



# Massachusetts Department of Environmental Protection Three-Year Geographic Response Plan Testing Program

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## After-Action Report on Plum Island Sound Entrance (NS-10) GRP Test

Testing Date: June 8, 2010

Developed by Nuka Research and Planning Group, LLC

July 2010

### Project Background

MassDEP has initiated a three-year program to test GRPs at a variety of locations statewide. This long-term testing program will benefit ongoing and future GRP development throughout the state by documenting lessons learned for various oil spill response tactics under a range of conditions. The testing will also provide practical training opportunities for local responders and spill response organizations, and will improve the level of preparedness to respond to coastal oil spills statewide.

The overall purpose of the testing program is to evaluate the *tactics and strategies* and not to test or challenge the spill responders (local or professional). However, the testing process often yields important information about areas where additional training or standardization is needed to improve overall response capabilities.

For additional information on the MassDEP 3-Year GRP testing program, visit the project website at <http://grp.nukaresearch.com/testing.htm>.

### Testing Overview

The fifth GRP site tested as part of the 3-Year MassDEP program was NS-10, Plum Island Sound Entrance. A half day of testing was conducted on June 8, 2010 to evaluate the draft tactics and strategies in GRP-NS-10.

A planning team consisting of representatives of MassDEP, the towns of Ipswich, Essex, and Rowley, and Nuka Research (contractor) met periodically in the months prior to the deployment test to establish objectives, select the sites and develop a schedule.

The testing day began at 12:00 p.m., when participants gathered at the Pavilion Beach parking lot/boat ramp for Operations and Safety Briefings and a quick lunch. Testing concluded at approximately 4:00 p.m. The Testing Plan (Appendix A) included a rough schedule, as well as a list of testing objectives and other logistical and operational information.

## **GRP Site**

The Plum Island Sound GRP site (NS-10) is located on the eastern coast of northern Massachusetts. In this small region there are many tributaries flowing inland, the Sandy Point State Reservation and the Parker River National Wildlife Refuge.

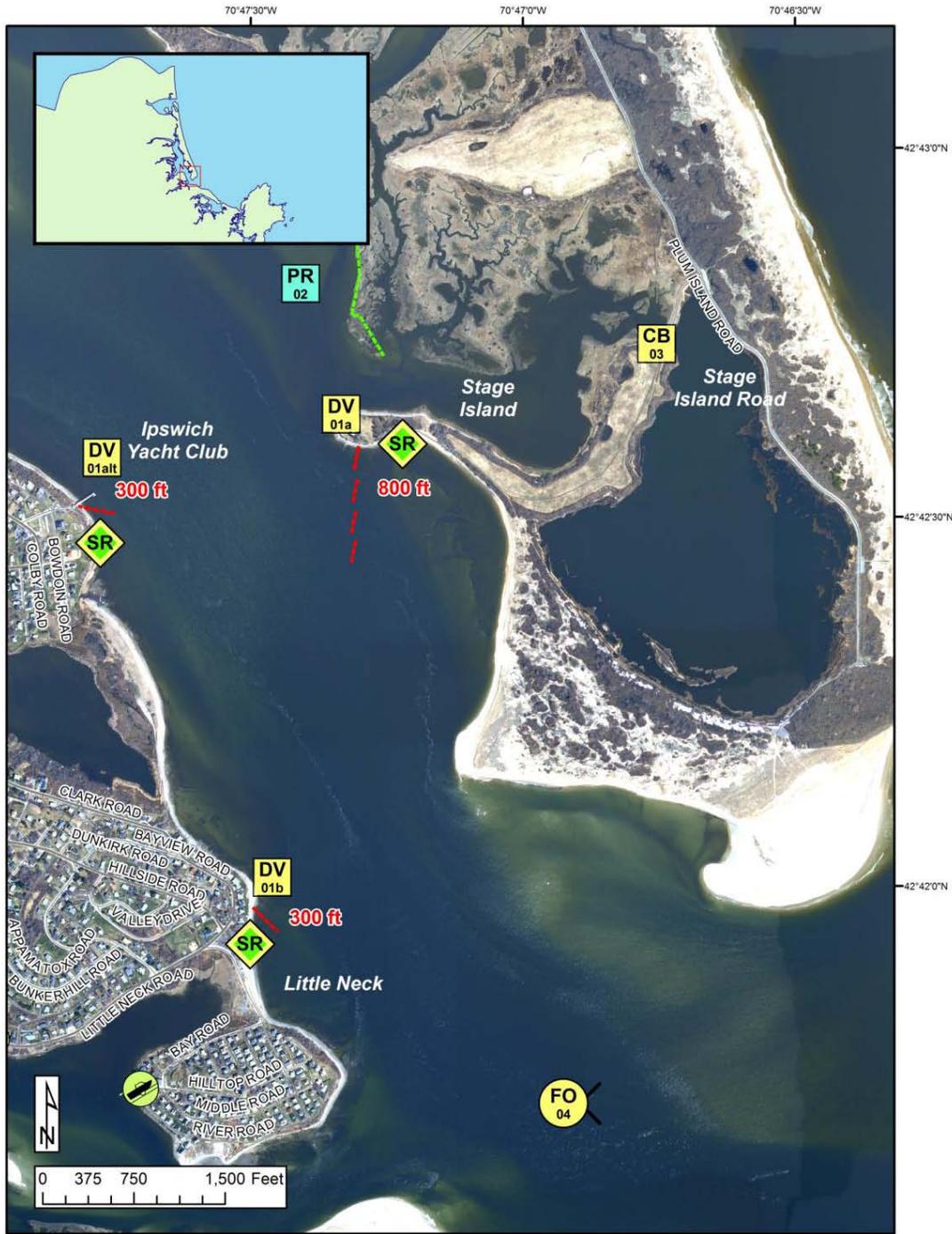
The focus of the GRP for Plum Island Sound Entrance is preventing an oil spill in Ipswich Bay from entering the Sound and migrating up various waterways, which would impact sensitive areas with fish, reptiles, birds, other wildlife and aquaculture. The goal is to deploy boom to divert and recover as much oil as possible from the adjacent shoreline. Figure 1 shows a map of GRP-NS-10. The tactic tested is identified on the GRP map as DV-01a. Appendix B contains a copy of the full GRP for this site.

