



# University Lakes Flood Risk Reduction Design Services

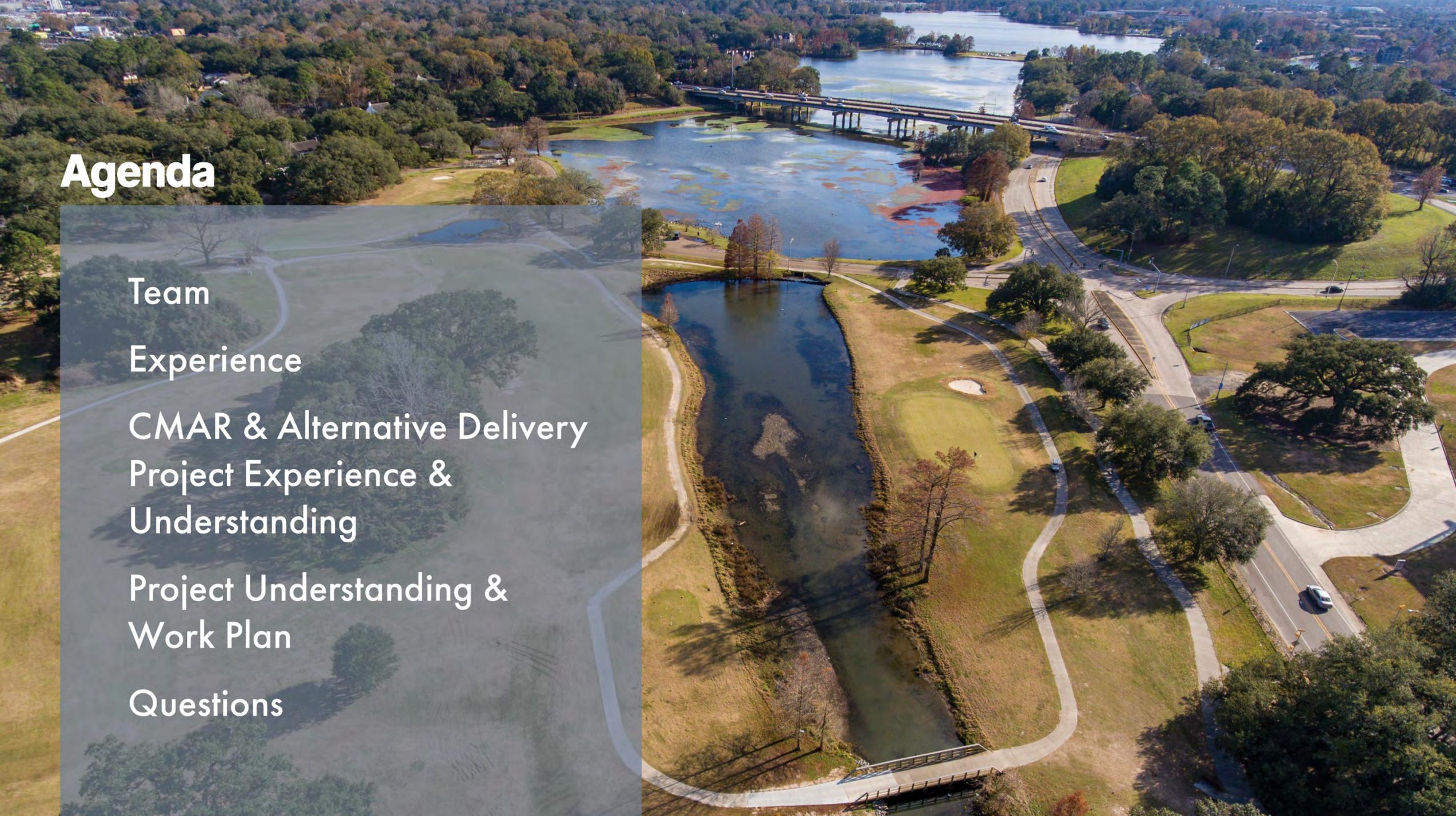


February 11, 2021

# **GEC** **Presenter**



**JEFF ROBINSON, PE**  
**GEC**

An aerial photograph of a golf course. In the foreground, there's a large, dark pond with some lily pads. To the right, a paved road curves through the course. In the background, a multi-lane bridge spans across a larger body of water. The surrounding area is filled with lush green trees and some residential buildings.

