



Louisiana Water Resources Commission

July 28, 2022

Billy Williamson, PE

Louisiana Department of Transportation and Development

LOUISIANA
WATERSHED
INITIATIVE

working together for sustainability and resilience



AGENDA

1. Louisiana Watershed Initiative Overview
2. State Projects and Programs
3. Statewide Data and Modeling
4. Questions

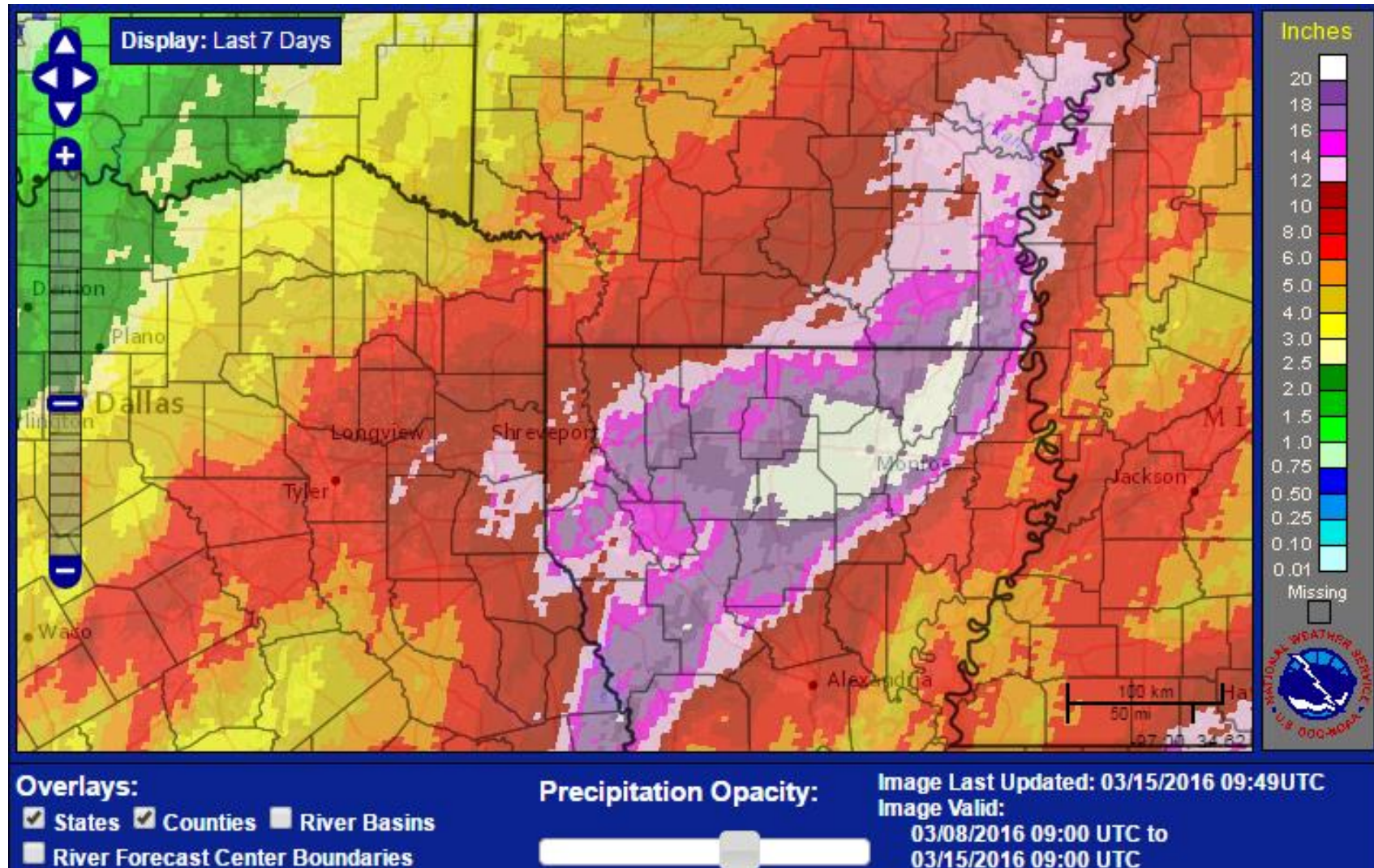




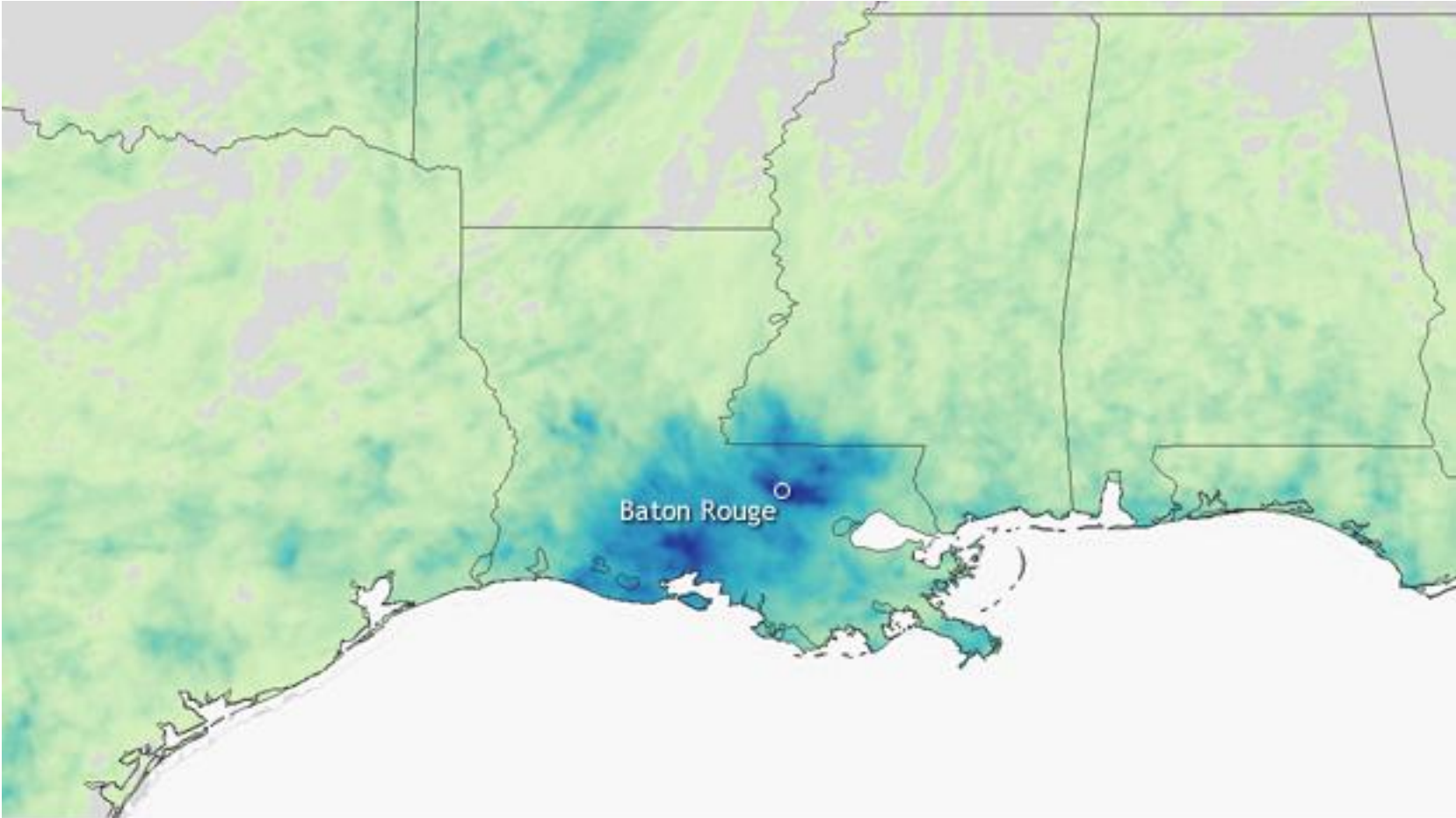
Louisiana Watershed Initiative Overview



March 2016



August 2016

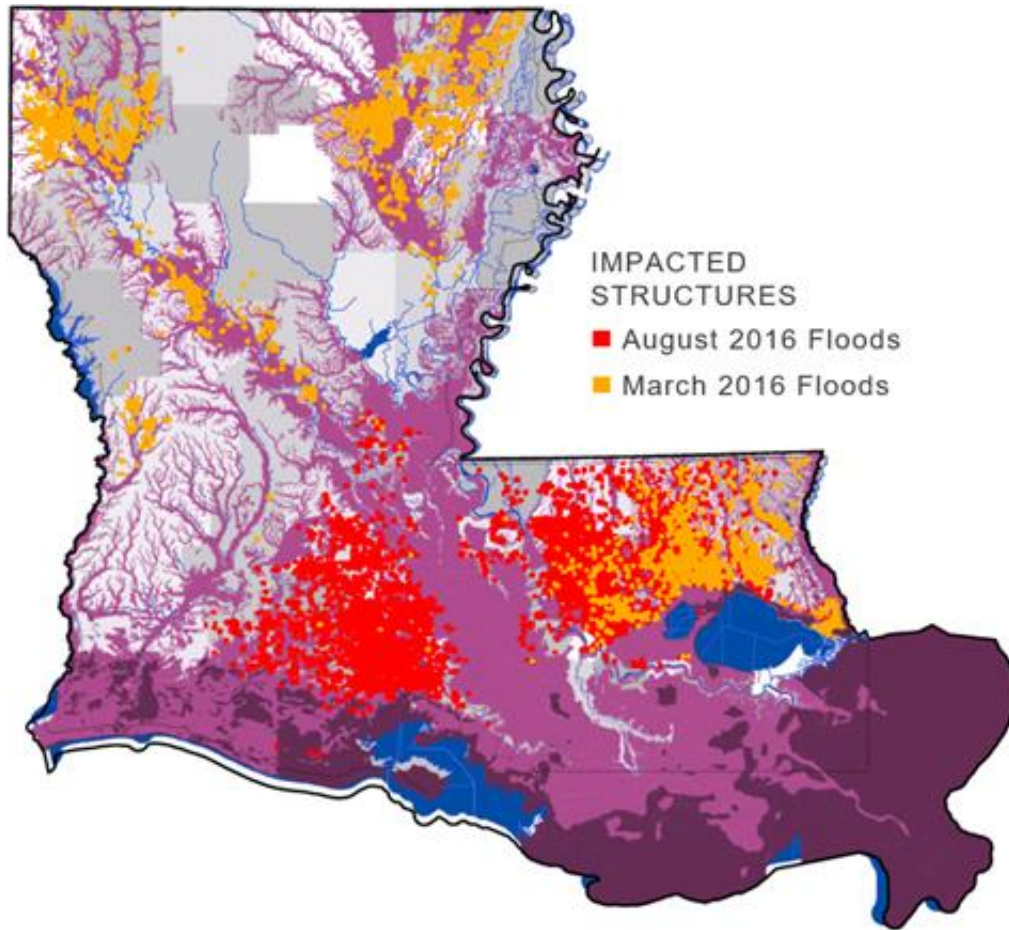


August 8-15, 2016



Climate.gov
Source: AHPs (PRISM)

2016 Floods

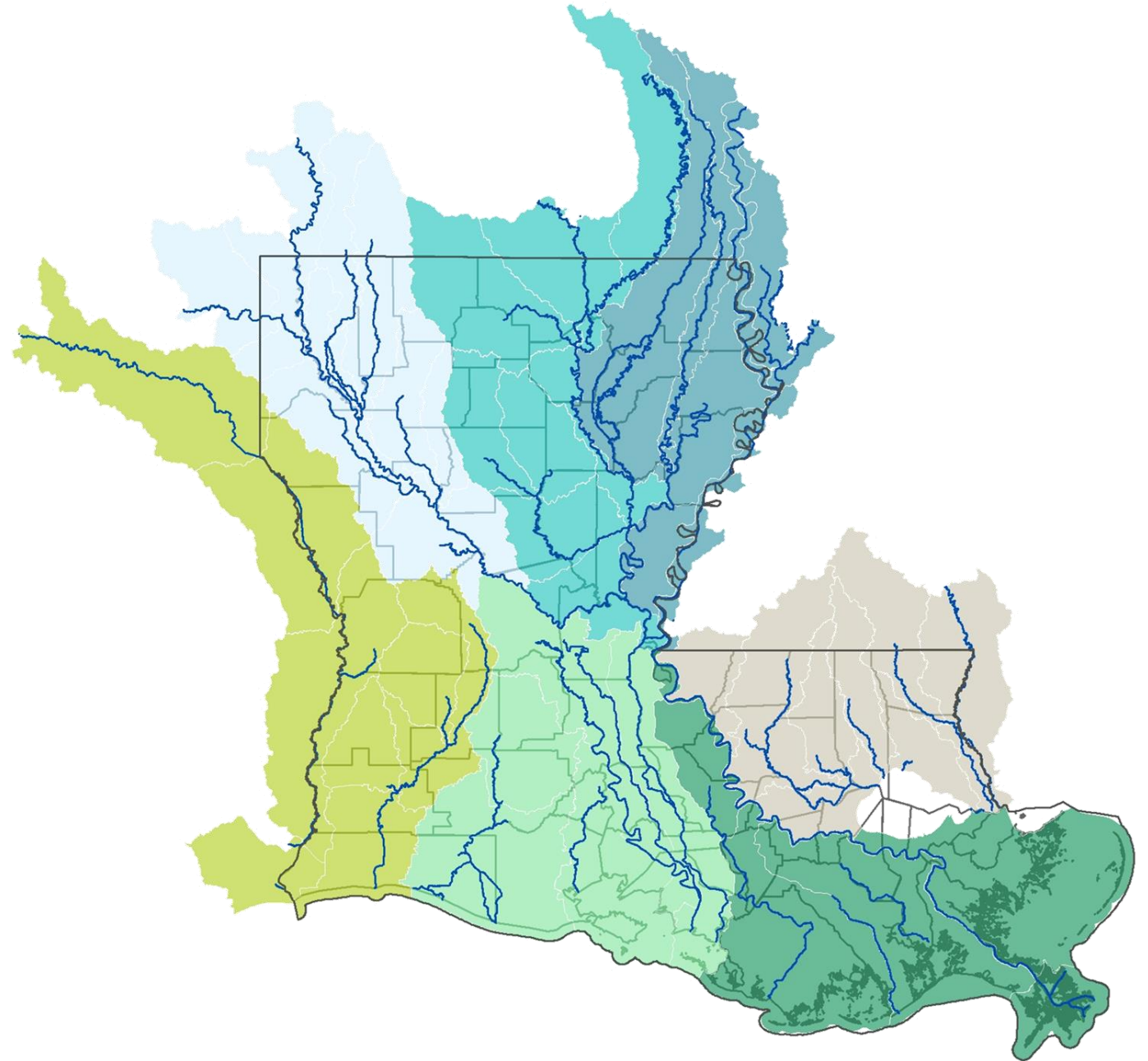


- 145k structures impacted
 - ~80% uninsured
- >\$10B in damages



The challenge

- Flooding does not follow political boundaries, as major watersheds cross parish and state lines.
- Actions in one community can impact entire ecosystems.



The opportunity

- Fundamentally change the state's approach to flood risk reduction
- Proactively address flood risk by improving statewide floodplain management



CHENIERE LAKE PARK, WEST MONROE



The Council



The federal government has awarded Louisiana \$1.2 billion in HUD CDBG-Mitigation funds to support the LWI.

Louisiana Council on Watershed Management



LOUISIANA
Office of
COMMUNITY
DEVELOPMENT



Our mission

Reduce flood risk, improve floodplain management throughout the state and maximize the natural and beneficial function of floodplains



MISSISSIPPI RIVER IN DARROW, LA



STATE PROJECTS AND PROGRAMS

WORKING TOGETHER FOR SUSTAINABILITY AND RESILIENCE



State projects and programs

PROGRAM OVERVIEW

- State agencies worked together to identify and fund projects and programs that would establish a more comprehensive flood mitigation strategy in Louisiana.
- OCD will administer program awards in phases and in alignment with the state's Action Plan.
- Selected projects advance LWI's long-term resilience objectives, including natural flood management, flood risk reduction and critical infrastructure projects.



