MarTREC
Maritime Transportation Research & Education Center

MarTREC UTC Project Information Form
USDOT Tier 1 University Transportation Center
Agency ID or Contract Number DTRT13-G-UTC50

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 a 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
Principal Investigator(s) and Contact Information: Chase Rainwater (PI) and Heather Nachtmann (Co-PI)
Principal Investigator Institution (University): University of Arkansas