

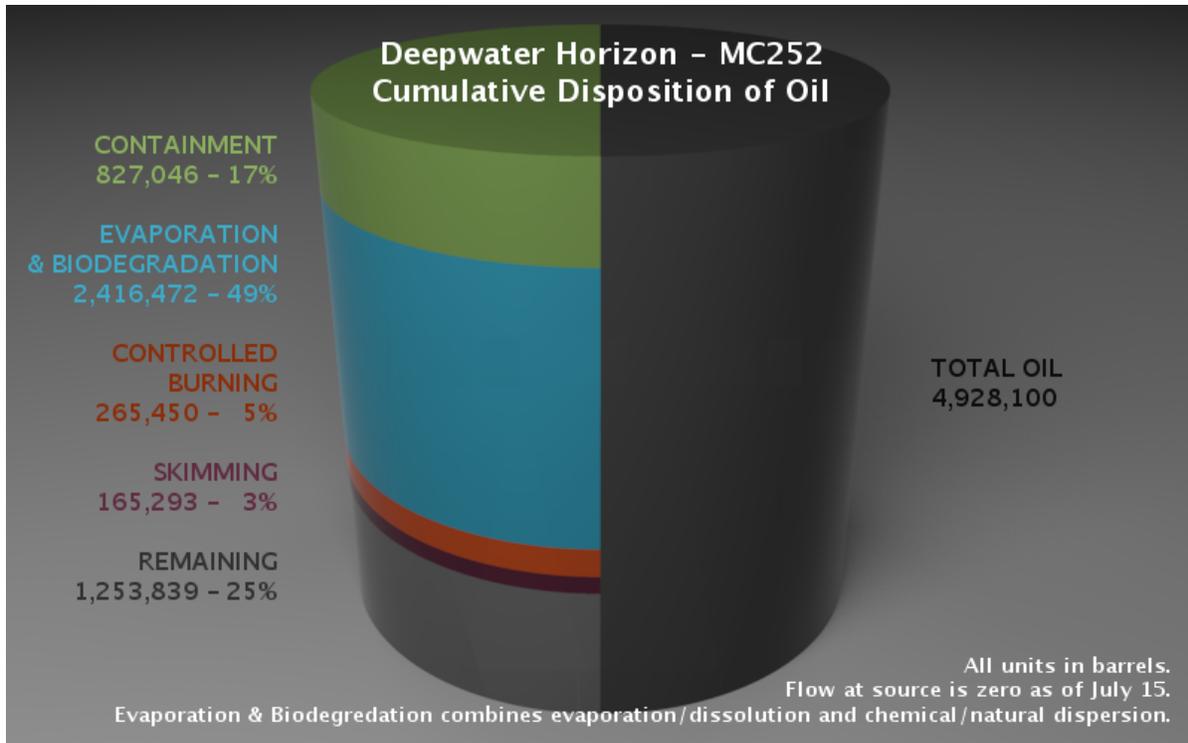


## Deepwater Horizon MC252 Gulf Incident Oil Budget Government Estimates - Through August 01 (Day 104)

	Cumulative	August 01
<b>Discharged</b>	4,928,100	0
Recovered via RITT and Top Hat	827,046	0
Dispersed Naturally	763,948	0
Evaporated or Dissolved	1,243,732	0
<b>Available for Recovery</b>	2,093,374	0
Chemically Dispersed	408,792	0
Burned	265,450	0
Skimmed	165,293	21
<b>Remaining</b>	1,253,839	-21
Dispersant Used	43,900	0
Inland Recovery (Cumulative)	35,818 tons	

\* All unlabeled values in barrels. See end notes for assumptions.

\*\* Government estimate of discharge ranged from 62,200 bbl on April 22, 2010 to 52,700 bbl on July 14, 2010.



