

LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES



**OFFICE OF FISHERIES
INLAND FISHERIES DIVISION**

PART VI -A

WATERBODY MANAGEMENT PLAN SERIES

**JOHN K. KELLEY GRAND BAYOU
RESERVOIR**

LAKE HISTORY & MANAGEMENT ISSUES

CHRONOLOGY

August 2013 –Prepared by

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LAKE HISTORY

GENERAL INFORMATION

Date reservoir formed

Grand Bayou Reservoir dam was designed by the Louisiana Department of Public Works. The dam was constructed by Louisiana Paving Company and completed in 1994. The spillway gate was closed in 1996 and the lake reached pool stage during the first week of August 1996.

Impoundment

John K. Kelly Grand Bayou Reservoir is an impoundment of the stream known as Grand Bayou.

Owners – Approximately 75% of the lake bottom up to the 138.5' MSL contour line is owned by the John K. Kelly Grand Bayou Reservoir Commission. Flood easements were purchased for the remainder of the lake bed and this portion remains in private ownership. All lands bordering the lake below the 147.5' MSL contour are in the surcharge area. A permit from the John K. Kelly Grand Bayou Reservoir Commission is required for any construction in this area.

Purposes for creation – The lake was formed as a water supply and recreational reservoir.

Size (surface area)

2500 acres at pool stage.

Water shed

134 sq. miles or 85,760 acres
Watershed ratio 34.3:1

Pool stage

138.5' MSL

Parish located

Red River Parish

Spillway Width

350'

Drawdown description

Spillway

Gate size - 60" x 60"

Number of gates - 1

Condition – good

Flow rate - 800 cubic feet per second

The structure allows for the lake to be lowered to a level of 115' MSL which is 23.5' below normal pool stage. The lake can be lowered at a rate of up to one foot per twenty four hour period at an elevation of 138.5' MSL.

Who controls

The John K. Kelly – Grand Bayou Reservoir Commission has control over the lake but relies on the Louisiana Department of Wildlife and Fisheries (LDWF) for management of fisheries and aquatic habitats and enforcement of laws governing these resources. The Louisiana Department of Transportation and Development is responsible for maintenance and operation of dam and control structure.

LAKE AUTHORITY

Association

John K. Kelly Grand Bayou Reservoir District.

The district shall be governed and controlled by a board of seven commissioners, each of whom shall be a qualified elector of Red River Parish residing within and owning property within the district. The members of the board of commissioners shall be appointed by the governor for a five year term. Any vacancy in the office of commissioner due to death, resignation, or any other cause shall be filled by the governor for the unexpired term. Current members of the board of commissioners are given in Table 1.

Table 1. Current members of the John K. Kelly Grand Bayou Reservoir District Board of Commissioners.

Member Name	Address	Term Expires
Urson S. “Bill” Bacle	257 Bacle Road Coushatta, LA 71019	11/12/2013
James A. Dickerson	658 Red Maple St. Coushatta, LA 71019	3/18/2014
Anita S. Hinds	5367 Hwy. 507 Coushatta, LA 71019	11/12/2013
Blake J. McCartney	P.O. Box 1301 Coushatta, LA 71019	11/24/2013
Peggy McCoy	P.O. Box 436 Coushatta, LA 71019	10/5/2014
Claude Veatch	168 Elarie Road Coushatta, LA 71019	9/28/2017
Mary Ann Wiggins	6098 Hwy. 71 Coushatta, LA 71019	7/31/2014

Contact information:

John K. Kelly Grand Bayou Reservoir District
c/o Buddy Fowler
5286 Hwy. 784
Coushatta, LA 71019
Phone (318) 932-3821
FAX (318) 932-9396
Email: grandbayouresort@bellsouth.net
Website: grandbayouresort.com

Authorization

Louisiana Act No. 474 House Bill No. 875 created the Grand Bayou Reservoir Commission in 1958 as a recreation and water conservation district with an area consisting of Wards 1 and 2 of Red River Parish. Act 474 granted the Grand Bayou Reservoir Commission authority to develop “the natural resources of the district by the conservation of soil and water for agricultural, recreation, commercial, industrial and sanitary purposes”. Act 474 created the District as a political subdivision of the State of Louisiana, and gives the District “complete control over the supply of fresh water made available by its facilities which shall be administered for the benefit of the persons residing or owning property within the District and, if it shall be for the benefit of the District, it shall have the authority to sell such water for irrigation, municipal and industrial uses, both within and outside of the District”.

This legislation was amended in 1989 by Act No. 176 and in 1993 by Act No. 120 as found in LA R.S. 38:2701 to R.S. 38:2717. The name was changed in 1993 to the John K. Kelly Grand Bayou Reservoir District.

ACCESS

Boat docks

Grand Bayou Resort – owned and operated by the John K. Kelly Grand Bayou Reservoir Commission. A map of the reservoir including the location of Grand Bayou Resort and boat ramp appears in [Appendix I](#).

Piers

Private piers are present and associated with many lakeside properties. A 7600 sq. ft. partially covered fishing / picnicking pier is located at the Grand Bayou Resort.

State/Federal facilities

The only public facility on the lake is the Grand Bayou Resort which is owned and operated by the John K. Kelly Grand Bayou Reservoir Commission.

SHORELINE DEVELOPMENT

State/National Parks

The Grand Bayou Resort is owned and operated by the John K. Kelly Grand Bayou Reservoir Commission. The park offers boat launches, swimming areas, RV campsites, picnic areas, pavilion, fishing pier, and 8 luxury cabins. Contact information for these facilities is provided below.

Grand Bayou Resort
Rt. 5, Box 12250
Coushatta, LA 71019
318-932-3821
318-932-0066
Email grandbayouresort@bellsouth.net
Web Site www.grandbayouresort.com

Shoreline development by landowners

Approximately 20% of the shoreline is currently developed or under development for camps, homes, commercial marinas, and the Grand Bayou Resort.

