



RESTORE ACT CENTER OF EXCELLENCE FOR LOUISIANA EXPENDITURE SUMMARY

Due within 30 days of the close of the award

CFDA/Fed Grant Number: 21.015/RCEGR260003-01-00

CEA Number: 2000249131

Subaward Agreement Number: _____

Award Period (mm-dd-yyyy to mm-dd-yyyy): _____

Project Title: _____

Grantee Lead Institution: _____

Grantee Principal Investigator and Contact Information:

First name: _____ Last name: _____

Title: _____ Affiliation: _____

Mailing address: _____

Phone: _____

Email: _____

Year	Total Award	Total this Invoice	Invoiced to Date	Remaining Amount	Percent Expended	Technical Percent Completed
Year 1						
Year 2						
Year 3						
Year 4						
Year 5						
Total						



RESTORE ACT CENTER OF EXCELLENCE FOR LOUISIANA FINAL TECHNICAL REPORT

Due within 30 days of the close of the award

Project Title:

Principal Investigator:	
Principal Investigator Institution:	
Co-Principal Investigator:	
Co-Principal Investigator Institution:	
Co-Principal Investigator:	
Co-Principal Investigator Institution:	
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Co-Principal Investigator Institution:	
Co-Principal Investigator:	
Co-Principal Investigator Institution:	

A. Technical Activities

1) Deliverables on proposed goals and objectives.

#	Proposed goal / objective / activity	Target output / deliverable	Completed (Y/N)	Comments (If No, please describe incomplete deliverable(s) or reason why actual output / deliverable deviated from the proposed)	Topical area (s) and research need(s) addressed (as described in the proposal)
1					
2					
3					
4					

#	Proposed goal / objective / activity	Target output / deliverable	Completed (Y/N)	Comments (If No, please describe incomplete deliverable(s) or reason why actual output / deliverable deviated from the proposed)	Topical area (s) and research need(s) addressed (as described in the proposal)
5					
6					
7					
8					
9					
10					

- 2) Summary of research project.** Similar to an abstract; include sentences that describe the introduction, research questions/hypotheses, methods, results, discussion, and conclusion. 400 words max.

The Mississippi River Delta (MRD) is socioeconomically important to the state of Louisiana and the United States. Various types of land-water system data have been collected in the MRD. However, very few efforts have been made to utilize these datasets in modeling regional stratigraphy and groundwater dynamics in the MRD, especially for the upper 50 m of the depth. In this interval of depth, the Mississippi River and surrounding interdistributary bays intensively interact with the groundwater system. The lack of knowledge in regional stratigraphy and groundwater dynamics hinder an understanding of how hydrogeological setting affects processes such as surface-groundwater interaction, subsidence, and sediment erosion. In this study, topobathymetric, geological/geotechnical, and hydrological data were used to construct multiple 3-D stratigraphy models and a groundwater flow model in the MRD. Ordinary kriging, compositional kriging, and multiple indicator methods were found to be efficient in regionalizing different types of geological/geotechnical data. The stratigraphy models and groundwater model reveal a complex hydrogeologic setting in the MRD. Mississippi River channel cut through clayey delta plain deposits into buried sands between -10 m and -35 m. Sands deposited at depth and near the surface provide pathways for groundwater to interact with surface waters. Groundwater flow rate is 3-4 orders of magnitude smaller than the river discharge rate. The groundwater system actively interacts with surface water system in the Mississippi River and in the surrounding bays, especially during flood, storm, and hurricane events. Dramatic increase in pore water pressure and sharp groundwater recharge-to-discharge reversion are estimated to occur during hurricane and right after hurricanes respectively. High pore water pressure during and after hurricanes may destabilize sediments and compromise safety of coastal infrastructures such as the ring levees. Groundwater activities may contribute to vertical movement in the delta.

- 3) Results and scientific/technical highlights.** In 5-10 bullets: list and describe key outcomes and findings; new methods, technology, and/or advanced tools developed (e.g., models, biomarkers).

4) **Application of research results to the implementation of the Louisiana Coastal Master Plan by Coastal Protection and Restoration Authority.** Please add each targeted output/deliverable under each relevant column. Refer to section 1) *Deliverables on proposed goals and objectives* on page 2 to obtain your output/deliverables and to your notes/comments from the All Hands Meeting where this was discussed in the break out groups.

