	10	0.001	0.0025
MW-22S	22	6	6.45	1540	07/24/91	0.01	0.02	0.2	0.010	14	282	8	0.001	0.0025
MW-22S	22	6	6.48	1800	11/06/91	0.01	0.02	0.2	0.010	28	580	1	0.001	0.0025
MW-22S	22	6	5.85	1630	05/06/92	0.01	0.02	0.2	0.010	30	340	6	0.001	0.0025
MW-22S	22	6	6.47	1970	11/10/92	0.01	0.02	0.2	0.010	44	340	1	0.001	0.0025
MW-22S	22	6	6.60	1610	05/04/93	0.01	0.02	0.2	0.010	34	164	25	0.001	0.0025
MW-22S	22	6	6.48	1430	11/17/93	0.01	0.02	0.2	0.010	38	262	4	0.001	0.0025
MW-22S	22	6	6.47	2200	04/26/94	0.01	0.02	0.2	0.010	37	312	6	0.001	0.0025
MW-22S	22	6	6.28	780	11/10/94	0.02	0.04	0.2	0.010	42	304	3	0.001	0.0025
MW-22S	22	6	6.65	1690	05/04/95	0.02	0.04	0.2	0.010	35	307	8	0.001	0.0025
MW-22S	22	6	6.63	1863	05/14/96	0.02	0.04	0.2	0.010	44	280	2	0.001	0.0025
MW-22S	22	6	6.85	1690	06/26/97	0.005	0.01	0.01	0.010	34	267.0	3.69	0.001	0.0025
MW-22S	22	6	7.02	1680	05/06/98	0.005	0.01	0.01	0.010	3	282.0	0.26	0.001	0.0063
MW-22S	22	6	6.86	1700	05/13/99	0.005	0.01	0.01	0.010	36	269.0	4.30	0.001	0.0063
MW-22S	22	6	6.72	1840	05/11/00	0.005	0.01	0.01	0.010	47	274.0	0.20	0.001	0.0063
MW-22S	22	6	6.73	1740	04/19/01	0.005	0.01	0.01	0.005	42.90	278.0	3.74	0.001	0.0063
MW-22S	22	6	6.74	1780	04/17/02	0.005	0.01	0.01	0.005	37.80	267.0	8.28	0.001	0.0063
MW-22S	22	6	6.64	4090	04/23/03	0.005	0.01	0.01	0.020	31.40	627.0	391.00	0.001	0.005
MW-22S	22	6	6.67	1720	04/21/04	0.005	0.01	0.01	0.005	38.40	261.0	3.13	0.001	0.0063
MW-22S	22	6	6.77	1540	04/20/05	0.005	0.01	0.01	0.005	33.90	272.0	2.97	0.001	0.0062
MW-22S	22	6	6.94	1720	04/19/06	0.005	0.01	0.01	0.005	46.20	255.0	1.05	0.001	0.006
MW-22S	22	6	6.64	1740	04/24/07	0.005	0.01	0.01	0.005	34.30	293.0	2.01	0.001	0.006
MW-23S	23	6	5.90	2540	10/19/90	0.01	0.02	0.2	0.010	12	600	1	0.001	0.0025
MW-23S	23	6	5.83	2410	02/14/91	0.01	0.02	0.2	0.010	6	628	2	0.001	0.0025
MW-23S	23	6	5.95	2710	05/02/91	0.01	0.02	0.2	0.010	12	644	3	0.001	0.0025
MW-23S	23	6	6.41	2450	07/24/91	0.01	0.02	0.2	0.010	5	621	2	0.001	0.0025
MW-23S	23	6	6.40	2470	11/06/91	0.01	0.02	0.2	0.010	12	1180	1	0.001	0.0025
MW-23S	23	6	6.53	2540	05/05/92	0.01	0.02	0.2	0.012	14	645	5	0.001	0.0025
MW-23S	23	6	6.56	2510	11/10/92	0.01	0.02	0.2	0.010	18	600	1	0.001	0.0025
MW-23S	23	6	6.48	2830	05/04/93	0.01	0.02	0.2	0.010	13	289	2	0.001	0.0025
MW-23S	23	6	6.42	2280	11/17/93	0.01	0.02	0.2	0.010	12	537	2	0.001	0.0025
MW-23S	23	6	6.47	2900	04/26/94	0.01	0.02	0.2	0.010	13	578	5	0.001	0.0025
MW-23S	23	6	6.30	2760	11/10/94	0.02	0.04	0.2	0.010	13	529	1	0.001	0.011
MW-23S	23	6	6.63	2770	05/04/95	0.02	0.04	0.2	0.010	13	609	3	0.001	0.0025
MW-23S	23	6	6.61	2720	05/14/96	0.02	0.04	0.2	0.010	14	559	2	0.001	0.0025
MW-23S	23	6	6.74	2530	06/26/97	0.005	0.01	0.01	0.010	14	580.0	0.20	0.001	0.0025
MW-23S	23	6	6.89	2430	05/06/98	0.005	0.01	0.01	0.010	13	576.0	0.20	0.001	0.0063
MW-23S	23	6	6.67	2490	05/13/99	0.005	0.01	0.01	0.010	15	568.0	0.20	0.001	0.0063
MW-23S	23	6	6.67	2700	05/11/00	0.005	0.01	0.01	0.010	14	497.0	0.20	0.001	0.0063
MW-23S	23	6	6.60	2510	04/19/01	0.005	0.01	0.01	0.007	15.10	574.0	0.30	0.001	0.0063
MW-23S	23	6	6.67	2660	04/17/02	0.005	0.01	0.01	0.005	16.70	535.0	0.31	0.001	0.0063
MW-23S	23	6	6.57	2700	04/22/03	0.005	0.01	0.01	0.007	12.90	577.0	0.24	0.001	0.005
MW-23S	23	6	6.62	2500	04/20/04	0.005	0.01	0.01	0.005	12.70	511.0	0.20	0.001	0.0063
MW-23S	23	6	6.60	2590	04/19/05	0.005	0.01	0.01	0.006	19.30	574.0	0.02	0.001	0.006
MW-23S	23	6	6.98	2560	04/19/06	0.005	0.01	0.01	0.008	19.70	524.0	0.36	0.001	0.006
MW-23S	23	6	6.68	2530	04/24/07	0.005	0.01	0.01	0.005	13.10	511.0	0.20	0.001	0.006
MW-24S	24	6	5.93	2440	10/19/90	0.01	0.02	0.2	0.010	7	515	9	0.001	0.0025
MW-24S	24	6	6.33	2300	02/13/91	0.01	0.02	0.2	0.010	1	528	11	0.001	0.0025
MW-24S	24	6	6.06	2700	05/02/91	0.01	0.02	0.2	0.010	9	539	10	0.001	0.0025
MW-24S	24	6	6.49	2450	07/24/91	0.01	0.02	0.2	0.010	3	537	13	0.001	0.0025
MW-24S	24	6	6.64	2550	11/06/91	0.01	0.02	0.2	0.010	9	941	3	0.001	0.0025
MW-24S	24	6	6.61	2700	05/05/92	0.01	0.02	0.2	0.010	10	550	13	0.001	0.0025
MW-24S	24	6	6.69	2560	11/10/92	0.01	0.02	0.2	0.010	12	532	14	0.001	0.0025
MW-24S	24	6	6.58	2810	05/04/93	0.01	0.02	0.2	0.010	10	546	10	0.001	0.0025
MW-24S	24	6	6.72	2450	11/16/93	0.01	0.02	0.2	0.010	9	487	10	0.001	0.0025
MW-24S	24	6	6.57	2900	04/26/94	0.01	0.02	0.2	0.010	10	2540	10	0.001	0.0025
MW-24S	24	6	6.49	2530	11/10/94	0.02	0.04	0.2	0.010	11	758	12	0.001	0.0025
MW-24S	24	6	6.69	2910	05/04/95	0.02	0.04	0.2	0.010	10	520	13	0.001	0.0025
MW-24S	24	6	6.70	2830	05/14/96	0.02	0.04	0.2	0.010	13	492	11	0.001	0.0025
MW-24S	24	6	6.94	2720	06/26/97	0.005	0.01	0.01	0.010	13	493.0	13.20	0.001	0.0025
MW-24S	24	6	7.14	2540	05/06/98	0.005	0.01	0.01	0.010	11	467.0	12.20	0.001	0.0063
MW-24S	24	6	6.88	2730	05/13/99	0.005	0.01	0.01	0.010	14	470.0	11.80	0.001	0.0063
MW-24S	24	6	6.90	2890	05/11/00	0.005	0.01	0.01	0.010	15	384.0	8.00	0.001	0.0063
MW-24S	24	6	6.79	2770	04/19/01	0.005	0.01	0.01	0.005	15.80	502.0	5.53	0.001	0.0063
MW-24S	24	6	6.80	2780	04/17/02	0.005	0.01	0.01	0.005	15.00	470.0	2.96	0.001	0.0063
MW-24S	24	6	6.77	2820	04/22/03	0.005	0.01	0.01	0.005	12.20	488.0	1.72	0.001	0.005
MW-24S	24	6	6.70	2560	04/20/04	0.005	0.01	0.01	0.005	12.6	453	1.23	0.001	0.0063
MW-24S	24	6	6.73	2530	04/19/05	0.005	0.01	0.01	0.007	16.6	472	1.42	0.001	0.006
MW-24S	24	6	7.23	2670	04/19/06	0.005	0.01	0.01	0.012	20.2	449	2.91	0.001	0.006
MW-24S	24	6	6.73	2680	04/24/07	0.005	0.01	0.01	0.008	13.9	478	0.848	0.001	0.006