Deepwater Horizon MC252 Gulf Incident Oil Budget

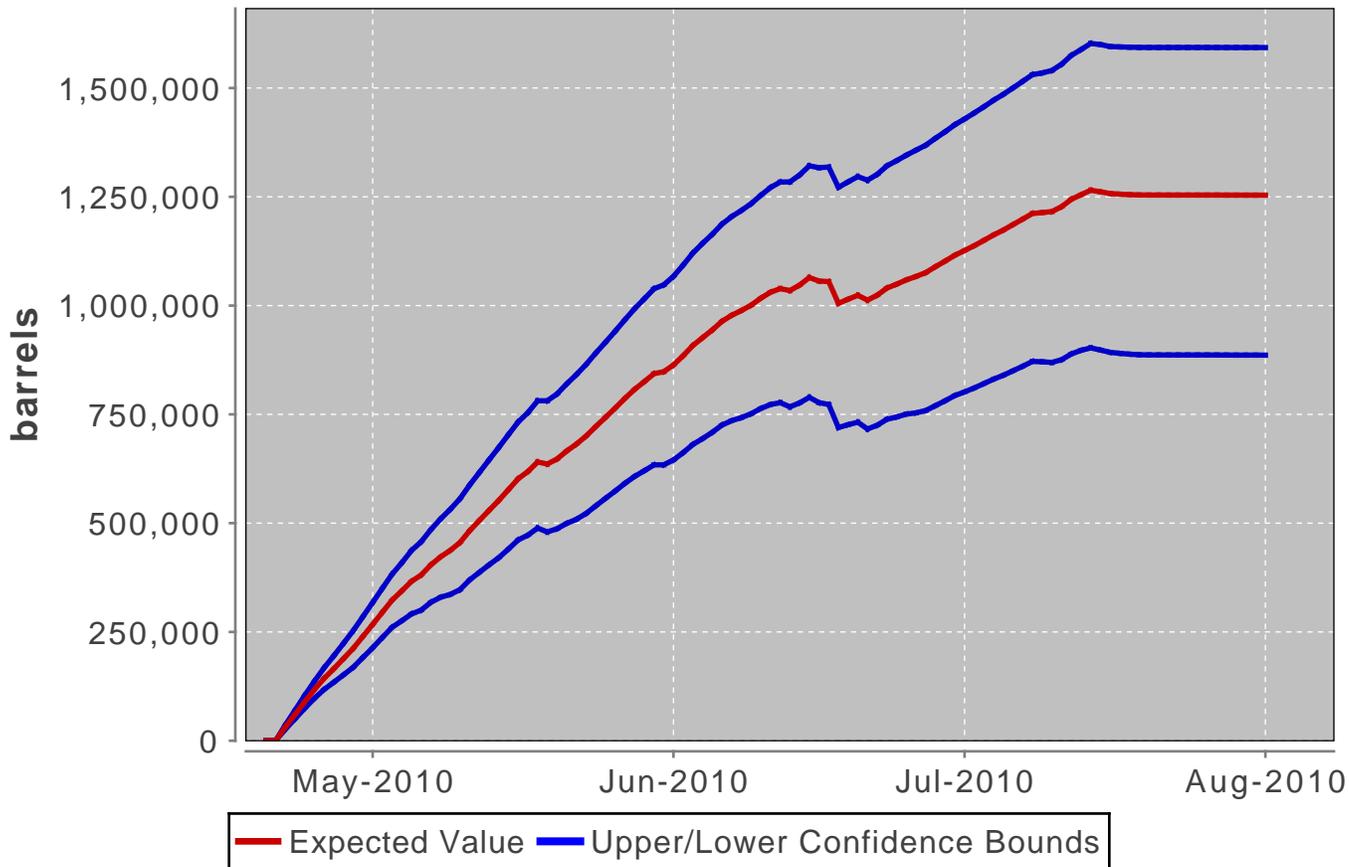
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See end notes section of the report for reference material on report elements.

Application operated by the U.S. Coast Guard and provided by the U.S. Geological Survey in cooperation with the National Oceanic and Atmospheric Administration.

