

Spring Bayou Watershed Restoration

MASTER PLAN



Spring Bayou Lake Commission, Avoyelles Parish Police Jury

May 2019

Letter of Introduction

The ultimate goal of the master plan is to maintain, protect, and preserve an ecological preserve and open space oasis.

The Spring Bayou Watershed has traditionally been recognized as one of the most significant fish, wildlife and wetland ecosystems in the South.

Located in Avoyelles Parish, Louisiana, the area includes one state Wildlife Management Area as well as two National Wildlife Refuges. The Watershed is also located within the Atchafalaya National Heritage Area. To native Louisianans and tourists alike, it exemplifies the unique lowland habitats that give this state its nickname, Sportsmen's Paradise.

Unfortunately, over time, these environmental features have deteriorated. The primary culprits have been sedimentation of area streams and lakes, rampant growth of invasive aquatic vegetation, decreased fish spawning habitat, degrading of water quality due to various environmental conditions and seasonal flooding. This Ecological Restoration Master Plan sets out a process and path to restore the Spring Bayou Watershed to a healthy, natural and sustainable open space mosaic of forest, wetlands, streams and open waters.

The Plan's focus is on water quantity, water quality and wildlife habitat. The end goal is to be achieved by restoring fresh water sources and retaining proper water levels while removing and preventing sedimentation.

Over the last century, local habitat changes and wetland losses have occurred, rarely the result of a single factor but more the cumulative effects of natural factors and human-induced modifications that are both geographically local and far removed. For the sake of future generations, now is the time to take action.

Please keep in mind that this Master Plan is an ongoing work-in-progress project. As is, it represents the needs and the goals for Spring Bayou as it exists in 2019. Revisions shall be made as warranted.



A handwritten signature in cursive script that reads "Jimmy".

Respectfully submitted

Jimmy Landry

Spring Bayou Lake Commission, Chairman

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Overview

Spring Bayou Lake Commission Mission Statement

“The mission of the Spring Bayou Lake Commission is to ensure the Spring Bayou Complex and associated wetlands are a healthy, natural and sustainable hydrological ecosystem that is permanently maintained, protected and preserved.”

Master Plan Goal

The goal is to execute this Master Plan in order to achieve the mission.

Background

Ecosystem context due to its long history as a wetland environment, Spring Bayou is by its very nature a novel ecosystem. Human activities have dramatically altered the historic ecology of the site, which now hosts a variety of problematic issues that had not previously been present before disturbance occurred. For example, the construction of levees, weir/dams and control structures have all played a part in altering the ecology. Crucial restoration initiatives include the control of invasive aquatic vegetation, excessive sedimentation removal and establishment of a stable fresh water source to the complex. A resilient ecosystem is one that has the capacity to resist long-term damage and rebound quickly after disturbances like storms, floods, and human activities.

From restoration as well as a novel ecosystem perspective, Spring Bayou represents a unique opportunity because of its recreational, cultural and economic impact to the area. It is transitioning from a locally utilized resource to a popular state-wide recreational area. The Spring Bayou ecological restoration is unique due to its opportunity to affect positive change in water quality, flooding and wildlife enhancement.

A robust ecological restoration master plan is responsive to current conditions and respectful of historical ecological systems, aiming for a resilient and regenerative future. Our vision is to optimize the ecological function and human benefits derived from this property. This requires a solid understanding of the existing landscape and watershed context and the natural resources that lie at its foundation. This section will describe some of the key elements that compose this landscape and make it a unique site.

Who are we?

Establishment

The Spring Bayou Lake Commission (SBLC) was established in 2018 as an officially-designated commission by the Avoyelles Parish Police Jury, the governing body of Avoyelles Parish, Louisiana. The creation of the SBLC can be traced back to when interest grew in the decline of habitat, water quality, sport fishing, and waterfowl hunting in Spring Bayou due to the water management issues effecting the complex. Below is a brief timeline and background information on the creation of the SBLC.

- July 2016 - the Avoyelles Parish Police Jury requested an opinion from the Louisiana Attorney General on riparian landowner rights and water pumping and the effect it had on game and fish in the Spring Bayou complex.
- September 2017 - the Louisiana Attorney General rendered an opinion to the APPJ's request in the document 16-0144. In that opinion, it stated that the APPJ, being the parish governing body, had the authority to create a game and fish preserve, and a commission to manage that preserve, concurrent with the Louisiana Wildlife and Fisheries Commission.
- July 2018 - Representatives from the APPJ met with the Secretary of Louisiana Wildlife and Fisheries Department in March 2018 and July 2018 to discuss the possibility of creating a game and fish preserve at Spring Bayou and the creation of a commission to oversee that preserve. The Secretary gave his approval for the process to move forward.
- August 2018 - the APPJ created a list of nine (9) potential commissioners from citizens and taxpayers of Avoyelles, as well as two Jurors from the APPJ to serve in an ad hoc position. On August 14, 2018, the APPJ, during their regular monthly meeting, introduced motions to adopt a resolution to establish a lake commission, to approve commissioners to the lake commission and to approve an installation date of August 27, 2018 at 6PM at the Ag Center building in Mansura. Those motions were passed. On August 27, 2018 a meeting was held to officially install the members of the Commission.
- September 10, 2018 the Commission held its first official meeting whereas officers were elected and the general organization of the commission was established. The new Commission expressed no desire of establishing and managing a "preserve" but rather focused on a plan that would bring about improvements to the Spring Bayou complex.

Commission Terms:

The Spring Bayou Lake Commission (Commission) is comprised of nine board members and two ad hoc members. The nine members are appointed by and serve at the pleasure of the Avoyelles Parish Police Jury (Jury). The two ad hoc members are chosen by and from the current Jury. The board members are to serve terms concurrent with the elected term of the Avoyelles Parish Police Jury. Board members may be removed for cause by the Jury by a two-thirds majority vote of the Commission. Commission board members serve without compensation.

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Spring Bayou Watershed

The Spring Bayou Watershed is located in central Louisiana along the southern bank of the Red River, beginning at the mouth where it empties into the mighty Mississippi River. The watershed stretches for about 70 river-miles and drains about 260,000 acres of mostly timber, farm, and pasture land in northern Rapides and Avoyelles Parishes. The Spring Bayou Lake complex within the watershed was formed by the Red River and is still part of the Red River backwater system. General topography is low, poorly drained land with numerous finger lakes and narrow ridges. Drainage waters finds its way into the lake complex via Choctaw Bayou (Fifth Ward), Chatlin Lake Canal and Little Choctaw Bayou (Belledeau), Coulee des Grues Canal (Marksville), Petite Bayou Rouge (Brouillette), Spring Bayou (Marksville) and Old River (Mansura). Water exits the complex through Little River, Bayou Jeansonne, and Bayou Natchitoches and into the Red River.

Spring Bayou Lake Complex

The Spring Bayou Lake Complex is located within the overall Spring Bayou Watershed and is made up of public and private lands. The state-owned property is referred to as the Spring Bayou Wildlife Management Area (WMA) located in north central Avoyelles Parish, two miles east of Marksville, off La. Hwy. 115 and 452. These highways connect to La. Hwy 1 and Hwy 107 in the immediate vicinity of Marksville. Convenient access to the area headquarters on the west side is provided by a blacktop road. Access by vehicle to the east side is provided by an improved shell road off the Bordelonville levee. Access to the interior is mainly by boat. Three concrete boat ramps are provided for this purpose. Spring Bayou WMA contains 12,506 acres and is owned by the Louisiana Department of Wildlife and Fisheries. The purpose for creation was recreational activities (fishing, boating, site seeing, hunting).

Spring Bayou General Information

Most of the complex is composed of the Spring Bayou Wildlife Management Association and managed by the Louisiana Dept. of Wildlife and Fisheries (Inland Fisheries and Wildlife Division). The local non-profit association Spring Bayou Restoration Team has cooperated with the LDWF on several projects. In addition, The Spring Bayou Lake Commission, appointed by the Avoyelles Parish Police Jury, is the authorized local-government commission charged with overseeing the management of the entire hydrological system.

