Preassessment Screen Determination for the DuPont Pompton Lakes Works Site and Environs
Passaic County, New Jersey

Issued by the:

United States Department of the Interior

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And

National Park Service

In its Capacity as Natural Resource Trustee

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I. INTRODUCTION, AUTHORITIES, AND DELEGATIONS

This determination concerns potential claims for damages pertaining to injured natural resources at the DuPont Pompton Lakes Works (PLW) site and adjacent ecosystems, as authorized by Section 107(f) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended (42 United States Code (USC) § 9607(f)), and the Clean Water Act (CWA) (33 USC § 1251 et seq.). There is a strong likelihood that a claim for damages to natural resources within the trusteeship of the United States Department of the Interior ("DOI"), acting through the U.S. Fish and Wildlife Service (USFWS) and the National Park Service (NPS), exists in this case, based on a review of relevant information gathered as of this date.

This determination was prepared by DOI, under the authority of Section 107(f) of CERCLA; the National Contingency Plan, Title 40 Code of Federal Regulations (CFR), Part 300; the DOI Natural Resource Damage Assessment (NRDA) Regulations, Title 43 CFR Part 11; and other applicable federal and state regulations and directives which serve to designate federal, state, and tribal natural resource trustees and which authorize the recovery of natural resource damages.

The first step in developing a natural resource damage claim is the preparation of a Preassessment Screen (PAS). The purpose of a PAS is to provide a review of readily available information on hazardous substance releases and the potential impacts of those releases on natural resources under the trusteeship of federal, state and tribal authorities. The review should ensure there is a reasonable probability of making a successful claim against the responsible party(ies) for releasing hazardous substances into the environment. This determination is made to ensure that money and effort will be expended appropriately in moving forward with a NRDA, as required by 43 CFR § 11.23. For the PLW and environs specifically, DOI has determined that:

1. A release of hazardous substances has occurred;
2. Natural resources for which DOI may assert trusteeship under CERCLA, CWA, and other applicable federal laws, as well as state law statutory and common law claims, have been or are likely to have been adversely affected by the discharge or release;
3. The quantity and concentration of the released hazardous substance is sufficient to potentially cause injury to natural resources;
4. Data sufficient to pursue an assessment are readily available or likely to be obtained at a reasonable cost; and
5. Response actions carried out or planned, if any, do not or will not sufficiently remedy the injury to natural resources without further action.

INFORMATION ON SITE AND DISCHARGE OR RELEASE

A. DuPont Pompton Lakes Work Site Background and History

The PLW covers approximately 570 acres within the Borough of Pompton Lakes, Passaic County, New Jersey (Figure 1), from which the facility takes its name. The landscape consists of northeast trending ridges and valleys, and is drained by the Wanaque and Ramapo Rivers. The surrounding land use is mainly residential and commercial, although the site is bordered to the northeast and east by Ramapo Mountain State Forest, which contains deciduous forest and some deciduous wooded wetlands. A National Historic Trail, the Washington-Rochambeau Revolutionary Route, is also located in the vicinity, as are various undeveloped areas.

The PLW facility is situated along an intermittent stream, Acid Brook, which enters Pompton Lake along the western bank at a shallow delta called the Acid Brook Delta (ABD) (Figure 2). Pompton Lake was formed by the damming of the Ramapo River, which enters the Lake at the northeast end, in the Borough of Oakland. The eastern half of the Lake is located in the Borough of Wayne. About 1.5 miles downstream of the Pompton Lake Dam, the Ramapo River empties into the Pompton River. The Pompton River flows into the Passaic River, which empties into Newark Bay.

Explosives were manufactured at the PLW facility between 1902 and 1994 (USEPA 2011). Operations included the production of gunpowder, blasting caps, detonating fuses, boosters, primer, and hand grenades (Marples 2008). Wastes generated include lead salts, mercury compounds, and chlorinated solvents, which were used to degrease and clean machines used in the manufacturing process (Pompton Lakes Works Remediation Project Information Center 2013).

Preliminary investigations conducted from 1981 through 1986 found that volatile organic compounds (VOCs), including tetrachloroethene and trichloroethene, were released at the PLW and had entered groundwater. As a result, DuPont and the NJDEP signed an Administrative Consent Order (ACO) in 1988 to conduct a remedial investigation of contamination originating from the PLW (Pompton Lakes Works Remediation Project Information Center 2013). In 1998, DuPont installed a system to pump and treat groundwater; a monitoring program continues to evaluate the effectiveness of treatment. Approximately 439 residences are potentially affected by vapor intrusion through the groundwater plume (USEPA 2011). As of July 2013, indoor air sampling for vapor intrusion had been performed at 390 residences and a total of 304 mitigation systems had been installed (DuPont Pompton Lakes Works Remediation Project Information Center 2013).

Releases of lead and mercury to Acid Brook have led to the remediation of contaminated soil at approximately 140 homes along the Brook (USEPA 2011). Hazardous substances have also been discharged via Acid Brook into the ABD and have migrated downstream, although the overall nature and extent of contamination has not yet been determined.

Remediation of sediment in Acid Brook was completed in 1996. The U.S. Environmental Protection Agency (EPA) is overseeing the development of a Remedial Action for the ABD area of Pompton Lake. Additional investigations are planned for the area of Pompton Lake downstream of the ABD to the Pompton Lake dam. As of yet, EPA has not delineated the extent of contamination sufficiently to identify where contamination from the PLW has come to be located.

B. Contaminants of Concern

The primary contaminants of concern (COCs) for the PLW and environs are mercury, other metals (particularly copper and lead), and VOCs, which have been measured at concentrations exceeding environmental standards and/or guidelines. VOCs are mainly a concern in groundwater, while mercury and lead have contaminated soil and sediment in the vicinity of the PLW, in the ABD, and in Pompton Lake, although the full extent of contamination is unknown. Mercury and lead may also have moved downstream; further investigation is needed to determine both the vertical and horizontal extent of contamination within and beyond Pompton Lake.

Mercury

Mercury is naturally found in the environment as elemental or metallic mercury, inorganic mercury compounds, and organic mercury compounds (USEPA 2012a). It is a heavy metal whose properties make it valuable in the technological and manufacturing industries (Washington State Department of Ecology and Washington State Department of Health 2003). Mercury that enters water can be transformed by microorganisms into methylmercury, the most toxic form (USEPA 2012a). Methylmercury is moderately lipophilic (soluble in fats) and hydrophilic (soluble in water), which allows it to enter the aquatic food chain rapidly and to bioaccumulate, or increase in concentration as it moves up the food chain (New Jersey Mercury Task Force 2002). Thus, organisms higher in the food web are particularly susceptible to harmful effects of mercury, including developmental, neurological, physiological, and behavioral abnormalities and impaired reproduction and survival (see reviews in Eisler 1987; Wolfe *et al.* 1998; NJ Mercury Task Force 2002; and Scheuhammer *et al.* 2007).

Copper and Lead

Copper may be present in a variety of forms, which vary in solubility and toxicity. Factors including pH, temperature, and organic carbon content affect the solubility and form of copper present in the environment (Eisler 1997), with some forms being very toxic to aquatic life (Commonwealth of Australia 2010). At pH > 6.0, copper carbonate complexes, which are much less toxic than other forms, generally dominate (Eisler 1997). Copper in sediment and soil typically binds to inorganic and organic particles, forming soluble or insoluble compounds, depending on what it is bound to (USEPA 2007; Commonwealth of Australia 2010). Sediment-bound copper may still accumulate in deposit-feeding organisms such as clams, and copper has been shown to accumulate in fish (Commonwealth of Australia 2010).