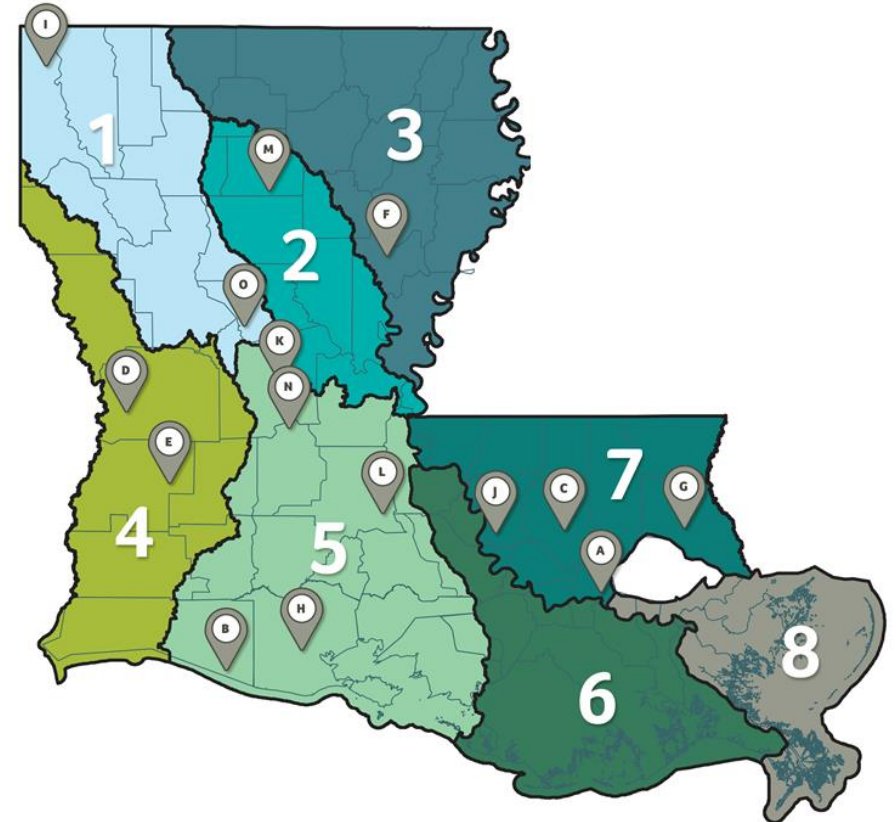
TOLEDO BEND RESERVOIR



State projects and programs

PROGRAM OVERVIEW

- Phase 1 includes \$163 million in flood risk reduction, drainage and critical infrastructure projects that provide crucial flood mitigation.
- Contracts are in development with project applicants.
- Project summaries, program policies and procedures are available at watershed.la.gov/state-projects-and-programs.
- Contact Kristen Vidrine at Kristen.Vidrine@la.gov with questions.



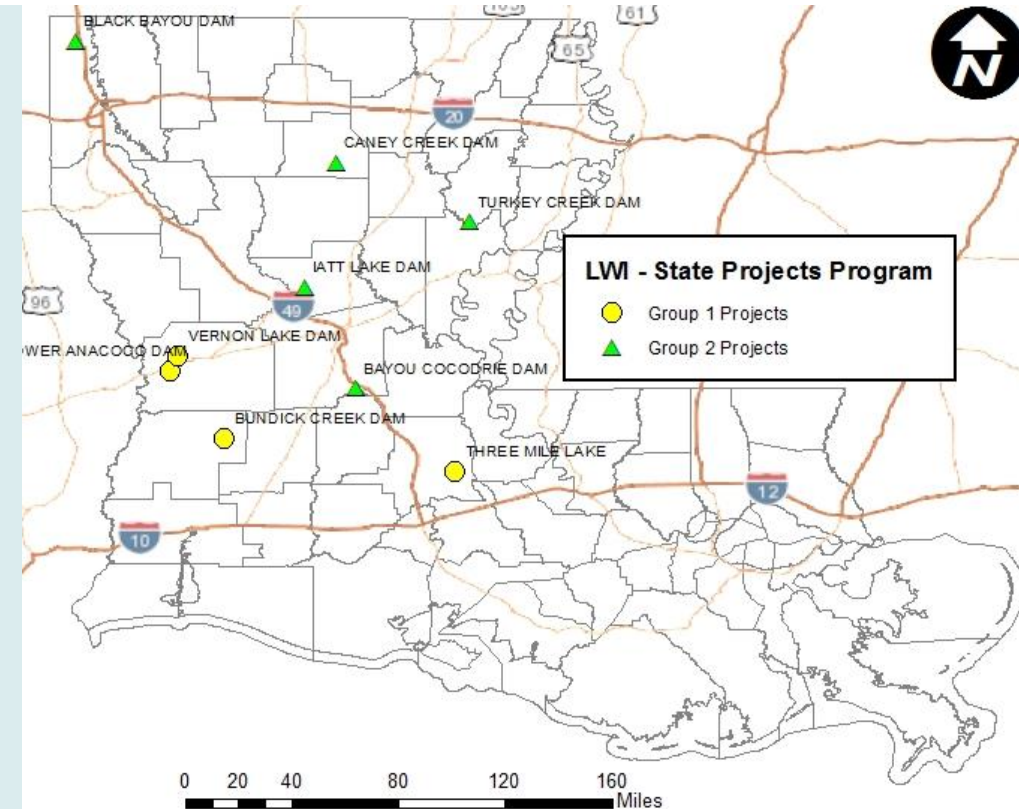
PHASE 1 SPP PROJECTS STATEWIDE



State projects and programs

DOTD PROJECTS

- Eight Projects Selected and Approved
 - Eight dams and one backwater flooding project
- Projects broken into two groups
 - Group 1: Michael Baker International
 - Group 2: Freese & Nichols, Inc.
- NTPs have been issued
- Five Year Project Timeline



DOTD PROJECT SITES



Statewide Data and Modeling



Statewide Data and Modeling Program

OVERVIEW

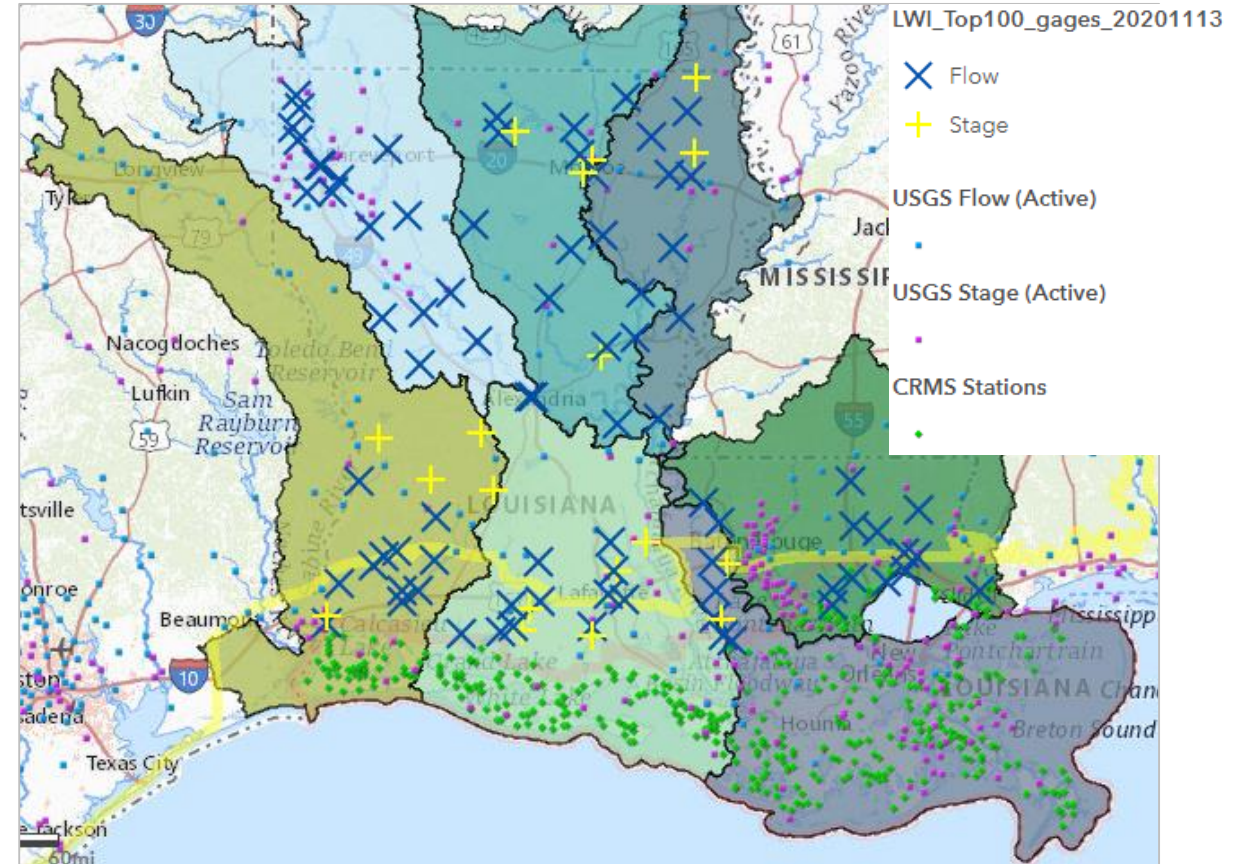
- \$145M to support statewide effort
- Generate and use the best available science and objective data
- Assess flood risks, including adverse impacts
- Evaluate proposed projects, strategies, and policies
- Guide decisions involving future development