PHYSICAL DESCRIPTION OF THE RESERVOIR

Shoreline length

27 miles.

Timber type

The entire lake bottom was clear-cut prior to impoundment. There was some re-growth of pine, sweet gum, and willows subsequent to clearing the lake bed. This re-growth has mostly decomposed following inundation of the lake bed and the lake is fairly open with the exception of a few isolated areas where stumps are present.

Average depth

10 feet.

Maximum depth

29.5 feet.

Natural seasonal water fluctuation

2 - 3 feet.

EVENTS/PROBLEMS

Special Regulations

In September of 1995, a moratorium on the harvest of black bass from Grand Bayou Reservoir was enacted to protect the pre-impoundment stocking of 100 adult Florida bass brood fish and thereby enhance the establishment of the Florida gene in the bass population. This moratorium expired at midnight on May 31, 1997. (Title 76, Part VII, Chapter 1, Section 179.) Prior to expiration of this moratorium plans to include Grand Bayou reservoir in the "Quality Lake Program" were introduced to the Wildlife and Fisheries Commission for their action. This included plans to implement a 14" – 17" protective slot limit for black bass, along with an 8 fish creel limit of which only 4 fish could be over 17". These regulations went into effect on June 1, 1997. (Title 76, Part VII, Chapter 1, Section 149.)

In 1998 the Louisiana Wildlife and Fisheries Commission prohibited the use of gill nets, hoop nets, trammel nets, fish seines, and wire nets in the reservoir. (Title 76, Part VII, Chapter 1, Section 185.)

Aquatic Vegetation

The invasive aquatic plant hydrilla (*Hydrilla verticillata*), first recorded in 1999, occasionally causes problems for recreational users of the lake. However, the complex cover provided by hydrilla is associated with some benefit to sport fisheries. Water hyacinth was first recorded in the lake in 2001 and has been controlled through herbicide applications. To date, water

hyacinth remains at low densities and is generally restricted to the backs of coves near the shore. Giant salvinia (*Salvinia molesta*) was discovered in the lake in 2006. The majority of Grand Bayou Reservoir is not conducive to maximum growth of giant salvinia and to date the plant remains problematic only in the upper reservoir and the shallow ends of protected coves.

Drawdowns

The Fairview- Union water system relies upon surface water from Grand Bayou Reservoir as the sole source for water distributed to customers. The water system serves approximately 1,800 people, a large public school, and the employees of the Weyerhaeuser Paper Mill.

The Riley Company of Louisiana, Inc. serves as the consulting engineer firm for the Fairview – Union water system. A letter from Tyrone A. Riley, P. E., President of the Riley Company of Louisiana, Inc., dated August 9, 2006 discusses concerns related to drawdowns. Excerpts from Mr. Riley’s letter are as follows.

“The Fairview-Union water system has two intake screens mounted on a wooden platform within the buoy line at the spillway. Pool stage of the lake is at 138.5 msl. The very top of the upper screen is set at approximately 133.5 msl or approximately 5 feet below pool stage. The very top of the lower screen is set at approximately 126.0 msl or approximately 12.5 feet below normal pool. In addition, water is transferred from the intake structure to a wet well on land through a 24” pipe line. The top of the pump in the wet well that delivers water to the treatment plant is at approximate elevation 128.5 msl or 10 feet below normal pool.”

“The purpose of two intake points at different levels is for quality control. There are periods of the year when water quality is better near the surface and periods of the year when water quality is better at a deeper level. This dual intake structure allows the treatment plant operator the flexibility to draw from the best quality stratum. Quality is usually associated with depth of algae in the lake but also is associated with lake turbidity and dissolved minerals.”

Mr. Riley believes that the hydraulic challenges presented by a drawdown can be addressed in regard to removal of water from the lake for input into the treatment plant, but has “very real concerns regarding water quality and ability of the treatment plant to treat enough water for system customers even though the water can be withdrawn from the lake.”

The initial drawdown plans for control of hydrilla called for the lake to be lowered initially to 8 feet below normal pool and this level be maintained while officials from the Fairview-Union Water System evaluate the capability of their water system to withstand further dewatering. During the initial weeks of the drawdown a period of drought resulted in a reduction of the water level to approximately 130.0 msl or approximately 8.5 feet below normal pool stage. At this elevation some cavitation of the raw water pump was noted by the operator the water treatment plant. It was recommended that the lake not be lowered beyond 7.5 feet below normal pool stage in the future to avoid recurrence of this problem. Unless this problem is addressed, the target water level during future drawdowns should not be greater than 7 feet below normal pool stage.

MANAGEMENT ISSUES

Aquatic Vegetation

Initial post-impoundment type map surveys of the aquatic vegetation in the reservoir indicated light coverage. Aquatic plant coverage steadily increased in the years following impoundment. A survey conducted during August of 2000 indicated 5% coverage of aquatic vegetation in the reservoir. In July of 2001 the estimated coverage was 15%. In the 2005 type map survey coverage was approximately 15-20%, and hydrilla (*Hydrilla verticillata*) had become a dominant plant in the reservoir despite spot treatment with herbicides in previous years. A survey conducted in July of 2006 revealed that the coverage of submersed aquatic vegetation was approximately 30%, with hydrilla remaining the dominant plant. The aquatic vegetation typemap developed in 2011 indicated that the total coverage by submersed vegetation was 380 acres and was almost exclusively comprised of hydrilla.