TABLE 2 (CONTINUED)

INDICATOR AND WATER QUALITY PARAMETERS DATABASE  
POST-CONSTRUCTION YEARS 1 THROUGH 17  
SOUTH AREA CAP

Bayou Sorrel Site  
Bayou Sorrel, Louisiana

Well Name	Well Code	Cluster Code	pH	SC	Sample Date	Cadmium	Chromium	Lead	Arsenic	TOC	Chloride	Sulfate	Ethylbenzene	Phenol
MW-25S	25	7	6.07	3320	10/19/90	0.01	0.02	0.2	0.010	6	790	43	0.001	0.0025
MW-25S	25	7	6.36	3110	02/13/91	0.01	0.02	0.2	0.010	1	735	49	0.001	0.0025
MW-25S	25	7	6.01	3580	05/02/91	0.01	0.02	0.2	0.010	6	766	15	0.001	0.0025
MW-25S	25	7	6.50	3050	07/24/91	0.01	0.02	0.2	0.010	2	796	33	0.001	0.0025
MW-25S	25	7	6.55	3270	11/06/91	0.01	0.02	0.2	0.010	7	1150	43	0.001	0.0025
MW-25S	25	7	6.63	3560	05/05/92	0.01	0.02	0.2	0.012	8	870	30	0.001	0.0025
MW-25S	25	7	6.66	3560	11/10/92	0.01	0.02	0.2	0.010	19	802	23	0.001	0.0025
MW-25S	25	7	6.57	3760	05/04/93	0.01	0.02	0.2	0.010	7	760	33	0.001	0.0025
MW-25S	25	7	6.68	3430	11/16/93	0.01	0.02	0.2	0.010	7	725	25	0.001	0.0025
MW-25S	25	7	6.62	3840	04/26/94	0.01	0.02	0.2	0.010	7	715	30	0.001	0.0025
MW-25S	25	7	6.57	3900	11/10/94	0.02	0.04	0.2	0.010	8	512	35	0.001	0.0025
MW-25S	25	7	6.68	3570	05/04/95	0.02	0.04	0.2	0.010	7	718	11	0.001	0.0025
MW-25S	25	7	6.63	3310	05/14/96	0.02	0.04	0.2	0.010	9	627	51	0.001	0.0025
MW-25S	25	7	6.85	3300	06/26/97	0.005	0.01	0.01	0.010	10	591	40.70	0.001	0.0025
MW-25S	25	7	7.02	3080	05/06/98	0.005	0.01	0.01	0.010	8	537	63.30	0.001	0.0063
MW-25S	25	7	6.76	3240	05/13/99	0.005	0.01	0.01	0.010	10	575	75.00	0.001	0.0063
MW-25S	25	7	5.87	3380	05/11/00	0.005	0.01	0.01	0.010	10	484	66.00	0.001	0.0063
MW-25S	25	7	6.75	2930	04/19/01	0.005	0.01	0.01	0.005	10.30	461	121.00	0.001	0.0063
MW-25S	25	7	6.81	3030	04/17/02	0.005	0.01	0.01	0.005	10.50	453	98.00	0.001	0.0063
MW-25S	25	7	6.74	2950	04/22/03	0.005	0.01	0.01	0.008	9.73	416	127.00	0.001	0.005
MW-25S	25	7	6.84	2710	04/20/04	0.005	0.01	0.01	0.005	8.11	394	122.00	0.001	0.0063
MW-25S	25	7	6.74	2720	04/19/05	0.005	0.01	0.01	0.005	11.30	386	132.00	0.001	0.006
MW-25S	25	7	7.21	2730	04/19/06	0.005	0.01	0.01	0.006	15.40	346	124.00	0.001	0.006
MW-25S	25	7	6.81	2680	04/24/07	0.005	0.01	0.01	0.009	8.10	333	122.00	0.001	0.006
UW-1S	30	20	6.44	4350	10/16/90	0.01	0.02	0.2	0.030	4	1160	10	0.001	0.0025
UW-1S	30	20	6.19	3960	02/13/91	0.01	0.02	0.2	0.022	1	1190	18	0.001	0.0025
UW-1S	30	20	5.82	4560	05/02/91	0.01	0.02	0.2	0.026	5	1210	14	0.001	0.0025
UW-1S	30	20	6.52	3960	07/24/91	0.01	0.02	0.2	0.032	1	1190	15	0.001	0.0025
UW-1S	30	20	6.56	4070	11/06/91	0.01	0.02	0.2	0.028	5	1500	2	0.001	0.0025
UW-1S	30	20	6.59	4240	05/05/92	0.01	0.02	0.2	0.053	6	1170	19	0.001	0.0025
UW-1S	30	20	6.71	4370	11/10/92	0.01	0.02	0.2	0.052	11	1160	12	0.001	0.0025
UW-1S	30	20	6.61	4730	05/04/93	0.01	0.02	0.2	0.031	6	1160	13	0.001	0.0025
UW-1S	30	20	6.70	4370	11/16/93	0.01	0.02	0.2	0.039	5	1160	3	0.001	0.0025
UW-1S	30	20	6.59	4100	04/26/94	0.01	0.02	0.2	0.048	6	1170	8	0.001	0.0025
UW-1S	30	20	6.97	4470	11/10/94	0.02	0.04	0.2	0.035	6	1180	3	0.001	0.0025
UW-1S	30	20	6.79	4770	05/04/95	0.02	0.04	0.2	0.050	5	1100	14	0.001	0.0025
UW-1S	30	20	6.77	4570	05/15/96	0.02	0.04	0.2	0.060	7	1160	5	0.001	0.0025
UW-1S	30	20	7.60	4290	07/11/97	0.005	0.01	0.01	0.050	5	1230	2.21	0.001	0.0025
UW-1S	30	20	7.29	4030	05/05/98	0.005	0.01	0.01	0.050	6	1140	3.50	0.001	0.0063
UW-1S	30	20	6.76	4110	05/12/99	0.005	0.01	0.01	0.040	8	1220	5.77	0.001	0.0063
UW-1S	30	20	6.89	4610	05/11/00	0.005	0.01	0.01	0.040	8	1050	4.50	0.001	0.0063
UW-1S	30	20	6.67	4370	04/18/01	0.005	0.01	0.01	0.049	9.36	1190	62.20	0.001	0.0063
UW-1S	30	20	6.76	4350	04/16/02	0.005	0.01	0.01	0.029	9.59	1080	15.10	0.001	0.0063
UW-1S	30	20	6.75	4360	04/22/03	0.005	0.01	0.01	0.024	6.24	1200	7.21	0.001	0.005
UW-1S	30	20	6.78	4190	04/21/04	0.005	0.01	0.01	0.007	6.92	1070	3.58	0.001	0.0063
UW-1S	30	20	6.76	4220	04/20/05	0.005	0.01	0.01	0.029	7.96	1190	4.20	0.001	0.006
UW-1S	30	20	6.88	4140	04/18/06	0.005	0.01	0.01	0.055	6.11	1190	5.84	0.001	0.0063
UW-1S	30	20	6.78	4220	04/24/07	0.005	0.01	0.01	0.023	6.24	1040	8.50	0.001	0.0063
UW-2S	31	20	6.28	4840	10/16/90	0.01	0.02	0.2	0.010	3	1520	6	0.001	0.0025
UW-2S	31	20	6.01	4640	02/13/91	0.01	0.02	0.2	0.010	1	1620	19	0.001	0.0025
UW-2S	31	20	5.95	5540	05/02/91	0.01	0.02	0.2	0.010	4	1620	13	0.001	0.0025
UW-2S	31	20	6.17	4100	07/24/91	0.01	0.02	0.2	0.010	1	1520	6	0.001	0.0025
UW-2S	31	20	6.34	4300	11/06/91	0.01	0.02	0.2	0.010	6	1460	1	0.001	0.0025
UW-2S	31	20	6.31	5130	05/05/92	0.01	0.02	0.2	0.011	6	1510	8	0.001	0.0025
UW-2S	31	20	6.29	4780	11/10/92	0.01	0.02	0.2	0.010	14	1420	8	0.001	0.0025
UW-2S	31	20	6.33	5630	05/04/93	0.01	0.02	0.2	0.010	5	1550	6	0.001	0.0025
UW-2S	31	20	6.39	4270	11/16/93	0.01	0.02	0.2	0.010	5	1250	13	0.001	0.0025
UW-2S	31	20	6.33	4030	04/26/94	0.01	0.02	0.2	0.010	5	1290	12	0.001	0.0025
UW-2S	31	20	6.63	4220	11/10/94	0.02	0.04	0.2	0.010	6	1140	4	0.001	0.0025
UW-2S	31	20	6.50	5240	05/04/95	0.02	0.04	0.2	0.010	6	1310	7	0.001	0.0025
UW-2S	31	20	6.61	4620	05/15/96	0.02	0.04	0.2	0.010	9	1210	3	0.001	0.0025
UW-2S	31	20	6.60	4430	06/26/97	0.005	0.01	0.01	0.010	9	1330	1.64	0.001	0.0025
UW-2S	31	20	6.77	3690	05/05/98	0.005	0.01	0.01	0.010	7	1020	11.20	0.001	0.0063
UW-2S	31	20	6.58	3270	05/12/99	0.005	0.01	0.01	0.010	8	911	17.70	0.001	0.0063
UW-2S	31	20	6.70	3890	05/11/00	0.005	0.01	0.01	0.010	10	884	8.40	0.001	0.0063
UW-2S	31	20	6.90	3880	04/18/01	0.005	0.01	0.01	0.007	11.10	1090	11.00	0.001	0.0063
UW-2S	31	20	6.72	3880	04/17/02	0.005	0.01	0.01	0.005	9.16	917	13.30	0.001	0.0063
UW-2S	31	20	6.59	3780	04/22/03	0.005	0.01	0.01	0.013	6.96	974	6.53	0.001	0.005
UW-2S	31	20	6.59	3560	04/21/04	0.005	0.01	0.01	0.008	8.86	887	4.8	0.001	0.0063
UW-2S	31	20	6.60	3470	04/20/05	0.005	0.01	0.01	0.012	15.4	893	6.23	0.001	0.0062
UW-2S	31	20	7.01	3040	04/19/06	0.005	0.01	0.01	0.014	11.3	679	9.31	0.001	0.006
UW-2S	31	20	6.64	3180	04/24/07	0.005	0.01	0.01	0.012	7.14	747	10.4	0.001	0.006



