

Greater New Orleans Hurricane and Storm Damage Risk Reduction System Update

Team New Orleans
U.S. Army Corps of Engineers

May 17, 2011



®

US Army Corps of Engineers
BUILDING STRONG®

Opening Statement



Perimeter Risk Reduction

LAKE PONTCHARTRAIN



Old 100-yr system: 200 miles
New 100-yr system: 130 miles
→ 30% less perimeter to defend

17th Street Canal
(4.7 linear miles)

Orleans Av Canal
(4.8 linear miles)

London Av Canal
(6.1 linear miles)

IHC
(9.9 linear miles)

GIWW/MRGO
(18.5 linear miles)

Harvey Canal
(7.3 linear miles)

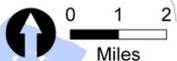
GIWW/Algiers Canal
(17.5 linear miles)

LAKE BORGNE



GREATER NEW ORLEANS HSDRRS CLOSURES/INTERIOR REACHES

- HSDRRS (Perimeter Reaches)
- HSDRRS (Interior Reaches)
- Closure Structures/Gates



New Orleans East

Surge Barrier Tie-In



St. Bernard Floodwall, near the IHNC Tie-In

(not labeled to scale)

Top of Floodwall:
EL +32'

Katrina Storm Surge:
EL +25'

500-yr Still Water
Elevation*: EL +22'

100-yr Still Water
Elevation*: EL +18'

* Still water elevation does not include waves
DESIGNED FOR A 100-YR STORM SURGE EVENT

Lake Borgne Surge Barrier “Great Wall of Louisiana”

(not labeled to scale)

Top of Surge Barrier: EL 26'

500-YEAR STILL
WATER ELEVATION *: EL +22.5'

100-YEAR STILL
WATER ELEVATION *: EL +18.8'

* Still water elevation does not include waves
DESIGNED FOR A 100-YR STORM SURGE EVENT

Bayou Segnette Pump Station

Completed Safe House



Deliver the Greater New Orleans HSDRRS Mission

Challenges

- Mandate to deliver \$14.6B construction program on schedule
- Form design criteria, program cost estimate, acquire funding
- NEPA compliance
- Deliver a comprehensive system

Enablers

- Administration / Congressional commitment
- Fully funded program
- Local partners and stakeholders capabilities
- National/Regional Corps capabilities
- NEPA Alternate Arrangements
- Full host of acquisition strategies
- Favorable bidding climate



Current Program Status

- **Total Program → \$10.4 B Obligated**
\$7.9 B Expended
- **100-yr System:**
 - ▶ Design about **99.8%** complete
 - ▶ All 100-yr base NEPA Compliance documents complete; supplements remain
 - ▶ All 100-yr base Project Description Documents complete; amendments remain
 - ▶ Lake Borgne Surge Barrier 86% construction complete
 - ▶ Seabrook Surge Barrier 28% complete
 - ▶ West Closure Complex 80% construction complete
 - ▶ LPV – 63 of 63 100-yr contracts awarded
 - ▶ WBV – 44 of 46 100-yr contracts awarded
- Permanent Pump Stations at Outfall Canals – Awarded 13 April 2011
- SELA – 14 of 35 contracts awarded
- Pump Station Repair complete
- Storm Proofing 56% construction complete
- NOV / NFL – pre-concept design
- Armoring – Alternatives being developed, select alternatives 31 May
- HSDRRS Environmental Mitigation – scoping ongoing



Construction Contract Status

	Total Contracts	100-Year Contracts
TOTAL	394	109
Awarded to date	331	107
Complete	206	44
Under Construction	125	64
Remaining Awards	63	2

as of 3 May 11



BUILDING STRONG®

1 June 2011 Status:

- 89% of the perimeter will be capable of defending against a 100-year storm surge
 - ▶ 86% of the system perimeter will be constructed to 100-year design criteria
 - ▶ 2 % of the system will have Engineered Interim Structures in place
 - ▶ 1% of the system will have Engineered Construction Closures on site to close gaps should a hurricane threaten the area
- 11% of the perimeter, construction of MRL EAMs suspended due to high river stages. Construction will resume when the river recedes.



Definitions

- **Engineered Alternative Measures**

- ▶ Meet hydraulic and structural/geotechnical design criteria
- ▶ Meet criteria for Accreditation
- ▶ Do not meet full HSDRRS design criteria
- ▶ Example: MRL Co-located phase 1 levees

- **Engineered Interim Structures**

- ▶ Meet 100-yr hydraulic and structural/geotechnical design criteria
- ▶ Temporary in nature – to be replaced by permanent features for Accreditation
- ▶ Example: Cofferdams at Seabrook Surge Barrier

- **Engineered Construction Closures**

- ▶ Rapidly deployed measures
- ▶ Used to close discrete access points, railroad / highway crossings under construction
- ▶ Does not meet criteria for Accreditation
- ▶ Example: HESCO Bastions / Temporary sheet pile



100-yr Contracts Where Final Structure Is Projected Beyond 1 June 2011

100-yr Contract	Award Date	Interim 100-yr	Final 100-yr
IHNC-01 Seabrook Surge Barrier	15-Feb-10	8-Apr-11	14-Feb-12
PCCP-01 Permanent Canal Closures	13 Apr-11	1-Jun-06	Oct-14
LPV-17.2 Bridge abutment and Floodwall Tie-ins at Causeway Bridge -Phase 2	24-Aug-10	Closure	13-Jan-12
LPV-09.2 PS's #1, #2, #3 and #4 Mods, Fronting Protection, Positive Cutoff and Floodwall Tie-ins	15-Apr-10	30-May-11	01-Oct-11
LPV-03.2B West Return Floodwall (Northern Segment) - Phase 2	15-Jul-10	18-Apr-11	10-Dec-11
LPV-03.2A West Return Floodwall (Southern Segment) - Phase 2	30-Jul-10	18-Apr-11	15-Sep-11
LPV-3d.2 Airport Runway 10 Levee Phase 2	15-Sep-10	Closure	15-Aug-11
WBV-77 Western Tie- In UP Railroad Crossing	<u>20-May-11</u>	Closure	<u>1-Jan-12</u>
WBV-75 Western Tie- In BNSF Railroad Crossing	<u>20-May-11</u>	Closure	<u>17-Oct-11</u>
WBV-74 Western Tie-In Closure Structure	30-Apr-10	30-May-11	26-Jun-11
WBV-73 Western Tie-In Highway Crossing	06-Jul-10	Closure	9-Dec-11
WBV-15a.2 Lake Cataouche Pump Station to Segnette State Park	15-Feb-10	Closure	12-Jul-11
WBV-16b Segnette PS fronting protection and modifications	15-Jan-10	15-May-11	9-Nov-11
WBV-16.2 Bayou Segnette Complex	10-Feb-10	Closure	16-Jul-11
WBV-24 Segnette State Park Floodwall	23-Dec-09	Closure	27-Jul-11
WBV-37 Ames / Mt. Kennedy Pump Stations	23-Jun-10	1-May-11	23-Sep-11
WBV-90 GIWW - West Closure Complex	17-Apr-09	1-Jun-11	16-Aug-11
WBV-09b Hero Canal to Oakville – Structures	14-May-10	Closure	21-Jul-11
WBV-09a Hero Canal to Oakville – Temp Pumps	21-Jun-10	TBD	17-Jun-11
WBV-09c Hero Canal to Oakville - Highway Structures	09-Jul-10	TBD	1-Aug-11
WBV – MRL Co Located Features	<u>Aug-Oct 12</u>	<u>TBD</u>	<u>Dec 14</u>

*deployed as needed prior to tropical events

Engineered Interim Structures
 Engineered Construction Closure*
 Engineered Alternative Measure
Unawarded contracts are in bold / underline

GREATER NEW ORLEANS HURRICANE STORM DAMAGE RISK REDUCTION SYSTEM (HSDRRS)

St. Bernard Projects Construction Status: 13 May 2011

LPV-144 (HYLA 05/18/11 CCP 06/29/11 NCC 10/18/11)
 Bayou Dupre Floodgate
 Replace floodgate.

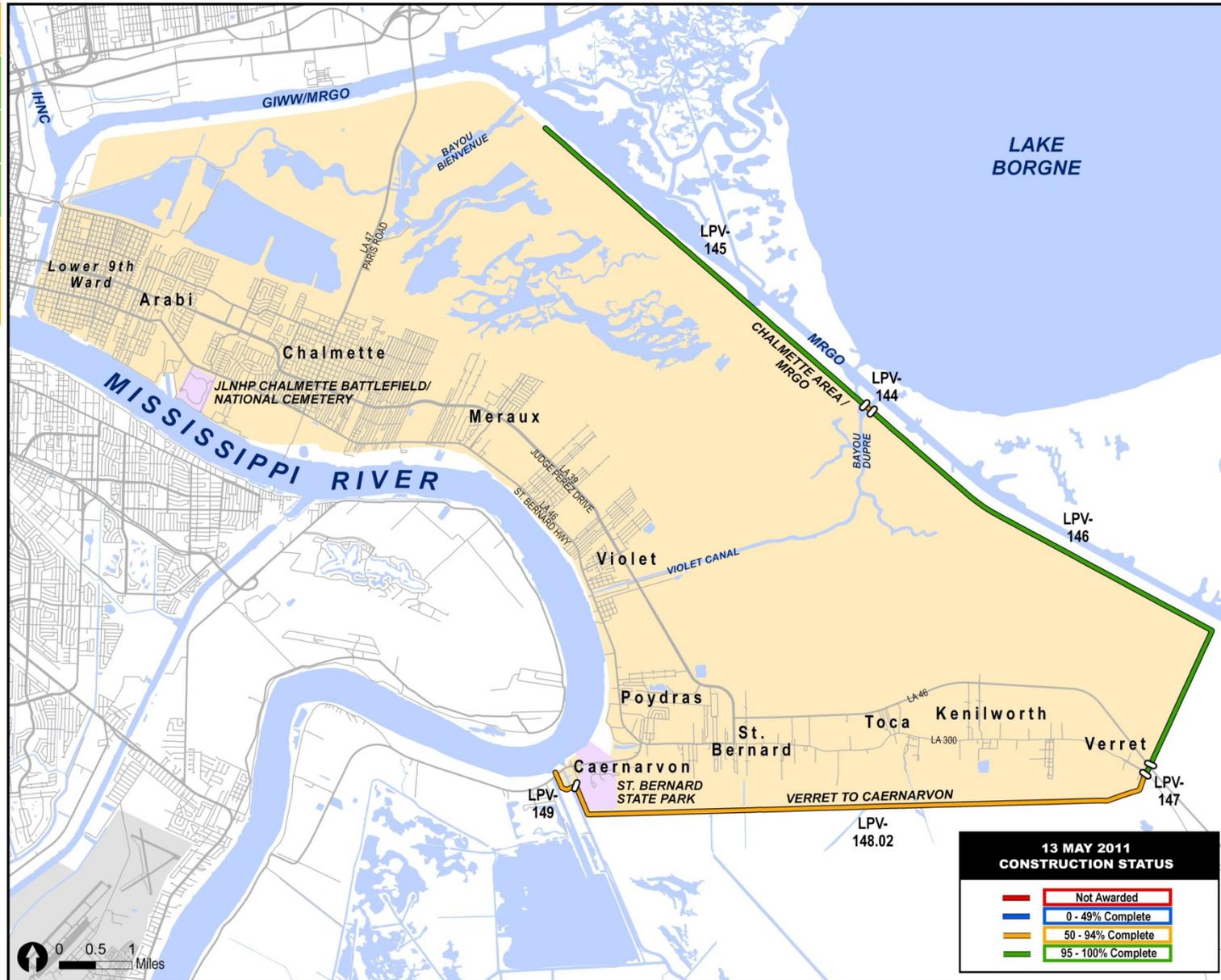
LPV-145 (HYLA 03/18/11 CCP 06/01/11 NCC 10/18/11)
 Bayou Bienvenue to Bayou Dupre
 Construct floodwall on top of levee.

LPV-146 (HYLA 05/06/11 CCP 05/31/11 NCC 08/19/11)
 Bayou Dupre to LA 46
 Construct floodwall on top of levee.

LPV-147 (HYLA 03/24/11 CCP 05/15/11 NCC 08/03/11)
 Bayou Road and LA 46 Floodgates
 Replace floodgates.

LPV-148.02 (HYLA 05/27/11 CCP 06/01/11 NCC 09/11/11)
 Verret to Caernarvon
 Construct floodwall on top of levee.

LPV-149 (HYLA 05/15/11 CCP 05/31/11 NCC 10/18/11)
 Caernarvon Canal at LA 39/Railroad
 Replace Floodgates.



