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## Franklin Slag Pile (MDC)

*Philadelphia, Pennsylvania*

*EPA Facility ID: PASFN0305549*

*Basin: Lower Delaware*

*HUC: 02040202*

### Executive Summary

The Franklin Slag Pile site encompasses approximately a 1.6-ha (4-acre) lot in Philadelphia, Pennsylvania, that contains approximately 52,000 m<sup>3</sup> (68,000 cy) of copper slag. While the site was active, slag material was observed in areas outside the property boundaries, including storm drains that discharge to the Delaware River and into a nearby lagoon and wetland area. Lead and copper are the primary contaminants of concern to NOAA. Surface water runoff is the primary pathway for the migration of contaminants from the site to NOAA trust resources. The habitat of primary concern to NOAA is the Delaware River, which is less than 0.4 km (0.25 mi) southeast of the site and provides habitat for NOAA trust resources, including anadromous, catadromous, and marine fish species.

### Site Background

The Franklin Slag Pile (MDC) site, referred to here as the Franklin site, encompasses approximately a 1.6-ha (4-acre) lot in the Port Richmond section of northeast Philadelphia, Pennsylvania (Figure 1). The Franklin site is bordered to the northeast and northwest by a lagoon and wetland area that belong to the Philadelphia Water Department (PWD) (Figure 2). The Delaware River is less than 0.4 km (0.25 mi) southeast of the site (USEPA 2006a).

The Franklin site consists of a waste pile that contains approximately 52,000 m<sup>3</sup> (68,000 cy) of copper slag. The slag, a byproduct of copper smelting at the adjacent Franklin Smelting and Refining Corporation, was purchased by a company called MDC and stored at the site until it could be physically treated and resold for use as a sandblast material or in asphalt roofing materials. MDC ceased operations and abandoned the site in 1999 (USEPA 2008).

While MDC was operating, slag was observed in areas outside of the property boundaries, including slag in storm drains along Castor and Delaware Avenues, which empty directly into the Delaware River, and in the adjacent lagoon and wetland area owned by the PWD (Tetra Tech 2001). Before its operations ceased at the site, MDC was cited by the U.S. Environmental Protection Agency (USEPA) Region III Water Protection Division for releasing lead into stormwater runoff (USEPA 2006a). Surface water runoff is the primary pathway for the migration of contaminants from the site to NOAA trust resources.

In 2000, an emergency response action led by the USEPA was initiated at the site. During the response action, a thick plastic cover was placed over the slag pile; equipment stored in the slag pile was decontaminated, and visible slag contamination that had migrated outside the property boundaries was removed (USEPA 2006a).

