

and PCBs tend to show increasing tissue concentrations with increasing fish age, and the highest concentrations of these chemicals are found in fishes at the top of the food web (i.e., piscivores such as smallmouth bass). The results of the electroshocking survey conducted in Gold Run Pond by EA (2000) for the former NAWC facility showed that the resident fish community consisted exclusively of small forage fishes and no large piscivores. This suggests that, based on the trophic level and size class of fish present in Gold Run Pond, fishes in the Pond have a low potential for bioaccumulating chemicals. This was substantiated by the relatively low concentrations of mercury found in fish tissue by EA (2000). It is likely that food web biomagnification of Aroclor[®] 1260 would be limited in a similar manner, based on fish trophic level and size class.

Although chromium, lead, mercury, and zinc are considered COPECs at the Former Delphi Interior and Lighting Systems Site, a primary source of these metals may be the former NAWC facility. As discussed previously, all four of these metals were identified by the Navy as chemicals of concern for the NAWC facility. These chemicals entered the Gold Run System via NAWC storm sewer discharges. The 1997 Navy storm drainage system investigation confirmed that concentrations of these four metals, as well as aluminum, were elevated in the drainage system, and this prompted subsequent cleanup activities by the Navy in 1998 and 1999, which resulted in lower concentrations of these contaminants.

Examination of the mercury data for sediments in Upper Gold Run and Gold Run Pond supports the hypothesis that the former NAWC facility was a major source of contaminants to the Gold Run System (see Tables 3 and 4). For example, at the two stations sampled in Upper Gold Run in 1994 (Stations SS-11-SD-1 and SS-11-SD-2), sediment mercury concentrations were less than 0.14 mg/kg. However, at the two stations sampled in 1998 (S11-7 and S11-8) following a release of mercury from the NAWC facility, mercury concentrations were considerably higher (i.e., 1.9–4.9 mg/kg). Likewise, in Gold Run Pond, mercury concentrations were less than 0.16 mg/kg in 1994 (at Stations SS-11-SD-3 and SS-11-SD-4), but were considerably higher in 1998, with three detected values ranging from 0.3 to 1.6 mg/kg (i.e., at Stations S11-3, S11-4, and S11-6). After 1998, mercury concentrations decreased following cleanup activities initiated by the Navy at the NAWC facility. For example, in Lower Gold Run, mercury concentrations in sediment decreased from 8.3 mg/kg in 1998 to 0.87 mg/kg in 1999.

Subsurface sediment (1 to 1.5 ft deep) of Lower Gold Run was sampled in 2004. These subsurface data were assessed in the BEE to evaluate the potential for risk to aquatic organisms from exposure to deep sediment if scouring were to occur in Gold Run as a result of an extreme high flow event. Copper and mercury were identified as COPECs in the underlying sediment.

In summary, environmentally sensitive areas at the Site include Gold Run, Gold Run Pond, the Southern Swale, and the forested riparian areas associated with these surface water features. Contaminant migration pathways exist from Site-related and offsite sources to these sensitive areas. Seven metals, and Aroclor[®] 1260 are considered COPECs at the Site based on conservative screening evaluations. However, a primary source of at least four of the metals of concern may have been the former NAWC facility, and some of these constituents have decreased in concentration subsequent to 1998 and 1999 when storm sewer cleanup activities were undertaken by the Navy at the NAWC facility.

With regard to Aroclor[®] 1260, this chemical was detected in sediment at elevated concentrations in two locations in 1994/1998 (Stations SS-11-SD-3 in Gold Run Pond and SS-11-SD-5 in Lower Gold Run), and in surface soil at individual locations (Station WSO4 in Area 11, and Station JSO4 in Area 8). Mean sediment concentrations ranged from 0.056 mg/kg Aroclor[®] 1260 in Upper Gold Run, to 3.2 mg/kg for Gold Run Pond, to 2.9 mg/kg for Lower Gold Run in the 1994/1998 sampling. However, in 2002 the mean sediment concentration of Aroclor[®] 1260 in Lower Gold Run was much lower, 0.072 mg/kg.

Mercury and Aroclor[®] 1260 are a potential ecological concern from a bioaccumulation standpoint. However, the results of a site-specific food-web modeling evaluation conducted by EA (2000) for the former NAWC facility and the composition of the resident fish community in Gold Run Pond (i.e., small forage fishes and no piscivores) suggest that it is unlikely that bioaccumulation of mercury is a significant problem. Similarly, based on the low trophic level and small size class of fish present in Gold Run Pond, these fish have a low potential for bioaccumulating other chemicals, such as PCBs. Therefore, it is also not likely that bioaccumulation and food web biomagnification of Aroclor[®] 1260 would be a significant concern. In addition, because of its small size (0.9-acre), Gold Run Pond supports a limited fish population and thus provides limited prey base for piscivorous wildlife. Therefore, potential exposure to bioaccumulative COPECs such as mercury and Aroclor[®] 1260 would be limited to a few prey fish, and individual wildlife predators that might incidentally forage at the Pond as part of their more widespread foraging activities. Foraging at Gold Run Pond by piscivorous wildlife is also likely to be limited because of the prevalence of higher quality habitat nearby (e.g., Lower Gold Run and the Delaware River). Such limited exposure would not likely result in population-level effects. Thus, it is unlikely that the COPECs at the Site would adversely affect populations of ecological receptors, and further investigations based on ecological considerations are not warranted.

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