

2016 Highwater Event

Record Flooding for January - 5th Highest Flood Since 1927



In the Fall of 2015 we were experiencing a Super El Nino weather pattern. It was the highest El Nino in the past 100 years. During an El Nino weather pattern the temperature of the Pacific Ocean is at least 0.5 degree warmer than normal. In the Fall of 2015 the Pacific Ocean was over 2.5 degrees above normal. We experienced above average rainfall last Summer and Fall resulting in record setting stages on the Mississippi River in July and August 2015 and heavy rainfall in December 2015 resulted in record setting January 2016 highwater stages that ended up being 8' above flood stage. The previous record highwater for January was back in 2005 when Greenville reached 50.8'. This year we eclipsed that record by 5.4'.

By mid-December 2015 all eleven problem areas from the 2011 epic Flood had a permanent solution constructed at

On December 28, 2015 the National Weather Service predicted that the Greenville Gage would crest at 60' on January 13, 2016. The situation called for Mississippi Levee Board action and on December 29, 2015 a Special Board meeting was held and a state of emergency was declared with the Chief Engineer being given full authority to take all actions necessary to fight the flood event. A Phase I Flood Fight Organizational Meeting was held at the Levee Board office on January 4, 2016. Levee Inspectors from the U.S. Army Corps of Engineers and the Yazoo-Mississippi Delta Joint Water Management District started inspecting the levee on January 4th.

All of our 2011 flood problem areas were closely monitored during the 2016 highwater event and all of them performed as designed and no sandboils were found and no temporary corrective action



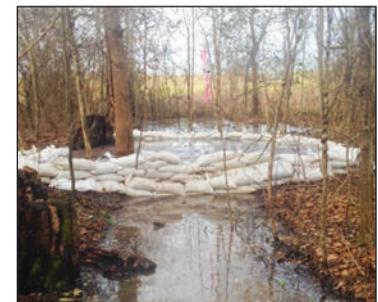
Above Greenville Relief Wells Flowing



Greenville City Front



MS Levee Board Crew Building Sandbag Ring Around Sandboil at Ben Lomond



Sandbagged Sandboil at Ben Lomond



Sandboils in Valewood Ditch Near the Levee



Crew Blocking Up Culverts in Valewood Ditch



Aerial of Greenville City Front



Aerial of Steele Bayou Structure



Levee Inspectors



Levee Inspectors - Corps, YMD & Levee Board

each site consisting of relief wells and/or landside seepage berms. The eleven sites were: Yazoo Backwater (YBW) Levee; Buck Chute; Albemarle; Francis; Above Greenville; Greenville; Avon; Leota; Lake Jackson; Ben Lomond and Tara Wildlife.

was needed at any of these locations. The Vicksburg District is to be commended for designing and constructing each permanent solution. \$11.3M was spent building a total of 187 relief wells and 20,405' of new landside seepage berms.

The Levee Board crew had

to again build a weir in Black Bayou Cut-off north of Greenville at Sta. 3675. Valewood Ditch had just been cleaned out in October 2015 and many large sandboils were discovered in the bottom of this ditch during the highwater event from Sta. 6193-6350. The

Levee Board Crew had to block off several pairs of 5' dia. concrete culverts at Sta. 6305 and 6330 and an 8' wide concrete box culvert at Sta. 6367.

Following the 2011 Flood the Corps installed relief wells

CORPS CORNER: Meet Col. Michael C. Derosier

New Vicksburg District Engineer

BY GREGORY RAIMONDO, *Vicksburg District*

The U.S. Army Corps of Engineers (USACE) Vicksburg District held its Change of Command Ceremony July 26, 2016, at the Vicksburg Convention Center. Col. Michael C. Derosier assumed command of the 68,000-square mile District from outgoing Commander, Col. John W. Cross. Maj. Gen. Michael C. Wehr, Commander of the Corps' Mississippi Valley Division, officiated the ceremony.

Col. Michael C. Derosier comes to the District after having served as the Deputy Commander of Mississippi Valley Division for the past year. He is a graduate of the United States Naval War College, Newport, Rhode Island. He was Commander of the Corps' Detroit District from 2010-2012. He served as the military assistant to the Assistant Secretary of the Army for Civil Works, the Pentagon, from 2012-2014.