TABLE 3

POREWATER  
INDICATOR AND WATER QUALITY PARAMETERS DATABASE  
FOURTH QUARTER, POST-CONSTRUCTION YEAR 2 THROUGH POST-CONSTRUCTION YEAR 17

Bayou Sorrel Site  
Iberville Parish, Louisiana

Porewater Chamber	Sample Date	pH	SC	TDS	TOC	TSS	COD	O&G	As	Cd	Ni	CN
PC-1	11/11/1992	7.19	1880	1430	20							
PC-1	2/11/1993	7.05	1580	880	8							
PC-1	5/5/1993	6.79	2540	2200	20							
PC-1	8/5/1993	7.05	2840	1520	12							
PC-1	11/17/1993	7.10	1660	1470	10							
PC-1	2/17/1994	7.55	2360	1310	11							
PC-1	4/27/1994	6.81	2110	1440	12							
PC-1	8/11/1994	6.83	3100	2180	14							
PC-1	11/10/1994	7.18	2770	1770	11							
PC-1	2/15/1995	7.01	2500	1580	12							
PC-1	5/3/1995	6.85	2560	1750	13	56	60	1	0.01	0.02	0.1	0.01
PC-1	2/15/1995	6.85	2250	1380	12							
PC-1	6/25/1997	7.49	2050	1420	14							
PC-1	5/6/1998	7.38	1920	1060	10							
PC-1	5/13/1999	7.35	2390	1470	15							
PC-1	5/12/2000	6.90	2120	1420	13							
PC-1	4/19/2001	7.03	2280	1300	12.6							
PC-1	4/18/2002	7.31	2480	1620	15.8							
PC-1	4/23/2003	7.17	2720	1680	13.5							
PC-1	4/21/2004	7.31	2900	2120	15.2							
PC-1	4/21/2005	7.32	2710	2220	17.8							
PC-1	4/20/2006	7.81	1650	823	12.2							
PC-1	4/26/2007	7.17	2140	1590	16.5							

TABLE 3 (CONTINUED)

POREWATER  
INDICATOR AND WATER QUALITY PARAMETERS DATABASE  
FOURTH QUARTER, POST-CONSTRUCTION YEAR 2 THROUGH POST-CONSTRUCTION YEAR 17

Bayou Sorrel Site  
Iberville Parish, Louisiana

Porewater Chamber	Sample Date	pH	SC	TDS	TOC	TSS	COD	O&G	As	Cd	Ni	CN
PC-2	11/11/1992	7.46	1490	1120	14							
PC-2	2/11/1993	6.80	2250	1280	10							
PC-2	5/5/1993	7.16	1674	1780	14							
PC-2	8/5/1993	7.04	2720	1890	9							
PC-2	11/17/1993	6.8	1370	466	12							
PC-2	2/17/1994	7.85	1749	567	12							
PC-2	4/27/1994	6.93	1640	876	11							
PC-2	8/11/1994	7.12	1721	1400	14							
PC-2	11/10/1994	7.00	2300	1420	13							
PC-2	2/15/1995	7.02	890	529	9							
PC-2	5/3/1995	6.68	1200	796	12	28	54	1	0.01	0.02	0.1	0.01
PC-2	2/15/1995	6.53	890	584	15							
PC-2	6/25/1997	7.03	666	435	14							
PC-2	5/6/1998	7.09	1020	613	13							
PC-2	5/13/1999	7.22	1790	1080	13							
PC-2	5/12/2000	6.80	1910	1350	16							
PC-2	4/19/2001	6.92	944	601	10.3							
PC-2	4/18/2002	7.06	1260	757	12							
PC-2	4/23/2003	7.23	1560	915	11.4							
PC-2	4/21/2004	7.39	1400	946	10							
PC-2	4/21/2005	7.38	1420	1060	13.1							
PC-2	4/20/2006	7.64	1280	831	20.6							
PC-2	4/26/2007	7.25	918	614	13.7							

TABLE 3 (CONTINUED)

POREWATER  
INDICATOR AND WATER QUALITY PARAMETERS DATABASE  
FOURTH QUARTER, POST-CONSTRUCTION YEAR 2 THROUGH POST-CONSTRUCTION YEAR 17

Bayou Sorrel Site  
Iberville Parish, Louisiana

Porewater Chamber	Sample Date	pH	SC	TDS	TOC	TSS	COD	O&G	As	Cd	Ni	CN
PC-3	11/11/1992	7.43	1620	1120	17							
PC-3	2/11/1993	7.23	1500	862	11							
PC-3	5/5/1993	6.98	1450	2040	11							
PC-3	8/5/1993	7.06	1610	1020	11							
PC-3	11/17/1993	6.73	1310	1090	11							
PC-3	2/17/1994	7.78	1239	962	11							
PC-3	4/27/1994	6.88	1540	828	11							
PC-3	8/11/1994	6.51	1785	1520	12							
PC-3	11/10/1994	6.94	1850	1130	13							
PC-3	2/15/1995	7.01	1590	942	11							
PC-3	5/3/1995	6.52	1310	868	11	3	42	1	0.01	0.02	0.1	0.01
PC-3	2/15/1995	6.25	1795	1110	13							
PC-3	6/25/1997	6.90	1780	1160	13							
PC-3	5/6/1998	6.77	918	556	10							
PC-3	5/13/1999	6.74	1220	744	9							
PC-3	5/12/2000	7.07	1010	667	10							
PC-3	4/19/2001	7.10	1030	604	9.26							
PC-3	4/18/2002	7.47	755	405	8.65							
PC-3	4/23/2003	7.23	977	511	8.26							
PC-3	4/21/2004	7.56	950	601	8.90							
PC-3	4/21/2005	7.11	1140	825	10.7							
PC-3	4/20/2006	7.51	940	515	11.6							
PC-3	4/26/2007	7.33	565	349	9.3							

TABLE 3 (CONTINUED)

POREWATER  
INDICATOR AND WATER QUALITY PARAMETERS DATABASE  
FOURTH QUARTER, POST-CONSTRUCTION YEAR 2 THROUGH POST-CONSTRUCTION YEAR 17

Bayou Sorrel Site  
Iberville Parish, Louisiana

Porewater Chamber	Sample Date	pH	SC	TDS	TOC	TSS	COD	O&G	As	Cd	Ni	CN
PC-4	11/11/1992	6.79	2360	1700	17							
PC-4	2/11/1993	6.85	2360	1480	9							
PC-4	5/5/1993	6.57	2470	2740	9							
PC-4	8/5/1993	7.02	2610	1850	10							
PC-4	11/17/1993	6.73	1260	1280	12							
PC-4	2/17/1994	7.22	1603	1260	9							
PC-4	4/27/1994	7.27	1720	1020	8							
PC-4	8/11/1994	6.66	2050	1680	10							
PC-4	11/10/1994	7.04	2210	1350	12							
PC-4	2/15/1995	6.61	3050	1850	28							
PC-4	5/3/1995	6.94	1340	1150	8	11	47	1	0.01	0.02	0.1	0.01
PC-4	2/15/1995	6.25	1940	1260	19							
PC-4	6/25/1997	7.18	1730	1160	12							
PC-4	5/6/1998	7.39	2000	1290	9							
PC-4	5/13/1999	7.24	1460	948	8							
PC-4	5/12/2000	6.68	2820	1880	17							
PC-4	4/19/2001	6.64	3220	2020	16.4							
PC-4	4/18/2002	7.27	1530	900	10.2							
PC-4	4/23/2003	7.41	1760	1010	7.91							
PC-4	4/21/2004	7.28	1820	1170	7.99							
PC-4	4/21/2005	7.13	1560	1120	8.64							
PC-4	4/20/2006	7.59	1360	733	9.13							
PC-4	4/26/2007	7.07	1650	1080	14.2							