Historically, the plant community on Grand Bayou has been made up of the following species: water hyacinth (*Eichhornia crassipes*), fanwort (*Cabomba caroliniana*), coontail (*Ceratophyllum demersum*), hydrilla (*Hydrilla verticillata*), primrose (*Ludwigia spp.*), water shield (*Brasenia schreberi*), Illinois pondweed (*Potamogeton illinoensis*), giant salvinia (*Salvinia molesta*), duckweed (*Lemna minor*), alligator weed (*Alternanthera philoxeroides*), lizard's tail (*Saururus cernuus*), southern watergrass (*Hydrochloa caroliniensis*), primrose (*Ludwigia spp.*), roadgrass (*Eleocharis baldwinii*), pennywort (*Hydrocotyle umbellata*), fragrant water lily (*Nymphaea odorata*), American Lotus (*Nelumbo lutea*), frog's-bit (*Limnobium spongia*), *Sagittaria spp.*, filamentous algae, variable-leaf milfoil (*Myriophyllum heterophyllum*) yellow nutsedge (*Cyperus esculentus*) and chara grass (*Chara spp.*).

Giant salvinia was first documented in the reservoir during the 2006 vegetation survey. The plant was found near the resort boat launch and likely "hitchhiked" by boat trailer from one of the nearby infested waterbodies. All visible giant salvinia plants were physically removed from the lake and the area treated with herbicides in an attempt to kill any remaining plants. Intensive efforts were made by LDWF spray crews to eradicate giant salvinia through herbicide applications. It is believed that giant salvinia was temporarily eradicated from the lake by these efforts in conjunction with annual drawdowns from 2006 to 2008 for hydrilla control. However the plant was apparently reintroduced later via boat trailers as LDWF personnel observed plants floating in the lake that had been flattened from being trapped between boat trailer bunks and the hull of a boat. LDWF staff also observed one boat launching and noted giant salvinia floating out from under the boat after it was backed off the trailer. Efforts to control giant salvinia on Grand Bayou Reservoir are ongoing.

Hydrilla was first found in the lake in 1999 and increased to higher densities each year despite herbicide treatments. The change in coverage from 2005 to 2006 is noteworthy. In 2006, hydrilla was found at depths greater than had been documented in previous surveys. Initially, hydrilla was limited to a maximum depth of six feet. The 2006 survey showed that hydrilla had established itself in depths up to ten feet. The waters of the reservoir are clear due to the low fertility of the watershed and this trait is conducive to the spread of hydrilla.

The 2006 survey showed that the plant was growing in deeper water and had significantly

increased coverage. The density of hydrilla noted in the 2006 typemap survey was approximately 30% coverage. This coverage level falls within the range of submerged vegetation that is optimal for fish production, and standardized fisheries samples did not reflect any adverse effects on the game fish population. However, at this density boating and fishing access was difficult in many areas of the lake and for most shoreline property owners. In 2006, hydrilla had almost totally covered the area upstream of the Hwy. 784 Bridge.

The John K. Kelly Grand Bayou Reservoir Commission expressed concerns about reservoir-wide boating access, user access at the Grand Bayou Resort, problems experienced by the shoreline property owners, and any further impacts to the lake if the hydrilla continued to increase in coverage. With these concerns in mind the reservoir commission requested a series of drawdowns for hydrilla control in the lake. The initial drawdown began September 12, 2006. The lake was dewatered at a prescribed rate of 4 to 6 inches per day until the lake reached 8 feet below normal pool. The plan called for the lake to be lowered as much as 11 feet below normal pool, pending a survey of the lake to see how much hydrilla remained in the water at 8 feet below normal pool. A survey revealed that nearly all of the hydrilla was exposed at the level of 8 feet below normal pool so no efforts were made to dewater the lake further. However the lake level fell to 8.5 feet below normal pool due to evaporation and the Fairview-Union Water System experienced some problems with their water intake at that level. The drawdown was scheduled to continue until January 31, 2007, but heavy rains refilled the lake in late December and it was determined by DOTD that the target level could not be reached again by that time, so the gate was closed in early January 2007.

An aquatic vegetation typemap survey conducted in August of 2007 indicated approximately 25% coverage of submerged aquatic vegetation. Many areas that previously had hydrilla were now harboring native submerged vegetation. There was also a reduction in the maximum depth of vegetative occurrence. Vegetation was only found reaching depths of 6 feet below normal pool stage. A second drawdown was conducted beginning August 15, 2007 and extended through the end of January 2008. The lake was lowered to a level of 7 feet below normal pool as the submerged vegetation was not found past this contour. A drawdown to this depth eliminated the cavitation problem that the intake pump for the water system had experienced the previous year.

A typemap survey conducted in August 2008 revealed a significant reduction in aquatic vegetation coverage as submerged vegetation was found to cover approximately 5% of the lake, with submerged vegetation found out to only depths of 4 feet below normal pool stage. The majority of the submerged vegetation was composed of native species, and hydrilla was found only in a few areas of the lake with low densities noted at those sites. The Grand Bayou Reservoir Commission decided to continue with the planned series of three consecutive drawdowns as there was evidence that some hydrilla tubers still remained viable in the subsoil of the lake bed. This drawdown began September 2, 2008 and extended through the end of January 2009. The lake was dewatered 7 feet as had been done in the previous year.

Hydrilla was found at low densities in a few areas of the lake during the typemap survey conducted in September 2009. Aquatic vegetation was found to cover approximately 5% to 8% of the lake, with submerged vegetation consisting predominately of native species being found out to depths of 4.5 feet. The consecutive drawdowns conducted the previous three

years were successful in reducing the hydrilla coverage on the lake.

The extreme freeze experienced in January of 2010 significantly reduced giant salvinia and other floating and emergent vegetation on the lake.

Drought conditions during 2011 resulted in the lowest lake level outside of intentional drawdowns. The lake level fell five and one-half feet below pool stage in the fall season of 2011. This drought induced lake level resulted in a reduction of submerged aquatic vegetation along the shoreline of the lake.

