

## Deepwater Horizon MC252 Gulf Incident Oil Budget

*Synopsis:* In collaboration with the USCG, NOAA, and NIST, the USGS has developed a Web application, known as Deepwater Horizon MC252 Gulf Incident Oil Budget, that allows comprehensive tracking and graphical display of the daily and cumulative oil budget in the Gulf.

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Since the April 20, 2010, blowout and explosion on the Deepwater Horizon offshore oil-drilling rig, the U.S. Geological Survey (USGS) has been actively involved with the National Incident Command Center, helping to inform decisions in response to the ensuing oil spill. The USGS is collaborating with the National Oceanic and Atmospheric Administration (NOAA), U.S. Coast Guard (USCG), and the National Institute of Standards and Technology (NIST) to provide scientific and technical expertise to aid the oil spill management and recovery effort. In particular, USGS science staff participate in a Flow Rate Technical Group established and led by the USGS Director, Dr. Marcia McNutt, to calculate the discharge rates and calculate an overall mass balance of oil given different mitigation and cleanup methods.

The USGS developed a Web application, known as Deepwater Horizon MC252 Gulf Incident Oil Budget, to track the discharged oil and results of subsequent processes that affect oil volumes in the Gulf. Secure Web architecture and rapid application development process, instituted for other Web-based applications used by USGS scientists, was used to construct the Oil Budget application, synthesizing information collected and maintained by the USCG. The application offers a basic user interface for daily data entry and reporting, allowing rapid visualization of oil volumes in the Gulf.

USGS, NOAA, NIST, and USCG science and logistics personnel collaborate to ensure that the oil tracking application supports absolute data integrity, comprehensive data entry and management, and simple Web access, mitigating the need for specialized software. The application allows:

- National Incident Command personnel to input daily variables;
- Scientific support staff to edit the computing program for the Oil Budget Model as improved information becomes available;
- Dynamic creation of graphs showing modeled low flow rate/maximum removal and high flow rate/minimum removal scenarios;
- Incorporation of succinct descriptions, including assumptions and factors used for calculations such as amount of oil burned, skimmed, or remained unaffected, in the online application and printed reports; and
- Generation of executive summaries, showing the most up-to-date calculated daily and cumulative values.

The USGS team continues to provide technical support and introduce incremental improvements to the Oil Budget tool as new information becomes available and desired capabilities are identified. Based on the rapid response to this incident, the USGS is poised to apply extensive scientific and technical expertise to benefit other environmental emergencies.