First Responder Training and Geographic Response Strategy (GRS) Testing Exercise Series – Naushon Island

After-Action Report/Improvement Plan

September 21, 2023

The After-Action Report/Improvement Plan (AAR/IP) aligns exercise objectives with preparedness doctrine and related frameworks and guidance. Exercise information required for preparedness reporting and trend analysis is included; users are encouraged to add additional sections as needed to support their own organizational needs.

EXERCISE OVERVIEW

Exercise Name	2023 Naushon Island GRS Validation/Testing Exercise
Exercise Date	September 21, 2023
Scope	This was a full-scale GRS validation/testing exercise planned for approximately six hours at Bull Island and upon the waters of Hadley Inner Harbor. Exercise play was limited to Hadley Inner Harbor and the adjacent Bull Island shoreline.
Mission Area(s)	Prevention, Protection, Response
Capabilities	Environmental Response/Health and Safety, Operational Coordination, Operational Communications
Objectives	**Objective 1**: Demonstrate the ability of local responders to conduct initial response activities within the first 4-6 hours of an oil spill incident by deploying MassDEP oil spill response equipment and implementing common Geographic Response Strategy (GRS) tactics in alignment with the MassDEP GRS Tactics Guide. **Objective 2**: Demonstrate the ability of local responders to establish and maintain command and control in the first 4-6 hours of an oil spill incident response by identifying relative health and safety hazards, developing an initial response organization, and communicating response objectives, strategies, and tactics through the completion of an Incident Briefing form (ICS 201) and the facilitation of an Operations and Safety Briefing. **Objective 3**: Demonstrate the ability of local responders to effectively communicate information and actions between multiple local, state, and federal agencies within the first 4-6 hours of an oil spill incident by identifying a common UHF or VHF radio channel that can be utilized by all participants.
Threat or Hazard	Discharge of oil into a navigable waterway
Scenario	An oil spill has occurred that threatens Bull Island and Hadley Inner Harbor. Responders will utilize Geographic Response Strategy (GRS) tactic DV01a to protect sensitive resources around Bull Island, in Hadley Inner Harbor, and the surrounding areas.
Sponsor	Massachusetts Department of Environmental Protection (MassDEP)
Participating Organizations	Participating organizations included: • Naushon Trust • MassDEP • U.S. Coast Guard Sector Southeastern New England • Moran Environmental Recovery (MER) • Nuka Research ***Note: See Appendix B for participant count***
Point of Contact	Julie Hutcheson, Marine Oil Spill Prevention & Response Program Coordinator Massachusetts Department of Environmental Protection Oil Spill Prevention and Response Program 100 Cambridge St., Suite 900 Boston, MA 02114 (617) 366-7424 julie.hutcheson@mass.gov

EXECUTIVE SUMMARY

Exercise Planning

In preparation for the Naushon Island exercise, both an Initial and Final Planning Meeting (IPM/FPM) were held with members of the Exercise Planning Team (EPT), which was comprised of personnel from each of the participating organizations listed in the Exercise Overview section.

Based on general direction provided by the EPT, and the overarching exercise scope and objectives mentioned above, the following deployment plans were developed:

- Deploy 400 ft of boom in a single leg diversion configuration to test the DV01a strategy in the Buzzards Bay Hadley Entrance GRS (BB45) (see **Figure 1** below)

Exercise Conduct

Upon arrival at the deployment site on the day of the exercise, exercise controllers and senior participant personnel conducted a pre-deployment site survey to identify any limitations or obstructions that may impact the deployment plan outlined above. The following factors are typically observed and evaluated during this process:

- Wind speed and direction
- Tidal conditions, water depth, current speed and direction, and other water flow patterns
- Vessel traffic, mooring field density, and other deployment area limitations or obstructions
- Availability and capabilities of on-scene response resources

Based on the results of this site survey, the following limiting conditions were noted, leading to modifications to the initial deployment plan:

- Of the two vessels available for conducting deployment operations, neither had the necessary capabilities to adequately tow 400 ft of boom from the Ferry Dock through Hadley Inner Harbor and to Bull Island. Vessels with at least 150 hp are recommended for towing longer sections of boom (one vessel had a 40 hp engine, and another had a 90 hp engine).