There are 4 public boat ramps, all of which are located on the Spring Bayou WMA. There is one boat ramp located on Little River which is on School Board property. The average water depth is 5 feet in the lake proper, with a maximum water depth of 12 feet. Pool Stage Elevation is 41.0 feet above mean sea level (MSL). Natural seasonal water fluctuation creates dramatic water level changes from typical rainfall events or rises in the Red River. Typically, water levels fluctuate an average of 3 feet annually.

A weir/dam structure was constructed in 1955 by the Department of Public Works for the Avoyelles Police Jury. The weir/dam stabilized water levels within Spring Bayou and curtailed annual backwater flooding. Spillway length is 100 feet. It is owned by the Avoyelles Parish Police Jury. However, because the weir/dam is under the Dam Safety Program, the La. Dept. of Transportation and Development retains some authority over the structure. There is also a control structure with 3 gates, each with a 4 ft x 4 ft opening that can generally allow enough flow to drop the lake 2 inches per day. It is owned by Avoyelles Parish Police Jury (servitude by land owner) and can be manipulated upon recommendations from the LDWF.

The areas of Boggy Bayou, Little River and Old River off of the WMA are heavily developed along the shoreline. The majority of the 84-mile long shoreline is undeveloped, as the majority of the lake complex resides within the WMA which does not allow for development (59 miles).

It takes roughly 21 days for a 3-foot drawdown. To allow for faster dewatering during drawdowns, dredging to connect the deeper, disconnected sections of the waterbody is needed. At pool stage, the water in this area is approximately 3 feet in depth. Fish kills occurred during the 1986 and 1987 drawdowns to control submerged vegetation. This was due to low water levels and warm temperatures, which created low dissolved oxygen conditions. Also, fish perished in 1999-2000 due to severe drought conditions, which lowered water levels and reduced dissolved oxygen within the complex. In 2008, another fish kill occurred due to low dissolved oxygen levels from Hurricane Gustav. Fish kills occurred in 2011 due to the Mississippi River Flood. Backwater from the Red River increased Spring Bayou to approximately four feet above pool stage. When the water receded, dissolved oxygen fell below 2.0 mg/l, causing fish to perish. (Source #1)

Source #1, LDWF, Waterbody Management Plan Series, Spring Bayou, Lake History & Management Issues

Ecology

The Spring Bayou Lake Complex is made up of sprawling open lakes, bayous, bays and sloughs with forest cover throughout the waterways. About 40% is covered by water.



The forest cover is consistent with most river bottom environments including nuttall oak (*quercus texama*), willow oak (*quercus phellos*), water oak (*quercus nigra*), and overcup oak (*quercus lyrata*) with bitter pecan (*carya aquatica*) on the higher elevations. The lower elevations contain overcup oak, bitter pecan, swamp privet (*forestiera acuminata*), and buttonbush. Lake edges are fingered with cypress (*taxodium distichum* and *taxodium districhum*), willow and buttonbush. The understory consists of deciduous holly (*ilex decidua*), hawthorn (*crataegus*), dogwood (*cornus florida*) and the saplings of the overstory. Other plants include rattan

(*calamoideae*), greenbrier (*smilax*), peppervine (*nekemias arborea*), trumpet creeper (*campsis radicans*), dewberry (*rubus*), smartweed (*polygonum*), verbena (*verbenaceae*), wild lettuce (*lactuca birosa*), vetch (*vicia*), sedges and grasses. Aquatic species are water hyacinth (*eichhornia crassipes*), alligator weed (*alternanthera philoxeroides*), delta duck potato (*sagittaria platyphylla*), water primrose (*ludwigia peploides*), lotus, duckweed (*lemnoideae*), and others.



Game species hunted are deer, squirrels, rabbits, waterfowl, and woodcock. Trapping for furbearers is allowed and species available are raccoon, mink, bobcat and nutria.

Fishing is excellent; principal species caught are largemouth various panfish, and catfish. Commercial fishing is allowed by permit. Species caught are catfish, buffalo, freshwater drum, garfish. Boating and water skiing are popular in open water portions.



bass,
and

Current impacts to the stream system, which are attributed mainly to development, include flooding, loss of headwater streams and tributaries, decrease in overall water quality, loss of floodplain, erosion and

sedimentation, channelization of the main stem and tributaries, lack of habitat within the streams and along its buffers, illegal dumping, excessive erosion, and loss of green space.

The Problems

Habitat Degradation

Long before the arrival of European settlers in the 1700's, the area carried on much as nature intended it to. The area was a low-lying catch basin of the Mississippi River/Red River carrying on annual cycles of flooding and drying. Exposed only to the presence of native indigenous people, very little changes occurred to the ecosystem.

Probably the most significant habitat change to occur with long term effect for the area was the flood of 1927. As the powers-to-be struggled with preventing such occurrences, the levee system was born. These levees cut-off many tributaries responsible for water flow in-and-out of the complex. For example, the Choctaw Bayou, which was the primary tributary from the Red River to Spring Bayou, was cut-off in the Fifth Ward area by the construction of the levee system.



In the mid-1950's, attempting to break the annual cycle of flooding and drying, a weir/dam was constructed on Little River by the Dept. of Public Works (DOTD) for the Avoyelles Parish Police Jury at an elevation of 41 ft. (msl). Prior to this period, the complex was made up of patches of privately-owned lakes which usually dried up during the summer months. There are reports that hay was usually cut each summer on Grand Lac. There are also reports that some of the back areas burned each summer. The weir/dam changed that habitat from basically cyclical to constant water in the lakes.

Another significant habitat change to occur was the introduction of sedimentation (silt) to the complex. The soybean boom of the 1960's and 1970's resulted in thousands of acres of woodland being cleared and burned in preparation for soybean production. Approximately 77% of Avoyelles Parish (348,000 acres) was forested in 1937. Prior to 1957, the remoteness of the area and frequent flooding resulted in limited clearing of bottom-land hardwoods. From 1957 through 1977, thousands of acres of frequently flooded bottom-land hardwoods were cleared for agricultural purposes (primarily soybeans). Much of this soil found its way into the complex during winter and spring rains resulting in shallower water levels throughout the complex. (Source #2) Through government restoration programs, many of those acres have been taken out of production and reforested to natural conditions.

In 1966, the Louisiana Department of Wildlife and Fisheries began purchasing property for the purpose of implementing a Wildlife Management Area. The first acquisition totaled 11,237 acres. Additional acquisitions in 1969, 1976, 1983 and 1985 increased the complex to 12,506 acres. With that ownership (LDWF, Inland Fisheries and Wildlife Division) came new management approaches that included drawdowns, fish species introduction, etc.

Source #2, U. S. Corps of Engineers Reconnaissance Study, 2001

Believing in the need for drawdowns, the LDWF suggested that the Avoyelles Parish Police Jury enter into an agreement with a local landowner on Little River near the weir/dam, Harry Henderson, to obtain a servitude to construct a control structure approximately 100 yards from the weir/dam. That agreement was entered into around 1979 and a control structure was constructed.



In 1988 and 1989, a channel was dredged 4 miles long connecting the major lake systems of the area. The channel provides deep water of adequate quality to sustain fish during summer/fall low water conditions.

In 1994, hydrilla was discovered in Spring Bayou. In two years, the plant covered 75% of the water body. Drawdowns were conducted in 1996 and 1997 with little success. Herbicides were used periodically from 1999-2012.

In 2007, the LDWF suggested another drawdown in an attempt to control the vegetation. A group of local citizens organizing under the name “Citizens Against a Drawdown” challenged the LDWF’s decision to implement a drawdown.

