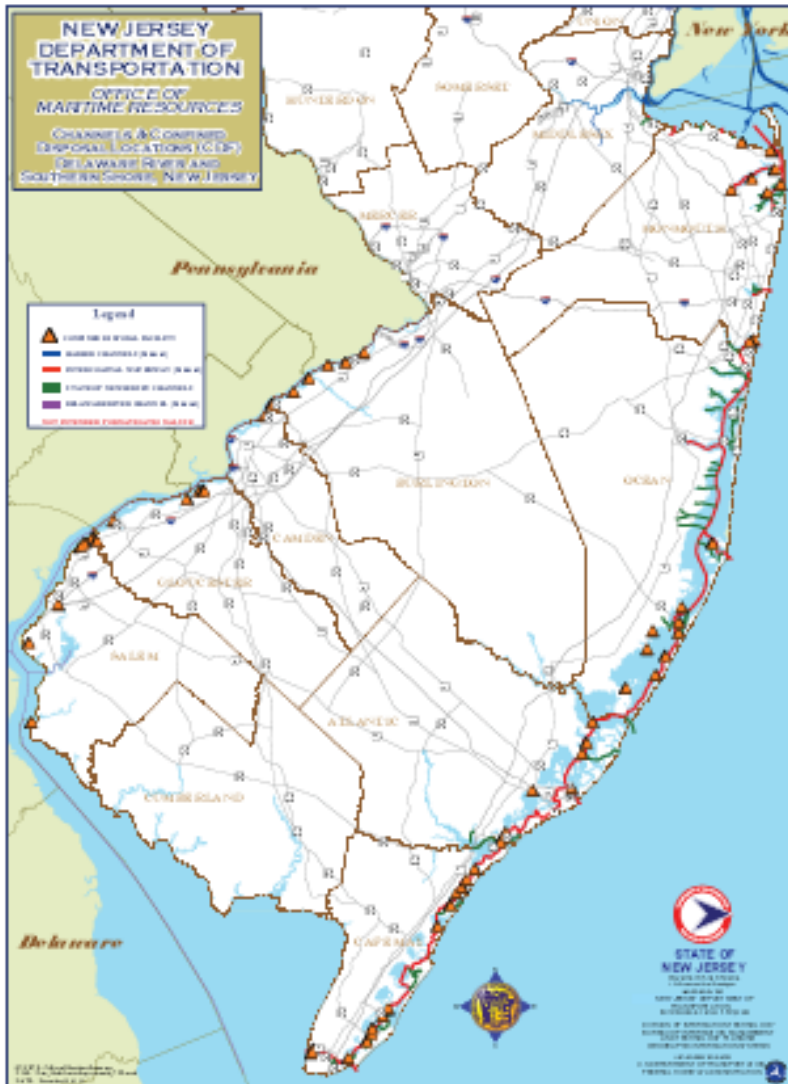




**PARSONS
BRINCKERHOFF**

MANAGING THE NJ MARINE TRANSPORTATION SYSTEM IN THE WAKE OF SUPERSTORM SANDY

NEW JERSEY'S MARINE TRANSPORTATION SYSTEM



- NY/NJ Harbor
- Delaware River
- Atlantic Coast (The Shore)
- Channels (> 500 miles)
- Dredged material management facilities
- Berths and Terminals
- Ports
- Goods Handling
- \$50 B Economic Engine

SUPERSTORM SANDY IMPACTS



SUPERSTORM SANDY IMPACTS ON STATE CHANNELS

- **200 Nautical Miles of State-marked and maintained navigation channels**
- **25 Confined Disposal Facilities (CDFs)**
- **Multi-disciplined team supporting channel recovery:**
 - **Project Coordination**
 - **Condition Survey (Bathymetry, Side Scan, CDFs)**
 - **Channel valuation and usage assessment**
 - **Pre and post-Storm shoaling analysis**
 - **Core-sampling to confirm Sandy impact**
 - **Channel design and dredging**



