



# Repair and Recertification of Alexandria Area Levee's

**JANUARY** 2014 UPDATE

# ISSUE

**As part of the Federal Emergency Management Agency's (FEMA) Map Modernization Program, the Red River, Atchafalaya, and Bayou Boeuf Levee District (RRABB) and the Nineteenth Levee District (19th) are required to certify existing levees shown on the Flood Insurance Rate Map (FIRM) in our system, which are currently providing protection against the base (1 % annual chance) flood.**

**Three basic parts to the National Flood Insurance Program (NFIP) - mapping, insurance, and regulations - which are interconnected and mutually supportive.**



## How does levee certification differ from levee accreditation?

If it can be shown that a levee provides the appropriate level of protection, then FEMA will “accredit” or recognize, the levee as providing adequate protection on flood hazard maps, and the area behind the levee will be shown as a moderate risk zone.

**NOTE:** FEMA accredits levees that meet the criteria and maps areas behind them as having a certain risk level, but FEMA does not perform the actual certifications.



## What does it mean for a levee to be certified?

A levee is certified if evidence—typically a statement by a licensed professional engineer or Federal agency responsible for levee design—has been presented showing that the structure meets current design, construction, maintenance, and operation standards to provide protection from the one-percent-annual-chance flood.

**NOTE:** The levee owner is responsible for ensuring that the levee is being maintained and operated properly and for providing evidence of certification.

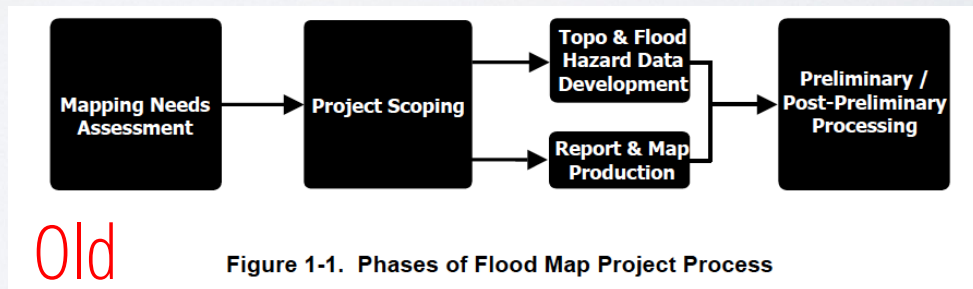


# NEW LEVEE & MAPPING PROCESS

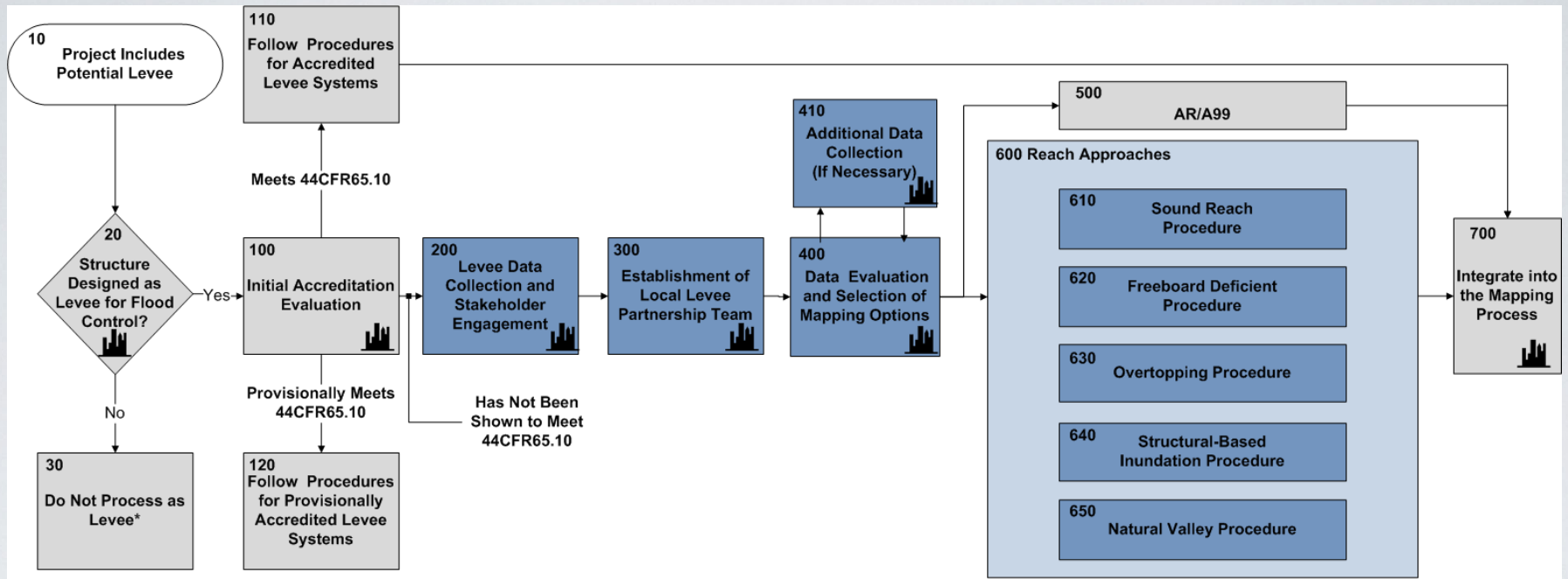
In response to the congressional recommendations, FEMA suspended the issuance of final determinations for FIRMs that were based on the “without levee” approach, meaning that the FIRMs would not become effective for NFIP floodplain management and flood insurance purposes in those areas.