Water levels remained low for most of year 2012 with the lowest level reached being four and one-half feet below pool stage. Submerged aquatic vegetation was again controlled along the lake shoreline by low water levels during 2012.

Reservoir inflow has returned to a more typical pattern in year 2013. While aquatic vegetation coverage is not problematic at this point, it is likely that if the lake level stabilizes vegetation coverage will increase.

Problematic plant species status as of September 1, 2013 was estimated to be:

Giant salvinia – Coverage was minimal, scattered and confined to areas protected from wind and wave action. Total infestation was approximately 10 acres.

Hydrilla – Coverage was marginal in isolated patches of water with depths ranging from 3 to 6 feet. Total coverage of hydrilla was 400 acres.

Water hyacinth – 3 acres.

Alligator weed – Coverage by this species was minimal, with 7 acres estimated.

Yellow nutsedge – This plant was found growing in much of the shoreline area. Total coverage by this species was approximately 70 acres.

Expectations for 2013: It is expected that hydrilla will increase in coverage during the year. Hydrilla is likely to cause problems in key recreational areas such as the boat launch, pavilion and swimming area. Based upon past experience, giant salvinia is not expected to be problematic at this lake.

Typemap

Type map surveys were conducted in 1998, 1999, 2000, 2001, 2005, 2006, 2007, 2008, 2009 and 2011 on Grand Bayou Reservoir. Type maps from 1998 – 2009 are compiled in MP-C archives. The most current type map for this reservoir appears in [Appendix II](#). A significant increase in submerged aquatic vegetation was noted between 1998 and 2006, at which point a series of three consecutive drawdowns were initiated for control of hydrilla in the reservoir.

Biomass

Biomass sampling was conducted in 2002 and 2003. The 2003 samples indicate an increase in total biomass by both depth and transect. Predominant species found in the sampling

included Chara, Coontail, Cabomba, Hydrilla, Brittle Naiad, and Pondweed. The only species showing a decline from 2002 to 2003 was Chara.

Treatment history by year available

Biological – none to date.

Chemical –

The use of herbicides is an important component of the LDWF integrated pest management program. The proper selection and use of herbicides is essential to achieve cost effective benefits and to avoid damage to non-target species. Each product listed has been approved by the Environmental Protection Agency for aquatic use. Aquatic vegetation will be treated according to the standard operating procedures for the application of herbicides as adopted by the LDWF Inland Fisheries Section. Chemical treatments made at John K. Kelly Grand Bayou Reservoir by year appear in Table 2.

Table 2. Chemical treatments made by LDWF at John K. Kelly Grand Bayou Reservoir by year.

Treatment Year	Chemical	Vegetation	Acres Treated	Rate
1999			1.0	
2000			3.0	
2003			10.0	
			3.0	
2004			3.0	
2005	2, 4-D	Water Hyacinth	9	0.5 gal./Acre
	2, 4-D	Water Shield	13	0.5 gal./Acre
2006				
2008	Aquamaster	Alligator Weed	7	0.75 gal./Acre
	Aquaneat	Alligator Weed	6	0.86 gal./Acre
	Aquastar	Alligator Weed, Cutgrass, Fanwort, Primrose, Giant Salvinia, Water Hyacinth	118	0.76 gal./Acre
2009	Aquamaster	Alligator Weed, Primrose, Giant Salvinia, Water Hyacinth, cattail, Smartweed	264	0.98 gal./Acre
	Diquat	Giant Salvinia, Water Hyacinth, Cutgrass, Alligator Weed, Primrose, Rush ssp.	93	1.0 gal./Acre
2010	Aquamaster	Alligator Weed, American Lotus, Primrose	47	0.75 gal./Acre
	Aquathol Super K	Hydrilla, Coontail, Fanwort	60	13.33 lbs./Acre
	Diquat	Rush ssp., Alligator Weed, Primrose, Cutgrass, Giant Salvinia, Cattail	68	1.0 gal./Acre
2011	Aquamaster	Alligator Weed, Giant Salvinia, Water Hyacinth	40	0.75 gal./Acre
	Diquat	Giant Salvinia	90.77	0.75 gal./Acre
	Aquathol Super K	Hydrilla	17.04 Acre feet	17.6 pounds/Acre foot
2012	Aquamaster	Alligator Weed, Giant Salvinia, Torpedo Grass	201	0.75 gal./Acre
	Diquat	Giant Salvinia	562	0.75 gal./Acre
	Ecomazapyr 2SL	Alligator Weed, Giant Salvinia	80	0.75 gal./Acre
As of September 1, 2013	Aquamaster	Alligator Weed, Giant Salvinia	93	0.75 gal./Acre
	Diquat	Alligator Weed, Giant Salvinia	320	0.75 gal./Acre

HISTORY OF REGULATIONS

Recreational Fishing Regulations

Largemouth Bass – In September of 1995, a moratorium on the harvest of black bass was enacted to protect the initial stocking of 100 adult Florida bass brood fish and allow them a chance to spawn in an effort to establish the Florida gene in the bass population. This moratorium expired at midnight on May 31, 1997. (Title 76, Part VII, Chapter 1, Section 179.) A 14” – 17” protective slot limit for black bass, along with an 8 fish creel limit of which only 4 fish could be over 17” was implemented June 1, 1997. (Title 76, Part VII, Chapter 1, Section 149.)

Recreational fishing regulations for 2013 may be viewed at the link below:

<http://www.wlf.louisiana.gov/fishing/regulations>

Commercial Fishing Regulations

Use of gill nets, trammel nets, fish seines, hoop nets, and wire nets is prohibited on Grand Bayou Reservoir. (Title 76, Part VII, Chapter 1, Section 185.)

