# SeaSketch for **Oil Spill** Response

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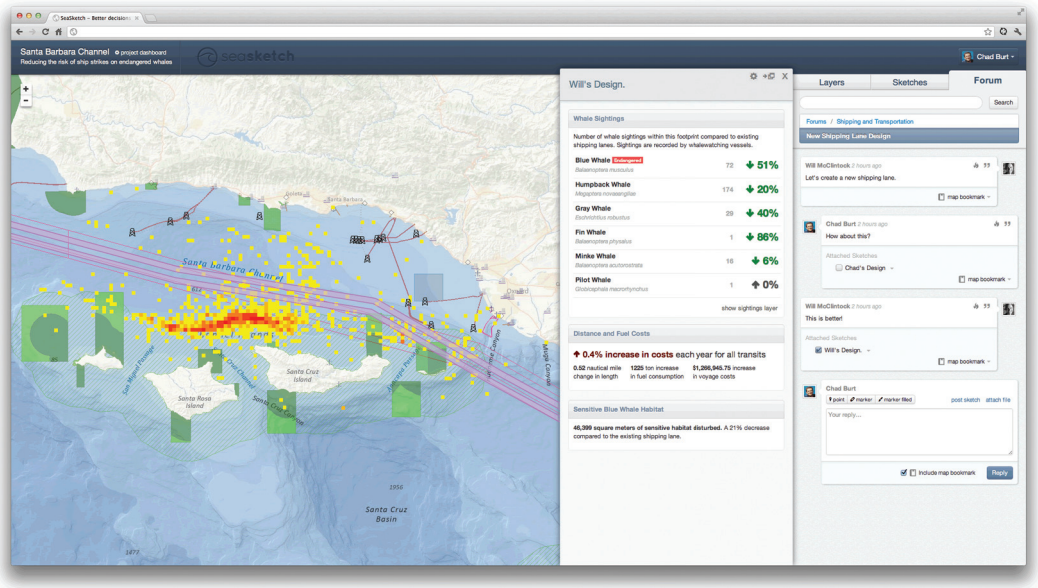


## Overview

Planning for oil spill response requires identifying key hazards that could cause an incident, an analysis of vulnerable assets around the drill site or supply vessels, an inventory, training, and coordination plan for response actions, and developing a system for providing situational awareness to support command and control in the event of an incident. In all of these steps, the use of geographic information systems (GIS) has proven to be essential. However, although safety measures are in place and protection plans deployed, the unexpected still happens – a pipe breaks, a rig explodes, a tanker runs aground. Because information is situation-critical, GIS has also become a major player in emergency response for command, on site work, and public information.

## Esri's Role

One example of this work on both the planning and response ends is that of Esri, a leader in GIS technology, which has worked with petroleum companies and disaster responders around the world designing solutions for disaster management planning, mitigation, response, and recovery. During the *Deepwater Horizon* spill in the Gulf of Mexico, Esri worked closely with dozens of government agencies and the Gulf coast GIS community in supplying software, technical support, GIS data, and personnel. It activated its Disaster Response Team to provide assistance to users in local, state, and federal government agencies as well as the private sector. Esri also provided support and services through its disaster response web site. These included an online oil spill plume trajectory model, a continuously updated environmental sensitivity index map, and electronic navigation charts, as well as links to other incident-related web sites. These resources provided the response community with tools to anticipate any adverse effects and respond proactively.

## SeaSketch

With Esri's support, researchers at the Marine Science Institute of the University of California in Santa Barbara (UCSB) have recently completed development of a web-based platform to enable large-scale collaboration on ocean resource planning and management, called SeaSketch. SeaSketch builds upon their previous work designing and developing a custom decision support tool for California used in the Marine Life Protection Act Initiative process, called MarineMap.

SeaSketch has great potential as an addition to the oil spill planning and response toolbox. Because it is web-based, SeaSketch enables diverse organizations involved in planning and responding to spills to easily view, analyze, share, and discuss maps and response analysis. In SeaSketch, planners could run scenarios on spills at particular facilities and under certain environmental conditions, and determine what assets would be at risk and what resources would need to be deployed. They could then easily share these analyses with stakeholders as part of environmental impact assessment processes and/or required oil spill response planning efforts. As offshore oil rigs and shipping containers are moved from place to place, these kinds of analyses will need to be updated, which is easily done in the SeaSketch interface.

When responding to a spill incident, responders could use SeaSketch to rapidly pull together and overlay maps from multiple sources around the globe that are updated in realtime as the situation changes. They could also quickly add new partners to the response team to the project from around the world. Using the survey tools in SeaSketch, reconnaissance teams could collect and share data in order to create damage assessment maps of infrastructure and evaluate the location and extent of damage. The survey tools could also generate status maps viewable by all of the response managers.

Using the sketching and analysis features of SeaSketch, responders could also place oil spill response vessels, dispersants, and other assets on the map and then receive analytical reports on the potential for those responses to contain and manage the spill. This can help to prioritize response strategies given forecasted human impacts, threats to the environment, and at risk structures. These analyses can enable better coordination of federal and state agencies, as well as private companies and non-governmental organizations involved in responding to the incident.

## Conclusion

Because SeaSketch is newly released, its potential for disaster management has yet to be proven. Nonetheless, the possibilities of SeaSketch as a collaborative platform inspire imagination. What is certain is that Esri technology and SeaSketch offer an easier method for creating a common operating picture accessible at the executive level where strategies are formed and at the operator level where the action takes place. The SeaSketch team at UCSB is looking to partner with organizations who are interested in collaborating on modifying SeaSketch to serve as their oil spill planning and response platform. If you are interested, please contact Evan Paul at **etp@msi.ucsb.edu**.

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