The “without levee” approach was a binary approach where the levee either met accreditation criteria or did not, with no middle ground.



# NEW LEVEL & MAPPING PROCESS



\*The new levee analysis and mapping approaches are not intended to change the current treatment of non-levee embankments or other structures not designed, constructed, operated as flood control projects. The application of sound engineering methods for such structures continues to be the acceptable practice.

# is Figure Element ID

 indicates community engagement

Part of Former FEMA Levee Analysis and Mapping Procedures (Not Revised)

Part of New Levee Analysis and Mapping Procedure

July 2013



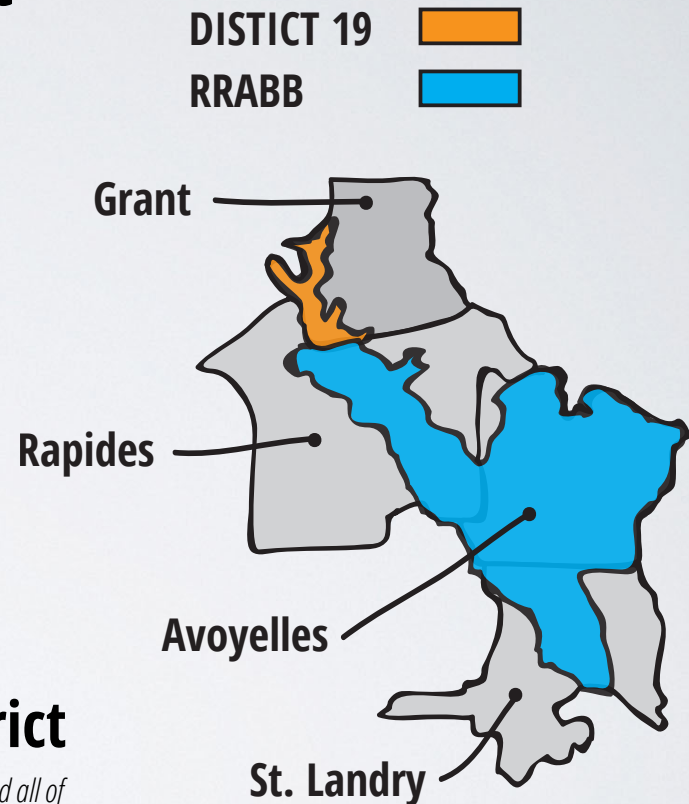
**The jurisdiction for levees in these matters falls within the authority, ambit, and scope of the levee districts involved.**