US Army Corps of Engineers®

His previous assignments also include platoon leader, company executive officer and assistant brigade engineer, 41st Engineer Brigade, Fort Drum, New York; (Operation Continue Hope, Somalia and Operation Uphold Democracy, Haiti); company commander, B Company, 62nd Engineer Battalion, Fort Sill, Oklahoma; project engineer, Far East District, Chunchon, South Korea; resident engineer, Schriever Air Force Base, Omaha District, USACE, Colorado Springs, Colorado; battalion operations officer and executive officer, 14th Engineer Battalion, Fort Lewis, Washington (Operation Iraqi Freedom).

Col. Derosier earned a Bachelor of Sci-

ence degree in civil engineering from the United States Military Academy, West Point, New York. He earned a Master of Science degree in civil engineering from the University of Colorado-Boulder in 2000; a Master of Military Art and Science from the School of Advanced Military Studies in 2005; and a Master of Science degree in National Security and Strategic Studies from the United States Naval War College in 2015. His military education includes U.S. Army Ranger, Sapper, Airborne and Air Assault courses, the Engineer Officer Basic and Advanced courses, and the Command and General Staff College.

Col. Derosier is a Registered Professional Engineer in the State of Missouri. He is married to Monica of Mentor, Ohio. ■



Col. Derosier

Remembering George C. Grugett

MARCH 7, 1925 – JULY 18, 2016

A Soldier, Public Servant, Leader & Friend

BY STEPHEN GAMBRELL, *MVFA*

When you remember the greatest generation there is one image that will flash on the screen of life ... that of George Grugett. He was born in McConnell, TN, attended school in Dyersburg, TN for 11 years and graduated in 1942 from Bryars Hall in Covington, TN. George was a WWII bomber pilot, 1943-1945 — a soldier that provided freedom for people he never knew and for us at home. He flew 47 missions in a B-25 bomber as an eighteen year old over Italy and Southern Europe. Fano, Italy honored George with a key to the city a few years ago when he visited and enjoyed the beautiful town!

George was a faithful champion of flood control and navigation that made and saved our nation billions of dollars and protected our people, their land and homes. He was a public servant for 35 years with the Corps of Engineers that paid close attention to people



and the engineering works that have made us insanely productive and gratefully prosperous. For the following 33 years Grugett was an unwavering strong voice of the great people who live and work in the Mississippi Valley. He was the voice of a system that is the eighth wonder of the world — The Mississippi River and Tributaries Project.

He was a friend to many — a never boring, always fresh and entertaining speaker and a very gracious host.

He didn't chase the money ... he had an internal drive to focus on the greater good ... people plus their land that produced a vibrant economy for seven decades.

Grugett was the best in the business ... a servant, a professional, a consistent champion and advocate for soldiers, he was a faithful and loyal friend.

George C. Grugett has finished his mission and he's home. Our country is a better place because of him and his life of service. We are privileged to call him friend. ■



Stephen Gambrell, George Grugett & Rob Rash



MV George Grugett

Interior Flooding

1,000 year rainfall event hits Greenville, MS



Greenville - Business Flooded

On March 8-11, 2016 there were 16" of rainfall that fell in Greenville over a four-day period — this is the 1,000-year rainfall event. 14.4" fell in Clarksdale and 14.3" fell in Cleveland over the same four-day period — this was the 200-year rainfall event. In Monroe, LA they had 10.9" in one day and 20.7" over a four-day period — this was well above a 1,000-year rainfall event. New records were set on the following interior streams: Coldwater River at Marks and Darling; Big Sunflower River at Clarksdale and Lombardy; and the Bogue Phalia at Leland. Over 500 homes were flooded in Washington County, 338 homes flooded in Bolivar County, 223 homes flooded in Coahoma County, and 100 homes flooded in Quitman County. Even though there was widespread flooding due to the magnitude of this storm, our interior streams did a good job of evacuating the floodwater from the Mississippi Delta. ■



