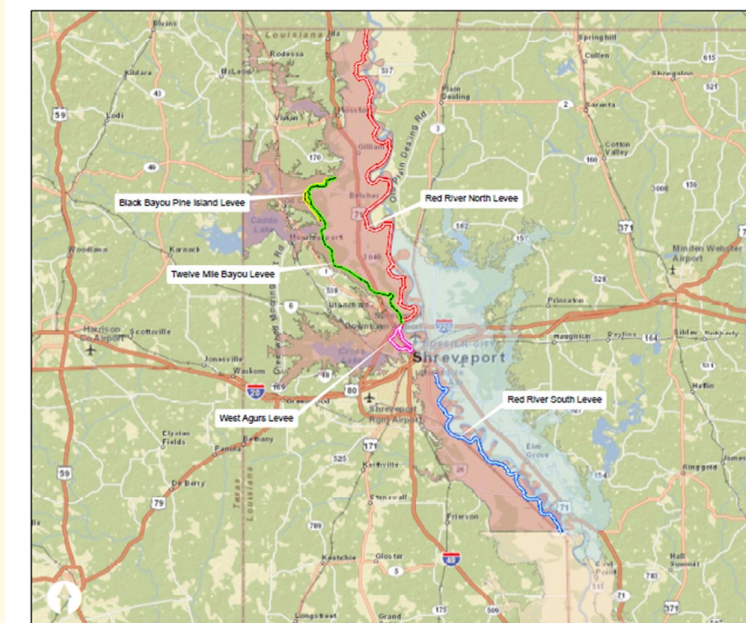


CADDO LEVEE DISTRICT



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Shreveport, LA 71107

www.caddolevee.org

Phone: (318) 221-2654

2016 / 2017 ANNUAL REPORT

ADMINISTRATOR'S MESSAGE

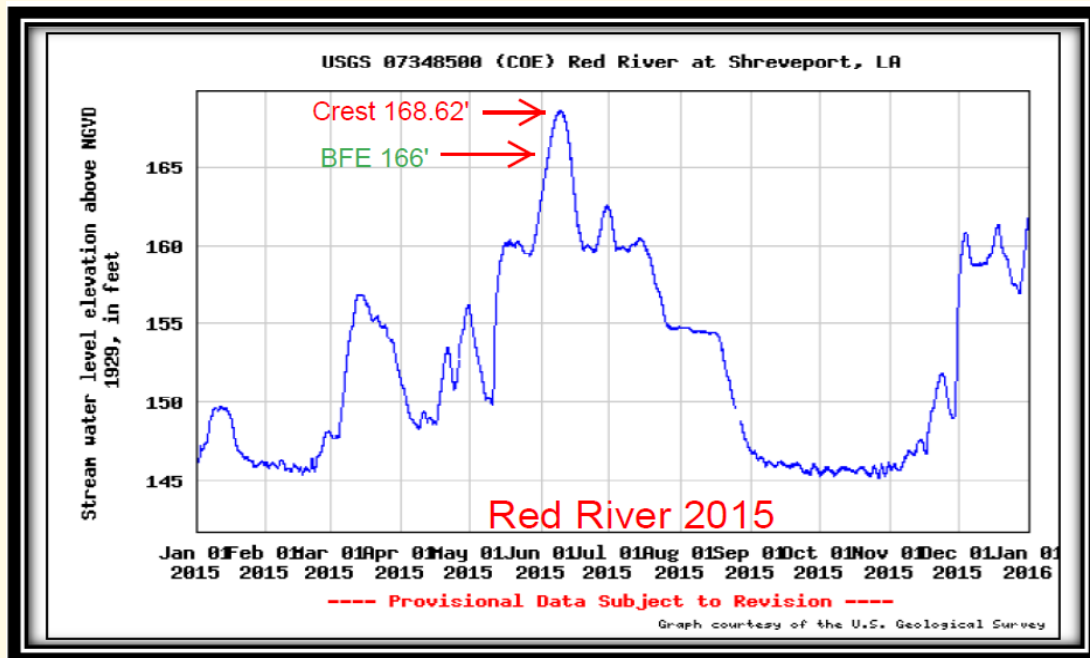


Working for Caddo Levee District and serving the residents of Caddo Parish has been an honor. Serving the public has been a fulfilling experience for me. After more than 25 years of working for the City of Shreveport's Engineering Division, I joined Caddo Levee District on May 1, 2014 as the Administrator.