During 2007, the “Citizens Against a Drawdown” officially became the Spring Bayou Restoration Team, Inc.



Working with the LDWF, the APPJ, elected officials and local agencies, it was decided that rather than implementing a drawdown, a program would be implemented that would introduce sterile triploid carp into the complex.

Between 2008-2015, approximately 65,000 juvenile triploid grass carp measuring 10-12 inches in length have been released throughout the complex and has been considered a success.



Besides hydrilla, the American Lotus plant became a problem throughout the complex.



Earlier spraying (prior to seed formation) of the American Lotus has also been considered successful.



Today, despite those attempts to save it, the Spring Bayou complex is slowly dying from changes that have occurred and are occurring to its habitat. Water pumping continues to be a controversial topic.



Sedimentation removal (dredging) is necessary but a very costly undertaking. The availability of a continuous water source into the complex from the Red River is a must for the complex's survival but that too is a costly project. Maintaining water quality is an ongoing issue. Increased sedimentation, chemical runoff, aquatic vegetation and water evaporation all have negative impact on water quality throughout the complex.



In summary, it is necessary to say that local habitat changes and wetland losses are rarely the result of a single factor but due to the cumulative effects of natural factors and human-induced modifications that may be local or geographically far removed.

Invasive and Nuisance Species

AQUATIC VEGETATION



Throughout the years, Spring Bayou has been subjected to the invasion of several different species of aquatic vegetation, mostly hydrilla and American Lotus. Several attempts were made to eradicate the two species.



Beginning in 2007, through efforts of the Louisiana Dept. of Wildlife and Fisheries and the Spring Bayou Restoration Team, a total of 65,000 sterile triploid grass-eating carp were released throughout the complex. That program has proven to be successful in the control of hydrilla.



As regards to the species American Lotus, the LDWF changed the timing of spraying from post-seed to pre-seed interrupting the reproduction cycle curbing the population throughout the complex.

Invasive water hyacinth (*eichornia crassipes*) is also prevalent throughout the open water lakes. It is a floating plant that reproduces quickly and has few natural control mechanisms. A rough estimate is that it covers several hundred acres of surface water out of the 3,000 total acres of lakes, preventing access to numerous locations throughout Spring Bayou.



FISH

As a result of the high-water backflow of 2011 into the complex, invasive Silver Asian Carp were discovered in complex. These fish are highly invasive and hard to control. The LDWF are making attempts to eradicate them from the complex.



The Solutions

Previous Efforts

In an attempt to connect the Old River channel to the rest of the Spring Bayou lakes, it was proposed in 2008 that the T-Bay cut be dredged. Efforts to do the dredging by Spring Bayou Restoration Team and the Avoyelles Parish Police Jury was completed in November 2009 at a total cost of \$50,000.00 (Source, SBRT meeting minutes).

Drawdowns were conducted in 1996 and 1997 with little success. Herbicides were used periodically from 1999-2012 (Source #3).

Beginning in 2008, juvenile triploid grass carp were stocked in the complex as a biological control to reduce the spread of hydrilla (Source #4).

US ARMY CORPS OF ENGINEERS STUDIES (1998-2012)

A work allowance of \$100,000 was received in 2000 but was increased to \$350,000 and a duration of 18 months due to very complex hydrologic conditions and sensitive environmental resources in the Spring Bayou area. The purpose of the study was to research environmental, flooding and other resource problems, investigate possible improvements, determine if there was a feasible alternative, develop a Management Plan and to conduct further feasibility studies and identify a local sponsor to cost share the feasibility study.

The Avoyelles Wildlife Federation and the Avoyelles Parish Police Jury were instrumental in getting the reconnaissance study started and that study was completed in February 2001. Shortly thereafter, the Avoyelles Parish Police Jury signed a letter of intent on September 17, 2001 to enter into the feasibility agreement with the U.S. Corps of Engineers. The actual Feasibility Cost Sharing Agreement and Project Management Plan was agreed to and signed on June 15, 2006 between the Avoyelles Parish Police Jury and the U.S. Corps of Engineers (Spring Bayou Agreement Letter, 2006)

The projected cost of the feasibility study was \$3.5M. The first installment totaled \$730,686.65. On a 50/50 cost sharing agreement, the Sponsor (Avoyelles Parish Police Jury) cost was \$365,343.33. However, due to lack of funding, the feasibility study was aborted.

From the studies that were done, the Corps developed three freshwater diversion alternatives and evaluated them at a conceptual level. Features of these plans included construction of water control structures and pumping stations to divert freshwater from the Red River, removal of sediment from existing streams to permit diverted flows into and through the study area, additional water control structures to prevent silt and pesticide flows from entering the study area, modification of an existing water control structure to manipulate water surface elevations for the purposes of fishery production, and aquatic weed control and buffer zones along streams to reduce erosion. (Source #5)

Source #3 & #4, Louisiana Dept. Wildlife & Fisheries, Waterbody Management Plan Series, Spring Bayou

Restoration Plan

Introduction

The Spring Bayou Lake Commission is tasked with two goals, ecological restoration of the Spring Bayou Complex and improving flooding and drainage conditions. Ecological restoration is defined as the process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed! Flooding and poor drainage, in addition to the environmental damage caused, also impact roads and bridges, structures, agricultural crops and agricultural non-crop areas. The considerations that apply to the restoration of the Spring Bayou Complex are based on a vision for its future.

It is important to acknowledge the multiple benefits that a restored complex will provide. Spring Bayou is envisioned as a robust forest, dominated by native hardwood species, with a rich understory that provides improved structure for wildlife. The ecosystem improvements sought will provide flood and erosion reduction, wetland preservation, water quality improvements, reduced groundwater consumption, increased spawning habitat for fisheries, and a reduction in invasive aquatic vegetation that increases overall usability.

This master plan is intended to establish a blueprint for the ecological restoration of Spring Bayou. It provides guidance for strategic implementation of projects that support ecological uplift and improved function across the watershed. The long-term restoration efforts of the Spring Bayou Lake Commission continue that long tradition of taking a leadership role in enhancing our resources by focusing on preservation, restoration and management of these resources.

Restoration Goals

As part of the development of this master plan, a set of goals was prepared. The core goals are listed below. These goals coincide with the Commission's mission statement to insure a healthy, natural and sustainable hydrological ecosystem that is permanently maintained, protected and preserved. There is no preference in that one goal supersedes another; rather, this project shall be viewed as an on-going project based upon needs and available funding.

Goal 1- Remove unnatural sediment deposits (dredging) from lake and stream bottoms that are detrimental to the health of the ecosystem or inhibit access to the complex.

