Preassessment Screen for Duck and Otter Creeks

Action:

Preassessment Screen for Duck and Otter Creeks, Lucas County, Ohio by the United States Department of the Interior (DOI).

Authority and Delegations:

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended, 42 U.S.C. 9601 *et seq.,* the Oil Pollution Act of 1990 (OPA), 33 U.S.C. 2701 *et seq.,* and the Federal Water Pollution Control Act (FWPCA), as amended, 33 U.S.C. 1251 *et seq.,* authorize the Federal Government and States to recover, on behalf of the public, damages for injuries to natural resources and their supporting ecosystems, belonging to, managed by, appertaining to, or otherwise controlled by the Federal Government or a State.

The President has designated federal natural resource trustees in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. §300.600 and through Executive Order 12580, dated January 23, 1987. Pursuant to the NCP, the Secretary of the DOI acts as a trustee for natural resources and their supporting ecosystems, managed or controlled by the DOI. In this matter, the U.S. Fish and Wildlife Service (Service) is acting on behalf of the Secretary of the DOI as trustee for the natural resources under its jurisdiction.

Requirement:

Federal regulations at 43 C.F.R. §11.23(a) require Natural Resource Trustees to complete a preassessment screen and make a determination as to whether a Natural Resource Damage Assessment shall be carried out at a site, before assessment efforts are undertaken pursuant to the regulations. This document fulfills that requirement for the Duck and Otter Creeks Site ("Duck and Otter Creeks" or the "Site") and follows the structure of Federal Regulations at 43 C.F.R. Part 11.

Purpose:

The purpose of this preassessment screen is to provide a rapid review of the readily available information on releases of hazardous substances and potential impacts on natural resources in Duck and Otter Creeks for which the DOI may assert trusteeship under section 107(f) of CERCLA.

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Information on the Site and on the discharge or release (43 C.F.R. §11.24(a)):

1) The time, quantity, duration, and frequency of the discharge or release.

Manufacturing, refining and other activities since the 1950s have resulted in severe contamination of both Duck and Otter Creeks with a range of hazardous substances. Several Potentially Responsible Parties (PRPs) have or are believed to have released hazardous substances to Duck and Otter Creeks. The PRPs that may have released hazardous substances to Duck and Otter Creeks include, but are not limited to, the following:

Table 1. Sources of hazardous substances to Duck and Otter Creeks.

Duck Creek	
	Address
Chevron Corporation	Chevron Corporation 6001 Bolinger Canyon Road San Ramon, CA 94583
CSX Corporation	CSX Corporation 500 Water Street, 15th Floor Jacksonville, FL 32202
FirstEnergy Corp.	FirstEnergy Corp. 76 South Main Street Akron, OH 44308
Conoco-Philips, Inc.	Conoco Phillips Corporation 600 North Dairy Ashford (77079-1175) PO Box 2197 Houston, TX 77252-2197
Otter Creek	
	Address
BP-Husky Refinery	BP America 501 WestLake Park Boulevard Houston, TX 77079-2604
CSX Corporation	CSX Corporation 500 Water Street, 15th Floor Jacksonville, FL 32202
Chevron Corporation	Chevron Corporation 6001 Bolinger Canyon Road San Ramon, CA 94583
Enviro-Safe Refrigerants, Inc.	Enviro-Safe Refrigerants, Inc. 876 Otter Creek Road Oregon, OH 43616
Fiske Brothers Refining Company	Fiske Brothers Refining Company 1500 Oakdale Avenue. Toledo, OH 43605
Pilkington North America Inc.	Pilkington North America Inc. 2401 Broadway Road East Northwood, OH
Sunoco, Inc.	Sunoco Inc. 1735 Market Street, Ste LL Philadelphia, PA 19103-7583
Marsulex, Inc.	Marsulex, Inc. 1400 Otter Creek Road Oregon, OH 43616

2) The hazardous substances released.

Bottom sediments of the Duck and Otter Creeks are contaminated with polychlorinated biphenyls (PCBs), chlorinated pesticides, polycyclic aromatic hydrocarbons (PAHs), other organic chemicals and heavy metals that originated from the refineries, industrial facilities, and rail yards owned and/or operated by the companies listed in Table 1. A partial listing of hazardous substances that have been identified in Duck and Otter Creeks is provided in Table 2.

Table 2. Selected hazardous substances and their Chemical Abstract Registry Numbers identified in water, sediments and/or biota in the Duck and Otter Creeks.

cadmium (7440439)	chromium (7440473)	lead (7439921)
mercury (7439976)	selenium (7782492)	DDE (72559)
benzo(k)fluoranthene (207089)	fluoranthene (206440)	pyrene (129000)
chrysene (218019)	benzo(b)fluoranthene (205992)	benzo(a)anthracene (56553)
benzo(a)pyrene (50328)	phenanthrene (85018)	DDT (50293)
benzo(g,h,i)perlyene (191242)	naphthalene (91203)	DDD (72548)
indeno(1,2,3-cd)pyrene (193395)	aroclor 1254 (PCB) (11097691)	aroclor 1260 (PCB) (11096825)

3) History of the current and past use of the Duck and Otter Creeks Site.

Duck and Otter Creeks are two streams within the Maumee Area of Concern as defined by the International Joint Commission, which was established by the 1909 Boundary Waters Treaty between the United States and Canada. Duck Creek begins at Collins Park in the City of Toledo, Ohio. It flows in a north to northeasterly direction for approximately four miles before entering the Maumee River near its mouth on Lake Erie. Otter Creek lies to the east of Duck Creek and roughly parallels Duck Creek entering Lake Erie to the east of the mouth of the Maumee River. Otter Creek is approximately seven miles long. Both creeks flow through heavily industrialized and commercialized areas of the Cities of Toledo and Oregon, Ohio. In spite of the industrialized nature of their watersheds, substantial wetland complexes are also present along both creeks.

4) Relevant operations occurring at or near the Duck and Otter Creeks Site.

Decades of manufacturing activity and improper waste disposal practices have resulted in the release of hazardous substances to both Duck and Otter Creeks and their

watersheds. Hazardous substances have migrated to Duck and Otter Creeks from refineries and other industrial complexes along their banks, as well as through numerous spills and other releases from these facilities. Hazardous substances have injured surface waters, sediments, fish and wildlife in both creeks. There are currently no regulatory activities underway to address the contamination present in sediments, fish and other biota in Duck and Otter Creeks.

5) Additional hazardous substances potentially released from the Duck and Otter Creeks Site.

A partial listing of known hazardous substances is given in Table 2.

6) Potentially Responsible Parties.

Potentially responsible parties at Duck and Otter Creeks Site include, but are not limited to BP Husky Refinery, CSX Corp., Chevron Corp., Fiske Brothers Refining Co., Pilkington North America Inc., Sunoco Inc., Marsulex Inc., FirstEnergy Corp., Enviro-Safe Refrigerants Inc., and Conoco-Phillips Inc.

Damages excluded from liability under CERCLA (43 C.F.R. §11.24(b)):

Damages resulting from discharge or release of PAHs, PCBs and other hazardous substances (Table 2) at the Duck and Otter Creeks were not identified in any environmental impact statement, pursuant to the National Environmental Policy Act (NEPA), as amended, 42 U.S.C. 4321 *et seq.*

The release of PAHs, PCBs and other hazardous substances (Table 2) did not occur wholly before enactment of CERCLA, nor the 1977 amendments to FWPCA. Injuries to natural resources and resultant damages to the public from the release did not occur wholly before enactment of CERCLA, nor the 1977 amendments to FWPCA.

Damages resulting from the release of PAHs, PCBs and other hazardous substances (Table 2) did not result from application of a pesticide product registered under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), as amended, 7 U.S.C. 136.

Damages resulting from the release of PAHs, PCBs and other hazardous substances (Table 2) did not result from any federally permitted release as defined in §101(10) CERCLA.

No exclusion from damages is applicable to this site, pursuant to the CERCLA and FWPCA.

Preliminary identification of pathways (43 C.F.R. §11.25(a)):

Hazardous substances have been released from industrial sites along Duck and Otter Creeks over several decades. Hazardous substances have entered both creeks through runoff, spills, and direct discharge, contaminating natural resources in the Duck and Otter Creeks. Injuries to trust resources in the Duck and Otter Creeks are the result of both direct and indirect exposure to hazardous substances. Exposure occurs through the direct contact, surface water, particulate movement, and food chain pathways. Hazardous substances are present at concentrations sufficient to cause direct toxicity to trust resources. In addition, hazardous substances are present at concentrations sufficient to cause toxicity to food organisms. This injures trust resources indirectly by reducing the ability of the Duck and Otter Creeks to provide the supporting services required by trust resources.

Exposed areas (43 C.F.R. §11.25(b)):

Hazardous substances have migrated from refineries and other industrial facilities near and adjacent to the Duck and Otter Creeks, contaminating water, sediments and biota in (approximately) seven miles of Otter Creek and four miles of Duck Creek. While data are not currently available, it is probable that flood plain soils and wetlands adjacent to the Duck and Otter Creeks have also been exposed.

Exposed water estimates (43 C.F.R. §11.25(c)):

Water column concentrations of ammonia, cadmium, copper, cyanide, lead, mercury, and selenium in Otter Creek exceed the Ohio Water Quality Standard (Ohio Administrative Code 3745-01) for chronic exposure (Tetra Tech EM Inc. 2008).

Sediment concentrations of several hazardous substances exceed benchmarks for toxicity to benthic organisms. Sediments in Duck Creek exceed the consensus probable effect/severe effect levels (MacDonald et al. 2000) for arsenic, cadmium, chromium, lead, mercury, anthracene, benzo(a)anthracene, benzo(a)pyrene, chrysene, fluoranthene, phenanthrene, pyrene and total PAHs. Otter Creek sediments exceed these benchmarks for arsenic, cadmium, chromium, lead, anthracene, benzo(a)anthracene, benzo(a)pyrene, chrysene,flouranthene, fluorine, phenanthrene, pyrene, total PAHs and total PCBs.

Estimates of concentrations (43 C.F.R. §11.25(d)):

Loading estimates are not available from Duck and Otter Creeks. Concentration ranges for several hazardous substances in surface water, bottom sediments, and fish tissue of Duck and Otter Creeks are provided in Table 3.

Table 3. Concentration ranges for selected hazardous substances in water, sediments and fish from Duck and Otter Creeks.

Duck Creek								
	Benzo(a) pyrene	**Pb**	**Fluoranthene**	**Cr**	**Pyrene**	**Hg**	**Napthalene**	**Total PCB**
Water (ng/l)	nd	nd	nd	nd	nd	nd	nd	nd
Sediment (mg/kg)	0.007 – 82.5	6.85 – 1,080	0.18 - 190	1.59 - 190	0.14 - 150	0.005 – 6.82	013 – 1.93	nd – 0.49
Fish (ug/kg)	nd	0.217	nd	nd	nd	nd	nd	259
Otter Creek								
	Benzo(a) pyrene	**Pb**	**Fluoranthene**	**Cr**	**Pyrene**	**Hg**	**Napthalene**	**Total PCB**
Water (ng/l)	nd	nd – 0.32	nd	nd	nd	nd - 0.022	nd	nd
Sediment (mg/kg)	0.29 - 20	0.01 – 0.4	0.11 – 51.8	2.84 - 399	0.12 – 44.8	0.007 – 7.7	0.11 – 1.45	0.06 – 2.4
Fish (ug/kg)	nd	nd	nd	nd	nd	nd	nd	nd

PCB = polychlorinated biphenyls
Pb = lead
Cr = chromium
Hg = mercury
nd = below analytical detection limits
nd = no data are available

Potentially affected resources (43 C.F.R. §11.25(e)):

1) Natural resources for which the Trustees may assert trusteeship under CERCLA have been or are likely to have been adversely affected by the release.

The following natural resources and their supporting ecosystems have been, or potentially have been, affected: geologic resources, ground water, surface water (including sediments) and biological resources including benthic organisms, fish, fish eating birds, wading birds, water fowl and fish eating mammals in the Duck and Otter Creeks. The following services to the public have or potentially have been affected: sport fishing, hunting, bird watching, boating, tourism, and passive values provided by wilderness areas, parks, forests, waterways, and a healthy ecosystem.

Migratory bird species in the Duck and Otter Creeks include, but are not limited to, the bald eagle (*Haliaeetus leucocephalus*), osprey (*Pandion haliaetus*), wood duck (*Aix sponsa*), Canada goose (*Branta canadensis*), common merganser (*Mergus merganser*), great blue heron (*Ardea herodias*), cliff swallow (*Hirundo pyrrhonta*), tree

swallow (*Tachycineta bicolor*), Caspian tern *(Sterna caspia*), Forester's tern (*Sterna forsteri*), common tern (*Sterna hirundo*), mallard duck *(Anas platyrhynchus*), black duck (*Anas rubripes*), lesser scaup (*Aythya affinis*) and kingfisher (*Ceryle alcyon*). Numerous species of migratory Neotropical songbirds inhabit the area seasonally.

Fish species in the Duck and Otter Creeks include, but are not limited to, yellow perch (*Perca flavescens*), white bass (*Morone chrysops*), pumpkinseed (*Lepomis gibbosus*), white crappie (*Pomoxis annularis*), goldfish (*Carassius auratus*), emerald shiner (*Notropis atherinoides*), gizzard shad (*Dorosoma cepedianum*), carp (*Cyprinus carpio*), brown bullhead (*Ictalurus nebulosus*), alewife (*Alosa pseudoharangus*), smallmouth bass (*Micropterus dolomieui*), rainbow smelt (*Osmerus mordax*), Johnny darter (*Etheostoma nigrum*), walleye (*Stizostedion vitreum*), rainbow trout (*Oncorhynchus mykiss*), spottail shiners (*Notropis hudsonius*), log perch (*Percina caprodes*), freshwater drum (*Aplodinotus grunniens*), lake sturgeon (*Acipenser fulvescens*) white suckers (*Catostomus commersoni*), coho salmon *(Oncorhynchus kisutch)* and Chinook salmon *(Oncorhynchus tschawytscha).*

Rainbow smelt *(Osmerus mordax)*, rainbow trout *(Oncorhynchus mykiss)*, coho salmon *(Oncorhynchus kisutch)* and Chinook salmon *(Oncorhynchus tschawytscha)* are anadromous fish species. Great Lakes populations of yellow perch *(Perca flavescens)*, lake sturgeon *(Acipenser fulvescens)*, walleye *(Stizostedion vitreum)*, and forage fish are nationally significant fish stocks pursuant to the Great Lakes Fish and Wildlife Restoration Act (GLFWRA).

2) Preliminary estimate of resources potentially affected.

A Risk Assessment completed in 2008 found high levels of risk to benthic organisms, bottom dwelling fish species, the belted kingfisher, and mink (Tetra Tech 2008).

Metals, PAHs and other hazardous substances exceeded consensus thresholds for severe effects to populations of benthic organisms throughout both Duck and Otter Creeks. Sediment concentrations were 2.5 to 143 times the thresholds for severe effects in Duck Creek and between 3.3 and 50 times in Otter Creek. These potential effects were confirmed by bioassays which demonstrated sediment toxicity to benthic organisms throughout the entire length of both Duck and Otter Creeks. Sediment concentrations also exceeded bench marks for lesions and deformities in bottom dwelling fish. Food chain modeling indicated high risk to belted kingfisher and mink in both creeks. Hazard quotients as high as 17 (belted kingfisher) and 23 (mink) were calculated for Duck Creek. Hazard quotients as high as 30 (belted kingfisher) and 16 (mink) were calculated for Otter Creek. Hazard quotients for both species indicated elevated risk throughout the entire length of both creeks.

References

MacDonald, D.D., C.G. Ingersol, and T.A. Berger. 2000. Development and evaluation of consensus-based sediment quality guidelines for freshwater ecosystems. Archives of

Environmental Contamination and Toxicology, 39:20-31.

Tetra Tech EM. 2008. Screening and baseline ecological risk assessment Duck and Otter Creeks Toledo and Oregon, Ohio. Tetra Tech EM Inc., 1 South Wacker Drive, Chicago, IL.

Preassessment Screen Determination:

Based upon a review of readily available data and an evaluation of the preassessment determination criteria, summarized in this document, the Service has reached the following conclusions:

- Releases of hazardous substances have occurred;
- Natural resources for which the trustees may assert trusteeship under CERCLA and FWPCA have been adversely affected by the discharge or release of hazardous substances;
- The quantity and concentration of the released hazardous substances are sufficient to potentially cause injury to natural resources;
- Data sufficient to pursue an assessment are readily available or likely to be obtained at a reasonable cost;
- Response actions planned will not sufficiently remedy the injury to natural resources without further action;

The Trustees hereby determine that further investigation and assessment is warranted and should be carried out at this site in accordance with Federal Regulations at 43 C.F.R. §11, Subparts C and E. The Trustees further determine that current information indicates that there is a reasonable probability of making a successful natural resources damage claim pursuant to section 107 of the CERCLA and section 311 of the FWPCA and that all criteria and requirements in 43 CFR Part 11, generally, and 43 C.F.R. § 11.23(a)-(g), §11.24 and §11.25, specifically, have been satisfied.

The information provided and conclusions made in this preassessment screen shall be used to direct further investigations and assessments and is not intended to preclude consideration of other resources later found to be affected or other parties found to be responsible for releases.

Tom Melius, Regional Director — Date: 8/19/09
U.S. Fish and Wildlife Service, Region 3
Authorized Official for the Department of the Interior

for