

Exposing Corruption Exploring Solutions  
**Project On Government Oversight**

January 25, 2011

President Barack Obama  
The White House  
1600 Pennsylvania Avenue, NW  
Washington, DC 20500

Via Facsimile: (202) 456-2461

Dear Mr. President:

The Project On Government Oversight (POGO) is a nonpartisan independent watchdog that champions good government reforms. POGO's investigations into corruption, misconduct, and conflicts of interest achieve a more effective, accountable, open, and ethical federal government. As such, POGO has a keen interest in addressing the failures of oversight that led to the BP oil disaster, and ensuring accountability in the response to this offshore oil spill, the largest in our nation's history. This spill has caused enormous economic problems in the Gulf states and for the people living there, continues to threaten vital ecosystems, and will remain a long-term concern for years to come whenever food is harvested from Gulf waters.

POGO has obtained internal emails written by officials involved in handling the crisis, including the National Oceanic and Atmospheric Administration (NOAA), the Environmental Protection Agency (EPA), the U.S. Geological Survey (USGS), and the White House. In these emails, officials discuss developing the BP Deepwater Horizon Oil Budget Report (Report). Released last summer, the Report offers conclusions about what happened to the petroleum released in the Gulf oil spill.<sup>1</sup>

Based on emails in our possession at this time, POGO is concerned that the White House may have ignored expert advice from agency officials and pressured scientists to make changes during the development of the Report in order to advance a public relations agenda. In these emails, agency officials describe "pushback" from the White House about Report conclusions. (Attachment A)

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<sup>1</sup> National Incident Command, *BP Deepwater Horizon Oil Budget: What Happened To the Oil?*, August 4, 2010. [http://www.restorethegulf.gov/sites/default/files/imported\\_pdfs/posted/2931/Oil\\_Budget\\_description\\_8\\_3\\_FINAL.844091.pdf](http://www.restorethegulf.gov/sites/default/files/imported_pdfs/posted/2931/Oil_Budget_description_8_3_FINAL.844091.pdf) (Downloaded January 20, 2011) (hereinafter *BP Deepwater Horizon Oil Budget: What Happened To the Oil?*); see also: Heather Zichal, "New Report: 74% of Oil in BP Deepwater Horizon Oil Spill has been Contained or Mitigated," *The White House Blog*, August 4, 2010. <http://www.whitehouse.gov/blog/2010/08/04/new-report-74-oil-bp-deepwater-horizon-oil-spill-has-been-contained-or-mitigated> (Downloaded January 20, 2011)

When EPA officials expressed concerns about how the effects of chemical dispersants were described, the concerns were ignored or overruled because of the goals of the “communication product” that NOAA was developing with the White House, according to e-mails. An e-mail stated that “the goal is to show chemical dispersion as part of the Federal response to the spill.” (Attachments A and B)

Furthermore, when reporters raised questions last fall about the Report, an Office of Management and Budget spokesman told *McClatchy News* that White House involvement with federal agencies that developed the Report was “not public relations or presentation.”<sup>2</sup> He added, “We offered them suggestions of ways to improve it and they happily accepted it.”

Such a statement appears to be undermined by the records in our possession.

### **EPA Science Ignored**

Based on emails in our possession at this time, it appears that the technical opinions of scientists at the EPA were ignored. In the case of chemical dispersants, which were being applied to oil that was gushing out a mile below the surface, it appears the White House wanted the public to have more confidence in the effectiveness of these chemicals than the science would allow.

EPA scientists did not feel the science would allow any attempt to quantify the exact effect of these dispersants or to distinguish their effects from the natural dispersion that occurs when oil travels a mile up from the floor of the ocean to the surface.

Regarding the effects of chemical dispersants, an official at the EPA wrote to agency scientists:

The percentages are very rough and should not be considered accurate. We still do not believe we should in a public document try to distinguish between naturally and chemically dispersed oil in the ocean. These calculations are extremely rough estimates, yet when they are put into the press—which we want to happen—they will take on a life of their own. We should combine these two categories. (Attachment A)

Disagreeing with the EPA, an official with the USGS responded:

Based on how NOAA is developing a communication product with the [White House], the dispersion types (Natural & Chemical) will not be combined. We appreciate the case for combining them, however the goal is to show chemical dispersion as part of the Federal response to the spill. (Attachment B)

Defending the professional and scientific opinion of EPA scientists, the EPA official wrote:

I think you are making a mistake on the separate estimates of dispersal but I have no additional arguments other than it is not verifiable and we will be trying to explain it

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<sup>2</sup> Renee Schoof and Margaret Talev, “Report: White House squelched release of BP oil spill estimates,” *McClatchy Newspapers*, October 6, 2010. <http://www.mcclatchydc.com/2010/10/06/101697/white-house-squelched-release.html> (Downloaded January 20, 2011)

for the rest of our time on this. I will take it up with the white house [sic].  
(Attachment A)

We would also note that earlier versions of the report listed an EPA official as one of the federal scientists who created and reviewed the report. (Attachment C) Neither that name, nor the name of any other EPA scientist, appears in the credits of the published Report.<sup>3</sup> It is our understanding that EPA scientists were not completely comfortable with the findings in the published Report.

### **Public Relations First, Science Second**

In a more subtle, but important example of putting an agenda first and science second, the White House glossed over the uncertainties that are often inherent in scientific calculations. Science is not public relations, where complicated issues can be simplified easily. But rather than acknowledging that it was impossible to quantify, with specificity, the likely size of the spill at the time, the White House apparently overruled NOAA's advice to acknowledge these uncertainties and make public a range.

An early draft of the report sent to the White House stated that the size of the spill should be expressed as "between 3-5 millions barrels." (Attachment C) A few days later, an official with NOAA wrote to colleagues, "We have received strong pushback from [White House] on the cumulative total used in our graphic being more than the official 4.93 M bbls." (Attachment A)

Later drafts and the final Report replaced the range of 3-5 million barrels with a more precise figure of 4.9 million barrels (Attachment D), presumably to make it appear the Administration was more in control of the situation than was possible. It should be noted that the White House deserves credit for erring on the side of the larger end of the spectrum of the possible size of the spill.

But it is vital that the public be able to trust the decisions made by scientific agencies—and this trust should not be compromised to advance a public relations agenda. The American people need to know the hard facts, including any uncertainties, in order to make informed decisions.

We are concerned that White House officials may have removed the uncertainty that typically comes with scientific measurements and settled on a more definitive number to make the public feel more comfortable. We feel that the public would be better served by understanding that the government's handling of the Gulf spill is filled with numerous uncertainties.