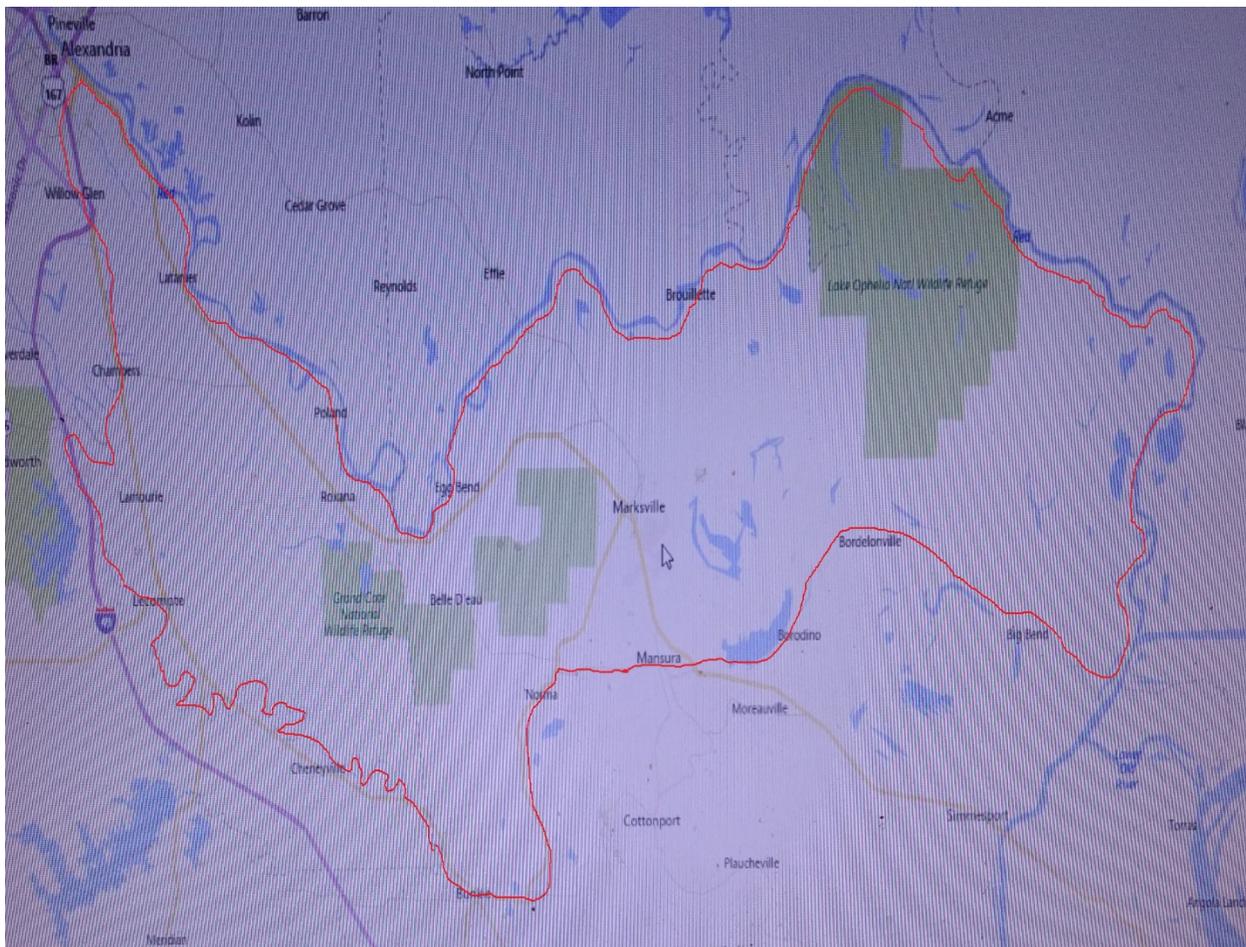
Goal 2- Prevent the introduction of new sediment deposits (silt, nutrients, pollutants) entering the Watershed and prevent the overgrowth of invasive aquatic vegetation.

Goal 3- Establish and execute a management plan to govern the retention and release of water in the lake complex.

Goal 4- Identify and develop access to new source(s) of surface water that can supply fresh water to the Watershed in order to better mimic the historic, natural, hydrologic processes of the ecosystem.

Watershed Study Area

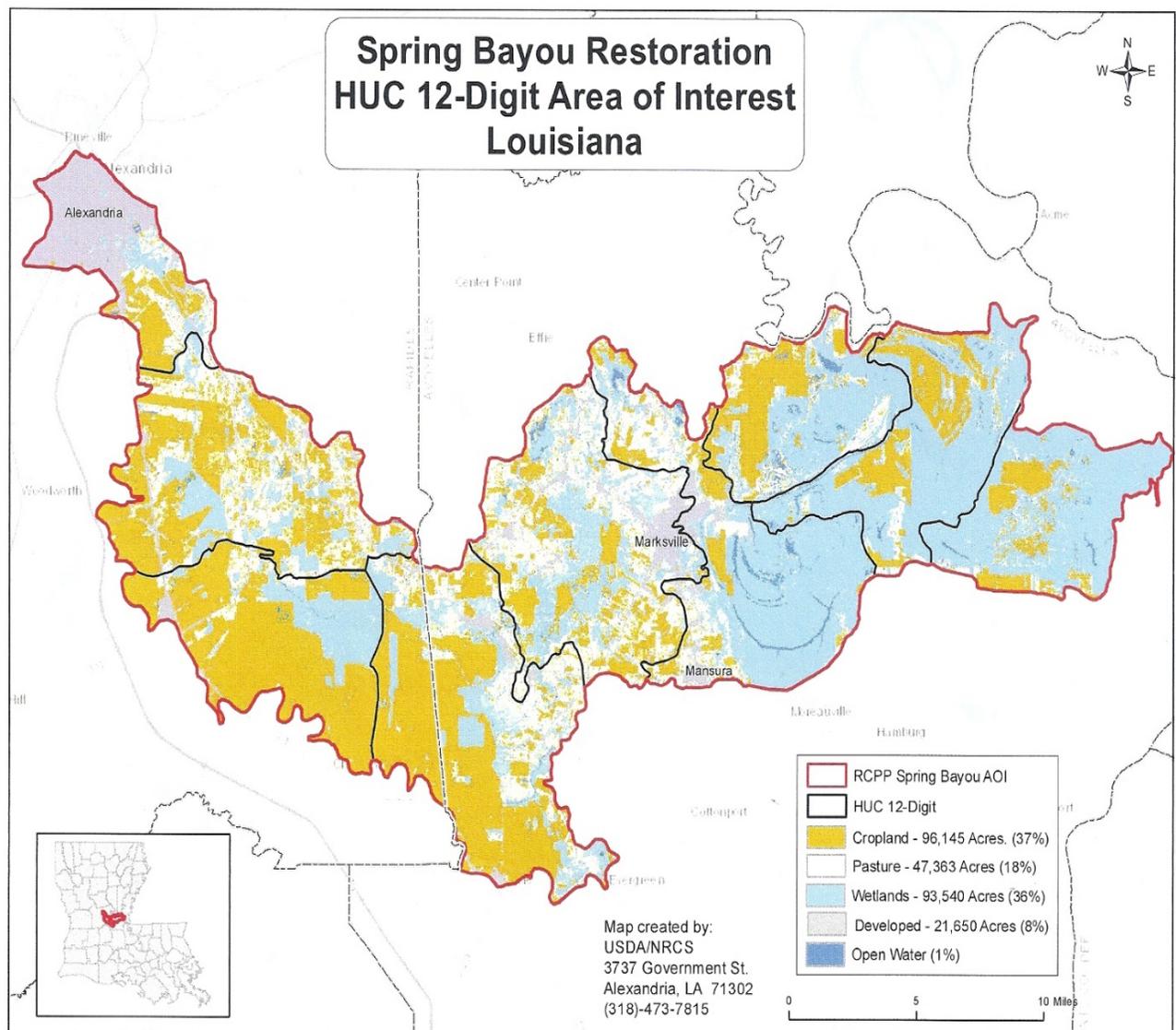
The first challenge in the development of this master plan was to identify a realistic watershed area for Spring Bayou. The study was based upon the location of those tributaries delivering water and sediment to the complex. The findings included nine (9) watersheds indicating a total watershed area of approximately 260,000 +/- acres. The watershed area includes the Chatlin Lake Canal / Echo-Cheneyville Cutoff in Rapides Parish, the Choctaw Bayou area of Belledeau and Fifth Ward, the Grand Cote Refuge of Little California, Marksville drainage area (Coulee des Grues and Bayou Pierite) the Old River, Bayou Lacombe and Bayou Tassin areas of Mansura and the area along Little River including Spring Bayou and Petite Bayou Rouge upwards to the Red River.



