



BAYOU RIGAUD TURBIDITY ASSESSMENT: ECOMAPPER SURVEYS

ERDC Dredging Operations Technical Support Program (DOTS)

U.S. ARMY CORPS OF ENGINEERS

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Response Summary:

The New Orleans District requested monitoring support for water turbidity during maintenance dredging of the Bayou Rigaud navigation channel near Grand Isle, LA. The channel passes close to the Louisiana Sea Grant's Oyster Research and Demonstration Farm and the Louisiana Department of Wildlife and Fisheries Michael C. Voisin Oyster Hatchery. The dredging involved transporting sediment to Fifi Island for beneficial use. Concerns were raised about potential turbidity plumes and suspended sediments affecting oyster operations, requiring additional filtering measures. A site visit was arranged where we demonstrated the use of an autonomous underwater drone (AUV, i3XO EcoMapper) to monitor turbidity downstream of the cutterhead dredge.

Period of Performance:

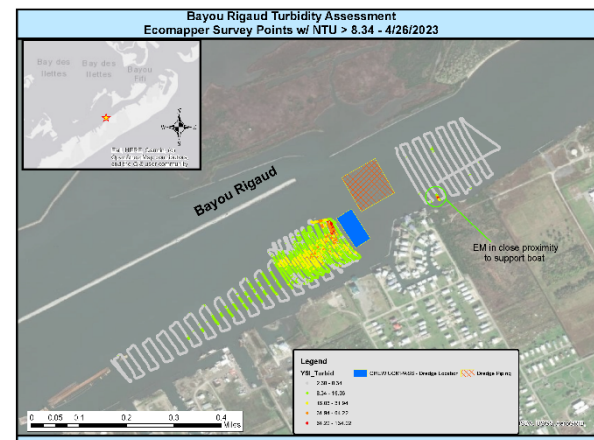
Request received April 19, 2023. Demonstration occurred on April 26, 2023. Report submitted to New Orleans May 9, 2023.

Benefits of the Response to the USACE Dredging/Navigation Program:

The surveys found that turbidity levels decreased with distance from the dredge and were lower near the water's surface. The dredge-induced turbidity plume extended downstream for about 2,000 feet before returning to background levels consistently. The plume's large spatial scale was likely due to strong tidal currents. Dredge tenders were identified as contributors to elevated turbidity levels. The ERDC-EL team's solution, utilizing unmanned autonomous technologies like the EcoMapper, offered several advantages. It enabled accurate and comprehensive turbidity monitoring, crucial for assessing dredging impacts near sensitive areas such as oyster hatcheries. Real-time turbidity data allowed proactive measures to mitigate potential impacts. Identifying the plume's scale helped dredge tenders minimize turbidity levels near the oyster hatchery. The solution is cost-effective, as AUVs like the EcoMapper collect data over extended periods, cover large areas autonomously, and reduce the need for extensive human involvement. It also promotes safe operational conditions by providing turbidity information and suggesting mitigation measures for dredging operations.

Deliverable:

The deliverables for this request included a site visit, a technology demonstration, and a report of the water quality monitoring results to New Orleans.



Providing environmental and engineering technical support to the U.S. Army Corps of Engineers
Operations and Maintenance navigation and dredging missions

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