We find the White House's actions troubling, especially given that you campaigned to restore the integrity of science in government policy and have taken laudable steps to do so. During your campaign, you pledged that this would "ensure that decisions that can be informed by science are made on the basis of the strongest possible evidence."<sup>4</sup> Shortly after taking office, you sent a memo to all heads of departments and agencies on scientific integrity, stating, "Political officials

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<sup>3</sup> *BP Deepwater Horizon Oil Budget: What Happened To the Oil?*

<sup>4</sup> Obama for America, "Investing in America's Future: Barack Obama and Joe Biden's Plan for Science and Innovation." <http://www.barackobama.com/pdf/issues/FactSheetScience.pdf> (Downloaded January 20, 2011)

should not suppress or alter scientific or technological findings and conclusions.”<sup>5</sup> And in a December 2010 memo, you gave good guidance to department and agency heads, noting that successful public policy “depends on the integrity of scientific process both to ensure the validity of the information itself and to engender public trust in the Government.”<sup>6</sup>

We feel that it is important that you live up to your own policy for strengthening scientific integrity. Disregarding the opinions of federal scientists and oversimplifying their concerns does not meet this standard.

We thank you for your consideration of our concerns. If you have any questions or records that can help us understand this issue more, please feel free to contact me or Paul Thacker at 202.347.1122.

Sincerely,



Danielle Brian  
Executive Director



Paul D. Thacker  
Investigator

Attachments: 4

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<sup>5</sup> Memorandum from Barack Obama, President of the United States, to the Heads of Executive Departments and Agencies, regarding Scientific Integrity, March 9, 2009. <http://www.whitehouse.gov/the-press-office/memorandum-heads-executive-departments-and-agencies-3-9-09> (Downloaded January 20, 2011)

<sup>6</sup> Memorandum from John P. Holden, Assistant to the President for Science and Technology and Director of the Office of Science and Technology Policy, to the Heads of Executive Departments and Agencies, regarding Scientific Integrity, December 17, 2010. <http://www.whitehouse.gov/sites/default/files/microsites/ostp/scientific-integrity-memo-12172010.pdf> (Downloaded January 20, 2011)

# Attachment A

To: Stephen E Hammond <sehammon@usgs.gov>  
From: Perciasepe.Bob@epamail.epa.gov  
Date: 08/01/2010 01:59PM  
cc: "bill lehr" <bill.lehr@noaa.gov>, "mark w miller" <mark.w.miller@noaa.gov>, "Mark K Sogge" <mark\_sogge@usgs.gov>, "Sky Bristol" <sbristol@usgs.gov>, "sean k o'brien" <sean.k.o'brien@uscg.gov>, Stephen E Hammond <sehammon@usgs.gov>  
Subject: Re: Oil Budget - EPA Comments - follow up and a request

OK

Here is a little more from Paul Anastas and Al Venosa.

Regarding Suggestion 1, EPA agrees that the ultimate message to the public will likely be that the oil was successfully dispersed with chemical dispersants, but until we know with some degree of certainty how much was chemically dispersed vs. physically dispersed, we are hesitant to assign distinct percentages at this time. The existing evidence shows that the droplet size from deep sea dispersant injection is very small, which is usually consistent with chemical dispersion under normal circumstances of surface application. However, the deep sea injection is unique to us all due to the extreme turbulence at the wellhead, and EPA feels the evidence is currently not sufficient to enable us to distinguish accurately chemical from physical dispersion mechanisms.

Regarding Suggestion 3, EPA indeed feels strongly that biodegradation will turn out to be an extremely important ultimate oil fate mechanism in the oil budget calculations. We would be happy to take the lead in writing the story on this in the planned follow-on report, and a simple mention at this juncture seems appropriate.

Regarding Suggestion 2, EPA feels that USGS and NOAA have enough information from their models to enable distinct descriptions of oil fate due to dispersion and evaporation/dissolution. We think it would be more accurate if someone from USGS or NOAA write this section because the modeling effort was not conducted by EPA scientists.

I recognize we have suggested additional explanation here on this matter (number 2), so I am going to have to leave it in your judgement

Bob Perciasepe  
Deputy Administrator

(o) +1 202 564 4711

From: Stephen E Hammond <sehammon@usgs.gov>  
To: Bob Perciasepe/DC/USEPA/US@EPA  
Cc: "mark w miller" <mark.w.miller@noaa.gov>, "bill lehr" <bill.lehr@noaa.gov>, "Sky Bristol" <sbristol@usgs.gov>, "Mark K Sogge" <mark\_sogge@usgs.gov>, "sean k o'brien" <sean.k.o'brien@uscg.gov>, Stephen E Hammond <sehammon@usgs.gov>  
Date: 08/01/2010 08:32 AM  
Subject: Re: Oil Budget - EPA Comments - follow up and a request

Bob,

Thanks for the feedback, greatly appreciated. Based on areprot I received, it sounds like we have another day or two before the WH makes a press release on the subject. We may have a bit more time now to discuss how to improve documentation.

Steve

Stephen E. Hammond  
US Geological Survey  
Chief Emergency Operations Office,  
National Geospatial Program  
Reston, VA  
703-648-5033 (w)  
[REDACTED]  
703-648-5792 (fax)

-----Perciasepe.Bob@epamail.epa.gov wrote: -----

To: "Stephen E Hammond" <sehammon@usgs.gov>  
From: Perciasepe.Bob@epamail.epa.gov  
Date: 07/31/2010 10:10PM  
cc: "mark w miller" <mark.w.miller@noaa.gov>, "bill lehr" <bill.lehr@noaa.gov>, "Sky Bristol" <sbristol@usgs.gov>, "Mark K Sogge" <mark\_sogge@usgs.gov>, "sean k o'brien" <sean.k.o'brien@uscg.gov>  
Subject: Re: Oil Budget - EPA Comments - follow up and a request

Thanks Steve.

I will try to get some language but NOAA science folks like Steve Murawski know this better than I. The basic idea is that this will be the first government input into the fate of the oil issue and biodegradation is a big part of that. That should be pretty easy to discuss. I will think how I can help on the other item 2. I agree it is a tough one.

I think you are making a mistake on the separate estimates of dispersal but I have no additional arguments other than it is not verifiable and we will be trying to explain it for the rest of our time on this. I will take it up with white house.

I greatly appreciate your attention to our concerns.