## **RRABB—Red River, Atchafalaya, and Bayou Boeuf Levee District**

*Beginning at the junction of the Red and Atchafalaya Rivers in the parish of Avoyelles, on the east then following the Atchafalaya River, to the mouth of Courtableau in the parish of St. Landry, then following Bayou Courtableau and Bayou Boeuf to the line of the parish of Rapides, and all territory subject to overflow contained in the parishes of Avoyelles and Rapides, as well as that included in the described limits situated in the parish of St. Landry.*

## **19th—Nineteenth Louisiana Levee District**

*All of the alluvial land subject to overflow on the left descending bank of the Red River in Grant Parish and all of the alluvial land subject to overflow along the tributaries of the Red River in Grant Parish downstream from the mouth of Bayou Nantachie.*



# FIRM'S USE

**Floodplain maps and developed flood hazard data are used for several purposes:**

- Communities, states and Federal agencies use them as the basis for regulating new flood prone construction,
- Insurance agents use them when rating flood insurance policies, and
- Lenders and Federal agencies use them to determine when flood insurance must be purchased as a condition of a loan or financial assistance.

**The flood insurance rates for buildings are based on how protected they are from the mapped hazard. Therefore, both the NFIP's regulations and insurance coverage depend on the accuracy and utility of the maps.**





# FHBM VS FIRM

## FEMA issues two kinds of maps: Flood Hazard Boundary Map (FHBM) Flood Insurance Rate Map (FIRM)

Most communities have had their FHBM's replaced by a FIRM. A FIRM usually includes a Flood Insurance Study with flood elevations and other hazard information needed to better protect new construction from flood damage.

### FIRM Technical Factors

(a) **Height of levee crest**

(b) **Levee condition**

- Initial design criteria

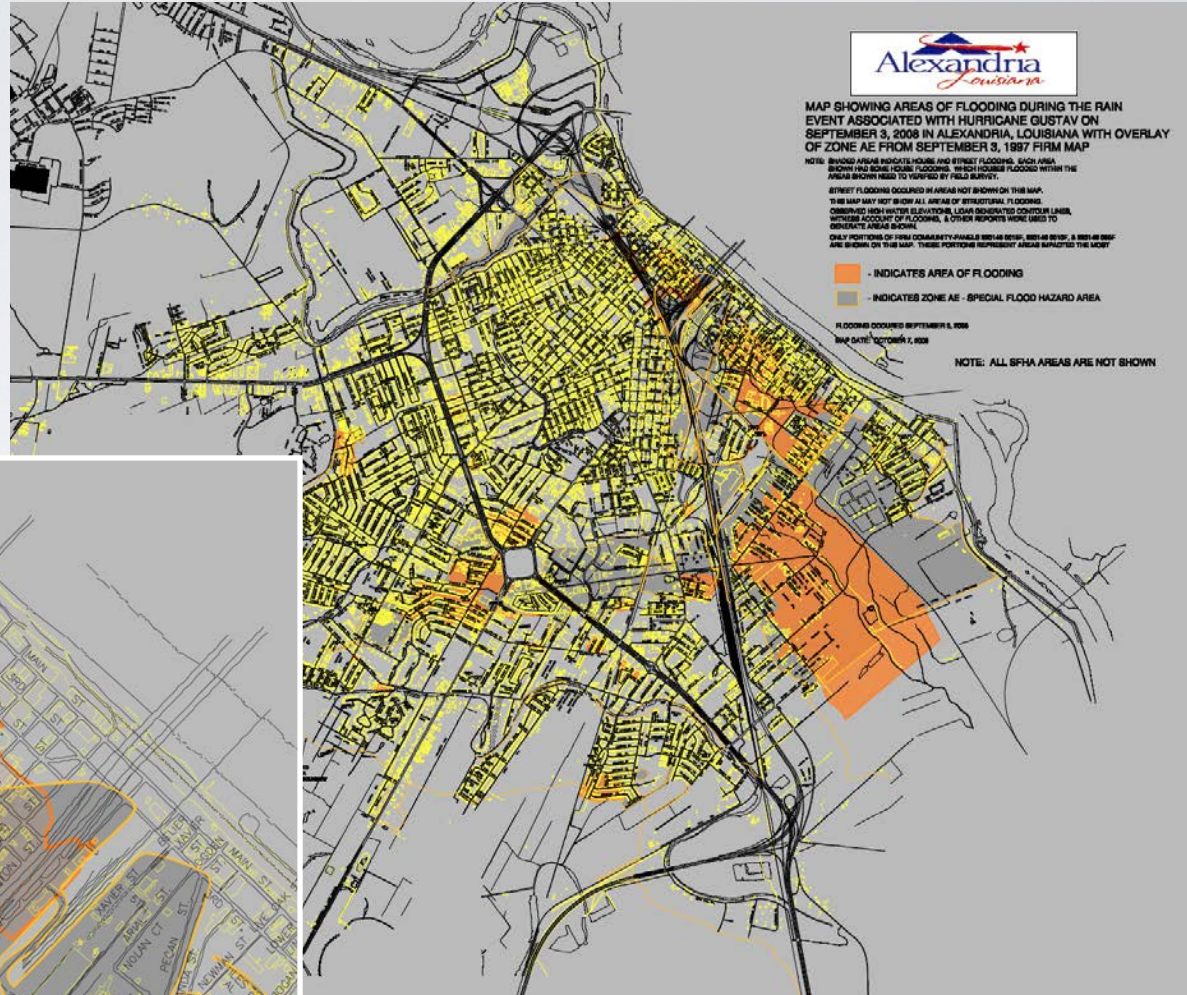
- Current conditions based on inspections, past performance, and operations and maintenance plans