Greenville - Bayou Road Underwater and Car Submerged



Greenville - Homes Flooded Along Broadway



Clarksdale - Lyons Eastgate Subdivision Flooded



Heads - Prather Headquarters



Leland - House Flooded Along Hwy 82



Marks - Hwy 6 & Hwy 3



Freedom Village - Homes Flooded



Leland - Hwy 82 & Doolittle Road Flooded



Leland - Bogue Phalia at Hwy 61



Greenville - Hwy 1 North - Meadowood Home Flooded



Greenville - Tampa Drive Home Flooded

Mississippi Levee Board Meeting Recaps

OCTOBER 2015

The Board took the following action at the October 5, 2015 regular board meeting: authority was given to advertise for worker's compensation insurance; November 10, 2015 was set as the date for annual levee inspection trip; and received report from the Chief Engineer on all ongoing projects in the Mississippi Levee District.

JANUARY 2016

The Board took the following action at the January 11, 2016 regular board meeting: reviewed bids and awarded Worker's Compensation Insurance to South Group Insurance; authorized advertisement of bids for Business Auto/Public Officials & Employees/Liability/ Contractors Equipment Insurance, chemicals and vehicles; concurred with permits issued to: Mississippi Transportation Commission for right of way needed to construct bridge improvements on Hwy. 14

bridge at Steele Bayou and Hwy. 16 bridge at Little Sunflower River; authorized advertisement for a ¾ ton 4 wheel drive pick-up; authorized a delegation to the MVFCA Congressional Meetings February 28–March 2 in Washington, D.C. to discuss FY 2016 Appropriations for Corps projects in the Mississippi Delta; and received status reports on all the ongoing projects in the Mississippi Levee District and meetings attended.

APRIL 2016

The Board took the following action at the April 4, 2016 regular board meeting: reviewed bids and agreed to accept low bids on chemical purchases for next 12 months, awarded general liability, automobile and property insurance to South Group Insurance, and awarded purchase of a 2016 4WD ¾ ton pick-up truck to Kossman's; concurred with permits issued to: AT&T Mississippi for fiber optic line crossing Mile 46.68 of Steele

Bayou; and received status reports on all ongoing projects in the Mississippi Levee District and meetings attended.

JULY 2016

The Board took the following action at the July 11, 2016 regular board meeting: adopted 2016-2017 budget; set ad valorem tax rate of 2.90 mils (no change); received Chief Engineer's Annual Report; accepted bid on helicopter application work by Provine Helicopters; concurred with permits issued; authorized a delegation to the MVFCA Annual Fall Congressional Meeting September 13-14 in Washington, D.C. to discuss FY 2017 Appropriations for Corps projects in the Mississippi Delta; authorized a delegation for the National Waterways Conference September 21-23 in Norfolk, VA; and received status reports on all ongoing projects in the Mississippi Levee District and meetings attended. ■



COMMISSIONERS RE-ELECTED

Ballard, House & Nichols have a combined 70 years of service

Levee Board Secretary Ginger Morlino (right) swears in re-elected Levee Commissioners Jimmy House, Roy Nichols and Fred Ballard (left to right). Ballard represents Washington County and has been on the Levee Board for 28 years since first being elected back in 1988. House represents Bolivar County and has been on the Levee Board for 22 years since first being elected back in 1994. Nichols represents Issaquena County and has been on the Levee Board for 20 years since first being elected back in 1996. ■

Staff Profile:

Jimmie Lee Huff

Equipment Operator

Jimmie Lee Huff, equipment operator on the Mississippi Levee Board Maintenance Crew, began working for the Levee Board April 2014.

Jimmie Lee was born in Scott, MS and grew up in Lobdell. He is a 1983 graduate of Nugent Center in Benoit (now Ray Brooks School) where he was a standout track relay man and basketball player. During his senior season he won the State Championship in the 440 yard dash and he was the lead-off runner in several State Championship relay races.

Jimmie Lee has 10 children. He and his wife Jennifer have



three children at home.