Bob Perciasepe  
Office of the Administrator  
(o)202 564 4711  
[REDACTED]

---

**From:** Stephen E Hammond [sehammon@usgs.gov]  
**Sent:** 07/31/2010 07:53 PM AST  
**To:** Bob Perciasepe  
**Cc:** mark.w.miller@noaa.gov; bill.lehr@noaa.gov; Sky Bristol <sbristol@usgs.gov>; Mark K Sogge <mark\_sogge@usgs.gov>; sean.k.o'brien@uscg.gov; Stephen E Hammond <sehammon@usgs.gov>  
**Subject:** Fw: Oil Budget - EPA Comments - follow up and a request

Hi Bob,

I'm with USGS and serve as a member of the Interagency Solutions Group as a liaison between the FRTG and the the NIC. USGS spent some time this afternoon with NOAA and USCG discussing the three suggestions you made below in preparation to update and modify the oil budget tool that has been developed. I'll give you a quick update on the discussion of suggestion 1 & 3, then ask you to provide some additional feedback on suggestion 2.

**Suggestion 1** - combine natural and chemical into one category of dispersed oil on charts and in narrative.

010845

**Decision** - Based on how NOAA is developing a communication product with the WH, the dispersion types (Natural & Chemical) will not be combined. We appreciate the case for combining them however the goal is to show chemical dispersion as part of the Federal response to the spill.

**Suggestion 3** - if no estimate can be made of biodegradation at least have a robust discussion about it both in terms of oil that will remain in marshes to be biodegraded and in terms of our expectations and evidence of the dispersed oil subsea.

**Decision** - NOAA is in general agreement that more is needed here. They indicated that they tried to make this explanation as robust as possible. We believe that a second document will be prepared in the near future that addresses biodegradation as the primary focus. It will include as much as it can on biodegradation rates.

**Suggestion 2** - clear up the dissolution and dispersion potential confusion with some additional explanation.

**Decision** - There is agreement on this yet we have found it difficult to describe in a short paragraph. We'd like to ask you to provide a short write-up that we can consider for this explanation in the oil budget tool.

We are working to get the toll updated by this evening. Any feedback you can offer quickly is greatly appreciated.

Steve

Stephen E. Hammond  
US Geological Survey  
Chief Emergency Operations Office,  
National Geospatial Program  
Reston, VA  
703-648-5033 (w)  
[REDACTED]  
703-648-5792 (fax)

-----Forwarded by Stephen E Hammond/GEOG/USGS/DOI on 07/31/2010 07:24PM -----

To: Stephen E Hammond/GEOG/USGS/DOI@USGS  
From: Mark K Sogge/DO/USGS/DOI  
Date: 07/31/2010 04:19PM  
Subject: Fw: Oil Budget - EPA Comments

Forgot to cc you...

Mark

----- Forwarded by Mark K Sogge/DO/USGS/DOI on 07/31/2010 03:19 PM -----

From: Mark K Sogge/DO/USGS/DOI  
To: Sky Bristol/RGIO/USGS/DOI@USGS  
Date: 07/31/2010 03:16 PM  
Subject: Fw: Oil Budget - EPA Comments

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Hi Sky,

I just got the chance to read through this. These changes are clearly within the decision domain of Bill Lehr and the USCG, rather than USGS.

I see that Bill was referred to in Bob's email, but was not cc'ed on the messages. A logical next step is to get this feedback to him. Do you prefer to do that, or have me take lead on it?

Mark

Mark Sogge  
Deputy Chair, NIC Flow Rate Technical Group  
Chief of Staff, USGS Western Region  
2255 Gemini Drive, Flagstaff, AZ 86001  
[REDACTED] FAX: 928-556-7266  
mark\_sogge@usgs.gov

----- Forwarded by Mark K Sogge/DO/USGS/DOI on 07/31/2010 03:12 PM -----

From: Marcia K McNutt/DO/USGS/DOI  
  
To: Perciasepe.Bob@epamail.epa.gov, jane.lubchenco@noaa.gov, Heather\_R\_Zicha [REDACTED],  
Rod.OConnor@hq.doe.gov, david\_hayes@ios.doi.gov, [REDACTED], oster.seth@epa.gov,  
Sean.Smith@dhs.gov, Larry.Robinson1@noaa.gov, anastas.paul@epa.gov,  
[REDACTED].gov, richard.r.windgrove@noaa.gov  
  
Cc: Mark K Sogge/DO/USGS/DOI, sbristol@usgs.gov  
  
Date: 07/31/2010 10:56 AM  
  
Subject: RE: Oil Budget - EPA Comments

Bob -

Thanks for these very helpful and constructive points. I will pass these on to Mark Sogge and Sky Bristol to take into account in the next iteration of the tool. We are happy to follow the lead of NOAA and EPA as to how to deal with what we agree are a lot of poorly constrained areas currently with what was happening to the oil in the subsurface. I think your point about the low flow rates resulting in low dispersant application is a good one, although in my conversations with BP and the ROV pilots it seems that the efficiency of dispersant application accounts for everything. For example, surface dispersant application on a thin sheet of oil has one rate of efficiency which is low, Very high rates of dispersion were seen by the pilots when they were able to put dispersion wands directly into concentrated oil plumes such as inside the end of the broken riser or a narrow jet from the kill line.

Marcia

USGSUSGSUSGSUSGSUSGSUSGSUSGSUSGSUSGSUSGSUSGS  
Dr. Marcia K. McNutt  
Director, U.S. Geological Survey  
12201 Sunrise Valley Drive MS 100

Reston, VA 20192  
(703) 648-7411 (office)  
(703) 648-4454 (fax)

[www.usgs.gov](http://www.usgs.gov)

USGSUSGSUSGSUSGSUSGSUSGSUSGSUSGSUSGSUSGS

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**From:** Perciasepe.Bob@epamail.epa.gov [mailto:Perciasepe.Bob@epamail.epa.gov]  
**Sent:** Saturday, July 31, 2010 9:12 AM  
**To:** jane.lubchenco@noaa.gov; "Zichal, Heather R." [REDACTED]; "OConnor, Rod" <Rod.OConnor@hq.doe.gov>; Marcia K McNutt <mcnutt@usgs.gov>; david\_hayes@ios.doi.gov; [REDACTED] Seth Oster <oster.seth@epa.gov>; "Smith, Sean" <Sean.Smith@dhs.gov>; Larry.Robinson1@noaa.gov; anastas.paul@epa.gov; "Allen, Thad ADM" <[REDACTED]>; richard.r.windgrove@noaa.gov  
**Subject:** Oil Budget - EPA Comments

Jane and Marcia:

After last evening's "5 o'clock call" Jane followed up quickly to get EPA access to the information and model work that has been used to develop the oil budget. I mentioned on the call last night that Lisa and I were not comfortable with some of the distinctions and omissions in the budget. With Jane's help our science team was able to review materials and discuss with NOAA's Bill Lehr into the night. Here are our comments summarized by me from Paul Anastas, Al Venosa and Greg Williams:

High Points:

-- The physically dispersed versus chemically dispersed has a logical basis, however, that is different from saying it is accurate. It is reasonable to say that too little dispersant was applied when the flow rate was thought to be lower and therefore not all of the oil was chemically dispersed. That which was not chemically dispersed would be at least partially naturally dispersed and there is research (for example from Norway) that looked at deep water natural dispersion. **The percentages are very rough and should not be considered accurate**. We still do not believe we should in a public document try to distinguish between naturally and chemically dispersed oil in the ocean. These calculations are extremely rough estimates yet when they are put into the press - which we want to happen - they will take on a life of their own. **We should combine these two categories.**

-- I believe there will be confusion between dispersion (natural and chem) with dissolution and evaporation as they are used in some of the charts.