Lead is likely to accumulate in sediment by forming insoluble sulfide complexes, particularly under anaerobic conditions and when the sediment has a high organic content (Commonwealth of Australia 2010). In such forms, it is relatively immobile, except under low pH or high flow conditions; however, it may be methylated through chemical and microbial processes, making it more available and toxic to biota (Eisler 1988). In water, lead chemistry and solubility are pH dependent; lead is most bioavailable when pH and mineral salt and suspended solid concentrations are low. Lead in soil forms complexes with organic matter and clay minerals, limiting its mobility, but it may leach from soil under acidic conditions (USEPA 2005a). Lead has been shown to accumulate in a variety of living organisms (Eisler 1988; Commonwealth of Australia 2010).

VOCs

VOCs are a group of chemicals that are most commonly found in chlorinated solvents and fuel products. VOCs such as tetrachloroethylene, trichloroethylene, 1,2-dichloroethane, and methylene chloride, which have been detected in groundwater in the vicinity of the PLW, typically evaporate easily from surface water and do not readily adsorb to soil or sediment particles (National Library of Medicine 2011; Commonwealth of Australia 2010). These VOCs often migrate away from their source through groundwater (Commonwealth of Australia 2010). Methylene chloride and 1,2-dichloroethane are not thought to be bioaccumulative, but tetrachloroethylene and trichlorethylene may bioaccumulate to some extent in fish and demonstrate moderate toxicity to aquatic life (Commonwealth of Australia 2010). VOCs may cause health effects in humans and are primarily of concern with respect to groundwater resources.

C. Potentially Responsible Parties

The DuPont Corporation is the only identified Responsible Party for the PLW. DuPont is working with EPA and the State of New Jersey to develop a remedial action plan for the ABD and Pompton Lake.

D. Damages Excluded from Liability under CERCLA or CWA

The regulations at 43 CFR Part 11.24 (b&c) state that DOI must determine whether damages from the release of hazardous substances are barred by specific defenses or exclusions from liability under CERCLA or the CWA. The required determinations are as follows:

The Trustee(s) must determine whether: (i) damages resulting from the discharge or release were specifically identified as an irreversible and irretrievable commitment of natural resources in an environmental impact statement or other comparable environmental analysis, that the decision to grant the permit or license authorizes such commitment of natural resources, and that the facility or project was otherwise operating within the terms of its permit or license, so long as, in the case of damages to an Indian tribe occurring pursuant to a federal permit or license, the issuance of that permit or license was not inconsistent with the fiduciary duty of the United States with respect to such Indian tribe; or (ii) the release of a hazardous substance from which the damages have resulted has not occurred wholly before the enactment of CERCLA; or (iii) damages resulted from the application of a pesticide product registered under the Federal Insecticide, Fungicide, and Rodenticide Act, 7 USC § 135-135k; or (iv) damages resulted from any other federally permitted release, as defined in Section 101(10) of CERCLA; or (v) damages resulted from the release or threatened release of recycled oil from a service station dealer described in Section 9607(a)(3) or (4) of CERCLA if such recycled oil is not mixed with any other hazardous substance and is stored, treated, transported or otherwise manage in compliance with regulations or standards promulgated pursuant to Section 6935 of the Solid Waste Disposal Act and other applicable authorities.

The Trustee(s) must also determine whether the discharge meets one or more of the exclusions provided in Section 311(a)(2) or (b)(3) of the CWA.

DOI has determined that the potential injuries as cited are not subject to the exceptions to liability under CERCLA Section 107(f), (i-j) and 114(c) and CWA Section 311 (a)(2) or (b)(3). Therefore, the continuation of an assessment is not precluded.

II. PRELIMINARY IDENTIFICATION OF RESOURCES POTENTIALLY AT RISK

A. Potentially Affected Resources

Numerous trust resources in the ABD and Pompton Lake, including organisms such as benthic invertebrates, fish, reptiles, birds, and mammals, and the habitats that support them (e.g., soil and sediment); ground water; and surface water may have been affected by releases of hazardous substances at the PLW. Mercury has been detected at levels of concern in sediment, surface water, soils, benthic invertebrates, and fish. Lead has been detected at levels of concern in soil, sediment and surface water. Elevated concentrations of VOCs have been measured in groundwater and surface water. The degree to which trust resources in the Ramapo River downstream of the Lake have been exposed to releases of hazardous substances from the PLW has not been thoroughly investigated.

Groundwater

Groundwater movement under the PLW and environs is controlled primarily by topography (USEPA 2005b). The PLW is located within a valley characterized by bedrock ridges located in the northern and middle portions of the Site that slope southward, opening to a flat plain in the southern portion of the PLW Site. Accordingly, groundwater flows south through the Acid Brook valley, then southeast from the southern plant region, ultimately discharging into Pompton Lake.

Groundwater sampling has identified a chlorinated solvent plume containing tetrachloroethene, trichloroethene, 1,2-dichloroethane, various isomers of dichloroethene, and other VOCs. In addition, vapor intrusion from contaminated groundwater has impacted off-site residences (USEPA 2011). Low concentrations of several VOCs have also been detected in surface water, reflecting groundwater-surface water transport (USEPA 2005b).

Surface Water

Pompton Lake is classified by the State of New Jersey as FW-2(NT), indicating it is freshwater non-trout, not "Outstanding National Resource Water" (ONRW) (NJDEP 2011a). This classification means that although it is not suitable for trout, it may be suitable for a variety of other fish species. Designated uses of FW-2(NT) waters are:

1. Maintenance, migration, and propagation of the natural and established biota;
2. Primary and secondary contact recreation;
3. Industrial and agricultural water supply;
4. Public potable water supply after conventional filtration treatment (a series of processes including filtration, flocculation, coagulation, and sedimentation, resulting in substantial particulate removal but no consistent removal of chemical constituents) and disinfection; and
5. Any other reasonable uses.

Pompton Lake is not currently used as a drinking water source, and swimming is prohibited as a result of fecal coliform bacteria concentrations (Arcadis *et al.* 2010).

Surface water bodies in addition to Pompton Lake that are potentially impacted by releases at the PLW include the Ramapo, Pompton, and Passaic Rivers. However, sampling to date has focused almost exclusively on Acid Brook and Pompton Lake; little information is available regarding contaminant concentrations in surface water downstream of the Pompton Lake Dam.

Sediment and Soil

Sediment, like surface water, serves as a medium for the transport of energy and nutrients and as habitat for various biota including benthic finfish and shellfish species. Contaminated sediment is often the source of hazardous substances entering the food chain through the absorption and ingestion of sediment by benthic invertebrates and fish. Sediment in the ABD and Pompton Lake has been contaminated with mercury, copper, and lead. Although the highest concentrations are overlain by cleaner sediments in most areas of the Lake, sediments at or just below the surface are often more prone to methylation and therefore typically contain the more bioavailable fraction of heavy metal contamination, particularly with respect to mercury. In addition, bathymetric studies of the Lake have identified areas of scour, potentially providing a source of contamination to sediment in the Ramapo River downstream (USEPA 2012b).