SPRING BAYOU WATERSHED AREA APPROXIMATELY 260,000 ACRES

That watershed area (260,000+/- acres) is divided by various classifications and acreage. The following is a breakdown of that data (Source #6):

- Cropland 96,145 acres (37%)
- Pastures47,363 acres (18%)
- Wetlands 93,540 acres (36%)
- Developed 21,650 acres (8%)
- Open Water(1%)



Source #6, NRCS

Implementation Priorities

The implementation priorities considered here are based on an understanding of needs and limited project funding. The Commission has focused on classifying the restoration efforts into categories and priorities, beginning, in general, with those projects nearest the Spring Bayou complex. Some of these projects should be considered short-term projects as others should be considered long-term. Phasing and sequencing of these projects should be determined by the SBLC in concert with its partners.

Goal 1 - Remove Sediment

1. Boggy Bayou / Little River Dredging
2. Little River Dredging (behind Old Museum)
3. Old River Dredging
4. Lil Choctaw Bayou Dredging
5. Spring Bayou Lakes

Goal 2 - Prevent Sedimentation

1. Establishment of Vegetative Buffer Zones
2. Establishment of Sediment Traps
3. Invasive Aquatic Vegetation Management

Goal 3 - Retain Water

1. Clearing Control Structure Area
2. Repair / Maintenance Control Structure Gates
3. Establishing Guidelines for the opening and closing of the control structure
3. Modifying the Weir / Dam
4. Surface Water Utilization

Goal 4 - Supply Water

1. Installation of Pumping Station System on the Red River
2. Install control structures on Choctaw Bayou and Coulee des Grues
3. Clearing and snagging of Choctaw Bayou and Coulee des Grues

Watershed Tributaries Map

The map below shows the tributaries that deliver water and sediment into the Spring Bayou complex.



Goal 1.1 - Boggy Bayou Dredging

The #1 priority in reference to dredging sediment from the complex would be that area from the LDWF boundary in Boggy Bayou towards Little River to the concrete bridge. The northern end of Boggy Bayou has what is left of an earthen dam restricting boat traffic and water flow during periods of low water levels.



*BOGGY BAYOU

Boggy Bayou is not considered a navigable stream. The running water is owned by the State of Louisiana whereas the waterway bottom is owned by three private entities. These entities have been contacted and have given verbal approvals for the project to proceed over their properties. However, legalities are pending as of this writing.

The Boggy Bayou area is approximately 85 acres. Two basic options exist for dredging the bayou; 1) dredge a channel by dragline and create a spoil bank with the sediment or 2) dredge and completely remove the sediment from the bayou.

The Commission's preference to dredging Boggy Bayou, as well as other areas of the complex, is to dredge and remove the sediment completely from the waterways. Using a 12-inch cutter head dredge would make that a reality. Dredging the bayou a depth of 3 feet would produce 400,000 cubic yards of sediment.

The LDWF has offered to implement this project using the dragline and spoil bank option. As of May 2019, LDWF is actively pursuing overall project design, seeking to enter into legal contracts with the landowners, applying for necessary permits (404,206,10 and nationwide) and funding, and all other measures needed for project completion. Dredging cost would most likely be on a matching arrangement, 75% LDWF and 25% matching partner.

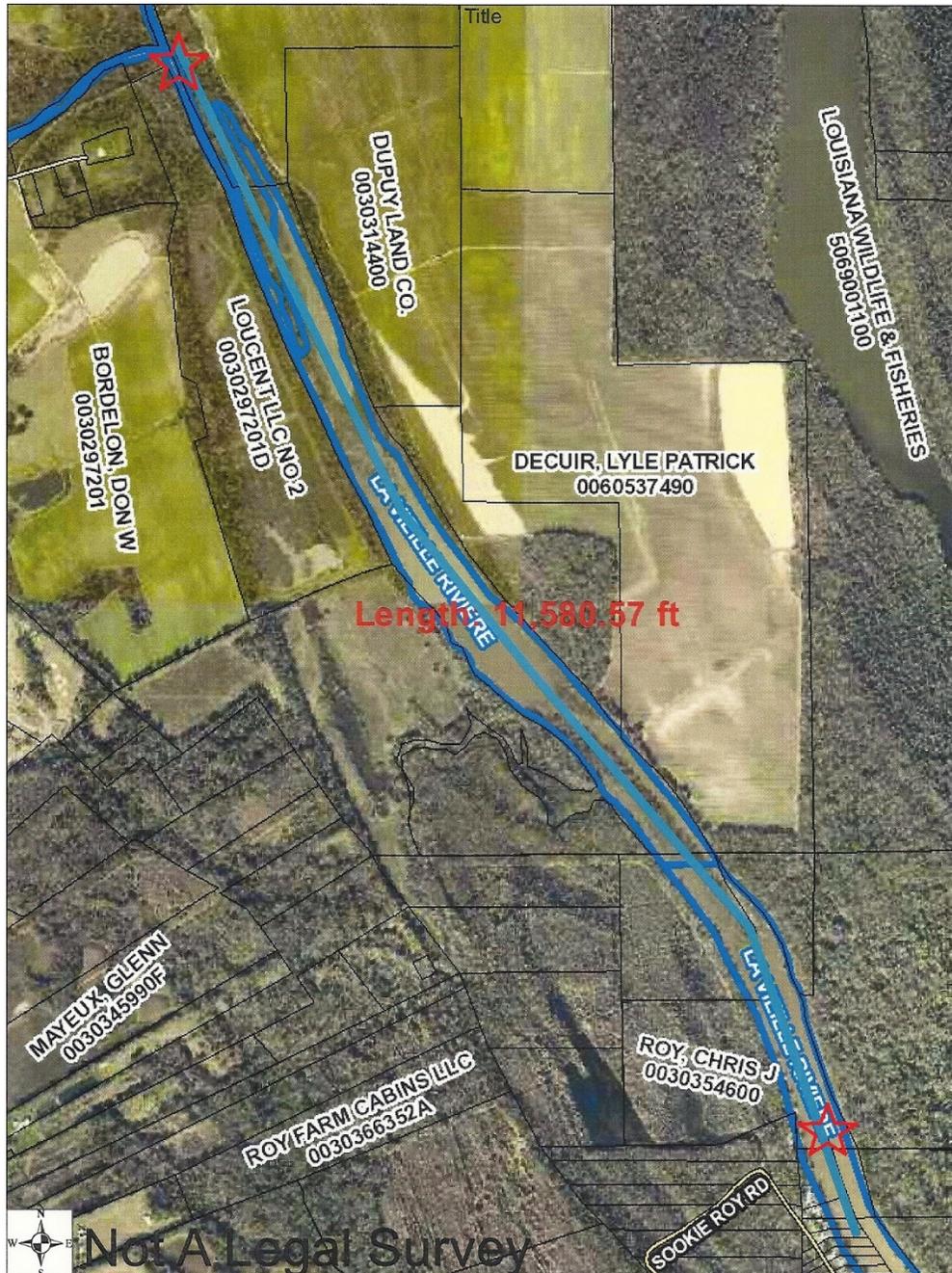
Goal 1.2 - Little River Clearing and Dredging

The #2 priority in respect to dredging would be that section of Little River north of the Coulee des Grues junction. Over the years that area has built up with sediment and an overgrowth of trees. That section of the waterbody is considered a navigable stream (running water and bottom owned by the State) and is approximately 10,945 feet long (2.07 miles).



