

Surface Water Sampling in 2004 and related “mechanistic research”

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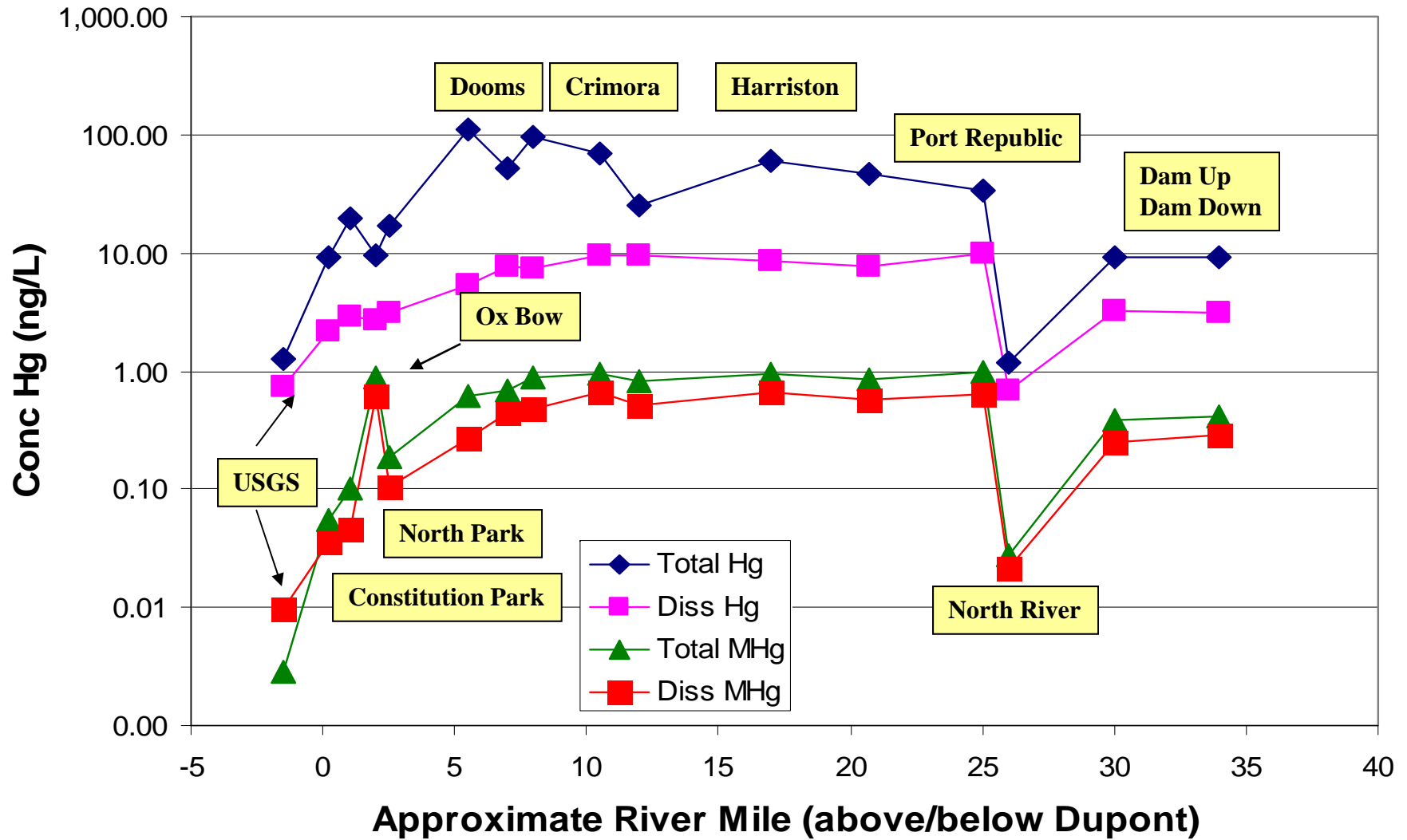
Expert’s Meeting