-- Finally, no biodegradation rates are used at all which is a tremendous limitation. We have made a decision during this ongoing event to enhance dispersions with chemicals to reduce oil particle size and make it more bio available. We have evidence of biological activity through dissolved oxygen levels indicative of aerobic digestion and some researchers have seen oil droplets in zooplankton. Biological digestion and metabolism is what we were seeking.

Paul and Al can provide details from the science team to Bill Lehr at NOAA, but for now based on these and after consultation with Paul, EPA suggests in the interest of getting these out this weekend that we:

- 1) combine natural and chemical into one category of dispersed oil on charts and in narrative.
- 2) clear up the dissolution and dispersion potential confusion with some additional explanation.
- 3) if no estimate can be made of biodegradation at least have a robust discussion about it both in terms of oil that will remain in marshes to be biodegraded and in terms of our expectations and evidence of the dispersed oil subsea.

Remember Admiral Allen's three battle objectives were:

- Stop the leak
- keep it off the shore, and
- clean up what gets to the shore.

I think the information in the oil budget will show success.

Bob Perciasepe  
Deputy Administrator

(o) +1 202 564 4711  
(c) +1 202 368 8193

Re: Need feed back from USCG and NOAA on potential changes to oil  
010849

**Subject:** Re: Need feed back from USCG and NOAA on potential changes to oil budget tool  
**From:** Mark Miller <mark.w.miller@noaa.gov>  
**Date:** Sun, 01 Aug 2010 16:21:20 -0400  
**To:** Sky Bristol <sbristol@usgs.gov>  
**CC:** Stephen E Hammond <sehammon@usgs.gov>

Tomorrow morning is great. We have received strong pushback from WH on the cumulative total used in our graphic being more that the official 4.93 M bbls. With the flow rate press release looking like it will go out on Tuesday that means our document won't go out until Wednesday so tomorrow morning if possible is great. How will you handle the report? Would it have only one set of graphics?

Mark

Sky Bristol wrote:

We have it on the list to produce a third report from the direct "government estimates." However, we'll need to address that first thing tomorrow if that is okay. We don't have the staffing today.

An alternative if available would be to have Antonio or one of the NIST guys run the R program directly with the latest spreadsheet. That won't get you the same report you see on the Web, but you'd have the numbers.

Sent from my iPhone

On Aug 1, 2010, at 13:27, Mark Miller <Mark.W.Miller@noaa.gov> wrote:

Sky,

I was wondering how difficult would it be for you to do a one off Report that had just the flowrates and not the +/- 10 % in it?

Mark

Sky Bristol wrote:

Mark,

Please add Steve Hammond to the list of executive sponsors in the credits for the Oil Budget Tool if it's not too late to get any changes into that document. I'll be updating the Web site version of these in the About page to match what I sent.

Inland recovery somehow did not make it into the printed report. I added that as a task for the next "cleanup" version.

Thanks.

<(((<<<<<<<<(((<<<<<<<<(((<<<<

Sky Bristol  
sbristol@usgs.gov  
Office: 303-202-4181

<((((<<<<<<<<((((<<<<<<<<((((<<<<<<<<

Begin forwarded message:

**From:** "Stephen E Hammond" <sehammon@usgs.gov>  
**Date:** August 1, 2010 6:59:04 AM MDT  
**To:** Sky Bristol <sbristol@usgs.gov>  
**Cc:** Mark Miller <mark.w.miller@noaa.gov>  
**Subject:** Re: Need feed back from USCG and NOAA on potential changes to oil budget tool

Sky,

Can you add my name to that of Kevin & Matha as an executive sponsor?

Also, I suggest that the definition of "Inland Recovery" be added to information in the executive summary output.

Stephen E. Hammond  
US Geological Survey  
Chief Emergency Operations Office,  
National Geospatial Program  
Reston, VA  
703-648-5033 (w)  
[REDACTED]  
703-648- 5792 (fax)

-----Sky Bristol <sbristol@usgs.gov> wrote: -----

To: Mark Miller <mark.w.miller@noaa.gov>  
From: Sky Bristol <sbristol@usgs.gov>  
Date: 07/31/2010 09:36PM  
cc: Stephen Hammond <sehammon@usgs.gov>  
Subject: Re: Need feed back from USCG and NOAA on potential changes to oil budget tool

I don't mean to be picky and it's not a huge deal, but I made some modifications to the credits section here to better represent the folks involved with the Oil Budget Tool.

<((((<<<<NNNN<((((<<<<NNNN<((((<<<<  
Sky Bristol  
sbristol@usgs.gov  
Office: 303-202-4181

# Attachment B

Inland recovery somehow did not make it into the printed report. I added that as a task for the next "cleanup" version.

Thanks.

<(((  
Sky Bristol  
sbristol@usgs.gov  
Office: 303-202-4181

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(((  
████████████████████

Begin forwarded message:

**From:** "Stephen E Hammond"  
<sehammon@usgs.gov>  
**Date:** August 1, 2010 6:59:04 AM MDT  
**To:** Sky Bristol <sbristol@usgs.gov>  
**Cc:** Mark Miller <mark.w.miller@noaa.gov>  
**Subject:** Re: Need feed back from USCG and NOAA on potential changes to oil budget tool

Sky,

Can you add my name to that of Kevin & Matha as an executive sponsor?

Also, I suggest that the definition of "Inland Recovery" be added to information in the executive summary output.

Stephen E. Hammond  
US Geological Survey  
Chief Emergency Operations Office,  
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Reston, VA  
703-648-5033 (w)  
████████████████████  
703-648- 5792 (fax)

-----Sky Bristol <sbristol@usgs.gov> wrote: -----

To: Mark Miller <mark.w.miller@noaa.gov>  
From: Sky Bristol <sbristol@usgs.gov>  
Date: 07/31/2010 09:36PM  
cc: Stephen Hammond <sehammon@usgs.gov>  
Subject: Re: Need feed back from USCG and NOAA on potential changes to oil budget tool

010898

I don't mean to be picky and it's not a huge deal, but I made some modifications to the credits section here to better represent the folks involved with the Oil Budget Tool.