TABLE 3 (CONTINUED)

POREWATER  
INDICATOR AND WATER QUALITY PARAMETERS DATABASE  
FOURTH QUARTER, POST-CONSTRUCTION YEAR 2 THROUGH POST-CONSTRUCTION YEAR 17

Bayou Sorrel Site  
Iberville Parish, Louisiana

Porewater Chamber	Sample Date	pH	SC	TDS	TOC	TSS	COD	O&G	As	Cd	Ni	CN
PC-5	11/11/1992	7.39	1760	1380	17							
PC-5	2/11/1993	7.23	1440	860	16							
PC-5	5/5/1993	7.32	1059	1440	13							
PC-5	8/5/1993	6.97	1710	990	12							
PC-5	11/17/1993	7.16	1490	1270	14							
PC-5	2/17/1994	7.83	1388	904	14							
PC-5	4/27/1994	7.07	1510	864	13							
PC-5	8/11/1994	7.06	1753	1430	17							
PC-5	11/10/1994	7.29	2010	1300	19							
PC-5	2/15/1995	6.73	1590	970	24							
PC-5	5/3/1995	6.83	960	684	14	1	58	1	0.01	0.02	0.1	0.01
PC-5	2/15/1995	6.25	1324	871	20							
PC-5	6/25/1997	7.17	1330	876	12							
PC-5	5/6/1998	7.45	919	525	10							
PC-5	5/13/1999	7.28	1150	715	11							
PC-5	5/12/2000	7.32	1070	723	11							
PC-5	4/19/2001	7.28	874	543	8.82							
PC-5	4/18/2002	7.46	855	519	10.1							
PC-5	4/23/2003	7.40	1160	684	11.5							
PC-5	4/21/2004	7.54	1110	818	12.5							
PC-5	4/21/2005	7.68	1330	1030	17.3							
PC-5	4/20/2006	7.69	1370	677	19.8							
PC-5	4/26/2007	7.51	942	942	16.9							

TABLE 3 (CONTINUED)

POREWATER  
INDICATOR AND WATER QUALITY PARAMETERS DATABASE  
FOURTH QUARTER, POST-CONSTRUCTION YEAR 2 THROUGH POST-CONSTRUCTION YEAR 17

Bayou Sorrel Site  
Iberville Parish, Louisiana

Porewater Chamber	Sample Date	pH	SC	TDS	TOC	TSS	COD	O&G	As	Cd	Ni	CN
PC-6	11/11/1992	6.77	2450	1880	17							
PC-6	2/11/1993	6.74	3720	1810	13							
PC-6	5/5/1993	7.27	1066	1160	8							
PC-6	8/5/1993	7.31	2270	1600	11							
PC-6	11/17/1993	6.67	2160	1980	11							
PC-6	2/17/1994	6.49	2920	1720	12							
PC-6	4/27/1994	6.88	3310	2040	25							
PC-6	8/11/1994	6.78	2150	1670	11							
PC-6	11/10/1994	7.14	2690	1600	14							
PC-6	2/15/1995	6.63	2560	1630	20							
PC-6	5/3/1995	6.61	2130	1550	19	63	97	14	0.01	0.02	0.1	0.01
PC-6	2/15/1995	6.67	2870	1950	20							
PC-6	6/25/1997	7.38	2110	1460	15							
PC-6	5/6/1998	7.41	995	569	10							
PC-6	5/13/1999	7.24	1680	999	13							
PC-6	5/12/2000	6.61	3200	2160	29							
PC-6	4/19/2001	7.20	882	526	8.28							
PC-6	4/18/2002	7.51	1120	649	10.2							
PC-6	4/23/2003	7.33	1860	1080	12.6							
PC-6	4/21/2004	7.25	1200	755	8.58							
PC-6	4/21/2005	7.13	2250	1690	20.8							
PC-6	4/20/2006	7.56	1770	782	18.2							
PC-6	4/26/2007	7.06	1480	970	21.5							

TABLE 3 (CONTINUED)

POREWATER  
INDICATOR AND WATER QUALITY PARAMETERS DATABASE  
FOURTH QUARTER, POST-CONSTRUCTION YEAR 2 THROUGH POST-CONSTRUCTION YEAR 17

Bayou Sorrel Site  
Iberville Parish, Louisiana

Porewater Chamber	Sample Date	pH	SC	TDS	TOC	TSS	COD	O&G	As	Cd	Ni	CN
PC-7	11/11/1992	7.07	2740	1820	15							
PC-7	2/11/1993	6.35	3060	1720	8							
PC-7	5/5/1993	6.92	2310	2560	10							
PC-7	8/5/1993	3.93	2920	1940	8							
PC-7	11/17/1993	6.95	1930	1650	15							
PC-7	2/17/1994	7.06	2320	1570	8							
PC-7	4/27/1994	7.16	2900	1880	7							
PC-7	8/11/1994	6.95	2970	2250	8							
PC-7	11/10/1994	6.94	3000	1830	9							
PC-7	2/15/1995	7.01	2920	1890	15							
PC-7	5/3/1995	6.73	2840	2080	14	47	79	1	0.02	0.02	0.1	0.01
PC-7	2/15/1995	6.62	3160	1900	15							
PC-7	6/25/1997	6.97	2850	2050	13							
PC-7	5/6/1998	7.12	2930	1980	12							
PC-7	5/13/1999	7.09	3000	1950	13							
PC-7	5/12/2000	6.99	3220	2080	14							
PC-7	4/19/2001	6.94	3080	1800	14.9							
PC-7	4/18/2002	7.10	2150	1440	11.8							
PC-7	4/23/2003	7.11	3390	2200	10.3							
PC-7	4/21/2004	6.90	2660	1930	10.7							
PC-7	4/21/2005	7.17	2960	2310	14.1							
PC-7	4/20/2006	7.69	2280	1650	16.2							
PC-7	4/26/2007	7.09	2470	1800	20.1							

TABLE 3 (CONTINUED)

POREWATER  
INDICATOR AND WATER QUALITY PARAMETERS DATABASE  
FOURTH QUARTER, POST-CONSTRUCTION YEAR 2 THROUGH POST-CONSTRUCTION YEAR 17

Bayou Sorrel Site  
Iberville Parish, Louisiana

Porewater Chamber	Sample Date	pH	SC	TDS	TOC	TSS	COD	O&G	As	Cd	Ni	CN
PC-8	11/11/1992	7.05	2000	1450	20							
PC-8	2/11/1993	6.58	2320	1340	12							
PC-8	5/5/1993	6.88	2480	2040	12							
PC-8	8/5/1993	6.93	2390	1660	11							
PC-8	11/17/1993	6.66	1590	1280	14							
PC-8	2/17/1994	7.17	1919	1250	11							
PC-8	4/27/1994	7.05	2410	1430	11							
PC-8	8/11/1994	6.46	2510	1910	12							
PC-8	11/10/1994	6.81	2480	1500	13							
PC-8	2/15/1995	7.07	2560	1560	12							
PC-8	5/3/1995	6.74	2330	1650	15	40	90	1	0.01	0.02	0.1	0.01
PC-8	2/15/1995	6.43	2650	1590	17							
PC-8	6/25/1997	6.97	2510	1650	16							
PC-8	5/6/1998	7.01	2450	1590	15							
PC-8	5/13/1999	7.32	2560	1660	17							
PC-8	5/12/2000	6.79	2610	1710	24							
PC-8	4/19/2001	7.17	2680	1720	21							
PC-8	4/18/2002	7.06	2660	1640	18.1							
PC-8	4/23/2003	7.05	2450	1670	15.3							
PC-8	4/21/2004	6.90	2380	1520	19.2							
PC-8	4/21/2005	7.13	2290	1550	21.0							
PC-8	4/20/2006	7.13	2330	1420	27.5							
PC-8	4/26/2007	7.11	2260	1490	34.2							



TABLE 3 (CONTINUED)

POREWATER  
INDICATOR AND WATER QUALITY PARAMETERS DATABASE  
FOURTH QUARTER, POST-CONSTRUCTION YEAR 2 THROUGH POST-CONSTRUCTION YEAR 17