# Agenda

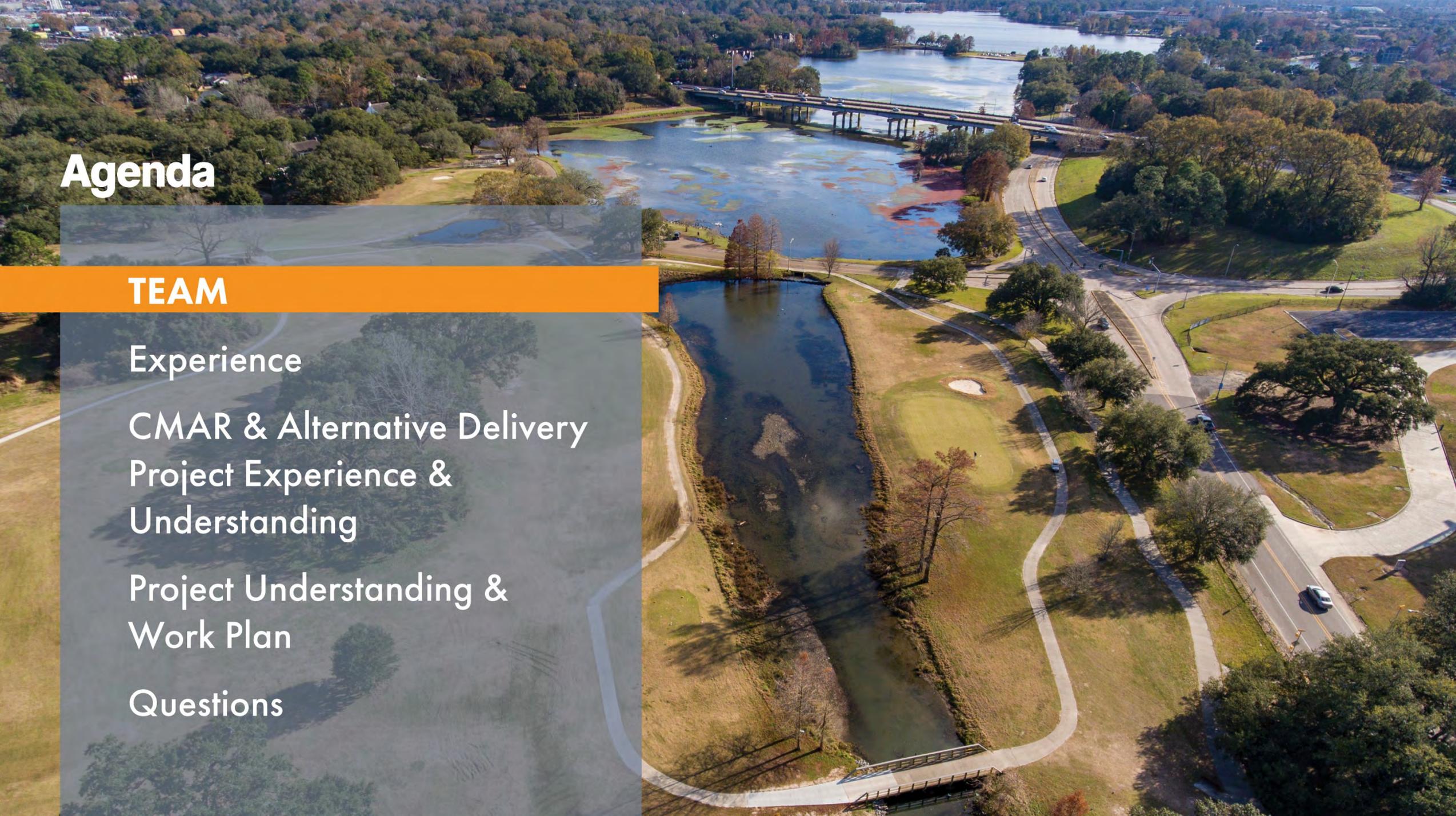
Team

Experience

CMAR & Alternative Delivery  
Project Experience &  
Understanding

Project Understanding &  
Work Plan

Questions



# Agenda

## TEAM

Experience

CMAR & Alternative Delivery  
Project Experience &  
Understanding

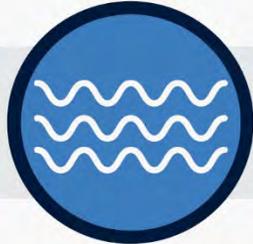
Project Understanding &  
Work Plan

Questions

# UNDERSTANDING PROJECT GOALS



**Flood Risk Reduction**



**Water Quality Improvement**



**Effective Dredging & Material Handling Methods**

# SHARED WORK EXPERIENCE



● - - - ● Established Working Relationship

# Team

# ORGANIZATION CHART

**Principal-in-Charge, Project Manager**

■ Jeff Robinson, PE

## ENGINEERING

### Engineering Lead

■ Jack Morgan, PE

### Core Team

Dredging/Earthwork

■ Whitney Thompson, PE

■ Christopher Paul, PE

■ John Darnall, EI

■ P. Stephen Lundgren, PE

■ L.R. Eric Erikson, PE

Water Quality

■ Amelia Fontaine, PE

■ James Coerver, PE

Hydraulic Controls

■ Stephen Wilson, PE

Structural Engineering

■ Keith Rebello, PhD, PE

H&H Modeling

■ George Hudson, PE

■ Wenkai Qin, PhD, PE, D.CE

■ Fatimata Diop, EI

Geotechnical Engineering

■ Sergio Aviles, PE

**Project Controls,  
Stakeholder  
Coordination, External  
Communications**

■ Seneca Toussant, PE

### CMAR Advisor

■ Cary Bourgeois, PE

### QA/QC

■ Ronald Noble, PE,  
D.CE, D.WRE, D.PE

■ GEC

■ Evans-Graves

■ La Terre

■ Southern Shores

■ APS

*Support Disciplines*

### Survey

■ Max Usrey, III, PE,  
PLS

### Cost Estimating & Existing Data

■ Jonathan Puls, PE

### Regulatory / Permitting

■ Laura Carnes

### Biology / Zoology

■ Michael Loden, PhD

### Economics

■ Shelton Perry

### GIS

■ Carlos Perez

# KEY PERSONNEL LOCATION & S/DBE STATUS



GEC

**Jeff Robinson, PE**  
PRINCIPAL-IN-CHARGE,  
PROJECT MANAGER



GEC

**George Hudson, PE**  
H&H MODELING



La Terre

**Seneca Toussant, PE**  
PROJECT CONTROLS,  
STAKEHOLDER COORDINATION,  
EXTERNAL COMMUNICATIONS



GEC

**Amelia Fontaine, PE**  
STORMWATER MANAGEMENT/  
WATER QUALITY



GEC

**Cary Bonorris, PE**  
CMAR/CONSTRUCTION  
ENGINEERING LEAD



Evans-Graves

**Stephen Wilson, PE**  
HYDRAULIC CONTROLS



Evans-Graves

**John Morgan, PE**  
CONSTRUCTION  
ENGINEERING LEAD



GEC

**Keith Rebeilo, PhD, PE**  
STRUCTURAL ENGINEERING



SSE

**Whitney Thompson, PE**  
DREDGING/EARTHWORK



SSE

**Christopher Paul, PE**  
DREDGING/EARTHWORK



APS

**Sergio Aviles, PE**  
GEOTECHNICAL ENGINEERING



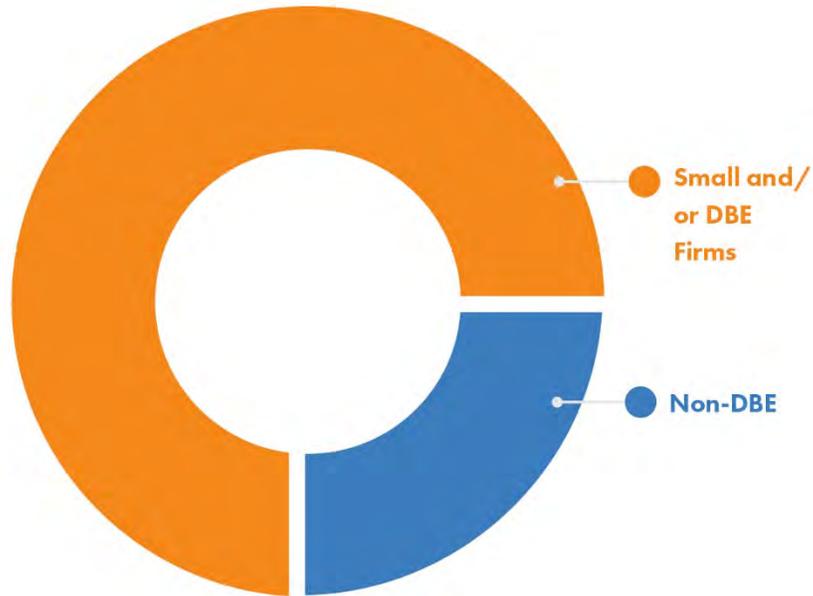
GEC

**Ronald Noble, PE,**  
**D.CE, DWRE, D.PE**  
QA/QC

These GEC Team Leaders have  
more than  
**285 years**  
of combined experience

S/DBE Baton Rouge-based New Orleans-based

## TEAM SMALL/DBE SUBCONSULTANTS



## SUBCONSULTANT PERCENTAGES

- 19%** **Evans-Graves**  
[ engineering • dredging/earthwork • hydraulic controls • survey ]
- 19%** **Southern Shores**  
[ dredging/earthwork ]
- 7%** **La Terre**  
[ project controls, stakeholder coordination, external communications ]
- 5%** **APS Engineering & Testing**  
[ geotechnical engineering ]