A skilled operator and mechanic, Jimmie Lee enjoys working on cars in his spare time. ■

2016 MISSISSIPPI LEVEE BOARD



COMMISSIONERS:

Fred A. Ballard, Jr., President, *Washington County*
Kenneth Rodgers, Vice-President, *Humphreys County*
James W. House, Jr., *Bolivar County*
Nott Wheeler, Jr., *Bolivar County*
Roy Nichols, *Issaquena County*
Hank Burdine, *Washington County*
Paul Hollis, *Sharkey County*

STAFF:

Peter Nimrod, *Chief Engineer*
Robert M. Thompson, *Assistant Engineer*
Heath Douglas, *Attorney*
Judy B. Ross, *Treasurer*
Ginger Morlino, *Secretary*
Patrick Bolls, *Maintenance Superintendent*
Rick Boyd, *Engineering Technician*



Levee Board Attends Meetings in D.C.

Annual meeting with the Mississippi Congressional Delegation seeks appropriations for flood control projects and provides ongoing project updates

The Mississippi Levee Board traveled to Washington, D. C. and met with the Mississippi Congressional Delegation during March 1-2, 2016. This annual trip provides the delegation with a status update of ongoing flood control projects in the Mississippi Delta and it is an opportunity for the Levee Board to discuss funding requirements for U.S. Army Corps of Engineers flood control projects in the Mississippi Delta. The Board also heard testimony before the House Mississippi River Congressional Caucus on March 2nd at the U.S. Capitol. ■



Sen. Thad Cochran with Mississippi Levee Board & Port Officials



Sen. Roger Wicker with Mississippi Levee Board & Ports



Cong. Bennie Thompson with Levee Boards & Ports



Cong. Trent Kelly with Mississippi Levee Board & Greenville Port

FY 2016 & FY 2017 Appropriations

\$500M needed for the MR&T Project for FY17

The President's FY 2016 Budget released on February 6, 2015 included only \$225M for the Mississippi River & Tributaries Project (MR&T) Project. On April 15, 2015 the House passed \$275M. On May 21, 2015 the Senate passed \$330M. On December 16, 2015 Congress completed negotiations and provided \$345M for the MR&T.

FY 2016 MR&T Project Appropriations

President's Budget	\$225M
House Committee	\$275M
Senate Sub-committee	\$330M
Conference Report	\$345M

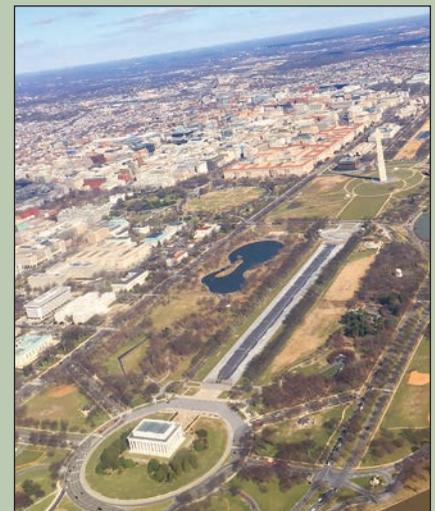
The President's FY 2017 Budget released on February 9, 2016 included only \$222M for the MR&T Project. On April 12, 2016 the House passed \$345M. On April 14, 2016 the Senate passed \$368M.

FY 2017 MR&T Project Appropriations

President's Budget	\$222M
House Committee	\$345M
Senate Sub-committee	\$368M
Conference Report	\$???
Levee Board Request	\$500M

The MR&T Project is only 89% complete. **The Corps needs a \$500M appropriation each year to fully fund all of our much-needed flood control projects.** The MR&T Project protects over 4 million people living in the Mississippi River Valley. Since 1928 the MR&T Project has cost \$14B and has prevented \$612B in damages. The MR&T Project has a 44 to 1 return on each dollar invested!

A preferred option is for Congress to appropriate \$7.1B up front to "buy down" the remaining features, recover the system from the 2015/2016 flood, and to finish the comprehensive system of the MR&T Project so that it will pass the Project Design Flood. If Congress funds the MR&T Project on an annual basis at the same rate of the last decade — it will take over 30 more years to complete and will cost three times that amount. By "buying down" and investing in the MR&T Project up front — this action will solidify the completion of the MR&T Project, get the project done quicker and more efficiently, and will save Americans billions of dollars in construction costs and billions in damages prevented to local land and people. Congress appropriates over \$20B each year to the Corps to build infrastructure in foreign countries — it's time to re-invest in America's infrastructure. ■