PROJECT COORDINATION

- **Numerous project team members:**
 - **NJDOT, NJDEP, Consultants/Sub-Consultants**
 - **Engineering, mapping, surveying, communications, FEMA**
- **Daily Communication/Conference Calls**
- **Secure project website – ProjectSolve**



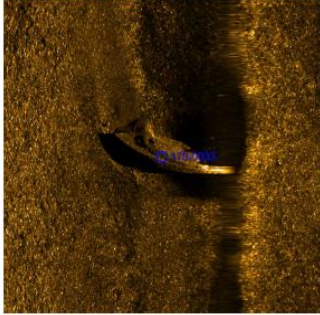
PROJECT TEAM COMMUNICATION

- **Significant project efforts (Bathymetric and Side Scan surveys) amongst numerous team members required daily coordination and discussion of:**
 - **Previous/Current/Next day efforts**
 - **File/data processing**
 - **Weather delays**
 - **NJDEP, NJDOT, Subconsultant, NJ State Police concerns**
- **Sensitive project data needed to be shared amongst select group of team members based on channel location**



SURVEY – SIDE SCAN

- **Sonar survey used to document presence of debris and navigational hazards**
- **Survey reviewed to identify target type, size, and location**
- **Debris removed if considered a threat to navigation (within the authorized channel)**

	<p>170-0033</p> <ul style="list-style-type: none">• Sonar Time at Target: 3/8/2013 6:54:35 PM• Click Position 39.3956164410 -74.3926239303 (WGS84) (X) 522468.31 (Y) 204798.20 (Projected Coordinates)• Map Projection: NJ83F• Acoustic Source File: S:\645-13_NJDOTChannels\Sidescan_data\20130308\130308 Brigantine Channel\Brigantine_Channel-3.002.isf• Ping Number: 495333• Range to target: 5.36• Fish Height: 6.03• Heading: 91.690 Degrees• Event Number: 0• Line Name: Brigantine_Channel-3.002	<p>Dimensions and attributes</p> <ul style="list-style-type: none">• Target Width: 7.63• Target Height: 8.74• Target Length: 25.77• Target Shadow: 20.93• Classification1: vessel• Classification2:• Description: sunken vessel
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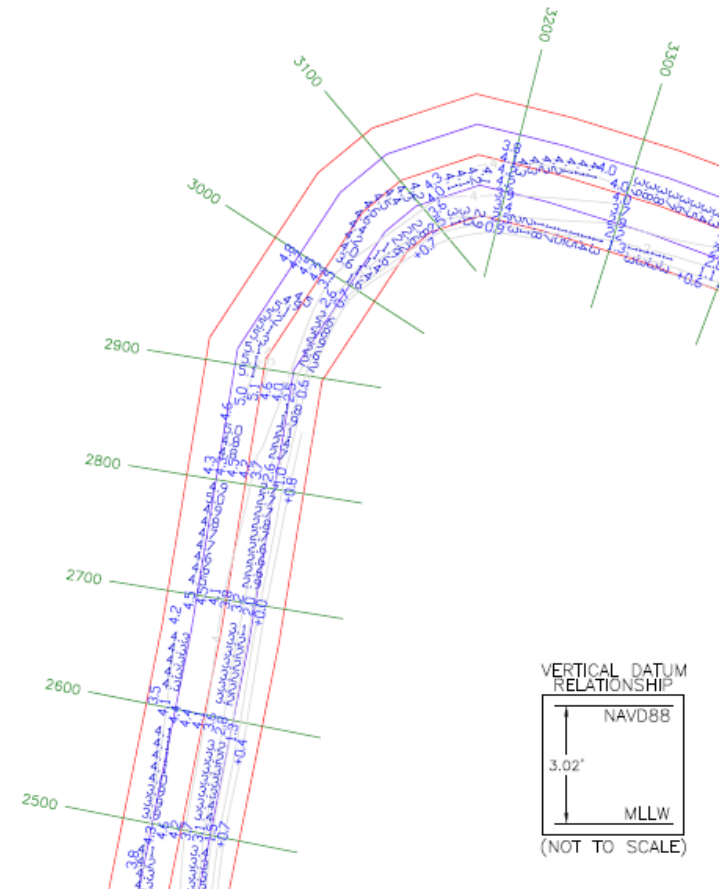
SURVEY – SIDE SCAN

