Gulf Monitoring Consortium

Report on Activities from April 2011 to October 2011

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On April 19, 2011, SkyTruth, SouthWings, and Waterkeeper Alliance launched the Gulf Monitoring Consortium: an innovative partnership that is systematically monitoring oil pollution in the Gulf of Mexico with satellite images and mapping, aerial reconnaissance and photography, and on-the-water observation and sampling. This unique effort led by three non-profit organizations will collect and publish images, observations and sampling data of the Gulf of Mexico to rapidly respond to reported and suspected oil pollution incidents.

The BP oil disaster highlighted the flawed process by which oil discharges are reported and cleaned up, and through which polluters are held responsible. The Gulf Monitoring Consortium uses the tools and expertise of each member to investigate and publicize new and chronic oil pollution in the Gulf of Mexico. During the first days of the BP oil disaster, SkyTruth accurately calculated that the amount of oil spewing into the Gulf was at least 20 times greater than the official BP and Coast Guard estimate, and their continual analysis of satellite imagery uncovered a chronic leak which was unrelated to the BP spill and had been polluting the Gulf since 2004. SouthWings provided a bird's eye view of the clean up effort as it was developing, allowing community leaders to share information with their neighbors and political officials. Waterkeeper Alliance member organizations along the Gulf Coast collected aquatic organisms, sediment, and water samples. These efforts proved valuable to both communities and local, state, and federal government officials who needed detailed information.

In the wake of the BP oil disaster we discovered the official processes of reporting and cleaning up oil pollution rely, to an inordinate degree, on the polluters themselves. Little information is made available to the public, and the information that is presented could be considered untrustworthy. Gulf Coast communities, and coastal communities throughout the U.S., deserve timely, accurate and reliable information regarding pollution incidents large and small.

The Gulf Monitoring Consortium's long-term goal is to ensure that industry and government pollution reports are accurate, credible and understandable, so that the true state of oil pollution related to energy development is widely acknowledged and incorporated into public policy and decision-making. The Consortium regularly evaluates, investigates and publicizes pollution incidents in the Gulf of Mexico related to oil and gas exploration, production and transportation. We believe these actions shine a light on the environmental degradation caused by oil industry practices and allowed by deficiencies in government oversight.

This Gulf Monitoring Consortium Update Report provides an assessment of several oil pollution incidents documented and analyzed by the members of the Gulf Monitoring Consortium between April and October 2011. The long-term goal of releasing bi-annual reports on the Consortium's documentation and analysis of oil pollution incidents is to promote more accurate and transparent reporting and oversight of offshore oil pollution.

Summaries of these investigations are located in separate fact sheets below. Each fact sheet includes the location and discovery date of each incident, a summary of Gulf Monitoring Consortium activity, known governmental and industry attempts to report and clean up all oil pollution, and efforts to hold the responsible party accountable for the pollution.