## PRESENTATION TEAM



GEC

**Jeff Robinson, PE**

PRINCIPAL-IN-CHARGE,  
PROJECT MANAGER



La Terre

**Seneca Toussant, PE**

PROJECT CONTROLS,  
STAKEHOLDER COORDINATION,  
EXTERNAL COMMUNICATIONS



Evans-  
Graves

**Jack Morgan, PE**

ENGINEERING LEAD



SSE

**Whitney Thompson, PE**

DREDGING/EARTHWORK



APS

**Sergio Aviles, PE**

GEOTECHNICAL  
ENGINEERING



GEC

**Cary Bourgeois, PE**

CMAR ADVISOR



GEC

**George Hudson, PE**

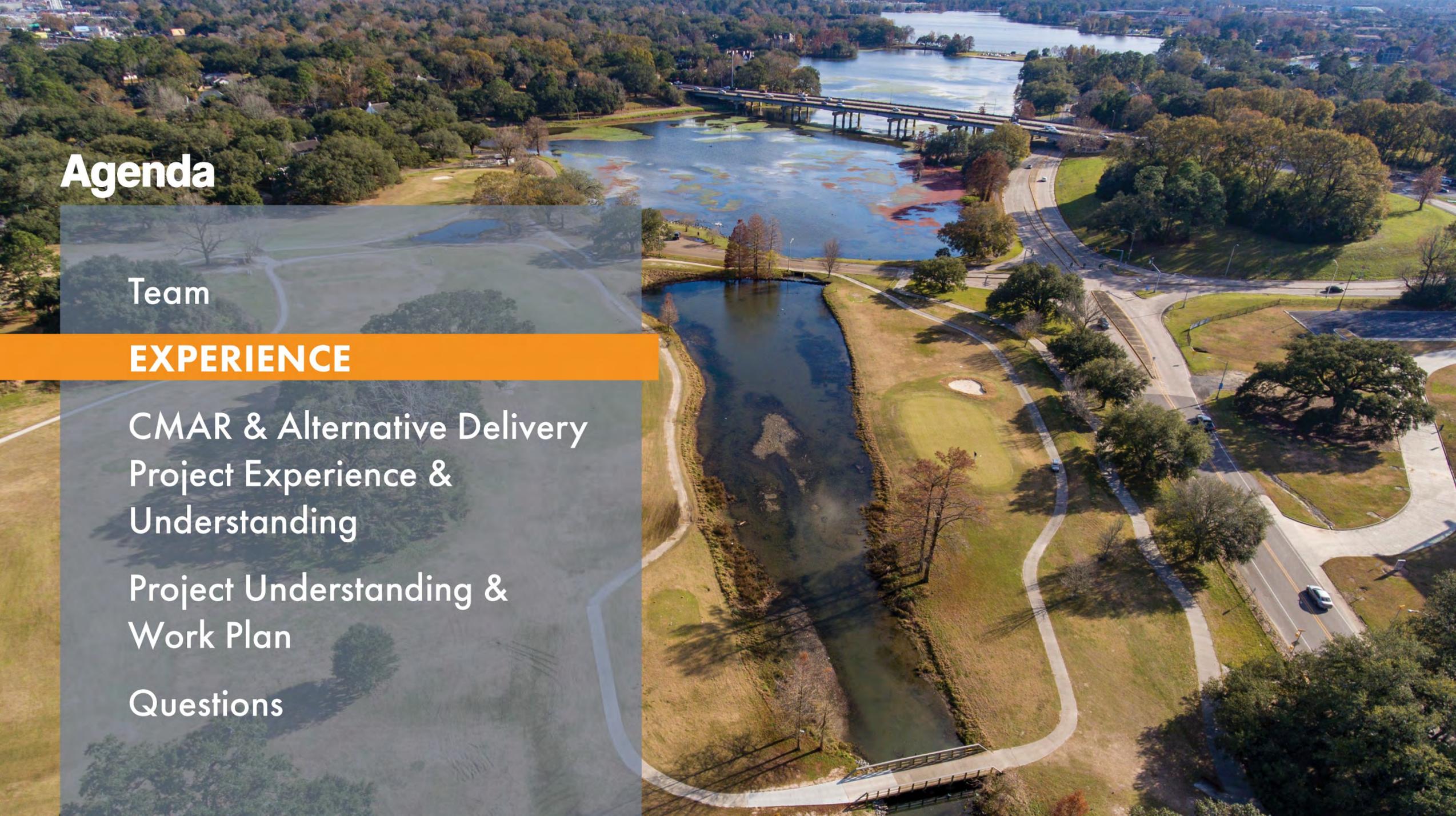
H&H MODELING



SSE

**Christopher Paul, PE**

DREDGING/EARTHWORK



# Agenda

Team

## EXPERIENCE

CMAR & Alternative Delivery  
Project Experience &  
Understanding

Project Understanding &  
Work Plan

Questions

# Experience

# COMPLETED PROJECTS

The GEC Team has completed 120 dredge planning and design projects throughout the U.S.



CONTINUING AUTHORITIES PROJECT (CAP) SECTION 206 FEASIBILITY REPORT  
AND ENVIRONMENTAL ASSESSMENT FOR THE LAKES DISTRICT



*SIMILARITIES TO THIS PROJECT:*

**Review / Interpret Existing Data**

**Earthwork / Dredging Model  
Development**

**Water Quality Enhancement**

**Dredging Methods & Dredge Material  
Handling**

**Constructed Wetlands**

## BATON ROUGE LAKES ECOSYSTEM RESTORATION



*SIMILARITIES TO THIS PROJECT:*

**Review / Interpret Existing Data**

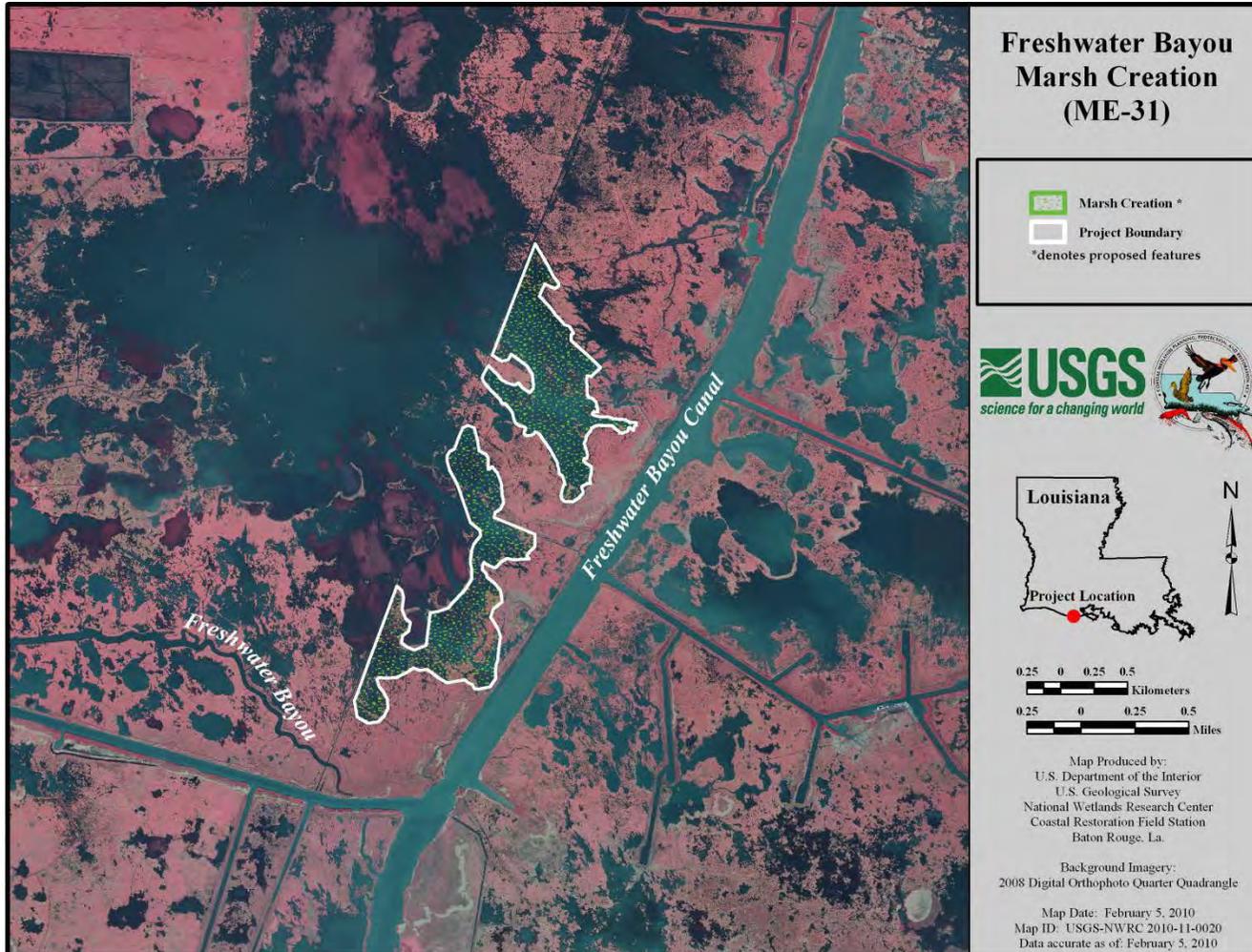
**Earthwork / Dredging Model  
Development**