**TITLE 76
WILDLIFE AND FISHERIES
PART VII. FISH AND OTHER AQUATIC LIFE**

Chapter 1. Freshwater Sports and Commercial Fishing

185. Netting Prohibition, John K. Kelly - Grand Bayou Reservoir

The Louisiana Wildlife and Fisheries Commission hereby prohibits the possession and/or use of commercial nets, including, but not limited to, gill nets, trammel nets, flag nets, hoop nets, wire nets and fish seines in John K. Kelly - Grand Bayou Reservoir located in Red River Parish.

AUTHORITY NOTE: Promulgated in accordance with R.S. 56:22(B).

HISTORICAL NOTE: Promulgated by the Department of Wildlife and Fisheries, Wildlife and Fisheries Commission, LR 24:1520 (August 1998).

Commercial fishing regulations for 2013 may be viewed at the link below:

<http://www.wlf.louisiana.gov/fishing/regulations>

DRAWDOWN HISTORY

Table 2. Description of John K. Kelly Grand Bayou Reservoir Drawdowns from 2006 – 2009.

Drawdown Dates	Depth Below Pool	Purpose
<p>September 12, 2006 through January 31, 2007 scheduled dates.</p> <p>Heavy rains in late December refilled lake and DOTD determined that target level could not be reached again within scheduled timeframe and gates closed in early January 2007.</p>	<p>Initial target depth of 8feet below normal pool. Plan called for lake to be lowered as much as 11feet below normal pool, pending a survey of the lake to assess hydrilla exposure at the 8 – 11 foot range. A survey revealed that most of the hydrilla was exposed at the level of 8 feet below normal pool and the control structure was closed. The lake level fell to 8.5 feet below normal pool due to evaporation and the Fairview-Union Water System experienced some problems with their intake at that level.</p> <p>Lake allowed to return to and held at approximately 7' below pool.</p>	<p>Hydrilla control at the request of the John K. Kelly Grand Bayou Reservoir Commission.</p> <p>First in a series of three consecutive drawdowns for hydrilla control.</p>
<p>August 15, 2007 through January 31, 2008</p>	<p>7' below normal pool stage</p>	<p>Hydrilla control at the request of the John K. Kelly Grand Bayou Reservoir Commission.</p> <p>Second in a series of three.</p>
<p>September 2, 2008 through January 31, 2009</p>	<p>7' below normal pool stage</p>	<p>Hydrilla control at the request of the John K. Kelly Grand Bayou Reservoir Commission.</p> <p>Third in a series of three.</p>

Success

The series of 3 consecutive drawdowns conducted during 2006 through 2008 proved successful in reducing the coverage of hydrilla and other submerged aquatic vegetation in Grand Bayou Reservoir. A typemap survey conducted during the summer of 2009 revealed submerged aquatic vegetation coverage of only 5% to 8%. Hydrilla was found only sporadically and at very low densities during this survey.

Fish kills

There have been no fish kills associated with drawdowns at this reservoir.

FISH KILLS / DISEASE HISTORY

An extensive fish kill occurred in January 2001, most likely due to thermal shock following severe freezing weather. Over 280,000 fish were killed, including over 11,000 available size game fish.

LMBV – 60 fish sample collected in spring 2002 with 5% of largemouth bass testing positive for the virus. Bluegill and Redear also tested, with no positive results.

CONTAMINANTS / POLLUTION

Mercury

The latest fish consumption advisory from DEQ and DHH for Grand Bayou Reservoir relating to mercury contamination was released on 5-29-03:

Women of childbearing age and children less than seven years of age **SHOULD NOT CONSUME BOWFIN (choupique, grinnel) and should consume no more than ONE MEAL PER MONTH of largemouth bass.**

Other adults and children seven years of age and older should consume no more than **TWO MEALS PER MONTH of largemouth bass or bowfin (choupique, grinnel) combined from the advisory area.**

Unless the fish species is specifically addressed in the details of the advisory, please limit consumption of all species in an advisory area to **FOUR MEALS PER MONTH.**

The current fish consumption advisories can be found at:

<http://www.deq.state.la.us/portal/LinkClick.aspx?fileticket=81zJeEBxJpE%3d&tabid=1631>

Water Quality

Water Quality information for the watershed including Grand Bayou Reservoir is listed on the Louisiana Department of Environmental Quality website:

<http://www.deq.louisiana.gov/portal/tabid/69/Default.aspx>

or at the U.S. Environmental Protection Agency website:

http://www.epa.gov/region6/water/npdes/tmdl/303d/la/epa-final-list_2006.pdf

Water quality data is collected at one sample site in the watershed at the Hwy. 507 Bridge below Grand Bayou Reservoir. Impairments for the watershed include fecal coliform from wildlife sources other than waterfowl, mercury from atmospheric deposition and unknown sources, low dissolved oxygen from natural conditions, and total dissolved solids from natural sources.

Water quality sampling is conducted by LDWF in conjunction with standardized sampling activities on the reservoir. Measured parameters include pH, conductivity, dissolved oxygen, and temperature. All parameters within acceptable limits, surface pH generally ranges between 6.5 and 7.5 with only slight variation throughout the sampled depth range. Conductivity ranges from 0.05 to 0.1 mS/cm. Thermal stratification occurs annually during the summer and fall, with a resulting oxycline.

Water level

No constant recorder information available. Sight gauge recently installed at dam near the intake for the Fairview – Union Water System.

BIOLOGICAL

Fish samples

Table 3. Historical, current and proposed LDWF biological fisheries sampling conducted at John K. Kelly Grand Bayou Reservoir.