Key Findings

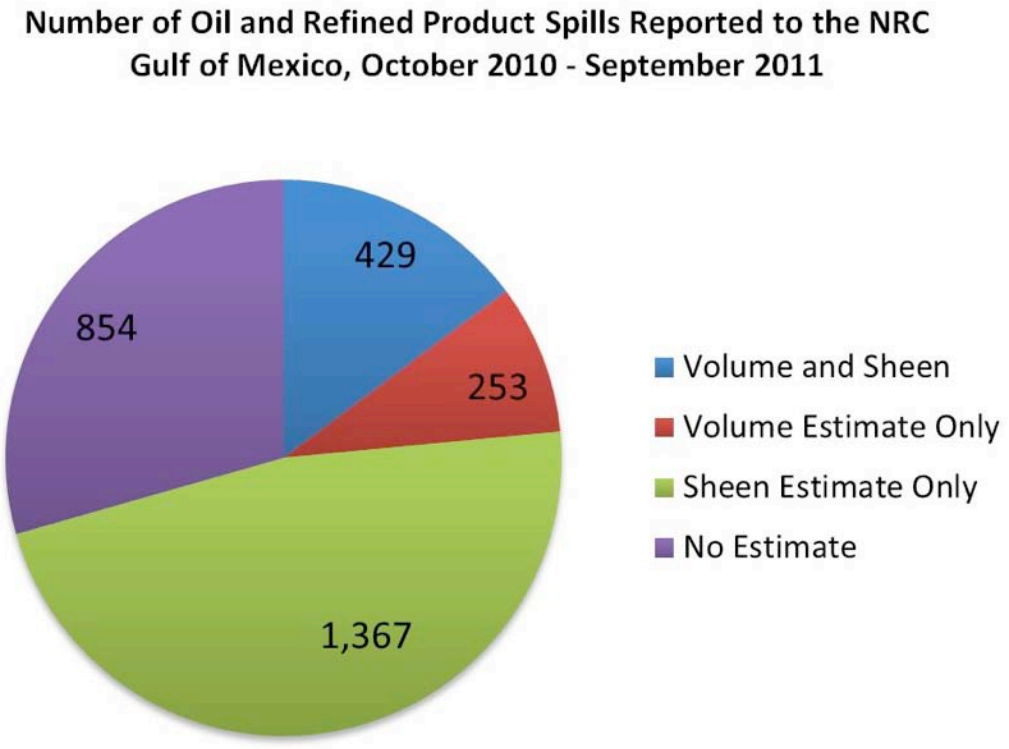
Gulf Monitoring Consortium members use a variety of methods to document and evaluate oil spill events: continuously monitoring official oil and hazardous materials spill reports collected and distributed by the National Response Center (NRC), processing and analyzing satellite images, conducting aerial overflights to acquire photographs and video, launching "sea-truth" expeditions on the water for direct observation and sampling, and analyzing other available data using GIS and interactive mapping tools. Using this innovative combination of techniques, Consortium members have discovered deficiencies in the process created to hold parties responsible for oil pollution accountable, and minimize the frequency and severity of oil pollution in the Nation's waters:

- **Lack of reporting of oil spills by responsible parties**

  Many of the pollution reports submitted to the NRC come directly from industry as they are the ones most likely to be near offshore oil infrastructure when an oil spill occurs and because polluters are required by law to report their spills. However, two of the spills we investigated were not reported to the NRC. This strongly suggests that oil spills occur more frequently than regulators and the public realize.

- **Underreporting by responsible parties**

  In addition to the lack of reporting, chronic underreporting of oil spills makes it impossible for the public and decision makers to understand the true scope of pollution caused by oil and gas exploration and production. NRC reports lacking estimates of the amount of oil spilled are common. Between October 1, 2010 and September 30, 2011 a total of 2903 oil or refined petroleum (e.g. diesel fuel) spills were reported in the Gulf region. Seventy-seven percent (2221) of those reports did not include an estimate of the quantity of oil spilled. Forty-five percent (1311) identify a suspected responsible party – a strong indicator that those reports were submitted by the actual polluters – and of those, nearly half (620) do not include any spill amount.