During March of 2015 and 2016, the north part of the parish experienced a significant flood event with a crest of 41.01 feet on Twelve Mile Bayou on March 16. This flood stage elevation was the highest recorded flood stage elevation in recent history, since 1945 (71 years). Also Caddo Lake recorded a historical peak flood elevation since the completion of the new dam in

1971. Flood waters overflowed the dam with a depth of more than three (3) feet and the gauge at the dam recorded a flood stage of 180.06 feet which is the highest since 1966 (50 years). The changes in the Red River's hydrologic and hydraulic characteristics in addition to the excessive record setting rainstorms resulted in unprecedented and devastating flooding in Caddo and Bossier parishes. We were fortunate that most of the flooding was confined to open space areas (low lying areas) that are located in the flood zone and the damage to property was minimal.

In mid to late May 2015, a series of heavy rain storms pounded parts of Oklahoma and Texas that are located in the Red River Basin. These rain storms broke 120 years of total monthly rain records for the area (totals of more than 20 inches were recorded in some areas which is 600% above normal). This record rainfall resulted in flooding of the Red River and produced a historic crest of 37.14 feet (168.62') in Shreveport on June 9, 2015. This crest exceeded the most recent crest of 34.0 feet that was set in May, 1990 and was the highest crest of the Red River in 70 years. This historic flood event caused major flooding in the cities of Shreveport and Bossier City and Caddo and Bossier parishes.



Continued Administrator's Message

The levee district's crews worked hard during the flood to insure the levees and floodgates were operated and maintained properly and provided the needed flood protection for lives and property. Also, the USACE (Corps of Engineers) provided full support during the flood by patrolling the levee system daily and monitoring seepage to insure sand boils would not develop and cause damage or breach of the levee system. I am very pleased to report that our levee system along the Red River and Twelve Mile Bayou performed well and provided the needed flood protection for our residents.

After the floods of 2015 and 2016, a detailed inspection of the levee system was performed and a field survey of the high water marks was conducted. The purpose of the survey was to assess the overall conditions of the levee system and to determine if any future improvements to the levee system and flood control structures are needed to insure flood protection will be provided from similar storms or one's with higher flood stage elevations in the future.

Fighting these flood was a successful joint effort by all the local government organizations with the assistance of the USACE. Caddo Parish Public Works, the City of Shreveport, Caddo Levee District, Caddo Sheriff's office, the U.S. Army National Guard, the U.S. Army Corps of Engineers (Corps) and other community organizations did an outstanding job during these floods and played a significant role in protecting lives and property.

The local government organizations in Caddo and Bossier Parishes including the Red River Valley Association and the Offices of Homeland Security of Caddo and Bossier parishes formed a Flood Technical Committee to assess causes of River's higher flood stage elevations. The Committee conducted numerous meetings with the Corps, FEMA, US Geological Survey and National Weather Service. Based of the Committee's recommendations the Corps initiated a 1.5 million dollars Hydraulic Study and Sediment Survey of the Red River's Channel from Lock 1 to Hwy 72 Bridge in Arkansas.



MEET THE BOARD

Caddo Levee District's Board of Commissioners

James T. Sims
President



Patrick Harrison
1st Vice President

Carolyn C. Prator
2nd Vice President



Helen G. Smith
Member

Gary Procell
Member

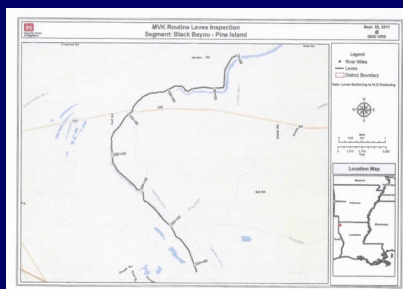
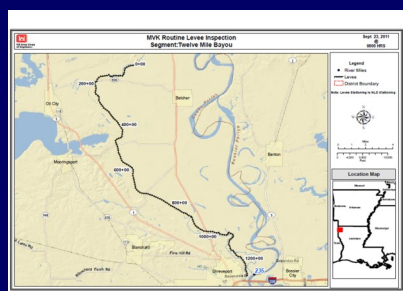
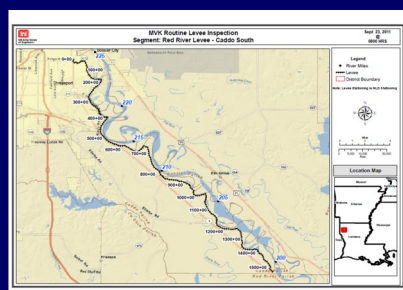
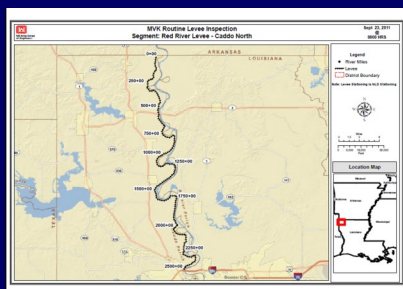


Willie L. Walker
Member

Kandi Moore
Member



LEVEES



The District is charged with operating and maintaining the integrity of approximately 119 miles of a levee system in Caddo Parish that provides flood protection for over 30,000 residents and 200,000 acres of land.