**Water Quality Enhancement**

**Dredging Methods & Dredge Material  
Handling**

**Constructed Wetlands**

## FRESHWATER BAYOU MARSH CREATION



### *SIMILARITIES TO THIS PROJECT:*

**Review / Interpret Existing Data**

**Earthwork / Dredging Model Development**

**Water Quality Enhancement**

**Dredging Methods & Dredge Material Handling**

**Constructed Wetlands**

**Construction and Implementation Plan**

## GOLDEN TRIANGLE MARSH CREATION



*SIMILARITIES TO THIS PROJECT:*

**Review / Interpret Existing Data**

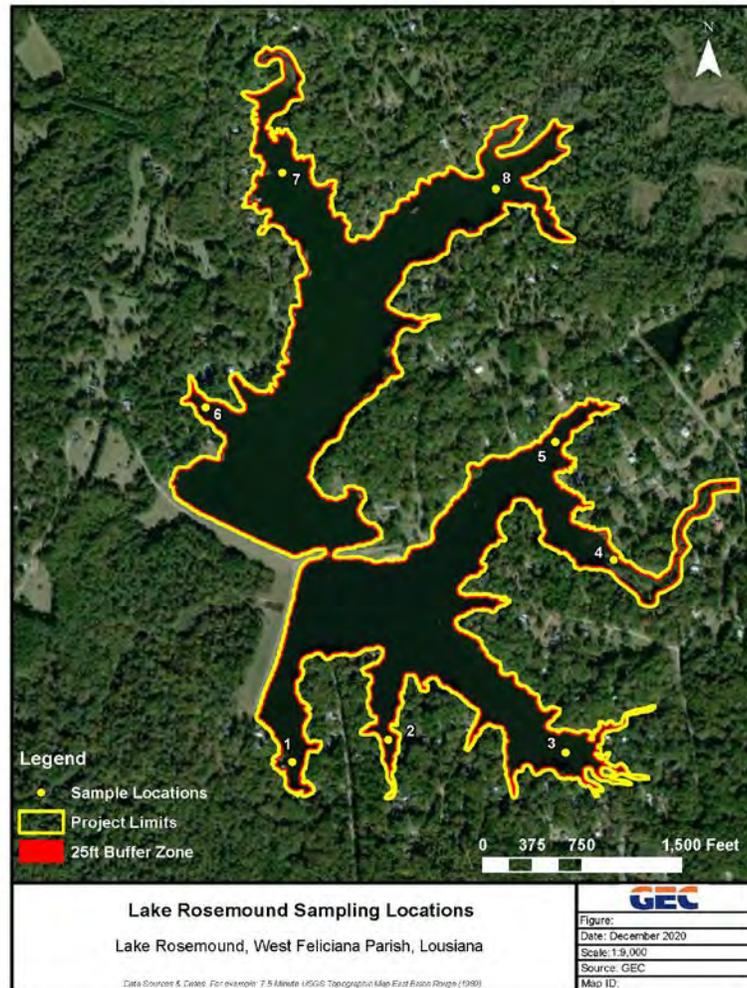
**Earthwork / Dredging Model  
Development**

**Dredging Methods & Dredge Material  
Handling**

**Constructed Wetlands**

**Construction and Implementation Plan**

## LAKE ROSEMOUND DREDGING



### *SIMILARITIES TO THIS PROJECT:*

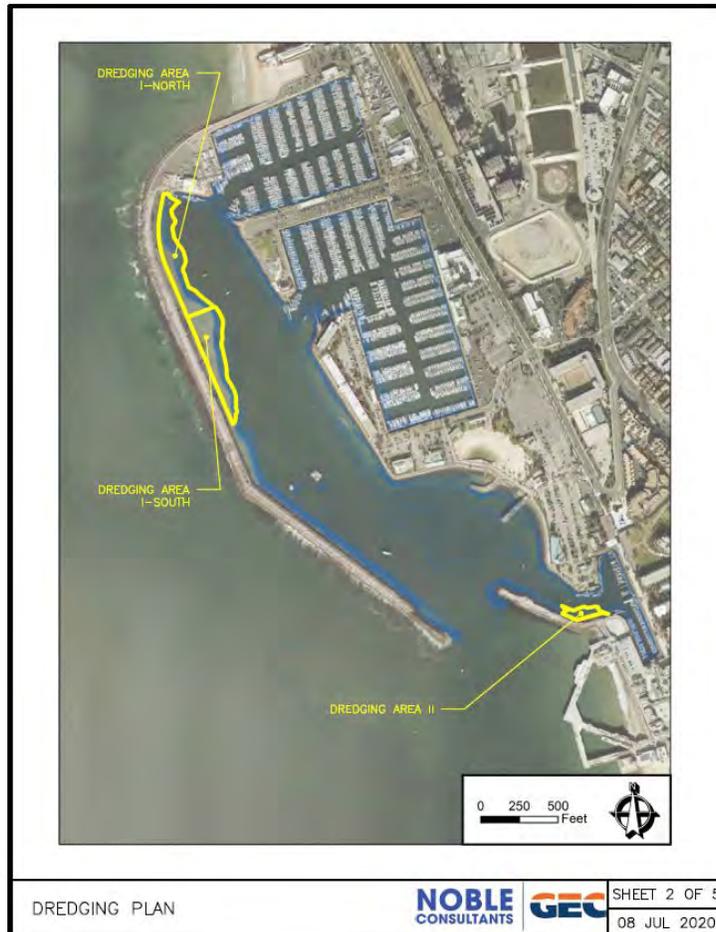
Review / Interpret Existing Data

Earthwork / Dredging Model  
Development

Dredging Methods & Dredge Material  
Handling

Construction and Implementation Plan

## KING HARBOR MAINTENANCE DREDGING



*SIMILARITIES TO THIS PROJECT:*

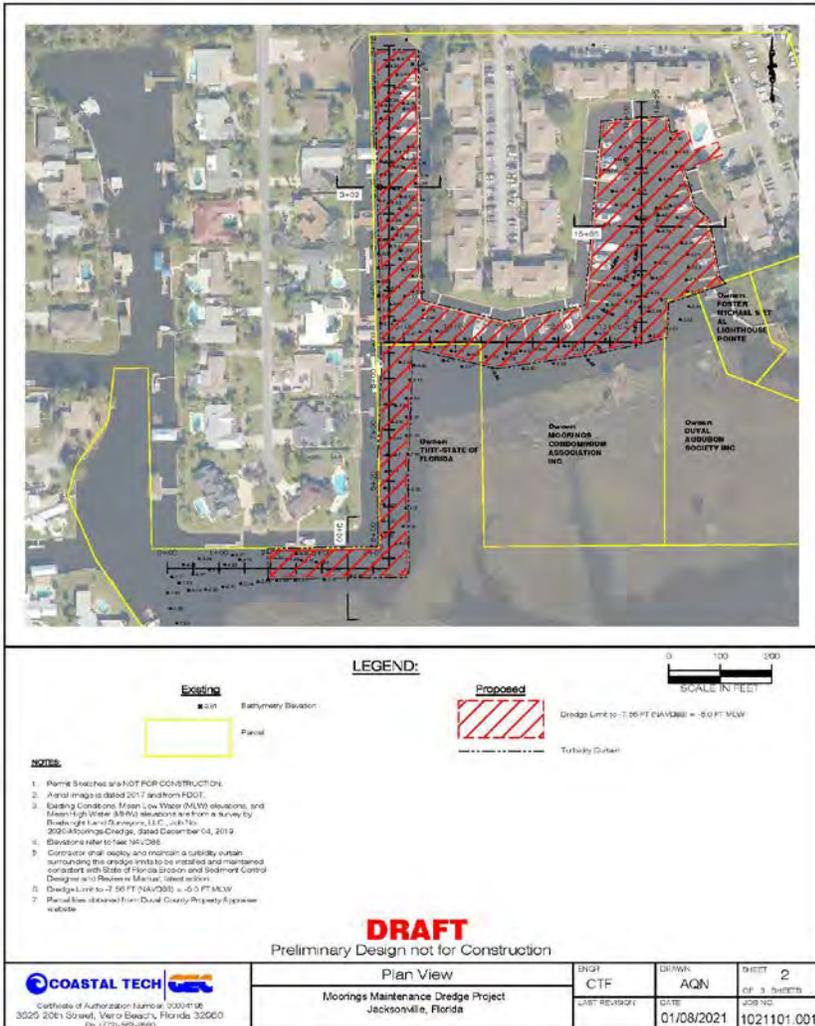
**Review / Interpret Existing Data**

**Earthwork / Dredging Model  
Development**

**Dredging Methods & Dredge Material  
Handling**

**Construction and Implementation Plan**

## MOORINGS DREDGING



*SIMILARITIES TO THIS PROJECT:*

- Review / Interpret Existing Data
- Earthwork / Dredging Model Development
- Dredging Methods & Dredge Material Handling
- Construction and Implementation Plan

ORMOND LAKES DREDGING, RESHAPING, AND INTERIOR DRAINAGE  
IMPROVEMENTS



*SIMILARITIES TO THIS PROJECT:*

**Review / Interpret Existing Data**

**Hydrologic Model Development**

**Earthwork / Dredging Model  
Development**

**Water Quality Enhancement**

**Dredging Methods & Dredge Material  
Handling**

**Constructed Wetlands**

## PORT LOUISIANA, INC. DREDGING AND PRELIMINARY DESIGN



*SIMILARITIES TO THIS PROJECT:*

**Review / Interpret Existing Data**

**Earthwork / Dredging Model  
Development**

**Dredging Methods & Dredge Material  
Handling**

**Constructed Wetlands**

**Construction and Implementation Plan**

WARD CREEK AT SIEGEN LANE CHANNEL IMPROVEMENTS



*SIMILARITIES TO THIS PROJECT:*

**Review / Interpret Existing Data**

**Earthwork / Dredging Model Development**

**Dredging Methods & Dredge Material Handling**

**Construction and Implementation Plan**

## BAYOU DULARGE RIDGE, MARSH, AND HYDROLOGIC RESTORATION



*SIMILARITIES TO THIS PROJECT:*

**Review / Interpret Existing Data**

**Earthwork / Dredging Model  
Development**

**Dredging Methods & Dredge Material  
Handling**

**Constructed Wetlands**

**Construction and Implementation Plan**



# Agenda

Team

Experience

**CMAR & ALTERNATIVE  
DELIVERY PROJECT  
EXPERIENCE &  
UNDERSTANDING**

Project Understanding &  
Work Plan

Questions

# CMAR & Alternative Delivery Project Experience & Understanding

As GNOEC Lake Pontchartrain Causeway Consulting Engineer, GEC launched the first highway CMAR project in Louisiana - the \$60M Causeway Safety Bays Project.