November 2004

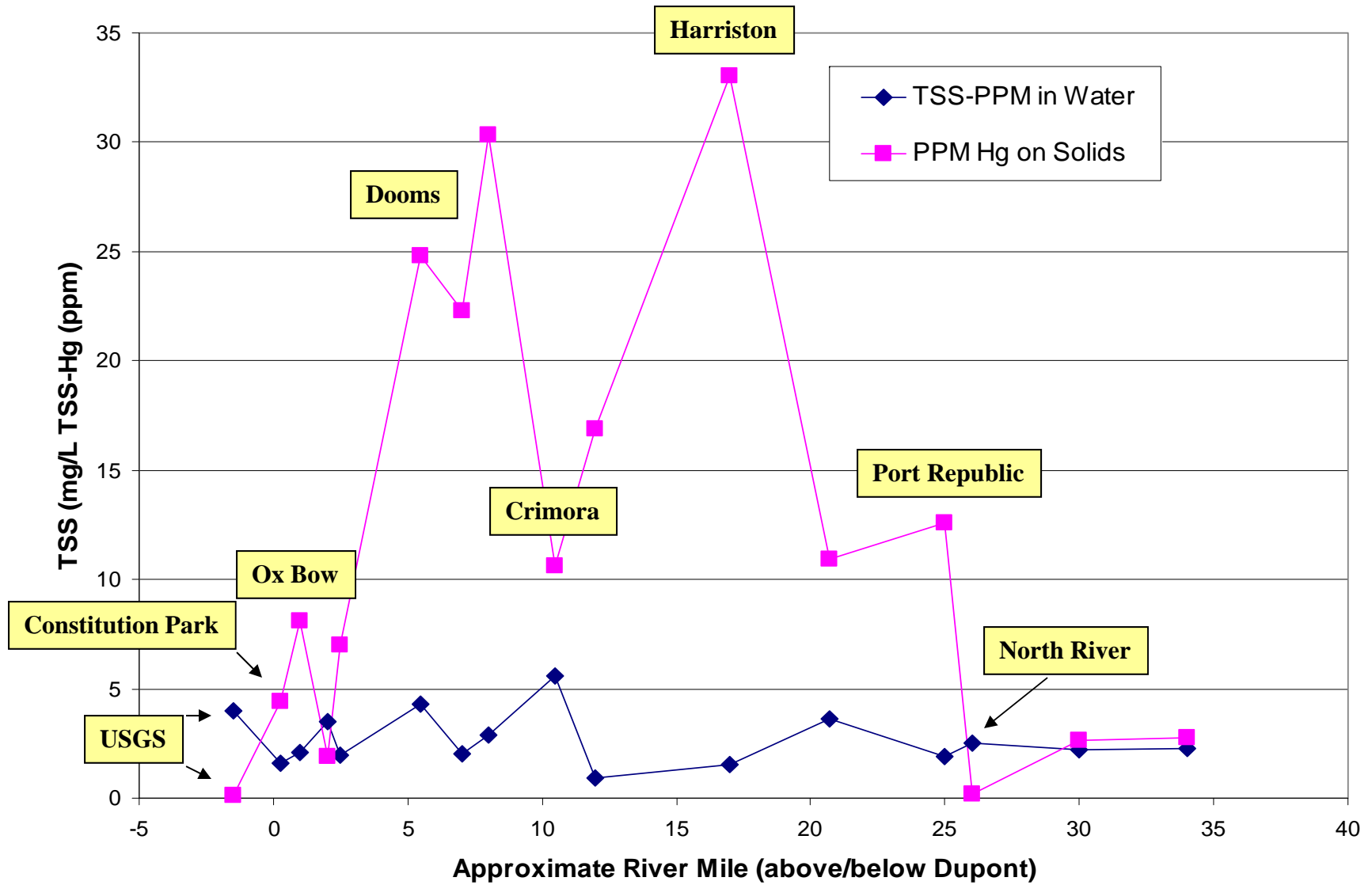
Items to Report

- Moderate flow sampling of South River
 - Total, dissolved, methyl, TSS, Hg on TSS
- Flood flow sampling of South River
 - Total, dissolved, TSS, Hg on TSS, some methyl
- Preliminary extraction experiments
 - Clean river water, Forestry soils, Ox Bow sediments