Investigations at the PLW and environs have also measured the concentrations of COCs in soil. These evaluations have included upland habitats within the PLW facility as well as areas encompassing what would be considered wetland or wetland transitional habitats (e.g., ABD uplands) (USFWS 2011). Habitat designations (i.e., soil or sediment) made in the original source documents are included in this PAS, although some areas described as soil may be sufficiently inundated by water to warrant evaluation using sediment screening values (USEPA 2005c). Therefore, both soil and sediment guidelines were used in this PAS to evaluate concentrations of COCs in samples likely to have been taken in wetland soils.

Benthic Invertebrates and Fish

A benthic community study completed in 1998 found that organisms in the sediments of Pompton Lake consisted primarily of chironomids (flies) and oligochaetes (worms), as is typically the case in eutrophic lakes (PTI 1997). Other taxa present included molluscs (gastropods), arthropods (water mites), crustaceans, and diptera (midges). Many of these organisms are carnivorous, feeding on herbivores, detritivores, or other, smaller carnivorous invertebrates (Exponent 2003).

Fish species collected in Pompton Lake included white perch, pumpkinseed, bluegill, sunfish, black crappie, yellow perch, carp, shiners, brown bullhead, white sucker, pickerel, pike, mudminnow, sunfish, and largemouth bass. Some of these species are primarily plankton eaters (e.g., golden shiner, bluegill, black crappie); larger species such as white and yellow perch and largemouth bass typically switch prey species during their lifetimes, feeding on zooplankton as larvae and progressing to larger prey species as they grow, ultimately feeding on other fish. These larger, longer-lived, higher trophic level fish are likely to bioaccumulate substances such as mercury.

Birds

A survey of aquatic birds species present in the vicinity of the Pompton Lake was performed in 1996 (Exponent 2003). Nineteen species were observed, including common loon, double crested cormorant, great blue heron, great egret, mute swan, Canada goose, mallard, wood duck, pied-billed grebe, American coot, killdeer, spotted sandpiper, greater yellowlegs, ring-billed gull, herring gull, bufflehead, blackbacked gull, and belted kingfisher (Exponent 2003). Two of these species (spotted sandpiper and belted kingfisher) have been shown to accumulate mercury at other mercury-contaminated sites (Cristol *et al.* 2008; Buck *et al.* 2013). Non-aquatic species such as passerines and birds of prey are also likely to be exposed to mercury released at the PLW. Several studies have shown that passerines in particular can accumulate relatively high levels of mercury through the consumption of invertebrate prey living in riparian habitats, such as emergent insects (insects that live in sediment or water during their larval stage) and spiders (see, for example, Cristol *et al.* 2008; Brasso and Cristol 2008; Edmonds *et al.* 2010; and Lane *et al.* 2011). Passerines that may be present in the vicinity of the PLW and environs and that have been shown to accumulate mercury include red-winged blackbird, Carolina wren, tree swallow, rough-winged swallow, and Eastern phoebe (Tsipoura *et al.* 2008; Buck *et al.* 2013; Cristol *et al.* 2008).

Amphibians and Reptiles

A variety of turtles, salamanders, snakes, frogs, and toads may inhabit the Pompton Lake area and come into contact with contaminated water, sediment, or food. Relatively little is known about the degree to which amphibians and reptiles accumulate mercury or about the effects of mercury on these organisms. However, amphibian populations in particular have been declining in recent years due to a variety of factors including disease, habitat loss, and climate change. Exposure to hazardous substances including mercury may be hastening this process (Sparling 2003).

Mammals

Mammals that may be expected to occur in the vicinity of Pompton Lake include deer, raccoon, skunk, rabbit, coyote, fox, opossum, a variety of rodents, and occasionally, bear and bobcat. In addition, while not common, river otter and mink are at least present in Passaic County, according to NJDEP trapping records (NJDEP 2011b; 2012). A variety of bat species may also frequent the area, including big brown, Eastern small-footed myotis, hoary, red, silver-haired, Indiana, tricolored, little brown, and Northern myotis. Mercury has been reported to occur at elevated levels in mink and bats living near other hazardous waste sites (Moore *et al.* 1999; Sleeman *et al.* 2010; Buck *et al.* 2013), and mink and river otter appear sensitive to mercury toxicity (Aulerich *et al.* 1974; Wobeser and Swift 1976; Halbrook *et al.* 1994; Osowski *et al.* 1995; Halbrook *et al.* 1997; Dansereau *et al.* 1999). In addition, although polychlorinated biphenyls (PCBs) have not been identified as a COC at the PLW, they are ubiquitous in the environment. Mercury and PCBs show synergistic toxicity to mink and otter (Foley *et al.* 1988; Wren 1991; Wren *et al.* 1987a, b); the interrelationship and combined effects of co-exposures of these compounds may or may not be consequential at the PLW.

Threatened and Endangered Species

The only federally listed species believed to be present in the vicinity of Pompton Lake is the Indiana bat, which is also State-listed as endangered. Other State-listed endangered species that may frequent the area are the bobcat, Eastern small-footed myotis, little brown bat, Northern myotis, tricolored bat (Eastern pipistrelle), bald eagle, peregrine falcon, Northern goshawk, pied-billed grebe, and golden-winged warbler (Conserve Wildlife Foundation of New Jersey 2013; NJDEP 2013a). State-listed threatened species that may be present include long-eared owl, red-headed woodpecker, osprey, yellow-crowned night heron, black-crowned night heron, cattle egret, Eastern lampmussel, triangle floater, and wood turtle. In addition, a variety of state species of special concern may use the area.

Cultural Resources

Cultural and historic resources may have been impacted by releases of hazardous substances at the PLW and/or related contaminant investigations and remediation. The Washington-Rochambeau Revolutionary Route Historic Trail, which commemorates a 600-mile march between Newport, Rhode Island, and Yorktown, Virginia, taken during 1781-1783 by the armies of George Washington and French General Count Rochambeau, passes through the area (NPS 2011). The march led to the American-French victory over British forces at the siege of Yorktown, which is considered a turning point in the War for Independence (NPS 2011). The intent of the Washington-Rochambeau Revolutionary Route National Historic Trail is "to identify, preserve, interpret, and celebrate the American and French Alliance in the War for Independence" (NPS 2011). The Historic Trail passes approximately one-quarter mile from the PLW and lies between the PLW and Pompton Lake. The Trail also crosses Acid Brook, one of the areas previously remediated due to high levels of contamination. No federally-owned land is included in the affected property, but activities at the PLW and environs may impact the historical significance and public use of the Trail.

B. Exposed Areas

Areas into which hazardous substances have been demonstrated to occur include the PLW, the Acid Brook, and Pompton Lake. VOCs have contaminated groundwater in the area. In addition, metals, particularly mercury, may have been transported downstream to the Ramapo River and beyond.

C. Preliminary Identification of Pathways

The suspected primary pathways for injury to Trust resources include: airborne transport and atmospheric fallout of particulates, overland runoff and sedimentation, groundwater discharge, surface water and sediment transport, and bioaccumulation via the foodchain.