1996	Electrofishing – (nighttime DC, prod) – 10 stations with varied sampling durations for a total of 180 minutes, includes 1 – 15 minute forage sample
1997	Electrofishing – (nighttime DC, prod) – 8 – 15 minute samples – Spring / includes 1 forage sample Electrofishing –(nighttime DC, prod) – 8 – 15 minute samples – Fall / includes 2 forage samples 4—300' Gill Net Sets, 2.5 Inch Bar, Mono 4—300' Gill Net Sets, 3 Inch Bar, Mono 4—300' Gill Net Sets, 3.5 Inch Bar, Mono 4—300' Gill Net Sets, 4 Inch Bar, Mono
1998	Electrofishing (nighttime DC, prod) – 6 – 15 minute samples – Spring Electrofishing (nighttime DC, prod) – 7 – 15 minute samples – Fall / includes 1 forage sample
1999	Electrofishing (nighttime DC, prod) – 6 – 15 minute samples – Spring Electrofishing (nighttime DC, prod) – 8 – 15 minute samples – Fall / includes 1 forage sample 4 – Frame Net Stations ½ Inch Bar, 3 ft. X 6 Ft. Frame (72 hour soak time) – 1 net at each station sampled once in spring and once in fall (8 samples)
2000	Electrofishing (nighttime DC, prod) – 6 – 15 minute samples – Spring Electrofishing (nighttime DC, prod) – 7 – 15 minute samples – Fall / includes 1 forage sample
2001	Electrofishing (nighttime DC, prod) – 6 – 15 minute samples – Spring Electrofishing (nighttime DC, prod) – 7 – 15 minute samples – Fall / includes 1 forage sample 6 - 25 ft. X 6 ft. Seine, 3/16 Inch Bar, 1 Quadrant Sets

2002	Electrofishing (nighttime DC, prod) – 6 – 15 minute samples – Spring Electrofishing (nighttime DC, prod) – 8 – 15 minute samples – Fall / includes 2 forage samples
2003	Electrofishing (nighttime DC, prod) – 6 – 15 minute samples – Spring Electrofishing (nighttime DC, prod) – 7 – 15 minute samples – Fall / includes 1 forage sample
2004	Electrofishing (nighttime DC, prod) – 6 – 15 minute samples – Spring Electrofishing (nighttime DC, prod) – 7 – 15 minute samples – Fall / includes 1 forage sample
2005	Electrofishing (nighttime DC, prod) – 6 – 15 minute samples – Spring Electrofishing (nighttime DC, prod) – 11 – 15 minute samples – Fall / includes 1 forage sample
2007	Electrofishing (nighttime DC, prod) – 3 – 15 minute samples – Spring Electrofishing (nighttime DC, prod) – 3 – 15 minute samples – Summer 6—300' Gill Net Sets, 2.5 Inch Bar, Mono 6—300' Gill Net Sets, 3 Inch Bar, Mono 6—300' Gill Net Sets, 3.5 Inch Bar, Mono 6—300' Gill Net Sets, 4 Inch Bar, Mono
2009	Electrofishing –(nighttime DC, prod) 6 – 15 minute samples – Spring Electrofishing – (nighttime DC, prod) 7 – 15 minute samples – Fall / includes 1 forage sample
2010	8 – Frame Net Stations ½ Inch Bar, 3Ft. X 6 Ft. Frame (soak time research) – 4 nets per station (64 samples) 8 – Lead Net Stations ½ Inch Bar, 3 ½ Ft. Diameter(soak time research) – 4 nets per station (64 samples)
2011	6—300' Gill Net Sets, 2.5 Inch Bar, Mono 6—300' Gill Net Sets, 3 Inch Bar, Mono 6—300' Gill Net Sets, 3.5 Inch Bar, Mono 6—300' Gill Net Sets, 4 Inch Bar, Mono
2012	No fisheries sampling conducted
2013 <u>Planned sampling activities</u>	Electrofishing –(nighttime DC, prod) 6 – 15 minute samples – Spring Electrofishing – (nighttime DC, prod) 7 – 15 minute samples – Fall / includes 1 forage sample 6—300' Gill Net Sets, 2.5 Inch Bar, Mono 6—300' Gill Net Sets, 3 Inch Bar, Mono 6—300' Gill Net Sets, 3.5 Inch Bar, Mono

	6—300' Gill Net Sets, 4 Inch Bar, Mono 6 – Lead Net Stations ½ Inch Bar, 3 ½ Ft. Diameter – 2 nets per station (24 samples)
2014	No fisheries sampling scheduled.
2015	Electrofishing –(nighttime DC, prod) 6 – 15 minute samples – Spring Electrofishing – (nighttime DC, prod) 7 – 15 minute samples – Fall / includes 1 forage sample 6—300' Gill Net Sets, 2.5 Inch Bar, Mono 6—300' Gill Net Sets, 3 Inch Bar, Mono 6—300' Gill Net Sets, 3.5 Inch Bar, Mono 6—300' Gill Net Sets, 4 Inch Bar, Mono 6 – Lead Net Stations ½ Inch Bar, 3 ½ Ft. Diameter – 2 nets per station (24 samples)

Lake records

Lake records on Grand Bayou Reservoir are not maintained by any known entity. The Louisiana Outdoor Writers Association (LOWA) maintains state fish records for Louisiana. LOWA’s record fish list may be viewed at:

<http://www.laoutdoorwriters.com/Records/LouisianaFishRecords/tabid/87/Default.aspx>

Two white crappies are listed in LOWA’s state record freshwater fish list revised 11/30/2012 as being caught from Grand Bayou Reservoir. Those fish records appear in Table 4.

Table 4. State record fish taken from John K. Kelly Grand Bayou Reservoir.

Species	Weight (pounds)	Date	Angler	State Rank
White Crappie	3.38	April 28, 2002	B. R. Shepherd	2
White Crappie	3.21	March 13, 2004	David “L. D.” Henry	5

Stocking History

Note - existing fish population not removed prior to impoundment. Post impoundment stockings to date have consisted of Florida strain largemouth bass and channel catfish. Stocking history is shown in Table 5.