Bayou Sorrel Site  
Iberville Parish, Louisiana

Porewater Chamber	Sample Date	pH	SC	TDS	TOC	TSS	COD	O&G	As	Cd	Ni	CN
PC-9	11/11/1992	7.09	1840	1480	16							
PC-9	2/11/1993	6.54	2400	1350	10							
PC-9	5/5/1993	7.16	2760	1760	10							
PC-9	8/5/1993	6.91	2350	1580	9							
PC-9	11/17/1993	6.88	1080	1020	10							
PC-9	2/17/1994	7.51	1720	800	9							
PC-9	4/27/1994	7.26	2300	1320	9							
PC-9	8/11/1994	6.50	2460	2210	10							
PC-9	11/10/1994	6.99	2550	1560	12							
PC-9	2/15/1995	7.30	2140	1370	12							
PC-9	5/3/1995	6.70	2320	1720	10	21	79	1	0.01	0.02	0.1	0.01
PC-9	2/15/1995	6.54	2910	1750	21							
PC-9	6/25/1997	6.99	2580	1780	17							
PC-9	5/6/1998	7.25	2280	1480	14							
PC-9	5/13/1999	7.01	2740	1770	18							
PC-9	5/12/2000	6.82	2820	1870	15							
PC-9	4/19/2001	7.06	2470	1600	14							
PC-9	4/18/2002	6.90	1740	1050	11.2							
PC-9	4/23/2003	7.05	2450	1480	10.4							
PC-9	4/21/2004	6.94	2110	1380	10.9							
PC-9	4/21/2005	7.17	2380	1630	14.5							
PC-9	4/20/2006	7.18	2330	1560	18.8							
PC-9	4/26/2007	7.14	2190	1440	23.1							

TABLE 3 (CONTINUED)

POREWATER  
INDICATOR AND WATER QUALITY PARAMETERS DATABASE  
FOURTH QUARTER, POST-CONSTRUCTION YEAR 2 THROUGH POST-CONSTRUCTION YEAR 17

Bayou Sorrel Site  
Iberville Parish, Louisiana

Porewater Chamber	Sample Date	pH	SC	TDS	TOC	TSS	COD	O&G	As	Cd	Ni	CN
PC-10 <sup>(1)</sup>	11/11/1992	7.07	2220		18	28	67	1	0.01	0.01	0.05	0.005
PC-10 <sup>(1)</sup>	2/11/1993	6.69	2500		10	17	64	1	0.01	0.01	0.05	0.014
PC-10 <sup>(1)</sup>	5/5/1993	7.02	2890		11	26	89	1	0.01	0.01	0.054	0.02
PC-10 <sup>(1)</sup>	11/17/1993	6.93	1370		14	25	72	1	0.01	0.01	0.05	0.01
PC-10 <sup>(1)</sup>	2/17/1994	7.33	2200		11	5	63	1	0.01	0.01	0.05	0.01
PC-10 <sup>(1)</sup>	4/27/1994	7.25	2230		9	34	79	1	0.01	0.02	0.01	0.01
PC-10 <sup>(1)</sup>	8/11/1994	7.37	2560		11	40	79	1	0.01	0.02	0.1	0.01
PC-10 <sup>(1)</sup>	11/10/1994	7.07	2410		12	1	122	1	0.01	0.02	0.1	0.02
PC-10 <sup>(1)</sup>	2/15/1995	7.41	2290		14	191	111	1	0.13	0.02	0.1	0.01
PC-10 <sup>(1)</sup>	5/3/1995	6.75	2100		10	6	115	1	0.01	0.02	0.1	0.01
PC-10 <sup>(1)</sup>	2/15/1995	6.58	2410		17	75	130	2	0.037	0.02	0.1	0.01
PC-10 <sup>(1)</sup>	6/25/1997	7.13	2390		15	32	62	1	0.03	0.005	0.04	0.01
PC-10 <sup>(1)</sup>	5/6/1998	7.35	2350		13	22	34	ND(5)	ND(0.01)	ND(0.005)	0.05	ND(0.01)
PC-10 <sup>(1)</sup>	5/13/1999	7.20	2420		15	33	36	ND(5)	0.02	ND(0.005)	0.05	ND(0.01)
PC-10 <sup>(1)</sup>	5/12/2000	7.07	2800		18	87	73	ND(6)	0.03	ND(0.005)	0.04	ND(0.01)
PC-10 <sup>(1)</sup>	4/19/2001	7.08	3560		16	53	62.9	ND(5.7)	ND(0.005)	ND(0.005)	0.041	ND(0.01)
PC-10 <sup>(1)</sup>	4/18/2002	7.33	2040		12	32	43.6	ND(5.6)	ND(0.005)	ND(0.005)	0.027	ND(0.005)
PC-10 <sup>(1)</sup>	4/23/2003	7.28	2540		12.4	19	57.9	ND(5.8)	ND(0.005)	ND(0.005)	0.0336	ND(0.005)
PC-10 <sup>(1)</sup>	4/21/2004	7.15	2050		13.1	47	50	ND(5.6)	0.0180	ND(0.005)	0.0275	ND(0.005)
PC-10 <sup>(1)</sup>	4/21/2005	7.40	2310		15.3	35	73.4	ND(5.7)	0.0091	ND(0.005)	0.0344	ND(0.005)
PC-10 <sup>(1)</sup>	4/20/2006	7.50	2270		18.8	24	70.4	ND(5.8)	0.0090	ND(0.005)	0.0351	ND(0.005)
PC-10 <sup>(1)</sup>	4/26/2007	7.36	2190		13.8	34	63.3	ND(5.7)	0.0079	ND(0.005)	0.0306	ND(0.005)

Note:

(1) - PC-10 is a flow weighted composite sample of porewater chambers PC-1 through PC-9.

TABLE 4  
 STORM WATER  
 INDICATOR AND WATER QUALITY PARAMETERS DATABASE  
 FOURTH QUARTER, POST-CONSTRUCTION YEAR 2 THROUGH POST-CONSTRUCTION YEAR 17

Bayou Sorrel Site  
 Iberville Parish, Louisiana

<u>Indicator and Water Quality Parameters</u>	<u>Sample Date</u>	<u>pH</u>	<u>SC</u>	<u>TOC</u>	<u>TSS</u>	<u>COD</u>	<u>O&amp;G</u>	
Location								
North Storm Water	11/11/1992	7.81	168	6	142	61	1	
South Storm Water	11/11/1992	7.97	148	6	144	52	1	
South Storm Water	8/15/1995	7.32	126	8	39	21	1	
<u>Inorganics</u>	<u>Sample Date</u>	<u>Sb</u>	<u>As</u>	<u>Be</u>	<u>Cd</u>	<u>Cr</u>	<u>Cu</u>	<u>Pb</u>
Location								
North Storm Water	11/11/1992	0.2	0.01	0.0005	0.01	0.02	0.05	0.02
South Storm Water	11/11/1992	0.2	0.01	0.0005	0.01	0.02	0.05	0.02
South Storm Water	8/15/1995	0.025	0.01	0.005	0.005	0.01	0.01	0.1
<u>Inorganics (continued)</u>	<u>Sample Date</u>	<u>Hg</u>	<u>Ni</u>	<u>Se</u>	<u>Ag</u>	<u>Tl</u>	<u>Zn</u>	<u>CN</u>
Location								
North Storm Water	11/11/1992	0.0005	0.05	0.005	0.01	0.5	0.02	0.005
South Storm Water	11/11/1992	0.0005	0.05	0.005	0.01	0.5	0.02	0.005
South Storm Water	8/15/1995	0.0005	0.02	0.005	0.005	0.01	0.022	0.01

**Site Inspection Checklist**  
*Appendix E*

INSPECTION TEAM ROSTER  
FOURTH FIVE-YEAR REVIEW

Bayou Sorrel Site  
Iberville Parish, Louisiana

- Ms. Laura Stankosky  
U.S. Environmental Protection Agency, Region VI  
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FOURTH FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST

I. SITE INFORMATION							
Site name: Bayou Sorrel Site	Date of inspection: March 28, 2008						
Location and Region: Iberville Parish, LA	EPA ID: LAD980745541						
Agency, office, or company leading the five-year review: USEPA, Region 6	Weather/temperature: Sunny, warm, high temperature - upper 80s F						
<p>Remedy includes: (Check all that apply)</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border: 1px solid black; padding: 2px;">Landfill cover/containment</td> <td style="width: 50%; border: 1px solid black; padding: 2px;">Monitored natural attenuation</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;">Access controls</td> <td style="border: 1px solid black; padding: 2px;">Ground water containment</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;">Institutional controls</td> <td style="border: 1px solid black; padding: 2px;">Vertical barrier walls</td> </tr> </table> <p>Ground water pump and treatment</p> <p>Surface water collection and treatment</p> <p>Other</p> <p>Attachments: Inspection Team roster included.</p>		Landfill cover/containment	Monitored natural attenuation	Access controls	Ground water containment	Institutional controls	Vertical barrier walls
Landfill cover/containment	Monitored natural attenuation						
Access controls	Ground water containment						
Institutional controls	Vertical barrier walls						
II. INTERVIEWS (Check all that apply)							
(see Appendix G of the Fourth Five-Year Review for site interviews)							

FOURTH FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST

III. ONSITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)				
<b>1. O&amp;M Documents</b>				
O&M manual	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	N/A	
Record drawings	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	N/A	
Maintenance logs	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	N/A	
Remarks _____				
<b>2. Site-Specific Health and Safety Plan</b>				
Contingency plan/emergency response plan	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	N/A	
Remarks _____ A short safety briefing was given prior to the conduct of the site inspection.				
<b>3. O&amp;M and OSHA Training Records</b>				
Remarks _____				
<b>4. Permits and Service Agreements</b>				
Air discharge permit	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A	
Effluent discharge	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A	
Waste disposal, POTW	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A	
Other permits _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A	
Remarks _____				
<b>5. Gas Generation Records</b>				
Remarks _____				
<b>6. Settlement Monument Records</b>				
Remarks _____				
<b>7. Ground Water Monitoring Records</b>				
Remarks _____				
<b>8. Leachate Extraction Records</b>				
Remarks _____				
<b>9. Discharge Compliance Records</b>				
Air	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A	
Water (effluent)	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A	
Remarks _____				
<b>10. Daily Access/Security Logs</b>				
Remarks _____ The daily access security log is maintained in the small office building located onsite.				