August 2004 "Moderate" Flow SW Scan

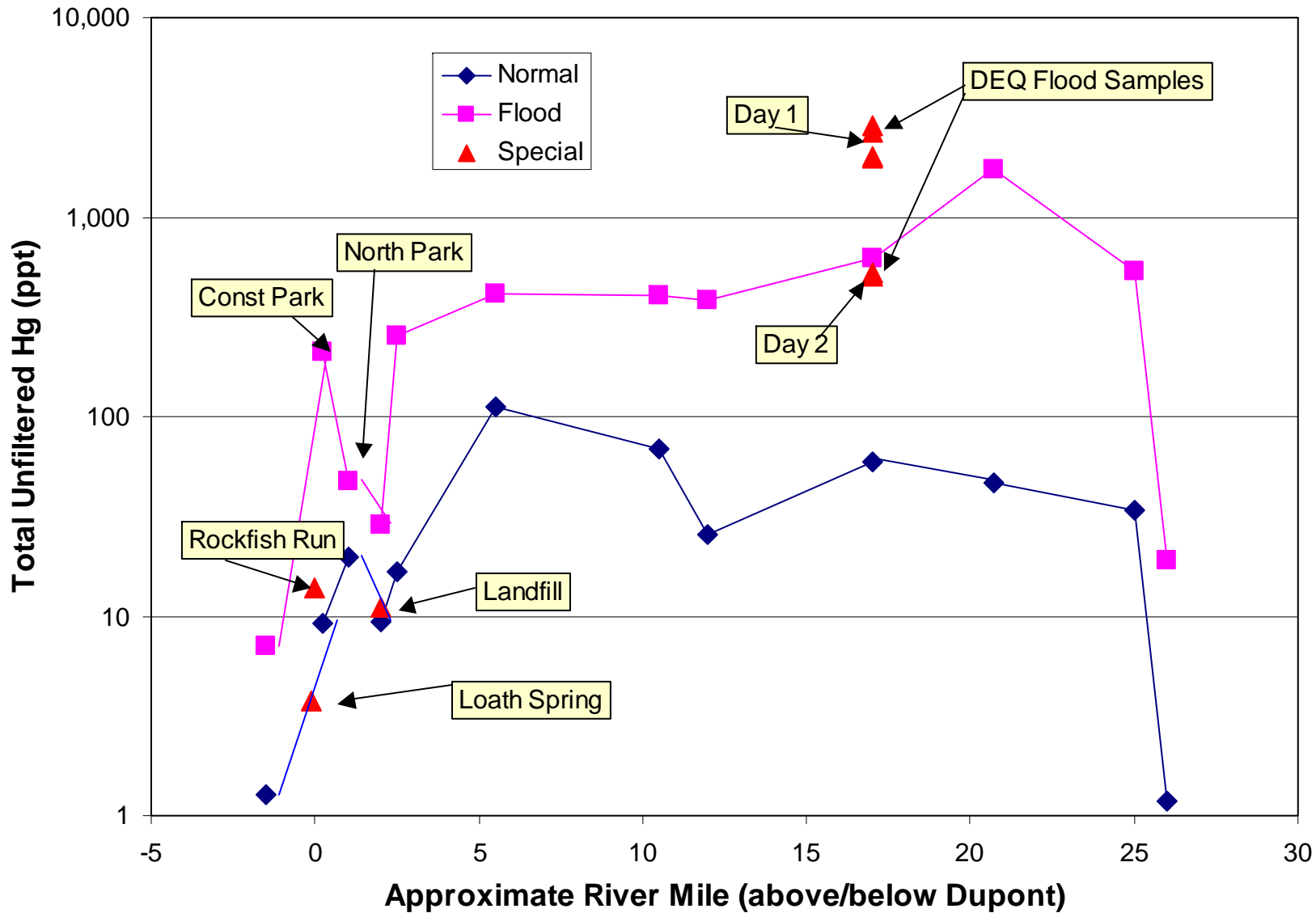