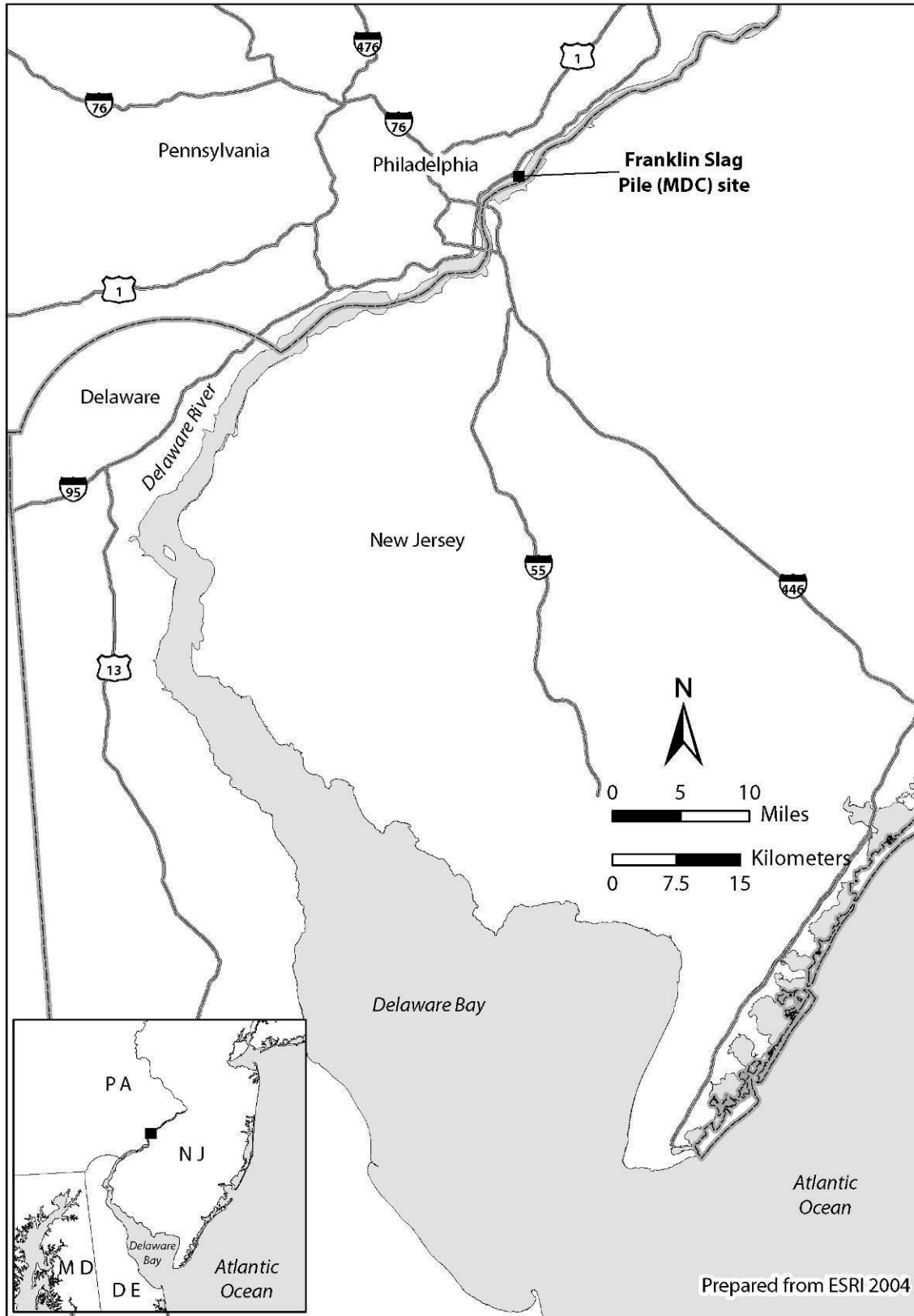


Figure 1. Location of the Franklin Slag Pile (MDC) site in Philadelphia, Pennsylvania.