River and Rain Gauge Network

PROGRAM OVERVIEW

- \$15M Investment
- 100 gauge sites to be installed
 - 15 sites to include water quality instrumentation
- Technical report and interactive map of the gauge network design are available at: watershed.la.gov/modeling-program



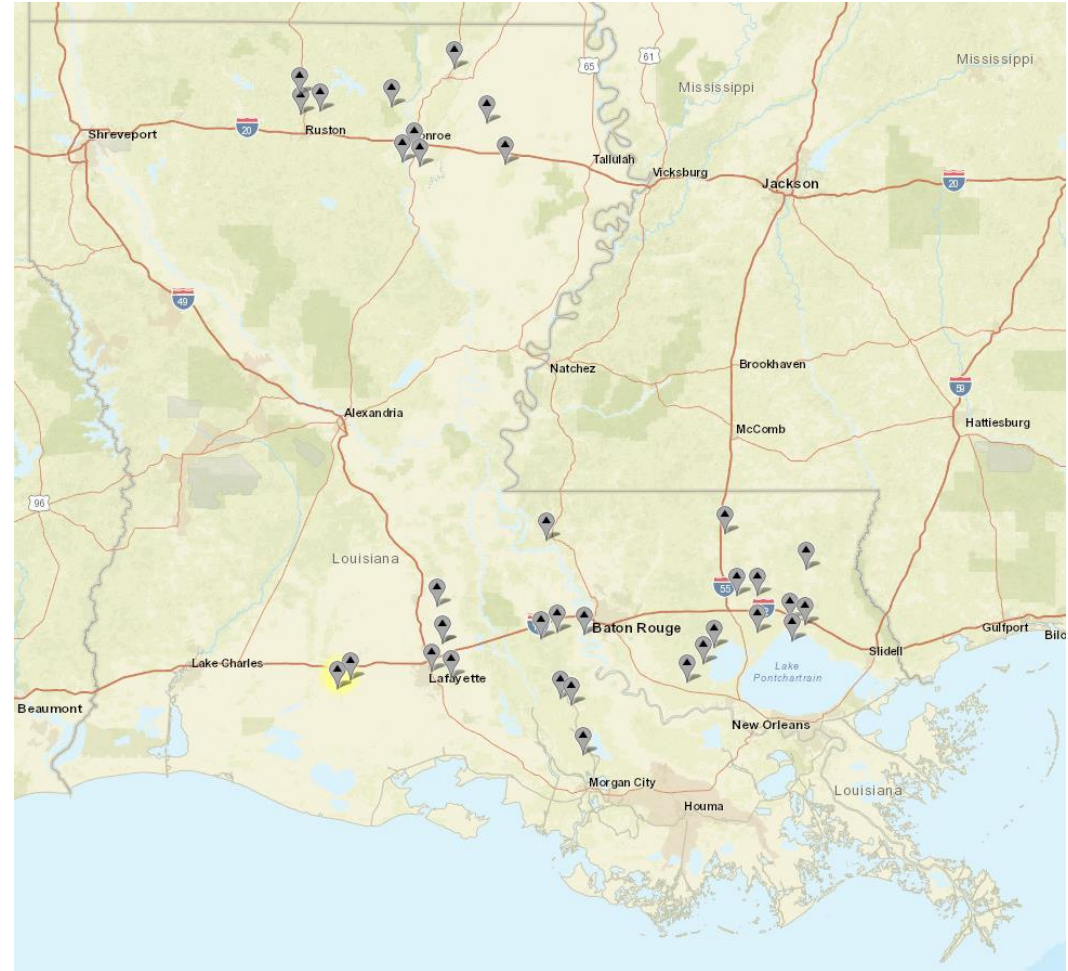
MAP OF LWI GAUGE NETWORK DESIGN
(TOP 100 SITES)



River and Rain Gauge Network

STATUS UPDATE

- 69 gauges installed to date @ 35 sites
 - 35 stream gauges
 - 34 rain gauges
- https://waterdata.usgs.gov/la/nwis/current/?type=LWI&group_key=county_cd



MAP OF INSTALLED LWI GAUGES
(AS OF 7/22/2022)



NOAA ATLAS 14 update

- Rainfall data that more accurately represents current precipitation data and its anticipated impacts.
- 430K committed to the FHA Pooled Fund Program to update the state's precipitation frequency estimates (PFEs) in partnership with NOAA
- The FHWA facilitator has assigned a study number (TFP-5(477)) and cleared the study to proceed.

Open Solicitations

Number	Title
<input type="text"/>	<input type="text"/>
1552	DEVELOP COUNTERMEASURE STRATEGIES FOR PROTECTING BRIDGE GIRDERS AGAINST OVERHEIGHT VEHICLES IMPACT
1551	In-Service Performance Evaluation (ISPE) of Roadway Safety Features
1550	A Multi-State Effort to Develop a Customizable Roadway Safety Management Systems
1548	Investigation of Dual Grade / Hybrid Steel Plate Girders Utilizing Stainless Steel
1547	Building Information Modeling (BIM) for Infrastructure
1546	Development of a Guide for Responding to Bridge Fires: Assessment, Repair, and Replacement
1545	Integration of New Traffic Signal Actuation Concepts using Enhanced Detector Information
1544	Western Alliance for Quality Transportation Construction (WAQTC) 2021-2025
1543	UPDATE PRECIPITATION FREQUENCY ESTIMATES FOR LOUISIANA (NOAA ATLAS 14 VOLUME 14)
1542	Demonstration to Advance New Pavement Technologies Pooled Fund
1539	2023 through 2025 Biennial Asset Management Conference and Training on Implementation Strategies



Statewide Watershed Modeling

PROGRAM OVERVIEW

- In May 2020, DOTD issued requests for qualifications to develop watershed models for the state's 59 watersheds
 - 2-tiered selection process
- Task Order 1 was issued in November 2020 for the development, evaluation, and refinement of detailed Model Design Approaches and Cost Estimates
 - Design Approaches were developed in accordance with the LWI Guidance of Modeling Methodology