St. Bernard Levee Tie-In to MRL



St. Bernard Floodwall

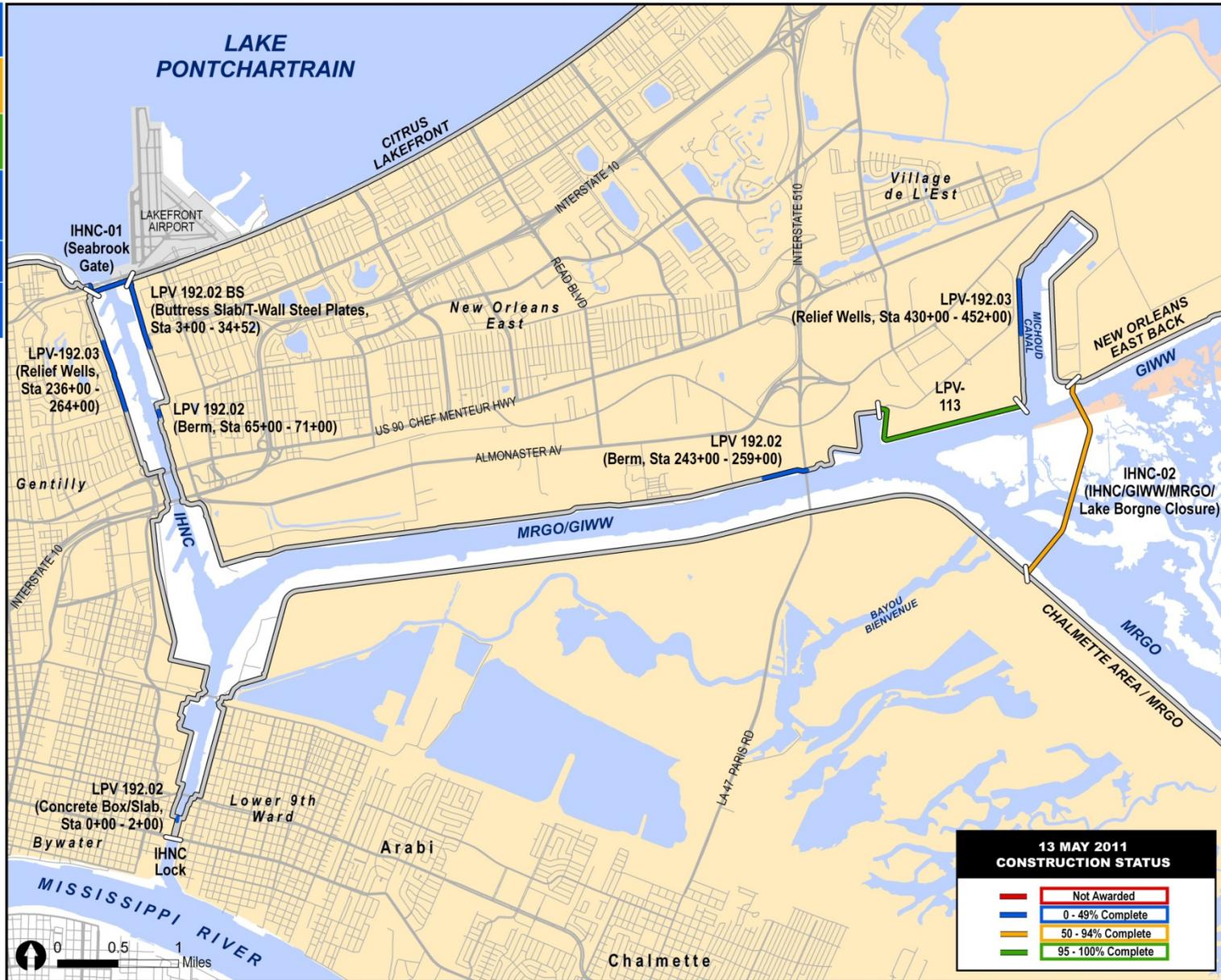




St. Bernard Floodwall Construction – Southern Reach

GREATER NEW ORLEANS HURRICANE AND STORM DAMAGE RISK REDUCTION SYSTEM (HSDRRS) IHNC and MRGO/GIWW Projects Construction Status: 13 May 2011

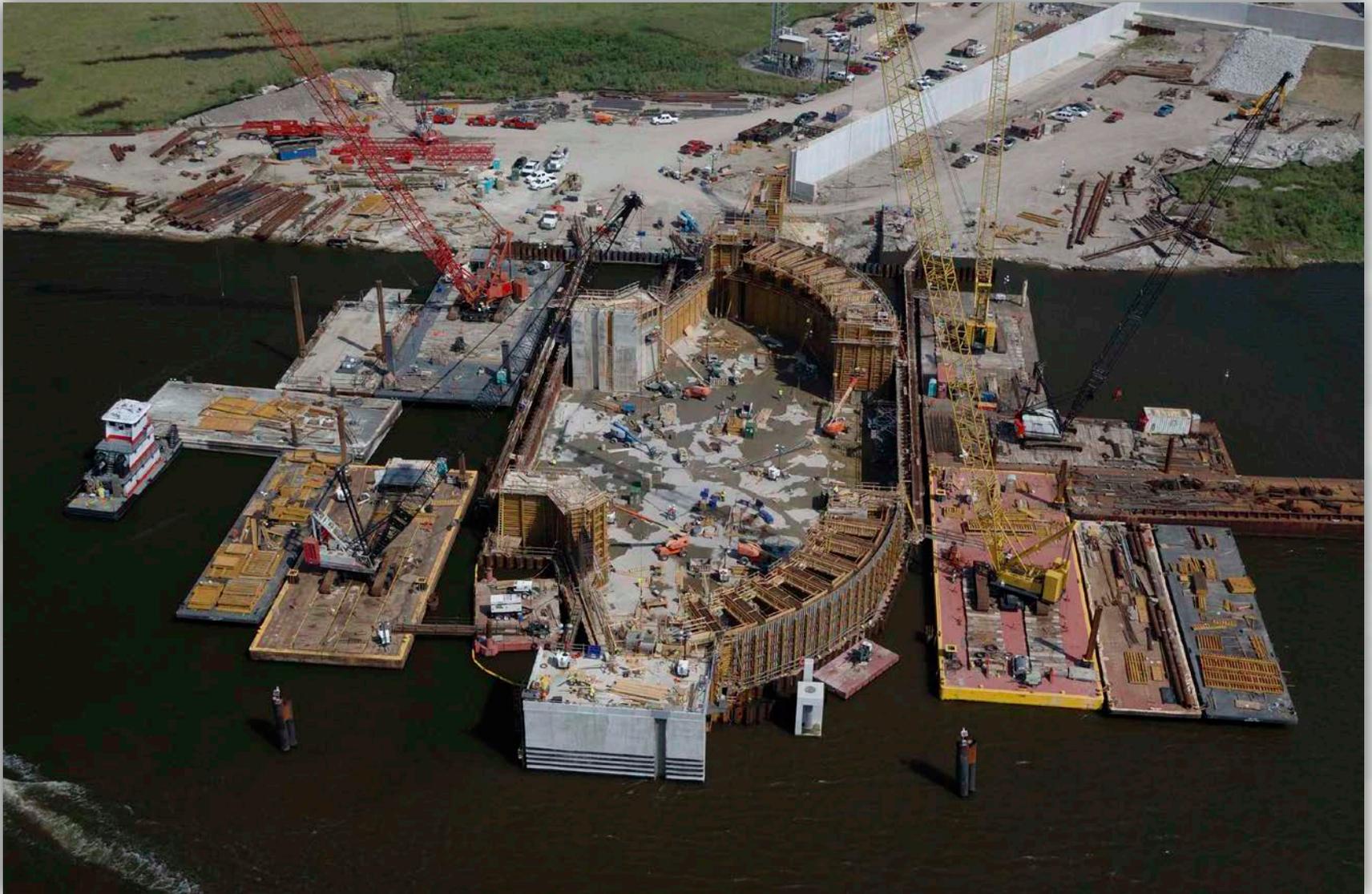
IHNC-01 (HYLA 04/08/11 CCP 02/03/12 NCC 06/17/12) Seabrook Gate Build closure structure.
IHNC-02 (HYLA 05/31/11 CCP 06/01/12 NCC 07/20/12) IHNC/GIWW/MRGO Lake Borgne Closure Build closure structure.
LPV-113 (CCP 09/15/10 NCC 07/06/11) Citrus Back Levee, Michoud Canal to Michoud Slip Raise levee.
LPV-192.02 (CCP 06/19/11 NCC 08/09/11) GIWW/MRGO Berm (Sta 243+00 - 259+00) IHNC Berm (Sta 65+00 - 71+00) IHNC Concrete Box/Slab (Sta 0+00 - 2+00)
LPV-192.02 BS (CCP 06/29/11 NCC 08/17/11) IHNC Buttress Slab/T-Wall Steel Plits (Sta 3+00 - 34+52)
LPV-192.03 (CCP 06/24/11 NCC 08/10/11) IHNC Relief Wells (Sta 236+00 - 264+00) Michoud Canal Relief Wells (Sta 430+00 - 452+00)



Lake Borgne Surge Barrier



Lake Borgne Surge Barrier



Lake Borgne Sector Gates



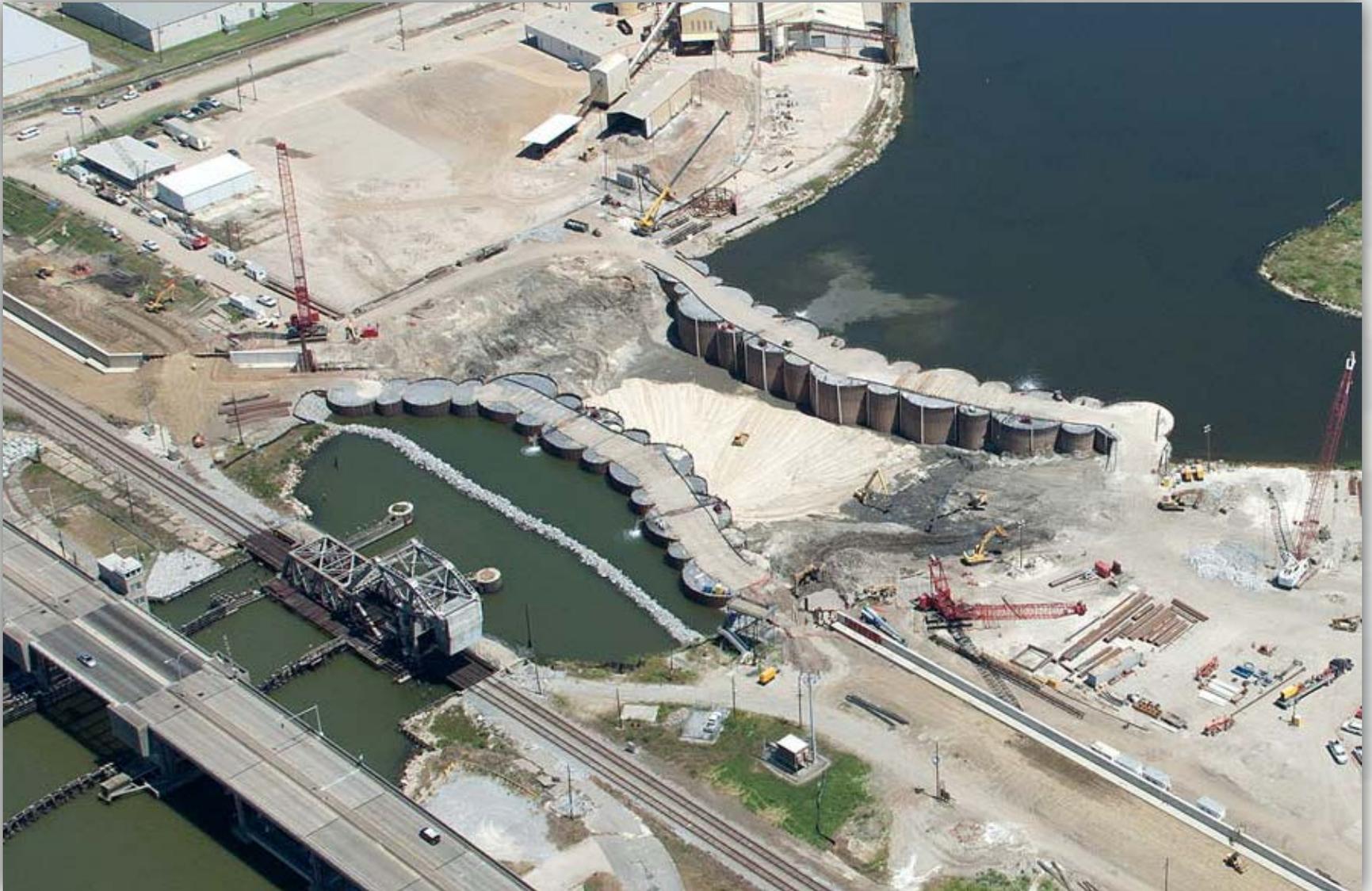
Lake Borgne Surge Barrier



Lake Borgne Surge Barrier



Seabrook Surge Barrier



GREATER NEW ORLEANS HURRICANE AND STORM DAMAGE RISK REDUCTION SYSTEM (HSDRRS) New Orleans East Projects Construction Status: 13 May 2011

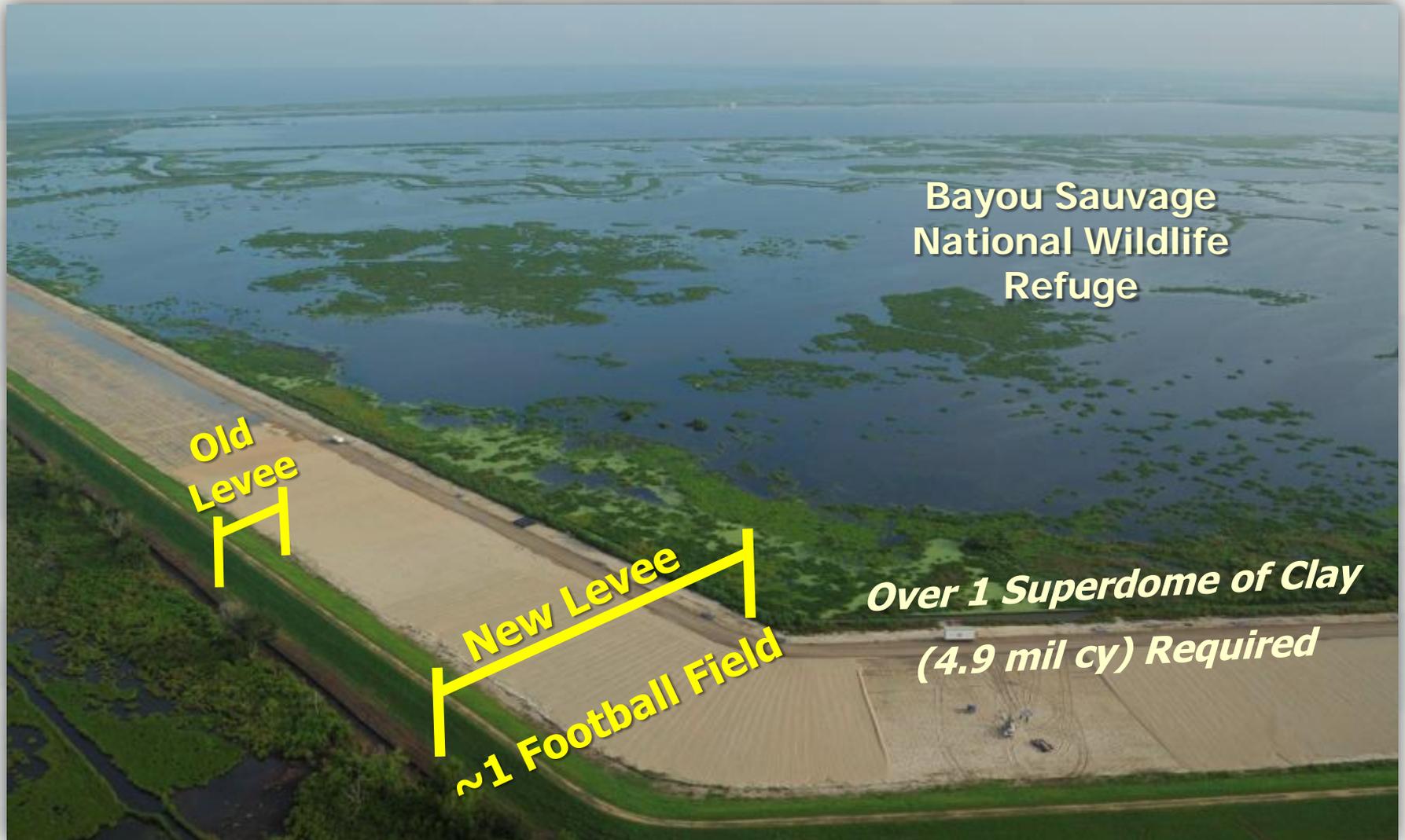
IHNC-01 (HYLA 04/08/11 CCP 02/03/12 NCC 06/17/12) Seabrook Gate <i>Build structure.</i>
IHNC-02 (HYLA 05/31/11 CCP 06/01/12 NCC 07/20/12) IHNC/GIWW/MRGO Lake Borgne Closure <i>Build closure structure.</i>
LPV-105.01 (HYLA 05/25/11 CCP 05/25/11 NCC 09/09/11) Lakefront Airport Floodwalls West <i>Reconstruct floodwalls.</i>
LPV-105.02 (HYLA 05/29/11 CCP 06/03/11 NCC 09/09/11) Lakefront Airport Floodwalls East <i>Reconstruct floodwalls.</i>
LPV-106 (HYLA 03/18/11 CCP 07/20/11 NCC 09/23/11) Citrus Lakefront Levee <i>Raise to 100-year level of protection.</i>
LPV-107 (HYLA 03/26/11 CCP 05/15/11 NCC 10/02/11) Lincoln Beach <i>Reconstruct Floodwall/Gate.</i>
LPV-108 (HYLA 04/04/10 CCP 05/26/10 NCC 07/15/11) Paris Road to Southpoint <i>Raise levees.</i>
LPV-109.02a (HYLA 05/30/11 CCP 06/30/11 NCC 09/18/11) Southpoint to CSX Railroad <i>Raise levees.</i>
LPV-109.02b (HYLA 03/25/11 CCP 07/31/11 NCC 10/18/11) I-10 Floodwall and Crossing <i>Earthem I-10 ramp.</i>
LPV-110 (HYLA 05/24/11 CCP 06/22/11 NCC 09/10/11) CSX Railroad Crossing <i>Replace gate.</i>
LPV-111.01 (HYLA 05/31/11 CCP 07/01/11 NCC 09/19/11) CSX Railroad to Michoud Canal <i>Raise levees.</i>



