

Floodplain Soil Assessment

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The floodplain has been identified as a potentially significant residual source of mercury (Lawler, Matusky and Skelly, 1981). A critical issue was that this original dataset is now very old. In addition, although average concentrations are below health-based criteria, earlier datasets used a composite strategy that may not be adequate for current evaluations.

Recent sampling activities have taken a phased approach. In the spring of 2003, samples were collected at the Forestry station, primarily to support an understanding of whether mercury in the floodplain soils is available at levels that could present a health risk from vegetable ingestion. However, all data collected has been used to help understand the role of floodplain soils as a potential "source".

A second phase of sampling was performed in the summer/fall of 2004. The objectives of the current sampling were (1) to determine general "representative" levels of mercury in floodplain soils relative to data currently available and (2) to leverage this activity with data gathering for helping to refine the conceptual site model including potentially defining continuing sources.

In this most recent round of sampling, a statistical review of the available data was used to develop a scope that defined the number of sample sites and replicates. Fifteen sites along the South River from Waynesboro to the confluence in Port Republic were identified for sampling. At each site, specific locations were sampled. Typically, at each sample location a series of replicates were composited to a single sample using hand auger equipment. The majority of the samples were taken as surface samples (0-24"). A total of 12 separate sites were sampled 2004, with a total of 55 sample locations divided between the locations. Of these 55 locations, 23 were composited at two depths for representative concentrations. An additional 29 locations were sampled at 3 depths to further improve the conceptual model. Two 3 ft deep cores were obtained at one location and divided into 11 individual slices for analysis. And one eroded bank sample was obtained with 10 individual increments from water to top of bank. The core and bank

samples were obtained to improve the conceptual model. Most recently, in October 2004, two additional eroded bank samples were obtained, with results pending.

Results of other sampling events (Deep Cores taken in the Wetlands in 2002 and Greenway Sampling in 2003) will be included in the evaluation.

Not all results are available but the initial results are consistent with 1980 findings. Surface soils above Port Republic are order-of-magnitude 10 ppm dry wt but variable. Deeper soils are sometimes higher but not always. No high concentration bands have been found in eroded bank locations but such samples have been few. The most recent eroded bank samples will add to these datasets.

Path Forward:

- Get results for outstanding samples
- Review data for Conceptual Site Model refinement
- Statistical analysis by John Green
- Determine need for additional samples

- Prepare report