(c) **Data availability:** Digital Elevation Models, design data, condition assessments, structural and geotechnical analyses, and hydrologic and hydraulic analyses

(d) **Flooding characteristics:** contributing drainage areas, duration of flooding, terrain of protected area, historic flooding



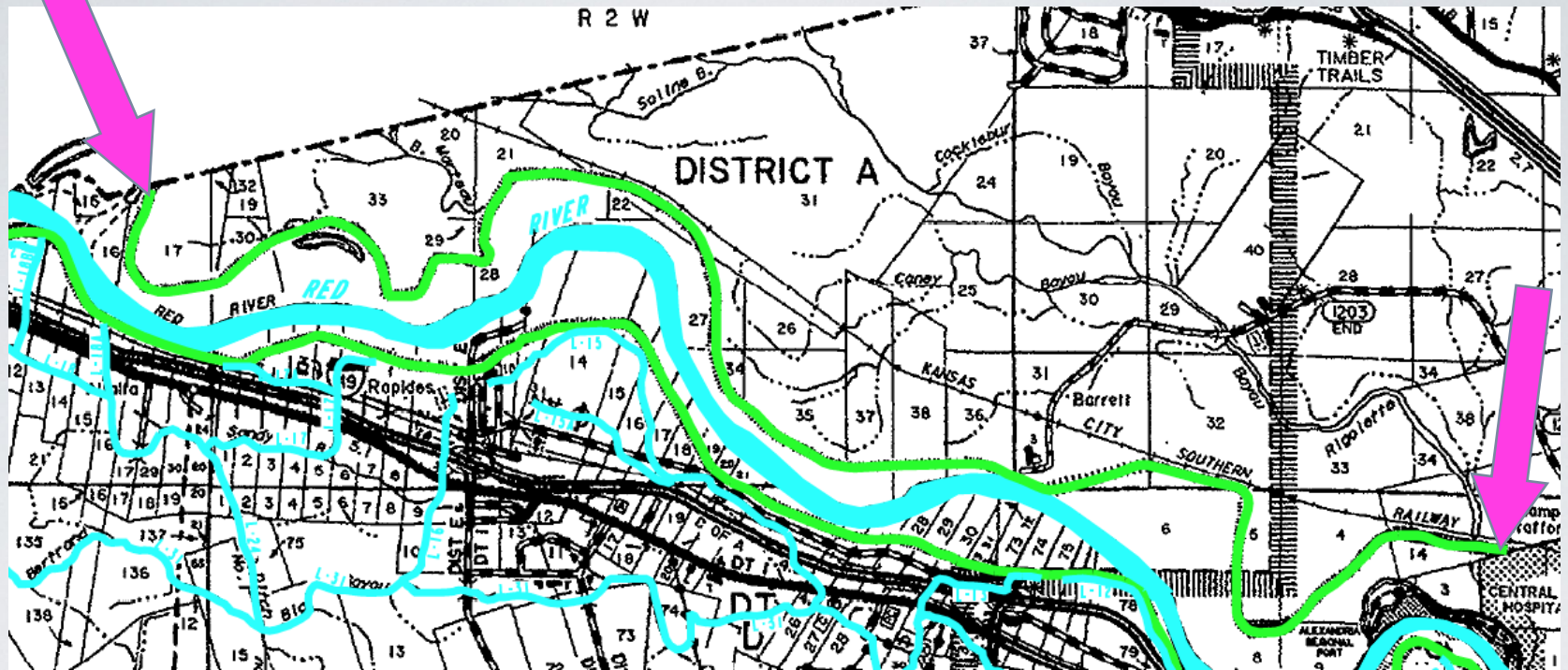