New Orleans East Deep Soil Mixing



New Orleans East Levee



GREATER NEW ORLEANS HURRICANE STORM DAMAGE RISK REDUCTION SYSTEM (HSDRRS)

New Orleans Projects Construction Status: 13 May 2011

- LPV-101.02** (HYLA 05/18/11 CCP 06/30/11 NCC 10/09/11)
 17th Street Canal to Topaz Street
 Replace I-Walls with T-Walls.
- LPV-102.01** (HYLA 08/05/08 CCP 09/02/08 NCC 11/19/10)
 Topaz Street to Orleans Avenue Canal
 Raise levees.
- LPV-103.01** (HYLA 08/07/08 CCP 07/24/08 NCC 11/19/10)
 Orleans Avenue Canal to London Avenue Canal
 Raise levees.
- LPV-103.01A1** (HYLA 10/01/10 CCP 11/08/10 NCC 06/17/11)
 17th Street Canal to London Avenue Canal
 Marconi Gate, Orleans Canal, and Bayou St. John work.
- LPV-103.01A2** (HYLA 05/13/11 CCP 05/15/11 NCC 09/18/11)
 Orleans Canal to London Avenue Canal
 Replace ramps at Rail Street and Lake Terrace.
- LPV-104.01** (HYLA 09/12/08 CCP 05/01/08 NCC 05/13/10)
 London Avenue Canal to IHNC
 Raise levees.
- LPV-104.01a** (HYLA 10/14/10 CCP 05/15/11 NCC 10/02/11)
 London Avenue Canal to IHNC
 Phase 1A--Raise ramps.
- LPV-104.02** (HYLA 05/13/11 CCP 05/15/11 NCC 10/01/11)
 London Avenue Canal to IHNC
 Replace I-Walls with T-Walls.
- PCCP-01** (CCP 12/31/14 NCC 06/03/15)
 Permanent 17th Street, Orleans, and London Canal Closures



Orleans Parish 2011 Interim Closure Structures

Seabrook (IHNC)



London Ave. Canal



17th St. Canal



Orleans Ave. Canal



Provides interim 100-year²⁹ level of risk reduction

Orleans Metro Levee

Construction of New Roadway Ramps



*Upgraded
Levee*

Canal Blvd.

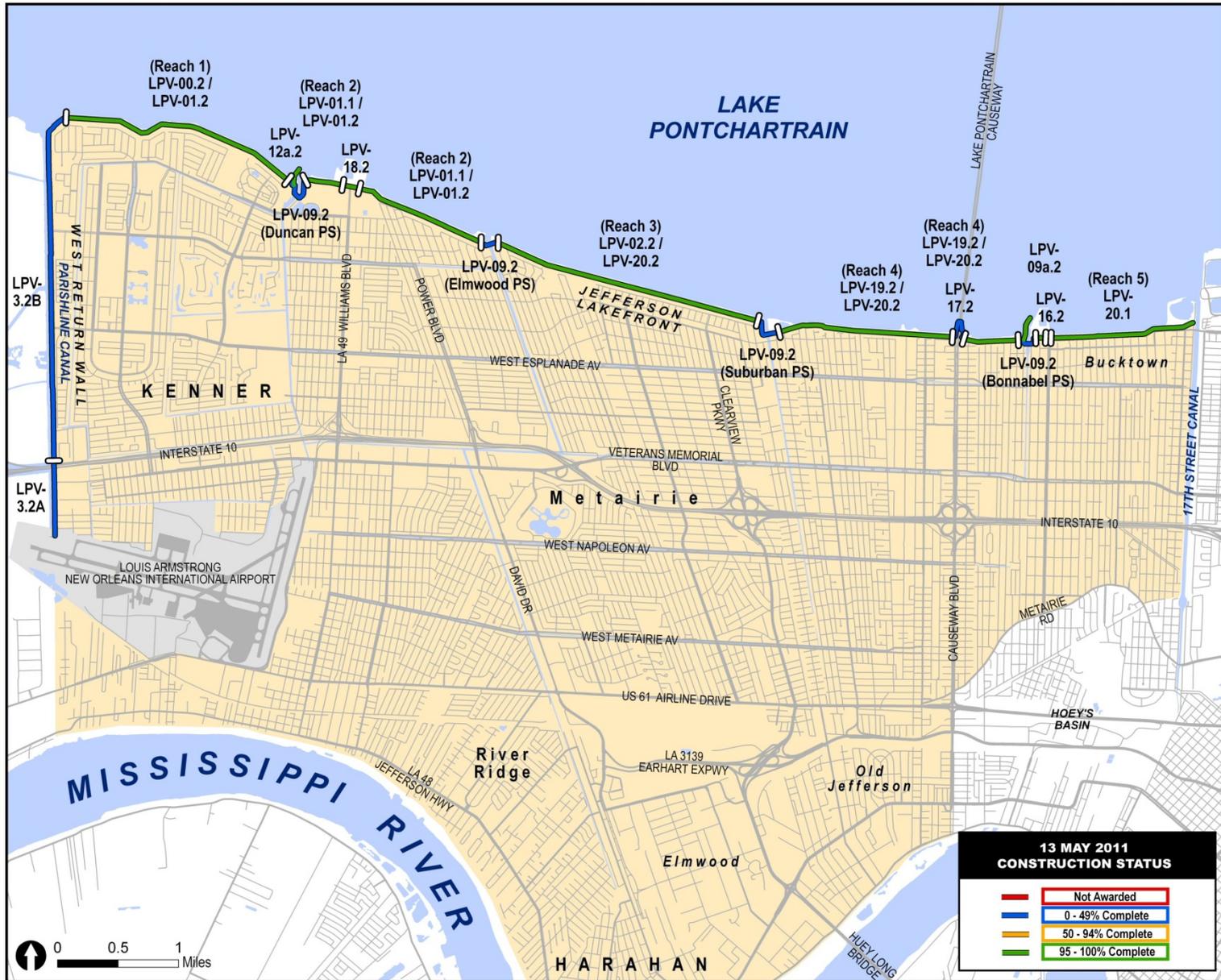
*Upgraded
Levee*

Orleans Lakefront Floodwall



GREATER NEW ORLEANS HURRICANE AND STORM DAMAGE RISK REDUCTION SYSTEM (HSDRRS) Jefferson Eastbank Projects Construction Status: 13 May 2011

- LPV-00.2** (HYLA 09/24/10 CCP 09/10/10 NCC 08/15/11)
 Reach 1 Lakefront Levee Phase 2
Bring levee to 100 year level of protection.
- LPV-01.1** (HYLA 01/05/11 CCP 01/05/11 NCC 08/15/11)
 Reach 2 Lakefront Levee Phase 1
Bring levee to authorized level of protection.
- LPV-01.2** (CCP 01/20/12 NCC 02/20/12)
 Foreshore Protection A Phase 2
Provide wave attention/foreshore protection along the frontside of Lakefront Levee System Reach 1 and 2.
- LPV-02.2** (HYLA 10/25/10 CCP 10/25/10 NCC 08/15/11)
 Reach 3 Lakefront Levee Phase 2
Bring levee/floodwall to authorized level of protection.
- LPV-03.2A** (HYLA 09/15/11 CCP 10/15/11 NCC 12/14/11)
 West Return Floodwall (Southern Segment) Phase 2
Construct to 100 year level of protection.
- LPV-03.2B** (HYLA 12/10/11 CCP 04/07/12 NCC 06/06/12)
 West Return Floodwall (Northern Segment) Phase 2
Construct to 100 year level of protection.
- LPV-09a.2** (HYLA 04/30/10 CCP 04/30/10 NCC 11/12/10)
 Pumping Station #1 (Bonnabel) Breakwater Phase 2
Construct concrete breakwater to elevation 14 feet.
- LPV-09.2** (HYLA 10/01/11 CCP 06/10/13 NCC 08/07/13)
 PS 1/PS 2/PS 3/PS 4: Modifications, Fronting Protection, Positive Cutoff/Floodwall Tie-ins - Phase 2
Bring to 100 year level of protection.
- LPV-12a.2** (HYLA 07/23/10 CCP 07/23/10 NCC 02/02/11)
 Pumping Station #4 (Duncan) Breakwater Phase 2
Construct concrete breakwater to elevation 14 feet.
- LPV-16.2** (HYLA 10/07/10 CCP 10/07/10 NCC 06/10/11)
 Floodwall/Gate at Bonnabel Boat Launch Phase 2
Bring to 100 year level of protection.
- LPV-17.2** (HYLA 02/03/12 CCP 11/28/12 NCC 01/12/13)
 Bridge Abutment/FW Tie-ins at Causeway Phase 2
Bring levee to 100 year level of protection.
- LPV-18.2** (HYLA 10/08/10 CCP 10/08/10 NCC 06/17/11)
 Floodwall/Gate at Williams Blvd. Boat Launch Phase 2
Construct to 100 year level of protection.
- LPV-19.2** (HYLA 09/08/10 CCP 09/08/10 NCC 08/15/11)
 Reach 4 Lakefront Levee - Phase 2
Bring levee to 100 year level of protection.
- LPV-20.1** (HYLA 10/13/10 CCP 10/13/10 NCC 08/15/11)
 Reach 5 Lakefront Levee Phase 1
Bring levee to 100 year level of protection.
- LPV-20.2** (CCP 09/27/11 NCC 12/26/11)
 Foreshore Protection B Phase 2
Provide wave attention foreshore protection along the frontside of Lakefront Levee System Reach 3 and 4.



West Return Floodwall



Elmwood Pump Station



GREATER NEW ORLEANS HURRICANE AND STORM DAMAGE RISK REDUCTION SYSTEM (HSDRRS)

St. Charles Projects Construction Status: 13 May 2011

LPV-03d.2 (HYLA 07/15/11 CCP 08/15/11 NCC 10/24/11)
 Airport Runway 10 Levee Phase 2
 Bring levee to 100 year level of protection.

LPV-04.2A (HYLA 05/18/11 CCP 05/25/11 NCC 08/31/11)
 Reach 1A Cross Bayou to St. Rose/GS FW Phase 2
 Raise and construct levees/floodwalls to 100 year levels.

LPV-04.1 (HYLA 04/08/10 CCP 07/04/10 NCC 01/14/11)
 Reach 1A Phase 1
 Bring levees to design elevations.

LPV-04.2B (HYLA 05/21/11 CCP 05/26/11 NCC 07/16/11)
 Reach 1B I-310 to Walker Drainage Structure Phase 2
 Raise and construct levees/floodwalls to 100 year levels.

LPV-04.1 (HYLA 04/08/10 CCP 07/04/10 NCC 01/14/11)
 Reach 1B Phase 1
 Bring levees to design elevations.

LPV-05.2A (HYLA 01/04/11 CCP 05/16/11 NCC 07/19/11)
 Reach 2A Shell Pipeline to Goodhope/
 Shell Pipeline Levee/Floodwall Replacement Phase 2
 Bring levee to design elevations.

LPV-04.1 (HYLA 04/08/10 CCP 07/04/10 NCC 01/14/11)
 Reach 2A Phase 1
 Bring levees to design elevations.

LPV-05.2B (HYLA 12/23/10 CCP 12/23/10 NCC 07/21/11)
 Reach 2B Good Hope to Cross Bayou Phase 2
 Raise and construct levees/floodwalls to 100 year levels.

LPV-06a.2 (HYLA 01/14/11 CCP 01/17/11 NCC 07/09/11)
 Bayou Trepagnier Complex Floodwall Phase 2
 Construct floodwall tie-ins to 100-year level of protection.

LPV-06b.2 (HYLA 05/20/11 CCP 05/26/11 NCC 07/05/11)
 Shell Pipeline Floodwall Phase 2
 Retrofit floodwall to 100-year level of protection.

LPV-06c.2 (HYLA 09/17/10 CCP 09/17/11 NCC 07/12/11)
 Good Hope Floodwall Phase 2
 Construct floodwall tie-ins to 100-year level of protection.

LPV-06e.2 (HYLA 05/23/11 CCP 05/31/11 NCC 07/24/11)
 Floodwall Under I-310 - Phase 2
 Construct floodwall to 100 year level of protection.