Table 5. Fish stockings at John K. Kelly Grand Bayou Reservoir.

Date	Florida Largemouth Bass	Size	Channel Catfish	Size
1995	100	Adults	0	
1996	21,510	Fingerlings	52,459	Fingerlings
1997	31,475	Fingerlings	0	
1998	178,196	Fingerlings	20,808	Fingerlings
1998	0		50,000	Advanced Fry
1999	131,132	Fingerlings	24,185	
1999	124,500	Advanced Fry	0	
2000	249,887	Fingerlings	41,796	Fingerlings
2001	252,866	Fingerlings	0	
2002	249,919	Fingerlings	27,185	Fingerlings
2003	125,010	Fingerlings	15,081	Fingerlings
2004	123,030	Fingerlings	59,950	Fingerlings
2005	132,259	Fingerlings	50,368	Fingerlings
2006	79,908	Fingerlings	0	
2009	120,510	Fingerlings	0	
2009	564,000	Advanced Fry	0	
2010	31,751	Fingerlings	0	
2011	81,734	Fingerlings	0	
2012	83,816	Fingerlings	0	
2013	20,027	Fingerlings	0	
TOTAL	2,601,630		341,832	

Species profile

LDWF samples taken at Grand Bayou show the following species to be present in the lake.

Gar Family, LEPISOSTEIDAE

Spotted gar, *Lepisosteus oculatus* (Winchell)

Bowfin Family, AMIIDAE

Bowfin, *Amia calva* Linnaeus

Herring Family, CLUPEIDAE

Gizzard shad, *Dorosoma cepedianum* (Lesueur)

Threadfin shad, *Dorosoma petenense* (Günther)

Minnnow Family, CYPRINIDAE

Common Carp, *Cyprinus carpio* Linnaeus

Golden shiner, *Notemigonus crysoleucas* (Mitchill)

Weed shiner, *Notropis texanus* (Girard)

Bullhead minnow, *Pimephales vigilax* (Baird and Girard)

Sucker Family, CATOSTOMIDAE

Lake chubsucker, *Erimyzon sucetta* (Lacépède)
Spotted sucker, *Minytrema melanops* (Rafinesque)

Freshwater Catfish Family, ICTALURIDAE

Black bullhead, *Ameiurus melas* (Rafinesque)
Yellow bullhead, *Ameiurus natalis* (Lesueur)
Brown bullhead, *Ameiurus nebulosus* (Lesueur)
Blue catfish, *Ictalurus furcatus* (Lesueur)
Channel catfish, *Ictalurus punctatus* (Rafinesque)
Tadpole madtom, *Noturus gyrinus* (Mitchill)
Flathead catfish, *Pylodictis olivaris* (Rafinesque)

Pike Family, ESOCIDAE

Chain pickerel, *Esox niger* Lesueur

Pirate Perch Family, APHREDODERIDAE

Pirate perch, *Aphredoderus sayanus* (Gilliams)

Killifish Family, CYPRINODONTIDAE

Blackstripe topminnow, *Fundulus notatus* (Rafinesque)

Livebearer Family, POECILIIDAE

Western mosquitofish, *Gambusia affinis* (Baird and Girard)

Silverside Family, ATHERINIDAE

Brook silverside, *Labidesthes sicculus* (Cope)

Temperate Bass Family, PERCICHTHYIDAE

Yellow bass, *Morone mississippiensis* Jordan and Eigenmann

Sunfish Family, CENTRARCHIDAE

Flier, *Centrarchus macropterus* (Lacépède)
Banded pygmy sunfish, *Elassoma zonatum* Jordan
Green sunfish, *Lepomis cyanellus* Rafinesque
Warmouth, *Lepomis gulosus* (Cuvier)
Orangespotted sunfish, *Lepomis humilis* (Girard)
Bluegill, *Lepomis macrochirus* (Rafinesque)
Dollar sunfish, *Lepomis marginatus* (Holbrook)
Longear sunfish, *Lepomis megalotis* (Rafinesque)
Redear sunfish, *Lepomis microlophus* (Günther)
Spotted sunfish, *Lepomis punctatus* (Valenciennes)
Bantam sunfish, *Lepomis symmetricus* Forbes
Florida largemouth bass, *Micropterus floridanus* Kassler et al.
Northern largemouth bass, *Micropterus salmoides* (Lacépède)
White crappie, *Pomoxis annularis* Rafinesque
Black crappie, *Pomoxis nigromaculatus* (Lesueur)

Perch Family, PERCIDAE
 Cypress darter, *Etheostoma proeliare* (Hay)
 Logperch, *Percina caprodes* (Rafinesque)

Genetics

Grand Bayou has been stocked with Florida strain largemouth bass since 1995. Florida strain largemouth bass are stocked into the reservoir to incorporate a genetic trait associated with larger maximum sized adult fish. Samples taken from electrofishing show that over time, the percentage of bass with Florida influence (F - F_x) has ranged from 6 percent (1998-1990) to 60 percent (2003-2004). Sampling has indicated that largemouth bass with the genetic signature defined as pure Florida have ranged from 0 percent (1997-1998 and 2009-2010) to 19 percent (2005-2006). Genetic testing results for largemouth bass are shown in Table 6.

Table 6. Genetic analysis of largemouth bass taken from John K. Kelly Grand Bayou Reservoir.

Year	Number	Northern	Florida	Hybrid	Florida Influence
1996	102	86%	3%	11%	14%
1997	49	86%	0%	14%	14%
1998	95	94%	2%	4%	6%
1999	59	80%	8%	12%	20%
2000	74	61%	15%	24%	39%
2001	49	63%	14%	23%	37%
2002	46	70%	11%	19%	30%
2003	52	79%	4%	17%	21%
2004	53	40%	13%	47%	60%
2005	53	49%	19%	32%	51%
2009	45	87%	0%	13%	13%

Threatened/endangered/exotic species

No threatened or endangered species of fish found in reservoir.