# EXISTING COA FIRM 1997



## Downtown Zoom



# REPAIR & RECERTIFICATION



## LEFT Descending Bank - Nantachie Lake to Pineville

**TYPE:** Federal Levee (not a system levee): River Mile 87 to 123 (36 miles +/-)

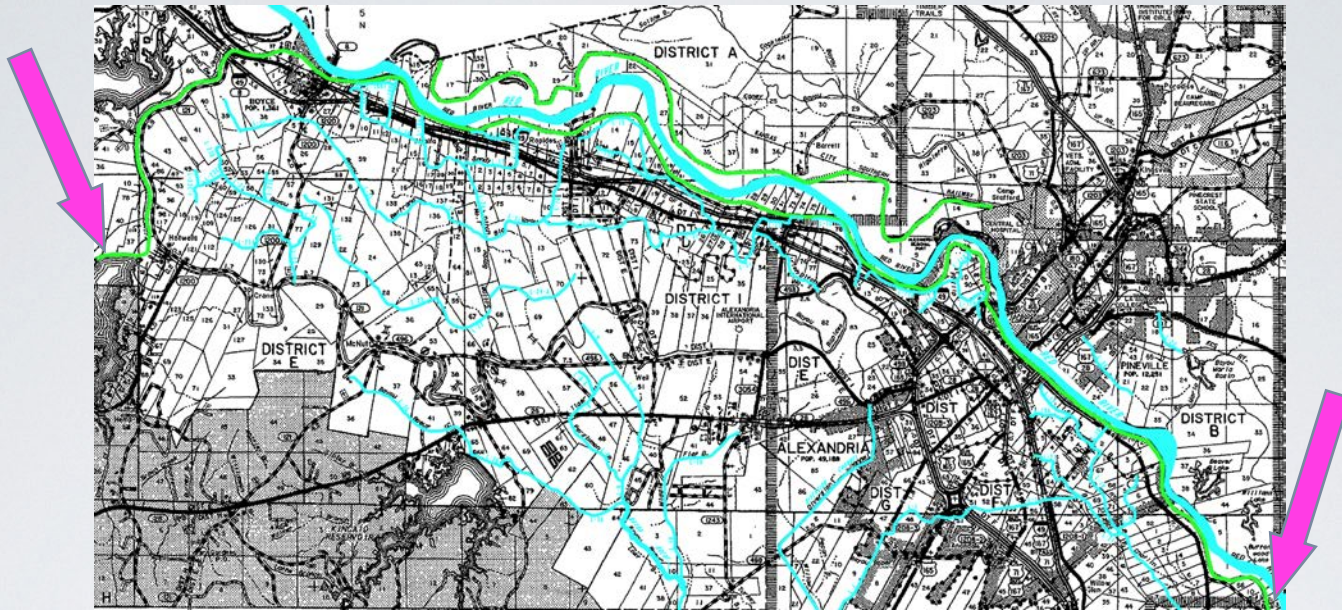
**ISSUE:** Insufficient Freeboard - Approximately 4500' in total