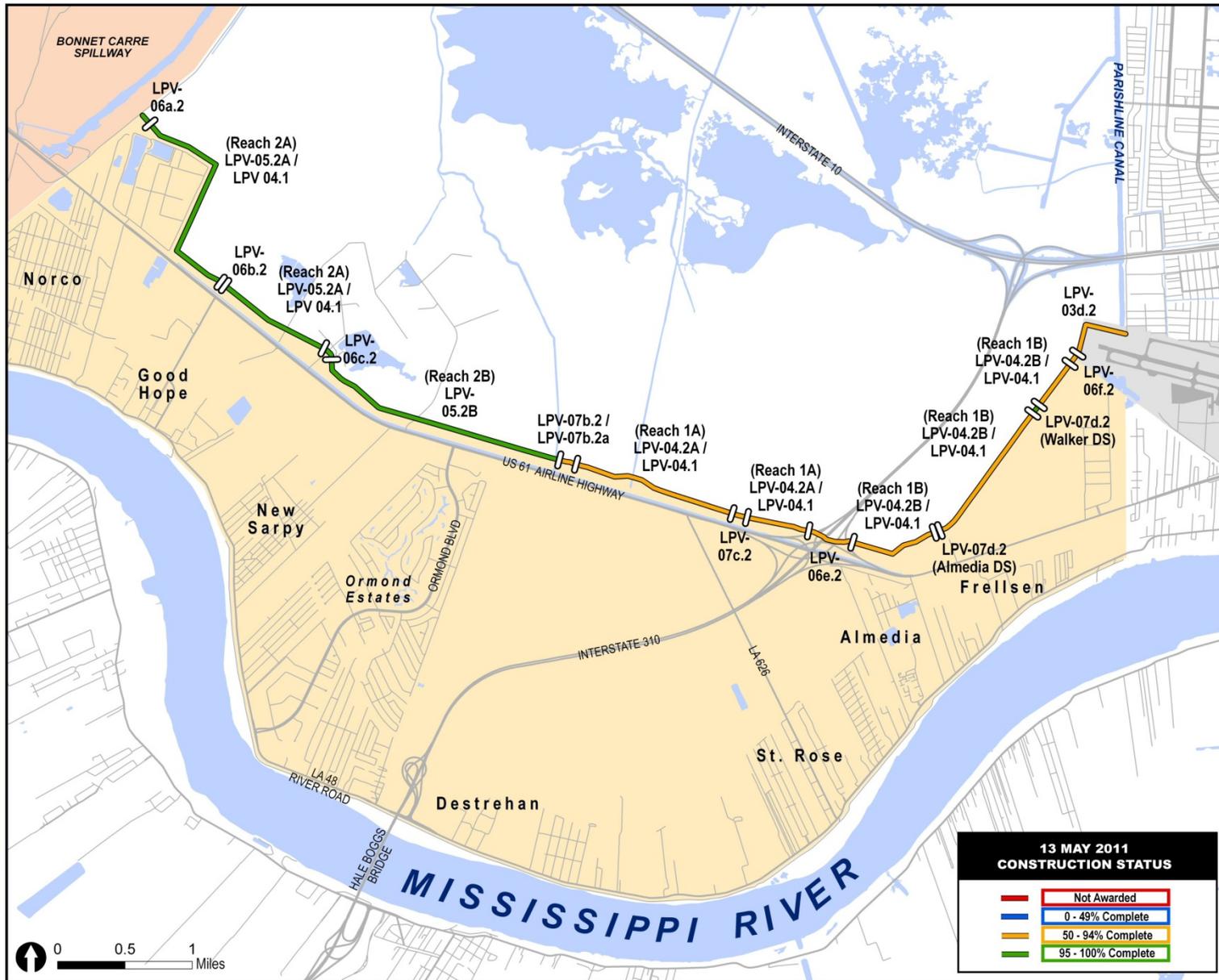
LPV-06f.2 (HYLA 05/30/11 CCP 05/30/11 NCC 07/25/11)
 Canadian National Railroad Gate Phase 2
 Provide 100 year level of protection.

LPV-07b.2 (HYLA 05/17/11 CCP 06/07/11 NCC 08/01/11)
 Cross Bayou Drainage Structure Phase 2
 Provide 100 year level of protection.

LPV-07b.2a (CCP 03/22/10 NCC 11/12/10)
 Cross Bayou Access Bridge/Pile Load Test
 Bridge Construction/Testing.

LPV-07c.2 (HYLA 05/20/11 CCP 05/20/11 NCC 07/06/11)
 St. Rose Drainage Structure and Levee Phase 2
 Construct floodwall to 100 year level of protection.

LPV-07d.2 (HYLA 10/04/10 CCP 10/04/10 NCC 08/01/11)
 Almedia/Walker Drainage Structures Phase 2
 Provide 100 year level of protection.



13 MAY 2011 CONSTRUCTION STATUS	
—	Not Awarded
—	0 - 49% Complete
—	50 - 94% Complete
—	95 - 100% Complete

St. Rose Drainage Structure and Levee



Bayou Tregapnier Complex Floodwall



GREATER NEW ORLEANS HURRICANE AND STORM DAMAGE RISK REDUCTION SYSTEM (HSDRRS) Lake Cataouatche/Western Tie-In Projects Construction Status: 15 May 2011

WBV-15a.2 (HYLA 07/12/11 CCP 08/09/11 NCC 10/06/11)
Lake Cataouatche PS to Segnette State Park-Phase 2
Raise and construct levees to 100 year level of protection.

WBV-15b.2 (HYLA 05/20/11 CCP 05/20/11 NCC 08/14/11)
Lake Cataouatche PS Fronting Protection, Modifications
PS fronting protection, modifications, floodwall tie-ins to the 100 year level of protection.

WBV-16b (HYLA 12/09/11 CCP 01/18/12 NCC 02/22/12)
Segnette PS Fronting Protection and Modifications.
PS fronting protection, modifications, floodwall tie-ins to the 100 year level of protection.

WBV-17b.2 (HYLA 06/01/11 CCP 08/12/11 NCC 10/09/11)
Station 160+00 to Hwy 90- Phase 2
Build to 100 year level of protection.

WBV-18.2 (HYLA 05/20/11 CCP 05/26/11 NCC 08/24/11)
Hwy 90 to Lake Cataouatche PS - Phase 2
Raise levees to 100 year flood level of protection.

WBV-24 (HYLA 06/01/11 CCP 08/24/11 NCC 10/04/11)
Bayou Segnette State Park Floodwall
Already built to authorized level of protection. This contract to meet 100 year level of protection.

WBV-71 (HYLA 11/12/10 CCP 11/12/10 NCC 07/20/11)
Western Tie-In Levees (North-South)
Raise levees to 100-year level of protection.

WBV-72 (HYLA 05/21/11 CCP 05/21/11 NCC 09/02/11)
Western Tie-In Levees (East-West)
Construct levees to 100-year level of protection.

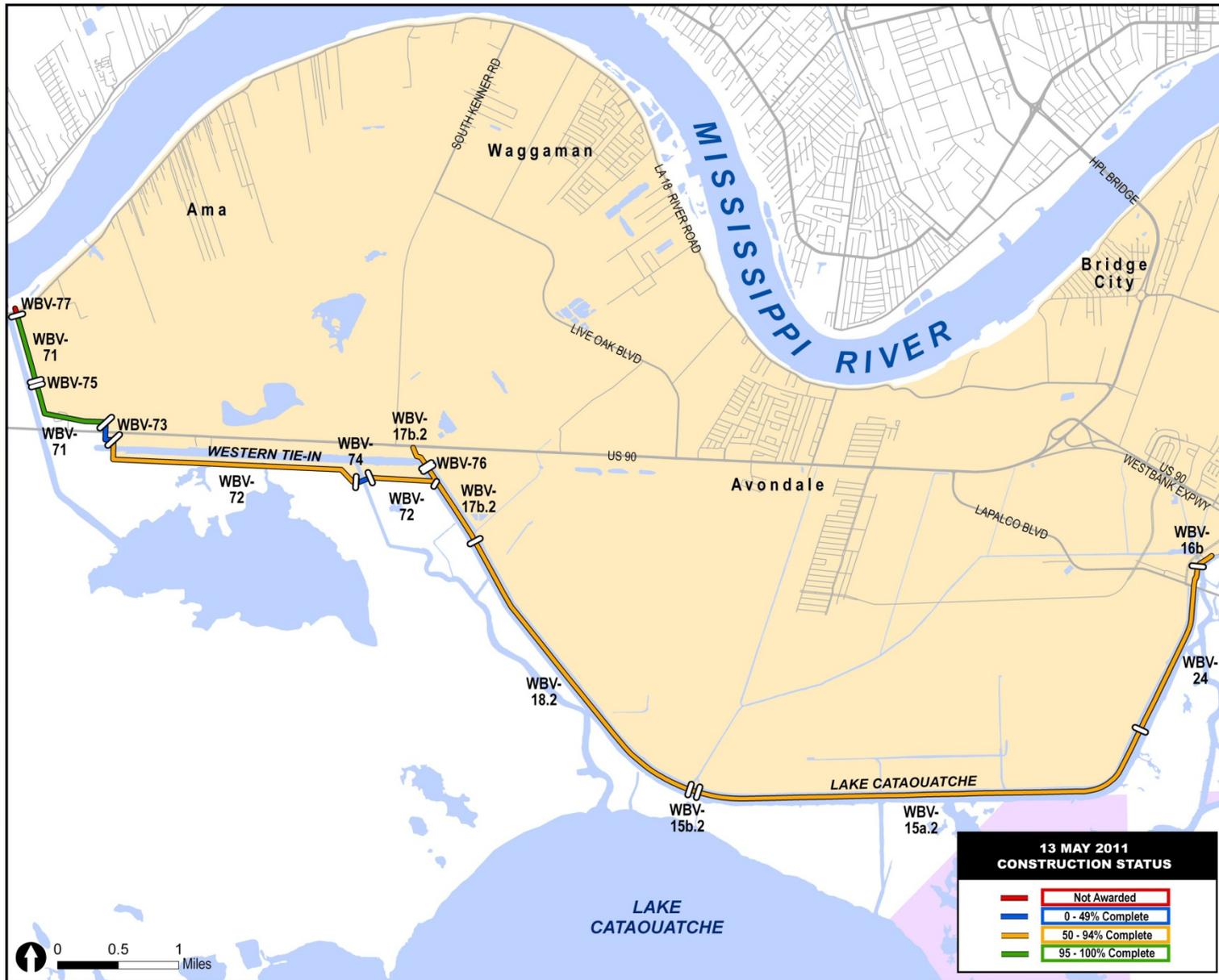
WBV-73 (HYLA 12/09/11 CCP 01/09/12 NCC 03/10/12)
Western Tie-In Highway Crossing
Construct FW/structures to 100-yr level of protection at US 90.

WBV-74 (HYLA 06/26/11 CCP 07/26/11 NCC 09/23/11)
Western Tie-In Closure Structure
Construct closure structure for 100-yr level of protection.

WBV-75 (HYLA 11/24/11 CCP 11/24/11 NCC 02/20/12)
Western Tie-In BNSF Railroad Crossing
Construct FW/structure for 100 year level at railroad crossings.

WBV-76 (HYLA 05/01/11 CCP 11/16/11 NCC 01/13/12)
Western Tie-in Highway 90 Pump Station
Relocating the PS at US 90.

WBV-77 (HYLA 02/18/12 CCP 03/18/12 NCC 05/05/12)
Western Tie-In Union Pacific Railroad Crossing
Construct FW/structure for 100 year level at railroad crossings.



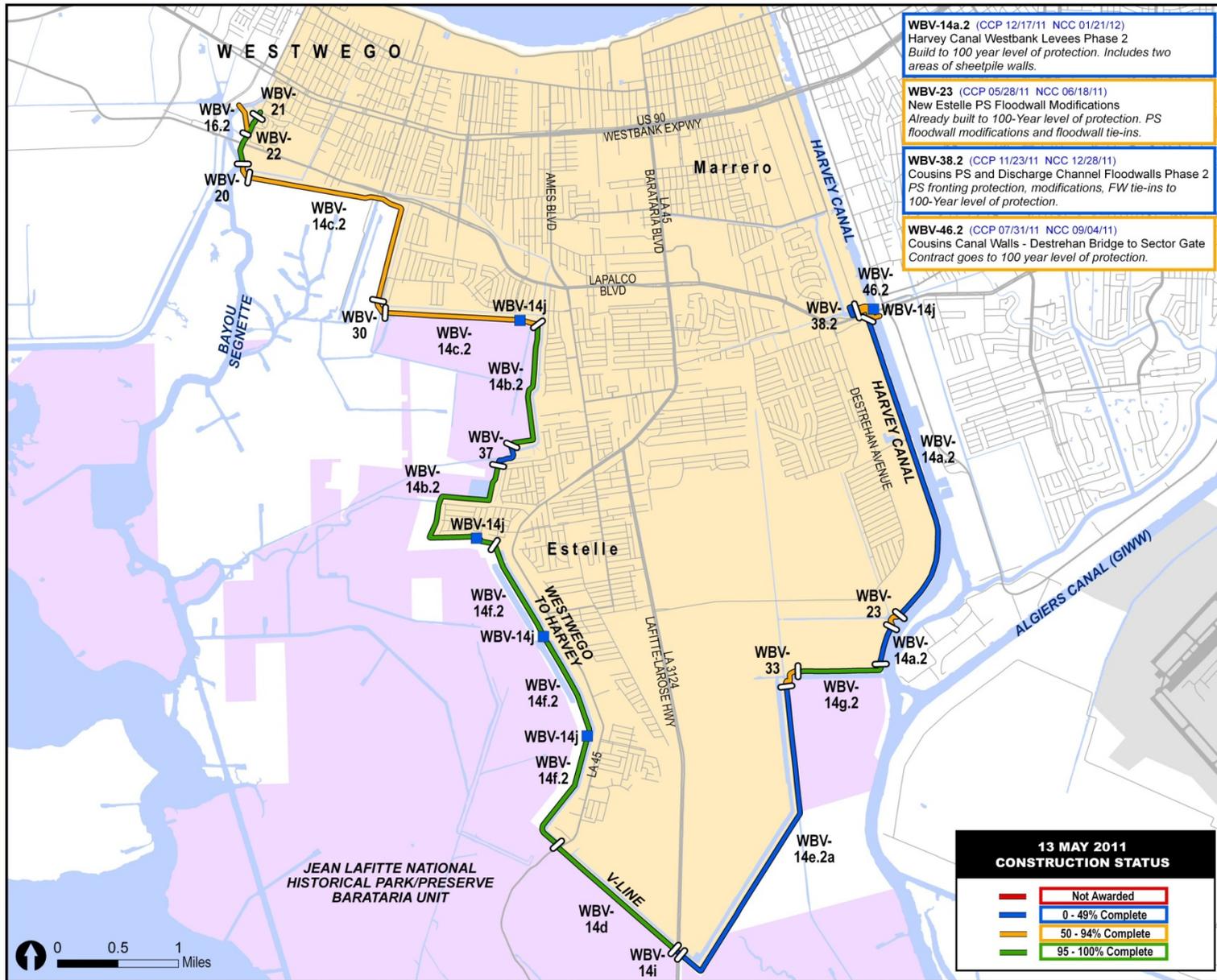
13 MAY 2011 CONSTRUCTION STATUS	
█	Not Awarded
█	0 - 49% Complete
█	50 - 94% Complete
█	95 - 100% Complete