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Sky Bristol  
[sbristol@usgs.gov](mailto:sbristol@usgs.gov)  
Office: 303-202-4181

<.((((<<<N^N^N<((((<<<N^N^N<((((<<<

On Jul 31, 2010, at 4:14 PM, Mark Miller wrote:

Thanks Steve. Look forward to the call. I have attached the latest that has incorporated comments from many reviewers.

Stephen E Hammond wrote:

Mark, Bill, Sean,

We have received guidance on how to proceed with changes to the Oil Budget Tool. EPA has made some suggested modifications that we need your input on to proceed. USGS as the developer and implementer of the product we need your direction and your guidance on exactly how the tool should describe the data that are used. We'd prefer your comments in writing to document changes. If you want to meet by phone we can use the bridge.

EPA suggests in the interest of getting these out this weekend that we:

- 1) combine natural and chemical into one category of dispersed oil on charts and in narrative.

I think that is good to keep them separate. We can then include chemical dispersion with skimming, burning and collection (in the text) as our "response success" while still allowing us to lump chemical and natural dispersion together for both underwater oil and likely biodegradation.

**Sent:** Sun Aug 01 10:03:52 2010

**Subject:** Fw: Oil Budget Tool Update Complete - Draft Final with Report

Heather, see below.

---

**From:** Mark Miller <mark.w.miller@noaa.gov>

**To:** Jane Lubchenco <Jane.Lubchenco@noaa.gov>; Margaret Spring <Margaret.Spring@noaa.gov>; William Conner <William.Conner@noaa.gov>; Jennifer Austin <Jennifer.Austin@noaa.gov>; Kristen Sarri (doc) (KSarri@doc.gov) <KSarri@doc.gov>; Scott Smullen <Scott.Smullen@noaa.gov>; Parita Shah (Pshah@doc.gov) <Pshah@doc.gov>; Kevin Griffis (kgriffis@doc.gov) <kgriffis@doc.gov>; 'Sgilson@doc.gov' <Sgilson@doc.gov>

**Sent:** Sun Aug 01 06:44:19 2010

**Subject:** Oil Budget Tool Update Complete - Draft Final with Report

Dr. Lubchenco,

USGS completed the update late last night. Here is a draft final from Jen and I. The only thing missing from the Where is the Oil paper is the citation for the flow rate estimates.

Mark

Mark Miller wrote:

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**Subject:** Re: Oil Budget - EPA Comments - follow up and a request

**From:** Perciasepe.Bob@epamail.epa.gov

**Date:** Sat, 31 Jul 2010 22:10:55 -0400

**To:** Stephen E Hammond <sehammon@usgs.gov>

**To:** Stephen E Hammond <sehammon@usgs.gov>

**CC:** mark w miller <Mark.W.Miller@noaa.gov>, bill lehr <Bill.Lehr@noaa.gov>, Sky Bristol <sbristol@usgs.gov>, Mark K Sogge <mark\_sogge@usgs.gov>, sean k o'brien <sean.k.o'brien@uscg.gov>

Thanks Steve.

I will try to get some language but NOAA science folks like Steve Murawski know this better than I. The basic idea is that this will be the first government input into the fate of the oil issue and biodegradation is a big part of that. That should be pretty easy to discuss. I will think how I can help on the other item 2. I agree it is a tough one.

I think you are making a mistake on the separate estimates of dispersal but I have no additional arguments other than it is not verifiable and we will be trying to explain it for the rest of our time on this. I will take it up with white house.

I greatly appreciate your attention to our concerns.

Bob Perciasepe  
Office of the Administrator  
(o)202 564 4711

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**From:** Stephen E Hammond [sehammon@usgs.gov]  
**Sent:** 07/31/2010 07:53 PM AST  
**To:** Bob Perciasepe  
**Cc:** mark.w.miller@noaa.gov; bill.lehr@noaa.gov; Sky Bristol <sbristol@usgs.gov>; Mark K Sogge <mark\_sogge@usgs.gov>; sean.k.o'brien@uscg.gov; Stephen E Hammond <sehammon@usgs.gov>  
**Subject:** Fw: Oil Budget - EPA Comments - follow up and a request

Hi Bob,

I'm with USGS and serve as a member of the Interagency Solutions Group as a liaison between the FRTG and the the NIC. USGS spent some time this afternoon with NOAA and USCG discussing the three suggestions you made below in preparation to update and modify the oil budget tool that has been developed. I'll give you a quick update on the discussion of suggestion 1 & 3, then ask you to provide some additional feedback on suggestion 2.

**Suggestion 1** - combine natural and chemical into one category of dispersed oil on charts and in narrative.

**Decision** - Based on how NOAA is developing a communication product with the WH, the dispersion types (Natural & Chemical) will not be combined. We appreciate the case for combining them however the goal is to show chemical dispersion as part of the Federal response to the spill.

**Suggestion 3** - if no estimate can be made of biodegradation at least have a robust discussion about it both in terms of oil that will remain in marshes to be biodegraded and in terms of our expectations and evidence of the dispersed oil subsea.

**Decision** - NOAA is in general agreement that more is needed here. They indicated that they tried to make this explanation as robust as possible. We believe that a second document will be prepared in the near future that addresses biodegradation as the primary focus. It will include as much as it can on biodegradation rates.

**Suggestion 2** - clear up the dissolution and dispersion potential confusion with some additional explanation.

**Decision** - There is agreement on this yet we have found it difficult to describe in a short paragraph. We'd like to ask you to provide a short write-up that we can consider for this explanation in the oil budget tool.

We are working to get tell toll updated by this evening. Any feedback you can offer quickly is greatly appreciated.

Steve

Stephen E. Hammond  
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-----Forwarded by Stephen E Hammond/GEOG/USGS/DOI on 07/31/2010 07:24PM -----

# Attachment C

007759

**From:** Mark Miller  
**To:** \_NOS ORR HAZMAT SSC; William Conner; Glen Watabayashi; John Tarpley; Debbie Payton; Amy Merten; Mark Dix; Bill Lehr; Doug Helton; Alan Mearns  
**Subject:** "Pie Chart" Doc  
**Date:** Thursday, July 29, 2010 9:30:29 PM  
**Attachments:** Oil Budget description 7 29 v 7.doc

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The Oil Budget document has just started clearance by the White House. It is positioned as a public information document and contains general description of the oil fate. If there are changes I will route the final version. Obviously not for release until after clearance.

