The Application of the Massachusetts Licensed Site Professional Program During a Marine Oil Spill Response

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Abstract: The response to a marine oil spill incident in the United States involves mobilization of Federal, State, Local, and Responsible Party (RP)-contracted resources, using the National Incident Management System, Incident Command System (NIMS-ICS). The NIMS-ICS utilizing a Unified Command structure provides a mechanism for responding agencies to establish response priorities and implement cleanup strategies. A recent marine oil spill response in Massachusetts demonstrated that the incorporation of specific state environmental regulatory programs within the NIMS Unified Command system could be a challenging, but advantageous element in the successful cleanup of a marine oil spill.

On April 27, 2003, a tank barge grounded in Buzzards Bay, spilling approximately 98,000 gallons of #6 fuel oil. Early in the response, the Massachusetts Department of Environmental Protection (MassDEP), also the State On-Scene Coordinator (SOSC), recognized the importance of utilizing the State’s Licensed Site Professional (LSP) program to assess cleanup effectiveness, characterize residual impacts, and identify cleanup endpoints. Massachusetts established the LSP program in 1993 to place greater responsibility for cleaning up sites on the private sector, reduce the burden of approvals on the MassDEP, and to accelerate the cleanup of hazardous wastes sites.

The 2003 Buzzards Bay spill was the first time that MassDEP integrated the LSP program into the early stages of a marine oil spill response and the NIMS Unified Command Structure. Including the LSP early in the process also facilitated the transition for conducting LSP-directed clean up after the NIMS Unified Command structure was deactivated. This paper describes the challenges and advantages associated with incorporating a privatized regulatory entity into this well-established and complex organizational matrix. The Massachusetts regulatory structure behind the LSP program is discussed, and recommendations are made for future application of the LSP program in marine oil spill response.
BUZZARDS BAY BACKGROUND

Buzzards Bay is an estuarine embayment located about an hour’s drive south from Boston and is bordered by Cape Cod (to the east) and Long Island Sound (to the west). Buzzards Bay is approximately 28 miles long, averages about 8 miles in width, and is approximately 228 square miles in area (Buzzards Bay National Estuary Program, 2007). The coastline along Buzzards Bay is over 350 miles long (Buzzards Bay National Estuary Program, 2007). Currents in Buzzards Bay are relatively restricted, with the Elizabeth Islands to the south limiting the exchange of oceanic water in Buzzards Bay with the Atlantic Ocean (Figure 1).

Buzzards Bay is a heavily traveled route for both commercial and recreational marine traffic, with the Cape Cod Canal (located in the northeast corner of Buzzards Bay) providing a transit route for more than 20,000 commercial and recreational vessels annually (United States Army Corps of Engineers, 2007). Between January and April 2007, approximately 2,346 tons of petroleum products were shipped through Cape Cod Canal (United States Army Corps of Engineers, 2007).

Both the shoreline and waters of Buzzards Bay are heavily used for commercial and recreational purposes. Productive shellfish beds are located in Buzzards Bay, and the City of New Bedford is the home port for over 300 large and small commercial fishing vessels. New Bedford was the top fishery in terms of value for the United States in 2005 and 2006, with the total value of the 2006 catch valued at over $280 million (National Oceanic and Atmospheric Administration, 2007).
The uses of the shoreline surrounding Buzzards Bay are quite variable, with large public recreational beaches, privately-owned beaches and shoreline, fringing and back barrier marshes, and undeveloped shoreline (e.g., most of the shoreline along the Elizabeth Islands is undeveloped and privately-owned). There are 10 towns located along the edge of Buzzards Bay, with a combined year-round population of approximately 260,000 people identified in the 2000 census (Buzzards Bay National Estuary Program, 2007). The summertime population grows as the beaches and shoreline along Buzzards Bay are popular vacation and tourist destinations.

The shoreline and waters of Buzzards Bay are also home to birds, marine mammals, and other marine species, including state- and federally-listed threatened and endangered species, such as the piping plover (*Charadrius melodus*) and roseate tern (*Sterna dougalii*). Ram Island and Bird Island in Buzzards Bay are the primary nesting habitats for one half of North America’s breeding pairs of roseate terns (Buzzards Bay National Estuary Program, 2007).