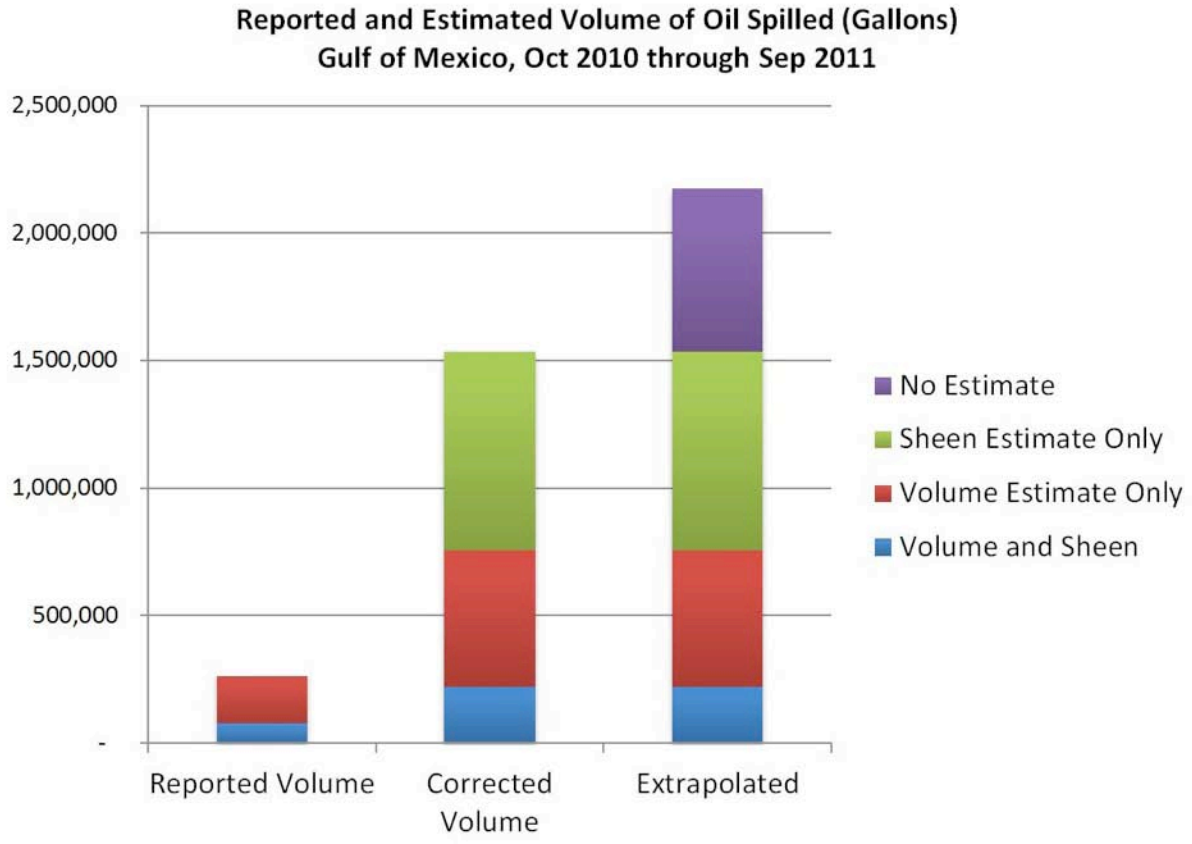


The 429 reports that include both 1) estimates of the spill amount (volume) and 2) a description of the resulting oil slick (or "sheen") commonly provide an amount far too small to create an oil slick of the reported size and extent. A responsible party is identified for 403 of those reports, suggesting these are reports from the polluters themselves and therefore should be more accurate than reports from passers-by. Of those 403 reports, 102 report a slick size exceeding 100 acres (about 0.16 square miles). The average reported spill amount for those 102 relatively large incidents is 54 gallons. However, computing the amount from those reports based on the described slick size, assuming an average slick thickness of only one one-thousandth of a millimeter (one micron), yields an average of 1,985 gallons of oil per incident: 36 times greater than the average reported spill amount, for reports of the largest spills that were likely submitted by the polluters themselves.

This chronic underreporting is confirmed by direct observations we are compiling in our ongoing analysis of oil slick extents visible on satellite images.

Any attempt to estimate the total amount of human-caused oil pollution in the Gulf of Mexico is hampered by three problems: 1) failure to report spills; 2) non-reporting of spill amounts; and 3) underreporting of spill amounts. We don't know how commonly spills are simply not reported at all (#1), although GMC's discovery and documentation of two unreported spills suggests this may be nontrivial. We do not have enough observational data yet to quantify the extent of spills that are reported but undescribed (#2 and #3), but we can extrapolate from the data on reported spills to approximate the magnitude of the overall problem.

The following chart compares the total amount of all spilled oil using reported volume; volume corrected based on reported sheen size assuming one micron thickness; and volume extrapolated to account for the 854 reports that did not include any spill size estimate:



Reported Volume shows the amount spilled as reported to the NRC for the 682 reports where a volume estimate was given. For **Corrected Volume**, the amount is estimated instead based on the reported sheen size for the 1,796 reports where a sheen extent is described. For the 429 reports where both spill volume and the resulting sheen extent are reported, a total sheen-estimated amount of 222,090 gallons is divided by the total reported amount of 77,694 gallons to get an average under-reporting factor of 2.858 (see table). This factor is then applied to the set of 253 reports that have a reported volume - but no description of the resulting sheen - to get a "corrected" volume estimate for these reports of 533,694 gallons.