Levee Enlargement Projects



465L - Loading Borrow Material



465L - Construction



465L - Construction

Work is progressing on the levee enlargement and berm projects in the Mississippi Levee District. The Corps has completed 35.4 miles of levee and currently has another 17.4 miles under contract of the original 69 miles of deficient levee. Item 468L, a 4.7 mile levee enlargement project, is 98% complete. This item is on the northern portion of MS Hwy 465 to Goose Lake Road. Item 463L, a 2.7 mile levee enlargement project, is currently 88% complete. This item goes from just above Chotard Resort to just below Laney's Camp on MS Hwy 465. Item 509L, a 3.9

mile levee enlargement project is currently 98% complete. This item goes from Lake Jackson to the completed Item 502L. Item 511L, a 3.4 mile levee enlargement project was awarded to My Company, Inc. of Topeka, KS and is currently 37% complete. This item goes from Leota to Lake Jackson. Item 465L, a 2.7 mile levee enlargement and berms project, was awarded to Carter's Contracting Services, Inc. on September 24, 2015 and is currently 10% complete. This item ties Items 468L and 463L together between Goose Lake Road and Chotard Resort. ■



465L - Unloading Borrow Material



509L - Final Grading

Levee Enlargement Project Update:

Completed Work – 35.4 miles
Items 474L, 477L, 488L, 496L & 502L

On-going Construction – 17.4 miles
Item 468L – 4.7 miles – 98% Complete
Item 463L – 2.7 miles – 88% Complete
Item 509L – 3.9 miles – 98% Complete
Item 511L – 3.4 miles – 37% Complete
Item 465L – 2.7 miles – 10% Complete

Future work remaining – 16.2 miles



511L - Topping Out The Levee



509L - New Limestone Road Surface on Completed Levee

Levee Slide Repairs 42 Slides Within the MS Levee District

The Corps of Engineers Hired Labor Crew has been busy repairing slides in the Mississippi Levee District. There are 42 levee slides scheduled to be repaired this year.



Slide at Deerfield



cutting out the slide and building a pad with that slide material. The lime is then added and the blending is done using a road reclaiming machine. After thoroughly blending on the pad, the soil-lime material is then used to rebuild the levee cross section. ■

Lanny Barfield, Chief of Geotechnical Branch and District Levee Safety Officer for the Vicksburg District Corps of Engineers said, "While slides along our Mainline Levee are for the most part shallow and don't significantly affect levee integrity during a high water event, it is critical these slides are repaired on an annual basis. The preferred repair method includes the blending of lime with the existing slide material. The lime alters the soil's shrink/swell characteristics making it less likely to slide from future weathering cycles."

Repairing the slides involves

2011 Flood Problems Corrected Construction is Complete at all 11 Problem Areas



Ben Lomond Relief Well Installation



Avon Relief Wells



Greenville Relief Well Installation

There were (12) major problem areas discovered during the Historic 2011 Flood that needed attention and remedial work. In December 2011 Congress passed an \$802 Million Supplemental Appropriation for disaster relief to repair the MR&T System following the 2011 Flood. The Mississippi



Final 6 relief wells installed on levee

Levee Board and the Vicksburg District Corps of Engineers used \$11.3M of this money to correct 11 problem areas by installing 187 relief wells and constructing 20,405' (3.9 miles) of landside seepage berm. The last relief well was installed in December 2015 just in time for the record breaking January highwater in 2016. The Mississippi Levee Board would like to thank Congress for appropriating the emergency money and the Corps of Engineers for designing and contracting out the work to repair these problem areas. ■

Steele Bayou Sedimentation Reduction Project

Phase VII Under Construction

The Steele Bayou Sedimentation Reduction Project was started in 2007 and includes the installation of grade/water control structures (flash board riser pipes) at headcut sites along Steele Bayou. These structures have enhanced property and keep Steele Bayou from receiving

too much sediment which is bad for flood control and water quality. This project does not cost the landowner anything but they have to supply borrow material from their spoil bank to cover the structure. Phases I through VI are now complete and include 49 sites on Steele