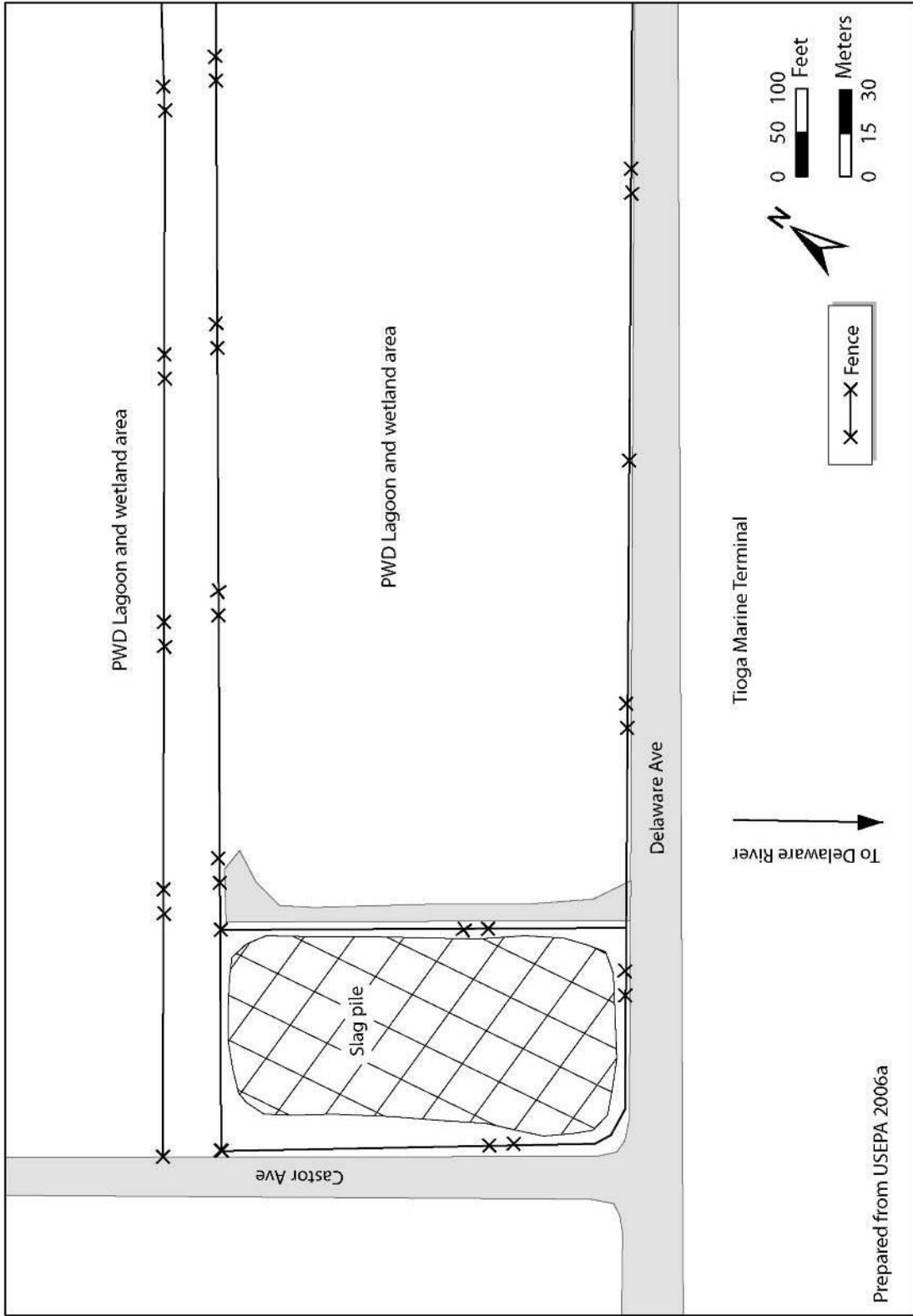


Figure 2. Detail of the Franklin Slag Pile (MDC) property.

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The Franklin Slag Pile (MDC) site was placed on the USEPA's National Priorities List in 2002. The USEPA began a remedial investigation/feasibility study at the site in May 2002, and these activities are still underway; results from this investigation were not available at the time this report was prepared (USEPA 2007, 2008).

### NOAA Trust Resources

The Delaware River is the habitat of primary concern to NOAA. The section of the Delaware River near Philadelphia is tidally influenced fresh water. Salinity concentrations in this area are nearly zero, and there are moderate amounts of suspended sediment (Sutton et al. 1996).

The Delaware River provides spawning, nursery, and adult habitat to several NOAA trust resources, including anadromous, catadromous, and marine fish species (Table 1). Alewife, American eel, American shad, blueback herring, and striped bass are commonly present in the Delaware River near the site (Kaufmann 2001). Atlantic menhaden are occasionally found in the area (Kaufmann 2001), and Atlantic sturgeon, a state endangered species in Pennsylvania, use habitat in the Delaware River near the site (PFBC 2007). There are no dams on the Delaware River that block the movement of anadromous or catadromous species near the site.

Table 1. NOAA trust resources present in the Delaware River near the Franklin Slag Pile site (O'Herron et al. 1994; Dove and Nyman 1995; Sutton et al. 1996; Kaufmann 2001).

Species		Habitat Use			Fisheries	
		Spawning Area	Nursery Area	Adult Habitat	Comm.	Rec.
Common Name	Scientific Name					
<b>ANADROMOUS FISH</b>						
Alewife	<i>Alosa pseudoharengus</i>	◆	◆	◆		
American shad	<i>Alosa sapidissima</i>		◆	◆		◆
Atlantic sturgeon	<i>Acipenser oxyrinchus</i>	◆	◆	◆		
Blueback herring	<i>Alosa aestivalis</i>	◆	◆	◆		
Striped bass	<i>Morone saxatilis</i>	◆	◆	◆		◆
White perch	<i>Morone americana</i>	◆	◆	◆		◆
<b>CATADROMOUS FISH</b>						
American eel	<i>Anguilla rostrata</i>		◆	◆		
<b>MARINE/ESTUARINE FISH</b>						
Atlantic menhaden	<i>Brevoortia tyrannus</i>		◆	◆		
Bay anchovy	<i>Anchoa mitchilli</i>		◆	◆		
Hogchoker	<i>Trinectes maculatus</i>		◆	◆		
Inland silverside	<i>Menidia beryllina</i>		◆	◆		
<b>INVERTEBRATES</b>						
Blue crab	<i>Callinectes sapidus</i>		◆	◆		◆