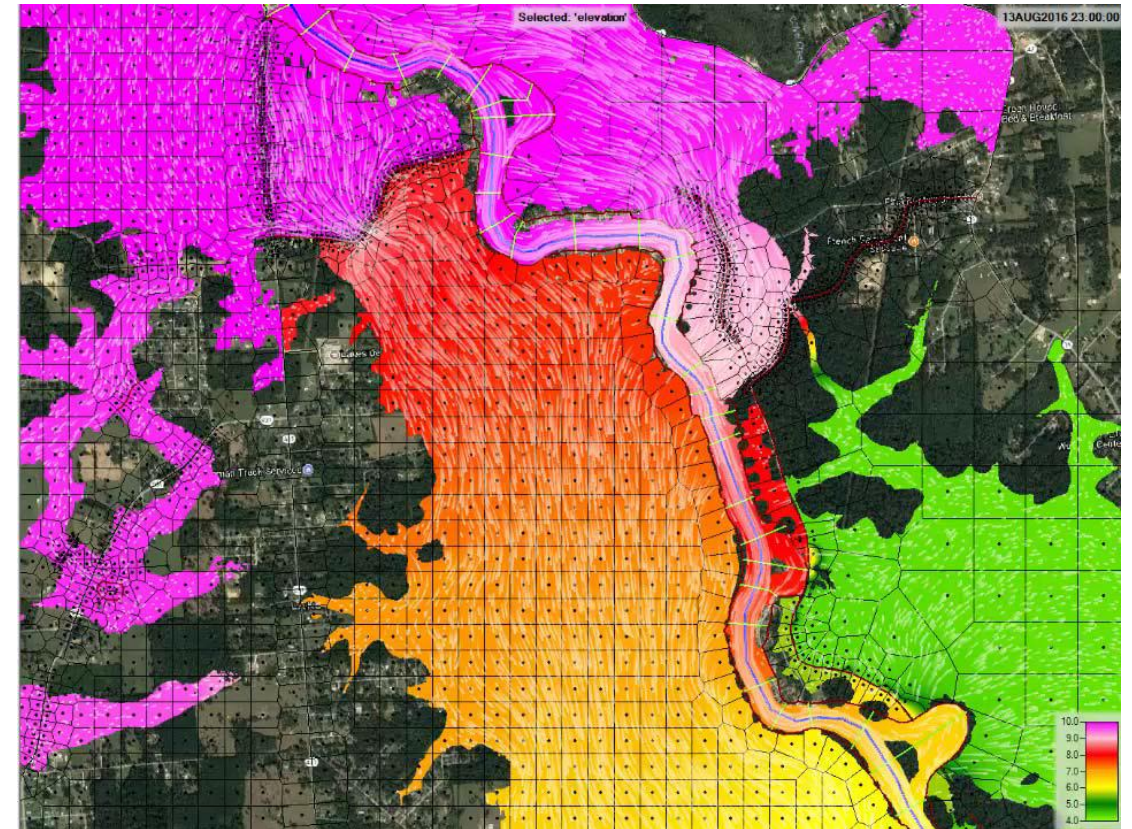
1D CHANNEL WITH 2D OVERBANK FLOW



Statewide Watershed Modeling

PROGRAM OVERVIEW

- \$77,272,171 OPC for regional modeling
 - Does not include Design Storm Development or Consequence Modeling
- HUC8 Models
- Coupled 1D/2D or Full 2D
- Tiered approach (high/low detail)
 - Population
 - Complexity
- Design approaches approved by TDQ

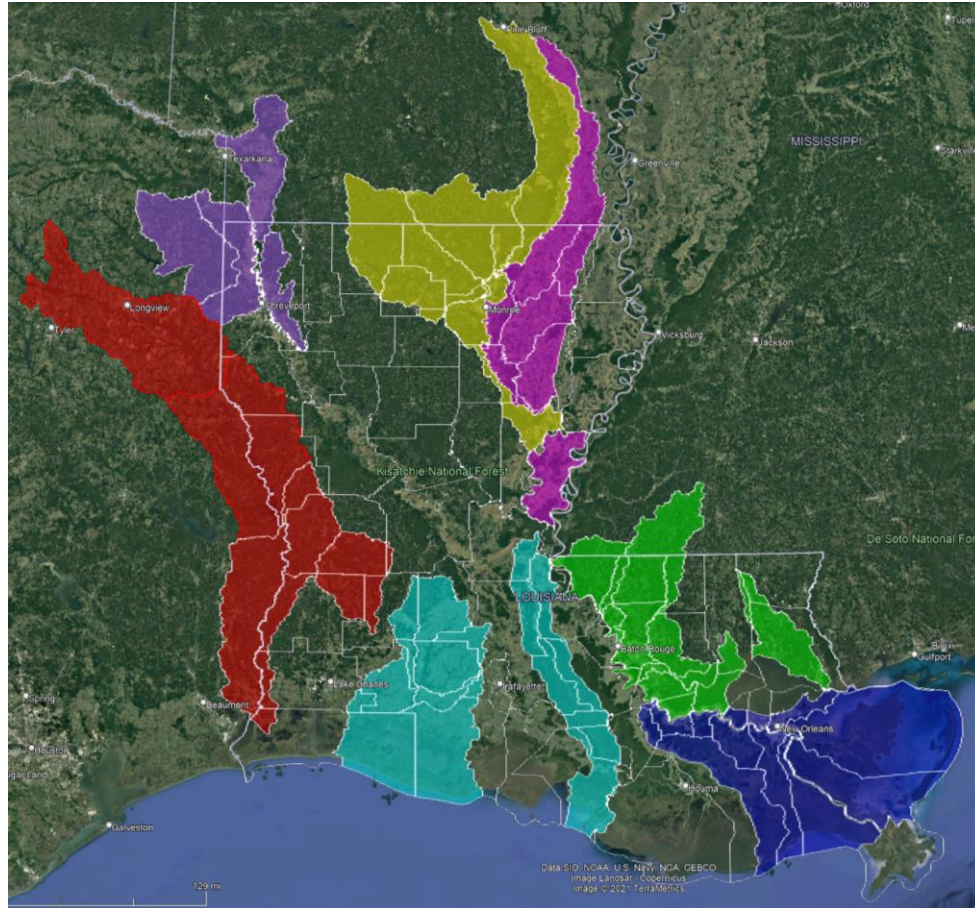


1D CHANNEL WITH 2D OVERBANK FLOW



Regional Watershed Modeling

SERIES I



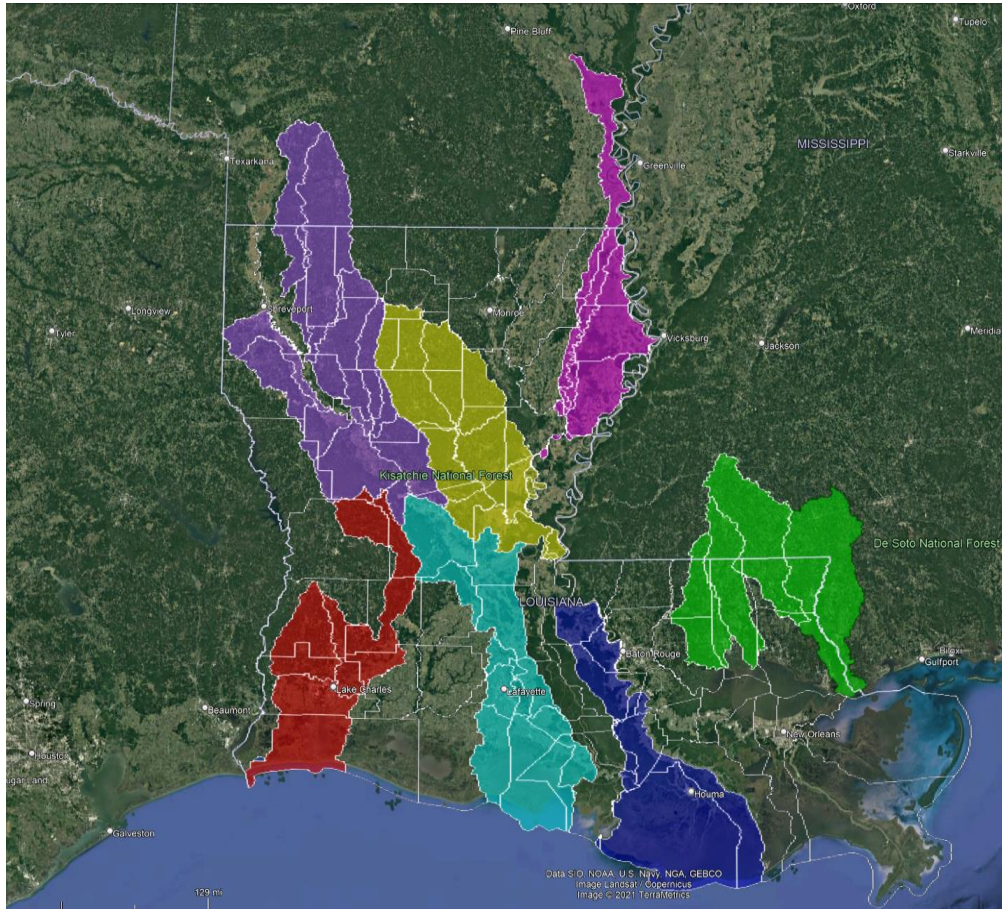
- 20 months
- Task orders issued

Deliverable	Deadline (Months from NTP)
Survey Plan	4
Survey Deliverable	20
Hydrologic Model Setup	12
Hydrologic Model Calibration	15
Hydrologic Model Validation	15
Hydraulic Model Setup	14
Hydraulic Model Calibration	18
Hydraulic Model Validation	18
Technical Report	20
Training Quick Guide	20
Geodatabase	20
Model Input and Output Files	20