Surface water pathway

Plant activities at the PLW resulted in the release of hazardous substances into Acid Brook, which flows intermittently into the ABD, a shallow bulge on the western side of Pompton Lake, an impoundment of the Ramapo River (Figure 2). Discharges from the PLW have resulted in contamination of surface water in the ABD and Pompton Lake. Surface water flows through the Pompton Lake Dam via flood gates, providing a pathway for downstream transport of contaminants. During some sampling events, mercury concentrations in water collected just above the Dam were somewhat higher than those in samples taken just upstream of the ABD, indicating mercury enrichment in surface water as it flows through and past the ABD (USEPA 2012b). Downstream of the Pompton Lake Dam, the Ramapo River joins with the Pompton River, a tributary of the Passaic River, which ultimately empties into Newark Bay. Relatively little sampling has been performed downstream of the Pompton Lake Dam, so the extent to which surface water has provided a pathway for the transport of contaminants to downstream segments of the Ramapo, Pompton, and Passaic Rivers has not yet been thoroughly investigated.

Groundwater pathway

Groundwater in the vicinity of the PLW has been contaminated by multiple VOCs. Groundwater has been found to discharge to surface water of Pompton Lake (USEPA 2005b). In addition, VOCs in groundwater have caused vapor intrusion into nearby residences (DuPont Remediation Group 2013). Although vapor intrusion remediation has been completed or is underway at approximately 300 residences near the Lake (DuPont Remediation Group 2013), and monitoring has indicated that VOC concentrations in groundwater are trending downward, contaminants in groundwater continue to discharge to surface water and VOC concentrations in multiple wells remain over New Jersey Ground Water Quality Standards (NJGWQS), N.J.A.C 7:9C (USEPA 2005b; O'Brien and Gere 2012).

Airborne pathway

Although air pollution sources to Pompton Lake have not been thoroughly investigated, some contamination, particularly mercury, may be associated with atmospheric deposition. Atmospheric mercury deposition in Pompton Lake was estimated to be approximately 0.5 micrograms per second (µg/sec), an amount significantly less than that contributed by tributaries (including the Acid Brook) to the Lake (Exponent 2003).

Soil pathway

Waste disposal and management practices at the PLW resulted in the release of hazardous substances to soil, which has been transported via surface water runoff to the Acid Brook, Pompton Lake, and the Ramapo River. In addition, particulates in water may be deposited in floodplains during flood events, thereby expanding the area of soil contamination. Soil in Acid Brook, the ABD Uplands, and properties along the shoreline of Pompton Lake have been shown to contain mercury, lead, and copper at concentrations exceeding ecological soil screening levels (ATSDR 1994; Parsons 2010; USEPA 2005a, 2007).

Sediment pathway

Contaminants in surface water run-off have traveled and adsorbed onto particulate matter and settled in sediment within the ABD and Pompton Lake. These sediments may also serve as a contaminant source to the Ramapo River and Passaic River downstream of the Lake. Bathymetric surveys performed in 2007 and 2011 indicated that previously buried sediments containing mercury at approximately 20 ppm had been scoured and presumably transported downstream below the Pompton Lake Dam (EPA 2012b).

Bioaccumulation

Mercury is bioaccumulative. Thus, one of the primary avenues for exposure of trust resources to mercury is via the food chain. Mercury has been measured in a variety of aquatic organisms sampled in the ABD, including algae, plankton, benthic invertebrates, and fish. However, other biota, including mammals, birds, reptiles, and amphibians, and aquatic biota in areas downstream, have not been evaluated. In addition, lead and VOCs may accumulate to levels of concern in some organisms (Eisler 1988; Commonwealth of Australia 2010); the presence of these substances in biota in the vicinity of Pompton Lake has not been evaluated.

D. Estimates of Concentrations

Groundwater

According to the NJGWQS (NJDEP 2010), most groundwater in the State of New Jersey, including that in the vicinity of the Pompton Lake, is required to adhere to Class II-A criteria. Tetrachloroethene concentrations in groundwater at the PLW showed the greatest exceedance of NJGWQS, with a maximum concentration 2,000 times the standard. Other VOCs including trichloroethene, 1,2-dichloroethane, carbon tetrachloride, methylene chloride, vinyl chloride, and various dichloroethene isomers, exceeded NJGWQS by factors of from 2 to 250, depending on the compound (Table 1).

Surface Water

Concentrations of mercury, lead, and copper exceeded New Jersey Surface Water Quality Criteria (NJSWQC; N.J.A.C. 7:9B), at the PLW, Acid Brook, ABD, and Pompton Lake surface water (Tables 2 and 3). The highest concentrations of copper were measured in an on-site lagoon, with concentrations 770 times the NJSWQC (NJDEP 2011a; Table 2). Lead was highest on-site as well, in a water body known as the shooting pond, with a concentration of 8,000,000 micrograms per liter (µg/L), a value over a million times the NJSWQC, in a sample taken in 1989 (Table 2). Concentrations of mercury, which is of greatest concern from an ecological perspective because of the potential for bioaccumulation, exceeded the NJSWQC only in the on-site lagoon, Acid Brook, and the ABD. However, mercury concentrations in surface water at the Pompton Lake Outlet exceeded the draft (un-promulgated) New Jersey Wildlife Criterion for mercury, which was developed using the peregrine falcon as a surrogate for all wildlife according to the EPA's Great Lakes Water Quality Initiative methodology (NJDEP *et al.* 2001). Maximum measured mercury concentrations in the ABD and at the Pompton Lake Outlet exceeded the New Jersey Wildlife Criterion by a factor of over 12,600 and 23 times, respectively.

Sediment and Soil

Mercury concentrations measured in surface sediments (generally 0-6 inches below the sediment-water interface) in the ABD were as high as 1,486 milligrams per kilogram (mg/kg), a value exceeding the NJDEP Ecological Screening "Severe Effects Level" (SEL), the level at which severe impacts to the benthic community have been evident in most cases studied, by a factor of over 700 (NJDEP 2009; Table 4). Measured mercury concentrations in Acid Brook soils reached 8,060 mg/kg, a value 4,000 times the SEL (no ecological soil screening value is available for mercury). These measured mercury levels are between 3 and 5 orders of magnitude greater than NJDEP's Ecological Screening Lowest Effects Level (LEL), the concentration at which adverse impacts to benthic organisms may begin to occur (NJDEP 2009). Concentrations of mercury generally decreased with distance from the confluence of Acid Brook and Pompton Lake; however, exceedances of the LEL, and in many cases the SEL, were evident throughout of the Lake.

Sediment and soil concentrations of copper and lead also exceeded ecological soil screening levels (EcoSSLs; USEPA 2005a, 2007) and sediment SELs and LELs (NJDEP 2009) (Table 4). Although not investigated to as great an extent as lead or mercury, copper concentrations exceeded screening levels in all areas evaluated (Acid Brook uplands, ABD sediment, and Acid Brook soil). The highest copper concentration, measured in Acid Brook soil, exceeded the soil screening criterion by three orders of magnitude. Lead concentrations were highest in Acid Brook soil as well, with the maximum concentration exceeding the soil screening level by four orders of magnitude. Concentrations of lead in Acid Brook soil, on-site soil, Acid Brook upland soil, soil along the Pompton Lake shoreline, and ABD sediment also consistently exceeded sediment screening guidelines (Table 4).