As a modification to the initial deployment, the following deployment activities were completed:

- Deploy 200 ft of a shortened single leg diversion (DV) boom array to test a modified DV01a tactic.

Participants practice throwing a heaving line

Participants learn about the different boom components and practice connecting sections of boom

Photos courtesy of Nuka Research & Planning Group

Sean Boyle (MER) assists participants with configuring shoreside anchor systems

Participants use a tractor to transport Naushon Island's MassDEP oil spill response trailer to the ferry dock for deployment

Photos courtesy of Nuka Research & Planning Group

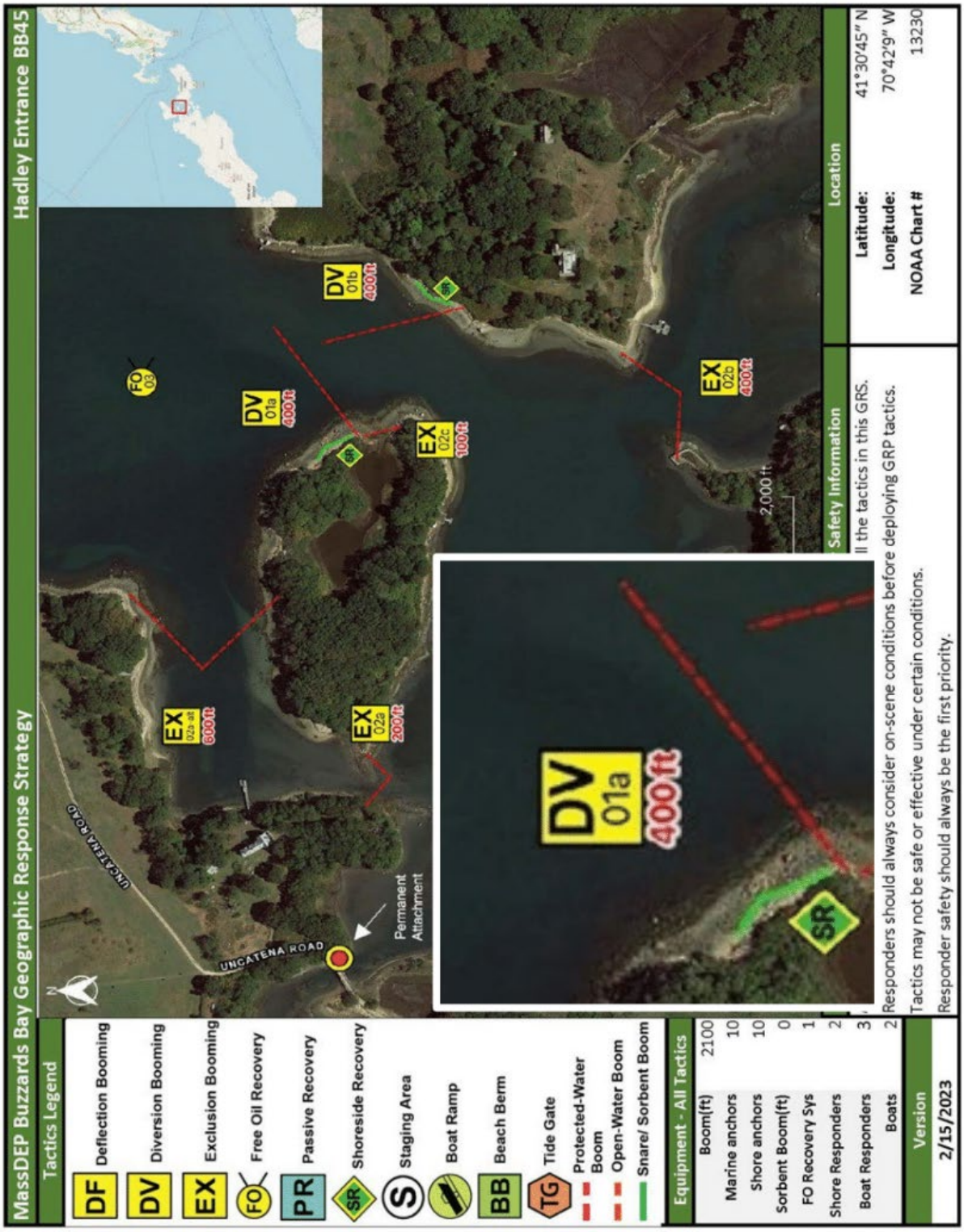


Figure 1. Exercise Tactics Map

ANALYSIS OF CAPABILITIES

Aligning exercise objectives and capabilities provides a consistent taxonomy for evaluation that transcends individual exercises to support preparedness reporting and trend analysis. Table 1 includes the exercise objectives, aligned capabilities, and performance ratings for each capability as observed during the exercise and determined by the evaluation team.

