

ENSURING PROTECTION OF CALIFORNIA'S COASTAL RESOURCES: SENSITIVE SITE STRATEGY EVALUATION PROGRAM

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ABSTRACT

There are over 400 designated environmentally sensitive sites and associated protection strategies in California's coastal waters. To meet the challenge of protecting sensitive sites, California Department of Fish and Game's Office of Spill Prevention and Response (OSPR) has developed the Sensitive Site Strategy Evaluation Program (SSSEP).

The SSSEP provides a program to test and evaluate the effectiveness of "protective response strategies". These strategies have been designed to exclude or divert oil spills away from these sites. Tides and currents, wind, water depth, and obstructions can have dramatic influence on how a strategy is designed and performs. The need to test and evaluate these strategies is critical to ensure that the strategies do work in an actual oil spill emergency to protect sensitive resources.

In California, marine oil facilities, vessels carrying petroleum cargo, and non-tank vessels over 300 tons are required to have an oil spill contingency plan. These contingency plan-holders are required to protect environmentally sensitive sites which may be impacted by an oil spill. Most contingency plan-holders form their plans based upon the response strategies contained in the regional Area Contingency Plans (ACP) and rely upon Oil Spill Response Organizations (OSROs) to supply the needed response resources.

In a cooperative venture, OSPR, the San Francisco Area Committee and OSROs have teamed together to conduct the SSSEP. The OSROs participating are MSRC and NRC Environmental Services. These OSROs provide the vast majority of San Francisco Plan Holders with their spill response services and have volunteered their time and efforts to test the response strategies.

The SSSEP is providing important information on just how effective our strategies are and what we can do to improve them. OSPR's future goal is to expand the SSSEP into California's other ACP areas, validating and building assurances in sensitive site protection strategies.

INTRODUCTION

One of the top challenges in protecting California's natural resources from the effects of an oil spill is ensuring that the strategies for their protection are effective. There are over 400 designated environmentally sensitive sites and associated protection strategies in California's coastal waters. To meet the challenge

of protecting sensitive sites, California Department of Fish and Game's Office of Spill Prevention and Response (OSPR) has developed the Sensitive Site Strategy Evaluation Program (SSSEP).

The SSSEP provides a program to test and evaluate the effectiveness of "protective response strategies". These strategies have been designed to exclude or divert oil spills away from these sites. Protective response strategies are prescribed by the U.S. Coast Guard's Area Contingency Plans for Oil Spills (ACP). The ACP generally identifies four basic categories of oil spill countermeasures: mechanical open water recovery, applied response technologies, (chemical treatment, in-situ burning, etc.), shoreline removal and no action. Under the ACP, if basic countermeasures do not remove the oil spill threat, defensive actions must be employed to prevent, minimize or mitigate the threat(s) to public health, welfare, and the environment. The protective response strategies, which are the subject of the SSSEP, provide such defensive actions.

These strategies look good on paper, but tides and currents, wind, water depth, and obstructions can have dramatic influence on how a strategy is designed and performs. Thus, while all response strategies have been designed and reviewed by teams of spill responders and scientists during site visits, few site-specific response strategies have actually been tested for effectiveness or practicality through actual equipment deployment. Implementation of the SSSEP will, however, provide previously unavailable feedback to OSPR and the Stakeholders. The need to test and evaluate these strategies is critical to ensure that the strategies do work in an actual oil spill emergency to protect sensitive resources.

CONTINGENCY PLAN-HOLDERS, OSROs AND SENSITIVE SITES

In California, marine oil facilities, vessels carrying petroleum cargo, and non-tank vessels over 300 tons are required to have an oil spill contingency plan. These contingency plan-holders are required to protect environmentally sensitive sites which may be impacted by an oil spill. Most contingency plan-holders form their plans based upon the response strategies contained in the regional Area Contingency Plans (ACP) and rely upon Oil Spill Response Organizations (OSROs) to supply the needed response resources.

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Services. These OSROs provide the vast majority of San Francisco Plan Holders with their spill response services and have volunteered their time and efforts to test the response strategies.

OSPR has created a new SSSEP database to capture the exercise information. Located in Sacramento, CA, this database, while still under development, will generate credit letters to plan holder whose OSRO has completed an exercise. Plan holders will receive credit for Preparedness for Response Exercise Program (PREP) requirement for "Protection" the ability of the spill response organization to protect the environmentally and economically sensitive areas identified in the approved ACP. In addition to protection, they will also receive credit for Staff mobilization, Communications, Transportation, Personnel Support, Equipment Maintenance, and Documentation.