Regional Watershed Modeling

SERIES II



- 24 months
- Task orders issued in January

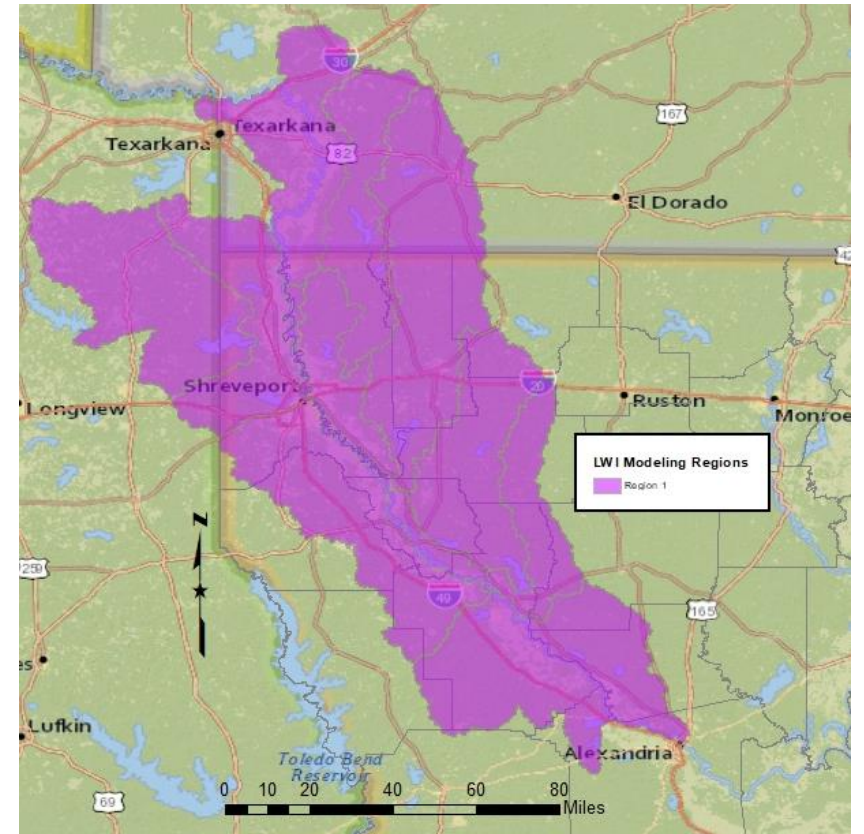
Deliverable	Deadline (Months from NTP)
Survey Plan	6
Survey Deliverable	24
Hydrologic Model Setup	11
Hydrologic Model Calibration	17
Hydrologic Model Validation	20
Hydraulic Model Setup	14
Hydraulic Model Calibration	19
Hydraulic Model Validation	20
Technical Report	24
Training Quick Guide	24
Geodatabase	24
Model Input and Output Files	24



Regional Watershed Modeling

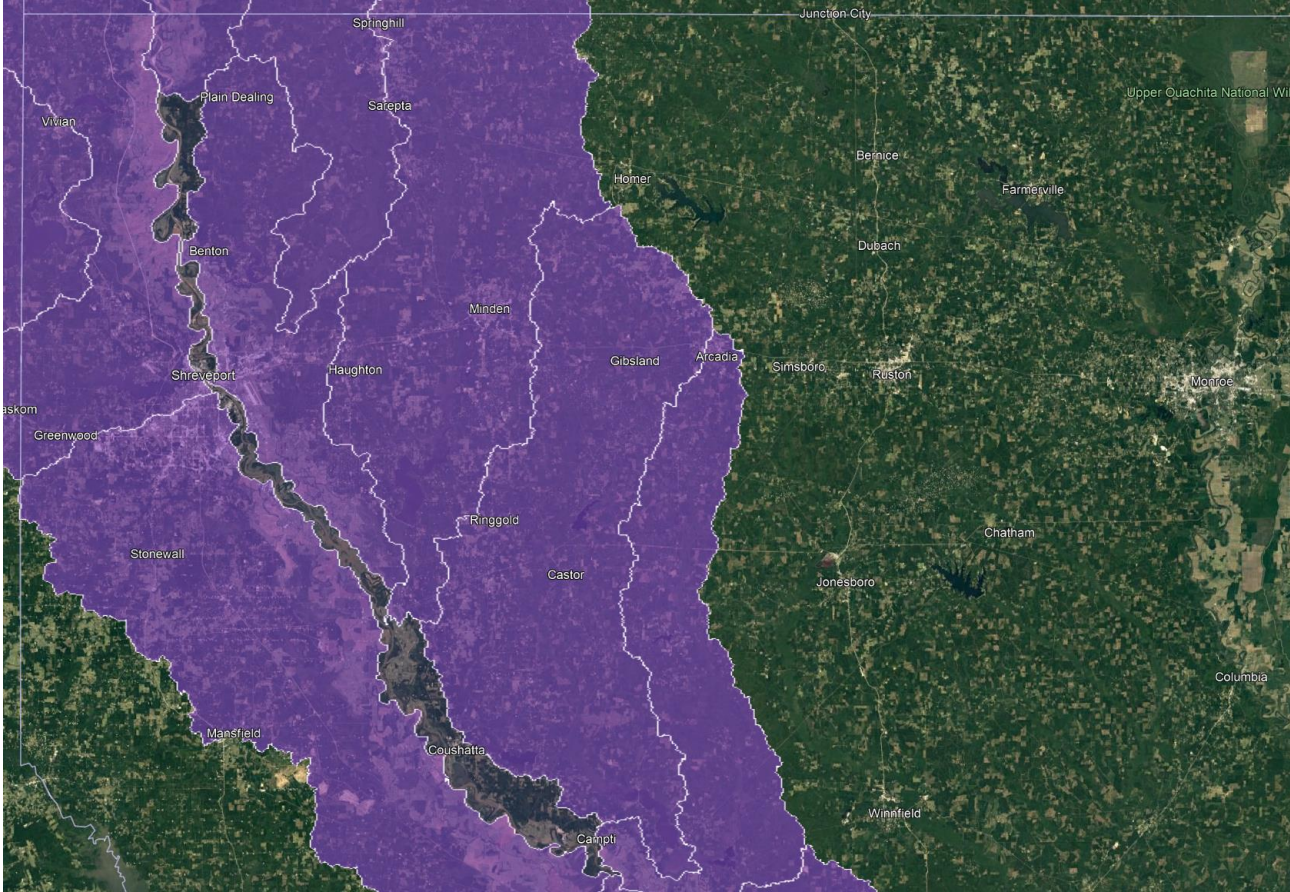
REGION 1

- Atkins North America (HUC 1114)
 - Dewberry (QA/QC)
 - Forte & Toblada (Survey)
 - NTB (Survey)
 - Michael Baker (Modeling select watersheds)
- Series I (Task Order 2)
 - McKinney-Postens Bayou, Red Chute, Cross Bayou, and Caddo Lake
- Series II (Task Order 3)
 - Loggy Bayou, Bodcau Bayou, Bayou Pierre, Saline Bayou, Black Lake Bayou, Lower Red
- Survey Plans approved; Series I collection underway