# CMAR & Alternative Delivery Project Experience & Understanding

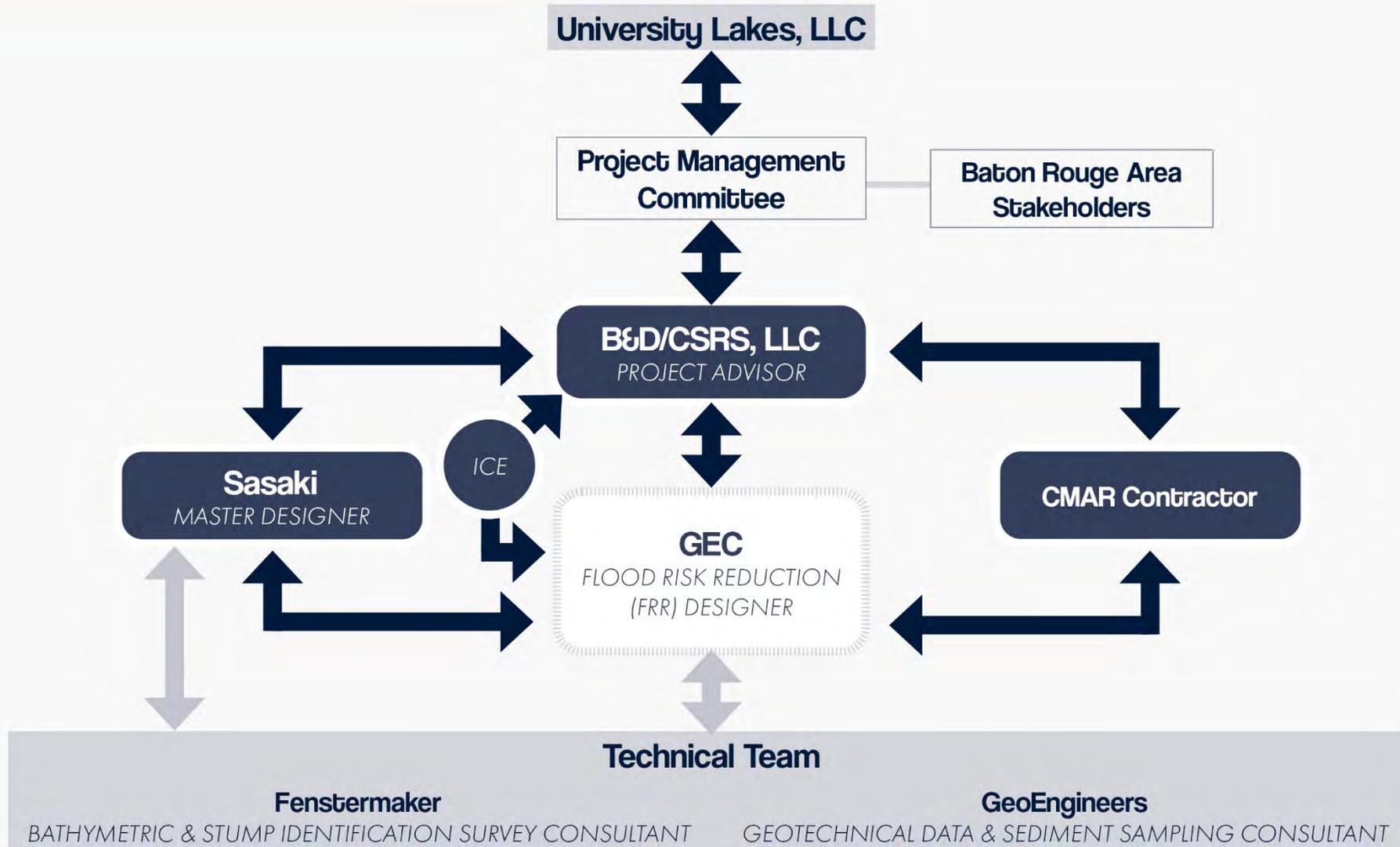
## TEAM EXPERIENCE

Combined experience of 13 Alternative Delivery Projects, including 3 CMAR projects.

CMAR / Alternative Delivery Projects	GEC	APS	EVANS-GRAVES
Causeway Bridge Safety Bays (CMAR)	✓		
I-10: LA 415 to Essen Lane on I-10 & I-12 (CMAR)	✓	✓	
Comite River Diversion Bridge at LA67, LA19, and LA19 Railroad Bridge (CMAR)		✓	
John James Audubon Bridge	✓		✓
I-12 Widening (O'Neal Interchange to Pete's Hwy)	✓		
I-12 Widening (Pete's Hwy to Juban Interchange)	✓		✓
US 90 (I-49 South) Albertson's Parkway to Ambassador Caffery	✓		
US 90 (Future I-49) LA 318 Interchange	✓		
I-10: Highland to LA 73		✓	
I-10 Widening (Siegen to Highland)			✓
I-10 / Loyola Dr Interchange	✓		
Baton Rouge to New Orleans ITS – TIM Phase 1 Design-Build	✓		
I-10 & I-12 College Drive Flyover Ramp Design-Build	✓		

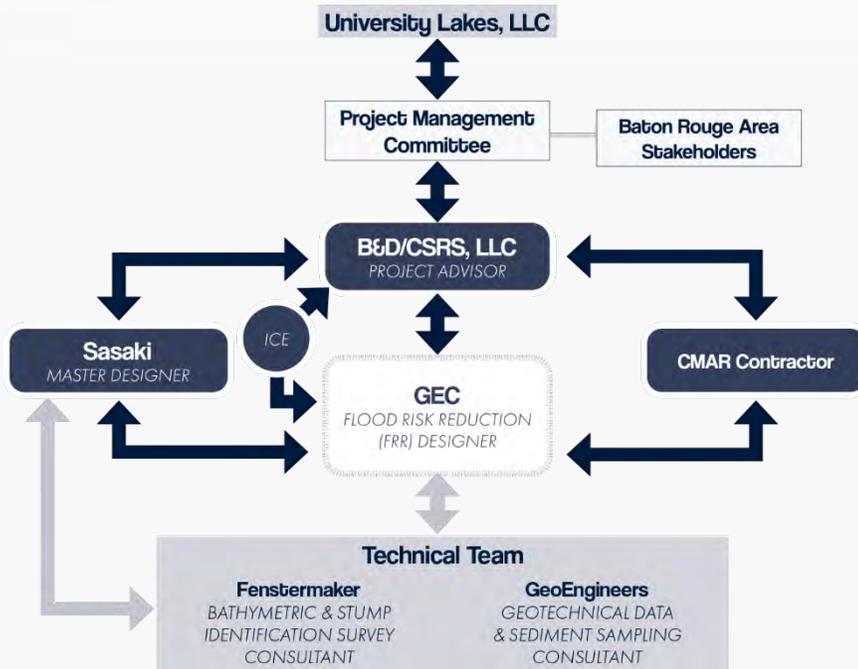
# CMAR & Alternative Delivery Project Experience & Understanding

## CMAR UNDERSTANDING



# CMAR & Alternative Delivery Project Experience & Understanding

## CMAR BENEFITS



- Real-time engagement provides owner significant influence over design
- Collaboration facilitates creativity and innovation
- Design focuses on practical construction methods
- Identifies and mitigates risks
- Contractor participates during design
- Minimizes community impacts
- Facilitates external communication

# CMAR & Alternative Delivery Project Experience & Understanding

- **Problem solving approach putting the stakeholder at the center of a problem**
- **High level and diverse leadership (1-2 days)**
- **Focuses on strategic objectives**
  - **“What are your definitions of project success”**
  - **“What are the key obstacles to you achieving success”**