Rated OSRO's who volunteer to participate in the strategy exercises receive equipment deployment credit. As part of their OSRO rating, each OSRO must inspect 33% of their total boom and deploy 1/3 of that each year and exercise at least 50% of all other response equipment exercised annually. The larger OSRO's, who are involved with this program, also hold a shoreline protection rating granted by the State.

SAN FRANCISCO REGIONAL PROGRAM

Currently, the SSSEP is being conducted in the San Francisco Bay and Delta. With 260 environmentally sensitive sites in this area, and an extensive database on the sensitive site characteristics and their associated response strategies, the San Francisco Bay area provided an excellent point to begin the program.

The sensitive sites and their associated response strategies are identified in the San Francisco Regional ACP. Examples of environmentally sensitive sites listed in the ACP include wetlands; estuaries; lagoons; eelgrass beds; habitats of species that are listed or candidates for listing as rare, threatened, or endangered sites with significant concentrations of vulnerable and/or sensitive species, and species experiencing significant population declines though not yet threatened.

The database for sensitive sites and strategies is known as the Site Information and Spill Response Strategy (SISRS) database. SISRS is a database of sensitive site information and oil spill protection strategies and is part of the California coastal contingency planning process. Data about a Sensitive Site is compiled in the SISRS database in the form of a Site Summary page which describes the ecological, physical, and geomorphological information about the site and a Site Strategy page, which includes the directions to the site, hazards identified, protection and injury concerns, site-specific strategies, equipment lists, and access and logistical considerations. This information is maintained in the SISRS database and used in the preparation of Area Contingency Plans.

For the purposes of prioritizing sites for this SSSEP, OSPR developed an overall list of high priority sites from the San Francisco Area Contingency Plan and SISRS database. Sites were categorized as "high risk", if the site-specific resources could be impacted by a spill within 24 hours, based on the spill trajectories in the ACP. Sites impacted after 24 hours were prioritized as "lower risk". High risk sites are being tested first in SSSEP. Fifty four site strategies are targeted for evaluation during the pilot program's 5 year timeframe.

In general, each site-specific exercise involves the assembly of the Oil Spill Response Organization (OSRO) resources in a designated area, deployment and retrieval of mechanical shoreline protection and oil-recovery equipment, and implementation of measures to protect sensitive resources at the site.

Exercises focus on the deployment of personnel and equipment of the site response strategy in the ACP, unless directed otherwise by OSPR to avoid injury or disturbance to sensitive natural

resources. Exercises typically concentrate on the deployment of protective barriers (floating booms) that prevent oil from entering a sensitive site. The floating booms are deployed and anchored offshore of the sensitive site by small boats and held in place by t-post stakes and/or anchors, depending on site-specific water depth, and sea and tidal conditions.

By design, sensitive sites have been identified for protection from oil spills due to their sensitivity and/or vulnerability to oil. Either the species present and/or the habitat itself is at risk and in need of protection. Some sensitive sites listed in the ACP will not be tested because of possible environmental impacts as a result of the response strategy (e.g. sites that require berming or diking of streams or other waterways). The SSSEP excludes certain coastal sites where mechanical shoreline protection is not possible and strategy calls for skimming offshore or applied response technologies; or sites with response strategies previously tested by the OSROs and deemed appropriate by OSPR.

Site strategies were then evaluated to identify sites that could be tested in a manner that would not impact either the site's sensitive habitats or wildlife, but would provide essential information about the strategies' effectiveness.

OSPR has worked with the USFWS, NMFS, USCG and EPA to develop an exercise protocol that provides for sensitive habitat and species protections during the exercises. To avoid adverse effects on the selected sites, OSPR has placed limitations or constraints on each exercise through a series of parameters based on sensitive species and habitat, governing where, how and when the exercise is conducted. Such parameters describe conditions for: access to and from site areas, timing of exercise, equipment and personnel deployment, and pre-exercise surveys. During each exercise, for example, deployed personnel and equipment remain in open waters. Disturbance of sensitive shorelines and their associated interior land and intertidal substrates are avoided. Exercises are conducted only during periods of the year when concentrations of sensitive species are reduced or not present (e.g. pinniped haulout and pupping areas, shorebird and waterfowl nesting and migration periods, fish spawning and migratory periods). Access to the exercise area, in turn, is limited to water access, common public landings, and access points that avoid sensitive resources. Each exercise is conducted consistent with normal boat or background activity (e.g. normal boating/fishing traffic in the immediate area). A site-specific survey, conducted by a qualified biologist, to identify sensitive resources precedes each exercise to confirm the absence of sensitive resources. Each exercise is limited in duration to approximately two to six hours. OSPR biologists are present during the exercise to monitor conformance with the exercise's environmental requirements.