Lake Cataoutache PS Safe House



GREATER NEW ORLEANS HURRICANE AND STORM DAMAGE RISK REDUCTION SYSTEM (HSDRRS) Harvey/Westwego Projects Construction Status: 13 May 2011

- WBV-14b.2** (HYLA 05/04/11 CCP 05/21/11 NCC 06/18/11)
 Orleans Village to LA 45 Levee Phase 2
Build to 100 year level of protection.
- WBV-14c.2** (HYLA 06/30/11 CCP 08/09/11 NCC 09/13/11)
 New Westwego PS to Orleans Village Phase 2
Build to 100 year level of protection.
- WBV-14d** (HYLA 04/06/11 CCP 06/21/11 NCC 07/19/11)
 V-line Floodwall
 LA 45 to Lafitte-Larose Highway; 100 year level of protection.
- WBV-14e.2a** (HYLA 05/01/11 CCP 12/18/11 NCC 01/22/12)
 V-line levee, East of Vertex Phase 2
Build to 100 year level of protection.
- WBV-14f.2** (HYLA 09/30/10 CCP 10/22/10 NCC 07/04/11)
 LA 45 Levee Phase 2
Contract goes to 100 year flood level of protection.
- WBV-14g.2** (HYLA 05/26/11 CCP 05/26/11 NCC 06/30/11)
 Estelle PS Vicinity Floodwalls
 Floodwalls between Lapalco Overpass to New Estelle PS to New Estelle PS for 100-year level of protection.
- WBV-14i** (HYLA 07/27/11 CCP 08/27/11 NCC 11/17/11)
 V-line Levee/LA 3134 Crossing
 Earth ramp crossing/culvert replacement.
- WBV-14j** (HYLA 07/14/11 CCP 07/14/11 NCC 08/17/11)
 Westwego-Harvey Utility Crossings/Harvey SG Retro Fit
 Sleeve through four floodwalls and sector gate retro fit.
- WBV-16.2** (HYLA 07/16/11 CCP 08/15/11 NCC 09/18/11)
 Bayou Segnette Complex
 Gate, pump station, navigation channel re-alignment and levee section across Bayou Segnette.
- WBV-20** (HYLA 06/12/11 CCP 07/12/11 NCC 08/16/11)
 New Westwego PS fronting Protection and Modifications
 PS fronting protection, modifications, floodwall tie-ins to the 100 year.
- WBV-21** (CCP 06/04/11 NCC 07/01/11)
 Old Westwego PS Fronting Protection and Modifications
 PS fronting protection, modifications, floodwall tie-ins to the 100 year level of protection.
- WBV-22** (HYLA 11/18/10 CCP 11/18/10 NCC 06/29/11)
 Westwego Floodwall
 100-Year level of protection for floodwall tie-ins.
- WBV-30** (HYLA 06/16/11 CCP 06/30/11 NCC 08/04/11)
 Westminster PS Fronting Protection and Modifications
 Already built to authorized level of protection. PS fronting protection, modifications, FW tie-ins to 100 year level of protection.
- WBV-33** (HYLA 05/30/11 CCP 05/30/11 NCC 07/04/11)
 Old Estelle PS Fronting Protection and Modifications
 Already built to authorized level of protection. PS fronting protection, modifications, FW tie-ins to 100 year level of protection.
- WBV-37** (HYLA 09/19/11 CCP 10/19/11 NCC 11/23/11)
 Ames / Mount Kennedy Pump Stations
 Already built to authorized level of protection. PS fronting protection, modifications, FW tie-ins to 100 year level of protection.



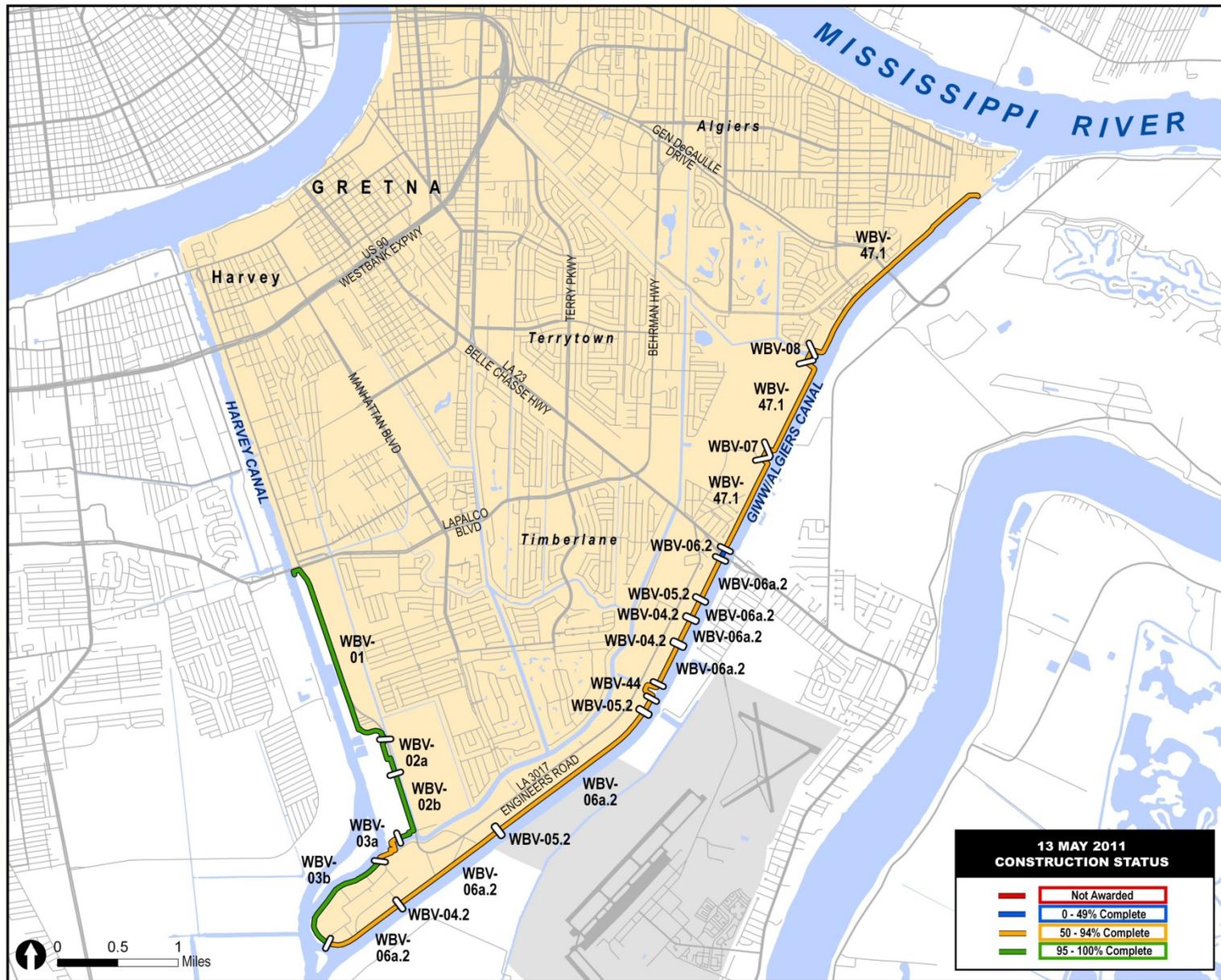
- WBV-14a.2** (CCP 12/17/11 NCC 01/21/12)
 Harvey Canal Westbank Levees Phase 2
 Build to 100 year level of protection. Includes two areas of sheetpile walls.
- WBV-23** (CCP 05/28/11 NCC 06/18/11)
 New Estelle PS Floodwall Modifications
 Already built to 100-Year level of protection. PS floodwall modifications and floodwall tie-ins.
- WBV-38.2** (CCP 11/23/11 NCC 12/28/11)
 Cousins PS and Discharge Channel Floodwalls Phase 2
 PS fronting protection, modifications, FW tie-ins to 100-Year level of protection.
- WBV-46.2** (CCP 07/31/11 NCC 09/04/11)
 Cousins Canal Walls - Destrehan Bridge to Sector Gate
 Contract goes to 100 year level of protection.

**13 MAY 2011
CONSTRUCTION STATUS**

	Not Awarded
	0 - 49% Complete
	50 - 94% Complete
	95 - 100% Complete

GREATER NEW ORLEANS HURRICANE AND STORM DAMAGE RISK REDUCTION SYSTEM (HSDRRS) Algiers/Gretna Projects Construction Status: 13 May 2011

- WBV-01** (CCP 03/31/10 NCC 05/29/11)
 Contract 1, Sectorgate to Boomtown Floodwall
 Construct floodwalls to level of protection.
- WBV-02a** (CCP 06/26/10 NCC 06/05/11)
 Contract 2a, Boomtown Floodwalls
 Construct floodwalls to level of protection.
- WBV-02b** (CCP 08/28/08 NCC 05/06/11)
 Contract 2b, Boomtown to Hero PS Floodwalls
 Construct floodwalls to level of protection provided by Engineering Division.
- WBV-03a** (CCP 05/31/11 NCC 07/04/11)
 Contract 3a, Hero PS to Algiers Canal Floodwall
 Construct floodwalls to level of protection.
 Includes Hero PS fronting protection, modifications, and floodwall tie-ins.
- WBV-03b** (CCP 05/23/11 NCC 06/20/11)
 Contract 3b, Hero PS to Algiers Canal Floodwall
 Construct floodwalls to level of protection.
 Includes floodwall and levee.
- WBV-04.2** (CCP 07/19/11 NCC 09/29/11)
 Belle Chasse Hwy to Hero Cutoff Reach 1-Phase 2
 Construct floodgates and tie-ins to the detention-basin elevation.
- WBV-05.2** (CCP 08/02/11 NCC 09/29/11)
 Belle Chasse Hwy to Hero Cutoff Reach 2 Phase 2
 Construct floodgates and tie-ins to the detention-basin elevation.
- WBV-06.2** (CCP 11/15/11 NCC 01/12/12)
 Belle Chasse Hwy to Hero Cutoff Reach 3 / 4-Phase 2
 Construct floodgates, levee, floodwalls, and tie-ins near Belle Chasse Tunnel to the detention-basin elevation.
- WBV-06a.2** (CCP 05/20/11 NCC 08/12/11)
 Belle Chasse Hwy to Hero Cutoff (West) Phase 2
 Raise levees to detention basin elevation.
- WBV-07** (CCP 07/21/11 NCC 09/17/11)
 Planters PS Fronting Protection and Modifications
 PS fronting protection, modifications, floodwall tie-ins to the detention-basin elevation.
- WBV-08** (CCP 12/20/11 NCC 06/03/12)
 SWB PS #13 Fronting Protection and Modifications
 PS fronting protection, modifications, floodwall tie-ins to the detention-basin elevation.
- WBV-44** (CCP 08/25/11 NCC 09/29/11)
 Whitney Barataria PS Floodwall Modifications
 Already built to authorized level of protection. PS floodwall modifications and floodwall tie-ins.
- WBV-47.1** (CCP 06/25/11 NCC 09/02/11)
 Algiers Lock to Belle Chasse Hwy (West) Phase 1
 Raise levees.



**13 MAY 2011
CONSTRUCTION STATUS**

	Not Awarded
	0 - 49% Complete
	50 - 94% Complete
	95 - 100% Complete

West Closure Complex



West Closure Complex

Closure Wall



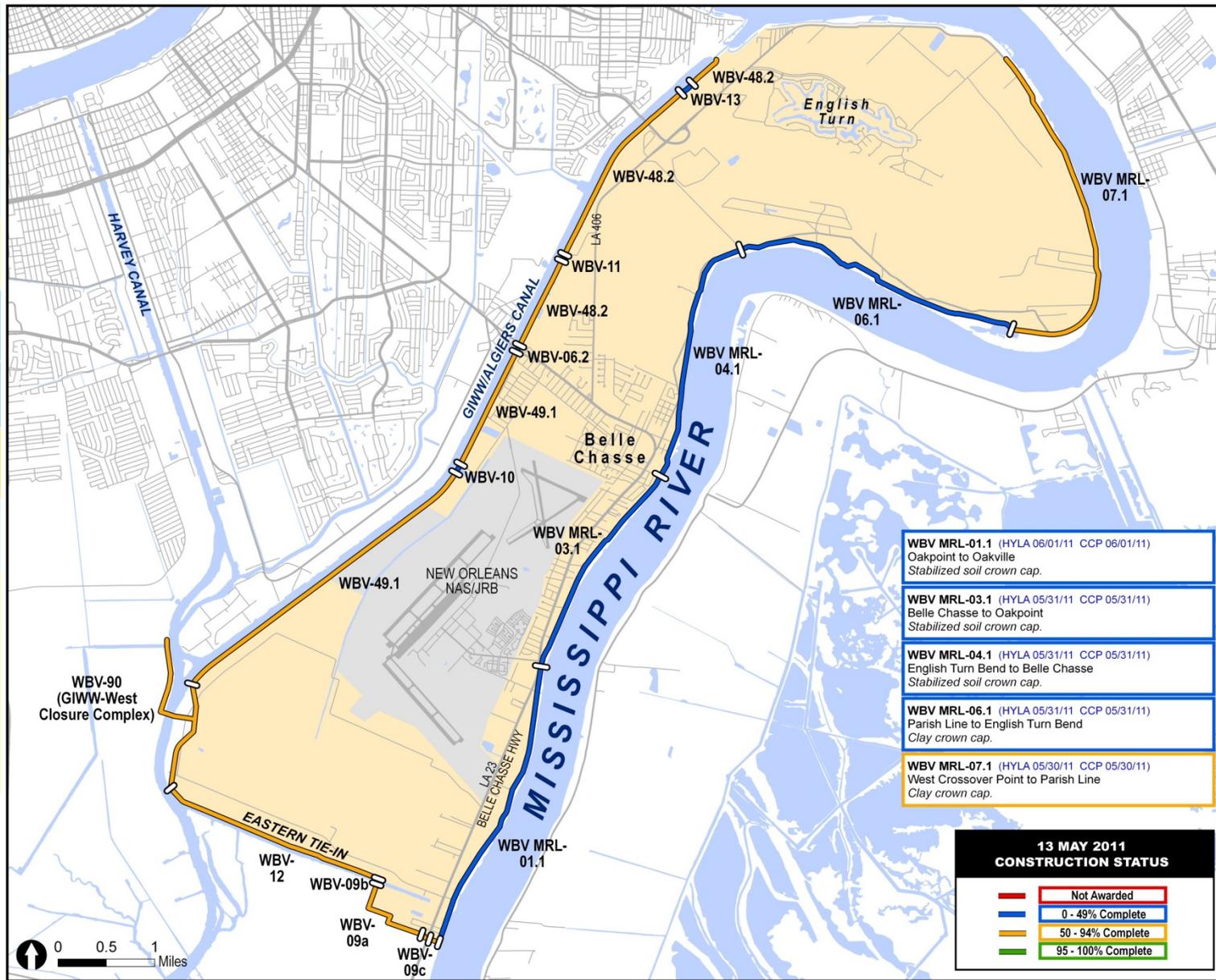
West Closure Complex

Pump Station



GREATER NEW ORLEANS HURRICANE AND STORM DAMAGE RISK REDUCTION SYSTEM (HSDRRS) Belle Chasse Projects Construction Status: 13 May 2011