**Repair Cost:** \$5,756,800 Million

**Certification Cost:** \$45,000/mile = \$1,620,000



# REPAIR & RECERTIFICATION



## **RIGHT Descending Bank - Bayou Jean de Jean to Moncla Bridge (LA 107)**

**TYPE:** Mississippi River & Tributary System Levee: River Mile 59 to 107 (50 miles +/-)

**ISSUE:** 5 sand boils: Reach 1 - River Mile 96.5; Reach 2 - River Mile 93; Reach 3 - River Mile 81.3; Reach 4 - River Mile 75.5; Reach 5 - River Mile 59

**Repair Cost:** \$7,378,682 Million

**Certification Cost:** \$45,000/mile = \$2,250,000



# FREEBOARD DEFICIENT PROCEDURE

Levee freeboard refers to the vertical distance from the Base Flood Elevation (BFE; also known as the 1-percent-annual-chance flood elevation) up to the top of the levee.

For the purposes of the National Flood Insurance Program (NFIP), **Riverine levees** normally require a minimum freeboard of 3 feet above the water-surface level of the base flood. In some situations only 2 feet is required.

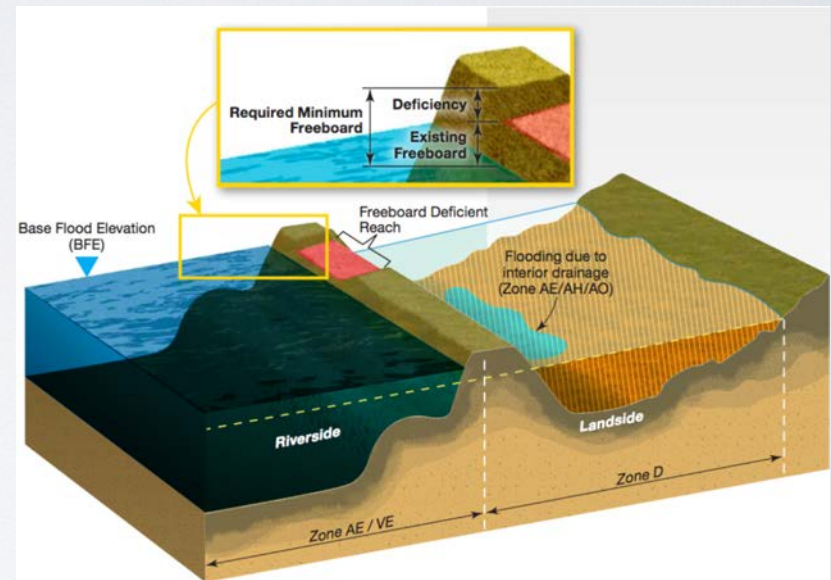


Figure 1 illustrates a levee system with a freeboard deficient reach. To use the **Freeboard Deficient** approach, the levee system must meet the structural, operational, and maintenance standards of 44 CFR 65.10. Although the levee system may have reaches that are deficient in freeboard, the levee reaches must be higher than the Base Flood Elevation (BFE) for their entire length.



# STRUCTURAL-BASED INUNDATION PROCEDURE

**Structural-Based Inundation procedure applies to levee reaches that do not meet the structural standards outlined in Title 44 CFR 65.10, but may still provide a measure of flood risk reduction. The Structural-Based Inundation procedure can be applied to one or more reaches in the levee system or the entire system.**

**The following types of issues can affect structural integrity:**

- Encroachment into the levee structure such as vegetation, animal burrows, and construction.
- Piping and **sand boils** during times of high water.
- Rivers that could overtop and erode the levee.
- Other information that indicates the levee is structurally inadequate.