# Government Estimates - Through August 01 (Day 104)

## Cumulative Remaining



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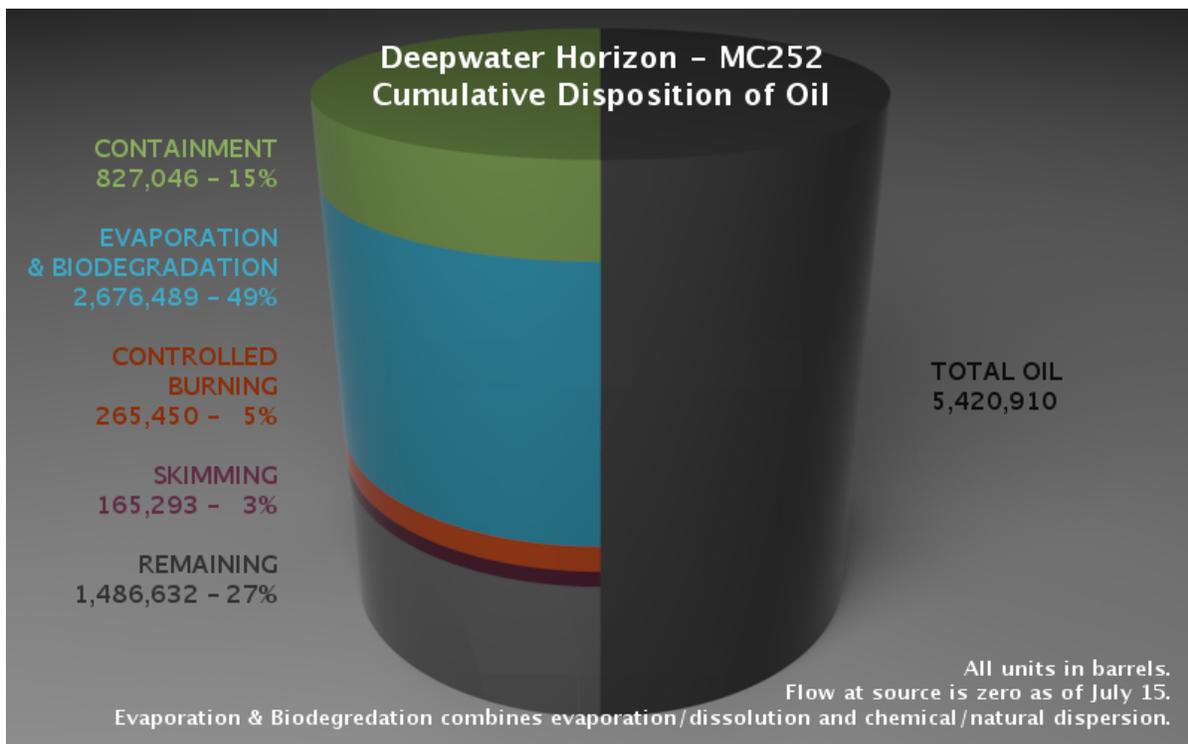
## Deepwater Horizon MC252 Gulf Incident Oil Budget Higher Flow Estimate - Through August 01 (Day 104)

	Cumulative	August 01
<b>Discharged</b>	5,420,910	0
Recovered via RITT and Top Hat	827,046	0
Dispersed Naturally	862,510	0
Evaporated or Dissolved	1,405,187	0
<b>Available for Recovery</b>	2,326,167	0
Chemically Dispersed	408,792	0
Burned	265,450	0
Skimmed	165,293	21
<b>Remaining</b>	1,486,632	-21
Dispersant Used	43,900	0
Inland Recovery (Cumulative)	35,818 tons	

\* All unlabeled values in barrels. See end notes for assumptions.

\*\* Higher Flow Estimate is based on the government discharge estimate plus 10% uncertainty.

\*\*\* Maximum discharge ranged from 68,390 bbl on April 22, 2010 to 58,022 bbl on July 14, 2010.



