



Announcement M13AS00014: Hurricane Sandy Coastal Recovery and Resiliency – Resource Identification, Delineation and Management Practices

**Agreement M14AC00002: NJGWS Post Hurricane Sandy
Offshore New Jersey Sand Resources Investigations: A Cooperative Agreement Between the
Bureau of Ocean Energy Management and the New Jersey Geological and Water Survey**

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Summary Report

Cooperative Agreement Outputs Including Project Deliverables

**Castelli, M.V., Latini, D., Uptegrove, J., Waldner, J.S., Hall, D.W., and Friedman, A.L, 2015,
Significant sand resource areas in State and Federal waters offshore Monmouth County,
New Jersey: New Jersey Geological and Water Survey, Geologic Map Series GMS 15-3, 2
sheets.**

The New Jersey Geological and Water Survey produced the map, “Significant Sand Resource Areas in State and Federal Waters offshore Monmouth County, New Jersey”, which identifies and quantifies 14 potential sand resources in both State and Federal waters. The identified sand resource areas have an estimated total sand volume of 157.4 million cubic yards based on a five-foot minimum thickness of sand. Also shown on the map are the existing nearshore sand sites identified and utilized by NJDEP and U.S. Army Corps of Engineers (USACE), including five areas offshore Belmar and the large borrow area offshore Sea Bright. Individual large-scale plots of the fourteen sand shoals show sand thickness contours and list the median grain size from vibracores sampled at a 30-cm (approximately 1-foot) interval. This map will be available on the NJGWS website, <http://njgeology.org>

The seismic sub-bottom data used in this analysis were collected by New Jersey Geological and Water Survey staff in 2000 and 2001 using an Octopus 360 sub-bottom processor. The grid of sub-bottom profiles extends from Sea Bright to just south of Manasquan Inlet. A total of 61 vibracores were collected in the map area in three acquisition phases in 2000, 2001, and 2002. These earlier data acquisition phases were

funded in part by NJGWS/MMS Cooperative Agreements No. 14-35-0001-3075 and No. 1435-01-02-CA-85191. Seismic profiles and vibracores were analyzed using SonarWiz 5™. Sand volume calculations and shoal contour plots were produced using Surfer 10™.