Mark

## Deepwater Horizon/BP Oil Budget Calculator: Where did the oil go?

The National Incident Command has assembled the best scientific minds in the government and independent scientific community to produce an estimate of just how much oil has been skimmed, burned, contained, evaporated and dispersed. They have developed a tool, called the Oil Budget Calculator to determine where the oil has gone. The numbers are based on best estimates of how much oil was released and how this oil is moving and degrading.

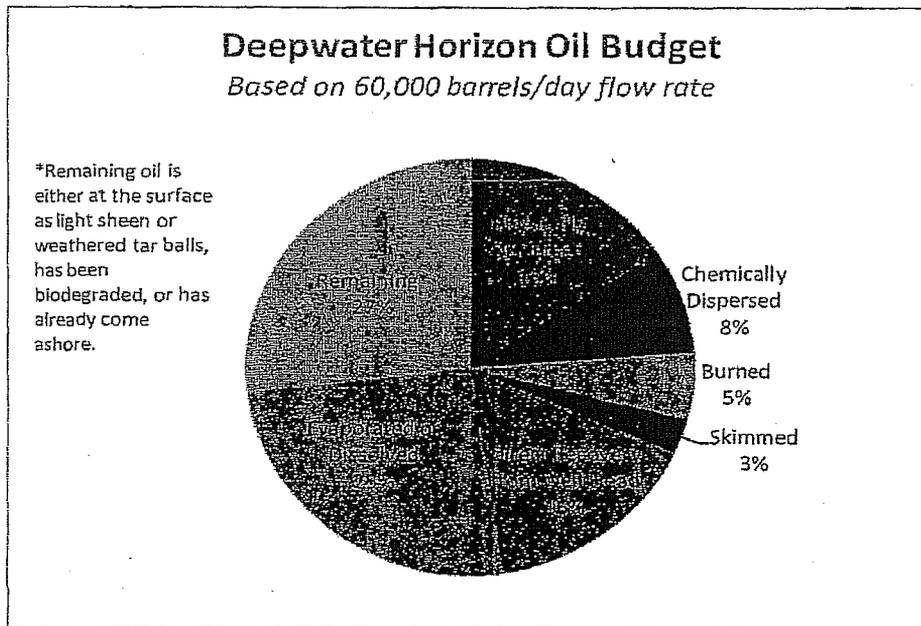


Figure 1: Oil Budget Calculator- Shows what has happened to the oil.

### Explanation of Findings

The Flow Rate Technical Group (FRTG), assembled by the National Incident Command, estimates that as of July 15, between 3-5 million barrels of oil had been released from the Deepwater Horizon/BP wellhead.

As shown in the pie chart (Figure 1), aggressive response efforts have been successful in recovering a significant portion of the spilled oil. 16 percent of the oil was captured directly from the wellhead by the riser pipe insertion tube and top hat systems. In addition, burning and skimming operations collected approximately 11 percent of the oil.

It is estimated that 25 percent of the oil volume quickly evaporated or dissolved into the water column. The volatile components of oil evaporate, while the components that are not volatile dissolve into the water column or form residues such as tar balls. The evaporation rate estimate is based on scientific research and observations conducted during the Deepwater Horizon incident. A different evaporation rate is used for fresh and weathered oil to provide the most accurate number.

16 percent of the oil has dispersed physically into the water column, and 8 percent of the oil was dispersed by the application of nearly 50,000 barrels of chemical dispersants. Physical dispersion occurs as a result of the oil coming out of the broken riser pipe at high speed into the water column, which caused some of it to spray off in small droplets (less than 100 microns – the diameter of a human hair).

Some portion of the dispersed oil that is in droplets smaller than 100 microns remained below the surface. Previous analyses have shown evidence of a diffuse cloud of dispersed oil between 3300 and 4300 feet. (citation: Federal Joint Analysis Group Report 1 and 2, <http://ecowatch.ncddc.noaa.gov/JAG/reports.html>).

We know that naturally occurring bacteria have consumed and biodegraded a significant amount of the oil. Bacteria that break down the dispersed and weathered surface oil are naturally abundant in the Gulf of Mexico in large part because of the warm water there, the favorable nutrient and oxygen levels, and the fact that oil enters the Gulf of Mexico through natural seeps regularly. While there is more analysis to be done to quantify the exact rate of biodegradation in the Gulf, early indications are that the light crude oil from this well is biodegrading quickly.

After accounting for operations, dispersion and evaporation, 27 percent remains. This oil is either at the surface as light sheen or weathered tar balls, has been biodegraded, or has already come ashore on beaches.

In summary, burning, skimming and direct recovery from the wellhead have removed roughly one quarter of the oil. Around a quarter of the total has been naturally evaporated and just less than one quarter dispersed into Gulf waters. The remaining amount, just over one quarter is on the surface, in tar balls, on the shore, already removed from the shore or has been biodegraded.

NOAA continues to track the movement of the remaining oil. It will issue daily surface oil trajectories for as long as necessary and continue subsurface sampling to monitor the concentration and distribution of oil there. NOAA responders are working with the Unified Command to develop monitoring strategies for tar balls and near shore submerged oil.

Even though the threat to shorelines has decreased since the capping of the BP wellhead, federal scientists remain extremely concerned about the impact to the Gulf ecosystem. Fully understanding the impacts of this spill on wildlife, habitats, and natural resources in the Gulf region will take time and continued monitoring and research.

**Note on degree of confidence in calculations:** The Oil Budget calculations are based on direct measurements where possible and the best available scientific estimates where measurements were not possible. The numbers for direct recovery and burns were measured directly and reported in daily operational reports. The rest of the numbers were based on previous scientific analyses, best available information and a broad range of scientific expertise. These numbers will continue to be refined based on additional information and further analysis.

## **Attachments**

**Appendix A:** Deepwater Horizon Gulf Incident Budget Tool Report from July 28, 2010, contains detailed explanation of calculation methods. The tool was created by the US Geological Survey in collaboration with US Coast Guard, NOAA, and NIST.