- WBV-06.2** (CCP 11/15/11 NCC 01/12/12)
Belle Chasse Hwy to Hero Cutoff Reach 3 / 4-Phase 2
Construct floodgates, levee, floodwalls, and tie-ins near
Belle Chasse Tunnel to the detention-basin elevation.
- WBV-09a** (HYLA 07/21/11 CCP 08/20/11 NCC 09/16/11)
Hero Canal to Oakville Levees
Raise and construct levee and a small pump station to
100-Year level of protection.
- WBV-09b** (HYLA 06/05/11 CCP 07/21/11 NCC 10/17/11)
Hero Canal to Oakville Structures
Raise and construct stop-log closure, pump station, and
tie-ins on Hero Canal to 100 Year level of protection.
- WBV-09c** (HYLA 08/01/11 CCP 08/12/11 NCC 09/23/11)
Hero Canal to Oakville - Highway Structures
Raise and construct vehicle and RR floodgates on Belle
Chasse Hwy. to 100-Year level of protection.
- WBV-10** (CCP 09/20/11 NCC 01/29/12)
Belle Chasse PS #1 Fronting Protection/Mods. Phase 1
PS fronting protection, modifications, floodwall tie-ins to
the detention-basin elevation.
- WBV-11** (CCP 03/02/12 NCC 07/12/12)
Belle Chasse PS #2 Fronting Protection/Modifications
PS fronting protection, modifications, floodwall tie-ins to
the detention-basin elevation.
- WBV-12** (HYLA 05/27/11 CCP 06/11/11 NCC 08/12/11)
Hero Canal Reach 1, 2nd Enlargement
Improve approx 2.2 miles of levee to the 100-year level
of risk protection.
- WBV-13** (CCP 10/15/11 NCC 11/11/11)
SWB PS #11 Fronting Protection/Modifications
PS fronting protection, modifications, floodwall tie-ins
to the detention-basin elevation.
- WBV-48.2** (CCP 05/20/11 NCC 08/13/11)
Belle Chasse Hwy to Algiers Lock (East) Phase 2
Already built to authorized level of protection. Stability
analysis of levee and constr. improvements as required.
- WBV-49.1** (CCP 05/20/11 NCC 08/06/11)
Hero Levee to Belle Chasse Hwy (East) Phase 1
Raise levees to the detention-basin elevation.
- WBV-90** (HYLA 06/01/11 CCP 12/31/12 NCC 02/04/13)
GIWW-West Closure Complex
Construction of 225-foot navigable structures;
19,140 cfs PS; T-wall on the edge of the 404c area;
levee; excavation/dredging for a gated closure south
of the confluence of Harvey and Algiers Canals.



- WBV MRL-01.1** (HYLA 06/01/11 CCP 06/01/11)
Oakpoint to Oakville
Stabilized soil crown cap.
- WBV MRL-03.1** (HYLA 05/31/11 CCP 05/31/11)
Belle Chasse to Oakpoint
Stabilized soil crown cap.
- WBV MRL-04.1** (HYLA 05/31/11 CCP 05/31/11)
English Turn Bend to Belle Chasse
Stabilized soil crown cap.
- WBV MRL-06.1** (HYLA 05/31/11 CCP 05/31/11)
Parish Line to English Turn Bend
Clay crown cap.
- WBV MRL-07.1** (HYLA 05/30/11 CCP 05/30/11)
West Crossover Point to Parish Line
Clay crown cap.



SELA Interior Drainage

Contract Status	Orleans Parish	Jefferson Parish
TOTAL	11	24
In Design	9	12
Awarded	2	12
Complete	0	9



SELA Interior Drainage

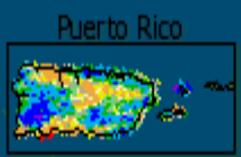
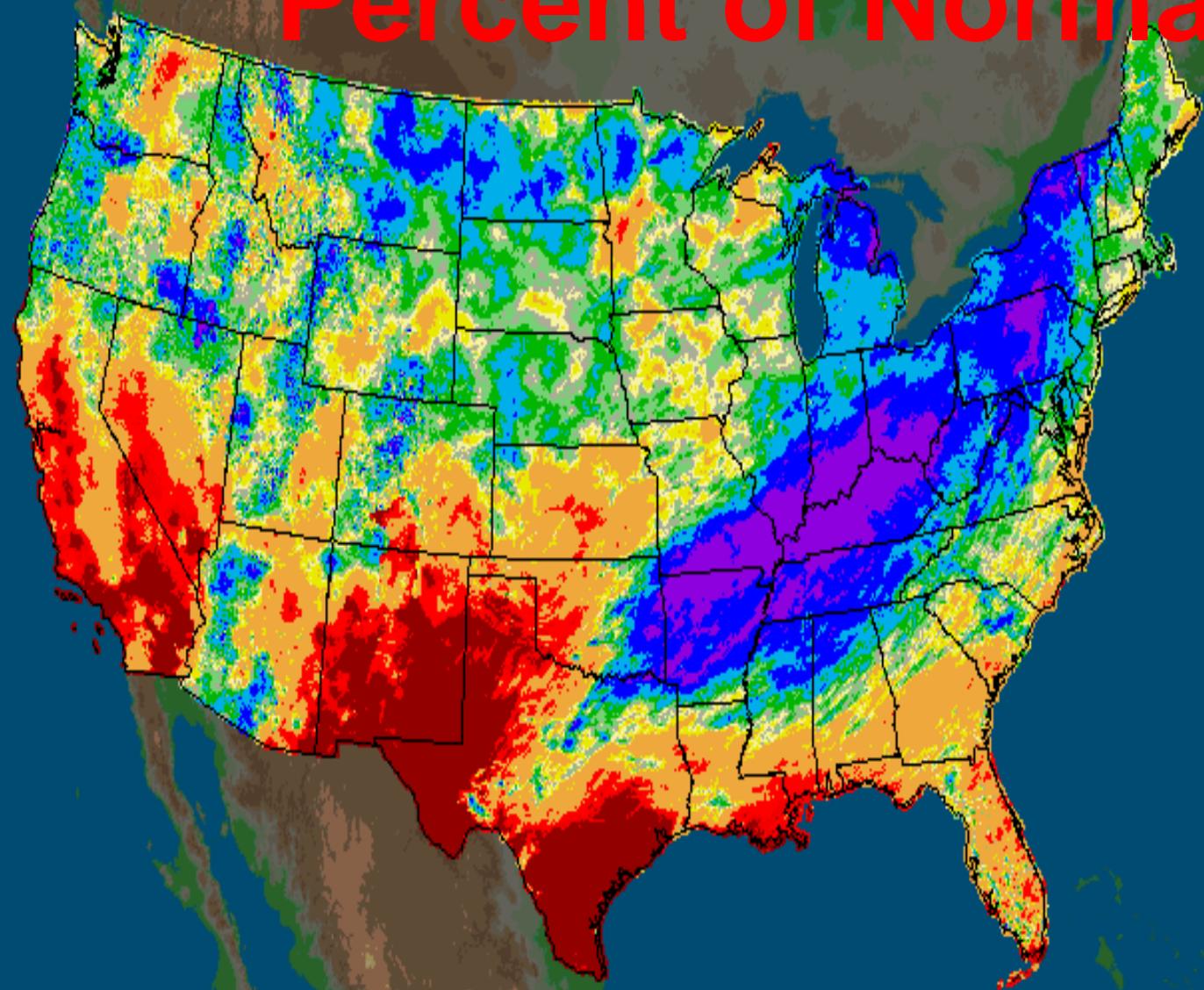
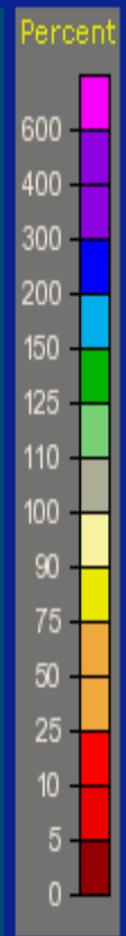


2011 Flood Fight

- The safety of the public is the Corps' number one priority.
- We are prepared to respond and are making informed decisions based on science and engineering.
- The Corps continues to work and communicate with our partners and stakeholders, including the National Weather Service, local levee districts, OCPR, DOTD, and GOHSEP.