Like many U.S. waterways, Buzzards Bay experiences high levels of vessel traffic, which contributes to the risk of vessel-source oil spills. At the same time, there are numerous environmentally sensitive resources that are vulnerable to potential oil spill impact. Because of high levels of human recreational and commercial use and of private shoreline ownership, local stakeholders have a high level of interest in minimizing short and long-term pollution damage caused by a marine spill.

**MASSACHUSETTS PRIVATIZED PROGRAM**

The assessment and cleanup of releases of oil and hazardous materials in Massachusetts are conducted under Massachusetts General Law, Chapter 21E and the regulations promulgated there
under, the Massachusetts Contingency Plan (MCP) (310CMR 40.0000). In 1993, Massachusetts modified the MCP and instituted a unique waste site clean-up program that relies on the use of private licensed environmental professionals known as “Licensed Site Professionals” or “LSP’s” to conduct the site assessment and remediation work necessary at state-regulated waste sites.

The LSP is an environmental consultant (hired by the responsible party) who has demonstrated sufficient technical training and experience and is licensed by the Commonwealth of Massachusetts to conduct assessment and cleanup activities at release sites. Under this new redesigned program, the role of the Massachusetts Department of Environmental Protection (MassDEP) would be to provide direct oversight at those sites that pose the most serious risks and to conduct post clean up audits on a percentage of the sites worked on by LSPs.

Since this redesign, MassDEP’s implementation of the “privatized program” has included maintaining an active emergency response program. While emergency response staff participate in the NIMS-ICS structure programmatically LSP’s have played a limited role in the early stages of emergency response incidents. In most land-based release situations the LSP or his/her representative initially works with MassDEP to develop an Immediate Response Action (IRA) Plan, which will become part of the overall incident mitigation plan for the release. Upon stabilization of the release where imminent hazards to public safety, health and the environment have been eliminated, a transition from the emergency response actions to LSP-directed assessment and remediation occurs. At this point the LSP assumes the lead for development of additional response action plans aimed at defining the nature and extent of residual impacts and reducing those impacts to a level that poses no significant risk (NSR) to human health, public welfare, safety, and the environment.
Federal and State response to releases of oil or hazardous material into coastal waters of the Commonwealth of Massachusetts have historically been under the joint purview of the USCG and MassDEP. This release of fuel oil into Buzzards Bay was one of the first incidences where the LSP was integrated into the cleanup structure at an early date.

RELEASE INFORMATION AND INITIAL RESPONSE ACTIONS

In the late afternoon of April 27, 2003 the tank barge B-120 under tow by a tug struck a rocky bottom shortly after entering the mouth of Buzzards Bay on its way from Philadelphia to a power plant in Sandwich, Massachusetts (see Figure 1). The barge proceeded to Anchorage Lima where damage to the barge was assessed, and oil remaining in the damaged storage compartments was transferred into another barge.
By the early morning hours of April 28, 2003 a Unified Command organization was being established at the Massachusetts Military Reservation on Cape Cod, with MassDEP filling the role of State On-Scene Coordinator (SOSC). Later that day it was apparent that a 12 foot long gash in the tank barges single hull had released what was later to be estimated at 50,000 – 98,000 gallons of #6 fuel oil cargo.

In the next 48 to 72 hours, as the vessel stabilized, on water containment and recovery efforts became the main focus of response efforts, as over flights and land based reconnaissance reports were indicating that major shoreline oiling had occurred in the Towns of Dartmouth, Fairhaven and Mattapoisett. Over the following week the extent of shoreline oiling covered almost 100 miles and impacted parts of all 10 communities bordering Buzzards Bay. As the Unified Command directed response organization grew to meet the operational and logistical requirements of this expanding geographical area so did the requests from local officials for information and input into the response. Public interest was extremely high. MassDEP, in addition to its role participating in Unified Command, Operations and Planning sections, served as a conduit for information flow to and from local municipal officials eventually establishing a web based system of daily updates. MassDEP also successfully utilized the services of a local non-profit environmental advocacy group that had been previously designated through the Area Committee to serve as the volunteer coordinator. Despite drawing on resources from all of its regional offices and several other state agencies by the beginning of the second week of the clean up state response resources were being stretched thin.
As the clean up progressed there was a need to develop written clean up guidance that could be used by division supervisors and shoreline inspection teams in determining when a segment had met the initial clean up goals. This document called the Immediate Response Action: Treatment and Completion Guideline Plan (IRATCGP) attempted to incorporate aspects of the Federal methodology of utilizing clean up methods according to shoreline type (e.g. sand beach, mixed sand and gravel) and habitat or human use of the affected shoreline.

