

New Jersey Department of Transportation  
Bureau of Research

## Technical Brief



### Channel Usage Research and Analysis – Phase 2

*This study developed recommendations for how NJDOT can use various methodologies for collecting channel vessel counts and classification data. By undergoing a second phase of vessel counts through those methodologies identified from Phase 1 of this project, the research team developed recommendations for how NJDOT can establish their own formal marine transportation system and channel data collection program.*

### Background

The NJDOT Office of Maritime Resources (OMR) is continuing steps towards the development of an asset management system to more effectively manage New Jersey's Marine Transportation System. After a primary round of round of vessel count data collection was undertaken in 2015, a second round occurred during the summers of 2016 and 2017 to better understand the different methodologies for analyzing channel usage. Insight from both rounds of data collection were then utilized to establish a framework for collecting vessel count and classification data on state-maintained channels.

### Research Objectives and Approach

The objective of this research was to develop and implement a reliable, repeatable, and verifiable method or SOP (Standard Operating Procedure) to collect vessel count and classification information by time of day. The research involved field tests of several approaches that could be applicable to a broader statewide effort to collect vessel count information utilizing the selected method on approximately 214 state channels within the state's Marine Transportation System. Once data was collected, the project team developed recommendations on variables to consider and a formalized procedure, including relevant methodologies, for conducting vessel counts.

### Findings

In the second round of data collection, the research team further analyzed four methodologies for collecting vessel counts and classifying information. Again, they found that ground-based counts were most cost-effective, but wider channels require vessel-based counts and are overall more expensive to collect data for.

The research team has the following recommendations for NJDOT:

- Implement a procedure for collecting vessel count and classification data on state-maintained channels that includes identifying which channels need to be counted,

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proper site surveying, methodology selection, logistical arrangements, surveyor training, and post-count tabulation;

- Conduct additional tests in a wider range of field conditions to determine (a) which variables affect the accuracy and precision of each count methodology, and to what extent, and (b) which variables affect the use channels by vessel type;
- Develop a set of factors to correct for variables that affect vessel counts and classifications so that count and classification data can be normalized depending on when, where and under what weather conditions the count was conducted;
- Develop a pre-survey field guide and checklist to match suitable count methodologies to known field conditions at each channel (including the weather forecasted for the survey day) and inform logistical preparations;
- Develop a Marine Transportation System data collection program that establishes approved methodologies, procedures, collection techniques, and a proposed channel collection schedule;
- To support post-processing, NJDOT should coordinate with the New Jersey State Motor Vehicle Commission to match vessel registration data collected in the field to attributes associated with that registration number, including vessel classification, age, and place of registry;
- NJDOT should determine what information, in addition to channel count and classification data, are needed to support asset management-related decision making on New Jersey's Marine Transportation System.

### **For More Information Contact:**

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A final report is available online at: <http://www.state.nj.us/transportation/refdata/research/>. If you would like a copy of the full report, send an e-mail to: [Research.Bureau@dot.state.nj.us](mailto:Research.Bureau@dot.state.nj.us).

### **Channel Usage Research and Analysis – Phase 2 NJDOT Research Report No: NJ-2017-003**