Percent of Normal



Flood Control Mississippi River & Tributaries Project

- 973 miles of levees in New Orleans District
- 3 Flood Control Structures

Old River

Morganza

BATON ROUGE

Bonnet Carré

NEW ORLEANS

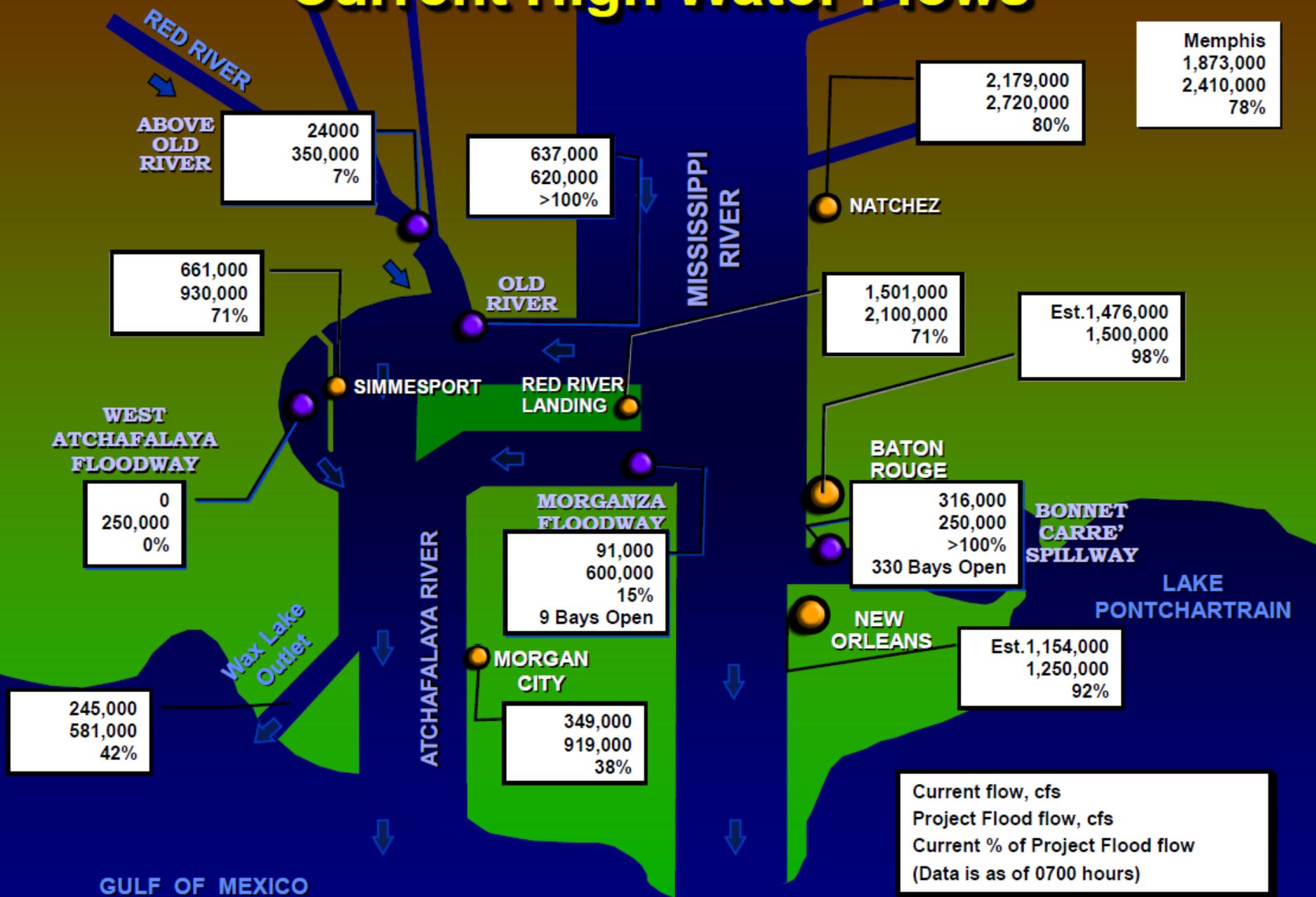
MORGAN CITY

ATCHAFALAYA RIVER

MISSISSIPPI RIVER



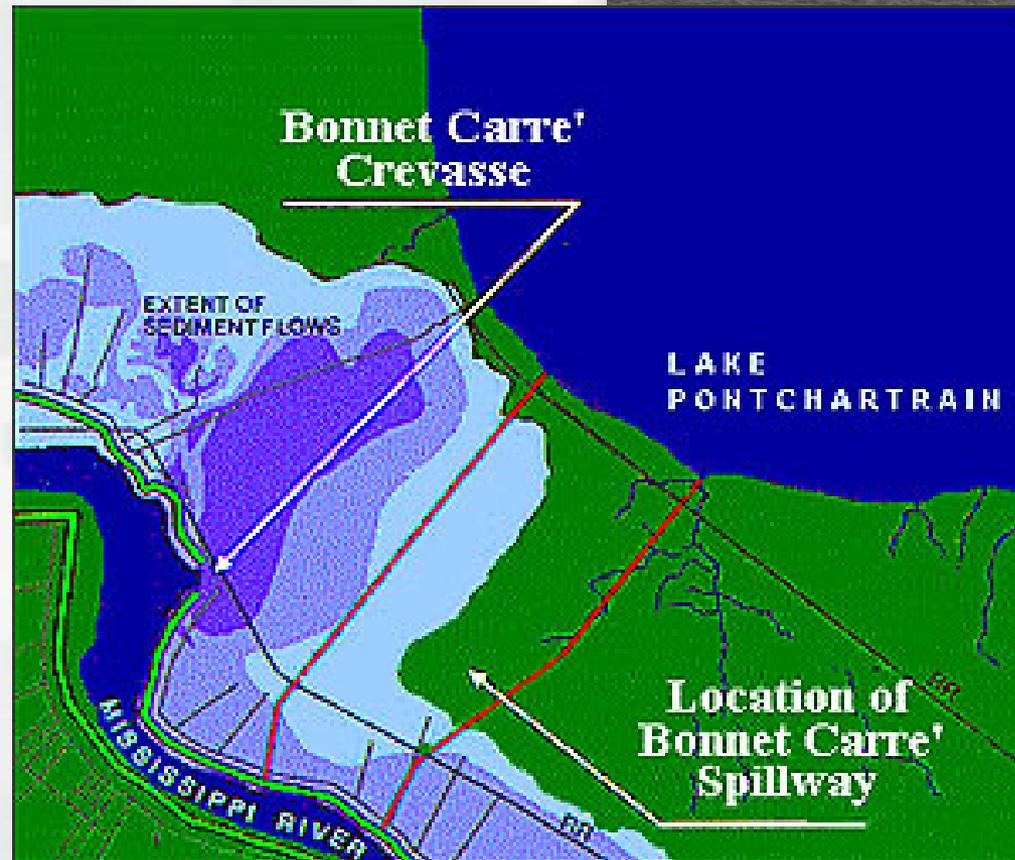
Current High Water Flows



Current flow, cfs
 Project Flood flow, cfs
 Current % of Project Flood flow
 (Data is as of 0700 hours)

Bonnet Carré Spillway

Current Status (as of 15 May):
Bays Open - 330;
Flow Rate – est. 316,000 cfs



Operational Trigger: Discharge of
1.25 million cfs and rising at Red
River Landing

Environmental Impacts

- Pallid Sturgeon – Threatened and Endangered Species in Bonnet Carre and Morganza Floodways.
- Louisiana Black Bear – Threatened and Endangered Species in Morganza and Atchafalaya Basin. Morganza listed as “critical habitat” for La. Black Bear.
- Cultural Resources – 172 prehistoric and historical archeological properties including some historic standing structures located from Morganza Floodway to Atchafalaya Bay. Twenty-four of these located north of U.S. Hwy 190 with highest possibility of being subject to erosion.
- Recreational Use Areas in Morganza Floodway, Atchafalaya Floodway and Bonnet Carre could be curtailed.
- Recreational activities that could be impacted include camping areas, a shooting range complex, public and private boat launches, hiking areas, bird watching areas, hunting, fishing, wildlife observation, and educational areas.
- Large and small wildlife will be effected in both floodways. Habitat may be temporarily effected.

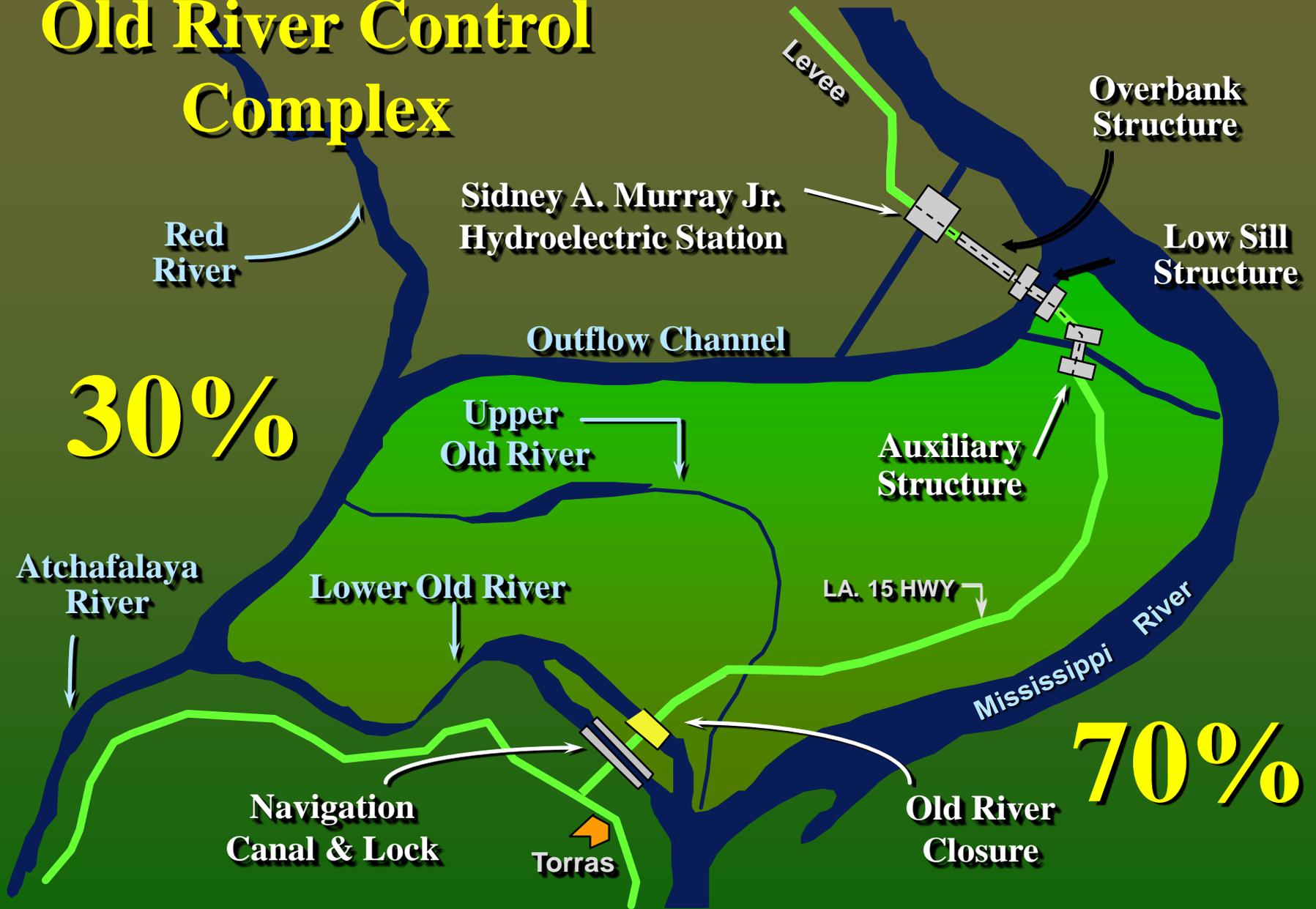


Environmental Monitoring – Bonnet Carre

- USGS conducting water quality sampling and analysis (partial funding by Corps)
- LADEQ conducting water quality sampling & analysis in Lake Pontchartrain
- Lake Pontchartrain Basin Foundation conducting water quality sampling & analysis around perimeter of Lake Pontchartrain
- LDWF conducting water quality sampling and fisheries monitoring in Lake Pontchartrain through Lake Borgne
- Mississippi Department of Marine Fisheries and others collecting water quality and fisheries data from Mississippi Sound and coastal waters
- OCPR monitoring changes to Mississippi River channel bathymetry due to operation of spillway
- Pallid Sturgeon – Capture of this species from the Bonnet Carre Spillway and return to the Mississippi River once spillway structure is closed
- Invasive Asian Carp – Tagging and monitoring of movements to determine survival and potential for introduction to north shore streams



Old River Control Complex



Red River

Sidney A. Murray Jr. Hydroelectric Station

Overbank Structure

Low Sill Structure

Outflow Channel

30%

Upper Old River

Auxiliary Structure

Atchafalaya River

Lower Old River

LA. 15 HWY

Mississippi River

Navigation Canal & Lock

Torras

Old River Closure

70%

Old River Complex



Old River
Auxiliary Structure

Old River
Low Sill
Structure

Old River
Overbank Structure

Sidney Murray
Hydroelectric Plant

Mississippi & Atchafalaya STAGES – 16 May 2011 – 0600 CDT

Station	Flood Stage	Current Stage	Forecasted Crest Stage	Date	Record Stage	Year
Cairo, IL	40.0	53.67	61.72****	2 May	59.51	1937
New Madrid, MO	34.0	43.40	48.35	6 May	47.97	1937
Caruthersville, MO	32.0	43.34	47.61	7 May	46.00	1937
Memphis, TN	34.0	Missing	47.87	10 May	48.70	1937
Helena, AR	44.0	55.54	56.59	12 May	60.21	1937
Arkansas City, AR	37.0	53.11	At Crest	16 May	59.20	1927
Greenville, MS	48.0	64.18	64.5	17 May	65.4*****	1927
Vicksburg, MS	43.0	56.64	57.5	19 May	56.20*	1927
Natchez, MS	48.0	61.12	63.0	21 May	58.04	1937
Red River Lndg, LA	48.0	62.66	65.5*** (64.5***)	22 May	61.61	1997
Baton Rouge, LA	35.0	44.43	47.5*** (45.0***)	17 May	47.28	1927
New Orleans, LA	17.0**	16.90	19.5*** (17.0***)	14 May	21.27	1922
Simmesport, LA	47.0	43.58	45.5	20 May	59.13	1927
Butte LaRose, LA	25.0	20.53	27.0	24 May	27.28	1973
Morgan City, LA	4.0	7.51	9.5*** [11.0***]	25 May	10.53	1973

*62.2 ' If Levees Held

New Record Stage **Exceeding Current Record Stage**

Levees Protect New Orleans to 20.0' Stage *w/o Morganza Operation ***w/Morganza Operation

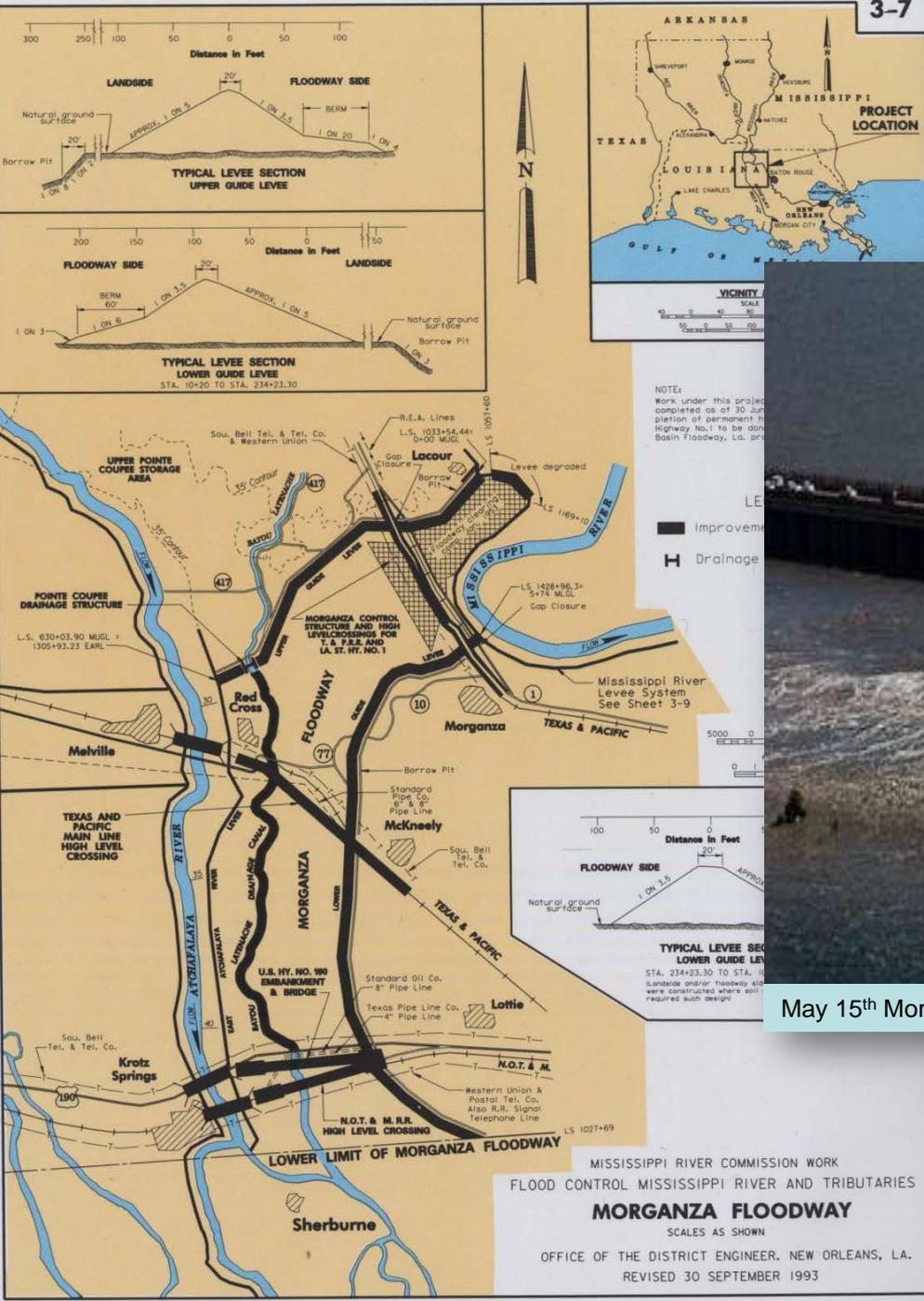
****NWS Crest of 63.0' on 5 May w/o BPNM Operation – Actual Stage of 59.7' on 5 May w/ BPNM Operation

*****Adjusted to Current Gage Location - Prior to 1940 stages were taken at City Front or Warfield Point

Note: With Morganza Operation, Baton Rouge to New Orleans crests will occur before upstream locations and will remain steady during the floodway operations.