## DESIGN PLANNING SESSION



# CMAR & Alternative Delivery Project Experience & Understanding

## DESIGN PLANNING SESSION

### PREPARE

Reflect on project development to date

### EMPATHIZE

Understand corridor stakeholders

### DEFINE

Know the right problems to solve and their challenges

### IDEATE

Rapid and interactive idea exchange

- Start wide and narrow to promising ideas



A Clear Understanding and Stakeholder Buy-In from the Start

# CMAR & Alternative Delivery Project Experience & Understanding

# CMAR WORKSHOPS & DESIGN REVIEW MEETINGS

Collaborate Design

Manage Risk

Control Cost

Accelerate Schedule





# Agenda

Team

Experience

CMAR & Alternative Delivery  
Project Experience &  
Understanding

**PROJECT UNDERSTANDING  
& WORK PLAN**

Questions

# Project Understanding

This project is at once:



**A feasibility study to evaluate measures available to improve the lakes' flood risk reduction potential; and**



**A feasibility study to evaluate measures and formulate alternatives to improve water quality, the ecosystem, recreation, and aesthetics; and**



**An engineering design project for flood risk reduction, water quality improvements, and dredging and dredge material placement; and, finally**



**A CMAR project requiring collaboration among the owner, engineer, and contractor to accelerate implementation and control costs.**

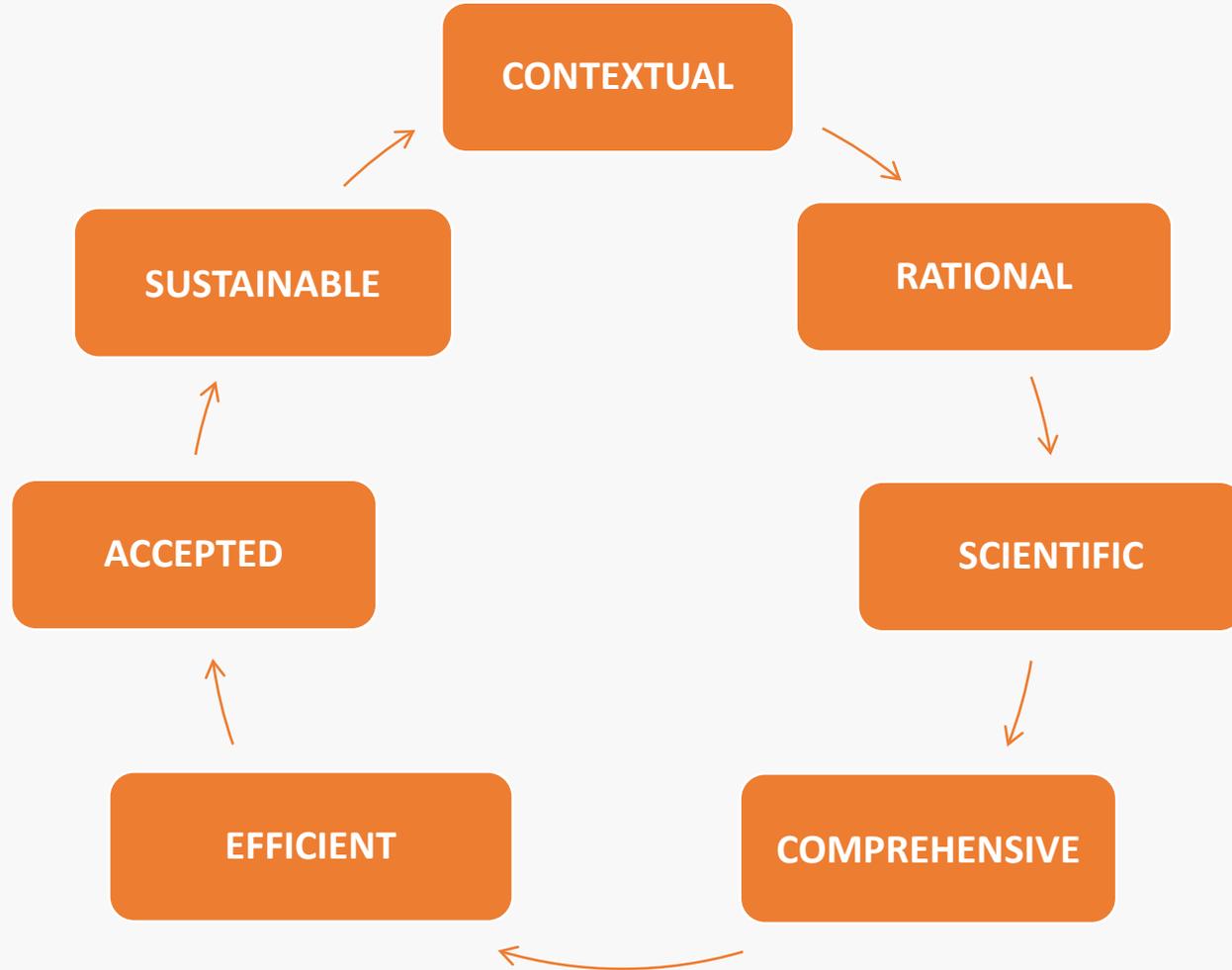


- **These elements present challenges individually, but they also present challenges as a group. Plans to address/improve one can negatively impact one or more of the others.**
- **Raising water surface elevations could reduce dredging and dredge material volumes but diminish or eliminate flood risk reduction capacity.**
- **Beneficial reuse of dredge material for constructed wetlands and new landforms in the lake reduce dredge material conveyance but could also diminish flood risk reduction capacity.**
- **Stump removal benefits certain recreational uses but negatively impacts fish and wildlife propagation.**

**The GEC Team will identify and compare measures/alternatives based on their effectiveness in attaining specific goals, optimizing management of the lake system with respect to stakeholder preferences.**



The GEC Team will deliver FRRD Project solutions that are:





### Identify

- ▶ Flood Risk
- ▶ Potential Benefits
- ▶ Stakeholder Preference



### Assess

- ▶ Area
- ▶ Depth
- ▶ Pool Surface Elevation



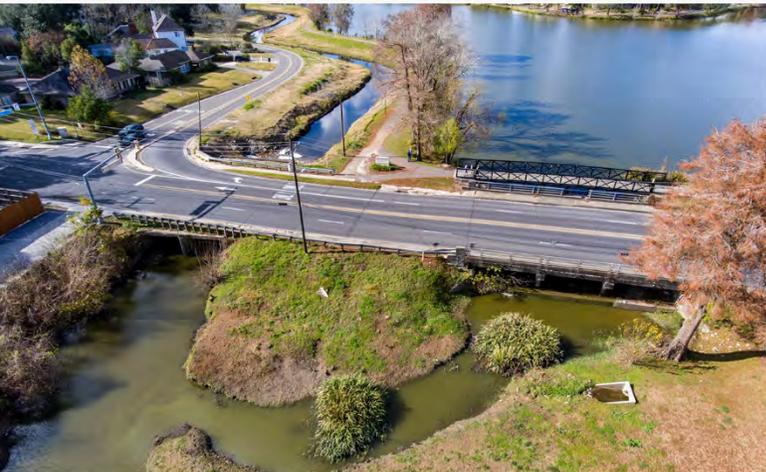
### Determine / Design

- ▶ Dredge Volume
- ▶ Material Placement
- ▶ Stump Removal
- ▶ Hydraulic Control(s) and Operation



### Balance

- ▶ Dredge Volume
- ▶ Material Placement
- ▶ Stump Removal
- ▶ Cost
- ▶ Community Impact





### Identify

- ▶ Methods
- ▶ Stakeholder Preferences



### Assess

- ▶ Area
- ▶ Depth
- ▶ Methods



### Determine / Design

- ▶ Dredge Volume
- ▶ Material Placement
- ▶ Methods and Operation



### Balance

- ▶ Dredge Volume
- ▶ Material Placement
- ▶ Cost





### Identify

- ▶ Depth
- ▶ Materials
- ▶ Volume
- ▶ Stumps
- ▶ Stakeholder Preference

### Assess

- ▶ Methods

### Determine / Design

- ▶ Methods
- ▶ Operation

### Balance

- ▶ Dredge Volume
- ▶ Material Conveyance
- ▶ Placement, Disposal
- ▶ Flood Risk Reduction
- ▶ Water Quality
- ▶ Cost/Schedule
- ▶ Permit(s)
- ▶ Community Impacts