Atlantic sturgeon and striped bass spawn approximately 32 km (20 mi) downstream of the site across the Delaware state line (Dove and Nyman 1995; Sutton et al. 1996). Alewife, blueback herring, and white perch spawn in the freshwater Delaware River near the site (O'Herron et al. 1994; Sutton et al. 1996). American eel spawn in the Atlantic Ocean, and juvenile and adult eel then migrate throughout the Delaware River basin. Atlantic menhaden spawn in salt water and migrate into the tidal freshwater Delaware River as juveniles (Sutton et al. 1996). Bay anchovy, hogchoker, and inland silverside spawn downstream of the site in Delaware Bay; as juveniles, these species mature in areas of lower salinity such as those near the site (Dove and Nyman 1995). Blue crab also spawn downstream of the site in Delaware Bay, and adult and juvenile blue crab are found throughout the tidally influenced portion of the Delaware River (Dove and Nyman 1995).

There are no commercial fisheries near the site, although commercial fishing occurs downstream in Delaware Bay. Recreational fishing for American shad, blue crab, striped bass, and white perch occurs on the Delaware River (Dove and Nyman 1995).

A fish consumption advisory is in effect for the tidally influenced portion of the Delaware River because of polychlorinated biphenyl (PCB) contamination (PADEP 2007). The advisory recommends that consumption of channel catfish, flathead catfish, striped bass, and white perch be limited to one meal per month. The advisory also recommends no human consumption of American eel and carp.

### **Site-Related Contamination**

Samples of surface water runoff (i.e., stormwater), soil, and waste slag were collected at the Franklin site during multiple sampling events between 1994 and 2000 (USEPA 1994; Weston 2000). The samples were analyzed for selected metals. The primary contaminants of concern to NOAA are lead and copper.

Table 2 summarizes the maximum concentrations of contaminants of concern to NOAA detected during the site investigations and compares them to relevant screening guidelines. Site-specific or regionally specific screening guidelines are always included when available. In the absence of such guidance, the screening guidelines for surface water are the USEPA ambient water quality criteria (AWQC; USEPA 2006b), and the screening guidelines for soil are the Oak Ridge National Laboratory final preliminary remediation goals (ORNL-PRGs; (Efroymson et al. 1997). Exceptions to these screening guidelines, if any, are noted on Table 2. Only maximum concentrations that exceeded relevant screening guidelines or for which no screening guidelines are currently available, discussed below. When known, the general sampling locations are also provided (refer to Figure 2).

#### Surface Water

Lead was detected in surface water samples collected from the Franklin site at a maximum concentration that exceeded the AWQC by three orders of magnitude (Table 2). The maximum concentration of lead was detected in a sample of stormwater runoff collected adjacent to the slag pile.

#### Soil

Three metals were detected in soil samples collected from the Franklin site at maximum concentrations that exceeded the ORNL-PRGs (Table 2). The maximum concentrations of beryllium, copper, and lead were detected in samples collected from around the perimeter of

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the slag pile. Maximum concentrations of copper and lead exceeded the ORNL-PRGs by two orders of magnitude, and beryllium exceeded the ORNL-PRG by one order of magnitude.

### Slag

Beryllium, copper, and lead were detected in samples collected from the slag pile. No screening guidelines are available for comparison to the maximum concentrations of these metals detected in this type of material.

Table 2. Maximum concentrations of contaminants of concern to NOAA at the Franklin Slag Pile (MDC) site (USEPA 1994; Weston 2000). Contaminant values in bold exceed or are equal to screening guidelines.

Contaminant	Waste Material (mg/kg)	Soil (mg/kg)		Water (µg/L)	
	Slag	Soil	ORNL-PRG <sup>a</sup>	Surface Water	AWQC <sup>b</sup>
<b>METALS/INORGANICS</b>					
Beryllium	130	<b>110</b>	10	ND	NA
Copper	17,000	<b>24,000</b>	60	ND	9 <sup>c</sup>
Lead	9,100	<b>6,700</b>	40.5	<b>7,000</b>	2.5 <sup>c</sup>

a: Oak Ridge National Laboratory (ORNL) final preliminary remediation goals (PRG) for ecological endpoints (Efroymson et al. 1997).

b: Ambient water quality criteria for the protection of aquatic organisms (USEPA 2006b). Freshwater chronic criteria presented.

c: Criterion expressed as a function of total hardness; concentrations shown correspond to hardness of 100 mg/L CaCO<sub>3</sub>.

NA: Screening guidelines not available.

ND: Not detected.

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