

MASS BALANCE ESTIMATE FOR T/V HYDE PARK SPILL

This estimate is based upon the data that was available as of 29 March 1999. As more information becomes available, the estimate may change.

Size of Spill

T/V HYDE PARK reports that 8 cubic meters (50.3 barrels) of Bunker C fuel oil was spilled from the starboard aft fuel tank based on soundings before and after the tank was punctured. However, the amount of oil recovered and the degree of shoreline oiling suggests that a larger amount was released.

Recovered

The cleanup contractor reported two amounts of recovered oil-water mixture to the Coast Guard. The first report indicates 100 barrels (bbls) of oil-water mixture recovered, yielding 40 bbls of oil and the second, 150 bbls of oil-water mixture yielding 50 bbls of oil. A total of 90 barrels of oil were recovered using on water mechanical recovery techniques. For any spill of significant size, it is estimated that the maximum amount of product recovered using mechanical methods at best is 10-20% of the total oil spilled.

It should be noted that roll-off boxes with a volume of 20 cubic yards were used to recover oil debris. However, the number of roll-off boxes used is unknown and was not factored into these calculations.

Evaporated

The amount of evaporation that occurs from a bunker oil depends upon the properties of the fuel oil. For a typical fuel oil #6, we would expect that as much as 5-20 % of the spilled oil would likely evaporate.

Scavenged

For muddy rivers, the flocculation process removes as much oil as does evaporation, although the actual numbers depend upon the degree of turbulence in the river, its sediment load, and the nature of the suspended particles. With its high sediment load, the Mississippi River can act as a large sink for the surface slick as pieces of the oil become attached to sediment in the water. Based upon the nature of the suspended material, the oil-sediment mixture can either form streamers on the surface or settle out on the bottom as the turbulence in the water decreases. We estimate that between 10 and 20 % of the floating oil was removed this way.

Oil Remaining Along Shoreline and Levee

This information is based on shoreline surveys conducted March 19-20, 1999. The conditions at the time of the survey were not optimal as most of the substrate was submerged. The only visible oil was adhered to floating debris, vegetation, and the concrete revetment. Areas of floating oiled debris were measured or estimated to determine the amount of oil cover on the debris. All the oiled vegetation had oil in a band about 6 inches wide on the stems of the plants.

The area of oiled vegetation was measured. Plant density of plants was not measured because to was relatively low and thought to contribute an insignificant amount of oil to the volume remaining. The length and width of oiling on the revetment was measured and the percent coverage estimated.

In calculating the amount of oil remaining, the oiled debris was assumed to be flat, and the percent oil coverage translated directly to percent coverage for the given area. It was assumed that the oiled vegetation would not contribute significantly so the amount of oil on the vegetation was not estimated. For the revetment oiling, when a range was given for either percent coverage or width of oil band the median value was chosen to represent the amount of oil.

Based on the above assumptions about 30¹ bbls oil remains on the shoreline and in stranded debris. This is an estimate that could be plus or minus 50 percent. Of this 30¹ bbls, about 11 bbls are on the revetment, with 19 bbls are coating the debris adjacent to the river.

Conclusion

The final mass balance is difficult to determine due to the difference between the amount reported by the RP and the amount recovered. The RP reported a spill of approximately 50 bbls; however, the amount of oil recovered by mechanical means (90 bbls), roll off boxes (unknown), evaporation (20%), scavenging (10-20%), and remaining along the shoreline (30¹ bbls) suggest that a larger quantity was spilled.

<u>Recoverd</u>	<u>Roll off boxes</u>	<u>Evaporation</u>	<u>Scaveging</u>	<u>Remaining</u>
90bbls	unknown	>18 bbls	> 13.5 bbls	30 ¹ bbls

¹ This amount not corrected for emulsification.