	Number of Reports	*Reported Volume*	*Sheen Estimate*	*Ratio*	*Corrected Volume*
No Estimate	*854*	-	-	-	-
Sheen Estimate	*1,367*	-	*780,298*	-	*780,298*
Volume Estimate	*253*	*186,703*	-	*2.859*	*533,694*
Both Volume and Sheen	*429*	*77,694*	*222,090*	*2.859*	*222,090*
TOTAL	***2,903***	***264,397***	***1,002,388***		***1,536,082***

Finally, the average "corrected" spill amount is used to **Extrapolate** a volume estimate for the remaining 854 reports that contain neither a spill amount, nor a description of the sheen extent. To do this, we compute the average corrected volume across all of the 2,049 reports where we have an estimate to get an average per-incident volume of 750 gallons. Multiplying this by 854 gives us an estimate of 640,222 gallons for this last set of reports, and **a total estimate of oil spilled in the Gulf from October 2010 through September 2011 of 2,176,304 gallons:**

	Number of Reports	Corrected Volume	Average	Extrapolated Volume
No Estimate	854	-	-	640,222
Sheen Estimate	1,367	780,298	571	780,298
Volume Estimate	253	533,694	2,109	533,694
Both Volume and Sheen	429	222,090	518	222,090
TOTAL	**2,903**	**1,536,082**	**750**	**2,176,304**

For reference, the three biggest oil spills in U.S. history occurred when a failed well in the Santa Barbara Channel leaked 3-4 million gallons into California waters in 1969; the *Exxon Valdez* tanker ran aground on a reef and spilled about 11 million gallons into Prince William Sound, Alaska in 1989; and BP's runaway Macondo well spewed 172 million gallons into the Gulf in 2010.

We consider this a conservative estimate, because many oil spills are thicker than the 1 micron average thickness we've assumed for these calculations[1], and because we haven't included any calculation to account for spills that were not reported to the NRC.

[1] MacDonald, I., 2010. "Deepwater disaster: how the oil spill estimates got it wrong." *Significance*, v.7, n.4, pp. 149-154.

- **Inconsistencies in National Response Center collection and publication of oil spill reports**

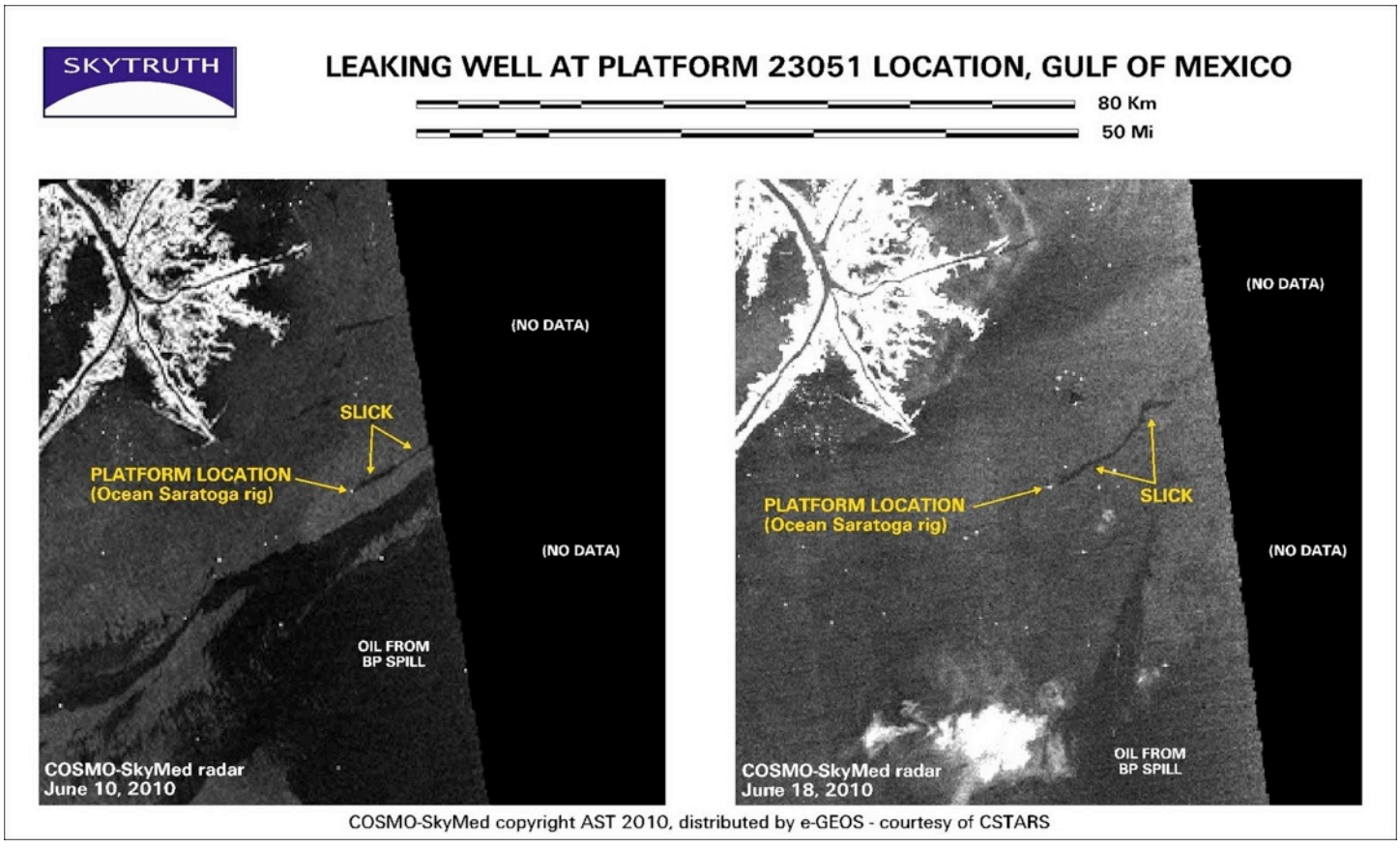
In two cases that we are aware of, information provided to the NRC by members of the public was incompletely or incorrectly captured in the resulting NRC reports. In the first case, a passenger aboard a SouthWings overflight of the Gulf on June 10, 2011 reported an oil slick emanating from a wellhead in Breton Sound (see fact sheet below). The resulting NRC report (#97928) published that same day includes an incorrect latitude coordinate and is missing critical information about the suspected source of the leak, describing the incident only as follows: "Caller stated that there is an unknown sheen in the water, the cause is unknown." Comparison of the lack of information in the NRC report with the fairly detailed information and photos published by the passenger in his blog on June 13[2] suggests that the NRC may not be accurately capturing important information provided by concerned citizens. In the second case, a local resident observed tarballs and oil on several occasions on the beaches near Pensacola. She filed several reports with the NRC, providing precise latitude-longitude location coordinates obtained with a handheld GPS unit in decimal degrees. The NRC mistakenly interpreted the coordinates as degrees-minutes-seconds, resulting in very inaccurate locations for the reported sightings of oil. These reports (for example, #990418, which gives an incorrect location far onshore, about 15 miles from the correct location provided by the caller) would be useless to responders.

A wellhead owned by Saratoga Resources that was the source of a leak in Breton Sound that was investigated by the Gulf Monitoring Consortium in June of 2011.

[2] http://healthygulf.org/201106131673/blog/bps-oil-drilling-disaster-in-the-gulf-of-mexico/birds-eye-view-have-you-seen-this

More Questions Than Answers

The Consortium's work over the six months of its existence is preliminary and, to date, it has produced more questions than answers. For instance, although we have determined that the number and size of oil spills in the Gulf are greatly underreported, we have significant questions about whether it is possible to determine the magnitude of the underreporting. Likewise, we have significant questions about the best way to optimize use of the resources available to us, especially satellite imagery, and maximize the information obtainable from them. And, of course, the fundamental question of the cumulative impact of these releases remains unanswered. We hope to make progress toward answering these and more questions as the Consortium continues to refine its work.



An example of the use of radar satellite imagery to monitor oil spills and oil leaks in the Gulf of Mexico.

Gulf Monitoring Consortium Oil Spill Fact Sheets

Platform 23051/ Taylor Energy Wells

Responsible Party: Taylor Energy (confirmed)

Location: 28.938022° N / 88.970963° W
12 miles off the Louisiana coast, Mississippi Canyon Block 20

Date Discovered: May 2010, SkyTruth satellite image monitoring

Estimated Discharge Amount: 100 – 400 gallons per day based on satellite observations of recurring oil slick; potentially since Hurricane Ivan (September 16, 2004)

Summary: On May 15, 2010, SkyTruth's review of satellite imagery revealed a sheen emanating from the location of Platform 23051. The platform was installed in 1984 by Taylor Energy Company, an independent oil company based in New Orleans. A subsequent SouthWings flight on June 5 found no platform at that location but instead a semisubmersible drill rig, Diamond Offshore's *Ocean Saratoga*, and a work boat. The flight also confirmed an oil slick next to the rig.

The Taylor Energy site consists of 28 wells damaged by Hurricane Ivan in 2004, buried under a seafloor mudslide triggered by the storm. The platform was destroyed at that time, or so badly damaged that it was subsequently removed. In September 2010 Taylor Energy reported that six of these wells had been plugged and two of the three visible oil plumes were stopped. However that leaves 22 damaged wells still discharging or capable of discharging oil into the Gulf of Mexico, seven years after the damage occurred.