Deepwater Horizon MC252 Gulf Incident Oil Budget

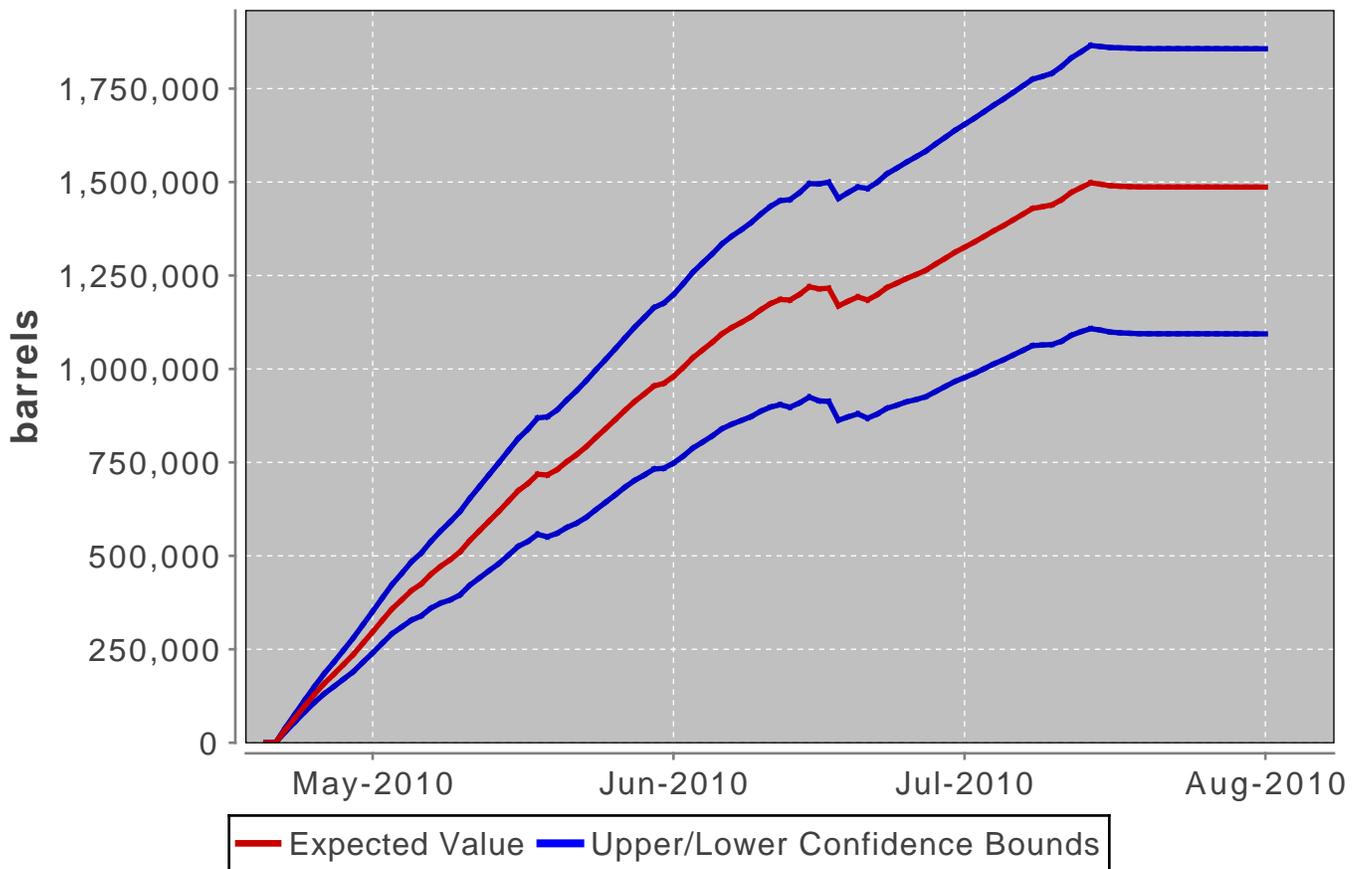
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## Higher Flow Estimate - Through August 01 (Day 104)

