



## Rationale for Identifying Massachusetts Communities for Inclusion in Coastal Oil Spill Risk Evaluation

This report describes the rationale used to identify which Massachusetts's coastal communities are to be included in the Massachusetts Department of Environmental Protection "Project to Identify Priority Coastal Communities for Distribution of Future Oil Spill Response Equipment, Training and Geographic Response Plans" (Project #101300).

### **Background**

The Massachusetts Department of Environmental Protection (MassDEP) has contracted with Nuka Research and Planning Group, LLC (Nuka Research) to conduct a qualitative evaluation of marine oil spill risks to Massachusetts coastal communities as part of the "Project to Identify Priority Coastal Communities for Distribution of Future Oil Spill Response Equipment, Training and Geographic Response Plans" (Project #101300). The risk evaluation project seeks to assign relative risk ratings to coastal towns and cities for the purpose of prioritizing future expenditures from the Massachusetts Oil Spill Act Fund<sup>1</sup> for oil spill response equipment trailers, geographic response plans, and other efforts. The project will be conducted in four phases:

- **Phase 1:** Develop risk categorization scheme and identify risk factors for coastal communities
  - Develop matrix and risk maps
  - Quantitative and qualitative data
- **Phase 2:** Conduct coastal oil spill response equipment inventory
- **Phase 3:** Evaluate and rank marine oil spill planning needs by community based on identified risk factors and current level of planning (spill trailers, geographic response plans, etc.)
- **Phase 4:** Final report summarizing Phases 1-3 and recommending future priorities for marine oil spill planning projects.

As part of Phase 1, DEP asked Nuka Research to propose a method for identifying which Massachusetts communities will be included in the study group. These communities will then be evaluated for risk of marine oil spills (Phase 1) and existing spill response equipment inventory (Phase 2), so that they may be compared (Phase 3) and prioritized (Phase 4) for future marine oil spill planning efforts to be conducted by DEP.

### **Proposed Criteria for Including Communities**

Nuka Research used as a starting point the list of communities served by the Massachusetts Coastal Zone Management (CZM) Program. Since CZM is concerned with watershed issues (drainage from terrestrial areas into the coastal environment), the list of communities included in the CZM program is slightly more inclusive than needed to suit the purposes of this project, since many of the communities included in CZM have no marine coastline and no tidally-influenced

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<sup>1</sup> The Massachusetts Oil Spill Prevention and Response Act identifies that funds collected from a 2 cent per barrel fee for petroleum products delivered to a marine terminal can be used for "oil spill prevention and response equipment or training, commonwealth response to a discharge or threat of a discharge of oil and assessment of natural resource damages."



water bodies, which would effectively eliminate the potential for marine transportation related oil spill impacts.

The following criteria were applied to the CZM Program List to narrow down the municipalities for which data will be collected and considered in the Project:

1. Does the municipality have a boundary that reaches the marine coast?
  - o If **yes**, the community is included.
2. If not, does the municipality include a tidal river, estuary, marsh or inlet that flows to marine waters with out impediment?
  - o If **no**, then consider question #3.
  - o If **yes**, then the community is included.
3. Based on Nuka’s best professional judgment, are there reasonable scenarios where spilled oil from a marine transportation related facility could migrate to the tidal rivers within the community?
  - o If **yes**, then the community is included.
  - o If **no**, then the community is excluded.

***Proposed Communities for Inclusion in the Coastal Oil Spill Risk Evaluation***

Nuka Research proposes that the 71 communities listed in Table 1 be included in the study. It is possible that the relatively small tidal coastlines of some of these communities will exclude them from consideration to receive spill response equipment, but a more inclusive approach at this stage will ensure that all potentially impacted areas are given fair consideration. Towns that are recommended for exclusion from this project may be included in future projects focused on inland oil spill risks.