Objective	Capability	Rating
Demonstrate the ability of local responders to conduct initial response activities within the first 4-6 hours of an oil spill incident by deploying MassDEP oil spill response equipment and implementing common Geographic Response Strategy (GRS) tactics in alignment with the MassDEP GRS Tactics Guide.	Environmental Response Health and Safety	S
Demonstrate the ability of local responders to establish and maintain command and control in the first 4-6 hours of an oil spill incident response by identifying relative health and safety hazards, developing an initial response organization, and communicating response objectives, strategies, and tactics through the completion of an Incident Briefing form (ICS 201) and the facilitation of an Operations and Safety Briefing.	Operational Coordination	S
Demonstrate the ability of local responders to effectively communicate information and actions between multiple local, state, and federal agencies within the first 4-6 hours of an oil spill incident by identifying a common UHF or VHF radio channel that can be utilized by all participants.	Operational Communications	S

Ratings Definitions:

Performed without Challenges (P): The targets and critical tasks associated with the core capability were completed in a manner that achieved the objective(s) and did not negatively impact the performance of other activities. Performance of this activity did not contribute to additional health and/or safety risks for the public or for emergency workers, and it was conducted in accordance with applicable plans, policies, procedures, regulations, and laws.

Performed with Some Challenges (S): The targets and critical tasks associated with the core capability were completed in a manner that achieved the objective(s) and did not negatively impact the performance of other activities. Performance of this activity did not contribute to additional health and/or safety risks for the public or for emergency workers, and it was conducted in accordance with applicable plans, policies, procedures, regulations, and laws. However, opportunities to enhance effectiveness and/or efficiency were identified.

Performed with Major Challenges (M): The targets and critical tasks associated with the core capability were completed in a manner that achieved the objective(s), but some or all of the following were observed: demonstrated performance had a negative impact on the performance of other activities; contributed to additional health and/or safety risks for the public or for emergency workers; and/or was not conducted in accordance with applicable plans, policies, procedures, regulations, and laws.

Unable to be Performed (U): The targets and critical tasks associated with the core capability were not performed in a manner that achieved the objective(s).

Table 1. Summary of Core Capability Performance

The sections below provide an overview of the performance related to each exercise capability and the associated objectives, highlighting strengths and areas for improvement for each. Refer to page 4 for an overview of the objectives associated with each capability.

Capability 1: Environmental Response/Health and Safety

Strengths

The Partial capability level can be attributed to the following strengths:

Strength 1: Vessel crews successfully navigated through nearby vessel traffic and a mooring field to tow boom from the Naushon Ferry Dock, through Hadley Inner Harbor and to Bull Island.

Strength 2: Vessel crews collaborated to make several adjustments to marine anchor systems to achieve the appropriate boom angle relative to the current and wind.

Shore and vessel crews work together to offload boom for towing

Areas for Improvement

The following areas require improvement to achieve the full capability level:

Area for Improvement 1: Miscommunication regarding the appropriate amount of boom needed to deploy the modified diversion tactic led to delays in boom towing and deployment operations.

Reference: Safety and Operations briefing

Analysis: While offloading boom from the trailer and into the water to prepare for towing operations, participants were unclear on the amount of boom per section (50 ft 12" sections and 100 ft 18" sections) and the total amount of boom needed to deploy the modified diversion tactic (200 ft). This resulted in each vessel towing a separate section of boom (with one vessel towing the initial 150 ft of boom, and the second vessel towing the remaining 50 ft) and required both vessels to coordinate efforts to connect the boom sections on-water after arriving at the deployment location off Bull Island. While participants were eventually able to connect both sections of the boom, this operation took extra time and effort, and would have been much more difficult in a situation involving rougher sea conditions.