August 2004 Moderate Flow TSS Scan

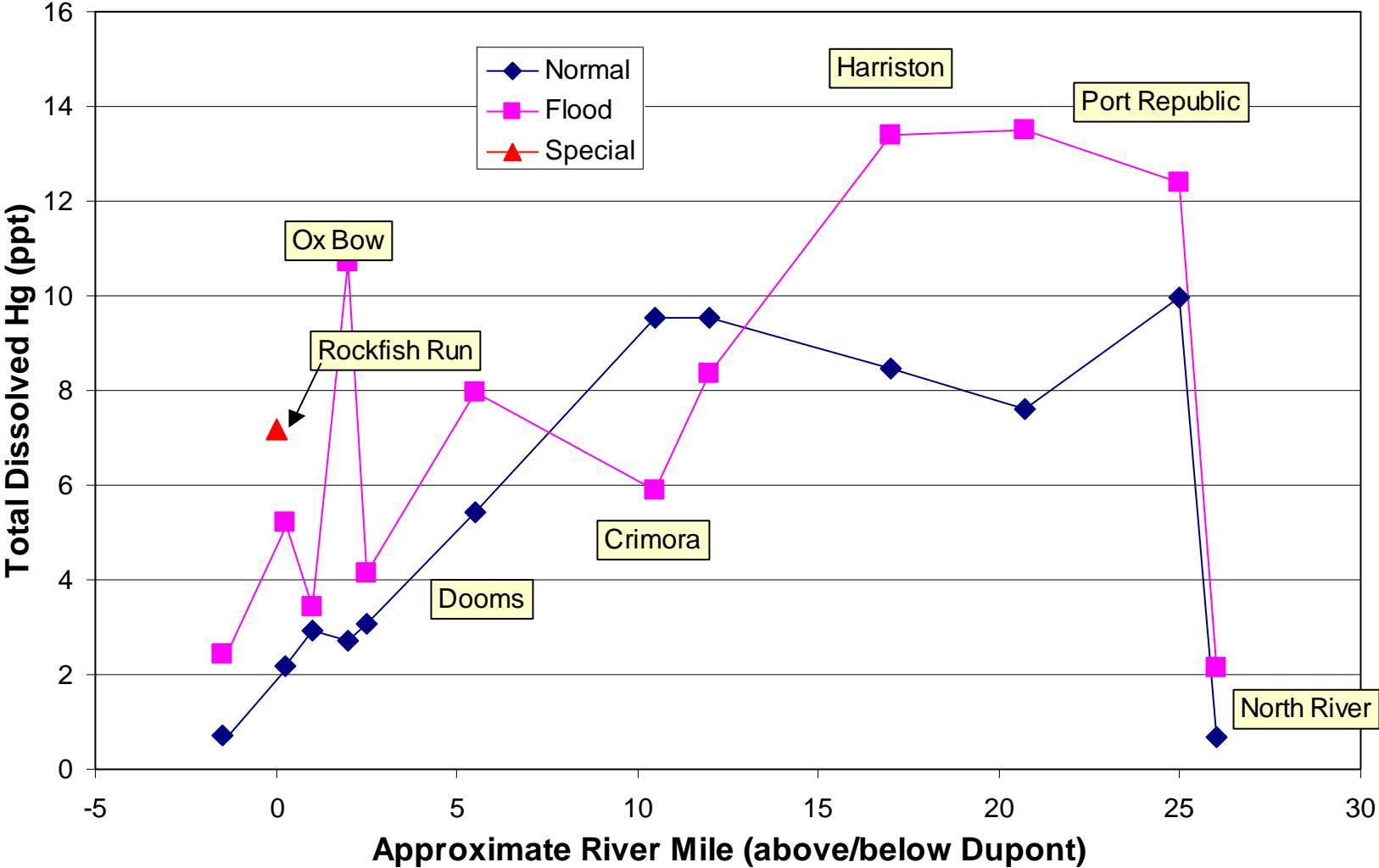


Total Unfiltered Hg