**ROLE OF THE LSP**

At the request of the MassDEP, an LSP was initially brought into the cleanup effort approximately two weeks after the release, in May 2003. The cleanup endpoint criteria and guidelines in the IRATCGP were being finalized by Unified Command and the Responsible Party and natural resources trustees were also beginning a cooperative effort to conduct a Natural Resources Damages Assessment (NRDA). Reconnaissance activities were being performed by Shoreline Cleanup Assessment Teams (SCAT) to characterize oil impacts and collect environmental data with the objective of directing cleanup operations.

Incorporating the LSP into the Unified Command- response activities is shown on Figure 2.
The initial role of the LSP at this stage was to:

- understand current environmental conditions affecting areas of Buzzards Bay,
- understand the roles and responsibilities of Unified Command and other entities involved in the release such as the NRDA consultant for the RP as well as interested environmental groups;
- understand when and under what conditions the Unified Command would be completing initial cleanup activities and;
- establish a clear transition approach between UC and the LSP, as well as the Oil Pollution Act of 1990 (OPA 90) and the MGL Chapter 21 E and the MCP.

During the initial stages of LSP involvement and up until Unified Command completed their work in September 2007, the LSP had limited involvement, decision-making, or control in emergency response actions and cleanup. However there were several benefits of having the
LSP involved in the initial stages of emergency response actions prior to the transition from Unified Command oversight to LSP oversight, including:

- having a clear understanding of the nature, migration characteristics, and magnitude of the release and environmental media impacts at completion of emergency cleanup such that additional response actions conducted under the MCP and under the direction of the LSP were focused on areas of Buzzards Bay and environmental media that were unlikely to meet MCP cleanup standards;

- having an understanding of the data and information that was collected during Unified Command-directed cleanup (e.g., SCAT field team observations of degrees of intertidal oiling; qualitative/quantitative assessments of benthic organisms, fish, and wildlife impacts; and other qualitative and quantitative data collected by the NRDA consultant) such that continued site characterization under the MCP would limit duplications of characterization data and information; and

- keeping the public informed on the role of the LSP and the transition to MCP response actions after Unified Command-directed cleanup was complete and explaining what MCP response actions would generally entail moving forward.

There were many challenges to the integration of the LSP into the Unified Command-directed cleanup and response action process. The primary challenge dealt with establishing an LSP Role in Unified Command decision making. There were two main issues that complicated LSP involvement with the Unified Command:
1. The MCP was unclear on the role of the LSP in emergency responses to discharge of oil to navigable waters that are being directed by the U.S. Coast Guard. It was not clear if the RP had a duty to retain an LSP to conduct emergency response actions and to prepare plans and status reports required by the deadlines specified in the MCP during the time the Unified Command was directing cleanup actions.

2. The Unified Command system as required by federal regulations is a very structured and organized system where each unit has a well-defined function and reporting scheme. This command system allows for an organization to quickly respond to a release with a minimum of confusion and pre-planning. However, the LSP does not have a pre-defined role in this system of decision-making.

As a result, the LSP played a secondary role in cleanup and assessment decision-making during the Unified Command-directed cleanup operations. During this time, however, the LSP and associated staff provided some input to the Unified Command on the IRATCGP cleanup endpoints and cleanup approaches, and assisted SCAT in performing site reconnaissance and inspections.