**Appendix B: Acknowledgements**

**Deepwater Horizon/BP Oil Budget Calculator:  
Where did the oil go?  
Appendix B: Acknowledgements**

**Authors**

Jane Lubchenco, NOAA, DOC  
Marcia McNutt, USGS, DOI  
William Conner, NOAA, DOC  
Mark Sogge, USGS, DOI  
Steven Hammond, USGS, DOI

**Credits**

The following scientists were involved in developing the Oil Budget Calculator tool:

David Mack (USGS) – Lead application developer  
Jeff Allen (USGS) – Interface designer  
Bill Lehr (NOAA) – Lead mass balance and oil budget scientist  
LCDR Lance Lindgren and CDR Peter Hoffman (USCG) – Application requirements  
Steve Hale, Kent Morgan, Kevin Laurent, and Jerry McFaul (USGS) – Technical advisors  
Sky Bristol and Tim Kern (USGS) – Project vision and management  
Kevin Gallagher and Martha Garcia (USGS) – Executive sponsors

The Following Scientists created and reviewed the calculation methods used in the oil budget calculator:

Federal Scientists

Bill Lehr, NOAA  
Robert Jones, NOAA  
Albert Venosa, EPA  
Antonio Possolo, NIST

Independent Scientists

Ron Goodman, U. of Calgary  
Al Allan, SpilTec  
James Payne, Payne Env.  
Tom Coolbaugh, Exxon Mobil  
Ed Overton, LSU  
Juan Lasheras, UCSD  
Merv Fingas, Env. Canada(ret)  
Ali Khelifa, Env. Canada  
Pat Lambert, Env. Canada  
Per Daling, SINTEF  
David Usher, ISCO  
Peter Carragher, BP  
Michel Boufadel, Temple Univ.

# Attachment D

006625

**From:** Mark.W.Miller  
**To:** Bill Conner; Bill Lehr; Mark K Sooge; Hammond, Stephen E; Sky Bristol; Parsons, Roger; Nathalie Valette-Silver; Anastas.Paul@epa.gov; Perciasepe.Bob@epa.gov; Venosa.Albert@epamail.epa.gov; Allen.Harry@epamail.epa.gov; Wilson.Gregory@epamail.epa.gov; Sarri, Kristen; Scott Smullen; Zichal, Heather R.; Gilson, Shannon; Margaret Spring; KGriffis@doc.gov  
**Subject:** Final Submission, Oil Budget  
**Date:** Tuesday, August 03, 2010 3:21:26 PM  
**Attachments:** Oil Budget description & 3 FINAL.docx

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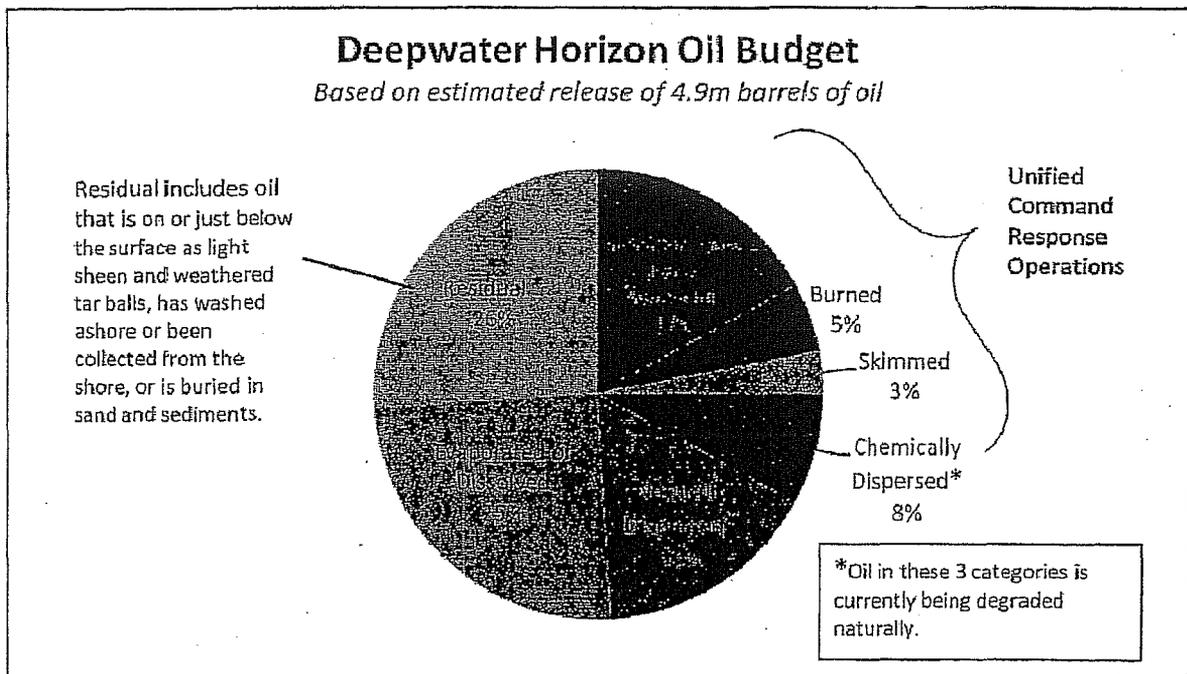
This is the copy just transmitted to the White House. Actual schedule for release is not known but should be shortly.

Mark

## BP Deepwater Horizon Oil Budget: What Happened To the Oil?

The National Incident Command (NIC) assembled a number of interagency expert scientific teams to estimate the quantity of BP Deepwater Horizon oil that has been released from the well and the fate of that oil. The expertise of government scientists serving on these teams is complemented by nongovernmental and governmental specialists reviewing the calculations and conclusions. One team calculated the flow rate and total oil released. Led by Energy Secretary Steven Chu and United States Geological Survey (USGS) Director Marcia McNutt, this team announced on August 2, 2010, that it estimates that a total of 4.9 million barrels of oil has been released from the BP Deepwater Horizon well. A second interagency team, led by the Department of the Interior (DOI) and the National Oceanic and Atmospheric Administration (NOAA) developed a tool called the Oil Budget Calculator to determine what happened to the oil. The calculator uses the 4.9 million barrel estimate as its input and uses both direct measurements and the best scientific estimates available to date, to determine what has happened to the oil. The interagency scientific report below builds upon the calculator and summarizes the disposition of the oil to date.

In summary, it is estimated that burning, skimming and direct recovery from the wellhead removed one quarter (25%) of the oil released from the wellhead. One quarter (25%) of the total oil naturally evaporated or dissolved, and just less than one quarter (24%) was dispersed (either naturally or as a result of operations) as microscopic droplets into Gulf waters. The residual amount — just over one quarter (26%) — is either on or just below the surface as light sheen and weathered tar balls, has washed ashore or been collected from the shore, or is buried in sand and sediments. Oil in the residual and dispersed categories is in the process of being degraded. The report below describes each of these categories and calculations. These estimates will continue to be refined as additional information becomes available.