Participants connect sections of boom before it is towed to Bull Island

Area for Improvement 2: Participants initially prepared too much anchor line for the northern marine anchor, impacting the initial placement and angle of the diversion array.

Reference: MassDEP GRS Tactics Guide

Analysis: After vessel crews dropped marine anchors to secure the northern end of the boom array, Command Staff recognized that the anchor line was too long and needed adjustment to achieve an effective encounter angle and straighter diversion configuration. After receiving directives from Command Staff to make these anchor adjustments, vessel crews quickly coordinated to tie off any excess slack and reposition the anchors. While vessel crews were able to achieve proper anchor placement and boom angles after these adjustments, it is recommended prior to on-water deployment that Command Staff observe and communicate on-scene conditions impacting deployment tactics and strategies, such as tides, ocean conditions, currents, and water depths, and reference general response recommendations (i.e., the length of the anchor line should be 3 - 5 times the depth of the water) to prepare anchor systems and other resources for deployment.

Area for Improvement 3: The shoreside anchor location utilized in the DV01a validation/test was not ideal for conducting efficient boom anchoring operations, or for initiating shoreside recovery.

Reference: MassDEP GRS Tactics Guide

Analysis: While use of the permanent attachment off Bull Island was convenient for boom anchoring purposes because it didn't require the configuring of a shoreside anchor system, it made the process of anchoring the boom more difficult. After preparing anchor line to connect the southern end of boom to the attachment, vessel crewmembers worked together to disembark their vessel, position themselves on top of the rock a few feet off the shore of Bull Island, and tie the anchor line to the attachment. Although boom was successfully secured to the attachment, this process was both inefficient and potentially dangerous. For the future deployment of the DV01a tactic, shoreside anchor deployment operations should be led by the shoreside anchor team, even if it requires donning waders or other protective equipment. The location of the permanent attachment (several feet from the shoreline) was also a factor as it eliminated the ability to initiate shoreside oil recovery operations due to a gap between the end of the boom and Bull Island.

Vessel crews connect boom to a permanent anchor attachment near Bull Island

Capability 2: Operational Coordination

Strengths

The Partial capability level can be attributed to the following strengths:

Strength 1: Incident Commanders effectively coordinated vessel crew roles and responsibilities, deployment tactics and strategies, and resource requirements during the Safety and Operations brief, and throughout boom towing, anchoring, and deployment operations.

Strength 2: Incident Commanders identified and communicated safety hazards (i.e., pinch points and trip hazards) and oversaw compliance with several safety precautions throughout the deployment (i.e., ensuring all participants wore PFDs).

Areas for Improvement

The following areas require improvement to achieve the full capability level:

Area for Improvement 1: The Safety Officer (SO) was positioned on the shore of Bull Island, making it more difficult to monitor vessel operations and vessel crew safety.

Reference: Safety Officer ICS Position Guide

Analysis: If the SO had been on one of the two working vessels or in a separate safety vessel throughout the deployment, they may have been able to proactively identify challenges related to using the permanent attachment as an anchor point, may have chosen to utilize the shoreside anchor team more effectively, and may have recognized that, at one point, there were too many participants in one of the vessels (8 participants in the smaller vessel). For future responses and exercises, Incident Commanders should consider either dedicating multiple Safety Officers to monitor both shore and vessel crews or utilizing a safety vessel to monitor work vessel activity.

Capability 3: Operational Communications

Strengths

The Partial capability level can be attributed to the following strengths:

Strength 1: Incident Commanders effectively coordinated the distribution of consumer-grade radios to each vessel and to members of the shoreside crew to ensure continuous communications amongst each strike team.

Areas for Improvement

The following areas require improvement to achieve the full capability level:

Area for Improvement 1: Lack of access to marine radios limited participants' ability to monitor and communicate with local marine radio traffic.

Analysis: Although members of the Command staff had access to radios and successfully coordinated the use of each radio to maintain continuous communications between each vessel and the shoreside strike team, these radios were not marine grade, limiting participants' ability to connect to local marine UHF/VHF channels to monitor radio activity and to confirm whether the Safety Marine Information Broadcast (SMIB) was sent by local Coast Guard Command. Marine radios allow for direct communications with nearby vessels, nearby marinas and harbors, and local U.S. Coast Guard representatives. It would be beneficial for Naushon Island staff to purchase and have access to marine radios for future oil spill response operations.