## **Goals and Objectives**

The goal of this test was to conduct a field test of boom deployment as shown in the GRP for Plum Island Sound Entrance (NS-10, See Figure 1 and Appendix B). The following testing objectives were established:

- Develop tactical and operational plans to assign personnel and resources for GRP deployment.
- Deploy equipment from Ipswich response trailer, with Essex standing by.
- Provide opportunity for responders from Ipswich, Essex, Rowley, USCG, MassDEP, and other agencies to work together.
- Deploy DV-01a using Ipswich equipment.
- Deploy two legs of cascaded boom array (4 x200 ft sections), to provide responders with opportunity to practice anchoring segments within a cascaded array.
- Evaluate staging area and site access considerations.
- Evaluate GRP tactic as shown and identify any changes or modifications necessary to achieve goal of divert & collect.
- Document all activities.
- Conduct post-deployment "hot wash" to identify lessons learned.

Figure 1. Map of NS-10 (GRP for Plum Island Sound Entrance).



Map Legend					
<b>BB</b> Beach Berm	<b>DF</b> Deflection Booming	<b>MD</b> Mosquito Ditch			Protected-water Boom (Flood Tide)
<b>CB</b> Culvert Block	<b>EX</b> Exclusion Booming				Protected-water Boom (Ebb Tide)
<b>DV</b> Diversion Booming					Beach Berm Material
<b>PR</b> Passive Recovery	<b>FO</b> Free-oil Recovery				

- Identify any training or planning gaps brought out by the boom deployment.
- Evaluate staging area and general logistics for deploying boom at this location.

The objectives were included in the plan of operations for the day's testing, and evaluation forms were developed to measure evaluators' assessment of whether the objectives were met.

### **Participation**

Staff from the Ipswich Fire Department, the Rowley Fire Department, the Essex Fire Department, the Ipswich Police/Harbormaster Department, and Ipswich Shellfish Department was the primary responders for this deployment test (see Figures 2 and 3). They transported, deployed, demobilized, and stored the boom and anchors used in the test. Professional spill responders from Moran Environmental provided assistance and direction to the town responders. It was emphasized throughout the testing that these tests were designed to test the strategies and provide experience to the responders.

*Figure 2. Unloading boom from the trailer on the back side of Little Neck*



Photo by MassDEP

Figure 3. Towing boom to the deployment site



Personnel from Nuka Research and MassDEP acted as facilitators, providing direction, answering questions, and keeping the process moving.

There was a group of observer/evaluators who observed part or all of the day's deployment and were asked to fill out evaluation forms online, or participate in the debrief. The observers included representatives from the Coast Guard, Massachusetts Environmental Police, Ipswich Fire Department, and the MassDEP (see Figure 4).

A list of participants from the June 8, 2010 Plum Island Sound Entrance GRP Test is included in the data forms in Appendix C. Due to the large number of participants, and the fact that firefighters came and went as they had to answer calls, the column for observer/responder was left blank if their role was unknown to the data recorder and some participants' names may not have been recorded.

## Equipment

The equipment (boom, anchor system, lines, floats) deployed during this test came from the MassDEP oil spill response trailer from the Town of Ipswich (See Figure 5). Vessels were provided by the Ipswich Fire Department, the Rowley Harbormaster Department, the Massachusetts Environmental Police, and the Essex Fire Department. The latter two were used as observation/safety boats.

