SITE Program Phase 2 Report: sampling information for samples shown in Figure 2.

2.2.1 Soil Sampling Sites

2.2.1.1 Winona

The Winona site in Winona, Missouri, was a wood treatment facility that had been remediated. Contaminants at the site included PCP, dioxin, diesel fuel, and PAHs. PCB concentrations are between 0.9 - 2.2 pg/g TEQ. Over a period of at least 40 years, these contaminants were deposited into an on-site drainage ditch and sinkhole. Areas of contaminant deposition (approximately 8,500 cubic yards of soils/sludge) were excavated in late 2001/early 2002. This material was placed into an approximately 2½-acre treatment cell located on facility property. During 2002/2003, material at the treatment cell was treated through addition of amendments (high-ammonia fertilizer and manure) and tilling. Final concentrations achieved in the treatment cell averaged 26 milligrams per kilogram (mg/kg) for PCP and from 8,000 to 10,000 for pg/g TEQ_{DF}. Samples used for this study from this site were obtained from the treatment cell after these concentrations had been achieved.

2.2.1.2 Solutia

The chemical production facility at the Solutia site in Nitro, West Virginia, is located along the eastern bank of the Kanawha River, in Putnam County, West Virginia. The site has been used for chemical production since the early 1910s. The initial production facility was developed by the U.S. government for the production of military munitions during the World War I era between 1918 and 1921. The facility was then purchased by a small private chemical company, which began manufacturing chloride, phosphate, and phenol compounds at the site. A major chemical manufacturer purchased the facility in 1929 from Rubber Services Company. The company continued to expand operations and accelerated its growth in the 1940s. A variety of raw materials has been used at the facility over the years, including inorganic compounds, organic solvents, and other organic compounds, including Agent Orange. Agent Orange is a mixture of chemicals containing equal amounts of two herbicides: 2,4-D (2,4 dichlorophenoxyacetic acid) and 2,4,5-T (2,4,5 trichlorophenoxyacetic acid). Manufacture of this chemical herbicide began at the site in 1948 and ceased in 1969. Dioxin contamination in the site soils was associated with the manufacture of 2,4,5-T, where dioxins are an unintentional by-product. The site has a dioxin profile from the ppt to low parts per billion (ppb) range. PCB concentrations ranged between 0.5 - 37 pg/g TEQ.

2.2.1.3 Tittabawassee River

The MDEQ sampled Tittabawassee River flood plain soils at three sites. The contamination source was possibly legacy contamination from chemical manufacturing. Individual samples were collected from two locations at Imerman Park in Saginaw Township. The first sample was taken near the boat launch, and the second sample was taken in a grassy area near the river bank. Previous analyses from these areas of this park indicated a range of PCDD/F concentrations from 600 to 2,500 pg/g. PCB concentrations were found to be between 1 and 8 pg/g TEQ. Individual samples were collected from two locations at Freeland Festival Park in Freeland, MI. The first sample was taken above the river bank, and the second sample was taken near a brushy forested area.

2.2.2 Sediment Sampling Sites

2.2.2.1 Newark Bay

Surrounded by manufacturing industries, Newark Bay is a highly contaminated area with numerous sources (sewage treatment plants, National Pollutant Discharge Elimination System discharges, and nonpoint sources). This bay is downstream from a dioxin Superfund site that contains some of the highest dioxin concentrations in the United States and also is downstream from a mercury Superfund site. The dioxin concentration in the area sampled for this demonstration was approximately 450 pg/g. PCB concentrations were found to be between 1 and 5 pg/g TEQ. Fine-grained sediments make up 50% to 90% of the dredged material. Average total organic carbon was about 4%.

2.2.2.2 Raritan Bay

Surrounded by industry and residential discharges, Raritan Bay has dioxin contamination, but to a lesser degree than Newark Bay. No major Superfund sites are located in the vicinity. Dioxin concentration should be significantly less than in Newark Bay. PCB concentrations were found to be around 2 pg/g TEQ. The fine-grained sediment and total organic carbon values were similar to percentages in Newark Bay.