CLD staff monitors the levee system on regular basis, repairs ruts, eroded areas, slides, cave-ins, animals damages and borrows, damaged fences and gates, and degraded levee crown surfaces, ramps and washouts. In addition to mowing grass, the staff sprays areas to control weed growth and nuisance vegetative growth, trims & weed-eats around levee gates and fence lines, etc. Overhanging tree branches and small trees within the statutory easement are removed as needed to ensure the integrity of the levee system is maintained.

The USACE- Levee Safety Program Division conducts annual inspections of levee system and DOTD's Public Works & Water Resources Division- Levee Safety staff performs quarterly inspections. The entire levee system, with the exception of the Twelve Mile Bayou Levee segment, have been certified by FEMA on April 18, 2013 and are classified by the USACE as minimally acceptable (no areas with an unacceptable rating).

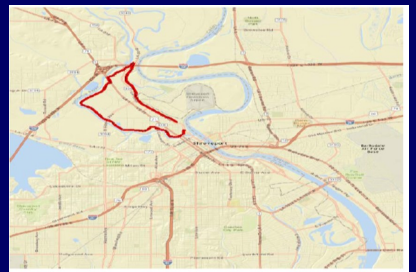
The District's levee system consists of the following five (5) segments:

- 1) **The Red River main levee (80.37 miles).** Extends 51.52 miles from north of the intersection of Cross Bayou and Red River to the hills at the Arkansas-Louisiana State line.

LEVEES— CONTINUED

The other 28.85 miles extend downstream from the Shreveport-Barksdale Highway to the Caddo-Red River Parish Line.

- 2) The **Twelve Mile Bayou** Levee segment is 23.92 miles long and it extends from the Red River Levee at Twelve Mile Bayou Bend, north of Shreveport, to the high ground, approximately 9 miles above the mouth of Black Bayou, at Gamm Road, southwest of the town of Gilliam.
- 3) The **Black Bayou-Pine Island** Levee segment is approximately 7.01 miles long and it extends from the high land, approximately one mile northeast of Caddo Lake Dam, to the high land above the mouth of Black Bayou.
- 4) The **West Agurs** Levee segment is 5.02 Miles and it extends along Cross Bayou and Twelve Mile Bayou, from the Red River Levee at Market St. and Cross Bayou, in Shreveport, to the Red River at Clyde Fant Parkway in Downtown Shreveport.
- 5) The **Cherokee Park** Levee segment begins at a point on the Red River Levee , close to Grimmerett Drive and Ute St., and runs eastward, for 1.53 miles, to the high ground at the North end of Shreveport Downtown Airport's Runway.



DRAINAGE

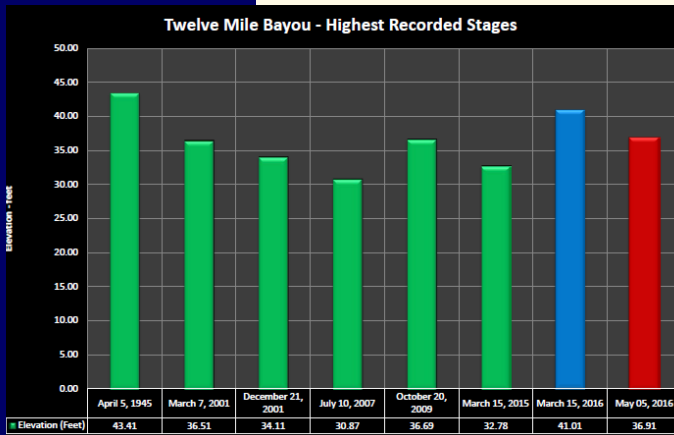
The drainage system, operated and maintained by the Levee District, includes natural drainage bayous (ditches and canals), paved

drainage ditches, flood control structures, floodgates and one storm water pumping station. These drainage facilities, in conjunction with the levee system, provide flood protection to residents and property in Caddo Parish. Removal of obstructions, clearing, dredging, grading and mowing the high banks of the paved canals is performed by CLD staff to ensure proper

drainage is provided.