FOURTH FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST

IV. O&M COSTS			
<b>1. O&amp;M Organization</b>			
State in-house	Contractor for State		
PRP in-house	<input checked="" type="checkbox"/> Contractor for PRP		
Federal Facility in-house	Contractor for Federal Facility		
Other _____			
<b>2. O&amp;M Cost Records</b>			
Readily available	Up to date	<input checked="" type="checkbox"/> Funding mechanism/agreement in place	
Original O&M cost estimate	N/A	Breakdown included	
Total annual cost by year for review period if available			
From	10/2002	To	9/2003
	Date		Date
			\$234,000
			Total cost
From	10/2003	To	9/2004
	Date		Date
			\$246,000
			Total cost
From	10/2004	To	9/2005
	Date		Date
			\$310,000
			Total cost
From	10/2005	To	9/2006
	Date		Date
			\$257,000
			Total cost
From	10/2006	To	9/2007
	Date		Date
			\$245,000
			Total cost
<b>3. Unanticipated or Unusually High O&amp;M Costs During Review Period</b>			
Describe costs and reasons: N/A			
V. ACCESS AND INSTITUTIONAL CONTROLS			
<b>A. Fencing</b>			
<b>1. Fencing damaged</b>		Location shown on site map	<input checked="" type="checkbox"/> Gates and locks secured N/A
Remarks The perimeter security fences on the North and South Area caps remain in excellent condition.			
<b>B. Other Access Restrictions</b>			
<b>1. Signs and other security measures</b>		Location shown on site map	N/A
Remarks Approximately thirty-five warning signs are attached to the inside of the North and South Area cap perimeter fences and at other noticeable locations onsite.			
<b>C. Institutional Controls (ICs)</b>			
<b>1. Implementation and enforcement</b>			
Site conditions imply ICs not properly implemented	Yes	<input checked="" type="checkbox"/> No	N/A
Site conditions imply ICs not being fully enforced	Yes	<input checked="" type="checkbox"/> No	N/A
Type of monitoring (e.g., self-reporting, drive by) Ground water monitoring and statistical analysis of ground water data, engineering cap inspections, and site inspections.			
Frequency Annually, semi-annually, and weekly, respectively.			
Responsible party/agency Bayou Sorrel Steering Committee (BSSC)			
Contact	Mr. Harold W. Moats	Chairman, BSSC	3/28/2008 (336) 632-7714
	Name	Title	Date Phone No.
Reporting is up-to-date		<input checked="" type="checkbox"/> Yes	No N/A
Reports are verified by the lead agency		<input checked="" type="checkbox"/> Yes	No N/A
Specific requirements in deed or decision documents have been met		<input checked="" type="checkbox"/> Yes	No N/A
Violations have been reported		Yes	No <input checked="" type="checkbox"/> N/A
Other problems or suggestions: Report attached N/A			



FOURTH FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST

<b>2. Adequacy</b>	<input type="checkbox"/> ICs are adequate	<input type="checkbox"/> ICs are inadequate	<input type="checkbox"/> N/A
Remarks	While no institutional controls are required in the ROD, a Servitude Agreement and Long-Term Lease are in place and protective.		
<b>D. General</b>			
<b>1. Vandalism/trespassing</b>	Location shown on site map	<input type="checkbox"/> No vandalism evident	
Remarks	Trespassing is controlled to the extent practicable via the perimeter security fences, warning signs, etc. and frequent visits to the site by the site coordinator to conduct O&M activities.		
<b>2. Land use changes on-site</b>	<input type="checkbox"/> N/A		
Remarks			
<b>3. Land use changes off-site</b>	<input type="checkbox"/> N/A		
Remarks			
<b>VI. GENERAL SITE CONDITIONS</b>			
<b>A. Access Roads</b>	<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A	
<b>1. Roads damaged</b>	Location shown on site map	<input type="checkbox"/> Roads adequate	<input type="checkbox"/> N/A
Remarks	Site entrance and North/South Area cap perimeter roads are well maintained.		
<b>B. Other Site Conditions</b>			
Remarks	General Site condition is excellent.		
<b>VII. LANDFILL COVERS</b>			
<b>A. Landfill Surface</b>			
<b>1. Settlement (Low spots)</b>	Location shown on site map	<input type="checkbox"/> Settlement not evident	
Areal extent _____	Depth _____		
Remarks			
<b>2. Cracks</b>	Location shown on site map	<input type="checkbox"/> Cracking not evident	
Length _____	Width _____	Depth _____	
Remarks			
<b>3. Erosion</b>	Location shown on site map	<input type="checkbox"/> Erosion not evident	
Areal extent _____	Depth _____		
Remarks			
<b>4. Holes</b>	Location shown on site map	<input type="checkbox"/> Holes not evident	
Areal extent ~ 1' diameter/hole _____	Depth ≤ 1' depth/hole _____		
Remarks	Small burrow holes, presumed to be previously from armadillos, are noted predominantly beneath and within the limits of the perimeter security fences. These holes are filled with on-site borrow soil as part of routine maintenance activities. Inspection of the holes continues to show that the burrowing animals stop digging when they reach the sand layer and do not approach the geomembrane layer.		
<b>5. Vegetative Cover</b>	<input type="checkbox"/> Grass	<input type="checkbox"/> Cover properly established	<input type="checkbox"/> No signs of stress
Remarks	Cover consists of grass and low-growing forbes; no sign of trees.		
<b>6. Alternative Cover (armored rock, concrete, etc.)</b>	<input type="checkbox"/> N/A		
Remarks			

FOURTH FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST

7.	<b>Bulges</b>	Location shown on site map	<b>Bulges not evident</b>
	Areal extent _____	Depth _____	
	Remarks _____		
8.	<b>Wet Areas/Water Damage</b>	<b>Wet areas/ water damage not evident</b>	
	Wet areas	Location shown on site map	Areal extent _____
	Ponding	Location shown on site map	Areal extent _____
	Seeps	Location shown on site map	Areal extent _____
	Soft subgrade	Location shown on site map	Areal extent _____
	Remarks _____ The perimeter drainage ditches on the North and South Area caps occasionally contain water after significant rainfall events due to elevated water levels in the adjacent, downgradient water bodies. The site received little/no impact from Hurricanes Katrina and Rita.		
9.	<b>Slope Instability</b>	Slides	Location shown on site map
	Areal extent _____		<b>No evidence of slope instability</b>
	Remarks _____		
<b>B.</b>	<b>Benches</b>	Applicable	<b>N/A</b>
	(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)		
1.	<b>Flows Bypass Bench</b>	Location shown on site map	<b>N/A or okay</b>
	Remarks _____		
2.	<b>Bench Breached</b>	Location shown on site map	<b>N/A or okay</b>
	Remarks _____		
3.	<b>Bench Overtopped</b>	Location shown on site map	<b>N/A or okay</b>
	Remarks _____		
<b>C.</b>	<b>Letdown Channels</b>	Applicable	<b>N/A</b>
	(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off the landfill cover without creating erosion gullies.)		
1.	<b>Settlement</b>	Location shown on site map	<b>No evidence of settlement</b>
	Areal extent _____	Depth _____	
	Remarks _____		
2.	<b>Material Degradation</b>	Location shown on site map	<b>No evidence of degradation</b>
	Material type _____	Areal extent _____	
	Remarks _____		
3.	<b>Erosion</b>	Location shown on site map	<b>No evidence of erosion</b>
	Areal extent _____	Depth _____	
	Remarks _____		
4.	<b>Undercutting</b>	Location shown on site map	<b>No evidence of undercutting</b>
	Areal extent _____	Depth _____	
	Remarks _____		