*Figure 4. Observation/safety boat*



*Figure 5: Town of Ipswich Oil Spill Response Trailer*



## Summary of Testing Day

After meeting at the Pavilion Beach parking lot for a review of the day's objectives, a safety briefing by Elise DeCola, and assignments for the incident by Incident Commander Lt. French, the group moved to the staging area on the back side of Little Neck. They deployed four sections of boom, towed by four vessels, for one version of DV-01a, a cascaded boom array. There were many moorings in the channel, which created a challenge for boat operators. The tide was low and the shoreside responders who were put ashore at the deployment site dragged the first leg of boom into place. They anchored it far enough up the beach so that it would not have to be moved when the tide flooded (See Figure 6).

The next leg of the cascade array was set from the vessel, without difficulty. Each responder vessels set the boom it was towing until the cascade array was in place.

*Figure 6. Setting shoreline anchor*



Photo by MassDEP

The change in the weather became a factor in this deployment test, the wind picking up after the rain squalls went through. The wind proved challenging in setting the last anchors and handling the boom. The entire deployment was completed in about three hours.

## Documentation

Since on-site conditions have an impact on deployment, data was compiled on tide cycles, wind speed and direction, sea state, precipitation, and any other environmental conditions or on-scene factors. The completed site data collection form is included in Appendix C.

Standard evaluation forms were posted online for the day's testing, with standard evaluation criteria. To date, six written evaluations have been submitted; some participants provided verbal comments during the debrief (see Table 1). Photographs were also used as documentation. Appendix D contains a copy of Evaluation Forms.

Table 1: Participants' Evaluation Responses

Participant	General Comments/Suggestions	Logistics/Staging Area	Anchors	Boom	Boats	Personnel
Keith Carlson	Every spill will need different tactics. It's nice to have hands-on training to know how the equipment works.  I think the trailer was nicely set up.	I think the site was too far away, long way to tow the booms. Maybe the deployment could and should be closer to the spill site.		When towing we had to use one side or the other to tie the boom to. We are going to set up a rope to tow from the middle for less strain. Definitely need man power to deploy these booms.	I understand one boat had trouble with the 200 feet of boom. I think there were enough boats.	The more training the better.

Plum Island Sound Entrance GRP Deployment Test Report

Participant	General Comments/Suggestions	Logistics/Staging Area	Anchors	Boom	Boats	Personnel
Andrew Clark	<p>The boom configuration in this training deployment was for tide and wind conditions that did not exist on the day of the exercise. Once local personnel are comfortable with basic deployment, it may be beneficial to have future exercises in which a scenario is presented and local personnel must adjust the boom configuration to match the tide and wind conditions actually present.</p> <p>For the most part, boom deployment was successful. The actual conditions present during the exercise made it difficult to set the boom according to the GRP.</p>	<p>This is an excellent location for staging and boom deployment. Much more equipment could be staged on this beach, if necessary.</p>	<p>There were some issues with the anchors not holding. This could be due to not enough scope on the anchor lines/chains as deployed. It was apparent that chop could develop in this area quickly that would overtop this boom. In a large spill, more boom would be necessary to successfully collect oil.</p>	<p>Towing boom through mooring areas is particularly difficult. This operation may be easier with shorter runs of boom and more practice.</p>	<p>Sufficient.</p>	<p>The deployment was generally successful, although more training would be beneficial.</p>