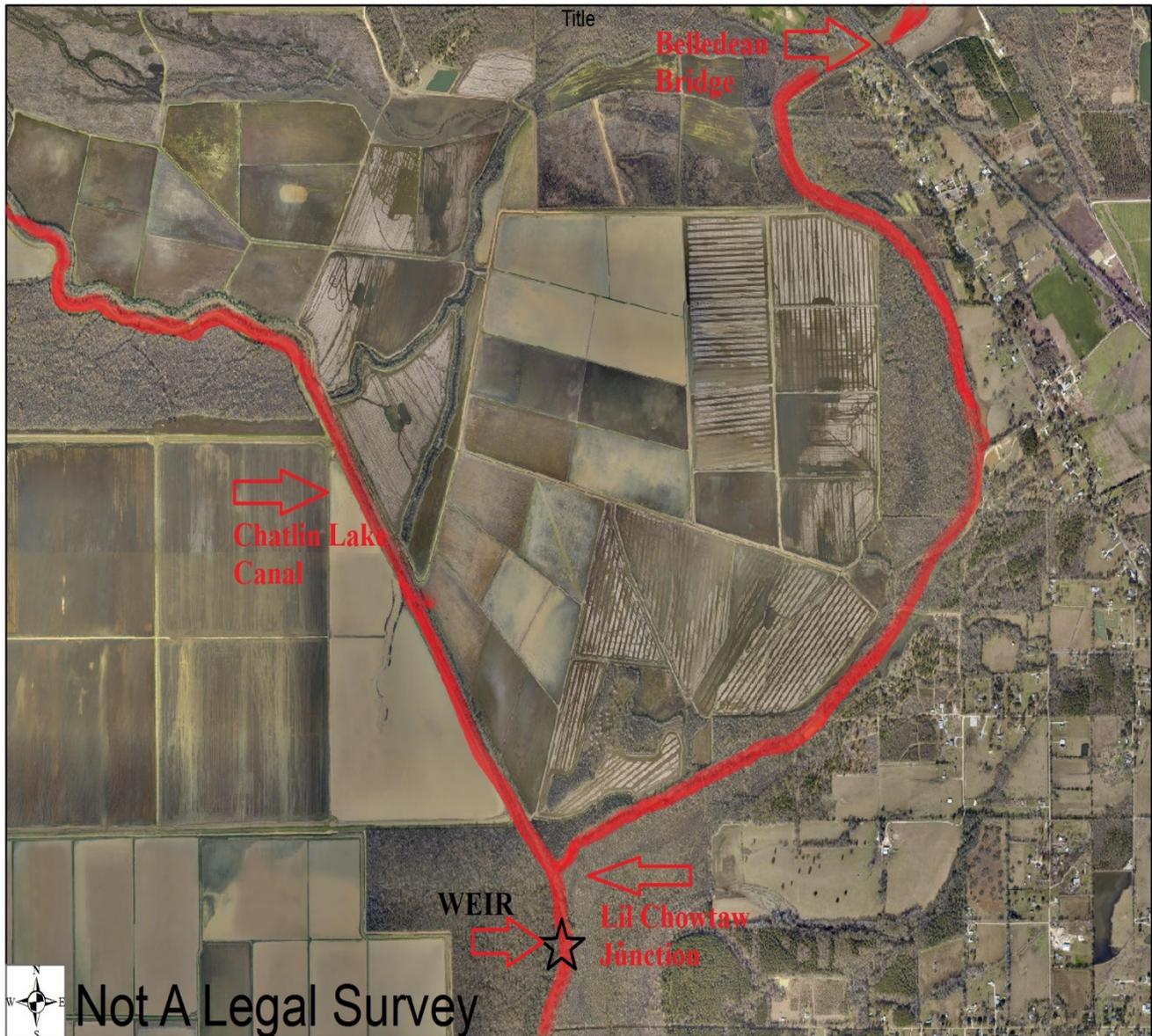
Goal 1.3 - Old River Dredging

The #3 priority in respect to dredging would be that section of Old River south of the Coulee des Grues junction. The channel has over the years built up with sediment to the point it is impassible by boat. That section of the waterbody is considered a navigable stream (running water and bottom owned by the State) and is approximately 11,486 feet long (2.17 miles).



Goal 1.4 - Lil Choctaw Bayou Dredging

This project would consist of the removal of obstructions in the channel, dredging and the re-direction of the channel as it's juncture with the Chatlin Lake Canal on L & P Farms property. Doing so would divert a larger volume of water towards Spring Bayou.



Goal 1.5 - Dredging Spring Bayou Lakes
Long-term consideration.

Goal 2.1 - Agricultural Buffer Zones

Looking at the aerial maps for Spring Bayou, silt enters the complex from the farms to the west and north. There are probably only five to 10 landowners who play the most critical role for sediment entering Spring

Bayou from adjacent streams. Further upstream, additional sediment enters Spring Bayou via runoff as far away as Alexandria.



*Farmland north of Spring Bayou. Similar situations exist to the west.

An effort can be made to reach out and work (Rice Stewardship Program) with the farmers to discuss the problem, show them the effects of their farms on the water quality, and provide them technical assistance to get them to voluntarily create buffers along the worst-offending parts of their farms.

Goal 2.2 - Sediment Control Stations

The reduction of silt movement into the complex can be facilitated using control stations and/or weirs to check the flow. These check-points would have to be placed strategically through the area to maximize their effectiveness in curtailing silt deposits, beginning with those areas nearest the water bodies. The most likely locations would be on Petite Bayou Rouge, Spring Bayou, Coulee des Grues and Bayou Tassin.



Goal 2.3 - Invasive Aquatic Plant Management

SBLC plans to continue its existing partnerships with LDWF to continue its herbicidal treatment program for the containment of invasive aquatic plant species such as American Lotus and Water Hyacinth. Additionally, it should continue to work with the Spring Bayou Restoration Team (SBRT) and LDWF on the maintenance of the grass carp program for hydrilla containment, as well as pursuing other avenues of control, such as biological or mechanical control.

Goals 3.1, 3.2, and 3.3 - Little River Control Structure

In 1979, the LDWF needed a means to do drawdowns in the complex when they deemed it necessary to do so. The dam did not allow them to do that. Thus, the need for a control structure. So, an exchange agreement was written between the APPJ and the landowner, Harry Henderson. In this agreement, Mr. Henderson agreed to provide a parcel of land with servitude to construct the control structure. That parcel is approximately 100 yds. from the dam. That agreement was extended to Henderson's heirs and assigns. (Source # 7)

The control structure on Little River has 3 gates. The gate sizes are 4 ft x 4 ft. Fully opened, the flow rate can drop the lake 2 inches per day. The structure is owned by the Avoyelles Parish Police Jury. It is located on servitude property of the local landowner. The LDWF may recommend opening and closing of the gates. It is also the responsibility of the APPJ to maintain and/or repair the structure. The APPJ has full authority in making the decision to open and close the gates. However, LDWF recommends that the gates be opened only under two conditions, up-stream flooding situations and drawdowns.



Source #7, Avoyelles Parish Police Jury

Goal 3.4 - Little River Weir and Dam

In the mid-1950's, attempting to break the annual cycle of flooding and drying, a weir/dam was constructed on Little River by the Dept. of Public Works (DOTD) for the Avoyelles Parish Police Jury at an elevation of 41 ft. (msl). The weir/dam was constructed by driving sheet metal pilings across the water body capped by a concrete top and shored up on the down-stream side with rocks. (Source, DOTD, Alexandria District). Prior to this period, the complex was made up of patches of privately-owned lakes which usually dried up during the summer months. There are reports that hay was usually cut each summer on Grand Lac. There are also reports that some of the back areas burned each summer. The weir/dam changed that habitat from basically cyclical to constant water in the lakes.

On June 21, 2012, George Israel (SBRT), Chris Brouillette (RRABB), Brad Sticker and Grady Cross (DOTD) inspected the Little River Dam and decided that repairs should be made as soon as possible in case an unusual water event occurred which would possibly damage the dam even more. It was found that the repairs to the dam would be more extensive than originally thought. In a cooperative agreement, repairs were completed on the North and South wings of the dam. (Source #8)

In the Corps' 2001 reconnaissance study, it was suggested that the dam be elevated by 2 feet raising it to 43 feet. The LDWF has some reservations toward doing that referencing that some hard-wood stands could be adversely affected should they be flooded for an extended period of time. In December 2018 an official reading was taken of the dam elevation with results coming in at 40.85 ft (MSL).. It is generally agreed that a 42 ft. level may be more acceptable. However, any plans to raise the dam would have to address and satisfy all concerns of doing so.