Regional Watershed Modeling

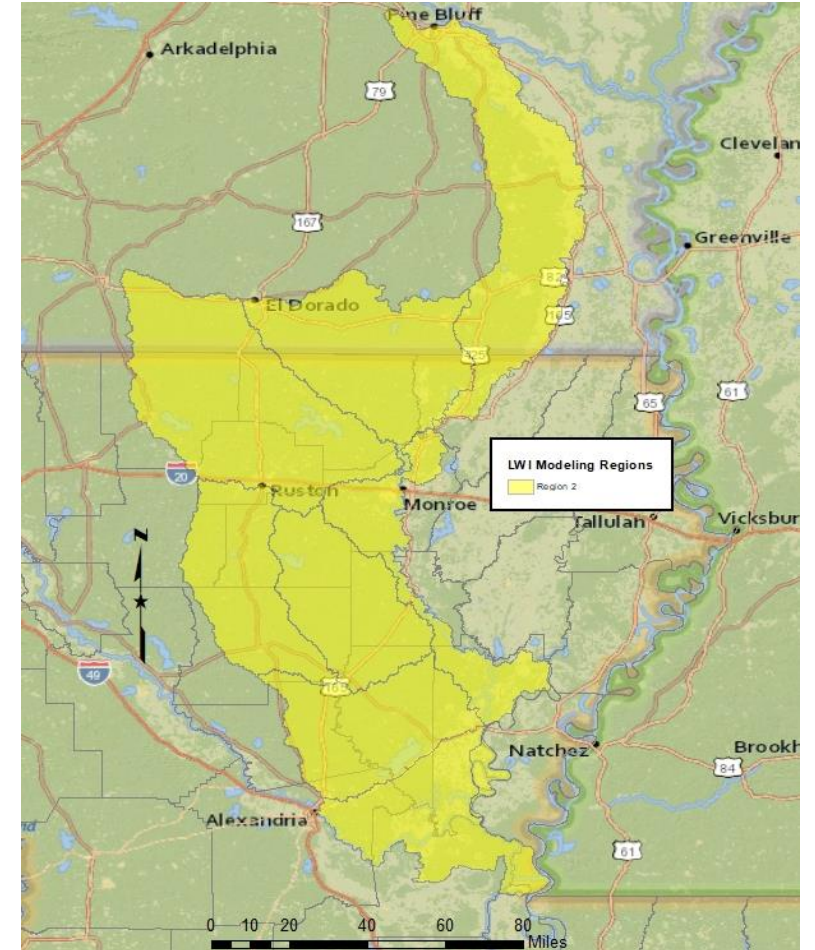
REGION 1



Regional Watershed Modeling

REGION 2

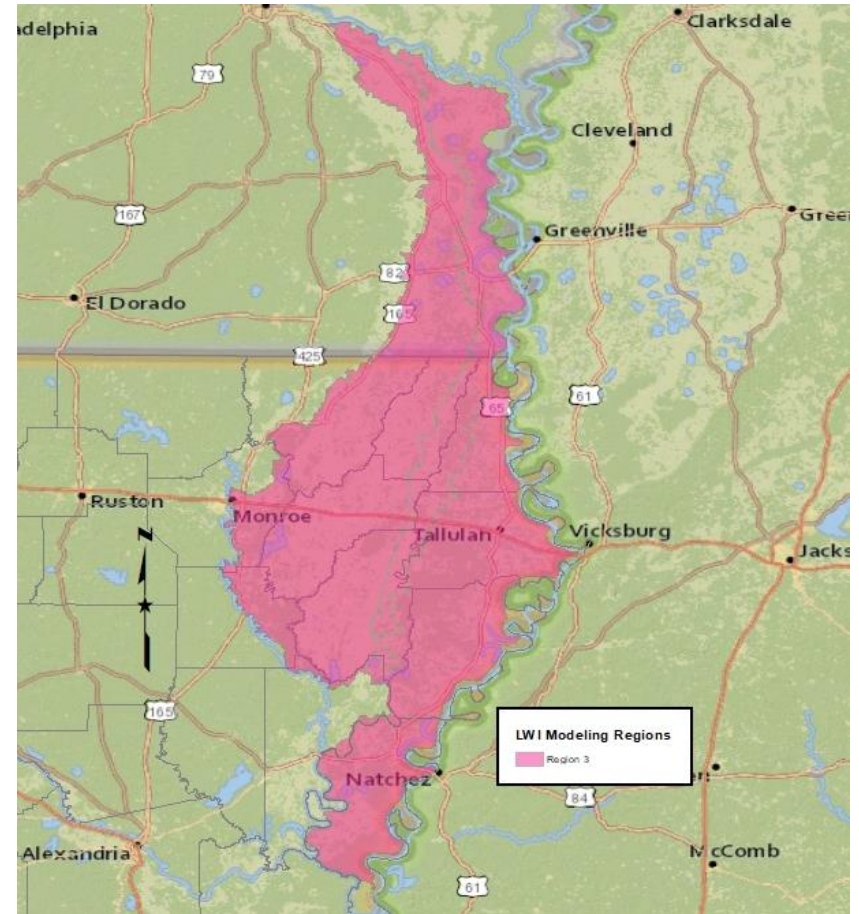
- Freese and Nichols (HUC 8040)
 - Nixon Engineering (Survey)
 - Bryant Hammett & Associates (Survey)
 - GOTECH (Survey)
 - Volkert (QA/QC & Outreach)
 - CE Hydro (Hydrometeorology & Hydrography)
- Series I (Task Order 2)
 - Lower Ouachita-Bayou de Loutre, Bayou Bartholomew, Bayou D'Arbonne, Lower Ouachita
- Series II (Task Order 3)
 - Lower Red, Castor, Dugdemonia, Little, Black
- Survey Plans approved
- Series I Hydrologic Model Setups approved



Regional Watershed Modeling

REGION 3

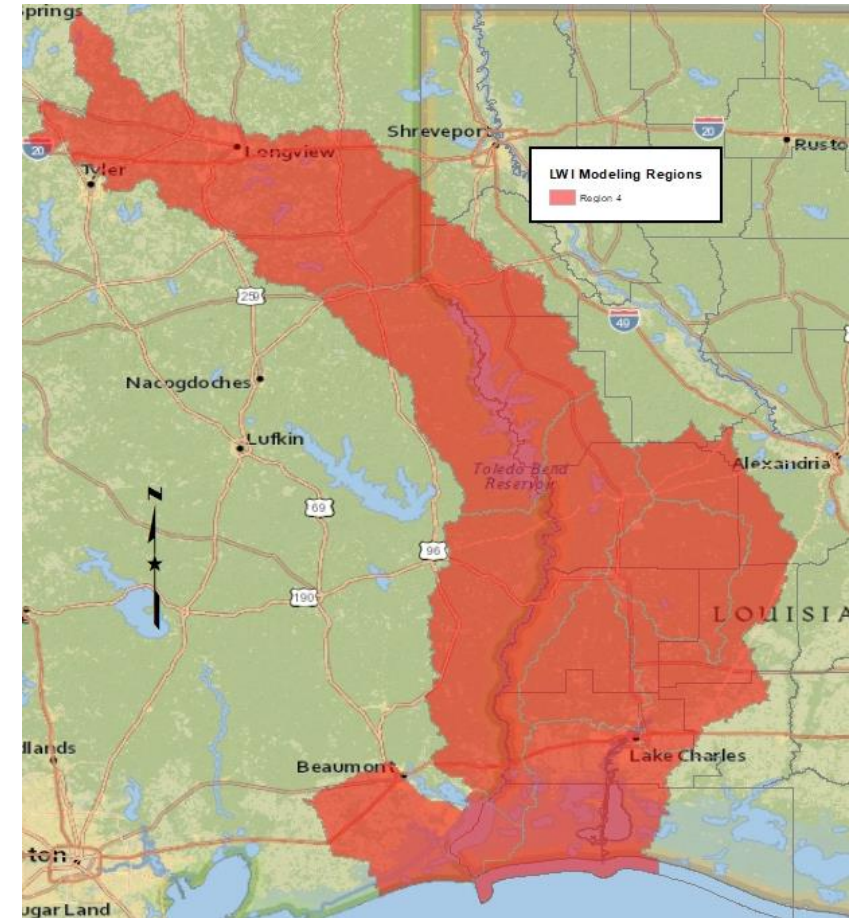
- Wood Environment & Infrastructure Solutions (HUC 8050)
 - Denmon (QA/QC)
 - Lazenby & Associates (Survey)
- Series I (Task Order 2)
 - Boeuf, Bayou Cocodrie
- Series II (Task Order 3)
 - Bayou Macon, Tensas River
- Survey Plans approved; collection underway