FOURTH FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST

5.	<b>Obstructions</b>	Type _____ Areal extent _____ Size _____	<input type="text" value="No obstructions"/> Location shown on site map
Remarks _____			
6.	<b>Excessive Vegetative Growth</b>	Type _____ Areal extent _____	
<input type="text" value="No evidence of excessive growth"/> Vegetation in channel does not obstruct flow Location shown on site map			
Remarks _____			
<b>D. Cover Penetrations</b>			
1.	<b>Gas Vents</b>	Active <input type="text" value="Functioning"/> Evidence of leakage at penetration	Passive <input type="text" value="Needs maintenance"/> Routinely sampled Properly secured/locked Good condition N/A
Remarks _____ Maintenance needed is considered routine. Generally, the gas vents are in good condition; routine maintenance needs to continue. Soil needs to be added to and beneath the concrete pad surrounding one gas vent on the South Area cap where the presence of fire ant mounds and/or small burrow holes have reduced its stability.			
2.	<b>Gas Monitoring Probes</b>	Properly secured/locked Evidence of leakage at penetration	Functioning Routinely sampled Needs maintenance Good condition <input type="text" value="N/A"/>
Remarks _____			
3.	<b>Monitoring Wells (within surface area of landfill)</b>	<input type="text" value="Properly secured/locked"/> Evidence of leakage at penetration	<input type="text" value="Functioning"/> Routinely sampled Needs maintenance Good condition <input type="text" value="N/A"/>
Remarks _____			
4.	<b>Leachate Extraction Wells</b>	Properly secured/locked Evidence of leakage at penetration	Functioning Routinely sampled Needs maintenance Good condition <input type="text" value="N/A"/>
Remarks _____			
5.	<b>Settlement Monuments</b>	<input type="text" value="Located"/>	<input type="text" value="Routinely surveyed"/> N/A
Remarks _____			
<b>E. Gas Collection and Treatment</b>		Applicable	<input type="text" value="N/A"/>
1.	<b>Gas Treatment Facilities</b>	Flaring Good condition	Thermal destruction Needs maintenance Collection for reuse N/A
Remarks _____			
2.	<b>Gas Collection Wells, Manifolds and Piping</b>	Good condition	Needs maintenance N/A
Remarks _____			
3.	<b>Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings)</b>	Good condition	Needs maintenance N/A
Remarks _____			

FOURTH FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST

<b>F. Cover Drainage Layer</b>		Applicable	N/A
1. <b>Outlet Pipes Inspected</b>		Functioning	N/A
Remarks _____			
_____			
2. <b>Outlet Rock Inspected</b>		Functioning	N/A
Remarks _____			
_____			
<b>G. Detention/Sedimentation Ponds</b>		Applicable	N/A
1. <b>Siltation</b>	Location shown on site map	Siltation not evident	N/A
Areal extent _____	Depth _____		
Remarks _____			
_____			
<b>Erosion</b>	Location shown on site map	Erosion not evident	N/A
Areal extent _____	Depth _____		
Remarks _____			
_____			
3. <b>Outlet Works</b>	Functioning	N/A	
Remarks _____			
_____			
4. <b>Dam</b>	Functioning	N/A	
Remarks _____			
_____			
<b>H. Retaining Walls</b>		Applicable	N/A
1. <b>Deformations</b>	Location shown on site map	Deformation not evident	
Horizontal displacement _____	Vertical displacement _____		
Rotational displacement _____	N/A		
Remarks _____			
_____			
2. <b>Degradation</b>	Location shown on site map	Degradation not evident	N/A
Remarks _____			
_____			
<b>I. Perimeter Ditches/Off-Site Discharge</b>			
1. <b>Siltation</b>	Location shown on site map	Siltation not evident	
Areal extent _____	Depth _____		
Remarks _____			
_____			
2. <b>Vegetative Growth</b>	Location shown on site map	N/A	
Areal extent _____	Vegetation does not impede flow	Type _____	
Remarks _____			
_____			
3. <b>Erosion</b>	Location shown on site map	Erosion not evident	
Areal extent _____	Depth _____		
Remarks _____			
_____			
4. <b>Discharge Structure</b>	Functioning	N/A	
Remarks _____			
_____			

FOURTH FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST

VIII. VERTICAL BARRIER WALLS				
1. <b>Settlement</b>	Location shown on site map	Settlement not evident		
	Areal extent _____	Depth _____		
Remarks _____				
<hr/>				
2. <b>Performance Monitoring</b>	Type of monitoring	Ground water monitoring		
	Performance not monitored	Evidence of breaching		
	Frequency	annually		
	Head differential	N/A		
Remarks _____				
<hr/>				
IX. GROUND WATER/SURFACE WATER REMEDIES				
A. <b>Ground Water Extraction Wells, Pumps, and Pipelines</b>		Applicable	N/A	
<b>Pumps, Wellhead Plumbing, and Electrical</b>				
	Good condition	All required wells properly operating	Needs maintenance	N/A
Remarks _____				
<hr/>				
2. <b>Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances</b>	Good condition	Needs maintenance	N/A	
Remarks _____				
<hr/>				
3. <b>Spare Parts and Equipment</b>	Readily available	Good condition	Requires upgrade	N/A
Remarks _____				
<hr/>				
B. <b>Surface Water Collection Structures, Pumps, and Pipelines</b>				
1. <b>Collection Structures, Pumps, and Electrical</b>	Good condition		Needs maintenance	
Remarks _____ Pore Water is used for irrigation of the caps				
<hr/>				
2. <b>Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances</b>	Good condition		Needs maintenance	
Remarks _____				
<hr/>				
3. <b>Spare Parts and Equipment</b>	Readily available		Good condition	Requires upgrade
Remarks _____ Needs to be provided				
<hr/>				
C. <b>Treatment System</b>		Applicable	N/A	
1. <b>Treatment Train</b> (Check components that apply)				
	Metals removal	Oil/water separation	Bioremediation	Carbon Adsorbers
	Filters	N/A		
	Additive (e.g., chelation agent, flocculant)	_____		
	Others	_____		
	Good condition	Needs maintenance		
	Sampling ports properly marked and functional			
	Sampling/maintenance log displayed and up to date			
	Equipment properly identified			
	Quantity of ground water treated annually _____			
	Quantity of surface water treated annually _____			
Remarks _____				
<hr/>				

FOURTH FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST

2.	<b>Electrical Enclosures and Panels</b> (properly rated and functional)	Good condition	Needs maintenance	N/A
Remarks _____				
3.	<b>Tanks, Vaults, Storage Vessels</b>	Good condition	Needs maintenance	Proper secondary containment N/A
Remarks _____				
4.	<b>Discharge Structure and Appurtenances</b>	Good condition	Needs maintenance	N/A
Remarks _____				
<b>Treatment Building(s)</b>				
		Good condition (esp. roof and doorways)	Needs repair	N/A
Chemicals and equipment properly stored				
Remarks _____				
6.	<b>Monitoring Wells</b> (pump and treatment remedy)	Properly secured/locked	Functioning	Routinely sampled
		All required wells located	Needs maintenance	Good condition N/A
Remarks _____				
<b>D. Monitoring Data</b>				
1.	<b>Monitoring Data</b>	Is routinely submitted on time	Is of acceptable quality	
2.	<b>Monitoring data suggests:</b>	Ground water plume is effectively contained	Contaminant concentration levels are acceptable	
<b>E. Monitored Natural Attenuation</b>				
1.	<b>Monitoring Wells</b> (natural attenuation remedy)	Properly secured/locked	Functioning	Routinely sampled
		All required wells located	Needs maintenance	Good condition <span style="border: 1px solid black; padding: 2px;">N/A</span>
Remarks _____				
<b>X. OTHER REMEDIES</b>				
If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.				
<b>XI. OVERALL OBSERVATIONS</b>				
<b>A. Implementation of the Remedy</b>				
Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, reduce infiltration and gas emissions, etc.).				
The remedial action objective is protection of human health and the environment. The remedy is outlined in Section IV. The remedy inhibits the migration of the wastes by providing a barrier to shallow ground water flow.				
Review of site conditions and data generated from September 2003 to May 2008, the remedy remains effective, functioning as designed, and protective of human health and the environment.				
_____				
_____				
_____				
_____				

FOURTH FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST

**B. Adequacy of O&M**

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

For the remedy to be effective, contaminant migration must be reduced so that offsite ground water is not affected.

Review of semi-annual engineering inspections and data generated from September 2003 through May 2008, the remedy is functioning as designed. Ground water data, collected annually, reviewed by the U.S. Environmental Protection Agency (EPA) and the Louisiana Department of Environmental Quality (LDEQ), continues to be reported at levels protective of human health and the environment.

The results of the semi-annual engineering inspections are also reviewed by EPA and LDEQ and continue to report acceptable site conditions with no significant maintenance or operational deficiencies.

**C. Early Indicators of Potential Remedy Problems**

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

No issues were found that may compromise the protectiveness of the remedy.

**D. Opportunities for Optimization**

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

Monitoring and operation of the remedy have been adjusted as needed under EPA and LDEQ oversight since completion of remedy construction in 1990 and are currently optimized to the extent practicable.