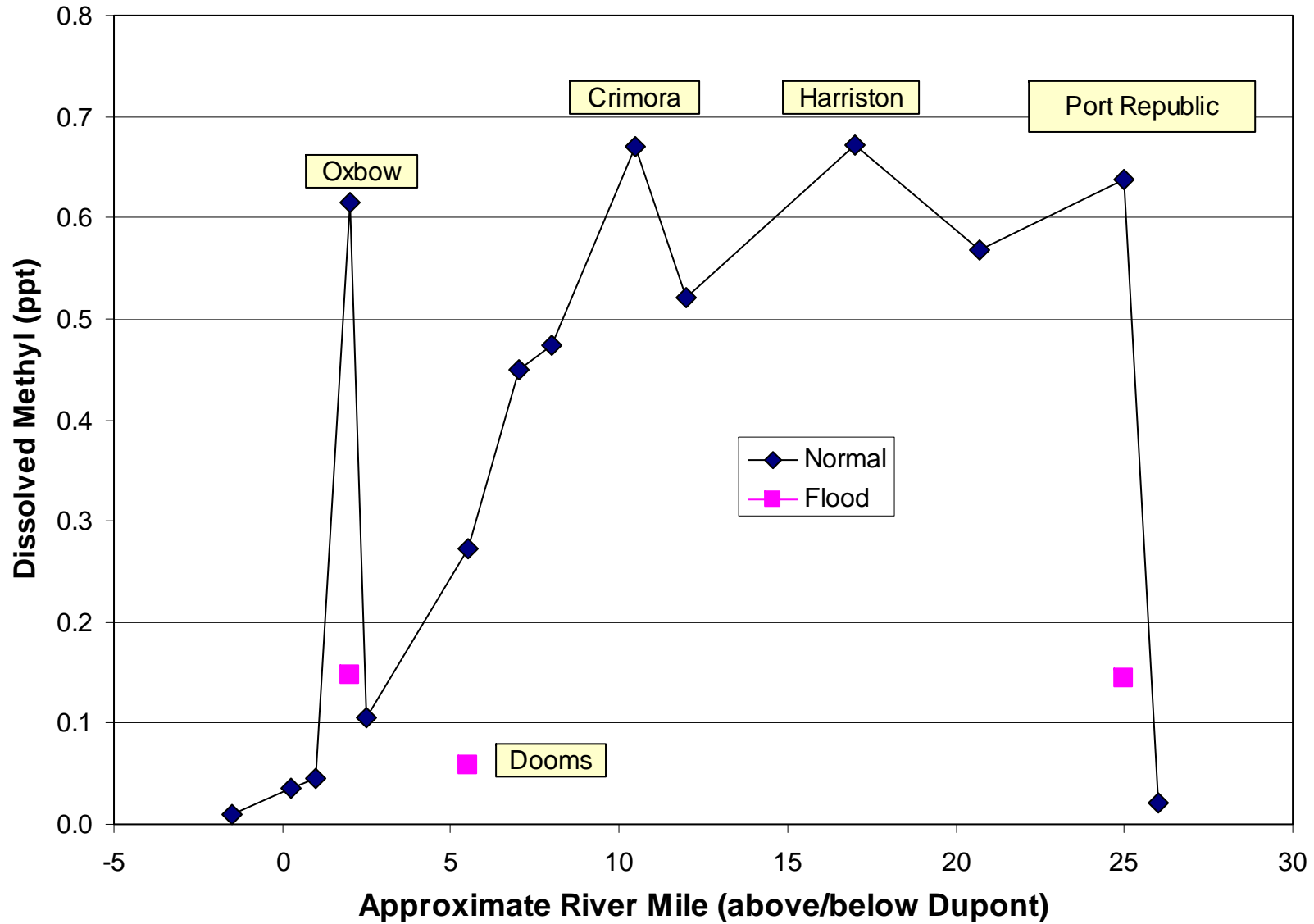
Comparison of Moderate Flow to Flood Flow