Plum Island Sound Entrance GRP Deployment Test Report

Participant	General Comments/Suggestions	Logistics/Staging Area	Anchors	Boom	Boats	Personnel
David LaPusata	<p>I believe that this exercise should have been a full day. I also believe that given the weather conditions, if there were a release that required boom deployment, the booming strategy would have been different. It may be prudent to decide the booming strategy and location on the day of the exercise to take all factors into account. This would make for a more real-life scenario/exercise.</p> <p>The boom was not deployed in strict accordance with the GRP. Two 400 foot cascading booms were deployed instead of four 200 foot booms. Wind conditions made boom deployment in the designated configuration difficult. In a real spill situation on the day of the exercise, the boom location and configuration would surely have been different.</p>	<p>The beach was in a very good location and provided enough room to stage vehicles, equipment and supplies. The water was calmer in the inlet, and the beach was only a short distance to the boom deployment location. It also had a nice hard-packed rocky surface, which allowed for easy launch of boats and equipment.</p>	<p>There was sufficient equipment and supplies to accomplish the tasks outlined in the exercise.</p> <p>There did not appear to be any major issues with the equipment.</p>	<p>Difficulties encountered included obstructions such as boats and moorings, and prevailing winds. In addition, some groups were better at setting boom anchors than others.</p>	<p>The vessels used were ideal for this type of boom deployment. They were relatively small and maneuverable, and could accommodate 3-4 individuals. There were also other slightly larger boats available in the event that the weather conditions precluded the use of the smaller boats.</p>	<p>Given the difficulties in setting boom in this area, I believe that additional exercise/practice is warranted. With that said, I believe that all of the participants did a great job for a first-time deployment. With a little more practice, this group could be extremely effective.</p> <p>As for training and knowledge, there were some individuals that did a better job of setting the boom and anchors than others. Those that were having trouble could benefit from additional training. Being able to effectively set boom anchors is a critical component to any boom deployment.</p>
Kingsley Ndi	<p>Based on my observations the players got a better understanding of their actual work environment and what possible limitations may exist.</p> <p>Players had a hard time installing DV-01a due to currents and unavailability of effective anchor points. However, they got a better sense of direction for future exercise, and also how to best prepare for real installations.</p>	<p>The trailer boom mob/demob and deployment at that location seemed to go fairly well.</p>		<p>I think with further practice, the players have an easier time deploying a similar boom array, in that setting.</p>	<p>There were plenty of vessels for boom deployment. Vessels appeared to be adequately powered, and maneuverability became an issue in one instance only due to boom entanglement.</p>	<p>The players had adequate equipment and applied themselves very well.</p>

Participant	General Comments/Suggestions	Logistics/Staging Area	Anchors	Boom	Boats	Personnel
David Standley	Responders were apparently not entirely able to effectively deploy DV-01a using 800 ft boom.	The staging area was marginally satisfactory under the extant tide, wind and current conditions. At higher tides it might not be feasible to bring tow boats to shore to attach booms due to the contour of the beach. Wading might be required. During summer time the increased number of moored boats and moorings in the river could be a serious problem. This concern would also exist at Pavilion Beach, but there the gradient of the intertidal zone is more uniform. At high tide Eagle Hill could be an option.	Equipment was sufficient but inexperience at setting anchors was said to be a problem	Tide and wind were a problem [towing boom] as were moored boats and moorings at the launch site.	There were enough vessels to deploy the boom but power was marginally acceptable for a couple of the boats.	More experience at launching, towing and anchoring booms in marginal conditions would be useful.
Albe Simenas	Current and wind conditions worked against the planned exercise but were a valuable learning tool.					

## Communications

For the testing day, marine Channel 12 was assigned for those responders on the water. Although it was a training exercise, an Incident Commander was assigned (Lt. French, Ipswich Fire Department) and a Safety Officer (Jim Zabelski, Ipswich Harbormaster Department). Both were on the water.

## Safety

Throughout the deployment test, facilitators emphasized that safety was the highest priority. An initial safety briefing was given, and participants were also encouraged to abide by the safety policies of their agency or organization. All participants who were on vessels were required to wear a personal flotation device at all times. Participants were instructed to dress in work clothes appropriate for the weather conditions.

The testing cycle was successfully completed with no safety incidents or injuries.

## Observations

The GRP test yielded specific information about the tactic tested, the staging area, and the equipment at the site. The major observations and lessons learned are summarized here by theme/issue, and recommendations for how to address these issues are included where appropriate.

- Although the staging area on the back side of Little Neck was good for deploying boom, towing it to the site through the mooring field proved challenging. This particular challenge will increase during the summer when there are more moorings out.
- Wind and flooding tide made deploying boom challenging. The wind affected how the connections were made between pieces of boom (see Figure 7) and how difficult it was to set the midline anchors. It was useful to have a second boat to hold one end of the boom while the anchor was being set (See Figure 8).

*Figure 7. Connecting two legs of boom*



*Figure 8. Second boat assisting*



Photo by MassDEP

- There was no VHF radio on land with the shoreside responders.
- There was difficulty in setting the rebar, which was too long, on the shore. A permanent anchor point was found up the beach in the bushes.
- The second vessel had trouble pinning the anchor.
- The responders demonstrated that they could successfully deploy a cascaded boom array under less than ideal conditions.

### **Recommendations**

Several recommendations came out of this testing day, related both to the GRP itself and to the testing process:

- Make sure all responders have marine or handheld radios.
- Consider loading boom onto vessels if approaching through the mooring fields.
- When setting anchors mid-line in strong current/tide, use second boat to push the boom out, while first responders set anchor.

- Check trailers for varied lengths of rebar; possibly use a smaller sledge hammer. A Danforth anchor could also be used in place of rebar.
- Continue to look for opportunities to use field exercises to test and work with neighboring towns.