An oil surrogate (peat moss) is used to validate/test the DV01a tactic

Appendix A: IMPROVEMENT PLAN

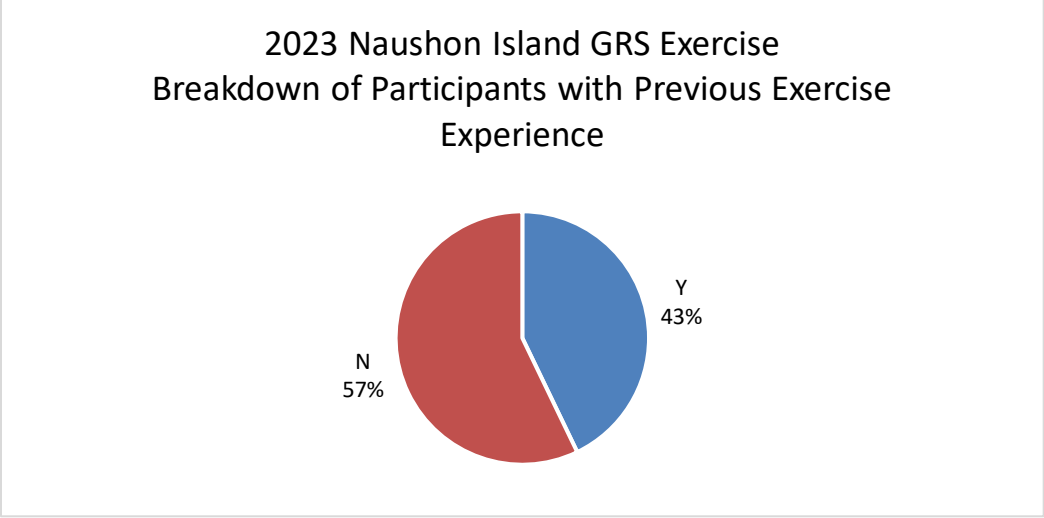
This IP is developed specifically for MassDEP, MER, Nuka Research, and Naushon Trust following the MassDEP First Responder Training and GRS Testing Exercise conducted on 21-Sep-23.

Capability	Issue/Area for Improvement	Corrective Action	Capability Element[1]	Primary Responsible Organization
Capability 1: Environmental Response	1. Miscommunication regarding the appropriate amount of boom needed to deploy the modified diversion tactic led to delays in boom towing and deployment operations.	Boom lengths should be discussed and coordinated in the Operations briefing prior to engaging in on-water deployment activities.	Organization/Leadership	Naushon Trust with oversight by Exercise Controllers
Capability 1: Environmental Response	2. Participants initially prepared too much anchor line for the northern marine anchor, impacting the initial placement and angle of the diversion array.	During the Safety briefing, the SO should identify and discuss local factors and safety hazards that impact deployment tactics and strategies.	Equipment/Systems	Naushon Trust with oversight by Exercise Controllers
Capability 1: Environmental Response	3. The shoreside anchor location utilized in the DV01a validation/test was not ideal for conducting efficient boom anchoring operations, or for initiating shoreside recovery.	For future responses and exercises involving the deployment of a diversion tactic, responders should ensure that the shoreside anchor point is located on shore to enable recovery operations.	Planning	Naushon Trust with oversight by Exercise Controllers
Capability 2: Operational Coordination	1. The Safety Officer was positioned on the shore of Bull Island, making it more difficult to monitor vessel operations and vessel crew safety.	For future responses and exercises, the SO should either be located on a safety vessel, or in an alternate location that allows them to monitor operations effectively.	Organization/Leadership	Naushon Trust with oversight by Exercise Controllers
Capability 3: Operational Communications	1. Lack of access to marine radios limited participants' ability to monitor and communicate with local marine radio traffic.	Naushon Trust staff should purchase marine grade radios to improve capabilities to monitor local marine radio traffic.	Equipment/Systems	Naushon Trust