The pump station, flood control structures and the floodgates are inspected on a regular basis. The floodgates are cleaned and painted, as needed. The Agurs Pumping Station serves the North Shreveport Business and Commercial area which includes Caddo Parish Correction Facility and the North Louisiana Technical College. The Drainage Basin for the Station is approximately 1.595 Square Miles (1020 Acres). Summary of the Stations characteristics:

- Two 200 HP Vertical Turbine Electric Pumps (One was installed in 1966 and the other in 2004).
- Inlet Intake Elevation 148'
- Outlet Discharge Elevation 158.23'
- Two 36" Discharge Pipes equipped with Siphon-Breaker Valves.
- Pumping Capacity is 25,000 gpm.



Capital Projects

Capital projects which are implemented by CLD include: levee crown gravel surfacing; erosion, scour and slide repairs; rip rap revetment; pipe installation and rehabilitation; flood gates installation and repairs; paving ditches and repairing concrete and paved canals; dredging and grading canals; etc. Large scale projects are advertised for bids in accordance with Louisiana Public Bid Laws and licensed contractors are selected by the bid process to perform the work. Small scale projects and minor repairs are performed by CLD's in-house crews.

Since 2015, the following capital improvements and maintenance projects were completed:

- ♦ **Riprap Revetment at Bishop's Point** to protect the Red River levee from scour and erosion by flooding from the Red River (\$247,273.00).
- ♦ **Lateral C-8 Canal (S. Broadmoor ditch)** in Southeast Shreveport paved ditch panels removal and replacement and erosion repairs (\$85,222.00).
- ♦ **Black Bayou/Pine Island Levee** surfacing with crushed aggregates to ensure the riding surface is stabilized and accessible during flood fight and prevention activities (\$387,039.00).
- ♦ **Bayou Pierre Channel Repairs and Rehabilitation** between Pierremeont Road and Ockley Drive (\$395,500.00).
- ♦ **Black Bayou/Pine Island and West Agurs Levees** culverts rehabilitation by slip lining (\$272,946.00).



Capital Projects

- ♦ **West Agurs Levee/Twelve Mile Bayou Riprap Revetment South of Cadillac Street** to protect the to protect West Agurs levee from scour, erosion and bank caving of Twelve Mile Bayou (\$233,432.00).
- ♦ **Cherokee Park Levee New Flood Control Structures** in Cherokee Park area to provide flood protection from backwater flooding of the Red River (\$214,797.00).
- ♦ **Twelve Mile Bayou Levee from the Red River Levee to LA 173 (approximately 10.5 miles)** surfacing with crushed aggregates to ensure the riding surface is stabilized and accessible during flood fight and prevention activities (\$551,670.00).

The total cost for these completed projects is \$2,387,897. In addition, the following projects are planned for 2017:

- ♦ **Twelve Mile Bayou Levee from LA 173 to LA 530 (approximately 10.1 miles)** surfacing with crushed aggregates to ensure the riding surface is stabilized and accessible during flood fight and prevention activities (\$528,264.00).
- ♦ **Red River Levee South at the Caddo-Bossier Port** (approximately 1.0 mile) - raising a section of the levee to insure the area is protected from overtopping during flooding and free board is maintained for FEMA certification (\$1,210,500.00).
- ♦ **Shiftail Canal Flood Control Structure Rehabilitation by slip line** (\$675,500.00).



LAND MANAGEMENT (FORESTRY)

The Levee District is responsible for management of approximately 10,000 acres of lands. A full-time forester is responsible for property management, which includes; timber harvesting and re-planting, surface leases (usually one acre plots used for camp sites, and larger tracts of land used for grazing and agricultural). The Caddo Levee District has lease agreements with Caddo Parish Commission- Parks Division that allows the Parish to construct and operate public recreational areas and public boat launches on CLD's property at three (3) locations (Robert Nance Park in Hosston on Black Bayou, Noah Tyson Park in Vivian/Rodessa area on Black Bayou and Horace Downs Park in Mooringsport at Caddo Lake Dam.

Also CLD has an Agreement with the Louisiana Department of Wildlife and Fisheries (LDWF) to manage the Soda Lake Wildlife Management Area (Soda Lake WMA), a 1,300 acre wildlife and public use area with a Boat Launch into Twelve Mile Bayou. The Soda Lake area is a key part of the total wildlife management plan for the Red River Valley in providing wintering waterfowl habitat.