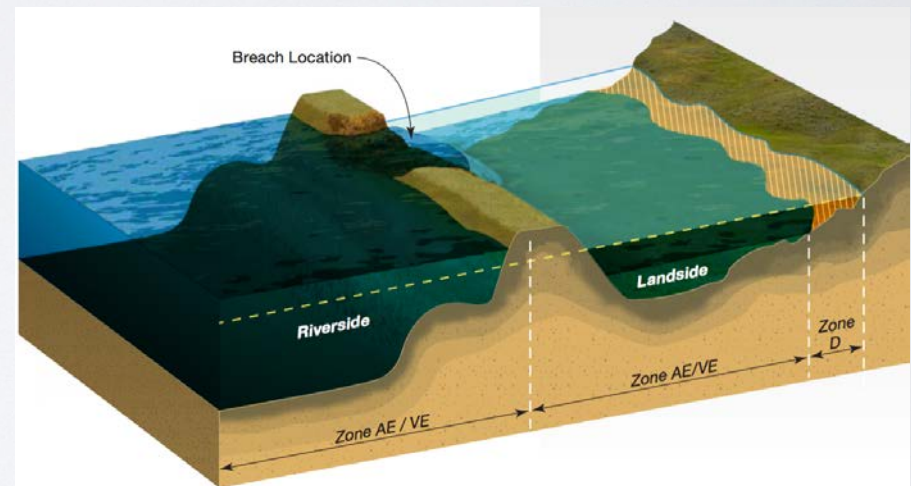


Figure 2: Cross-section of a structurally deficient reach that is breached, allowing inundation on the landward side of the levee



# SAND BOILS

Sand boils form during floods particularly when seepage occurs beneath levees that are built above a sandy or gravelly ground alongside a river.

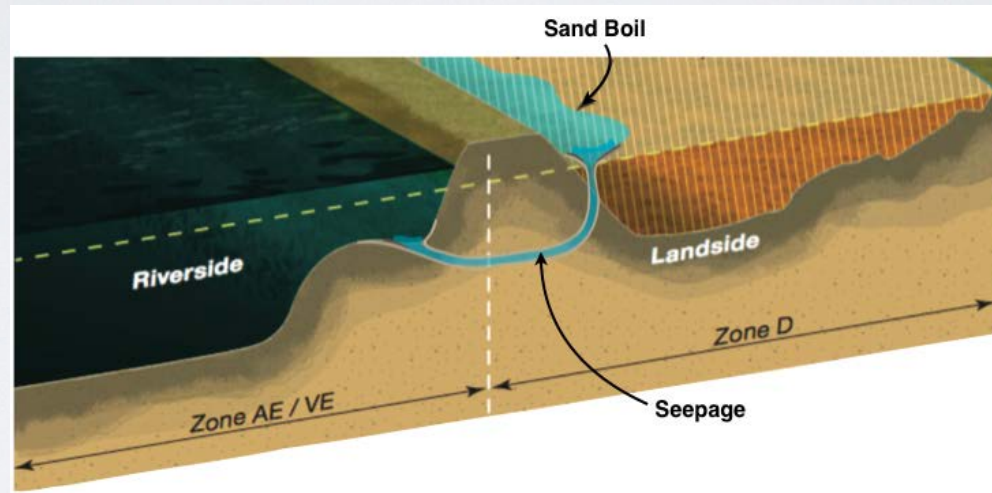


Figure 3: Cross-section of a sand boil, allowing inundation on the landward side of the levee. Left unchecked, a sand boil can undermine the levee's integrity and lead to failure.

# SAND BOIL EXAMPLES



## 1. Seepage

## 2. Sand Boil

## 3. Flooding

When flooding occurs, the water on the riverside of the levee tries to find a way around the levee. If water can travel through the ground it breaks through the surface. This process forms sand boils that show as wet spots in the soil.

The underground pressure forces the water up, flooding the area until the pressure beneath stabilizes.