### Cumulative Remaining



Deepwater Horizon MC252 Gulf Incident Oil Budget

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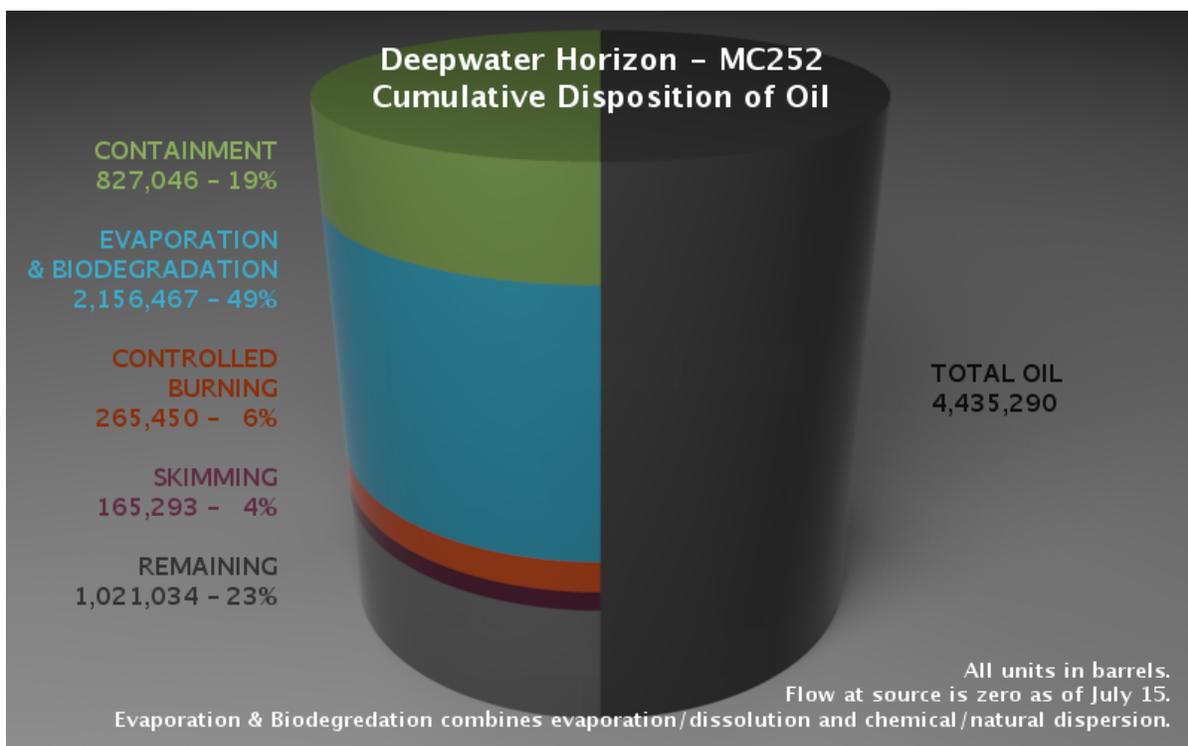
## Deepwater Horizon MC252 Gulf Incident Oil Budget Lower Flow Estimate - Through August 01 (Day 104)

	Cumulative	August 01
<b>Discharged</b>	4,435,290	0
Recovered via RITT and Top Hat	827,046	0
Dispersed Naturally	665,386	0
Evaporated or Dissolved	1,082,289	0
<b>Available for Recovery</b>	1,860,569	0
Chemically Dispersed	408,792	0
Burned	265,450	0
Skimmed	165,293	21
<b>Remaining</b>	1,021,034	-21
Dispersant Used	43,900	0
Inland Recovery (Cumulative)	35,818 tons	

\* All unlabeled values in barrels. See end notes for assumptions.

\*\* Lower Flow Estimate is based on the government discharge estimate minus 10% uncertainty.

\*\*\* Maximum discharge ranged from 55,956 bbl on April 22, 2010 to 47,472 bbl on July 14, 2010.