### Identify

- ▶ Volume
- ▶ Materials
- ▶ Master Plan Needs
- ▶ Stakeholder Performance
- ▶ Future Needs



### Assess

- ▶ Locations
- ▶ Methods



### Determine / Design

- ▶ Methods
- ▶ Locations



### Balance

- ▶ Dredge Volume
- ▶ Material Conveyance
- ▶ Placement, Disposal
- ▶ Flood Risk Reduction
- ▶ Water Quality
- ▶ Cost/Schedule
- ▶ Permit(s)
- ▶ Community Impacts



## Task / Duration

Review/Interpret Existing Data

2 MOS. ▶ 5/1

Hydrologic and Hydraulic Model Development

2 MOS. ▶ 5/1

Water Quality

2 MOS. ▶ 5/1

Earthwork and Dredging Model Development

◀ 4/1 4 MOS. ▶ 8/1

Dredging Methods and Dredged Material Handling

◀ 6/1 4 MOS. ▶ 10/1

Engage CMAR Contractor

Construction and Implementation Plan

◀ 6/1 9 MOS. ▶ 3/1

Design Planning Session

Dredging and Geotextile Tube Pilot

CMAR Pre-Construction Coordination

◀ 3/1 12 MOS. ▶ 3/1

CMAR Team Workshops and Design Review Meetings



1 MO.

2 MOS.

3 MOS.

4 MOS.

5 MOS.

6 MOS.

7 MOS.

8 MOS.

9 MOS.

10 MOS.

11 MOS.

12 MOS.

## 1 Review / Interpret Existing Data

## 2 Hydrologic & Hydraulic Model Development

## 3 Water Quality

## 4 Earthwork and Dredging Model Development

## 5 Dredging Methods and Dredged Material Handling

## 6 Construction and Implementation Plan



**Seneca Toussant, PE**  
TASK LEAD

The GEC Team will **review and assess data** developed from the boundary, bathymetric, and stump identification surveys, geotechnical and data collection, and sediment sampling analyses and **identify data gaps**, if any, with respect to FRRD analysis and design needs that require **additional survey and data collection**.

The GEC Team will document its data assessment, findings, conclusions, recommendations, requests for additional survey/collection (if any), and follow-up action items/schedule in a report for the Project Advisor and Sasaki.

Key information/meetings include but are not limited to:

- University Lakes and City Park Golf Course Lake water surface elevations and **hydraulic controls**
- Geotechnical data required for **geotextile tubes** (e.g. specific gravity, % solids, hanging bag test, etc.)
- UL, Project Advisor, Sasaki – **Master Plan changes**
- USACE, LDEQ – potential for dredge spoil discharge to the Mississippi River
- LSU, BREC, City of Baton Rouge – **opportunities/constraints for potential use of lands/facilities**
- DOTD – opportunities for potential use of land at I-10-Dalrymple interchange
- Regulatory Stakeholders – permitting requirements
- Design Thinking Session

*Deliverable: Data Assessment Report*

1 MO.

2 MOS.

3 MOS.

4 MOS.

5 MOS.

6 MOS.

7 MOS.

8 MOS.

9 MOS.

10 MOS.

11 MOS.

12 MOS.

## 1 Review / Interpret Existing Data

## 2 Hydrologic & Hydraulic Model Development

## 3 Water Quality

## 4 Earthwork and Dredging Model Development

## 5 Dredging Methods and Dredged Material Handling

## 6 Construction and Implementation Plan



**George Hudson, PE**  
TASK LEAD

The GEC Team will consult with the Project Advisor to select the methodology and modeling software it will use to establish an existing condition model for watershed boundaries contributing to University Lakes and the City Park Golf Course Lake, and document normal water surface levels, **hydraulic controls within the lakes** and those that control discharge from the lakes to Bayou Duplantier and Corporation Canal, and other required information. The GEC Team will also model and document stage, storage, and peak flows for the existing condition 10-, 25-, 50-, and 100-year storm events for each lake individually and as a sequenced system to evaluate total discharge through the University Lake and Corporation Canal structures discharging to Bayou Duplantier.

Key information/meetings include but are not limited to:

- Culverts/control between City Park Golf Course Lake and City Park Lake
- Culvert between Lake Erie and City Park Lake.
- Culvert between City Park Lake and University Lake
- Culverts between Crest Lake and University Lake
- University Lake weir at Stanford Avenue
- Culverts and risers between Campus Lake and Corporation Canal
- Culverts between Campus Lake and Corporation Canal
- Culverts between Corporation Canal and Bayou Duplantier
- Channel surveys of Bayou Duplantier downstream and upstream of the lakes
- Culvert between the privately owned lake on East Lakeshore and City Park Lake
- **FEMA flood loss data** for Bayou Duplantier and lake system watersheds
- **Potential flood risk reduction benefits**
- Potential available storage capacity

*Deliverable: Hydrologic and Hydraulic Modeling Report*

1 MO.

## 1 Review / Interpret Existing Data

2 MOS.

## 2 Hydrologic & Hydraulic Model Development

3 MOS.

4 MOS.

## 3 Water Quality

5 MOS.

6 MOS.

## 4 Earthwork and Dredging Model Development

7 MOS.

8 MOS.

## 5 Dredging Methods and Dredged Material Handling

9 MOS.

10 MOS.

## 6 Construction and Implementation Plan

11 MOS.

12 MOS.

The GEC Team will identify and assess alternatives to improve the quality of storm water discharges into the lakes and to **enhance the quality of water in the lakes**. In coordination with Sasaki, these alternatives might include but would not be limited to the design of **constructed wetlands, aeration systems, and fore bays and other sediment traps**.

Key information/meetings include but are not limited to:

- LSU, BREC, City of Baton Rouge – feasibility for water protection buffer/zone with enhanced storm water ordinances
- LSU, BREC, City of Baton Rouge – potential use and locations for diffused aeration systems
- BREC – potential for converting City Park Golf Course Lake to a constructed wetland or fore bay
- DOTD – water quality plans/considerations addressed in the I-10 CMAR Project

*Deliverables: Water Quality Report*



**Amelia Fontaine, PE**  
TASK LEAD

- 1 MOS.
- 2 MOS.
- 3 MOS.
- 4 MOS.
- 5 MOS.
- 6 MOS.
- 7 MOS.
- 8 MOS.
- 9 MOS.
- 10 MOS.
- 11 MOS.
- 12 MOS.

## 1 Review / Interpret Existing Data

## 2 Hydrologic & Hydraulic Model Development

## 3 Water Quality

## 4 Earthwork and Dredging Model Development

## 5 Dredging Methods and Dredged Material Handling

## 6 Construction and Implementation Plan



**Jack Morgan, PE**  
TASK LEAD

The GEC Team will develop a **baseline earthwork model** to depict cut/fill volumes, balance the **cut/fill relationship**, and determine the approximate size and acreage of the proposed lake system. We will investigate alternatives to alter the existing normal water surface elevation for all or portions of the lake system that could provide benefits including reductions in the amount of dredging and **stump removal** required and bank lines in closer proximity to recreation areas.

The GEC Team will also investigate alternatives to **increase detention volumes** in the lake system by restricting flow at proposed outfall structures, detaining a greater amount of rainfall volumes within the lake system, and ensuring that the peak water surface elevations cause no significant impact to property, traffic, and recreational activity.

The GEC Team will document its earthwork modeling (by phase and total project), H&H modeling (for the 10-, 25-, 50-, and 100-year storm events), and benefit-cost analyses with findings, conclusions, and recommendations for the proposed design alternatives in three reports for the Project Advisor and Sasaki.