Dissolved Total Hg Comparison of Moderate Flow to Flood Flow

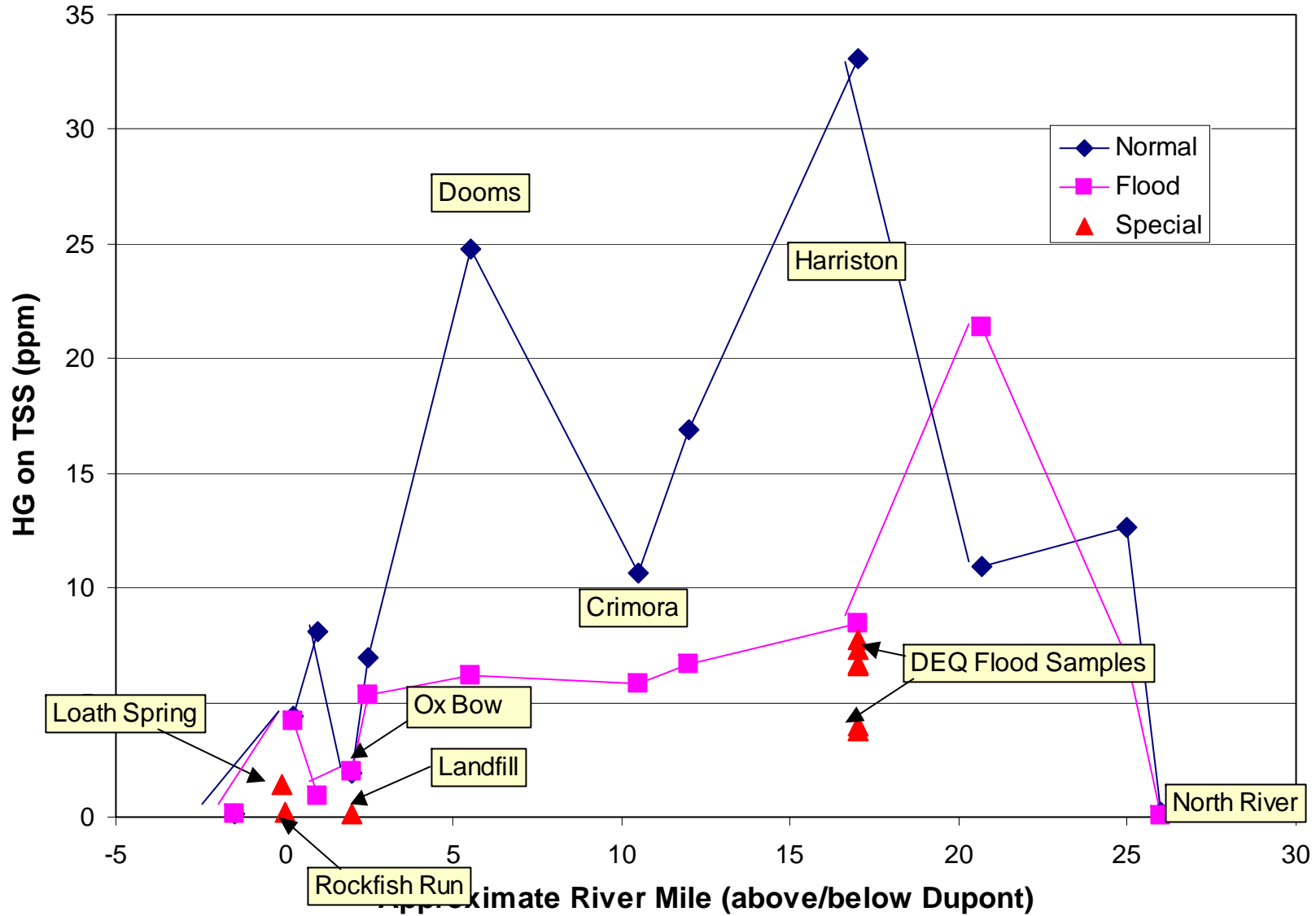


Dissolved Methyl Comparison of Moderate Flow to Flood Flow



HG on TSS

Comparison of Moderate Flow to Flood Flow



Preliminary SW Findings

- Dissolved forms of Hg in SW tend to increase with distance downstream from the plant and peak near Crimora and Harriston.
- Stormflow increased total Hg in SW at all locations significantly, especially downstream near Crimora/Harriston.
- Dissolved Hg in river water at all stations (except Crimora), including reference, was also higher during stormflow [most remarkable finding]