- **Nearly 5,000 targets identified**
 - **Many crab pots, debris, and unknown targets**
 - **36 vessels**
 - **77 pilings**
 - **20 dock sections**



SURVEY - BATHYMETRIC

- **Single-beam survey used to confirm channel depths and identify shoal locations/volumes**



CONFINED DISPOSAL FACILITIES



CDF BERM EROSION



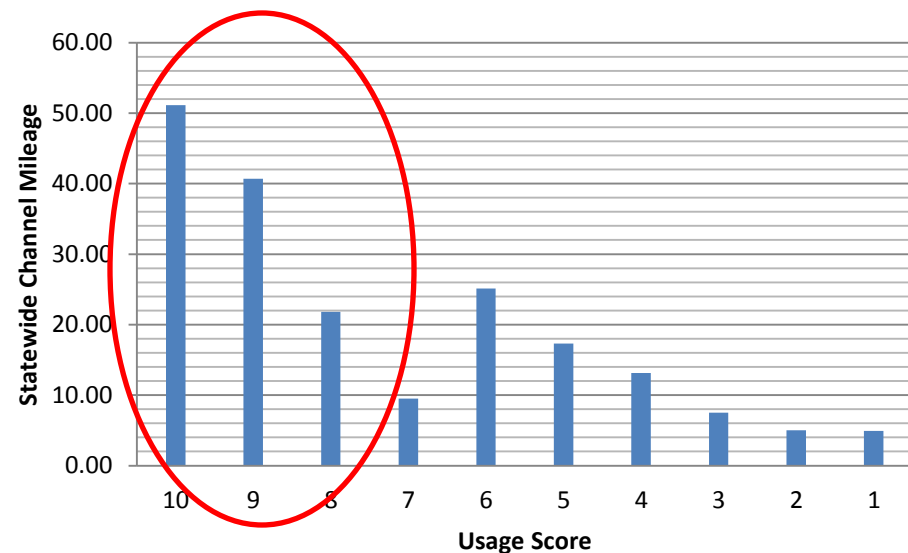
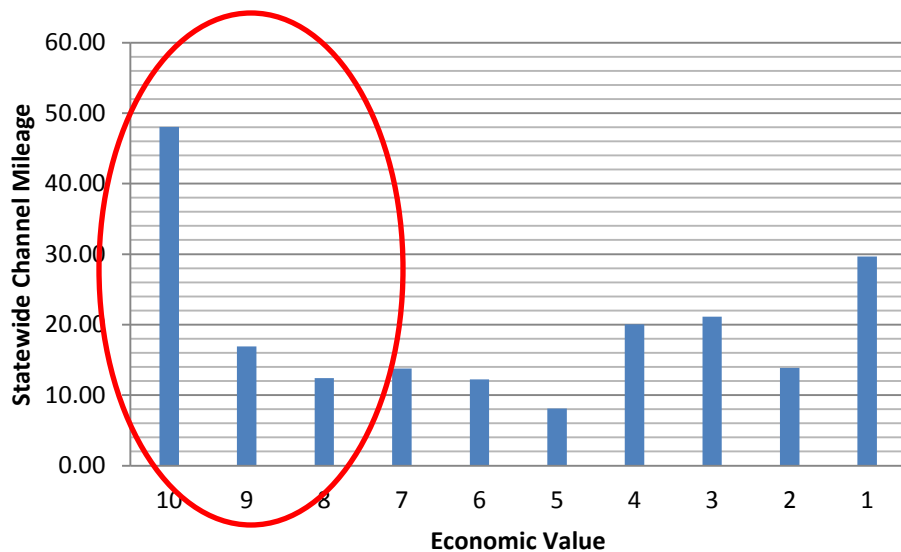
ECONOMIC VALUE/USAGE RATINGS