**TRANSITION FROM NIMS-ICS UNIFIED COMMAND TO STATE LEAD RESPONSE ACTIONS**

The NIMS Unified Command completed its operations on September 3, 2003, at which time the outstanding assessment and cleanup operations were transitioned to the LSP with oversight by MassDEP (Figure 3).
One of the unique aspects of this release was that the cleanup criteria specified by Unified Command in the IRATCGP did not match the cleanup criteria in the MCP. The MCP requires that a condition of NSR be demonstrated to human health, public welfare, safety, and the environment for each shoreline segment. The IRATCGP cleanup criteria were based upon shoreline type and degree of use (e.g., public recreational sandy beaches had a relatively strict cleanup standard), whereas the MCP cleanup criteria are independent of shoreline type and degree of use (Figure 4).
One of the benefits derived from the presence of the LSP was that the Unified Command was able to demobilize with the knowledge that a well laid out regulatory process would be followed to complete response actions goals identified in the IRATCGP. This was an important safeguard to the affected municipalities and concerned parties considering that some shoreline segments had not undergone Immediate Response Action Completion (IRAC) inspection and the IRATCGP endpoints had not been achieved at some segments. For example, although (IRAC) assessment teams working under the Unified Command structure had inspected most of the 149 shoreline segments to evaluate whether the IRATCGP endpoints were achieved, 14 segments were not inspected by the IRAC teams. These segments were primarily located in areas that were difficult to access (e.g., the Elizabeth Islands) or locations where cleanup operations were
still ongoing at the time of the IRAC inspection. Salt marshes at four segments were also not inspected by the IRAC teams. The IRAC teams had also identified five segments that had failed the IRATCGP criteria and further treatment was considered feasible. The LSP was able to continue the inspection process in the fall of 2003 at these segments, and conduct cleanup operations as necessary. The focus of cleanup operations was modified such that the cleanup endpoint objective was to achieve a Condition of NSR at each segment, which was sometimes in excess of the original cleanup guidelines established in the Unified Command IRATCGP.

One of the primary concerns expressed by citizens and municipal officials was that a process be put in place that would be responsive to reports of oil after the Unified Command operation ceased and that shoreline inspections and cleanup continue. A major concern was that oil could have become buried in some isolated areas during the summertime months (when sand accretion on the shoreline is typically occurring), and that the buried oil could be exposed in the fall or winter, after the Unified Command was deactivated. To address these concerns the LSP established a call-in number where citizens and municipal officials could report material suspected to be oil, and inspection teams would be dispatched within 24 hours to evaluate the report and conduct cleanup operations where appropriate. In addition to removing residual oil, these reconnaissance visits allowed the LSP-directed field teams to collect data that would be used in evaluating whether a condition of NSR was achieved at these segments. In addition, having the LSP-directed field teams respond to the reports eliminated the need for state officials to also respond. Reports generated by the LSP describing assessment and cleanup operations were sent to the MassDEP for review and audit and were posted on-line at a previously-established website operated by the Buzzards Bay National Estuary Program.
(www.buzzardsbay.org) for the public to review. The LSP also continued an active public involvement process begun by Unified Command by hosting several public meetings to maintain open lines of communication concerning ongoing and anticipated assessment and cleanup operations.

**Conclusions and Recommendations:**

This Buzzards Bay oil spill has identified several clean up goals and process efficiencies that can be gained by the incorporation of a LSP into the early stages of a marine oil spill. Coordinating and/or considering these activities with the involvement and perspective of the LSP will make for greater cost and manpower efficiencies, may shorten the length of the of time that a release stays within the state’s regulatory purview and may result in improved regulatory compliance for the responsible party.

In retrospect, several areas where earlier involvement by the LSP would have provided further benefit were identified:

1. The MassDEP response effort both in the command post and in the field could have been supported by additional LSP staff in gathering and summarizing information collected by various sections of the response organization, documenting field reports of shoreline oiling, tabulating qualitative monitoring for water column and benthic oiling, participating in the planning of NRDA baseline information, and disseminating reports or complaints from the public. Most of this information was eventually needed in conducting MCP site characterization reports, and not only would have assisted MassDEP in man-power, but would have made MCP site characterization more efficient.
2. Having a more substantial role in establishing cleanup processes and cleanup end point
criteria as part of the IRATCGP would have allowed for better integration of MCP-
required final cleanup standards into the overall cleanup process. As can be observed on
Figure 4, IRATGCP end point criteria were based upon the visual presence of oil whereas
the MCP cleanup criteria are risk-based. By having the opportunity to incorporate
comprehensive permanent closure criteria where possible into the IRATGCP, it is likely
that a more efficient site-wide response would have occurred under both federal and state
environmental regulatory standards.

3. The existence of an established state/private regulatory program designed to address
many of the same issues as the Federal response provided the opportunity for an earlier
transition from Unified Command directed response actions and thus made more
effective use of scarce Federal and State resources. The presence of the LSP on this
release also allowed Unified Command to transition further assessment and cleanup
responsibilities to the LSP, for portions of the shoreline that had not completed the
inspection process at the time of the transition and for a small number of shoreline
segments that had not met the Unified Command cleanup criteria.

4. Effective use of the Massachusetts privatized program can also allow response actions to
proceed in a way that maintains the trust and confidence of the public in the response
actions.
References:


