Project Title: Optimal Dredge Fleet Scheduling - Phase 2 Research

Project Abstract (Brief Description): The excavation of US waterways, commonly known as dredging, is vital to our economy. Without navigable waterways, transportation of product may be disrupted. Oversight of dredging operations is a challenging problem because a decision-maker must (i) choose from numerous potential locations that are in need of dredging and (ii) schedule selected jobs within allowable environmental windows. In its simplest form, this series of decisions can be broken into two problems: (1) Job Selection Problem and (2) Job Scheduling Problem. In prior research projects supported by MarTREC and the Army Corps of Engineers, investigators Rainwater, Nachtmann and Sullivan have developed the first quantitative optimization tools to assist decision-makers with the deterministic, one-year variant of the Job Scheduling Problem. This methodology has already been integrated into Corps computing systems. However, all previous work assumes that the decision-maker has been provided a preselected set of jobs for scheduling consideration. A quantitative system for comprehensive consideration of dredge job selection does not exist. The failure to integrate the selection and scheduling process suggests that opportunity exists for significant financial and operational benefits for transportation planners. This proposed research seeks to provide new quantitative tools that address this need by leveraging the expertise developed in this area by the team of investigators.

Describe Implementation of Research Outcomes (or why not implemented) - Place any photos here
To be determined upon conclusion of the project:

Impacts/Benefits of Implementation (actual, not anticipated)
To be determined upon conclusion of the project:

Web Links: martrec.uark.edu

Budget (Funding) Amounts & Source(s) (US DOT +Match(s) =Total Costs): $49,903+$36,481=$86,384

Project Start and End Dates: 08/15/16-08/14/17

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Principal Investigator Institution (University): University of Arkansas