Key information/meetings include but are not limited to:

- LSU, BREC, City of Baton Rouge, Public (especially lake system residents) – opportunities/constraints changes to existing water surface elevations
- Potential available storage capacity
- Sasaki – Master Plan earthwork/fill and stump clearance needs and May St. (bridge) plan
- FEMA flood loss data for Bayou Duplantier and lake system watersheds
- Flood risk reduction benefits identification/quantification

*Deliverables:*      *Hydrologic and Hydraulic Modeling Report*  
*Earthwork Modeling Report*  
*Benefit-Cost Analyses Report*

1 MOS.

## 1 Review / Interpret Existing Data

2 MOS.

3 MOS.

## 2 Hydrologic & Hydraulic Model Development

4 MOS.

5 MOS.

## 3 Water Quality

6 MOS.

7 MOS.

## 4 Earthwork and Dredging Model Development

8 MOS.

9 MOS.

## 5 Dredging Methods and Dredged Material Handling

10 MOS.

11 MOS.

## 6 Construction and Implementation Plan

12 MOS.



**Whitney Thompson, PE**  
TASK LEAD

The GEC Team will assess **alternative dredging** (and submerged stump marking and removal) **methods** and equipment and their suitability for use in project construction (especially with respect to avoiding or minimizing impacts to the human and natural environments) and **develop dredge spoil handling, processing, transporting, and placement options including placement on-site, off-site, in geotextile tubes, or using a combination of options.**

Should the Project Advisor concur, the GEC Team believes it could be beneficial to accelerate engagement of the CMAR contract for collaboration during this task.

The GEC Team will document its data assessment, findings, conclusions, and recommendations in a report for the Project Advisor and Sasaki.

Key information/meetings include but are not limited to:

- LSU, BREC, City of Baton Rouge, Public (especially lake system residents) – opportunities/constraints
- LSU, BREC, City of Baton Rouge – opportunities/constraints for potential use of lands/facilities
- Sasaki – Master Plan earthwork/fill and stump clearance needs
- USACE, LDEQ - potential for dredge spoil discharge to the Mississippi River
- Water budget analyses, opportunities/constraints
- Geotechnical and sediment sampling data/analyses
- Geotechnical evaluation of dredge spoil suitability for fill/construction
- Geotechnical data required for geotextile tubes (e.g. specific gravity, % solids, hanging bag test, etc.)
- Project Advisor – potential for a small-scale dredging and geotextile tube demonstration/pilot

*Deliverable: Dredging and Material Placement Plan*

- 1 MOS.
- 2 MOS.
- 3 MOS.
- 4 MOS.
- 5 MOS.
- 6 MOS.
- 7 MOS.
- 8 MOS.
- 9 MOS.
- 10 MOS.
- 11 MOS.
- 12 MOS.

## 1 Review / Interpret Existing Data

## 2 Hydrologic & Hydraulic Model Development

## 3 Water Quality

## 4 Earthwork and Dredging Model Development

## 5 Dredging Methods and Dredged Material Handling

## 6 Construction and Implementation Plan



**Jack Morgan, PE**  
TASK LEAD

With Sasaki, the GEC Team will determine dredging methodology, dredge material construction suitability and placement locations/quantities, and lake system footprint. With the CMAR construction contractor, the GEC Team will develop the dredging and mobilization plans and dredging (and water quality improvements) construction sequence and schedule.

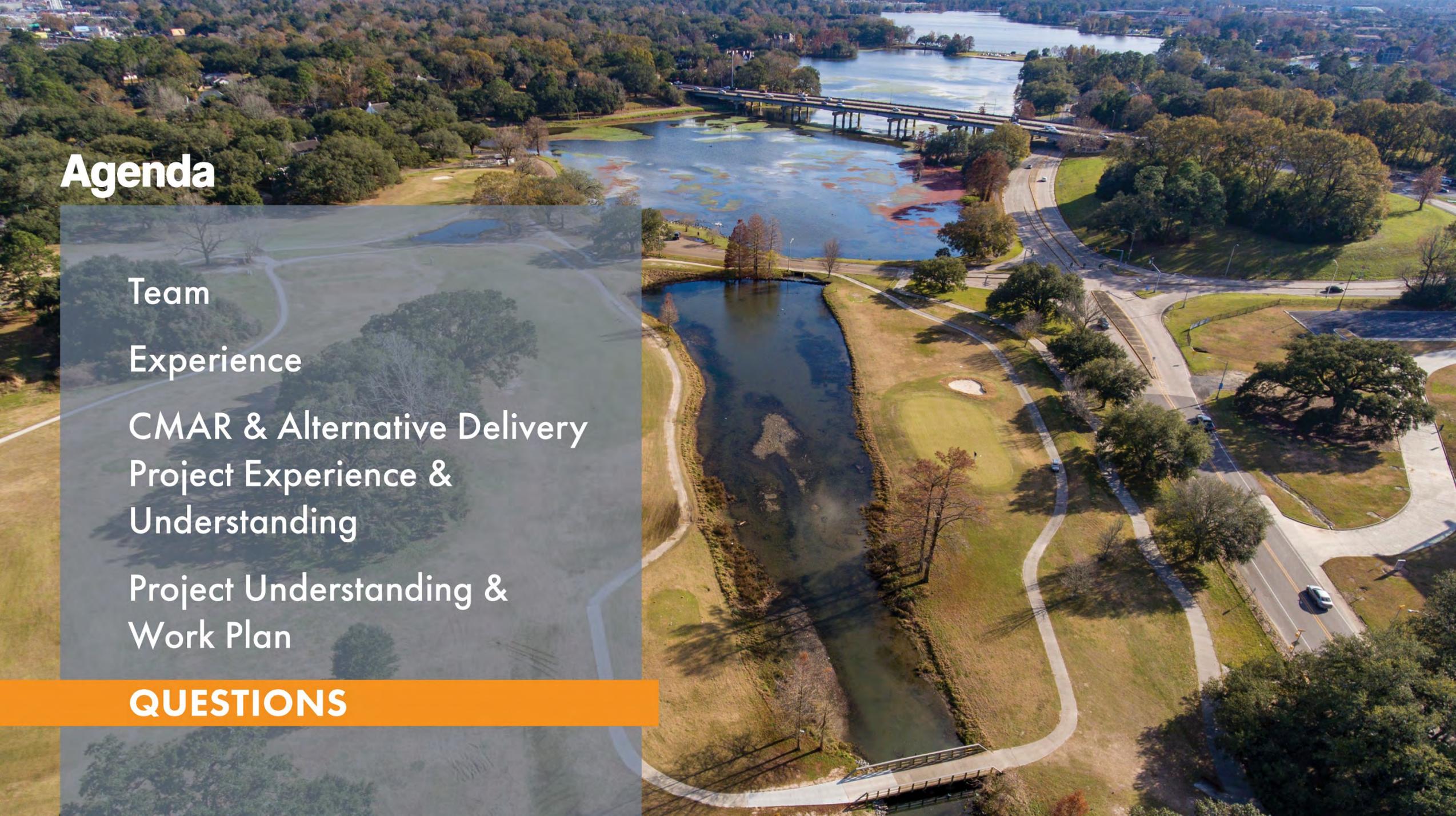
The GEC Team will present 10% and 30% construction documents to the Project Advisor for engagement of the CMAR contractor. Afterwards, we will coordinate among the entire project team to maintain the construction budget in accordance with the preliminary design estimate of probable cost acceptable to the PMC and develop construction plans, sections, details, and technical specifications in accordance with applicable standards to 100% PSE Plans.

Key information/meetings include but are not limited to:

- LSU, BREC, City of Baton Rouge, Public (especially lake system residents) – opportunities/constraints
- LSU, BREC, City of Baton Rouge – opportunities/constraints for potential use of lands/facilities
- Sasaki – Master Plan earthwork/fill and stump clearance needs and water quality improvements
- USACE, LDEQ - potential for dredge spoil discharge to the Mississippi River
- Regulatory Stakeholders – permitting requirements
- Water budget analyses, opportunities/constraints
- Geotechnical and sediment sampling data/analyses
- Geotechnical evaluation of dredge spoil suitability for fill/construction
- Geotechnical data required for geotextile tubes (e.g. specific gravity, % solids, hanging bag test, etc.)
- Tree survey
- Dredging and Geotextile Tube Pilot
- CMAR Team Workshops and Design Review Meetings

*Deliverables:* Construction plan drawings  
Grading plan  
Grading sections  
Slope stabilization plan and details  
Tree protection plan and details

*Deliverables:* Demolition plans  
Earthwork calculations  
Specifications  
Updated estimate of probable construction costs  
Permit plans and documentations



# Agenda

Team

Experience

CMAR & Alternative Delivery  
Project Experience &  
Understanding

Project Understanding &  
Work Plan

**QUESTIONS**

# Questions



Jeff Robinson, PE



Seneca Toussant, PE



Jack Morgan, PE



Whitney Thompson, PE



Sergio Aviles, PE



Cary Bourgeois, PE



George Hudson, PE



Christopher Paul, PE