Biota

Limited biological sampling was performed in the ABD in 1998 and 2005. Taxa evaluated include algae, phytoplankton, zooplankton, chironomids, oligochaetes, and fish. Mercury is entering the food chain and accumulating in higher trophic level fish to levels above the protective level of 0.2 mg/kg identified by Beckvar *et al.* (2005) (Table 5). Model dose response curves developed using data from a variety of studies evaluating mercury toxicity to fish indicate that a tissue concentration of 0.2 mg/kg predicts a 5.5% injury (based on lethality-equivalent endpoints) to juvenile and adult fish and a 33% injury to early life-stage fish (Dillon *et al.* 2010). In addition, mercury concentrations in largemouth bass, a species potentially consumed by humans, exceeded the recommended threshold for the protection of human health (USEPA 2001) (note, however, that the fish were analyzed as whole-body samples rather than fillets). Fish consumption advisories for mercury are in effect for largemouth bass, bluegill sunfish, and common carp at Pompton Lake (NJDEP 2013b).

Mercury concentrations in birds in the vicinity of the PLW have not been measured. However, in studies by Frederick and Jayasena (2010) and Jayasena (2011), white ibis fed methylmercury at dietary concentrations of 0.05 ppm exhibited abnormal mating behavior, leading to significant decreases in egg productivity. Average and maximum methylmercury concentrations in all fish species and age classes evaluated in the ABD, with the exception of young-of-the-year yellow perch, exceeded this threshold (Table 5).

No information could be found regarding tissue concentrations of other biota in the ABD and Pompton Lake. Mercury concentrations in biota downstream of Pompton Lake also have yet to be evaluated. Some of this information may be obtained in future sampling efforts in Pompton Lake and the Ramapo River downstream.

III. PREASSESSMENT SCREEN CRITERIA

In accordance with section 11.23(e) of the Federal NRDA Regulations (43 CFR Part 11.23(e)), DOI has determined that all of the following criteria are met.

A. Criterion #1 – A release of a hazardous substance has occurred

There have been releases of hazardous substances, as defined by CERCLA and the CWA, from the PLW. Compounds that have been released from the PLW include, but are not limited to, mercury and other metals and VOCs, which are listed as hazardous substances in Federal Regulations at 40 CFR 302.4, pursuant to Section 102(a) of CERCLA and Section 311 of the Federal Water Pollution Control Act. These substances have entered the soil, groundwater, surface water, and sediment of the Acid Brook and Pompton Lake, and may have been transported downstream to the Ramapo, Pompton, and Passaic Rivers and adjacent ecosystems.

B. Criterion #2 – Natural resources for which the Trustee(s) may assert trusteeship under CERCLA have been or are likely to have been adversely affected by the release

The exposed areas and natural resources adversely affected by releases of mercury and other hazardous substances in the vicinity of the PLW, Pompton Lake, and downstream portions of the Ramapo, Pompton, and Passaic Rivers are within the trusteeship of DOI as defined under CERCLA. Specific affected resources include soil, surface water, sediment, and biota.

C. Criterion #3 – The quantity and concentration of the released hazardous substance is sufficient to potentially cause injury to natural resources

Mercury and other metals have contaminated the soil, surface water, and sediment in the vicinity of the PLW and Pompton Lake. VOCs have contaminated groundwater. Concentrations of these substances are sufficient to cause injury to natural resources in the vicinity of Pompton Lake.

D. Criterion #4 – Data sufficient to pursue an assessment are readily available or are likely to be obtained at a reasonable cost

Data relevant to pursuing an assessment for the PLW and environs are available from NJDEP, EPA, and other sources. These data include information on contaminant releases, concentrations in the environment, and the effect of contamination on natural resources. Given the volume of available information, additional data useful for an assessment could be obtained at a reasonable cost. Additional data is also expected to become available through collection efforts currently underway as part of current and proposed remedial investigations of Pompton Lake and areas downstream in the Ramapo and Passaic Rivers. If the necessary data to evaluate injury to biota in these areas are not acquired through EPA-approved remedial investigations, DOI may undertake such sampling in future NRDA studies.

E. Criterion #5 – Response actions carried out or planned do not or will not sufficiently remedy the injury to natural resources without further action

DOI does not expect that the remedial measures carried out to date, or those planned for the future, will fully address the various sources and pathways of exposure of natural resources to hazardous substances released at the PLW, or the past, current, and future injuries resulting from such exposure. Therefore, DOI has determined that the response actions carried out or currently planned do not or will not sufficiently remedy the injury to the natural resources of Pompton Lake and the Ramapo, Pompton, and Passaic Rivers.

IV. PRE-ASSESSMENT SCREEN DETERMINATION

Following the review of information described in this Preassessment Screen, DOI has determined that the criteria specified in 43 CFR Part 11 are satisfied. DOI has further determined that there is a reasonable probability of making a successful claim for damages with respect to natural resources over which DOI has trusteeship. Therefore, DOI concludes that an assessment of natural resource damages is justified.

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FIGURES

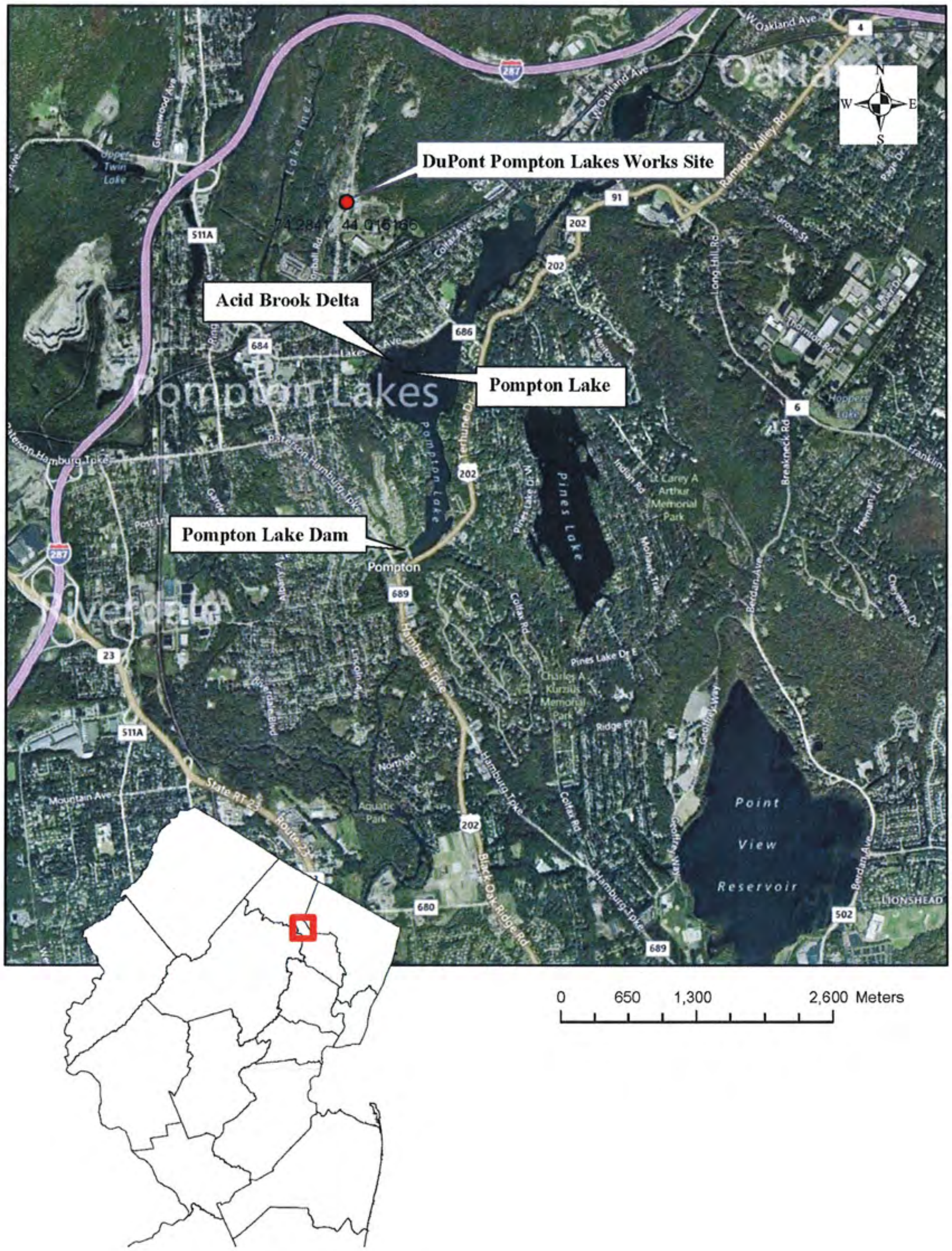

Figure 1: Location of the DuPont Pompton Lakes Works Site, Pompton Lake Dam, Pompton Lake, and ABD.

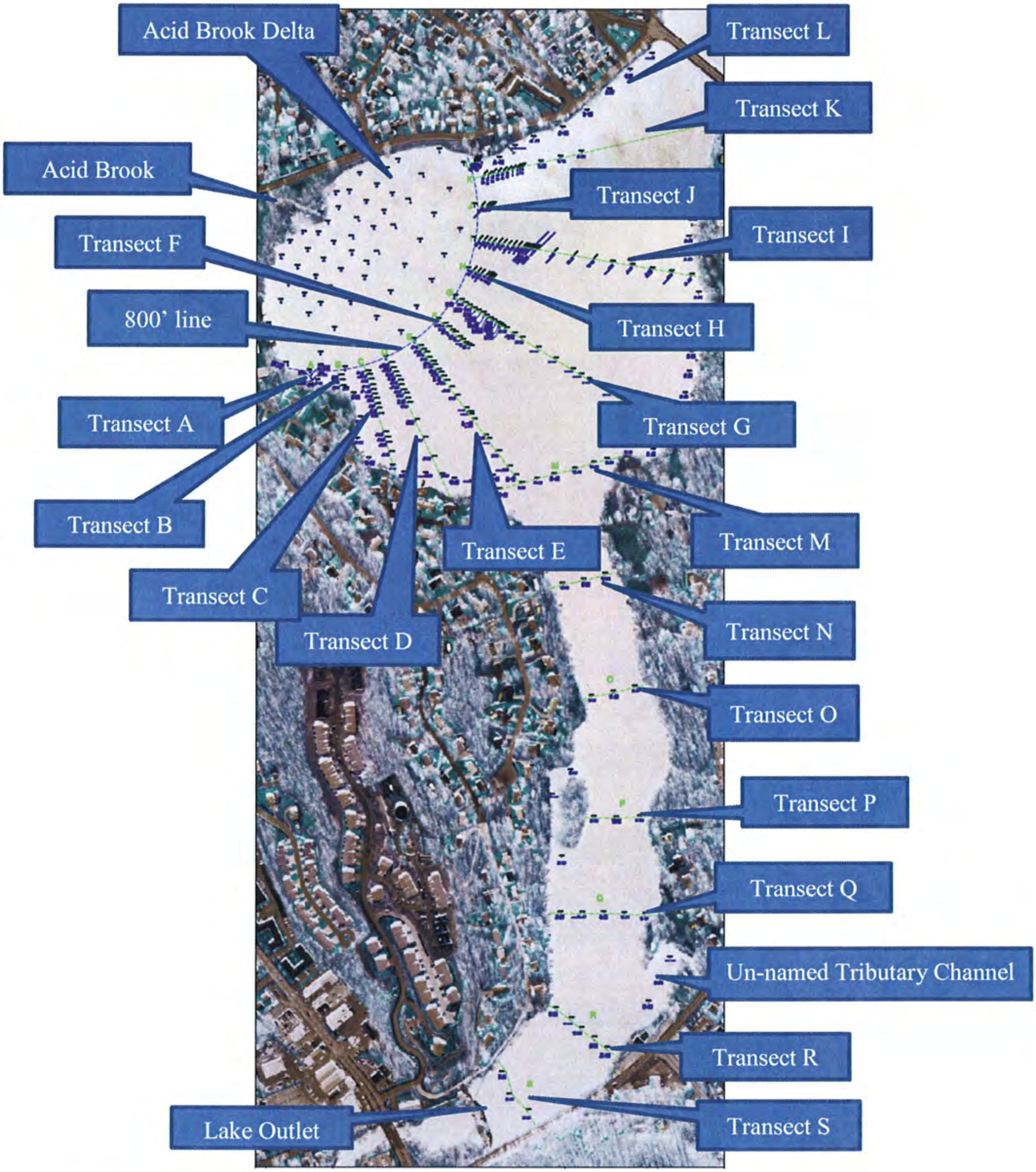

Figure 2. Sampling Transects within Pompton Lake to the Pompton Lake Dam. Adapted from DuPont Corporate Remediation Group 2009.

TABLES

Table 1. Measured Concentrations of Volatile Organic Compounds (VOCs) in Groundwater in the Vicinity of the PLW.

Sample Year	Compound	Maximum Concentration (µg/L)	Minimum Concentration (µg/L)	NJ GWQC (µg/L)[1]
1985-1986[2]	Tetrachloroethene	**408**	NR	1
2003[3]		**2000**	0.07	
2012[4]		**240**	ND	
1985-1986[2]	Trichloroethene	**167**	NR	1
2003[3]		**130**	ND	
2012[4]		**83**	ND	
2003	1,2-Dichloroethane	**<5.0**	ND	2
2012[4]		**21**	ND	
1985-1986[2]	1,1-Dichloroethene	**253**	NR	1
2003[3]		**5.4**	ND	
2012[4]		**16.0**	ND	
2003	cis-1,2-Dichloroethene	27	ND	70
2012[4]		**2,500**	ND	
1985-1986[2]	Trans-1,2-Dichloroethene	**400**	NR	100
2003[3]		1.3	ND	
2012[4]		**200**	ND	
2003	Carbon tetrachloride	**38**	ND	1
2012[4]		**3.3**	ND	
1985-1986[2]	Methylene chloride	**26.0**	NR	3
2003[3]	Vinyl chloride	**3**	ND	1
2012[4]		**150**	ND	

[1]NJDEP 2010.
[2]Data from ATSDR 1994.
[3]Data from USEPA 2005b.
[4]Data from O'Brien and Gere 2012.
NJ GWQC: New Jersey Groundwater Quality Criterion
µg/L: micrograms per liter
NR: not reported
ND: Not detected
Bold numbers exceed water quality criterion

Table 2. Concentrations of Mercury and Methylmercury in Surface Water in the Vicinity of the PLW.

Sampling Period	Contaminant	Sampling Area	Maximum Concentration (µg/L)	Minimum Concentration (µg/L)	Average Concentration (µg/L)	Acute Criterion[1] (µg/L)	Chronic Criterion[1] (µg/L)	Wildlife Criterion[2] (µg/L)
1989[3]	Mercury	Lagoon, PLW	**0.9**	**0.9**	NA			
		Shooting Pond, PLW	ND	ND	NA			
		Plant Stream, PLW	ND	ND	NA	1.4[b,c]	0.77[b,c]	0.00053[b]
1990[3]	Mercury	Acid Brook	**6.7**	**6.7**	NA			
		Pompton Lake	ND	ND	ND			
1998[4]	Mercury[a,c]	Acid Brook	**0.134**	**0.0821**	**0.108**			
	Mercury[b,c]		**0.103**	**0.0566**	**0.0784**			
	Mercury[a,c]	Acid Brook Delta	**0.327**	**0.0827**	**0.205**	1.4[b,c]	0.77[b,c]	0.00053[b]
	Mercury[b,c]		**0.0104**	**0.00196**	**0.00618**			
	Mercury[a,c]	Lake Outlet	**0.0123**	**0.00767**	**0.0105**			
	Mercury[b,c]		**0.00246**	**0.00209**	**0.00225**			
May 2004[5]	Mercury[a,b]	Acid Brook Delta	**0.423**	**0.00236**	**0.00872**			
	Mercury[b,c]		**0.0341**	**0.00153**	**0.00679**			
August 2004[5]	Mercury[a,b]		**0.000816**	**0.00562**	**0.1236**			
	Mercury[b,c]		**0.173**	**0.00124**	**0.00965**	1.4[b,c]	0.77[b,c]	0.00053[b]
January 2005[5]	Mercury[a,b]		**0.0092**	**0.0092**	NA			
	Mercury[b,c]		**0.00276**	**0.00086**	**0.00143**			
May 2005[5]	Mercury[b,c]		**0.294**	**0.00094**	**0.01917**			
1998[4]	Methylmercury[a]	Acid Brook	0.000398	0.000164	0.0003			
	Methylmercury[c]		0.000307	0.000104	0.000223			
	Methylmercury[a]	Acid Brook Delta	0.000553	0.000293	0.000426			
	Methylmercury[c]		0.000282	0.000065	0.000174			
	Methylmercury[a]	Lake Outlet	0.00201	0.000067	0.000763			
	Methylmercury[c]		0.000209	0.000062	0.000141			
May 2004[5]	Methylmercury[a]	Acid Brook Delta	0.001022	0.00023	0.000455	NC	NC	NC
	Methylmercury[c]		0.000548	0.00008	0.000204			
August 2004[5]	Methylmercury[a]		0.00459	0.000041	0.000816			
	Methylmercury[c]		0.002013	0.000016	0.000209			
January 2005[5]	Methylmercury[a]		0.00095	0.00095	NA			
	Methylmercury[c]		0.000077	0.000015	0.000031			
May 2005[5]	Methylmercury[c]		0.000313	0.000049	0.000103			

[1]Criteria from NJDEP 2011a. Criteria are the same as the National Recommended Water Quality Criteria (USEPA 2009).
[2]Criteria from NJDEP *et al.* 2001.
[3]Data from ATSDR 1994 (total / dissolved not addressed).
[4]Data from Exponent 2003.
[5]Data from DuPont Corporate Remediation Group 2006.
[a]Total / unfiltered (includes dissolved and particulate fractions)
[b]Total recoverable (includes both methylmercury and inorganic mercury)
[c]Dissolved fraction / filtered
µg/L = micrograms per liter
NA = not applicable
NC = no criterion
Bold numbers are greater than the most stringent criterion.
See Figures 1 and 2 for Area Locations.

Table 3. Concentrations of Copper and Lead in Surface Water in the Vicinity of the PLW.

Sampling Period	Hardness (mg/L)	Contaminant	Sampling Area	Concentration (µg/L)	Chronic NJWQC[1] (µg/L)
1989[2]	NR	Copper	Lagoon, PLW	**5920**	7.67
			Shooting pond, PLW	ND	
			Plant stream, PLW	**35**	
1990[2]	NR	Copper	Acid Brook	**94**	
			Pompton Lake	**18**	
April 1998[3]	48	Copper[a]	Acid Brook	**18.4**	4.98
		Copper[b]		**16.5**	4.52
	60	Copper[a]	Acid Brook Delta	2.52	6.03
		Copper[b]		0.87	5.47
	57	Copper[a]	Lake Outlet	1.27	5.77
		Copper[b]		1.03	5.24
June 1998[3]	65	Copper[a]	Acid Brook	**23.4**	6.46
		Copper[b]		**16.1**	5.86
	NA	Copper[a]	Acid Brook Delta	--	NA
		Copper[b]		--	NA
	64	Copper[a]	Lake Outlet	1.36	6.37
		Copper[b]		1.12	5.78
August 1998[3]	45	Copper[a]	Acid Brook	**31.4**	4.72
		Copper[b]		**23.6**	4.28
	98	Copper[a]	Acid Brook Delta	3.16	9.17
		Copper[b]		2.7	8.33
	130	Copper[a]	Lake Outlet	1.26	11.67
		Copper[b]		1.33	10.6
1989[2]	NR	Lead	Lagoon , PLW	**700**	6.8
			shooting pond, PLW	**8,000,000**	
			plant stream, PLW	**9.4**	
1990[2]	NR	Lead	Acid Brook	**54.0**	
			Pompton Lake	**12.0**	
April 1998[3]	48	Lead[a]	Acid Brook	1.05	6
		Lead[b]		0.735	5.4
	60	Lead[a]	Acid Brook Delta	2.336	6.2
		Lead[b]		0.186	5.4
	57	Lead[a]	Lake Outlet	0.617	6.2
		Lead[b]		0.181	5.4
June 1998[3]	65	Lead[a]	Acid Brook	1.2	6.3
		Lead[b]		0.692	5.4
	NA	Lead[a]	Acid Brook Delta	--	NA
		Lead[b]		--	NA
	64	Lead[a]	Lake Outlet	0.745	6.3
		Lead[b]		0.261	5.4
August 1998[3]	45	Lead[a]	Acid Brook	1.01	6
		Lead[b]		0.41	5.4
	98	Lead[a]	Acid Brook Delta	1.44	6.8
		Lead[b]		0.6	5.4
	130	Lead[a]	Lake Outlet	0.63	7.2
		Lead[b]		0.32	5.4

[1]Chronic criteria from NJDEP 2011a. The criterion for copper is hardness-dependent. If sample-specific hardness values were not available, the criterion was calculated using a hardness of 71 milligrams per kilogram $CaCO_3$, the average of measured hardness values presented in this table. Criteria for the dissolved fraction were derived by multiplying the value for the total recoverable fraction by a conversion factor, as presented in NJDEP 2011a (for copper) or USEPA 2009 (for lead).

[2]Data from ATSDR 1994 (total / dissolved not addressed).

[3]Data from Exponent 2003.

[a]Total / unfiltered (includes dissolved and particulate fractions)

[b]Dissolved fraction / filtered

NJWQC = New Jersey Water Quality Criterion

mg/L = milligrams per liter

μg/L = micrograms per liter

NA = not applicable

NR = not reported

Bold numbers exceed criterion.

See Figures 1 and 2 for Area Locations.

Table 4. Metal Concentrations in Sediment in the Vicinity of the PLW.

Sampling Period	Contaminant	Area	Maximum Concentration (mg/kg)	Minimum Concentration (mg/kg)	Average Concentration[b] (mg/kg)	Screening Guideline TEC[1] (mg/kg)	SEL[1] (mg/kg)	Lowest EcoSSL[2] (mg/kg)
1990-1996[3]	Copper	ABD Uplands	**1640**	10.4	**148**	34	270	28
1991[4]		Acid Brook soil	**25,400**	NR	NR			28
1998[5]		ABD (0-10 cm)	**952**	**179**	**535**			NA
1990-1996[3]	Lead	ABD Uplands	**1230**	**4**	**228**	31	250	11
1991[4]		Acid Brook soil	**119,000**	NR	NR			11
1992[4]		On-site soils and sediments	**1790**	NR	NR			11
1998[5]		ABD (0-10 cm)	**563**	**42.8**	**290**			NA
2009-2010[3]		ABD Uplands	**1050**	**50.5**	**267**			11
2010[3]		Pompton Lake shoreline	**656**	17.9	**126.24**			11
1990-1996[3]	Mercury	ABD Uplands	**132**	0.0705	**10.74**	0.174	2	NV
1991[4]		Acid Brook soil	**8060**	NR	NR			
1992[4]		On-site soils and sediments	**5930**	NR	NR			
1998[5]		ABD (0-2 cm)	**66.4**	**55.59**	**60.29**			
		ABD (2-4 cm)	**65.36**	**49.7**	**61.21**			
		ABD (4-8 cm)	**69.76**	**64**	**66.73**			
		ABD (0-10 cm)	**186**	**5.5**	**51.2**			
2003-2007[6]		ABD (800 foot line)	**1486**	ND	**123.10**			
		Pompton Lake transects A-L	**367**	0.147	**12.07**			
		Pompton Lake -transect M	**5.92**	0.132	**1.31**			
		Pompton Lake - transect N	**2.75**	**0.893**	**1.57**			
		Pompton Lake - transect O	**2.25**	**1.71**	**2.00**			
		Pompton Lake - transect P	**2.16**	**0.623**	**1.49**			
		Pompton Lake - transect Q	**2.47**	**0.488**	**1.65**			
		Pompton Lake - transect R	**2.58**	**0.379**	**1.23**			
		Pompton Lake - transect S	**2.42**	**1.18**	**1.63**			
		Pompton Lake - un-named tributary in channel	**0.811**	**0.357**	**0.601**			
		Pompton Lake - Eastern Shore	**2.06**	**0.2**	**1.04**			
		Pompton Lake - Western Shore	**65.1**	**1.03**	**10.92**			
2004[7]		ABD (0-6 cm)	**115**	**0.4**	**35.40**			
		ABD (6-15 cm)	**138**	**0.5**	**42.30**			
2009-2010[3]		ABD Uplands	**103**	**3.23**	**24.34**			
2010[3]		Pompton Lake shoreline	**1.97**	0.02915	**0.471**			
1998[5]	Methylmercury	ABD (0-2 cm)	0.0339	0.0146	0.02292	NV	NV	NV
		ABD (2-4 cm)	0.0411	0.0114	0.02224			
		ABD (4-8 cm)	0.104	0.00839	0.02944			

[1]Ecological Screening Guidelines for Sediment from NJDEP 2009.

[2]Ecological Screening Guidelines for Soil from EPA 2005a, 2007. According to USEPA 2003, EcoSSLs may be useful for screening wetland soils, but are not intended for use in wetland soils that are regularly flooded. Sediment screening guidelines should be applied in such locations.

[3]Data from Parsons 2010.

[4]Data from ATSDR 1994.

[5]Data from Exponent 2003.

[6]Data from DuPont Corporate Remediation Group 2009.

[7]Data from DuPont Corporate Remediation Group 2006.

[a] Surface sediment is from 0-6 inches' depth unless otherwise indicated.

[b]Averages calculated excluding non-detects.

ABD = Acid Brook Delta

mg/kg = milligrams per kilogram

TEC = threshold effects concentration

SEL = severe effects level

cm = centimeters

NA = not applicable

NR = not reported

NV = no value

ND = not detected

See Figure 1 and 2 for Area Locations.

Bold numbers are greater than the more stringent of fresh or marine screening guidelines.

Table 5. Mercury Concentrations in Biota from the Acid Brook Delta of Pompton Lake.

Sampling Period	Location	Organism	Contaminant	# of Samples	Average Concentration (µg/kg ww)	Maximum Concentration (µg/kg ww)	Protective level[1] (µg/kg)
1998[2]	ABD	Algal mats	Mercury	3	350	760	NV
			Methylmercury	3	0.43	0.47	NV
2005[3]		Algal mats	Mercury	3	90	147	NV
			Methylmercury	3	0.26	0.264	NV
1998[2]	ABD	Phytoplankton	Mercury	3	600	620	NV
			Methylmercury	3	2.3	3	NV
		Zooplankton	Mercury	3	51	80	NV
			Methylmercury	3	22	24	NV
		Chironomids	Mercury	3	77	120	NV
			Methylmercury	3	2.6	3.5	NV
2005[3]	ABD	Chironomids	Mercury	15	358	940	NV
			Methylmercury	15	3.5	7.78	NV
1998[2]	ABD	Oligochaetes	Mercury	3	740	1600	NV
			Methylmercury	3	0.8	1.1	NV
		Pumpkinseed (medium)	Methylmercury	3	107	140	200
		Bluegill (small)	Methylmercury	1	NA	160	
		Bluegill (medium)	Methylmercury	1	NA	190	
		Bluegill (large)	Methylmercury	1	NA	180	
2005[3]	ABD	YOY bluegill	Mercury	5	90	128	200
			Methylmercury	5	78	93	
1998[2]	ABD	Black crappie (medium)	Methylmercury	1	NA	150	200
		Black crappie (large)	Methylmercury	1	NA	**370**	
		Yellow perch	Methylmercury	1	NA	**440**	
2005[3]	ABD	YOY yellow perch	Mercury	5	97	119	200
			Methylmercury	5	49	56.5	
1998[2]	ABD	White perch (small)	Methylmercury	1	NA	110	200
		White perch (medium)	Methylmercury	1	NA	140	
		White perch (large)	Methylmercury	1	NA	**250**	
		Golden shiner (small)	Methylmercury	1	NA	180	
		Golden shiner (medium)	Methylmercury	1	NA	**220**	
		Golden shiner (large)	Methylmercury	1	NA	200	
		Largemouth bass (medium)	Methylmercury	1	NA	200	
		Largemouth bass (large)	Methylmercury	4	**760**	**1200**	
2005[3]	ABD	YOY largemouth bass	Mercury	5	138	165	200
			Methylmercury	5	138	172	

[1]Value for whole fish is the recommended protective value from Beckvar *et al.* 2005.

[2]Data from Exponent 2003.

[3]Data from DuPont Corporate Remediation Group 2006.

= number
µg/kg = micrograms per kilogram
ww = wet weight
NA = not applicable
NV = no value
ABD = Acid Brook Delta
YOY = young of the year
For undected values, one-half the detection limit was used to calculate average values (Exponent 2003).
Bold values exceed the protective level.

PREASSESSMENT SCREEN
FOR
DuPONT/POMPTON LAKES WORKS SITE
18 October 2013
PREPARED BY THE
United States Department of the Interior – U.S Fish & Wildlife Service
and National Park Service

REGARDING NATURAL RESOURCE DAMAGE ASSESSMENT & RESTORATION

U.S. Department of the Interior:

By:______________________________

Wendi Weber
Regional Director
U.S. Fish & Wildlife Service, Region 5
For the United States Department of the Interior

Date: 10/29/13