Since discovering the leak, Gulf Monitoring Consortium members have continuously monitored this site with daily satellite imagery, and tracked NRC reports related to this ongoing spill. Taylor Energy and the Coast Guard have acknowledged the leaks and say they average 14 gallons per day. Our analysis of the size of the visible oil slicks, however, suggests the leakage rate is possibly in the range of 100-400 gallons per day, assuming an average slick thickness of one micron (one one-thousandth of a millimeter) and a half-life of oil on the ocean surface of 3-4 days. A regularly updated chronology of reports and information related to this site can be found at http://blog.skytruth.org/p/site-23051-chronology.html.

Government & Industry Response: In September 2004 the Department of Interior and then Minerals Management Service directed Taylor Energy to investigate the damage to its platform and deposit $500 million into a trust to cover expenses. In 2007 Interior instructed the company to perform a remedial action due to oil contamination. In four separate instances the Federal government instructed Taylor to contain the crude oil discharges, deploy skimming devices, and conduct overflights twice daily.

Taylor Energy has contracted the *Ocean Saratoga* to plug the damaged wells. However, the rig has been onsite intermittently and has not been seen there since June 2011, even though oil slicks continue to be observed by the Gulf Monitoring Consortium. This suggests that fixing the leak is a low priority for the company and government regulators.

In addition, the NRC has intermittently been notified (presumably by Taylor) of leaks from the site. Those notifications consistently include spill amounts that are significantly – an average of 78 times – lower than the minimum volume that we estimate could produce visible slicks of the reported size, suggesting systematic underreporting of this chronic spill.

Waterkeeper Alliance Action: On October 12 the Waterkeeper Alliance, along with five of its Gulf Coast affiliate groups, filed a notice of intent to sue Taylor Energy for this ongoing, chronic oil leak in accordance with the Clean Water Act and Resource Conservation and Recovery Act citizen suit provisions. These provisions provide "grace periods" of 60 and 90 days respectively for the polluting company to address the ongoing violations detailed in the notice or for the responsible regulatory agency to initiate an enforcement action.

Since then, Waterkeeper Alliance has filed Freedom of Information Act requests to Federal and State agencies to obtain additional documentation regarding government oversight and management of this chronic oil spill.

The matter remains unresolved at the time this report is released.

June 5, 2010: Oil slick next to *Ocean Saratoga* semisubmersible drill rig. Rig is working to plug leaking wells at Taylor Energy site that were damaged by Hurricane Ivan in 2004. Photo courtesy J. Henry Fair.

Recurring Oil Slicks Near BP's Macondo Well Site

Responsible Party: BP, Transocean (suspected)

Location: 28.738140° N / 88.365945° W
50 miles off the Louisiana coast, Mississippi Canyon Block 252 and vicinity

Date Discovered: August 14, 2011

Estimated Discharge Amount: Unknown

Summary: Rumors of a new leak suspected to be from BP's plugged and abandoned Macondo well began to circulate the Gulf Coast in mid-August of 2011, possibly sparked by an August 14 NRC report and subsequent media accounts concerning a possible leak at a BP operation in the Green Canyon area, 170 miles west of the notorious Macondo site. On Wings of Care and the Gulf Restoration Network flew over the Macondo site on August 19 and observed a very small slick, fueling rumors that the Macondo well was still leaking or had somehow "come back to life." Another overflight by On Wings of Care on August 30 documented extensive slicks 15 miles northeast of the Macondo well.