- **Channel ratings used to indicate general economic value or usage for each channel**
- **Qualitative analysis to prioritize channels for dredging and/or future investments**
- **Economic Value Ratings:**
 - **Number of marinas, businesses, fishing vessels, other water-related businesses**
- **Channel Usage Values:**
 - **Number of residential/charter/marina slips, boat ramps, emergency services**



ECONOMIC VALUE/USAGE RATINGS

- Preliminary ratings
- Future vessel traffic and channel land use surveys will strengthen initial data sets





NEW JERSEY DEPARTMENT OF TRANSPORTATION - OFFICE OF MARITIME RESOURCES

HURRICANE SANDY EMERGENCY RESPONSE PROTECTIVE MEASURES - DEBRIS LOCATIONS

170 - Brigantine Channel: Atlantic City, Brigantine City, Atlantic County, NJ



ID	Target Type	Dimensions and attributes
170-0023	sunken vessel	Target Width: 0.06 Target Height: 1.01 Target Length: 14.29 Target Shadow: 1.75 Classification: debris Description: debris
170-0024	sunken vessel	Target Width: 0.06 Target Height: 7.70 Target Length: 24.45 Target Shadow: 21.12 Classification: vessel Description: sunken vessel
170-0025	sunken vessel	Target Width: 1.41 Target Height: 9.02 Target Length: 14.14 Target Shadow: 2.42 Classification: debris Description: debris
170-0027	sunken vessel	Target Width: 1.08 Target Height: 3.11 Target Length: 0.50 Target Shadow: 4.48 Classification: debris Description: debris
170-0032	sunken vessel	Target Width: 0.06 Target Height: 5.71 Target Length: 13.51 Target Shadow: 11.69 Classification: unknown object Description: unknown object possible small boat or dock section
170-0033	sunken vessel	Target Width: 0.06 Target Height: 8.88 Target Length: 12.29 Target Shadow: 11.82 Classification: vessel Description: sunken vessel
170-0034	sunken vessel	Target Width: 1.43 Target Height: 1.84 Target Length: 25.17 Target Shadow: 3.23 Classification: debris Description: debris
170-0100	crab pot	Target Width: 2.11 Target Height: 1.89 Target Length: 9.72 Target Shadow: 5.04 Classification: crab pot Description: crab pot
170-0101	crab pot	Target Width: 2.40 Target Height: 1.06 Target Length: 2.25 Target Shadow: 4.97 Classification: crab pot Description: crab pot
170-0102	sunken vessel	Target Width: 0.06 Target Height: 3.32 Target Length: 12.17 Target Shadow: 8.38 Classification: vessel Description: sunken vessel - stiff