## **Appendices**

- Appendix A: GRP Testing Plan
- Appendix B: GRP NS-10 (as tested)
- Appendix C: Site Data Collection Form (completed)
- Appendix D: Evaluation Form (blank)

## Appendix A

## **GRP TESTING PLAN**

### **NS-10 Plum Island Sound Entrance GRP Test**

**06/08/10 12:00pm to 4:00pm**

#### ***Objectives***

- Simulate actual incident – Fire Chiefs take lead in assigning personnel, implementing tactics.
- Develop tactical and operational plans to assign personnel and resources for GRP deployment.
- Deploy equipment from Ipswich response trailer.
- Provide opportunity for responders from Ipswich, Essex, Rowley, USCG, MassDEP, and other agencies to work together in Task Force setting.
- Deploy DV-01a using Ipswich equipment.
  - Deploy one cascaded strategy (4 x 200 ft sections)
  - Evaluate staging area and site access considerations.
  - Evaluate GRP tactic as shown and identify any changes or modifications necessary to achieve goal of divert & collect.
- Document all activities.
- Conduct post-deployment “hot wash” to identify lessons learned.
- Identify any training or planning gaps brought out by the GRP deployment.

#### ***Participants***

Based on initial planning, participants will include individuals from:

- Boston Line Services
- Essex Police & Harbormaster
- Essex Fire Dept.
- Essex Shellfish Dept.
- Ipswich Police Dept.
- Ipswich Harbormaster
- Ipswich Fire Dept.
- Ipswich Conservation Committee
- Rowley Harbormaster
- Rowley Shellfish Dept.
- Parker River National Wildlife Refuge
- Mass DEP
- U.S. Coast Guard
- Massachusetts Environmental Police
- Nuka Research and Planning Group (facilitator)

***Schedule of Events***

<b>Time</b>	<b>Event</b>	<b>Location/Details</b>
12:00	Meet for briefing & assignment of personnel to tactics	Pavilion Beach via Little Neck Rd. Lunch will be provided to all participants.
13:00	Deploy DV-01a	Trailers at Pavilion Beach.
15:15	Demobilize all boom & load back into trailer	Remove boom and anchors, rinse & store boom in trailer.
15:45	Debrief	Pavilion Beach
16:00	Adjourn	

***Support Equipment***

**Vessels**

Preliminary list of vessels:

- Ipswich harbormaster
- Essex harbormaster
- Rowley harbormaster

**Personnel**

Response personnel TBA based on attendance.

**Boom**

800 feet Ipswich Trailer (18")

***Other Information***

**Tides (Plum Island Sound (south end))**

High 1		Low 1		High 2		Low 2	
08:39	7.6 ft	02:56	1.27 ft	20:54	8.79 ft	15:00	1.47 ft

**Attachments**

- NS-10 GRP (Plum Island Sound Entrance)

## **Appendix B**



# North Shore Geographic Response Plan

## Plum Island Sound Entrance NS-10



Map Legend			
<b>BB</b> Beach Berm	<b>DF</b> Deflection Booming	<b>MD</b> Mosquito Ditch	Protected-water Boom (Flood Tide)
<b>CB</b> Culvert Block	<b>EX</b> Exclusion Booming	U.S. Coast Guard Station	Protected-water Boom (Ebb Tide)
<b>DV</b> Diversion Booming	Shoreside Recovery	Boat Ramp	Snare or Sorbent Boom
<b>PR</b> Passive Recovery	<b>FO</b> Free-oil Recovery	Beach Berm Material	

A total of 2 State Response Trailers are required to implement all of the tactics in this GRP. Responders should always consider on-scene conditions before deploying GRP tactics. Tactics may not be safe or effective under certain conditions. Responder safety should always be the first priority.