Permits

Permits are reviewed, approved and issued by CLD for all work that is to be performed by all entities (public and private) on or adjacent to CLD's facilities (canals, levees, property, natural bayous) that are under the jurisdiction of the Board. The USACE reviews all permits that might have any impact on the levee system and if it is determined that the proposed work is in conformance with the USACE's District guidelines, and does not adversely affect the levee, the USACE will issue a "No Objection" letter and CLD will proceed with the permit process. The Department of Transportation and Development- Public Works and Water Resources Division's (District 4) office reviews all permits submitted to CLD and provides recommendations to the staff. Letters of "No Objection" are issued if the proposed work to be permitted is in compliance with DOTD's guidelines and has no negative impact on CLD's facilities. The District handles approximately 30 to 35 permit requests per year. In 2015 (January – December) twenty-nine (29) permits were processed by CLD's office, in coordination with the USACE and DOTD.

Permit Fee– (Individuals) \$100.00 (Business/Commercial/Other- Excluding Govt.)- \$500

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Common Types of Permits on the District's Levee System include:

- 1) Ramp Construction
- 2) Utility Crossing
- 3) Electric Powerline Crossing
- 4) Pipeline construction, up-and-over & directional drilling
- 5) Excavation adjacent to levees
- 6) Fences and Gates

REVISED: 2/15/14

**CADDO LEEVE DISTRICT
Permit Request**

Name of Applicant: _____ Date: _____

Mailing Address: _____

Email Address: _____

Main Phone #: _____ Alternate Phone #: _____

Fax Number: _____

Detailed Description of Construction
(must include plan and profile sheet describing the scope of work showing distances and depths)

Location of Construction

Address: _____

Parish: _____ Section: _____ Township: _____ Range: _____

GPS Coordinates (must include topo map with GPS Coordinates): _____

Name of Levee: _____

Name of Professional Engineer/Architect: _____

Please attach check for: _____ \$100.00 Individuals
\$500.00 All others (excluding Government)

Insurance Company Name, Address & Phone #

Note: PROOF OF PERFORMANCE BOND OR INSURANCE BINDER MUST BE SUBMITTED WITH THIS APPLICATION BEFORE PERMIT WILL BE GRANTED.

CERTIFICATE OF INSURANCE OR PERFORMANCE BOND (if requested by CLD) NAMING CLD AS AN ADDITIONAL NOTICEE FOR ALL PURPOSES. INSURANCE POLICY OF \$1,000,000 PROVIDED THAT THE INSURER WILL IMMEDIATELY NOTIFY CLD AND APPLICANT OF ANY CHANGES IN COVERAGE FOR ANY REASON*

Applicant acknowledges and grants unto CLD the right to any information pursuant to this policy or bond and, with that right, the right to directly contact the insurer to determine any insured's status or any other right under the policy.

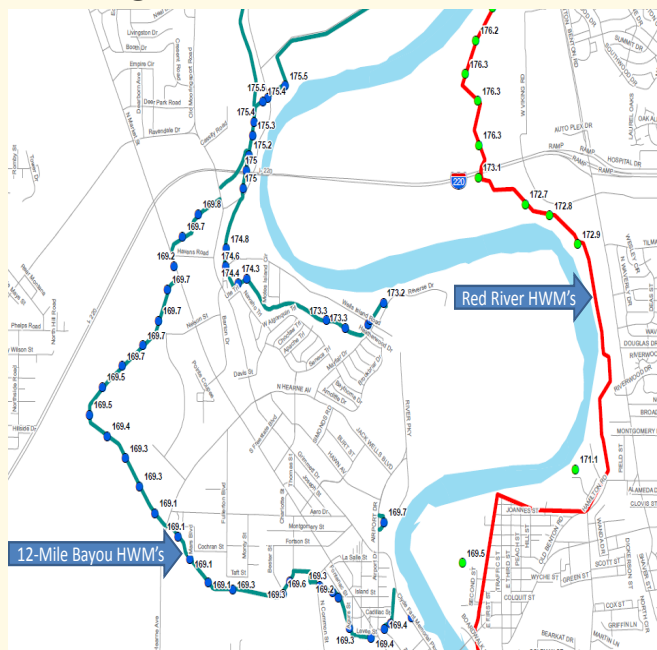
REPORTS

The Levee District is tasked with the operation and maintenance of the levee and drainage system to provide flood protection to life and property in the Eastern part of Caddo Parish from the Red River and its tributaries. The District employs 16 to 18 employees with an operating budget of \$2.40 to \$2.50 million dollars annually. During 2016 and 2017, the staff of Caddo Levee District accomplished the following tasks:

- The 119 miles of levee were mowed 6 to 7 times a year to insure the grass height is maintained to the USACE specifications. Damage caused by animals, mother nature and vehicles was repaired. Degraded ramps were restored to proper grade to ensure the Levee's height is maintained. The concrete paved ditches located in the urban area (City limits of Shreveport) were mowed 5-6 times per year as needed, cleared and cleaned silt and debris.
- All the floodgates were inspected on a regular basis, repaired and painted, if needed. Major repairs included replacement of shaft and hoist heads of Agurs Pump Station's 10' x 10' floodgate.
- The levee system was inspected by the USACE (annual inspection) and DOTD's Public Works Division (semi-annual inspection). Caddo Levee District's levee system continues to be Minimally Acceptable and meets the USACE eligibility requirements.
- Twenty-Nine (43) permit requests were processed by the District for various activities which include the installation of fences/gates, pipeline installation or repair, power line crossings, new ramps/driveways, temporary water line crossings and other installations or construction activity that could impact the levee or drainage systems operated and maintained by the District.
- Four (4) capital projects were completed in 2016-2017 for a total of \$1,272,847.62. The projects included: **(1)-Gravel surfacing of Twelve Mile Bayou Levee segments from I-220 to Hwy. 173** (approximately 10.45 miles long), **(2)-Riprap revetment to protect West Agurs Levee South of Cadillac Street**, **(3)-Rehabilitation by Slip lining Black Bayou / Pine Island Culverts and one of West Agurs 36" Culverts**, **(4)-Two new two Flood Control Structures and Gates at Cherokee Park Area Levee.**

REPORTS-CONTINUED

● Both the June 9, 2015 flood of the Red River and the March 15, 2016 flood of Twelve Mile and Caddo Lake were historical and devastating to our communities in Caddo and Bossier Parishes. The Red River Flood Stage reached a record high of 37.14' (167.62' NGVD) on June 9th. This recorded flood stage was the highest in 70 years when the river crested at 38.40' (168.88 NGVD) in 1945. Twelve Mile Bayou recorded a peak flood stage elevation of 41.01 feet on March 16, 2016 which was the highest recorded since 1945 (71 years) while Caddo Lake recorded a peak flood stage elevation of 180.06 feet NGVD on the same date which was the highest in the Lake's recent history since 1966 (50 years) and after the new dam was completed in 1971. Caddo Levee Systems along the Red River and Twelve Mile Bayou performed very well during these unprecedented flood events and provided the required and needed flood protection. This was the first time in recent history flood waters rose above the toe of the levee and remained against the levee for an extended period of time (10-15 days and at some locations). After the flood waters receded, detailed inspections of the levee system were performed to insure the integrity of the levee system is preserved and the levees are structurally sound. Also a detailed field survey of the high water marks was performed to allow for assessing the height of the levee system and insure flood protection will be provided in the future from similar floods with higher crest elevations.



Date	HWM	Flow(kcfs)
30-Jun-15	31.05	132
9-Jun-15	37.14 (2.64') 1.27"/year	206
1-Nov-09	29.45	131
5-Mar-01	29.8	135
15-May-90	34.5 (1.68') 0.61"/year	230
29-Apr-73	26.55	156
5-May-66	29.6	174
8-May-58	33.7	249
11-Jun-57	32.82	228
20-May-53	27.32	173

REPORTS-CONTINUED

- Bids for timber sale on a 70 acre tract of land, Sections 35, T20N, R16W were received during November, 2016 with the highest bid in the amount of \$47,314.34.
- Initiated Phase II of the Field Survey of the campsite surface leases managed by the District. Approximately 81 lots were surveyed and lot plans were prepared in Phase I. Also Guidelines for original leases (Campsite Permit) were developed and adopted by the District. The Guidelines and Field Survey are critical for managing the surface leases.
- The Levee District's Board in June of 2016 and May of 2017 adopted a **ZERO (0.00) millage tax rate** on all properties subject to taxation by Caddo Levee District. This is the Fifth year for adopting 0.00 millage. The total savings for the tax payers of the District is approximately **12 million dollars** in the last five (5) years. The District's self-generated revenues (campsite & grazing leases, timber sales, and mineral lease royalties) were adequate to fund the operation and maintenance and the collection of the tax millage was not necessary.



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