Bayou, 12 sites on Main Canal and 4 sites on Black Bayou. Phase VII includes 12 more sites and was awarded to Quinn Contracting, Inc. back in October 2015 and is now 51% complete. This is a great success story for minimizing erosion and keeping sediment out of Steele Bayou

Steele Bayou Sedimentation Reduction Project Update:

Completed Work:

Phases I - IV – 65 sites

On-going Construction:

Phase VII – 12 sites – 51% Complete

thereby helping flood control and at the same time improving water quality. ■



Installing Outfall Pipe



Filling in Around Outfall Pipe



Final Grading on Levee Embankment



Completed Outfall Pipe

2015 Helicopter Application 168.8 miles sprayed in 2015



Helicopter - Loading Chemical & Refueling



Helicopter Spraying Steele Bayou

The U.S. Army Corps of Engineers began work on the Big Sunflower River & Tributaries Project in 1947. This project included channel improvements to over 700 miles of interior streams located within the Mississippi Delta. These streams provide the outlet for flood water in the Delta. In 1950, the Mississippi Legislature authorized the two (2) Mississippi Delta levee boards to participate as local sponsors of Corps of Engineers projects within the Yazoo Basin. The Mississippi Levee Board is responsible for minor maintenance for 350 miles of interior streams within the Mississippi Levee District.

To perform this much needed maintenance, the Mississippi Levee Board contracts with a helicopter applicator to spray a portion of the interior

streams each year. A mixture of aquatic herbicides is sprayed on the underbrush and privet that is encroaching into the required clear width of the channel. This required clear width must be maintained to ensure the streams have adequate flood storage and passage capacity.

This year the Mississippi Levee Board treated 168.8 miles of its interior streams. This included 1,294 acres of interior streams located primarily in the southern half of the Mississippi Levee District. Provine Helicopters sprayed on October 15-16, 2015 and October 19-21, 2015. Streams treated this year included the Big Sunflower River, Dowling Bayou, Ditchlow Bayou, Twin Lakes, Little Sunflower River, Steele Bayou, Valewood Ditch and the Bogue Phalia. ■

2015 Annual Bus Inspection



Members of the 2015 Annual Levee Inspection take a photo in front of the Greenville Yacht Club

On November 10, 2015, the Mississippi Levee Board hosted its Annual Levee Inspection. This year's trip inspected the northern portion of the levee system starting at the Bolivar/Coahoma County Line and proceeding south to Greenville, MS.

Lunch was served at the Greenville Yacht Club. ■

FLOODING from Front Page

in the ag field north of Ben Lomond Road but decided not to extend the wells further north into the Anderson-Tully (ATCO) Woods. Needless to say this became an issue again in 2016 when several sandboils were discovered in the ATCO Woods. The Levee Board Crew

had to sandbag around one sandbail and had to place barrels around numerous sandboils.

The Mississippi River crested on January 13th at Arkansas City at 44.3' (141.0' m.s.l.); January 13th at Greenville at 56.2' (131.1 m.s.l.); and January 15th at Vicksburg at 50.2' (96.4' m.s.l.). ■

BACK IN TIME: Timber Pile Dike

Many of us are familiar with stone dikes in the Mississippi River. These dikes are structures placed, usually perpendicular to the river flow in a river. According to Freddie Pinkard, Mississippi River Channel Improvement Coordinator for the Corps-Vicksburg District, dikes can be categorized as either pervious or impervious. Impervious dikes are typically made of stone and are used to redirect flow away from eroding banks or to constrict a channel for navigation. Pervious dikes, such as timber pile dikes are used to impede flow. Slowing down the flow reduces the sediment transport capacity, thus turning erosional areas into depositional areas.

Prior to the construction of stone dikes, timber pile dikes were constructed along the Mississippi River. The timber pile dike shown here was constructed in the early 1900's in Bolivar County. This particular structure, with multiple openings between the piles to allow flow to pass through, was built to slow the velocity of the river at higher stages to protect the levee alignment just downstream. That levee, which was perpendicular to the dike, has since been setback to run parallel with the river, but the timber pile dike remains. ■



Old Timber Pile Dike at Sta. 470



Timber Pile Dike Construction



Old Timber Pile Dike at Sta. 470

Visit us online at: www.msleveeboard.com



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