Deepwater Horizon MC252 Gulf Incident Oil Budget

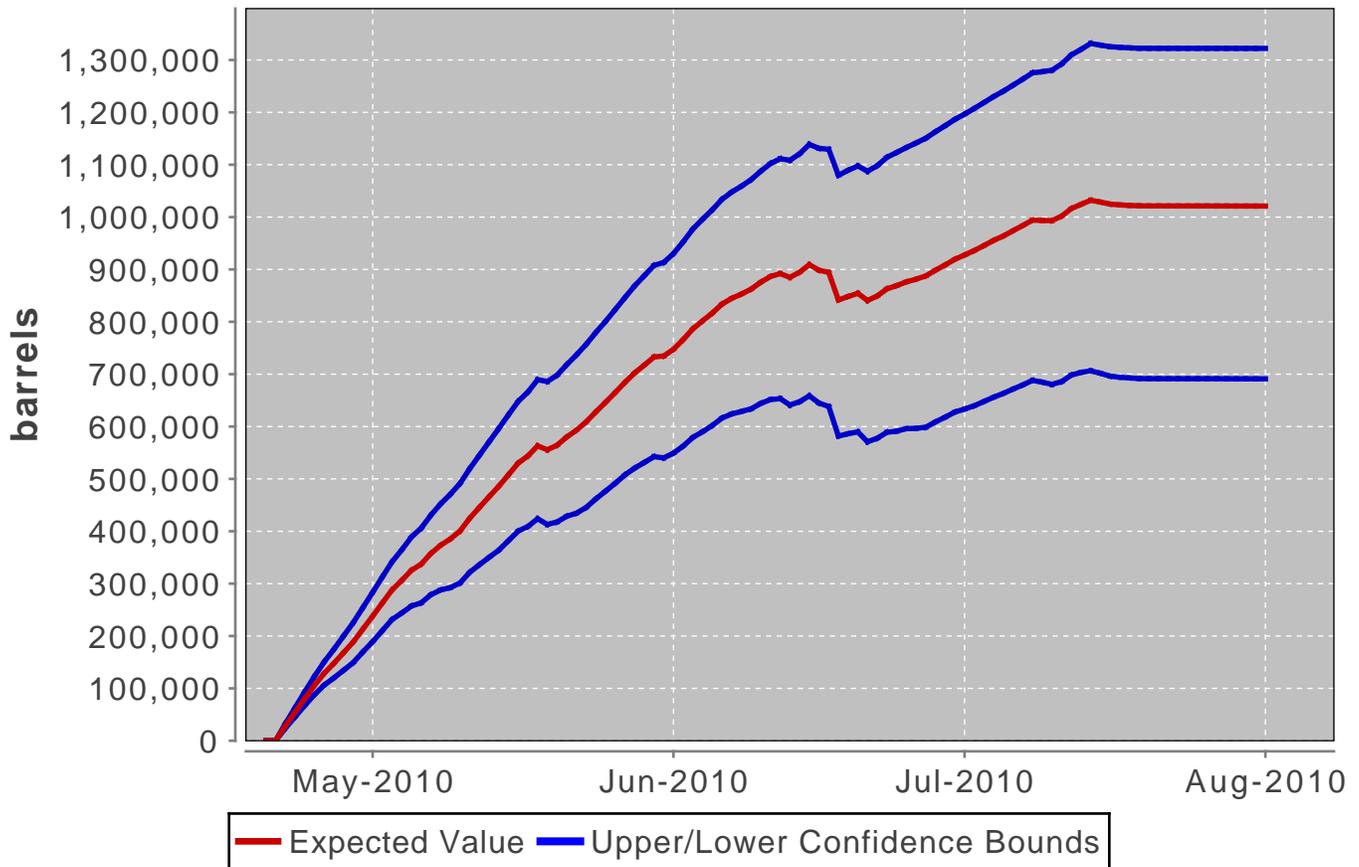
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## Lower Flow Estimate - Through August 01 (Day 104)

### Cumulative Remaining



Deepwater Horizon MC252 Gulf Incident Oil Budget

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## Reference Notes

### Chart - Cumulative/Daily Volume Remaining on the Surface

The volume of oil that each day is added to the volume of oil already on the surface is computed, taking into account the effective discharge (total discharge minus volume collected via the Riser Insertion tool or the Top Hat), and the volume that is evaporated or dissolved, skimmed, burned, or dispersed (either chemically or naturally).

### Chart - Deepwater Horizon MC-252 - Cumulative Disposition of Oil

The Cumulative Disposition of Oil "Barrel Graph" provides a representation of the total amount of oil released over time based on low and high discharge estimates, the relative amounts of oil recovered or dispersed by both natural and management methods, and the total remaining oil calculated by the oil budget model. The values used in the chart come from the calculations in a statistical model and correspond to the cumulative values in the table. See the footnotes (available in the Web application by clicking on the labels in the table) for further information on the individual calculations and additional reference material.

### Discharged

On July 31, 2010, the U.S. scientific teams charged by National Incident Commander Thad Allen with determining the flow of oil from BP's leaking well refined their estimates of the oil flow. The teams estimated that the discharge rates ranged from 62,000 bbl/day at the start of the incident to 53,000 bbl/day when the well was capped on July 14 with an uncertainty factor of  $\pm 10\%$ . The uncertainty factor in the best government estimate was used to create a Higher Flow Estimate and a Lower Flow Estimate report in the Oil Budget Tool.