# North Shore Geographic Response Plan

## Plum Island Sound Entrance NS-10

ID	Location and Description	Response Strategy	Implementation
<b>NS-10-01</b> 	<b>Plum Island Sound</b> (a) Stage Island Lat. 42°42'36"N Lon. 70°47'17"W (b) Little Neck Lat. 42°41'58"N Lon. 70°47'30"W (alt) Ipswich Bay YC	<b>Divert and Collect – Shoreside</b> Divert incoming oil to collection sites to allow for shoreside collection.	Deploy anchors and boom with skiffs.  For (a) place 4x200-ft sections of 18” boom at the proper angle to divert incoming oil to the collection site.  For (b) or (alt) place a 300-ft section of 18” boom at the proper angle to divert incoming oil to the collection site. Vessel moorings and marine structures may be used as attachment points.  Set up shoreside recovery and tend throughout the tide.
<b>NS-10-02</b> 	<b>Various Locations</b>	<b>Passive Recovery</b> Place passive recovery tactics to recover oil and prevent it from entering sensitive areas.	Place and anchor snare or sorbent boom along the riverfront to prevent lateral movement of oil into smaller creeks. See diagram for suggested locations. Replace as necessary to maximize the recovery.
<b>NS-10-03</b> 	<b>Stage Island Road</b> Lat. 42°42'44"N Lon. 70°46'45"W	<b>Culvert Block</b> Install and monitor culvert block to keep oil from entering coastal pond.	At low tide place an inflatable culvert plug in the culvert. Note that although it is preferable to block the culvert on the ebb tide, it is more important to implement as early as possible. If an inflatable plug is not available, place plywood or similar sheeting material across the entrance of the culvert. Use plastic sheeting to ensure the seal. Stack adequate sandbags against the plywood sheeting to counter the outflow pressure from the intertidal area. Monitor the block to ensure blocking integrity.
<b>NS-10-04</b> 	<b>Plum Island Sound</b>	<b>Free-Oil Recovery</b> Maximize free-oil recovery in the offshore & nearshore environment in Plum Island Sound depending on spill location and trajectory.	Deploy free-oil recovery strike teams upwind and up current of the port area. Use aerial surveillance to locate incoming slicks. Ensure that responders have experience with on-water free-oil recovery. Stay in main channels during low tide.





# North Shore Geographic Response Plan

## Plum Island Sound Entrance NS-10

ID	Response Resources	Staging Area Site Access	Resources Protected	Special Considerations
NS-10-01 	<b>Deployment</b> <i>Equipment (Sites a &amp; b)</i> 1100 ft 18" boom 10 anchor systems 2 anchor stakes 2 shoreside recovery systems <i>Vessels</i> 2 skiffs <i>Personnel/Shift</i> 8 total (1 vessel operator + 1 responder per vessel, 8 shoreside responders) <b>Tending</b> <i>Vessels</i> 1 skiff <i>Personnel/Shift</i> 4 total (1 vessel operator + 1 responder per vessel, 2 shoreside responders)	<b>Staging Area:</b> Ipswich Fire Department, 55 Central St (Rt 1A)  <b>Site Access:</b> (a) Via Newburyport on Plum Island Turnpike to Island Drive to Stage Island. (b) From Manning Rd to East St, to Jeffery's Neck Rd to Little Neck Rd.  Chart 13282-1	<b>Fish-</b> Anadromous, finfish  <b>Birds-</b> Bald Eagle, Seabirds, Plover, Roseate Tern, Least Tern, Nesting Areas  <b>Invertebrates-</b> Shellfish, Lobster, Crab, Shrimp  <b>Habitat-</b> Marsh/Swamp, Tidal Flats, Riprap  <b>Human use-</b> Boat Ramps, Marinas	Tide range of 7 - 9 ft. Extensive tidal flats exposed during low tides.  Tidal Current max speed of 2-3 kts in main channel. Less than 1 kt in side creeks.  Vessel master should have local knowledge and experience operating in strong currents.  Sandy Point (the southeastern most point in the diagram) is a shorebird nesting area and should be avoided from April 1 to August 31.  Entire site surveyed: 06/26/09.  Tested: not yet.
NS-10-02 	<b>Deployment</b> <i>Equipment</i> 1200 ft of snare or sorbent boom 12 anchor stakes <i>Vessels</i> 1 skiff <i>Personnel/Shift</i> 4 shoreside responders	<b>Site Access:</b> Same as NS-10-01.	Same as NS-10-01.	Use snare boom for persistent oils and sorbent boom for non-persistent oils.
NS-10-03 	<b>Deployment</b> <i>Transport</i> 1 Truck <i>Equipment</i> 1 inflatable culvert blocker or 1 sheet of plywood 50-100 sandbags 1 polyethylene sheet <i>Personnel/Shift</i> 4 shoreside responders	<b>Site Access:</b> Via Newburyport on Plum Island Turnpike to Island Drive to Stage Island.	Same as NS-10-01.	Coordinate with DPW.  Culvert plug should be tested and stored at appropriate location.  Tested: not yet.
NS-10-04 	Deploy multiple free-oil recovery strike teams as required to maximize interception of oil before it impacts sensitive areas.	<b>Site Access:</b> Vessel Platform  Via marine waters.  Chart 13282-1	Same as NS-10-01.	Vessel master should have local knowledge.





**Site Photographs and Contact Information**



Stage Island at mid-tide on 21 May 2009. View looks north.



North Ridge of Great Neck. MassDep, 08 April 2008.



Little Neck. MassDEP, 08 April 2008.