[1] Capability Elements are: Planning, Organization and Leadership, Personnel, Equipment and Systems, Training, or Exercise

APPENDIX B: PARTICIPANTS & RESOURCES

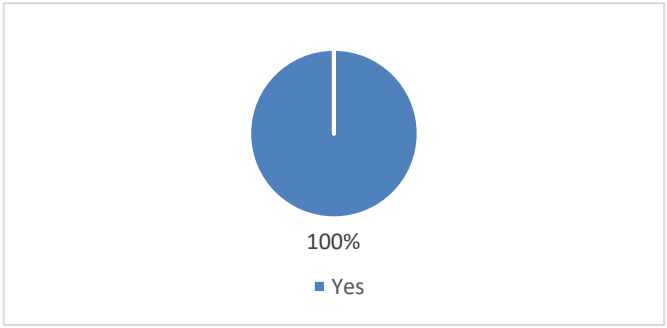
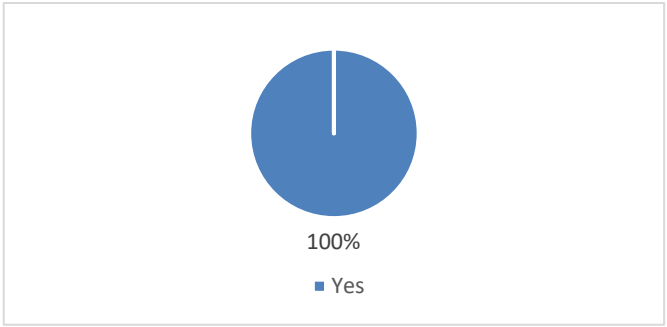
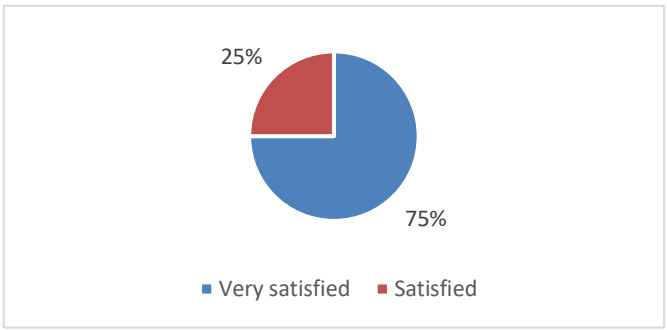
Participating Organizations	
Naushon Island	**Participant Count**
Naushon Trust	11
TOTAL TOWN/CITY PARTICIPANTS	11
Federal	
United States Coast Guard Sector Southeastern New England	3
State	
Massachusetts Department of Environmental Protection (MassDEP)	1
Nuka Research and Planning Group, LLC (contractor for MassDEP)	3
Moran Environmental Recovery (contractor for MassDEP)	2
TOTAL	20



List of Resources			
Agency	**Resource**	**Kind**	**Exercise Function**
Naushon Trust	Oil spill response trailer	Trailer	Trailer Demonstration
Naushon Trust	Oil spill response trailer	Trailer	Boom Deployment
Naushon Trust	Tractor	Vehicle	Support
Naushon Trust	90 hp center console Carolina Skiff	Vessel	Boom Deployment
Naushon Trust	30 hp flat-bottom aluminum boat	Vessel	Boom Deployment
Nuka Research	Drone	Equipment	Support

APPENDIX C: PARTICIPANT FEEDBACK

Participants are encouraged to provide their feedback at the conclusion of each exercise by completing a participant feedback survey provided through Google Forms. The first two yes/no questions, as seen below, gather feedback from participants on the perceived success and effectiveness of the exercise. The following two questions use a satisfaction scale (Very Satisfied, Satisfied, Neutral, Unsatisfied, Very Unsatisfied) to gather feedback on each participant's level of satisfaction with the course and the training experience.

Question	Results	Comments
Do you have a better understanding of spill response techniques and tactics than you did before this training?		
Do you feel more prepared to respond to an oil spill than you did before this exercise?		
Please rank your overall satisfaction with the structure and length of this training.		Discuss environmental conditions, tides, currents, and ESI data in operations brief and/or classroom curriculum

Question	Results	Comments
How would you rate your overall learning experience?		Discuss benefits of using drones in response