PRE/POST STORM COMPARISONS


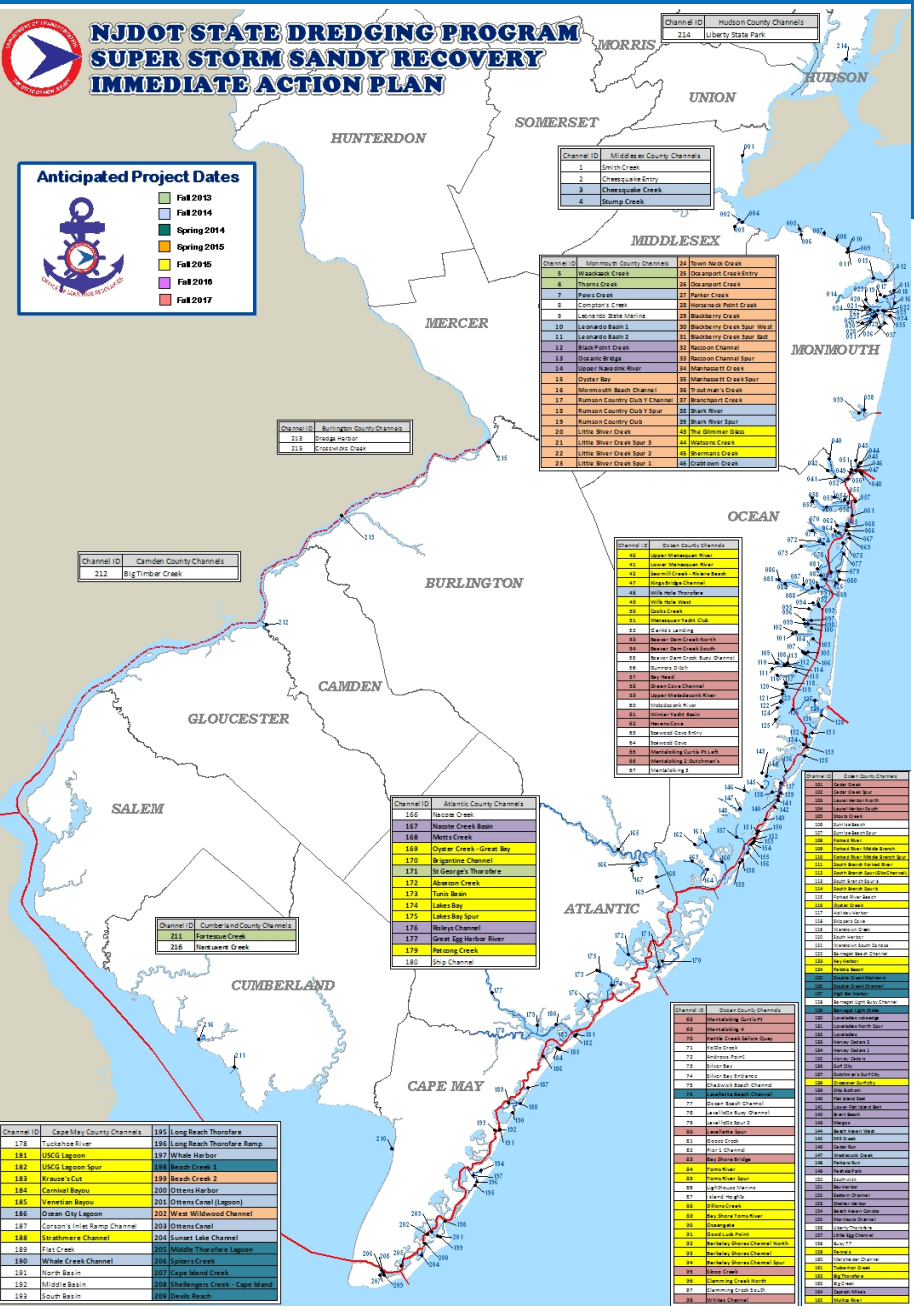




**NJDOT STATE DREDGING PROGRAM
SUPER STORM SANDY RECOVERY
IMMEDIATE ACTION PLAN**

Anticipated Project Dates

- Fall 2013
- Fall 2014
- Spring 2014
- Spring 2015
- Fall 2015
- Fall 2016
- Fall 2017

IMMEDIATE ACTION PLAN (CHANNELS)

- **2014 (out for bid)**
 - Waackaack/Thorns
 - Keansburg
 - St. George's Thorofare
- **2014 (in design)**
 - Cape May Channels
 - Barnegat Inlet
 - Leonardo
 - Beach Creek
 - Cheesquake/Stump Creek
 - Pews Creek
 - Manasquan Inlet
- **2015 (planned)**
 - Avalon Channels
 - Fortescue
 - Shrewsbury Channels
 - Absecon/Tunis/Lakes Bay/Risleys



PATH FORWARD

- **Dredge, dredge, dredge (Federal and State \$\$\$)**
- **Vessel traffic surveys and Coastal land use inventories for prioritization of work**
- **Local dredged material management planning**
- **Dredged Material Management System (online database and beneficial use clearinghouse)**
- **Waterway Linear Segmentation (asset management system), akin to DOTs LRS for highways**