**Site Photographs**  
*Appendix F*





**Cap Conditions - North and South Area Caps**



**Cap Conditions - North and South Area Caps**



**Monitoring Well Pad and Perimeter Road**



**Atmospheric Gas Vent and Perimeter Fence Warning Sign**

**Interviews**  
*Appendix G*

# INTERVIEW RECORD

Site Name: Bayou Sorrel Site	EPA ID No.: 4715
Subject: Fourth Five Year Review	Time:      Date: 3/28/08
Type: <input type="checkbox"/> Telephone <input checked="" type="checkbox"/> Visit <input type="checkbox"/> Other	<input type="checkbox"/> Incoming <input type="checkbox"/> Outgoing
Location of Visit:	

## Contact Made By:

Name: Laura Startcosky Laura Startcosky	Title: RPM	Organization: USEPA
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## Individual Contacted:

Name: Laurie Peacock	Title: Geologist	Organization: LDEQ
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Telephone No: 225-219-3412	Street Address: 602 North St.
Fax No: 225-219-3414	City, State, Zip: Baton Rouge, LA 70821
E-Mail Address: laurie.peacock@la.gov	

## Summary Of Conversation

1. What is your overall impression of the project? (general sentiment)  
Site is well managed; minor animal hole repairs made to cap as needed.
2. What effects have post-construction site activities in the last five years had on the surrounding community?  
No effect
3. Are you aware of any community concerns regarding the site or its operation and administration? If so, please give details.  
No.
4. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so, please give details.  
No.
5. Do you feel well informed about the site's activities and progress?  
Yes.

6. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the site? If so, please give purpose and results.

Communication w/ EPA contact when appropriate.  
Receive routine documentation from contractor.  
(reports)

7. Have there been any complaints, violations, or other incidents related to the site requiring a response by your office? If so, please give details of the events and results of the responses.

No.

8. Is the remedy functioning as expected? How well is the remedy performing?

Remedy functioning as expected.

9. What does the monitoring data show? Are there any trends that show contaminant levels are decreasing?

No contamination/release observed in monitor well data.

10. Is there a continuous on-site O&M presence? If so, please describe staff and activities. If there is not a continuous on-site presence, describe staff and frequency of site inspections and activities.

Yes. Steve McGlothlin caretaker.

11. Have there been any significant changes in the O&M requirements, maintenance schedules, or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.

No

12. Have there been unexpected O&M difficulties or costs at the site since start-up or in the last five years? If so, please give details.

No

12. Have there been unexpected O&M difficulties or costs at the site since start-up or in the last five years? If so, please give details.

No

13. Have there been opportunities to optimize O&M, or sampling efforts? Please describe changes and resultant or desired cost savings or improved efficiency.

No

14. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?


No .




## INTERVIEW RECORD

<b>Site Name:</b> Bayou Sorrel Site	<b>EPA ID No.:</b> 4715	
<b>Subject:</b> Fourth Five-Year Review	<b>Time:</b>	<b>Date:</b>
<b>Type:</b> <input type="checkbox"/> Telephone <input checked="" type="checkbox"/> Visit <input type="checkbox"/> Other	<input type="checkbox"/> Incoming <input type="checkbox"/> Outgoing	
<b>Location of Visit:</b>		

### Contact Made By:

<b>Name:</b> Laura Stankosky 	<b>Title:</b> Remedial Project Manager	<b>Organization:</b> Environmental Protection Agency
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### Individual Contacted:

<b>Name:</b> Prasad Shetty 	<b>Title:</b> Environmental Engineer	<b>Organization:</b> Environmental Resources Management
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<b>Telephone No:</b> 504-831-6700 <b>Fax No:</b> 504-831-6742 <b>E-Mail Address:</b> prasad.shetty@erm.com	<b>Street Address:</b> 3838 N Causeway Blvd, Ste 2725 City, State, Zip: Metairie, LA 70002
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### Summary Of Conversation

1. What is your overall impression of the project? (general sentiment)
  - Very good. The post-construction operation and maintenance (O&M) activities continue to be performed in accordance with the requirements of the O&M Plan.
  
2. What effects have post-construction site activities in the last five years had on the surrounding community?
  - None.
  
3. Are you aware of any community concerns regarding the site or its operation and administration? If so, please give details.
  - No.
  
4. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so, please give details.
  - No.
  
5. Do you feel well informed about the site's activities and progress?
  - Yes.

6. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the site? If so, please give purpose and results.

- Yes. In addition to routine site inspections and maintenance, we conduct one annual sampling event and two semi-annual engineering inspection events and generate reports to document the results of these events.

7. Have there been any complaints, violations, or other incidents related to the site requiring a response by your office? If so, please give details of the events and results of the responses.

- No.

8. Is the remedy functioning as expected? How well is the remedy performing?

- Yes.

- Very well.

9. What does the monitoring data show? Are there any trends that show contaminant levels are decreasing?

- Current monitoring data indicate that the remedy is functioning as required.

- No.

10. Is there a continuous on-site O&M presence? If so, please describe staff and activities. If there is not a continuous on-site presence, describe staff and frequency of site inspections and activities.

- Yes. Steve McGlothlin is the on-site caretaker. Activities include weekly site inspections and mowing events.

11. Have there been any significant changes in the O&M requirements, maintenance schedules, or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.

- No.

12. Have there been unexpected O&M difficulties or costs at the site since start-up or in the last five years? If so, please give details.

- No.

13. Have there been opportunities to optimize O&M, or sampling efforts? Please describe changes and resultant or desired cost savings or improved efficiency.

- Opportunities to optimize O&M and sampling efforts have been explored in the past. It is believed that O&M and sampling efforts are optimized for efficiency.

14. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

- Continue to perform O&M activities in accordance with the O&M Plan.

## INTERVIEW RECORD

Site Name: <u>BAYOU SORREL SUPERFUND SITE</u>	EPA ID No.: <u>LAD980745541</u>
Subject: <u>FOURTH FIVE YEAR REVIEW</u>	Time: <u>3:03 PM</u> Date: <u>8/13/08</u>
Type: <input type="checkbox"/> Telephone <input type="checkbox"/> Visit <input checked="" type="checkbox"/> Other	<input checked="" type="checkbox"/> Incoming <input type="checkbox"/> Outgoing
Location of Visit: <u>electronic mail</u>	

### Contact Made By:

Name: <u>Laura Starkosky</u>	Title: <u>RPM</u>	Organization: <u>US EPA</u>
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### Individual Contacted:

Name: <u>Edwin M. Reeves, Jr.</u>	Title: <u>Parish Council Dist. 5</u>	Organization: <u>Iberville Parish</u>
Telephone No: <u>225.687.9073</u>	Street Address: <u>5860 St. Clement Ave.</u>	
Fax No: <u>          </u>	City, State, Zip: <u>Mademine, LA. 70764</u>	
E-Mail Address: <u>EREEVES@wilbertsons.com</u>		

### Summary Of Conversation

1. What is your overall impression of the project? (general sentiment)  
I HAVE BEEN AN ELECTED OFFICIAL SINCE 1989 REPRESENTING THE MADEMINE LOUISIANA AREA AND I HAVE NOT RECEIVED ANY COMPLAINTS OR INDIGNITIES DURING THAT TIME.  
(Mademine City Council 1989-2003. Iberville Parish Council 2003-current)
2. What effects have site operations had on the surrounding community?  
Current site operations have had NO effects
3. Are you aware of any community concerns regarding the site or its operation and administration? If so, please give details.  
I AM NOT AWARE OF ANY CONCERNS NOR HAVE I BEEN CONTACTED REGARDING SUCH.
4. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so, please give details.  
NO
5. Do you feel well informed about the site's activities and progress?  
I AM AWARE THAT THE NECESSARY DOCUMENTS AND REPORTS ARE ON FILE AND AVAILABLE TO THE GENERAL PUBLIC AT THE IBERVILLE PARISH LIBRARY.

6. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

Continue to monitor - clean the site to the best possible satisfaction of all parties and continue to maintain correct records at the Iberville Parish library. if required and necessary.

# INTERVIEW RECORD

<b>Site Name: Bayou Sorrel Superfund Site</b>		<b>EPA ID No.: LAD980745541</b>	
<b>Subject: Five-Year Review</b>		<b>Time: 8:44 am</b>	<b>Date: 5/20/2008</b>
<b>Type:</b> <input type="checkbox"/> Telephone <input type="checkbox"/> Visit <input checked="" type="checkbox"/> Other		<input checked="" type="checkbox"/> Incoming <input type="checkbox"/> Outgoing	
<b>Location of Visit: electronic mail submittal</b>			

## Contact Made By:

<b>Name: Laura Stankosky</b>	<b>Title: RPM</b>	<b>Organization: U.S. EPA</b>
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## Individual Contacted:

<b>Name: Sammy Carville</b>	<b>Title:</b>	<b>Organization:</b>
<b>Telephone No: (225) 659-2427</b>	<b>Street Address: 57724 Erwin Dr.</b>	
<b>Fax No: (225) 659-2858</b>	<b>City, State, Zip: Plaquemine, LA 70764</b>	
<b>E-Mail Address: byufab@aol.com</b>		

## Summary Of Conversation

1. What is your overall impression of the project? (general sentiment)  
Good
2. What effects have site operations had on the surrounding community?  
None at this time.
3. Are you aware of any community concerns regarding the site or its operation and administration? If so, please give details.  
None
4. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so, please give details.  
None
5. Do you feel well informed about the site's activities and progress?  
I do.

6. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

I own and manage a fabrication business located  
1/4 mile from Jack Millers Landing on Hwy 75.

I employ a number of people who have lived in  
Bayou Sorrel for all or most of their lives.

I have asked them their opinions and/or concerns  
and there are none. Most know the site is being

maintained and they are satisfied at that.

I have met the person that maintains the property  
and I am not aware of problems with the site.