PROGRAM IN ACTION

On May 14, 2003 the first exercise of the Sensitive Site Strategy Evaluation Program was conducted at Hastings Slough in Suisun Bay. Clean Bay (now MSRC, a California Oil Spill Response Organization) arrived on-scene and successfully deployed the San Francisco Area Contingency Plan's response strategy for protection of Hastings Slough and adjacent marshes. The Strategy's goal is to deflect incoming oil on flood tide, from entering Hastings Slough and marshes to the east (Figure 1). The SSSEP's Environmental Protocol called for remaining at least 50' offshore. Clean Bay established anchor point at Red "2" channel marker (approximately 75' off of Pt. Edith) (Figure 2). The final anchor point was established along the ACP's 605.2 Response Strategy. Rice hulls released demonstrated that the deflection strategy worked. Currents in the channel were greater than 1 knot on the Flood tide. Limited entrainment did occur at ACP's "angle of deflection". Lessons learned entail establishing a flatter angle of deflection.

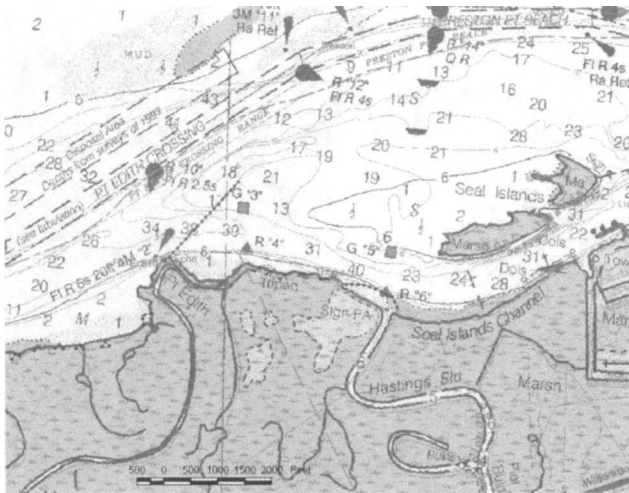


FIGURE 1. HASTINGS SLOUGH ACP SITE SF-605.2 SITE STRATEGY. DEFLECTION BOOM IS RED DOTTED LINE.



FIGURE 2. CLEAN BAY DEPLOYS BOOM OFF POINT EDITH TO TEST THE HASTINGS SLOUGH'S RESPONSE STRATEGY.



FIGURE 3. SAN PABLO CREEK ACP SITE SF-502. EXCLUSION BOOM DEPLOYMENT IN SHALLOW WATER.

Another example of a sensitive site strategy exercise was conducted by Foss Environmental as they tested the San Pablo Creek ACP Site SF-502 (Figure 3). The strategy's goal is to exclude oil from entering the mouths of the inlets and prevent oil from entering the creek and marshes. The site is in shallow water, with mudflats at low tide. Shallow draft vessels were necessary. Lessons learned from this exercise included: The flood tide creates a countercurrent flowing from the west. Mid leg anchor points may be necessary. Deeper waters were found on the Northeast approach to the site. Approaches from the Southeast may lead to grounding.

RESULTS

The SSSEP is now in its second year of operation. Fifteen sites and associated strategies have been evaluated so far.

During a Site strategy evaluation, the OSRO conducts the exercise as described in the ACP. The SSSEP Evaluators observe the exercise, document weather and sea conditions, and record the exercise's equipment deployment. Typically an on-site debrief will occur between the OSRO participants and the SSSEP evaluators. Observations regarding the strategy deployment and outcome of the deployment are discussed.

The ACP's Area Committee incorporates the input of State and Federal trustees, contingency planners, and stakeholders (industry, spill response co-ops and contractors, environmentalists, and other agencies) to form a consensus on the appropriate site protection strategies and response resources. The ACP's SSSEP Subcommittee meets with the SSSEP Evaluators and discusses the Strategy outcome and recommends modifications or alternatives as necessary to the Strategy.

If modifications or alternatives are relatively minor but are necessary to a successful strategy, OSPR will draft changes to the ACP's Site Strategy. These changes are typically amounts of boom required or minor adjustments in deflection angles. These draft changes are presented to the full ACP Committee for approval. The ACP members vote to adopt changes if necessary and incorporate into ACP.

If proposed changes to a Site Strategy are significant, and the ACP's SSSEP Subcommittee approves, OSPR will draft proposed changes to the ACP's Site Strategy. These draft changes will be presented to the ACP Committee for adoption and subsequent retesting of revised strategy.

CONCLUSION

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