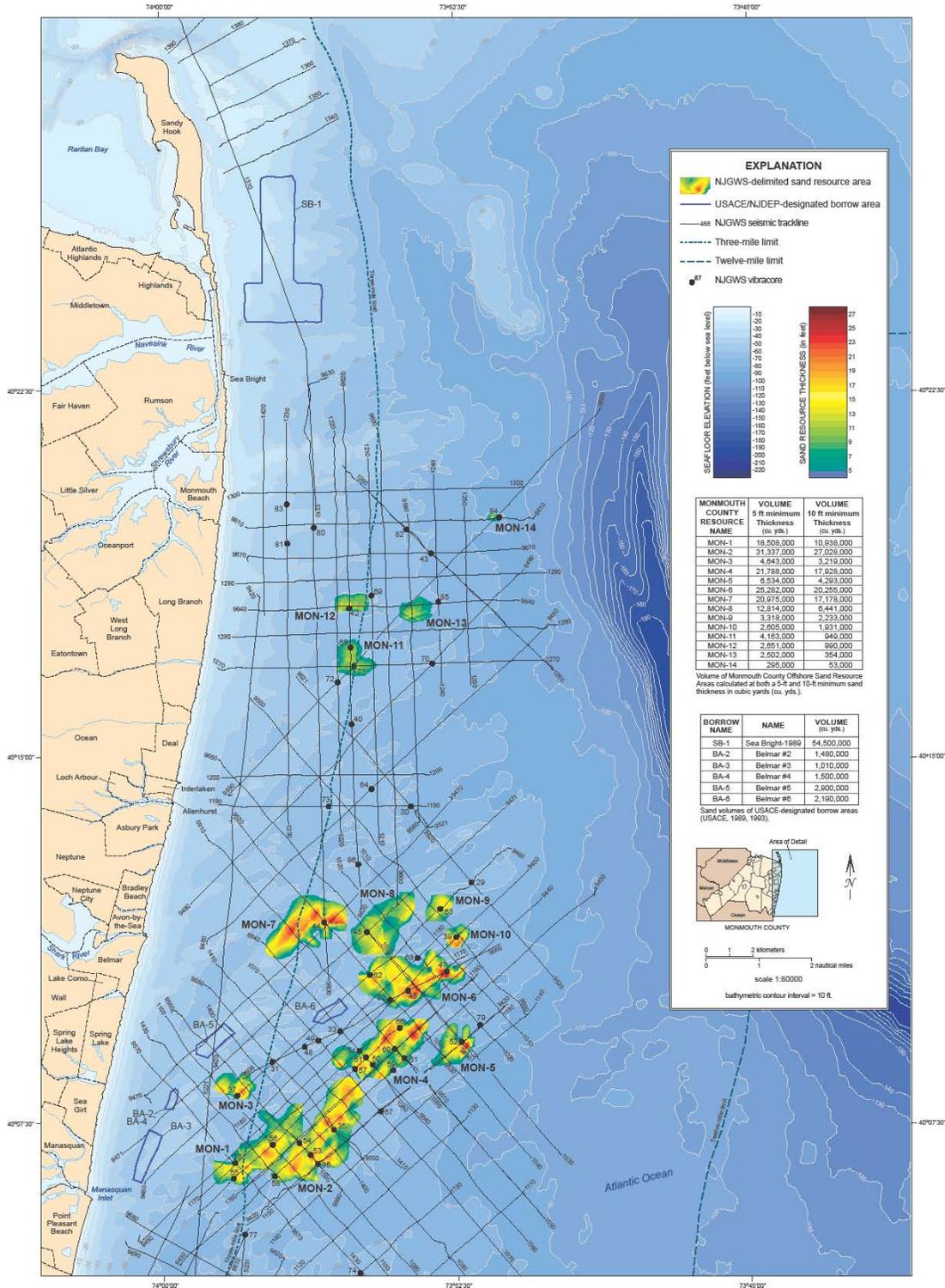


Figure 1. Significant Sand Resource Areas in State and Federal Waters offshore Monmouth County, GMS 15-3, Plate 1.

Kuhn, M.E., Gagliano, M.P., Castelli, M.V., Uptegrove, J, 2016, Northern Ocean County offshore Sand Resource Area Synthesis and Assessment: “Sand-Resource Areas in Northern Ocean County, New Jersey”.

NJGWS staff performed a preliminary analysis of seismic and vibracore data to locate, characterize, and quantify sand-resource areas offshore Northern Ocean County, New Jersey (Figure 2). The analysis is based on a synthesis of 109 seismic lines and 145 vibracores collected in State and Federal waters from Manasquan Inlet to Barnegat Inlet. Sand deposit thickness is interpreted from sub-bottom profiles using SonarWiz™6. Sand volumes are calculated in 5-foot and 10-foot thicknesses using Surfer™12. The analysis of sites requested by U.S. Army Corps of Engineers and the analysis of new discoveries made by NJGWS yield nine resource areas with an estimated total volume of 73,950,000 cubic yards of sand. Locations of the data elements are reported as GIS coverages, including metadata files. NJGWS recommended an additional fifteen vibracore sites to USACE to supplement the characterization of the nine resource areas and to further explore sand-resource area prospects.