Soluble Hg Release From Soils

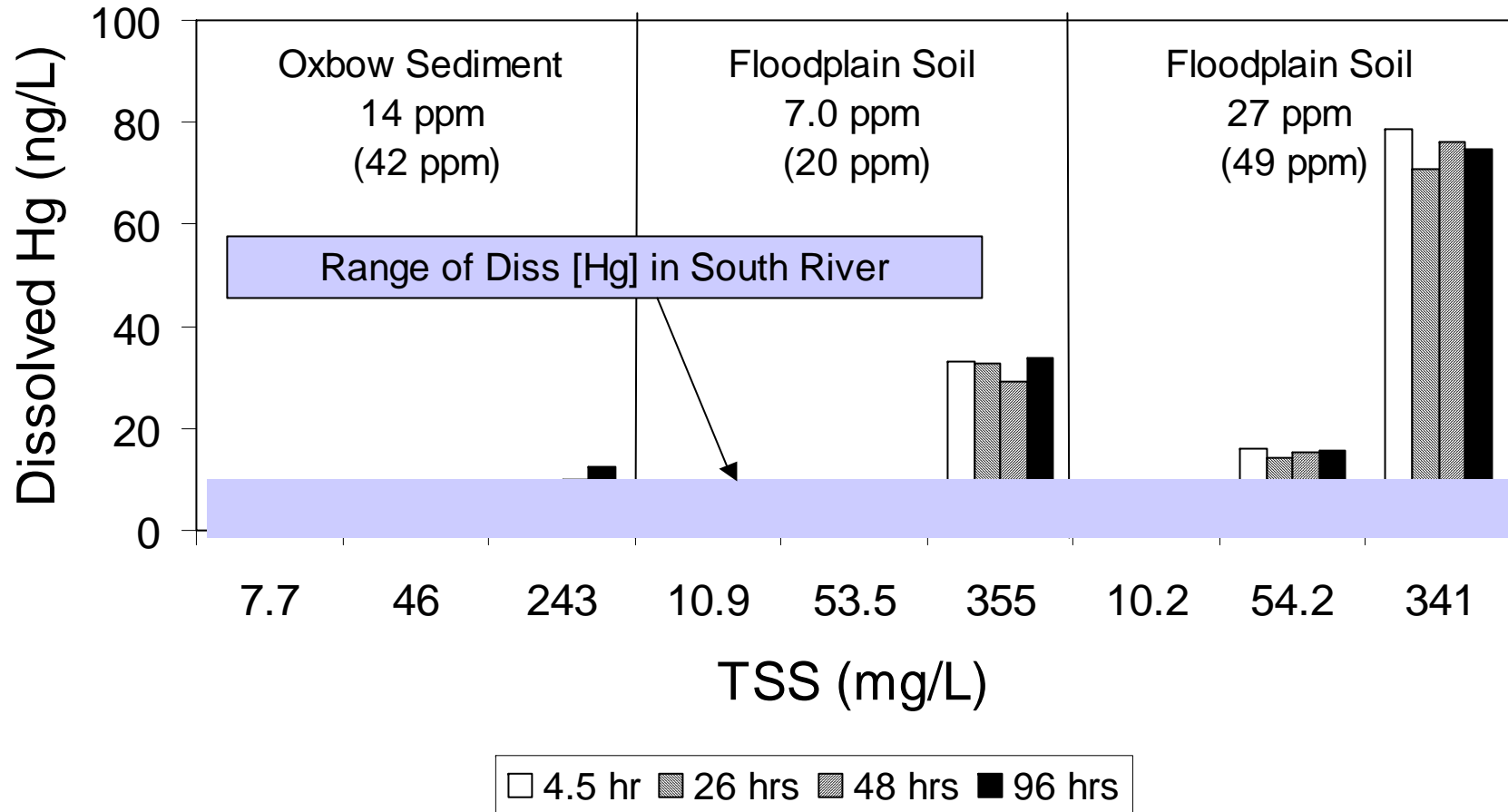
- Can significant amounts of dissolved Hg be released from eroded and transported soils from the floodplain?
- How do these amounts (concentrations) compare to dissolved mercury in the South River during low and storm flows?

Leaching Study

Experimental Design

- Two soils and one sediment selected for study at three suspended concentrations (TSS) and four elapsed “leaching” times.
- Suspended in filtered river water (0.5 ng Hg/L) collected upstream of Dupont plant.
- Measured dissolved Hg @ 4, 24, 48 and 96 hrs.
- Provides a “worst-case” scenario.

Hg Releases from TSS



Preliminary Leaching Conclusions

- The relative amounts of soil/sediment-bound mercury released into the river from historically-contaminated soils and sediments were very small but resulted in significant increases in dissolved Hg.
- Dissolved Hg concentrations from these “simulated” erosion/suspension events were similar to dissolved concentrations measured within the river during stormflow.
- At least some of the observed downstream increase in dissolved Hg during both low and storm flow may be explained by releases from eroded soils.