**Figure 1:** Oil Budget - Shows current best estimates of what happened to the oil.

## Explanation of Findings

*Unified Command Response Efforts:* Response efforts to deal with the oil have been aggressive. As shown in the pie chart (Figure 1), response efforts were successful in addressing 33% of the spilled oil. This includes oil that was captured directly from the wellhead by the riser pipe insertion tube and top hat systems (17%), burning (5%), skimming (3%) and chemical dispersion (8%). Direct capture, burning and skimming remove the oil from the water entirely, while chemically dispersed oil remains in the water until it is biodegraded, as discussed below.

*Dispersion:* Based on estimates, 16% of the oil dispersed naturally into the water column and 8% was dispersed by the application of chemical dispersants on and below the surface. Natural dispersion occurs as a result of the oil coming out of the riser pipe at high speed into the water column, which caused some of the oil to spray off in small droplets. For the purpose of this analysis, 'dispersed oil' is defined as droplets that are less than 100 microns — about the diameter of a human hair. Oil droplets that are this small are neutrally buoyant and thus remain in the water column where they then begin to biodegrade. Chemical dispersion also breaks the oil up into small droplets to keep it from coming ashore in large surface slicks and makes it more readily available for biodegradation. Chemical dispersants were applied at the surface and below the surface; therefore, the chemically dispersed oil ended up both deep in the water column and just below the surface. Dispersion increases the likelihood that the oil will be biodegraded, both in the water column and at the surface. Until it is biodegraded, naturally or chemically dispersed oil, even in dilute amounts, can be toxic to vulnerable species.

All of the naturally dispersed oil and some of the oil that was chemically dispersed remained well-below the surface in diffuse clouds where it began to dissipate further and biodegrade. Previous analyses have shown evidence of diffuse clouds of dispersed oil between 3,300 and 4,300 feet in very low concentrations (parts per million or less), moving in the direction of known ocean currents and decreasing with distance from the wellhead. (citation: Federal Joint Analysis Group Report 1 and 2, <http://ecowatch.ncddc.noaa.gov/JAG/reports.html>): Oil that was chemically dispersed at the surface moved into the top 20 feet of the water column where it mixed with surrounding waters and began to biodegrade.

*Evaporation and Dissolution:* It is estimated that 25% of the oil volume quickly and naturally evaporated or dissolved into the water column. The evaporation and dissolution rate estimate is based on scientific research and observations conducted during the Deepwater Horizon incident.

Dissolution is different from dispersion. Dissolution is the process by which individual hydrocarbon molecules from the oil separate and dissolve into the water just as sugar can be dissolved in water. Dispersion is the process by which larger volumes of oil are broken down into smaller droplets of oil.

*Residual:* After accounting for the categories that can be measured directly or estimated (i.e., recovery operations, dispersion, and evaporation and dissolution), an estimated 26% remains. This figure is a combination of categories all of which are difficult to measure or estimate. It includes oil still on or just below the surface in the form of light sheen or tar balls, oil that has washed ashore or been collected from the shore, and some that is buried in sand and sediments and may resurface through time. This oil has also begun to degrade through natural processes.

*Biodegradation:* Dispersed oil in the water column and oil on the surface of the water biodegrade naturally. While there is more analysis to be done to quantify the rate of biodegradation in the Gulf, early observations and preliminary research results from a number of scientists show that the oil from the BP Deepwater Horizon spill is biodegrading quickly. Scientists from NOAA, EPA, DOE and academia are working to calculate more precise estimates of this rate. It is well known that bacteria that break down the dispersed and weathered surface oil are abundant in the Gulf of Mexico in large part because of the warm water, the favorable nutrient and oxygen levels, and the fact that oil regularly enters the Gulf of Mexico through natural seeps.

### **Explanation of Methods and Assumptions**

*Flow Rate:* The Oil Budget Calculator starts with an estimate of the cumulative amount of oil released over the course of the spill. The newest estimates reflect the collaborative work and discussions of the National Incident Command's Flow Rate Technical Group (FRTG) led by United States Geological Survey (USGS) Director Marcia McNutt, and a team of Department of Energy (DOE) scientists and engineers, led by Energy Secretary Steven Chu. This group estimates that approximately 4.9 million barrels of oil flowed from the BP Deepwater Horizon wellhead between April 22 and July 15, 2010, at which time the flow of oil was suspended. The uncertainty of this estimate is  $\pm 10\%$ . The pie chart above is based on this group's estimate of 4.9 million barrels of oil.

*Direct Measures and Best Estimates:* The oil budget calculations are based on direct measurements wherever possible and the best available scientific estimates where measurements were not possible. The numbers for direct recovery and burns were measured directly and reported in daily operational reports. The skimming numbers were also based on daily reported estimates. The rest of the numbers were based on previous scientific analyses, best available information and a broad range of scientific expertise. These numbers will continue to be refined based on additional information and further analysis. Further information on these calculation methods is available in the Deepwater Horizon Gulf Incident Budget Tool Report from Aug 1, 2010 (available online). The tool was created by the US Geological Survey in collaboration with US Coast Guard, NOAA and NIST.

### **Continued monitoring and research:**

Our knowledge of the oil, dispersants, ecosystem impacts and human impacts will continue to evolve. Federal agencies and many academic and independent scientists are actively pursuing better understanding of the fate, transport and impact of the oil. The federal government will continue to report activities, results and data to the public on a regular basis. Updates and information can be found at [www.restorethegulf.gov](http://www.restorethegulf.gov), and data from the response and monitoring can be found at [www.geoplatform.gov](http://www.geoplatform.gov).

DOI, NASA and NOAA continue to refine understanding of amounts of remaining surface oil. NOAA responders are working with the Unified Command on monitoring strategies for tar balls and near shore submerged oil, and researchers continue subsurface scanning and sampling to monitor the concentration, distribution and impact of oil there. EPA and NOAA have carefully monitored BP's use of dispersant in the Gulf and continues to monitor the air, water and sediments near the shoreline for the presence of dispersant and crude oil components with special attention to human health impacts. Numerous NOAA- and NSF-funded academic researchers and NOAA scientists are investigating rates of biodegradation, ecosystem and wildlife impacts. DOI and DOE responders are working to ensure control of the well and

accurate measurement of oil released and oil remaining in the environment. DOI is leading efforts to mitigate impacts of oil to terrestrial wildlife, natural resources, and public lands. Even though the threat to shorelines, fish and wildlife, and ecosystems has decreased since the capping of the BP wellhead, federal scientists remain extremely concerned about the impact of the spill to the Gulf ecosystem. Fully understanding the impacts of this spill on wildlife, habitats, and natural resources in the Gulf region will take time and continued monitoring and research.