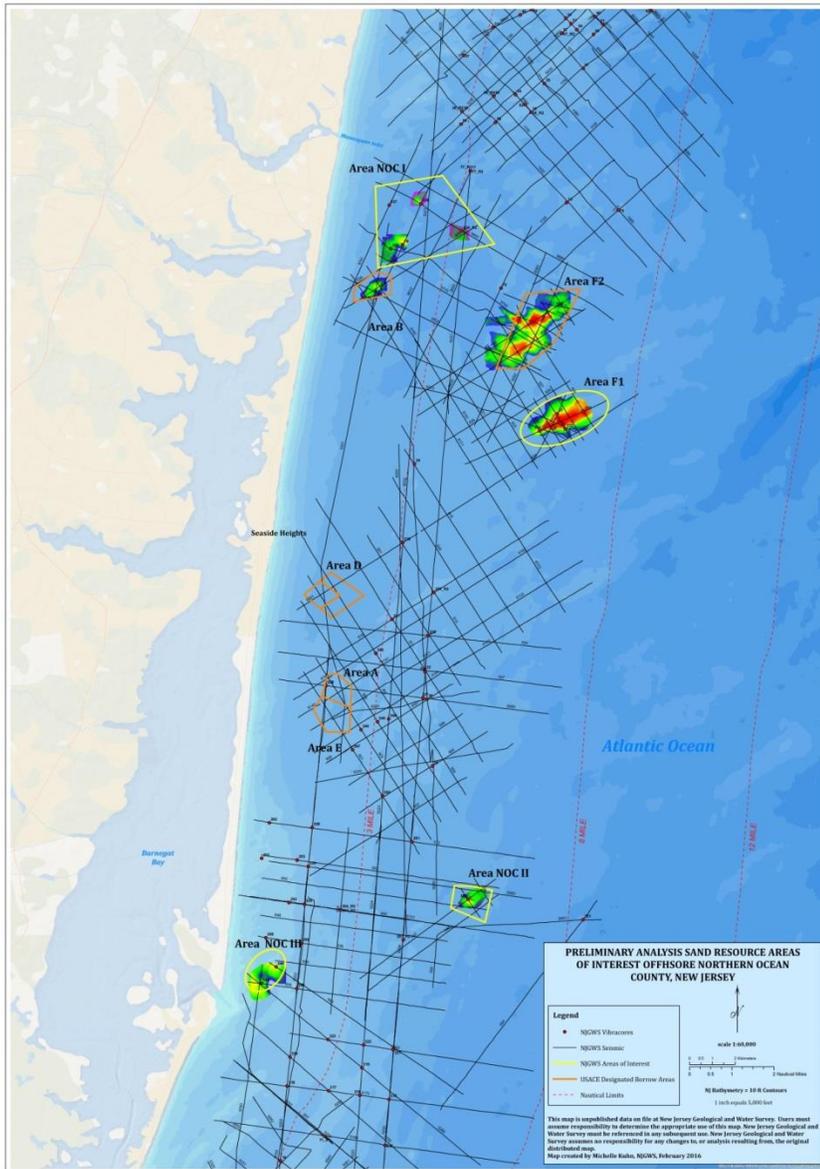


Figure 2. Preliminary analysis of sand resource areas offshore Northern Ocean County, New Jersey.

Kuhn, M.E., Castelli, M.V., Monteverde, D.H., Uptegrove, J., Gagliano, M.P., 2015, Technical Report delineating areas for geophysical and geological surveys for the Atlantic Sand Assessment Project to fill data gaps.

NJGWS reviewed sites for seismic acquisition and vibracore drilling proposed by CB&I, the BOEM contractor for the Atlantic Sand Assessment Project, or ASAP. Based on NJGWS' existing seismic and vibracore archive, additional sites for seismic and vibracore acquisition were proposed (Figure 3). NJGWS engaged the New York and Philadelphia Districts of the U.S. Army Corps of Engineers (USACE) to voice their data needs, to be incorporated into the CB&I proposal. NJGWS plotted approximately 382 nautical miles of offshore seismic lines, with locations from offshore Monmouth County to offshore Cape May County. NJGWS also supplied locations for 3 areas offshore Northern Ocean County in which cores should be collected, and 3 actual core locations offshore Monmouth County. The resulting proposed seismic acquisition included areas of interest to the USACE and expanded grids around lines recommended by NJGWS, including re-acquiring seismic profiles previously collected by NJGWS.

In addition to the survey review and recommendations, NJGWS provided technical consultation regarding acquisition tools, survey areas, etc. during the extent of the contract period.