Stage Island. MassDEP 08 April 2008

**Contact Information:**

Ipswich Fire Department: 978-356-6630  
Ipswich Harbormaster: 508-356-4343  
Ipswich DPW: 978-356-6612  
Mass Bays Estuary Assn: 978-374-0519  
U.S.C.G. Station Merrimack: 978-462-3428  
Mass Division of Marine Fisheries: 617-626-1520  
Environmental Police: 800-632-8075



## Appendix C

**Massachusetts Geographic Response Plan Deployment Tests**

<b>Test Conditions Data Sheet</b>	
ALL FORMS IN THIS PACKET SHOULD BE COMPLETED IN FULL BY FACILITATOR. Use a separate set of forms for each individual tactic tested.	
Data Recorder Name: Sanne Schneider	Data Recorder Organization: Nuka Research
Date: June 8, 2010	GRP Site Name: Plum Island Sound Entrance
GRP # NS - 10	Tactic # DV-01a
Test Start Time (begins at completion of safety & operation briefings): 1240	Test End Time (ends when all equipment removed and demobilized either back to trailer or to new testing site): 1550
Tide stage at <b>start</b> time: Mid-tide, ebbing	Tide stage at <b>end</b> time: Low tide, flooding
Tide height at <b>start</b> time: Approx. 4.5 ft	Tide height at <b>end</b> time: Approx 1.47 ft
Approximate wave height (ft) during test: N/A	Approximate wave period during test (describe): N/A
Average wind speed (kts) during test: 5 knots	Wind direction during tests: northwest
Max wind speed during test: 12 knots with gusts up to 23	Estimated visibility (mi) during tests: 10 miles
Estimated current speed at <b>start</b> time:	Estimated current speed at <b>end</b> time:
Current direction at <b>start</b> time: NW	Current direction at <b>end</b> time: SE
Notes: Rain squalls came in and the wind picked up during deployment.	

**Massachusetts Geographic Response Plan Deployment Tests**

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<b>Deployment Details Data Sheet</b>	
Data Recorder Name: Sanne Schneider	Data Recorder Organization: Nuka Research
Date: June 8, 2010	GRP Site Name: Plum Island Sound Entrance
GRP # NS-10	Tactic # DV-01a
Total elapsed time required to deploy tactic: Three hours, ten minutes	Number of vessels used to deploy (do not count observers): Four
<b>1. Vessel information (fill out for each vessel involved)</b>	
Vessel name & ownership: Ipswich Fire	Type: Ribcraft
Length: 19'	Engine type & HP: Evinrude 115
Vessel name & ownership: Rowley Harbormaster	Type:
Length:	Engine type & HP:
Vessel name & ownership: Essex Fire	Type:
Length: 16'	Engine type & HP: Evinrude 225
Vessel name & ownership: Ipswich Fire	Type: Pump out
Length:	Engine type & HP: 130hp

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**Massachusetts Geographic Response Plan Deployment Tests**

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<b>Deployment Details Data Sheet</b>	
<b>2. Response Personnel information</b>	
Number & type of response personnel required per GRP: Six total (1 operator + 1 responder for two vessels, four shoreside responders)	
Total number of personnel involved in deployment: 16	Number of vessel operators: Four (response vessels alternated)
Number of vessel-based responders: 13	Number of shore-based responders: Three
List all response personnel by name and organization (do not include observers or facilitators):	
Responder name	Organization
Jeffrey French	Ipswich Fire
Edwards	Ipswich Fire
Keith Carlson	Ipswich Fire
Stone	Ipswich Fire
Mark Emery	Rowley Fire
Matt Bodwell	Ipswich Police
Eric Copithorne	Ipswich Police
Ron Merry	Rowley Fire
Fred Hardy	Rowley Harbormaster
Tom Colpitts	Ipswich Police
James Zabelski	Ipswich Harbormaster
Jim Albani	Essex Fire
George Stavros	Essex Fire
Scott Lapreste	Ipswich Shellfish Department
Wes Burnham	Essex Fire/Harbormaster
Joe Lafata	Essex Fire

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<b>Deployment Details Data Sheet</b>	
<b>3. Response Equipment information</b>	
Amount and type of boom, anchor sets, and other equipment required per written GRP: 200' 12" boom, 600' 18" boom, five anchor sets, one shoreline anchor/rebar	
Type (size) of boom and other equipment used in deployment: 12" and 18" boom	Total amount of boom used in deployment: 800'
Number of anchor sets used in deployment: Five	Other equipment used during deployment: Rebar
Boom configuration in GRP as written: Cascade array with four legs	Actual boom configuration during deployment tests: Cascade array with two legs
Describe major differences/changes to deployment compared to GRP as written. Due to time constraints only two legs of the array were deployed.	
Based on deployment, are changes recommended to GRP? (consider input from responders, observers, and facilitators)  Due to the challenge of towing through the mooring site, depending on the location of a spill, the staging area could be changed or boom could be loaded on response vessels instead of towed.	
Describe how on-scene conditions impacted deployment overall, and list any observations regarding the potential for local conditions to impact future deployments of this GRP.  Strong winds kicked up and made setting anchors challenging. Having a second vessel assist in pinning the anchor was helpful.	