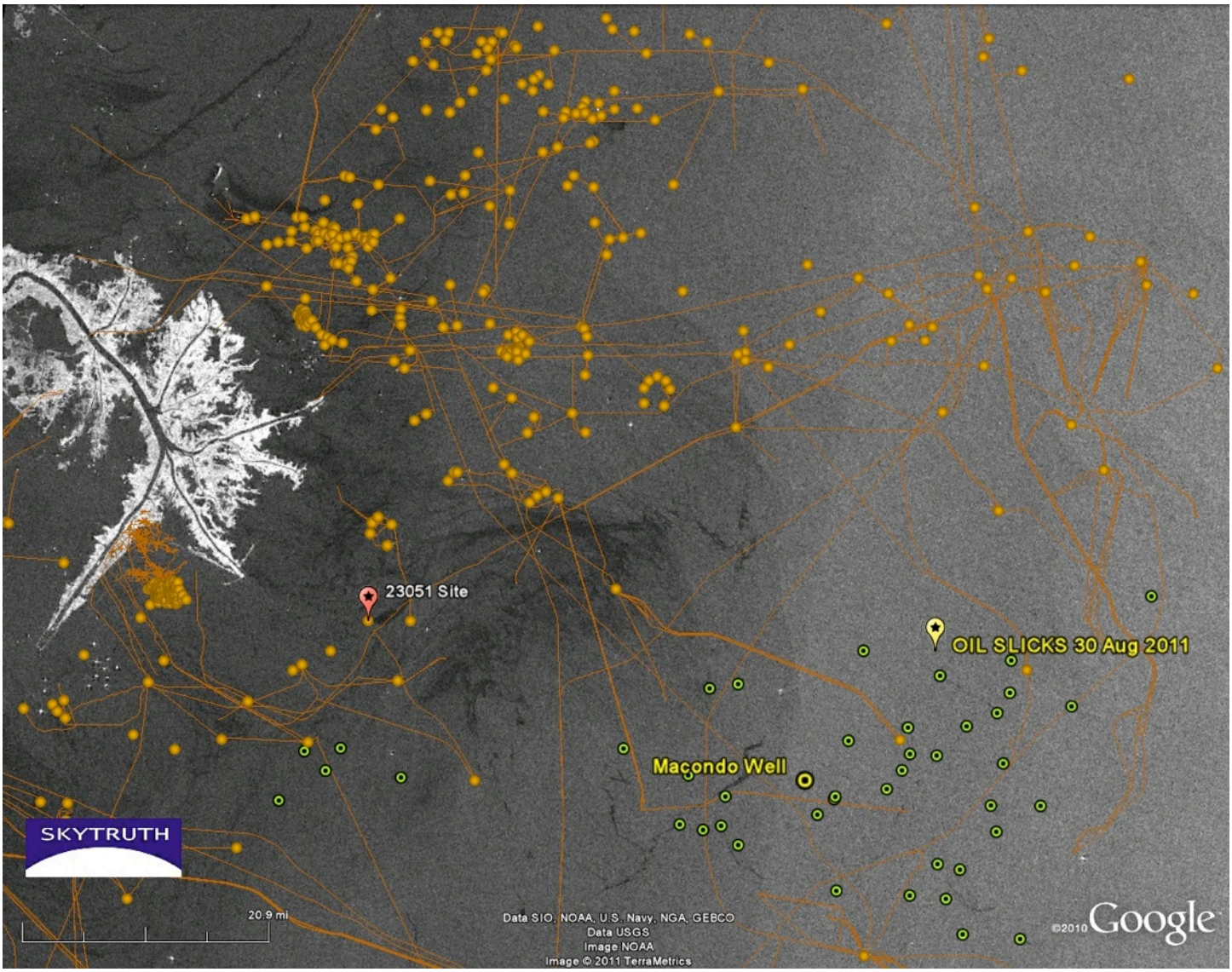
Gulf Monitoring Consortium members tracked these and other reports, analyzed daily NASA visible-infrared satellite images and occasional radar satellite images, and researched possible sources of these multiple sightings of oil pollution in the general vicinity of the Macondo well site. In a SkyTruth blog post dated August 23, 2011, John Amos stated that given the size of the BP oil disaster and the amount of pipe and discarded equipment still sitting at the bottom of the ocean it is likely that residual oil will be leaking from the wreckage at this site for years to come. A radar satellite image taken on August 30 and analyzed by SkyTruth confirmed the slicks observed by the overflight that same day. Tropical Storm Lee blew through the area in early September; radar images taken August 26, September 11 and September 14 showed no evidence for a significant ongoing problem in the area.

Oil collected near the Macondo well by reporter Ben Raines on August 23 was analyzed by LSU professor Ed Overton. During a conversation with Waterkeeper Alliance staff Dr. Overton stated that he believed that the chemical signature proves that the oil was most likely coming from either the sunken *Deepwater Horizon* rig or the one-mile-long pipeline that collapsed during the sinking of the rig and other debris following two explosions on April 20, 2010. The oil sample appeared fresh and unlikely to be from natural seepage.