Several non-native plants are found in Grand Bayou Reservoir including; water hyacinth, alligator weed, hydrilla, and giant salvinia.

CREEL SAMPLING

Historic information / Type

A creel survey was initiated in May 1997 to determine angler effort and catch rates. This access point survey included a count of trailers and bank fishermen. Interviews were conducted on two weekend days and one weekday per month during the remainder of 1997. In 1998, the creel survey was continued with efforts increased to six days per month during

the peak periods of March through October, and three days per month from November through February. In 2001, the creel survey followed a schedule similar to that in 1998. An angler opinion survey was also conducted in conjunction with the creel surveys to determine the angler opinion of the 14" – 17" slot limit. During the 1998 creel survey, 82% of anglers were in favor of the 14" – 17" slot limit. During the 2001 survey, 63% were in favor of the regulation.

Current methods

No creel census survey currently underway on the reservoir.

Hydrological changes

None noted.

WATER USE

Hunting

Waterfowl hunting is allowed on Grand Bayou Reservoir. Only floating blinds are allowed by the lake commission and all blinds must be removed no later than 30 days after the close of duck season.

Skiing

This reservoir is a popular destination for skiing and recreational boating.

Scuba Diving

Water clarity at this reservoir is not sufficient for recreational diving activity.

Swimming

A swimming area is located at the park site of Grand Bayou Resort.

Irrigation

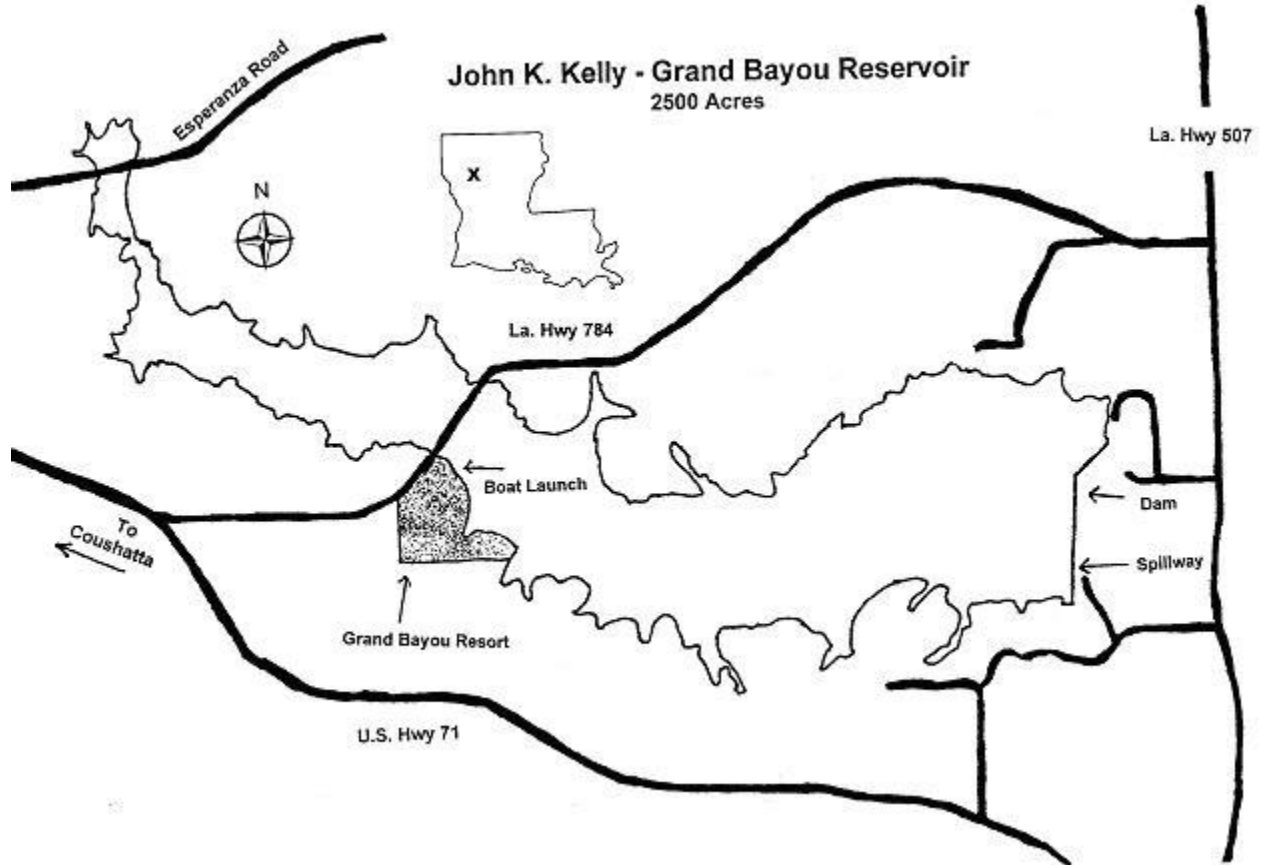
Reservoir water is used for lawn irrigation by some shoreline property owners.

Boating

Houseboats are not allowed on the lake. Houseboat is defined by the Grand Bayou Reservoir Commission as any vessel with living quarters on board. In addition any vessel with a toilet on board is only allowed to operate on the reservoir in daylight hours and must be removed from the lake during the night. These measures are in effect to limit the discharge of sewerage into the reservoir and protect the water supply.

APPENDIX I
[\(return to boat docks\)](#)

Grand Bayou Map



APPENDIX II
([return to typemap](#))

Type Maps and Narratives

Aquatic Vegetation Typemap 2011
John K. Kelly – Grand Bayou Reservoir
2,500 Acres
Red River Parish, Louisiana