Based on reports of major explosions and burning oil from the first two days of the incident (April 20-21), the estimate begins on April 22, 2010. In general, the discharge rate trended down over time due to decreasing reservoir pressure observed after the well was capped. Severing the riser on June 4 (Day 45), resulted in an estimate of discharge increase of approximately 4%. Placement of the containment cap on July 12 (Day 84) resulted in a flow decrease of approximately 4%

### Previous Fixed Flow Rate

Previous versions of the Oil Budget Tool used a constant low and high flow estimate based on estimations from the Flow Rate Technical Group Plume Team PIV measurements. This method was chosen at the time as the best available process and because the same measurement method was

used pre- and post-riser cut. On June 15, 2010, an improved estimate of how much oil is flowing from the leaking BP well was announced. The most likely flow rate of oil at that time was estimated between 35,000 and 60,000 barrels per day. This improved estimate was based on more and better data that was available after the riser cut -- data which helped increase the scientific confidence in the accuracy of the estimate at that time.

## Recovered via RITT and Top Hat

RITT and Top Hat are mechanical devices that British Petroleum (BP) has used to recover oil from the spill flow. Values for the amount recovered by the vessels Helix Producer, Discoverer Enterprise and the Q4000 are reported by BP, entered daily by National Incident Command personnel, and used in the calculation of remaining oil. Cumulative totals are a sum of all daily values entered.

## Dispersed Naturally

Natural oil dispersion is estimated using the methods described in this annotation and background documentation. The following assumptions and factors apply:

- Droplets smaller than 100 micron are considered dispersed
- No natural surface dispersion assumed
- Subsurface natural dispersion based upon plume turbulent energy dissipation

Natural subsurface dispersion calculates the total discharge minus an estimation of subsurface chemical dispersion multiplied by a factor of natural dispersion effectiveness derived from a scientific method of determining oil dispersion in the water column.

## Evaporated or Dissolved

Evaporation and dissolution occur naturally with oil on the surface. This element in the report is the result of a scientific calculation using the methods described in this annotation and background documentation. The following assumptions and factors apply:

- Evaporation formulas include dissolution
- Evaporation is the largest oil removal mechanism for surface oil
- Most evaporative losses occur during the first 24 hours

Evaporation is calculated differently for "fresh" oil within 24 hours (daily total in the report) and older oil for the cumulative total over time. Different factors are used to represent the difference in this rate. The evaporation/dissolution calculation first determines the remaining oil available for evaporative processes by removing the following from the total discharge:

- Measured amount removed via RITT and Top Hat
- Calculated amount of subsurface dispersion
- Reported amount of oil burned
- The remaining amount is then multiplied with a different factor based on scientific research and current observations conducted on the Deepwater Horizon incident.

## Available for Recovery

The amount available for recovery, both daily and cumulative, is simply the remaining oil after removing the following from the total discharge:

- Measured amount removed via RITT and Top Hat
- Calculated amount of subsurface dispersion
- Calculated amount of evaporation and dissolution

## Skimmed

Skimmed oil is a rough calculation based on the daily reported amount of oily water multiplied by a factored estimation of net oil content in oily water.

- The skimmed oil estimate is very rough
- The actual amount of skimmed oil should ultimately be based on actual measurement

## Burned

Total burned values are entered daily by National Incident Command personnel and used in daily and cumulative totals.

- American Society for Testing and Materials (ASTM) burn rate standards are used
- Different rates for non-emulsified and emulsified oil

## Chemically Dispersed

Chemical oil dispersion is the result of a scientific calculation based on the amount of chemical dispersant applied and recorded daily and acting on both surface and subsurface oil. The following assumptions and factors apply:

- Droplets smaller than 100 micron are considered dispersed
- No natural surface dispersion assumed

- International Tanker Owners Pollution Federation (ITOPF) "planning purpose" dosage of 20:1 used as estimate for successful chemical dispersant application

## Dispersant Used

The amount of dispersant used is recorded each day of the incident by National Incident Command personnel. It is an actual measurement of the total dispersant used via all methods employed.

## Oil Remaining

Volume of oil remaining after other known volume totals are removed from the total discharged.