At this time Gulf Monitoring Consortium members are unable to confirm that the oil pollution is coming from the closed Macondo well or either of the two relief wells, or from some other active source in the area. We consider it most likely that the oil pollution spotted during this time was from the wreckage that remains on the bottom of the ocean, but we are continuing to monitor the area and investigate possible sources. Transocean denies that any residual oil is leaking from the *Deepwater Horizon* wreckage.

Government & Industry Response: BP and the Coast Guard maintain that oil pollution observed during this time was not emanating from the plugged Macondo well. A submersible (ROV) was deployed to inspect and

collect video of the area. This deployment was witnessed by the Gulf Coast Incident Management Team, which is the successor organization to the Unified Command that led the government response to the BP oil disaster in the summer of 2010. Video of the Macondo wellhead and the two relief wells, collected by the ROV, show no signs of active leakage. However, a comprehensive survey of the seafloor in the vicinity of the Macondo well was not conducted, so other possible sources of leakage in the area cannot be ruled out at this time.



Checking satellite imagery after reports of oil slicks in the Macondo Well area; Envisat ASAR image taken September 14, 2011, with oil and gas infrastructure (orange) and known natural seep locations (green). Image courtesy European Space Agency.

Leak from Saratoga Resources Wellhead, Breton Sound, LA

Responsible Party: Saratoga Resources (suspected)

Location: 29.523699° N / 89.329453° W
9 miles off the Louisiana coast, Breton Sound Block 33

Date Discovered: June 10, 2011

Estimated Discharge Amount: Unknown

Summary: A possible spill in Breton Sound was first brought to the Gulf Monitoring Consortium's attention through a June 8, 2011 news account of an oil slick near Venice, Louisiana. Later that day a team from National Wildlife Federation sampled an oil slick in the vicinity. Two days later, a SouthWings overflight discovered a miles-long slick clearly emanating from an unmanned wellhead 9 miles off the Louisiana coast to the northeast of Venice, La.

Based on the GPS location and state oil and gas data, SkyTruth was able to identify the well as one drilled by Amerada Hess in 2004. Since that time, according to official records reviewed by Gulf Monitoring Consortium members, the well has changed hands at least three times—to companies that have all filed for bankruptcy. Most recently, the well appears to have been owned by Saratoga Resources, Inc. of Louisiana.

On June 17, using the data collected by SouthWings and SkyTruth, the Lower Mississippi Riverkeeper, Paul Orr, traveled to the well site by boat. Paul found no sign of an ongoing leak but did notice a distinct petroleum odor and reported that the well looked as though a vessel had hit it.

It remains unclear whether the oil slick near Venice that was reported by the media and sampled by National Wildlife Federation on June 8 came from the Saratoga Resources well or from another, as-yet unidentified source.

Government and Industry Response: Responding to pressure from local officials, the Coast Guard mounted a response to the reported spill near Venice, mobilizing cleanup contractors and deploying thousands of feet of boom to protect nearby shorelines. However, no oil came ashore and no actual cleanup activity occurred. The source of the Venice slick remains unknown. As for the leak Gulf Monitoring Consortium discovered from the Saratoga Resources well, we have found no report to the NRC from the responsible party and no indication of any state or federal government action related to this obvious and well-documented discharge.

Discharge from Platform off Southwestern Louisiana Shoreline

Responsible Party: FINA Oil & Chemical (suspected)

Location: 29.531986° N / 92.418975° W
One mile off the Louisiana coast, Vermilion Block 16

Date Discovered: May 7, 2011

Estimated Discharge Amount: Unknown

Summary: On a May 7, 2011, SouthWings flight over the Gulf looking for oil coming ashore on Louisiana beaches, the pilot and photographer documented a platform discharging a dark oily substance that created a visible sheen. The platform was later identified from state oil and gas data as a structure installed in the late 1980s and operated by FINA Oil & Chemical, a Dallas, Texas-based company affiliated with Belgian oil company Petrofina. The oily discharge was too small to be observed on satellite images. The Sabine Riverkeeper, Paul Ringo, was unable to visit the platform site by boat but did conduct an onshore follow up on May 12. He found no oiled beaches in the vicinity.

Government & Industry Response: It appears the responsible party did not report this release, as we have found no NRC reports for this time frame and area. We are unaware of any governmental response.

Gulf Monitoring Consortium photo taken May 7, 2011 showing apparent discharge from an oil platform in state waters along the Louisiana coast.

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