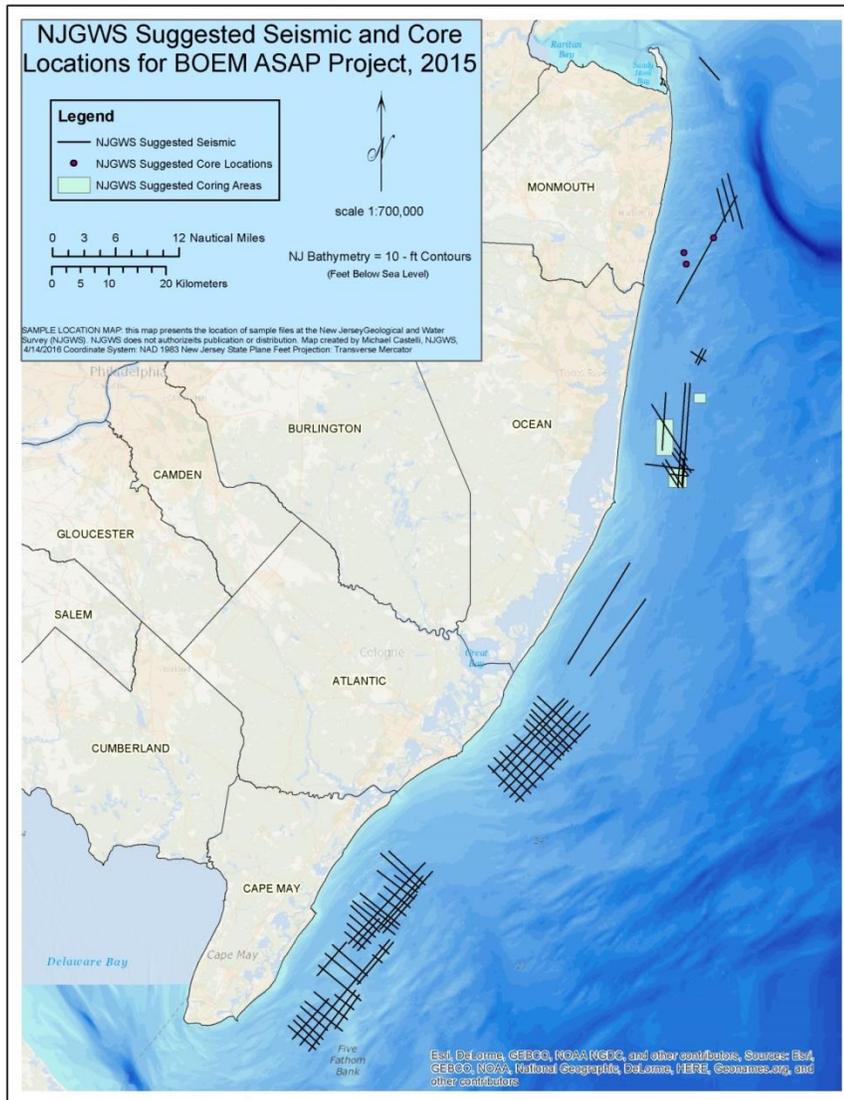


Figure 3. NJGWS suggested seismic and core locations for BOEM ASAP Project

Gagliano, M.P., Kuhn, M.E., Castelli, M.V, Uptegrove, J., 2016, Incorporation of NJGWS seismic and vibracore data archives into data portals for information access and exchange.

New Jersey Geological and Water Survey staff were tasked with organizing, synthesizing and creating metadata and a geodatabase for sub-bottom seismic and vibracore data collected by NJGWS between 1995 and 2015. A total of 526 seismic profiles and 291 vibracores were reviewed, checked for quality and format, organized by year, and entered into the geodatabase. The data were formatted according to combined NJGWS and BOEM design protocols developed in the course of preparing the data transfer. Constituent data layers vary based on acquisition year, acquisition software, drilling contractor, and advances in core-processing protocols.

Metadata was created using the United States Geological Survey metadata tool, an open source toolbox extension for ArcMap. This data will be available publically on the National Geophysical Data Center after transmittal to the Bureau of Ocean Energy Management (BOEM). Given the large size of the digital records, the seismic and vibracore data were transferred to BOEM in two phases by mail using external hard drives provided by BOEM.