# PROJECT STATUS

**FEMA does not currently have a deadline for recertification or accreditation or a date for issuing new FIRMS.**

**Since a minimum requirement for establishing the National Flood Insurance Program is the completion of this process, new insurance rates will not be adopted for at least this period of time.**

**Although you may already know how the FIRM process works, it proceeds, as follows:**

1. 30 day community review period.
2. Preliminary DFIRM Community Coordination Meeting
3. 90 day protest and appeal process, after which FEMA must resolve all protest and appeal issues.
4. Letter of Final Determination and a 6-month Compliance Period. This sets the effective date for compliance. During this time period, the City must adopt a revised Flood Damage Prevention Ordinance. FEMA is notified of the compliance and new maps become effective on the date previously determined in the Letter of Final Determination.



# CURRENT STATUS

## PLANS UNDER REVIEW by CORPS:

The plans for repairs to the Alexandria side of the levee (right side descending bank) are complete and currently under review by the Corps of Engineers.

## ADVERTISE for BID:

The PARISH plans to advertise for bids in **APRIL 2014** and an estimated 9 months to 1 year to complete levee repairs.

## RECERTIFICATION:

Once completed, the Corps of Engineers will begin the process of recertification (estimate 6 months).

PARISH PROJECTS	PROJECT BUDGET	FUNDS OBLIGATED	FUNDS SPENT	Current Activity
<b>RAPIDES PARISH PROJECTS:</b>	-			
<b>PROPOSAL APPROVED: 12-09-09</b>				
Levee - North Bank - Grant - 40PARA3301	\$ 1,079,137.00	\$193,515.00	\$ 132,657.50	
Levee - North Banks - Rapides - 40PARA3302	\$ 835,023.00	\$838,298.00	\$ 716,372.75	CONSTRUCTION COMPLETE
Levee - South Bank - Rapides - 40PARA3303	\$ 7,378,682.00	\$ 3,205,174.00	\$ 1,541,687.94	
Levee - Pineville Utility Conflicts- \$5,756,800 (Total All Locations) 40PARA3304				
Location 1 - WWTP -	\$ 2,524,670.00	\$ 2,114,914.00	\$ 159,959.12	UNDER CONSTRUCTION
Location 2 - WWTP-Secondary Outfall & Pump Station -	\$ 629,003.00	\$ 137,200.00	\$ 85,441.15	
Location 3 - Sewer Plugged and Sealed Abandoned Outfall -	\$ 122,550.00	\$ 118,450.00	\$ 113,662.92	CONSTRUCTION COMPLETE
Location 4 - Pineville Main St. Sewer and Water Utility Reloc. -	\$ 390,104.00	\$ 423,223.70	\$ 317,541.04	CONSTRUCTION COMPLETE
Location 5 - Sanders & Lakeview -	\$ 487,836.00	\$ 140,200.00	\$ 89,078.19	
Location 6 - Sewer Relocation -	\$ 788,346.00	\$ 138,750.00	\$ 86,198.85	
Location 7 - Rembert St.-	\$ 267,740.00	\$ 189,396.00	\$ 27,260.15	
Location 8 -Lakeview to Sanders Sewer Relocation -	\$ 546,551.00	\$ 164,400.00	\$ 76,104.26	
Levee - Spanish Bayou/Huffman Creek- \$1,230,900 (Both locations) 40PARA3305				
Location 9 - Outfall Rehab at Spanish Bayou -	\$ 448,800.00	\$ 341,832.34	\$ 341,832.34	CONSTRUCTION COMPLETE
Location 10 - Huffman Creek -	\$ 782,100.00	\$ 496,676.00	\$ 78,937.66	UNDER CONSTRUCTION
Bayou Boeuf Diversion Canal- 40DRLG7001	\$ 700,000.00	\$ 536,333.06	\$ 535,168.56	CONSTRUCTION COMPLETE
Admin	\$ 81,812.00	\$ 81,812.00	\$ 81,812.00	
<b>TOTAL:</b>	<b>\$17,062,354.00</b>	<b>\$ 9,119,974.10</b>	<b>\$ 4,383,714.43</b>	

COA



**QUESTIONS?**