Source #8, Spring Bayou Restoration Team minutes



Goal 3.5 - Surface Water Utilization

The water level of the Spring Bayou complex is determined by the elevation of the spillway on Little River Dam. Currently, this is 41 ft. (MSL). During winter and spring months, which experiences abundant rainfall, the water level is above the 41-foot level causing runoff over the spillway. Summer and fall months generally experience drought conditions due to insufficient rainfall causing water levels to be below the 41-foot level.

Government agencies are increasingly discouraging fresh-water aquifer utilization with more emphasis being put on surface water utilization. During periods of low water levels, competing needs for water occur. SBLC's plan is to encourage the development of cooperative alternative solutions that supplement the level of surface water lost in the complex.

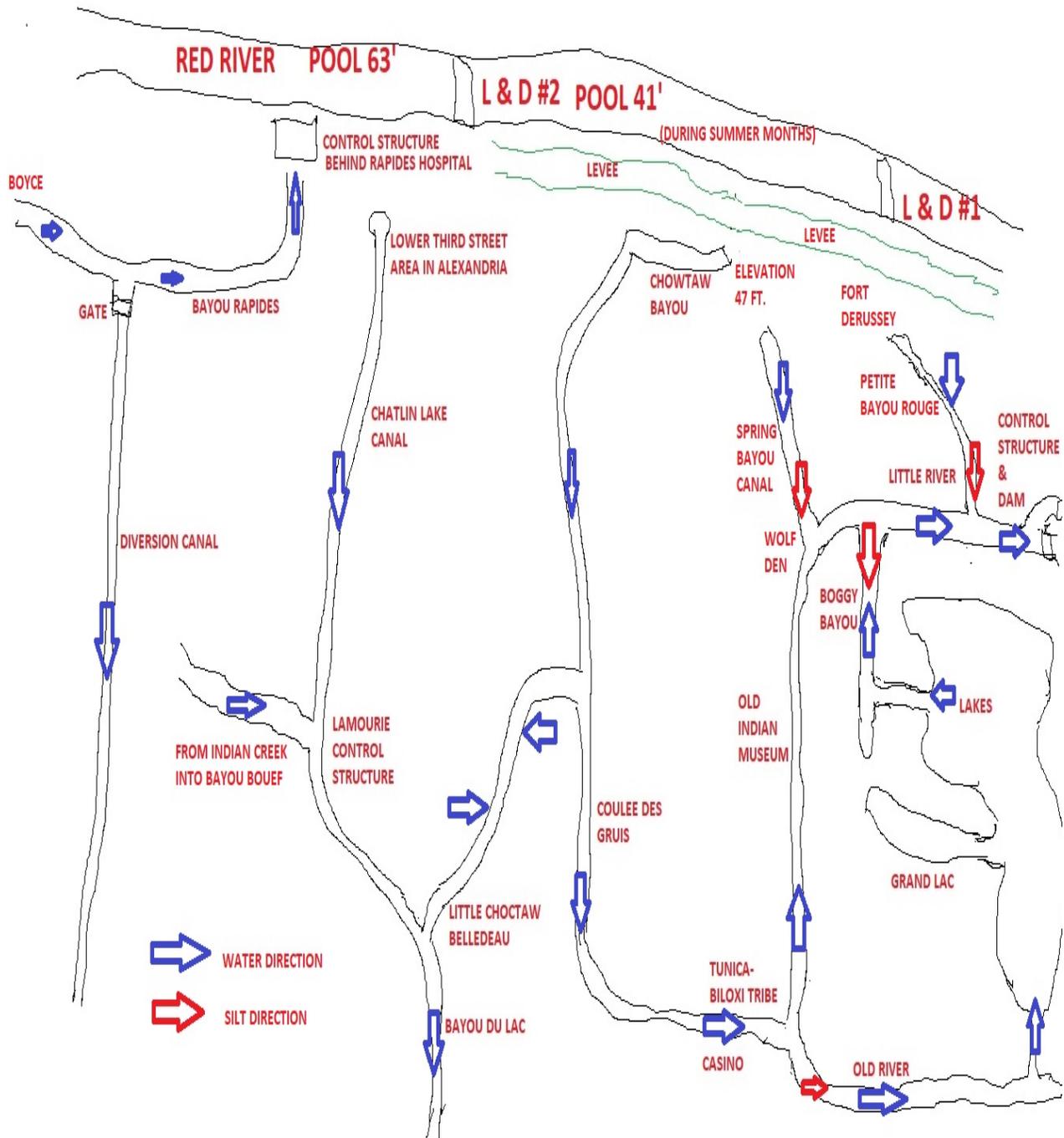
Goal 4.1 - New Water Supply from Red River

One of the key components to the Master Plan and the survival of the Spring Bayou complex is the ability to introduce fresh water into the complex during low-water periods (July-September). That could be accomplished by a pumping station on the Red River. A traditional pumping system is an expensive proposition and requires continuous maintenance and operational expenses.

Based on calculations, it has been determined that approximately 3.5 trillion gallons of water are lost to evaporation throughout the complex during a 90-day window during June through August. To maintain a water flow that would replace that water, a pumping flow of approximately 27,000 gallons per minute (24/7) or 60 cubic feet per second would be required. A larger volume would be required to supplement water requirements from Grand Cote Refuge should they participate in a surface water program rather than the ground water program currently in use. In their 2000 Reconnaissance Study, the U.S. Corps of Engineers (Vicksburg) recommended a 200 cubic foot per second pumping system.

The following map is a general layout of how water currently moves throughout the area. Generally speaking, most of the water accumulation is derived from rain and runoff. There are no Red River sources except for the Alexandria Control Structure which contributes little to the Spring Bayou area. (Source #9)