Regional Watershed Modeling

REGION 4

- C.H. Fenstermaker & Associates (HUCs 0808, 1201, 1204)
 - Michael Baker International (Modeling)
 - JESCO (Survey)
 - Halff & Associates (Modeling)
- Series I (Task Order 2)
 - Whisky Chitto, Middle Sabine/Toledo Bend Reservoir, Lower Sabine
- Series II (Task Order 3)
 - Lower Calcasieu, Upper Calcasieu, West Fork Calcasieu
- Survey Plans approved; collection underway



Regional Watershed Modeling

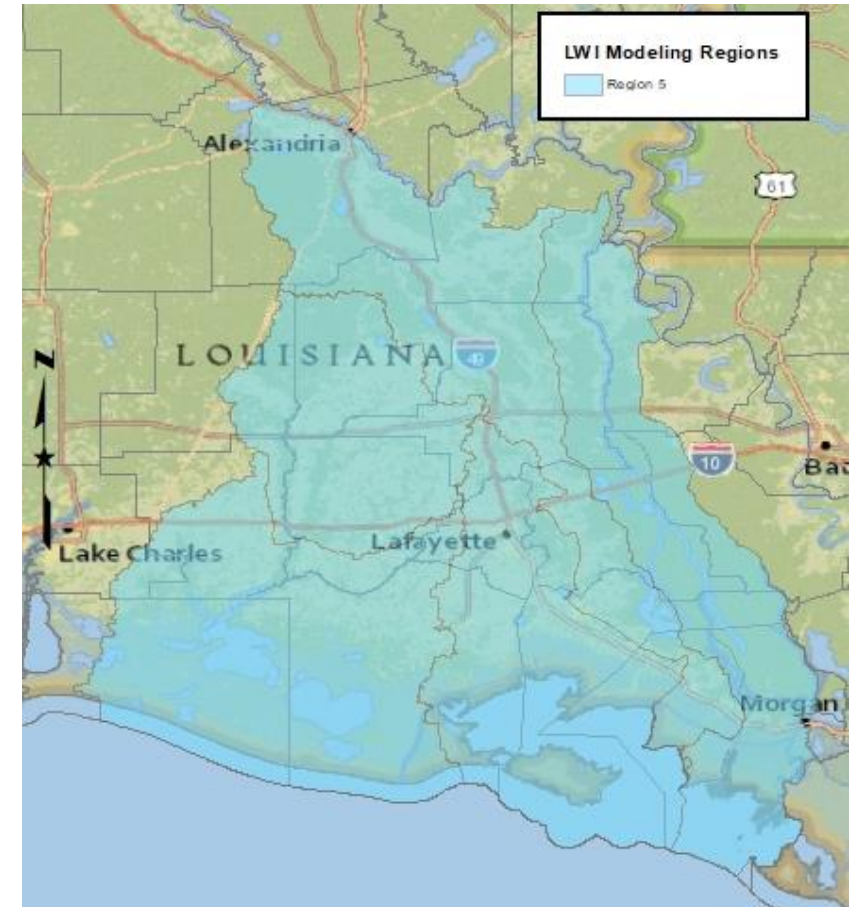
REGION 4



Regional Watershed Modeling

REGION 5

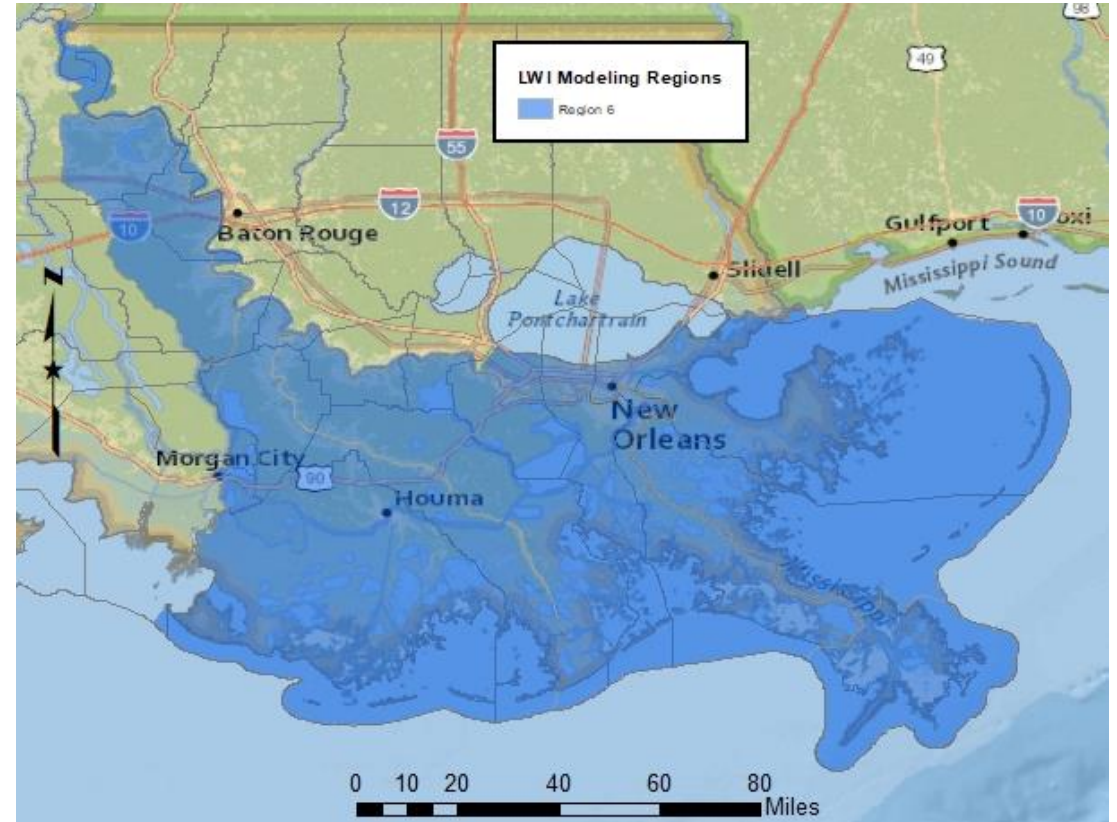
- HDR Engineering (HUC 0808)
 - Pan American Engineers(Survey)
 - C.H. Fenstermaker (Survey)
 - Civil Design and Construction (Survey)
 - Bluewing Civil Consulting (Modeling)
- Series I (Task Order 2)
 - Atchafalaya, Mermentau Headwaters, Mermentau
- Series II (Task Order 3)
 - Bayou Teche, Vermilion
- Survey Plans approved; collection underway
- Atchafalaya 2D HEC-RAS Hydrology setup under review



Regional Watershed Modeling

REGION 6

- Michael Baker International (HUCs 0807, 0809)
 - C.H. Fenstermaker (Survey)
 - Moffat & Nichol (Modeling & QA/QC)
 - Dewberry Engineers (QA/QC)
 - Forte & Toblada (Survey & Outreach)
 - Atkins North America (Modeling)
- Series I (Task Order 2)
 - Eastern Louisiana Coastal, East-Central Louisiana Coastal
- Series II (Task Order 3)
 - Lower Grand, West-Central Louisiana Coastal
- Survey Plans approved; collection underway



Regional Watershed Modeling

REGION 7

- Dewberry Engineers (HUCs 0807, 0809, 0318)
 - FTN Associates (QA/QC and Outreach)
 - Forte and Tablada (Survey and Outreach)
- Series I (Task Order 2)
 - Bayou Sara-Thompson, Lake Maurepas, Liberty Bayou-Tchefuncte
- Series II (Task Order 3)
 - Amite, Tickfaw, Lower Pearl, Tangipahoa, Bogue Chitto
- Survey Plans Approved; collection underway
- Bayou Sara-Thompson Hydrologic Model approved



Regional Watershed Modeling

FUTURE TASKS

- Design Storm Development
 - ULL hired to perform sensitivity analysis on geographic distribution
- Consequence Modeling
 - HEC-FIA or Go Consequences
- Coastal Transition Zone Joint Probability Analysis
 - What happens when riverine floods meet coastal surge?





Questions