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**Massachusetts Geographic Response Plan Deployment Tests**

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**Deployment Details Data Sheet**

**4. Participant information**

Total number of participants (responders, facilitators, observers, other): Thirty-seven

List all participants by name and organization:

Participant	Organization	Role (Observer, Facilitator or Responder)
Jim Albani	Essex Fire Dept.	Responder
Matt Bodwell	Ipswich Police	Responder
Wes Burnham	Essex Fire/Harbormaster	Responder
Keith Carlson	Ipswich Fire Dept.	Responder
David Carpentier	MA Environmental Police	Observer
Andrew Clark	MassDEP	Observer
Tom Colpitts	Ipswich Police	Responder
Eric Copithorne	Ipswich Police	Responder
Paul Croteau	MA Environmental Police	Observer
Elise DeCola	Nuka Research	Facilitator
John Duponte	Moran Environmental	Facilitator
Edwards	Ipswich Fire Dept.	Responder
Mark Emery	Rowley Fire Dept.	Responder
Michael Faivre	USCG, Gloucester	Observer
Jeffrey French	Ipswich Fire Dept.	Responder
Justin Graham	MA Environmental Police	Observer

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**Massachusetts Geographic Response Plan Deployment Tests**

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Mark Griffin	MA Environmental Police	Observer
Fred Hardy	Rowley Harbormaster	Responder
Anne Keraghan	Ipswich Fire Dept.	Observer
Joe Lafata	Essex Fire Dept.	Responder
Scott Lapreste	Ipswich Shellfish	Responder
David LaPusata	MassDEP	Observer
Scott Maher	MA Environmental Police	Observer
Ron Merry	Rowley Fire Dept.	Responder
Paul Nikas	Ipswich Police	Observer
Kingsley Ndi	MassDEP	Observer
Rich Packard	MassDEP	Facilitator
Lee Prentiss	Ipswich Fire Dept.	Observer
Caleb Queen	Nuka Research	Observer
Sanne Schneider	Nuka Research	Observer
Albe Simenas	MassDEP	Observer
David Standley	Ipswich Conservation	Observer
George Stavros	Essex Fire Dept.	Responder
Stone	Ipswich Fire Dept.	Responder
Andy Theriault	Ipswich Fire Dept.	Observer
Jay Tinel	Ipswich Fire Dept.	Observer
James Zabelski	Ipswich Harbormaster	Responder

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## Appendix D

<b>GRP Deployment Test Evaluation Form</b>		
<b>GRP # NS - 10 Plum Island Sound Entrance</b>		<b>Test date: 06/08/10</b>
Instructions to Evaluators: Complete this form based on your observations of the GRP testing today. Please email to <a href="mailto:sanne@nukaresearch.com">sanne@nukaresearch.com</a> or fax to 240-368-7467 or mail to Nuka Research, PO Box 1672 Plymouth, MA 02362.		
Evaluator Name:		Evaluator Organization:
What was your role in the exercise? (responder, observer, facilitator, etc.)		
What was your level of spill response experience prior to this exercise?		
Please check a box to respond to the following.		
	YES	NO
1. I feel more prepared to deploy GRPs now than I did prior to this exercise.		
2. I have a better understanding of spill response tactics than I did prior to this exercise.		
3. I would participate in future GRP deployments at other sites.		
4. The objectives were clearly explained and the deployment test met the objectives.		
5. The exercise was conducted safely.		
Other comments or suggestions about exercise design & facilitation?		

**GRP Deployment Test Evaluation Form**

GRP # NS – 10 Plum Island Sound Entrance

Test date: 06/08/10

**Evaluation of Tactics – Diversion Boom Array**

Were responders able to effectively deploy DV-01a using 800 ft boom (as directed at exercise in-briefing)?

Describe any challenges or setbacks you encountered or observed in towing and setting the boom.

Based on your experience today, would you feel comfortable setting a similar boom array during an actual incident?

Please evaluate how well the beach on the back side of Little Neck at the end of River Road worked for deploying and demobilizing boom from the trailer for this deployment.

**GRP Deployment Test Evaluation Form**

GRP # NS – 10 Plum Island Sound Entrance

Test date: 06/08/10

**Evaluation of Deployment Overall**

Was the equipment available (boom, anchors, line, etc.) sufficient to accomplish the deployment? If not, describe.

Were there enough vessels to deploy the boom? Did vessels have adequate power and maneuverability?

Did responders appear to have sufficient equipment, training and knowledge to deploy the boom? If no, explain any deficits.

Did the GRP document (map diagram and table) provide clear direction as to how and where to deploy the boom? If not, please identify problems & suggest improvements.