GENERAL MAP OF WATERFLOW THROUGHOUT THE AREA



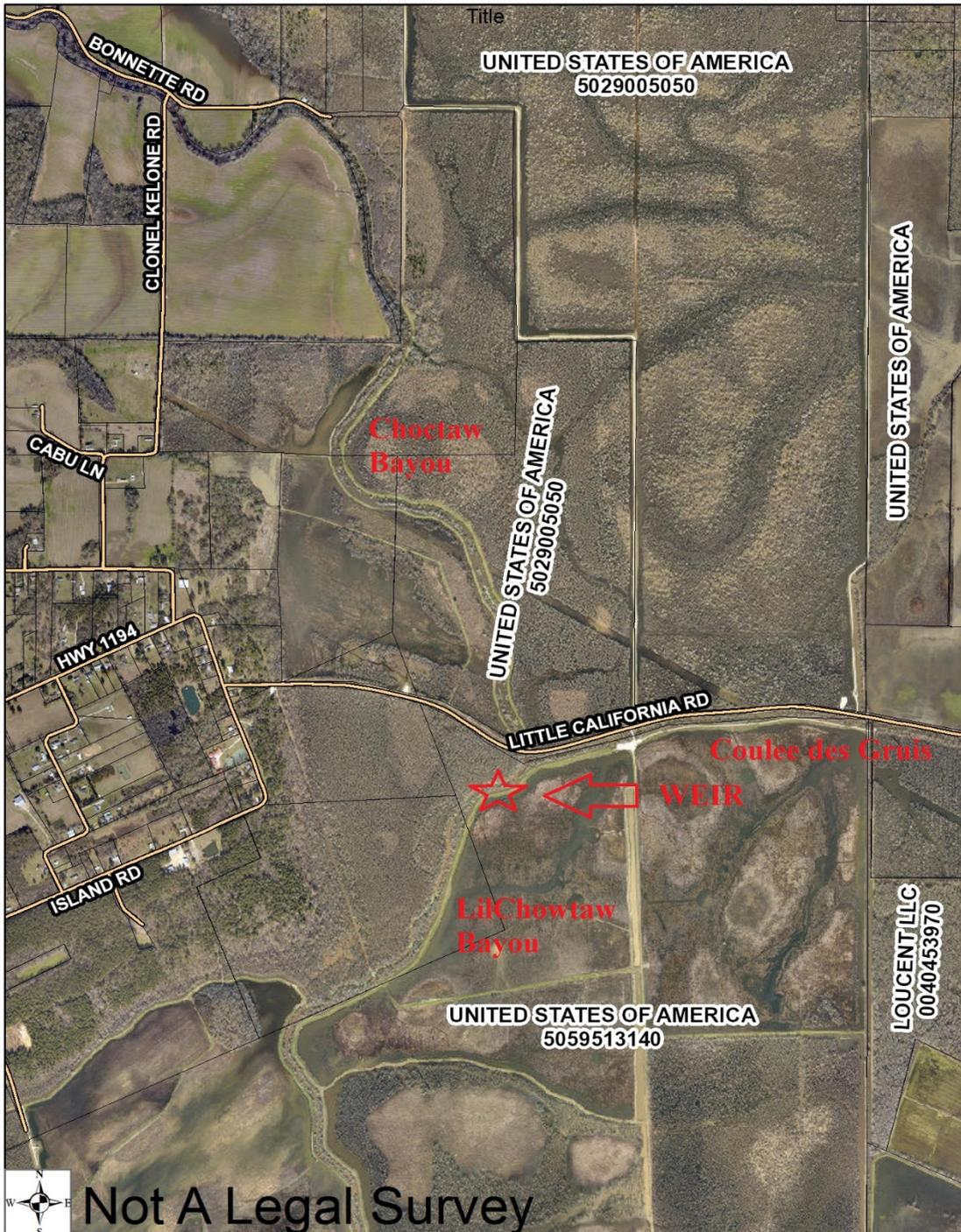
Source #9, Jim Landry

A pumping station could be placed in the vicinity of the Red River Oxbow or on the Red River in the Fifth Ward area.



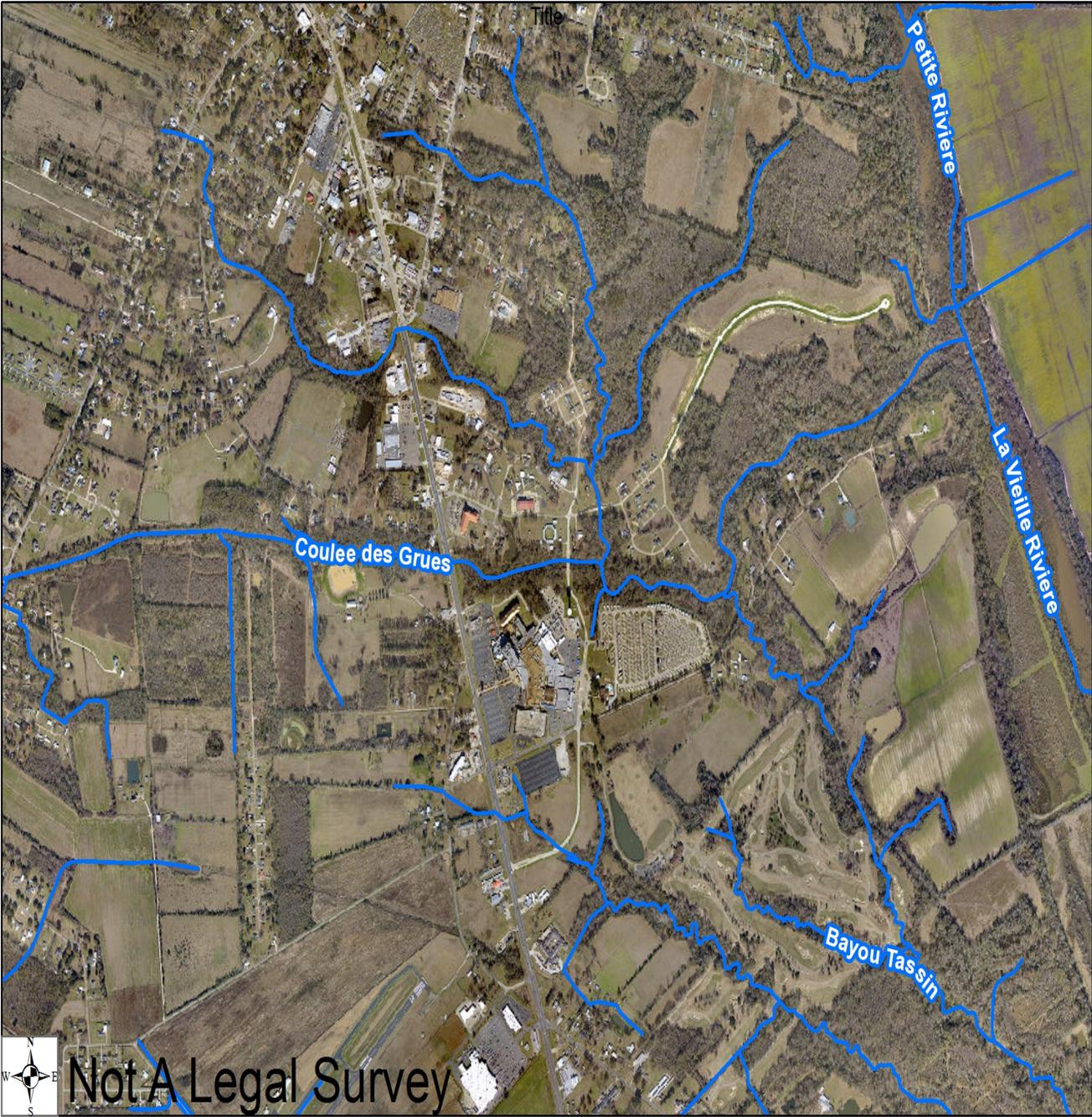
Goal 4.2 - Choctaw Bayou Control Structure

If a new pumping station is installed on the Red River, a control structure would need to be placed at the juncture of the Choctaw Bayou and Coulee des Grues to prevent backflow into the Lil Choctaw Bayou as it flows towards the Belledeau area.



The Coulee des Grues channel runs from the Choctaw Bayou, through Grand Cote Refuge, towards Marksville across Hwy 115 and Hwy 1, through Tribal property to the junction of Little River and Old River.





Partnerships

Project Partners

United States Dept. of Agriculture, Natural Resources Conservation Services (NRCS)
Ducks Unlimited
USA Rice
Louisiana Department of Wildlife and Fisheries
Tunica-Biloxi Tribe of Louisiana
Avoyelles Soil and Conservation District
Avoyelles Parish Police Jury
Rapides, Atchafalaya, Bayou Boeuf Levee District
U.S. Wildlife & Fisheries (Grand Cote Refuge)
Spring Bayou Restoration Team
Avoyelles Parish Wildlife Federation

Other Potential Supporters

Atchafalaya Water Heritage Trail
Avoyelles Commission on Tourism
Kisatchie Delta Regional Planning and Development District
Louisiana Ag Extension Services
Louisiana Department of Agriculture
Louisiana Department of Transportation and Development
U.S. Corps of Engineers

Conclusion

As part of the development of this master plan, a set of goals was prepared. Those goals were based on a watershed area of approximately 260,000 acres located in central Avoyelles and east Rapides Parishes and on the ecological needs of Spring Bayou and its surrounding areas. The goals center around water quantity, water quality and wildlife habitat. Specifically, sediment removal (dredging), sediment prevention (buffer zones and silt traps), establishing a fresh water source from the Red River (pumping), weir/dam modification and control structure maintenance describe the nucleus of this project. This project is considered a long-term project and planned accordingly. Progress will depend on set priorities and available funding. The Spring Bayou Lake Commission is the lead agency for this ecological project partnering with several organizations/agencies that share interest in Spring Bayou and the surrounding area.