Morganza Floodway

Current Status (as of 16 May):
 Bays Open - 11; Flow Rate – est. 110,000 cfs



May 15th Morganza Photo Courtesy of P.C. Piazza, The Daily Advertiser in Lafayette, LA

Operational Trigger: Discharge
 of 1.5 million cfs and rising at
 Red River Landing

Environmental Monitoring – Morganza

- Corps has existing water quality, sedimentation, water flow monitoring in two management units within the basin – Buffalo Cove and Henderson
- The State's Atchafalaya Basin Program had an existing, extensive water quality, flow, etc monitoring program in the entire East Grand Lake area
- USGS has established three water quality monitoring stations in and near Atchafalaya Basin. Corps may add another and increase frequency
- LDWF Inland Fisheries Division will be increasing their monitoring efforts through the basin during and after flood event to document effects
- Approximately 50 Louisiana black bear will be forced from the Morganza floodway. Flood-fight personnel will report sighting to LDWF for tracking
- Corps will cooperate with LDWF/USFWS to monitor bear movements and possibly fund study to comply with Endangered Species Act requirements
- Corps archeologists are documenting status of cultural resource sites within Morganza Floodway, pre and post diversion.





National Water Information System: Web Interface

[USGS Water Resources](#)

Data Category:
Real-time

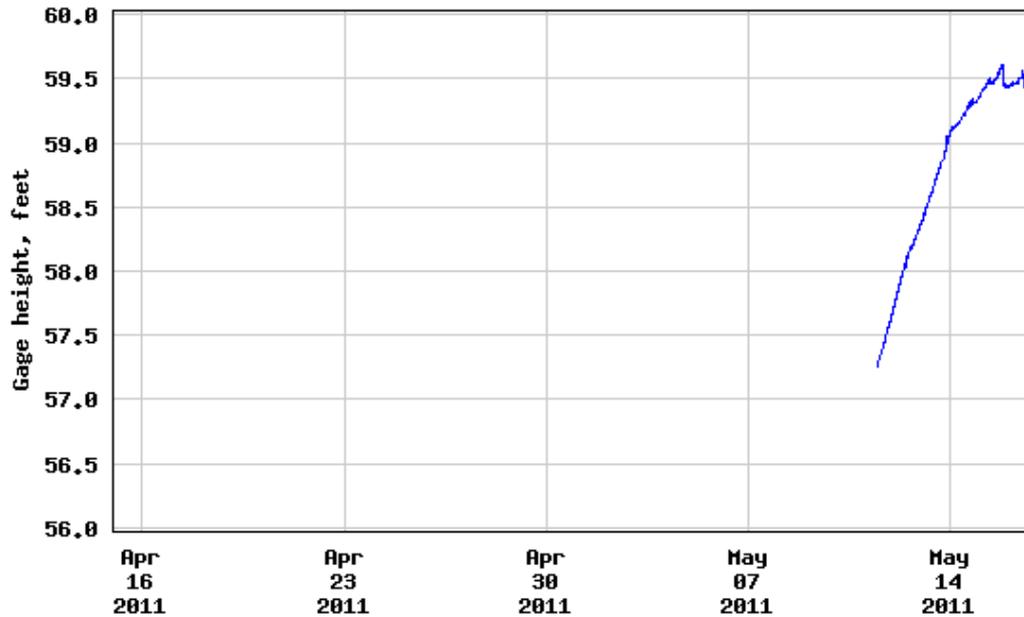
Geographic Area:
Louisiana

USGS 304619091365900 Fore Bay at Morganza Floodway Temporary Gage

Most recent instantaneous value: 59.53 05-16-2011 17:10 CDT

PROVISIONAL DATA SUBJECT TO REVISION

USGS 304619091365900 Fore Bay at Morganza Floodway Temporary Gage

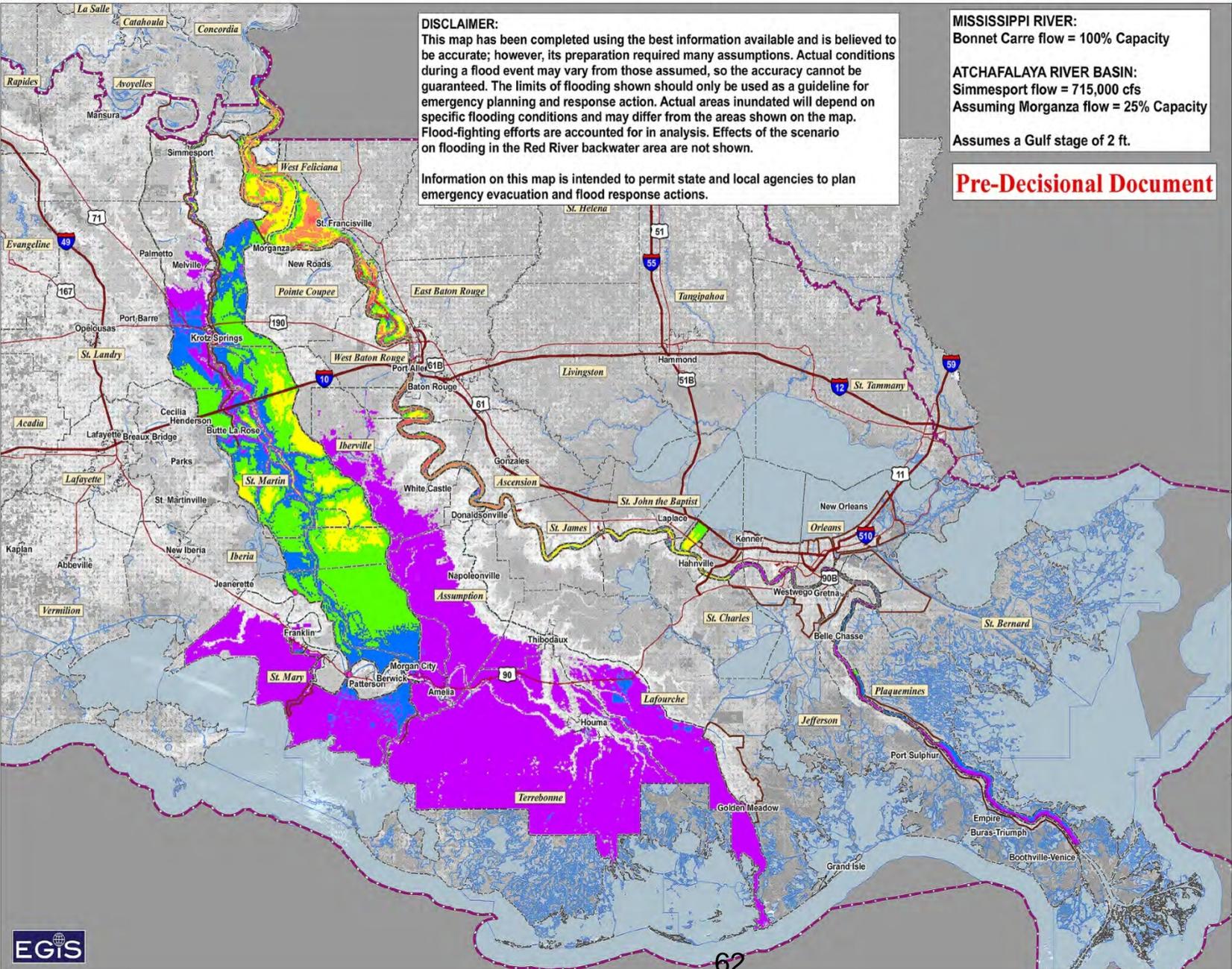


---- Provisional Data Subject to Revision ----

http://waterdata.usgs.gov/la/nwis/uv?site_no=304619091365900&format=gif&period=31



Potential Inundation (Scenario 1a)



DISCLAIMER:
This map has been completed using the best information available and is believed to be accurate; however, its preparation required many assumptions. Actual conditions during a flood event may vary from those assumed, so the accuracy cannot be guaranteed. The limits of flooding shown should only be used as a guideline for emergency planning and response action. Actual areas inundated will depend on specific flooding conditions and may differ from the areas shown on the map. Flood-fighting efforts are accounted for in analysis. Effects of the scenario on flooding in the Red River backwater area are not shown.

Information on this map is intended to permit state and local agencies to plan emergency evacuation and flood response actions.

MISSISSIPPI RIVER:
Bonnet Carre flow = 100% Capacity

ATCHAFALAYA RIVER BASIN:
Simmesport flow = 715,000 cfs
Assuming Morganza flow = 25% Capacity

Assumes a Gulf stage of 2 ft.

Pre-Decisional Document

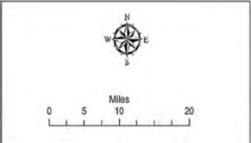
Estimated Flood Depth

- 0 ft - 5 ft
- 5 ft - 10 ft
- 10 ft - 15 ft
- 15 ft - 20 ft
- 20 ft - 25 ft
- 25 ft - 30 ft
- 30 ft - 40 ft

Geographic Features

- Selected Channel Floodgate
- Flood Control Systems
- Analysis Boundary
- City Limits
- New Orleans District

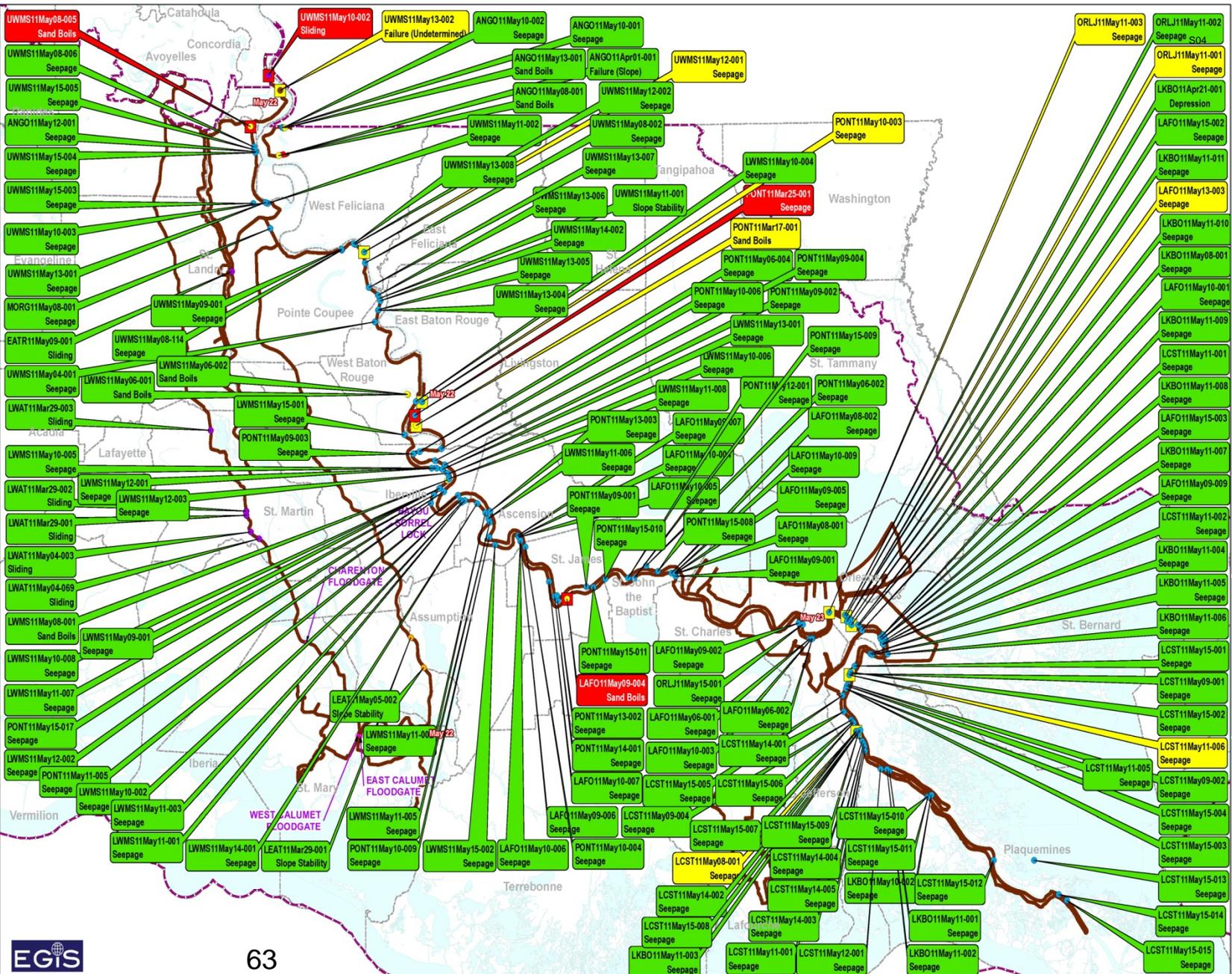
NOTE: Future revisions of this map are expected to occur for changed forecasts.



**Potential Inundation
Spring 2011 Flood
(Scenario 1a)**



New Orleans District Hot Spot Inspection Points Map



Inspection Point Status

Inspection Deficiency - 152

- Depression - 1
- Failure (Slope) - 1
- Failure (Undetermined) - 1
- Sand Boils - 8
- Seepage - 131
- Sliding - 7
- Slope Stability - 3

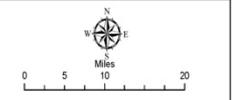
PRIORITY Level

- Low Priority Sites - 139
- Medium Priority Sites - 9
- High Priority Sites - 4

Geographic Features

- Flood Control Systems
- New Orleans District
- Parish Boundary
- Major Waterway

* Predictions based on National Weather Service crest forecast.



DISCLAIMER: While the United States Army Corps of Engineers, New Orleans District (hereinafter referred to as USACE) has made reasonable efforts to ensure the accuracy of the maps and associated data, it should be explicitly noted that USACE makes no warranty, representation or guarantee, either express or implied, as to the content, sequence, accuracy, timeliness or completeness of any of the data provided herein. USACE, its officers, agents, employees, or servants shall assume no liability for any delays for any errors, omissions, or inaccuracies in the information provided regardless of how caused. The USACE, its officers, agents, employees or servants shall assume no liability for any damages or actions taken by the user based on the use of the maps and associated data in reliance upon any information or data furnished here. By using these maps and associated data the user does so entirely at their own risk and explicitly acknowledges that he/she is aware of and agrees to be bound by the disclaimer and agrees not to present any claim or demand of any nature against the USACE, its officers, agents, employees or servants in any form whatsoever for any damages of any nature whatsoever that may result from or may be caused in any way by the use of the maps and associated data.

Questions