**Table 1. Recommendations for Coastal Communities to Include in the Risk Evaluation Project**

City	Marine Coast?	If NO, then tidal river frontage?	If YES, then recommended for consideration?
<b>North Shore</b>			
Salisbury	Y		
Newburyport	Y		
Newbury	Y		
Rowley	Y		
Ipswich	Y		
Gloucester	Y		
Rockport	Y		
Manchester	Y		
Beverly	Y		
Salem	Y		
Marblehead	Y		
Swampscott	Y		
Lynn	Y		
Nahant	Y		
Revere	Y		
Essex	N	Y—Essex	Y



City	Marine Coast?	If NO, then tidal river frontage?	If YES, then recommended for consideration?
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Peabody	N	Y-Danvers R.	Y
Saugus	N	Y-Saugus & Pine's R.	Y
Danvers	N	Y-Danvers & Porter R.	Y
Amesbury	N	Y-Merrimack R.	N-Newburyport is downstream and no major spill sources in Newburyport
<b>Boston Harbor</b>			
Winthrop	Y		
Boston	Y		
Quincy	Y		
Weymouth	Y		
Chelsea	N	Y-Chelsea Creek	Y
Braintree	N	Y-Mill Cove	Y
Everett	N	Y-Mystic River	Y
Milton	N	Y-Neponset R.	N-Well inland; Boston and Quincy are downstream
<b>South Shore</b>			
Hingham	Y		
Hull	Y		
Cohasset	Y		
Scituate	Y		
Marshfield	Y		
Duxbury	Y		
Kingston	Y		
Plymouth	Y		
Norwell	N	N	
Hanover	N	N	
Pembroke	N	N	
<b>Cape Cod &amp; Islands</b>			
Bourne	Yes to all		
Sandwich			
Barnstable			
Yarmouth			
Dennis			
Brewster			
Orleans			



City	Marine Coast?	If NO, then tidal river frontage?	If YES, then recommended for consideration?
Eastham			
Wellfleet			
Truro			
Provincetown			
Chatham			
Harwich			
Mashpee			
Falmouth			
Gosnold			
Tisbury			
Oak Bluffs			
Edgartown			
Chilmark			
Gay Head/Aquinnah			
West Tisbury			
Nantucket			
<b>South Coastal</b>			
Wareham	Y		
Marion	Y		
Mattapoisett	Y		
Fairhaven	Y		
New Bedford	Y		
Dartmouth	Y		
Westport	Y		
Fall River	Y		
Somerset	Y		
Swansea	Y		
Acushnet	N	Y-Acushnet R.	Y
Dighton	N	Y-Taunton R.	Y – bulk fuel storage in Somerset
Freetown	N	Y-Taunton R.	Y – bulk fuel storage in Somerset
Berkley	N	Y-Taunton R.	Y
Seekonk	N	Unknown; tidal data not available on Barrington R.	N – Far inland; Barrington River small
Rehoboth	N	Unknown; tidal data not available on Palmer R.	N – very far inland



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### ***Information Sources***

As discussed above, the original list of coastal communities was taken from the Massachusetts Coastal Zone Management program.

We used the *Massachusetts Atlas and Gazetteer* published by DeLorme to identify the political boundaries of Massachusetts municipalities.

Sandra Lee<sup>2</sup> at the Army Corps of Engineers-New England Division provided data on the tidal extent of rivers draining to the Massachusetts coast. Since the Project is concerned with the potential for a coastal oil spill to reach a specific location, the extent of the tide is a valid indicator, if the flow of water is not disrupted by a lock (as on the Charles River) or other impediment. Except for the locks on the Charles River, there were no such impediments identified on the tidal rivers of concern.

John Williams, with the Washington State Department of Ecology, provided input regarding the methodology used by the State of Washington to delineate between locations included in their marine GRP region vs. their inland GRP region.

In some cases, firsthand knowledge of the authors and the MassDEP Program Manager were also considered regarding past marine oil spills that had impacted the shoreline of one or more community or proximity to bulk fuel storage.

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<sup>2</sup> Conversation with Nuka Research, March 6, 2008.