COASTAL PROTECTION AND RESTORATION AUTHORITY PROGRAM AND PROJECT IMPLEMENTATION						
Planning	Feasibility	Engineering and Design	Operations, Maintenance, and Monitoring	Knowledge Base	Stakeholder Engagement	Communications

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Planning	Feasibility	Engineering and Design	Operations, Maintenance, and Monitoring	Knowledge Base	Stakeholder Engagement	Communications

5) Peer-reviewed publications. Please provide pdf copies.

Authors	List author names of graduate students/ Postdocs	Title	Journal	DOI (or other identifier)	Published; submitted; in prep; planned?	Date

Authors	List author names of graduate students/ Postdocs	Title	Journal	DOI (or other identifier)	Published; submitted; in prep; planned?	Date

6) Oral presentations and posters. Please provide pdf copies.

Presenter's Name	Co-author's Name	List author names of graduate students/ Postdocs	Title	Oral or poster?	Conference or meeting name	Location & date	Completed; submitted; planned?	Proceedings published (Y/N)

Presenter's Name	Co-author's Name	List author names of graduate students/ Postdocs	Title	Oral or poster?	Conference or meeting name	Location & date	Completed; submitted; planned?	Proceedings published (Y/N)

7) **List other products or deliverables.** These can include white papers, patent applications, workshops, outreach activities/products. Describe and provide pdf copies, as applicable.

8) **Data.** Making data publicly assessible in a timely manner is a key goal of the data management policy of RESTORE Act Center of Excellence. All projects must ensure that data and ISO metadata are collected, archived, digitized, and made available using methods that allow current and future investigators to address new questions as they arise. Per the U.S. Department of the Treasury’s Office of Gulf Coast Restoration Data Accessibility and Management Best Practices¹ *“Data are generally expected to be made publicly available at the time of publication of a peer-reviewed article relying on the data or two years after the data are collected.”* All information products resulting from funded projects must be associated with detailed, machine-readable metadata (ISO format) and shared in a regional or national digital repository or data center (e.g., National Centers for Environmental Information, Gulf of Mexico Research Initiative Information & Data Cooperative, Inter-university Consortium for Political and Social Research, DataOne Dash) for discovery and long-term preservation. Metadata, a brief description of the data, and location of the data (e.g., repository, DOI) must be provided to the LA-COE to enable tracking of all data and information products.

¹ <https://www.fio.usf.edu/documents/flracep/program-documents/Treasury%20RESTORE%20COE%20data%20management%20best%20practices%20Jan%202018.pdf>

#	Description of data	Repository or data center	Date by when data will be made available (2 years after final report)	DOI (or similar) if data are already uploaded
1				
2				
3				
4				
5				
6				
7				
8				

B. PARTICIPANTS AND COLLABORATORS

1) **Project participants and collaborators.** Please list researchers who are not post-doctoral researchers or students but have participated and/or collaborated in this research. This can be both unfunded and funded participants and collaborators on the research project.

First name	Last name	Institution	Project role

2) Mentoring and Training. Please list post-doctoral and graduate and undergraduate student participants (provide pdf copies of thesis/dissertation).

First Name	Last Name	Postdoc/ PhD/ MS/ BS	# Years involved	Institution	Thesis/Dissertation title/ research topic or tasks	Did the student graduate? Y/N	If they graduated, what is their current position?

C. CONTINUING RESEARCH

Please describe the next steps for this work, if applicable (5 bullet points max).

D. CERTIFICATION

Please submit report no later than 30 days following the close of the award to:

Danielle Johnson

Grants and Contracts Manager

AP@thewaterinstitute.org

Certification: I certify to the best of my knowledge and belief that this report is correct and complete for performance of activities for the purposes set forth in the award documents.

Principal Investigator:

Signature:

Name: Frank Tsai

Date Signed: January 28, 2020

Approval: I have evaluated the final report and associated invoice and confirm that the project is finished.

LA-COE Technical Point of Contact:

Signature:

Name:

Date Signed:

Approval: I have reviewed the final report and approve for payment.

LA-COE Director:

Signature:

Name:

Date Signed: