HRS DOCUMENTATION RECORD COVER SHEET

Name of Site: McLouth Steel Corp

EPA ID No. MID017422304

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Pathways, Components, or Threats Not Scored

The ground water migration, soil exposure and subsurface intrusion, and air migration pathways were not scored in this Hazard Ranking System (HRS) documentation record because the surface water migration pathway achieves an HRS site score sufficient for inclusion on the National Priorities List (NPL). The drinking water threat of the surface water migration pathway was also not scored because it does not significantly contribute to the overall surface water migration pathway score. Based on the proximity of the facility to potential targets for the ground water migration, soil exposure and subsurface intrusion, and air migration pathways, these pathways may be of future concern to the U.S. Environmental Protection Agency (EPA).

HRS DOCUMENTATION RECORD

Name of Site: McLouth Steel Corp Date Prepared: September 2018

EPA Region: 5

Street Address of facility*: 1491 West Jefferson Avenue

City, County, State, Zip Code: Trenton, Wayne County, Michigan, 48183

General Location in the State: Southeastern portion of Michigan

Topographic Map: Wyandotte, MI, 7.5' Topographic Quadrangle, 2014

Latitude: 42° 9' 38.15" North

Longitude: 83° 10' 15.26" West

The coordinates for the McLouth Steel facility were measured from the Sedimentation Basin, a clear landmark on the property (Ref. 3).

*The street address, coordinates, and contaminant locations presented in this HRS documentation record identify the general area where the site is located. They represent one or more locations EPA considers to be part of the site based on the screening information EPA used to evaluate the site for NPL listing. EPA lists national priorities among the known "releases or threatened releases" of hazardous substances; thus, the focus is on the release, not precisely delineated boundaries. A site is defined as where a hazardous substance has been "deposited, stored, disposed, or placed, or has otherwise come to be located." Generally, HRS scoring and the subsequent listing of a release merely represent the initial determination that a certain area may need to be addressed under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Accordingly, EPA contemplates that the preliminary description of facility boundaries at the time of scoring will be refined as more information is developed as to where the contamination has come to be located.

Scores	Pathway Score
Ground Water Pathway[1]	Not Scored
Surface Water Pathway	100.00
Soil Exposure and Subsurface Intrusion Pathway	Not Scored
Air Pathway	Not Scored
HRS SITE SCORE	**50.00**

1 "Ground water" and "groundwater" are synonymous; the spelling is different due to "ground water" being codified as part of the HRS, while "groundwater" is the modern spelling.

WORKSHEET FOR COMPUTING HRS SITE SCORE

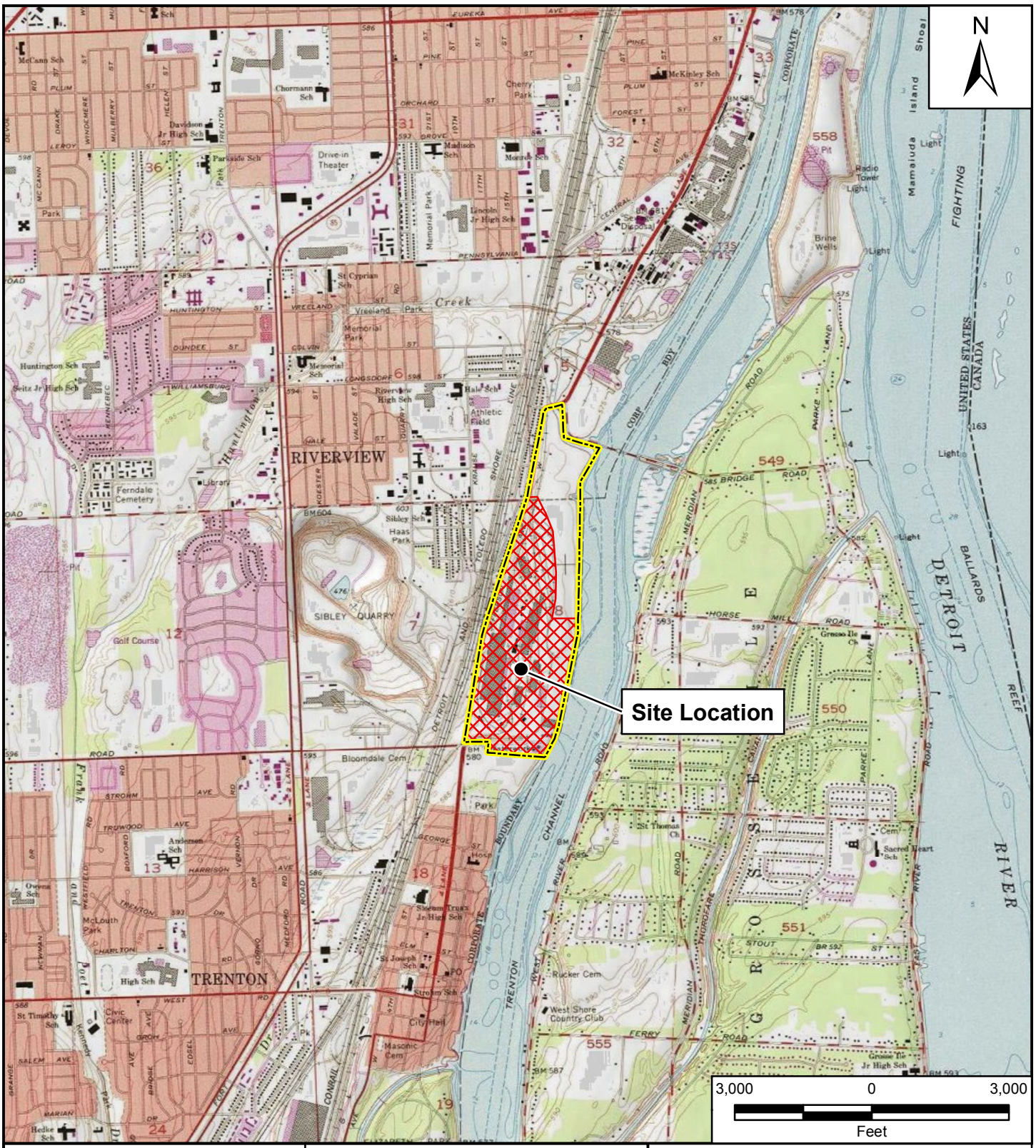
		S	S^2
1.	Ground Water Migration Pathway Score (S_{gw}) (from Table 3-1, line 13)	Not Scored	Not Scored
2a.	Surface Water Overland/Flood Migration Component (from Table 4-1, line 30)	100.00	10,000
2b.	Ground Water to Surface Water Migration Component (from Table 4-25, line 28)	Not Scored	Not Scored
2c.	Surface Water Migration Pathway Score (S_{sw}) Enter the larger of lines 2a and 2b as the pathway score.	100.00	10,000
3a.	Soil Exposure Pathway Score (S_{se}) (from Table 5-1, line 22)	Not Scored	Not Scored
3b.	Subsurface Intrusion Component (S_{ssi}) (from Table 5-11, line 12)	Not Scored	Not Scored
3c.	Soil Exposure and Subsurface Intrusion Pathway (S_{sessi}) (from Table 5-11, line 13)	Not Scored	Not Scored
4.	Air Migration Pathway Score (S_a) (from Table 6-1, line 12)	Not Scored	Not Scored
5.	Total of $S_{gw}^2 + S_{sw}^2 + S_{sessi}^2 + S_a^2$		10,000
6.	**HRS Site Score** Divide the value on line 5 by 4 and take the square root	50.00	

HRS TABLE 4-1 -Surface Water Overland/Flood Migration Component Scoresheet

Factor Categories and Factors	Maximum Value	Value Assigned
Drinking Water Threat		
Likelihood of Release:		
1. Observed Release	550	550
2. Potential to Release by Overland Flow:		
2a. Containment	10	
2b. Runoff	25	
2c. Distance to Surface Water	25	
2d. Potential to Release by Overland Flow (lines 2a × [2b + 2c])	500	
3. Potential to Release by Flood:		
3a. Containment (Flood)	10	
3b. Flood Frequency	50	
3c. Potential to Release by Flood (lines 3a × 3b)	500	
4. Potential to Release (lines 2d + 3c, subject to a maximum of 500)	500	
5. Likelihood of Release (higher of lines 1 and 4)	550	550
Waste Characteristics:		
6. Toxicity/Persistence	(a)	
7. Hazardous Waste Quantity	(a)	
8. Waste Characteristics	100	NS
Targets:		
9. Nearest Intake	50	
10. Population:		
10a. Level I Concentrations	(b)	
10b. Level II Concentrations	(b)	
10c. Potential Contamination	(b)	
10d. Population (lines 10a + 10b + 10c)	(b)	
11. Resources	5	
12. Targets (lines 9 + 10d + 11)	(b)	NS
Drinking Water Threat Score:		
13. Drinking Water Threat Score ([lines 5 × 8 × 12]/82,500, subject to a maximum of 100)	100	NS
Human Food Chain Threat		
Likelihood of Release:		
14. Likelihood of Release (same value as line 5)	550	550
Waste Characteristics:		
15. Toxicity/Persistence/Bioaccumulation	(a)	5×10^8
16. Hazardous Waste Quantity	(a)	1,000,000
17. Waste Characteristics	1,000	1,000

Factor Categories and Factors	Maximum Value	Value Assigned
Targets:		
18. Food Chain Individual	50	45
19. Population:		
19a. Level I Concentrations	(b)	NS
19b. Level II Concentrations	(b)	0.03
19c. Potential Human Food Chain Contamination	(b)	NS
19d. Population (lines 19a + 19b + 19c)	(b)	0.03
20. Targets (lines 18 + 19d)	(b)	45.03
Human Food Chain Threat Score:		
21. Human Food Chain Threat Score ([lines 14 × 17 × 20]/82,500, subject to a maximum of 100)	100	100
Environmental Threat		
Likelihood of Release:		
22. Likelihood of Release (same value as line 5)	550	550
23. Ecosystem Toxicity/Persistence/Bioaccumulation	(a)	5×10^8
24. Hazardous Waste Quantity	(a)	1,000,000
25. Waste Characteristics	1,000	1,000
Targets:		
26. Sensitive Environments:		
26a. Level I Concentrations	(b)	NS
26b. Level II Concentrations	(b)	600
26c. Potential Contamination	(b)	NS
26d. Sensitive Environments (lines 26a + 26b + 26c)	(b)	600
27. Targets (value from 26d)	(b)	600
Environmental Threat Score:		
28. Environmental Threat Score ([lines 22 × 25 × 27]/82,500, subject to a maximum of 60)	60	60
Surface Water Overland/Flood Migration Component Score For A Watershed		
29. Watershed Score[c] (lines 13 + 21 + 28, subject to a maximum of 100)	100	100.00
Surface Water Overland/Flood Migration Component Score		
30. Component Score (S_{of})[c], (highest score from line 29 for all watersheds evaluated, subject to a maximum of 100)	100	100.00

[a]Maximum value applies to waste characteristics category.
[b]Maximum value not applicable.
[c]Do not round to nearest integer.



Legend

- McLouth Steel Corporation Approximate Site Area at NPL Listing
- Former McLouth Steel Corporation Facility Boundary

See Figure Reference List of this HRS documentation record

McLouth Steel Corp
1491 West Jefferson Avenue
Trenton, Wayne County, Michigan
EPA ID No. MID017422304

Figure 1
Site Location Map

TETRA TECH

Prepared For: US EPA	Prepared By: Tetra Tech

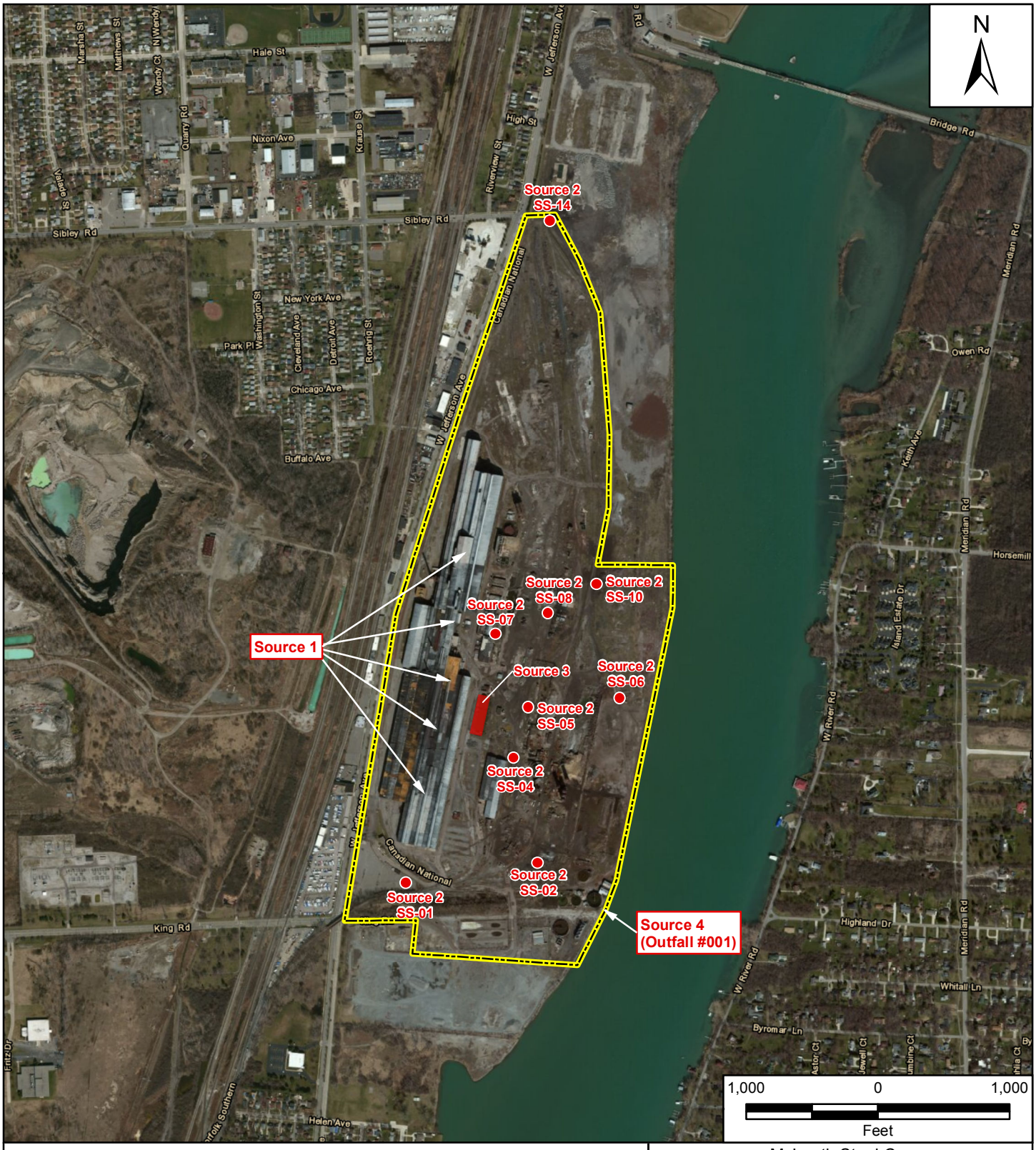
File Path: G:\IG\G9026-START IV\Michigan\DSC McLouth Steel Trenton\mxd\2018-03\Fig1-SiteLocation.mxd

Date Saved: 8/24/2018

EPA Contract No.: EP-S5-13-01

TDD No.: S05-0002-1608-009

Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
Projection: Mercator Auxiliary Sphere
Datum: WGS 1984



Legend

- Approximate Source Sample Location
- McLouth Steel Corporation Approximate Site Area at NPL Listing

The source of this map image is Esri, used by the EPA with Esri's permission

See Figure Reference List of this HRS documentation record

Source: ESRI_Imagery World 2D

McLouth Steel Corp
1491 West Jefferson Avenue
Trenton, Wayne County, Michigan
EPA ID No. MID017422304

Figure 2
Source Location Map

TETRA TECH

Prepared For: US EPA	Prepared By: Tetra Tech

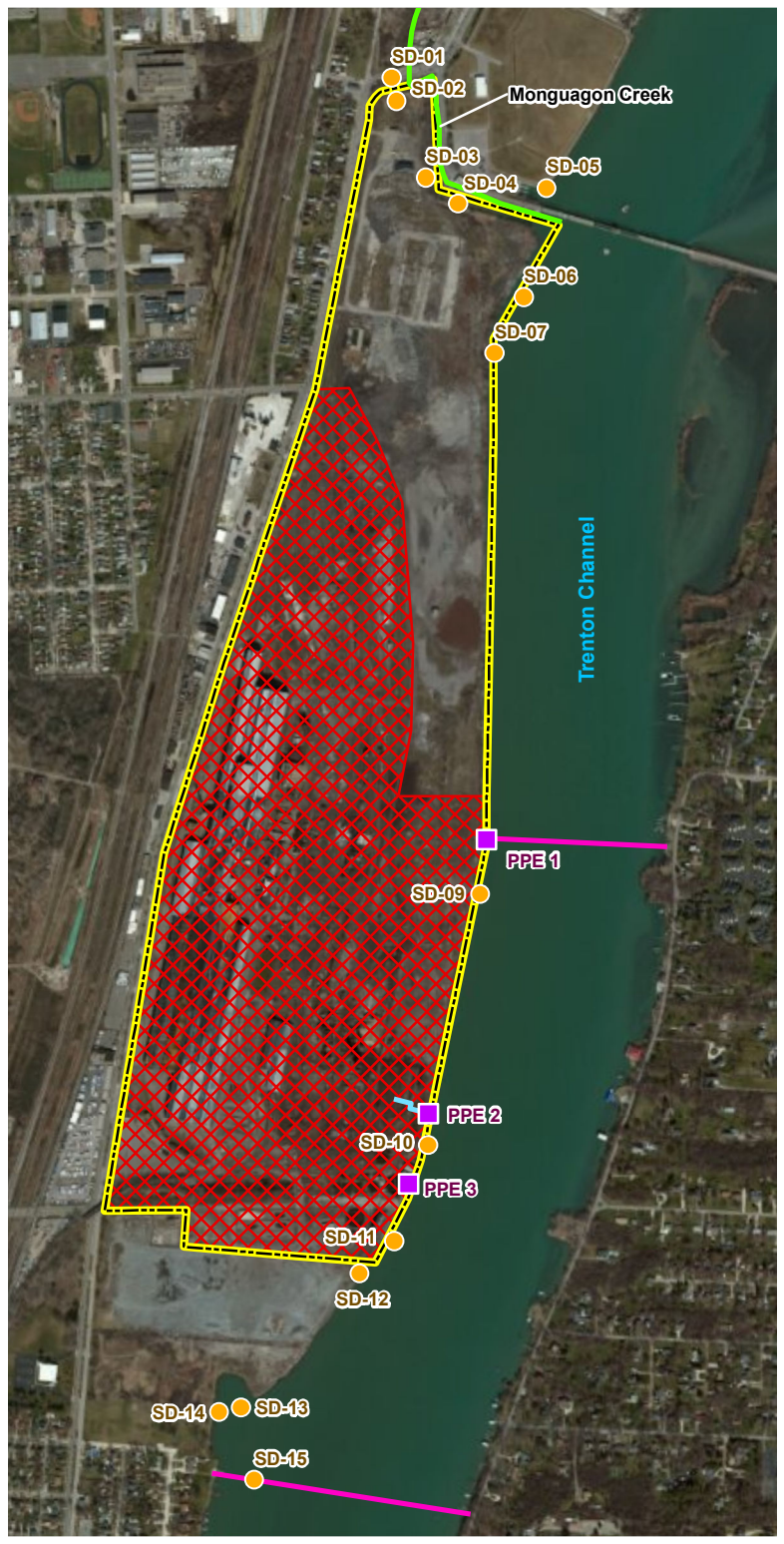
File Path: G:\IG\G9026-START IV\Michigan\DSC McLouth Steel Trenton\mxd\2018-03\Fig2-SourceAreas.mxd

Date Saved: 8/24/2018

EPA Contract No.: EP-S5-13-01

TDD No.: S05-0002-1608-009

Coordinate System: GCS WGS 1984
Datum: WGS 1984
Units: Degree



Segment 1

Segment 2

Segment 3

Our Lady of Hope Cem
Riverview
Trenton
Woodhaven
Substation
Powerplant
Seaway Hosp
Radio Towers
GROSSE ILE MUNICIPAL AIRPORT
Elba Island
Meso I
Sugar I
Bois Blanc
Stony
Gibralter
Horse
Hickory I
Celeron Island
Rockwood
Sturgeon Bar
East Rockwood
Milleville Beach
Laudenschlager
POINTE MOUILLE STATE GAME AREA
Pte Mouillee
POINT MOUILLE STATE GAME AREA
Estral Beach
Powerplant
Stony Point
BROWNSTOWN
GROSSE ILE
DETROIT RIVER
MICHIGAN ONTARIO
WAYNE CO
MONROE CO
INDEF BDY
ESSEX CO
MONROE CO
LUCAS CO
ESSEX CO
LAKE ERIE
ELEVATION 174.2
T4S
T5S
T6S
R10E
R11E

N
0 0.5 1 2
Miles

Source: U.S. Geological Survey (USGS). 7.5' Topographic Quadrangle. Wyandotte, 2014. See Figure Reference List of this HRS documentation record.

Reference Map

Legend

- Sediment Sample Location
- Probable Point of Entry
- In-water Segment Boundaries and Target Distance Limit
- Zone of Actual Contamination
- Drainage
- Creek
- McLouth Steel Corporation Approximate Site Area at NPL Listing
- Former McLouth Steel Corporation Facility Boundary

McLouth Steel Corp
1491 West Jefferson Avenue
Trenton, Wayne County, Michigan
EPA ID No. MID017422304

Figure 3
Surface Water Migration Pathway
15-Mile TDL and PPEs

TETRA TECH

Prepared For: USEPA | Prepared By: Tetra Tech Inc.

Date Saved: 8/24/2018

EPA Contract No.: EP-S5-13-01

TDD No.: S05-0002-1608-009

Coordinate System: NAD 1983 StatePlane Michigan South FIPS 2113 Feet
Projection: Lambert Conformal Conic
Datum:North American 1983
Units: Foot US

File Path: G:\G\G9026-START IV\Michigan\DSC McLouth Steel Trenton\mxd\2018-03\Fig3-Surface WaterMigrationPathway.mxd

FIGURE REFERENCE LIST

Figure 1: Site Location Map
Base Map Source - U.S. Geological Survey (USGS). 7.5' Topographic Quadrangle. Wyandotte. 2014.

Other Map Layer Sources:

- Former McLouth Steel Corporation Facility Boundary – Reference 6, page 39

Figure 2: Source Location Map
Base Map Source – ESRI_Imagery World 2D, Esri images are used by the EPA with Esri's permission.

Other Map Layer Sources:

- Approximate location of Source 1 – Reference 10, page 17
- Approximate locations of Sources 2 and 3 – Reference 6, pages 39 and 41
- Approximate location of Source 4 – Reference 103, page 7

Figure 3: Surface Water Migration Pathway – 15-mile TDL and PPEs
Main Base Map Source – U.S. Geological Survey (USGS). 7.5' Topographic Quadrangle. Wyandotte. 2014.

Map Inset Base Map Source – ESRI_Imagery World 2D, Esri images are used by the EPA with Esri's permission.

Other Map Layer Sources:

- Former McLouth Steel Corporation Facility Boundary and sediment sample locations – Reference 6, page 44
- Probable Points of Entry (PPEs) 1 and 3 – Reference 103, page 7
- PPE 2, drainage and creek – Reference 6, page 39
- Zone of Actual Contamination – as defined in sections 4.1.2.1.1, 4.1.3.3, and 4.1.4.3.1 of this HRS documentation record

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SITE SUMMARY

The former McLouth Steel Corp facility property is split into two areas, the North and South, for listing and cleanup funding purposes (see Figures 1 and 2). For HRS scoring in this documentation record, the McLouth Steel Corp (McLouth) site (EPA ID#: MID017422304) includes four sources documented in the South portion of the facility property where uncontrolled hazardous substances have come to be located. The McLouth site also includes observed releases of polychlorinated biphenyls (PCBs), dioxins, furans, metals, cyanide and other hazardous substances to the Trenton Channel of the Detroit River (see Sections 2.2.1, 4.0 and Figures 1 and 2; Ref. 5, p. 3).

Site Sources Scored: This HRS documentation record includes the scoring documentation for four sources of contamination associated with the South portion of the McLouth facility (see sections 2.2.1 of this HRS documentation record). These "scored" sources are:

1. PCB Transformers and Capacitors
2. Contaminated Soil
3. Sedimentation Basin
4. NPDES Permitted Outfall 001

HRS Pathways Scored: The surface water migration pathway, overland/flood component, is scored in this documentation record, including the human food chain and environmental threats, but not the drinking water threat. The primary targets evaluated in the surface water migration pathway are fisheries and protected species and sensitive environments in the Trenton Channel of the Detroit River adjacent to the facility (see sections 4.1.3.3 and 4.1.4.3 of this HRS documentation record).

The former McLouth Steel Corp facility property consists of approximately 273 acres located in the cities of Trenton and Riverview, Wayne County, Michigan, along the western bank of the Trenton Channel of the Detroit River (Refs. 3; 5, p. 4). The former facility property is bounded by the Grosse Ile Toll Bridge and Monguagon Creek as well as commercial/industrial property to the north; the Trenton Channel of the Detroit River and Grosse Ile to the east; Meyer Ellias Park, the Black Lagoon, and residential and commercial/industrial property to the south; and West Jefferson Avenue with a quarry, residential and commercial/industrial property to the west (Refs. 3; 5, p. 4). Two U.S. Environmental Protection Agency (EPA) Region 5 emergency removal actions have been conducted on the former McLouth facility property, and these two actions were entered into EPA's Superfund Enterprise Management System (SEMS) database with differing names, addresses, and EPA ID Numbers. These activities are listed in SEMS as Detroit Steel Company (DSC) - Trenton (EPA ID# MIN000510214), and Riverview Trenton Railroad (RTRR) (EPA # MIN000510380) (Ref. 6, p. 7). In addition, the Black Lagoon lies in the Trenton Channel of the Detroit River, approximately a half mile downstream from the former McLouth Steel Corp facility property (Ref. 12, pp. vii, 2). The Black Lagoon was remediated in 2004 and 2005 under EPA's Great Lakes Program and in cooperation with MDEQ (Ref. 12, pp. vii-viii).

References cited in this documentation record refer to the McLouth facility under aliases such as DSC – Trenton, Detroit Steel Trenton, and RTRR, among other names.

FACILITY HISTORY

McLouth was owned and operated by the McLouth Steel Products Corp as an integrated steel and iron production facility from 1954 to 1995 (Refs. 6, p. 8; 7, p. 6). McLouth used both basic oxygen furnaces (BOF) and electric arc furnaces (EAF) to produce steel. During its operation, McLouth established and operated a storage pile for EAF air pollution control dust, a listed hazardous waste pursuant to Part 111 of the Michigan Natural Resources

and Environmental Protection Act (NREPA) and the federal Resource Conservation and Recovery Act of 1976 (RCRA) (Ref. 5, p. 4). McLouth filed for Chapter 11 bankruptcy protection on September 29, 1995 (Ref. 7, p. 6). DSC took ownership of the McLouth assets, including the property and facilities, in August 1996 after bankruptcy court approval (Ref. 7, p. 6). In November 1996, DSC filed a Notification of Hazardous Waste Activity pursuant to Section 3010 of RCRA and identified itself as a generator of hazardous waste and an owner/operator of a treatment, storage, and disposal facility (Ref. 7, p. 6). DSC filed a Part A hazardous waste permit application in September 1997 and obtained interim status pursuant to RCRA (Ref. 7, p. 6). The facility remained idle until July 1998, when DSC restarted one acid pickling line and the facility's wastewater treatment system (Ref. 7, p. 6). In December 1999, DSC entered into a Comprehensive Corrective Action and Remedial Consent Order (WMD Order No. 111-15-99) with the Michigan Department of Environmental Quality (MDEQ) Waste Management Division (WMD) to take corrective actions and remedial activities to address contamination from more than 70 waste management units (WMUs) and areas of concern (AOCs) (Refs. 5, pp. 5, 6; 7, p. 1, 40, 41, 50-57).
In June 2000, Crown Enterprises purchased approximately 76 acres of the northern portion of the Trenton property from DSC. The 76 acres includes 36 acres within the city boundaries of Trenton and 40 acres within the boundaries of Riverview, Michigan. This portion of the facility is referred to as the Riverview Trenton Railroad site (RTRR) and is not included in this HRS documentation record (Ref. 5, p. 5).

REGULATORY HISTORY

Since the MDEQ Comprehensive Corrective Action and Remedial Consent Order was issued in 1999, several incidents and milestones occurred that document a lack of adequate waste management. The following bullets document these incidents and milestones chronologically:

- On March 9, 2000, EPA Region 5 issued a Complaint and Consent Agreement and Final Order under the Toxic Substances Control Act (TSCA) for several violations related to storage and handling of PCBs in transformers and containers (Ref. 10, pp. 1-4).
- Starting in September 2004, approximately 115,000 pounds of PCBs, mercury, oil and grease, lead, and zinc were removed from the Black Lagoon as the inaugural project under EPA's Great Lakes Program and in cooperation with MDEQ (Ref. 12, pp. vii-viii). McLouth is considered the primary source of sediment contamination in the Black Lagoon (Refs. 12, p. 2; 13, p. 4).
- On June 14, 2007, a fire occurred in the Sedimentation Basin at the facility (Ref. 8). The Trenton Fire Department (TFD) noted that there was a non-enclosed building with rusty containers marked as "Water Reactive" and there were no records of materials stored at the facility or notification of the TFD (Refs. 8; 15). The TFD Chief requested emergency removal support from EPA based on visual evidence of possible improper handling of waste materials (Refs. 8; 31).
- On September 14, 2007, MDEQ Waste and Hazardous Materials Division issued DSC a Letter of Warning citing several violations of NREPA, including storage of approximately 100 unlabeled 55-gallon drums, 50 unlabeled 250-gallon totes, and 100 other unlabeled containers of various sizes on the property; storage of alleged hazardous waste for more than 90 days; improper waste storage; lack of weekly inspection reports; and inadequate facility security. This letter also acknowledges the issue of disposal of waste oil into the Sedimentation Basin and concerns regarding exposure to wildlife (Ref. 9, pp. 1-8).
- On October 16, 2007, EPA and MDEQ inspected the facility and found that approximately 3,700 PCB-containing capacitors and approximately 60 non-active PCB-containing transformers remained on the facility, in violation of the 1999 WMD Order No. 111-15-99 and the 2000 Complaint and Consent Agreement and Final Order under TSCA (Refs. 7; 10; 11, pp. 9, 10). According to a "Container Sweep and Survey" conducted during the inspection, more than 500 55-gallon drums and over 1,000 other larger and smaller containers were also found on the facility (Ref. 14, pp. 1-10). In addition to unknown or unmarked contents, the containers held grease, oil, antifreeze, transmission fluid, paint, degreaser, lime, soil, muriatic acid, and other materials (Ref. 14). EPA also noted at least 35 aboveground storage tanks (ASTs) in various stages of

disrepair (Ref. 16, p. 6). EPA and MDEQ also noted during the inspection that there are many areas of stained soil and that the fencing around the property was in disrepair (Ref. 11, p. 10).

- On November 23, 2007, EPA issued a draft Administrative Settlement Agreement and Order on Consent for Removal Action to DSC based on site conditions and began negotiations with DSC to, among other things, remove and dispose of the PCB transformer and capacitor oil (Ref. 11, p. 1).
- Between October 2007 and February 2008, MDEQ continued to oversee DSC's management of wastes and container disposal; however, MDEQ notified EPA in January 2008 that MDEQ oversight did not cover the PCB issues, and thus EPA remained the lead agency for overseeing disposal and cleanup of the PCB transformers and capacitors (Ref. 17, p. 5). In February 2008, EPA conducted an inspection and oversaw the temporary containment of the PCB transformers and capacitors by contractors for DSC (Ref. 21, pp. 1, 2).
- On September 2, 2008, after EPA was unable to persuade DSC to agree to the November 2007 draft Administrative Settlement Agreement and Order on Consent for Removal Action, EPA issued a Unilateral Administrative Order under Section 106 of CERCLA (Order No. V-W-08-C-909) to force DSC to address improperly stored and leaking PCB transformers and capacitors (Ref. 18, pp. 1, 2, 5). On October 7, 2008, DSC stated its intent to comply with the Unilateral Administrative Order (Ref. 20).
- On March 2, 2009, EPA issued DSC a Failure to Comply with Unilateral Administrative Order (V-W-08-C-909) after DSC failed to follow the mandated removal schedule, which was to begin on February 28, 2009 (Ref. 19, p. 1).
- On March 26, 2009, DSC notified EPA that it did not have the funding to complete the removal of PCB transformers and capacitors; therefore, EPA proceeded with a fund-lead time-critical removal action (Ref. 4, p. 4).
- Between May and September 2009, EPA conducted a time-critical removal action to sample PCB oil in transformers; drain and dispose of the PCB oil from these transformers; relocate, package, and dispose of approximately 3,700 PCB oil capacitors; and consolidate and dispose of PCB-related hazardous materials located at the facility (Ref. 4, pp. 1, 4, 5). A total of 36,698 gallons of PCB oils were drained from a total of 97 transformers and taken off site for disposal (Ref. 4, p. 5). A total of 3,472 capacitors containing PCB oils were found, 40 of which were identified to be leaking (Ref. 4, p. 5).
- In June 2010, the owner of the DSC property filed for voluntary Chapter 11 bankruptcy (Ref. 22, p. 4).
- In March 2011, MDEQ referred the DSC site to EPA's Superfund program because the owners and operators are unable to perform the necessary corrective actions (Ref. 22, p. 1). MDEQ's deferral letter describes several public health and environmental concerns, such as long-term risks associated with "unaddressed" waste management units, areas of contamination and PCB-containing equipment; contaminated soil and fill; asbestos abatement; groundwater contamination; surface water and sediment contamination as a result of groundwater recharge; and an aging wastewater treatment system (Ref. 22, pp. 4, 5).
- In November 2015, MDEQ collected samples for an Expanded Site Inspection (ESI) of the McLouth facility (Ref. 6, p. 7). The ESI included collection and analysis of waste, soil, subsurface soil, sediment, surface water, and groundwater samples (Ref. 6, pp. 21-25, 46-62). Contamination of site-related hazardous substances was found in each of these media sampled (Ref. 6, pp. 26-28, 63-109).
- On March 31, 2017, Wayne County foreclosed on the McLouth property as a result of unpaid back taxes (Ref. 94, p. 2; 95, p. 1).

2.2 SOURCE CHARACTERIZATION

2.2.1 SOURCE IDENTIFICATION

Name of source: Historical Releases from Leaking PCB Transformers and Capacitors Number of source: 1

Source Type: Other

Description and Location of Source (with reference to a map of the site):

Source 1 is composed of historical releases from leaking PCB capacitors and transformers. Ninety-seven transformers and 3,472 capacitors containing PCB oils were stored in numerous areas of the property, including in the Pickling Building and Rolling Mill Building among other places, prior to a time-critical removal action conducted by EPA in 2009 (Refs. 4, pp. 4, 5, 9, 24-26; 5, pp. 6-9; 6, pp. 13, 14; 7, p. 53; 10, pp. 2, 12-17). Forty of these capacitors were found to be leaking (Ref. 4, p. 5), and a release of oil from transformers was documented when oils were seen floating on the surface of water in a flooded motor room where many transformers were located (Ref. 4, p. B-4, Photograph#7). A colorimetric PCB test kit shows the presence of PCBs measured in oils from the flooded basement (Ref. 27, pp. 28-34). While much of the PCB oil was removed from transformers and capacitors to an off-site disposal facility, some residual PCB oils remain in on-site transformers and in oils spilled from the transformers and capacitors (Refs. 4, p. 26; 22, p. 5; 33). Samples collected of the transformer oils, and analyzed using EPA Method 8082 for PCBs, revealed concentrations in the 50 to 90 percent range (Refs. 28, pp. 3-29; 29, pp. 3, 4, 8-27).

In February 2008, EPA conducted an inventory and assessment of the PCB transformers and capacitors at the McLouth facility in conjunction with the owner's removal contractors (Ref. 21, p. 1). PCB oils were observed leaking from capacitors during the inspection (Ref. 21, pp. 6-8). A site assessment conducted in October 2007 identified at least one PCB transformer located in an uncontained and uncovered area of the facility within 600 feet of the Detroit River (Ref. 16, pp. 4, 13, 20). Transformer Assessment Forms completed at the onset of the 2009 time-critical removal action identified many additional transformers outside and in uncontained areas near the Detroit River (Ref. 30, pp. 2, 3, 4, 10). Many inactive PCB oil transformers and capacitors were present on the facility and stored improperly as far back as the March 2000 Complaint and Consent Agreement and Final Order under TSCA (Ref. 10, pp. 1, 3, 4, 12, 13).

From May to September 2009, EPA conducted a time-critical removal action at the McLouth site (Ref. 4, pp. 4, 5). EPA drained 36,698 gallons of PCB oil from a total of 97 transformers (Ref. 4, p. 5). EPA also packaged and shipped 3,472 capacitors that contained PCB oil, 40 of which had been found to be leaking in the Reheat Furnace Building (Ref. 4, pp. 4, 5, and Figure 2). The basement of the motor room, where many transformers were located, flooded during the removal action, and oils were seen floating on the floodwater (Refs. 4, p. 14, Photograph #7; 27, pp. 28-34). In addition, PCB oils from some transformers were removed by Safety Kleen and Dynex earlier (Ref. 33, p. 5).

A list of the larger transformers, locations, capacities, and quantity removed by EPA in 2009 is provided in the table below:

Locations of Transformers				
Transformer No.	**Location Description**	**Capacity (Gallons)**	**Gallons Removed**	**References**
1	Blast Furnace One Yard	360	288	4, pp. 9, 24; 10, p. 13; 33, pp. 1, 6, 7
7	Boiler House	305	211	4, pp. 9, 24; 10, p. 13; 33, pp. 1, 6, 7
9	Boiler House	457	418	4, pp. 9, 24; 10, p. 13; 33, pp. 1, 6, 7
10	Boiler House	457	393	4, pp. 9, 24; 10, p. 13; 33, pp. 1, 6, 7
17	B Substation	130	70	4, pp. 9, 24; 33, pp. 1, 6, 7
18	B Substation	130	187	4, pp. 9, 24; 33, pp. 1, 6, 7
19	Machine Shop	390	370	4, pp. 9, 24; 33, pp. 1, 6, 7
25	Water Treatment	500	399	4, pp. 9, 24; 33, pp. 1, 6, 7
26	Water Treatment	205	201	4, pp. 9, 24; 33, pp. 1, 6, 7
27	Water Treatment	205	183	4, pp. 9, 24; 33, pp. 1, 6, 7
28	AC/DC Substation/OP1 Gas Washer	1025	917	4, pp. 9, 24; 33, pp. 1, 6, 7
29	AC/DC Substation/OP1 Gas Washer	380	377	4, pp. 9, 24; 33, pp. 1, 6, 7
30	AC/DC Substation/OP1 Gas Washer	25	42	4, pp. 9, 24; 33, pp. 1, 6, 7
35	No. 6/OP2 Gas Washer	205	160	4, pp. 9, 24; 33, pp. 1, 6, 7
36	No. 6/OP2 Gas Washer	380	355	4, pp. 9, 24; 33, pp. 1, 6, 7
37	Bag House	290	252	4, pp. 9, 24; 10, p. 15; 33, pp. 1, 6, 7
38	Bag House	194	156	4, pp. 9, 24; 10, p. 15; 33, pp. 1, 6, 7
41	Outside Blower Switch Gear Room	620	599	4, pp. 9, 24; 10, p. 15; 33, pp. 1, 6, 7
42	Blower Switch Gear Room	620	0	4, pp. 9, 25; 10, p. 15; 33, pp. 2, 6, 7
43	Blower Switch Gear Room	354	243	4, pp. 9, 24; 10, p. 15; 33, pp. 1, 6, 7
44	North Motor Room	520	488	4, pp. 9, 24; 33, pp. 1, 6, 7
46	Scarfer	500	460	4, p. 24; 10, p. 14; 33, pp. 1, 6, 7
47	Scarfer	500	516	4, p. 24; 10, p. 14; 33, pp. 2, 6, 7
49	South Motor Room	720	653	4, p. 24; 10, p. 14; 33, pp. 2, 6, 7
50	South Motor Room	720	636	4, p. 24; 10, p. 14; 33, pp. 2, 6, 7
51	South Motor Room	140	117	4, p. 24; 10, p. 14; 33, pp. 2, 6, 7

Locations of Transformers				
Transformer No.	**Location Description**	**Capacity (Gallons)**	**Gallons Removed**	**References**
52	South Motor Room	2,450	2,220	4, p. 25; 10, p. 14; 33, pp. 2, 6, 7
53	South Motor Room	2,680	2,387	4, p. 25; 10, p. 14; 33, pp. 2, 6, 7
54	South Motor Room	2,680	2,430	4, p. 24; 10, p. 14; 33, pp. 2, 6, 7
55	South Motor Room	2,140	1,964	4, p. 24; 10, p. 14; 33, pp. 2, 6, 7
56	South Motor Room	2,680	2,424	4, p. 24; 10, p. 14; 33, pp. 2, 6, 7
57	South Motor Room	2,140	1,891	4, p. 24; 10, p. 14; 33, pp. 2, 6, 7
59	South Motor Room	1,025	900	4, pp. 9, 24; 10, p. 14; 33, pp. 2, 6, 7
60	Basement-South Motor Room	2,070	834	4, pp. 9, 25; 10, p. 14; 33, pp. 2, 6, 7
61	Basement-South Motor Room	2,070		4, pp. 9, 25; 10, p. 14; 33, pp. 2, 6, 7
62	Basement-South Motor Room	2,070		4, pp. 9, 25; 10, p. 14; 33, pp. 2, 6, 7
63	Basement-South Motor Room	2,070		4, pp. 9, 25; 10, p. 14; 33, pp. 2, 6, 7
64	Basement-South Motor Room	2,070		4, pp. 9, 25; 10, p. 14; 33, pp. 2, 6, 7
65	Basement-South Motor Room	2,070		4, pp. 9, 25; 10, p. 14; 33, pp. 3, 6, 7
66	Basement-South Motor Room	812		4, pp. 9, 25; 10, p. 14; 33, pp. 3, 6, 7
67	Basement-South Motor Room	812		4, pp. 9, 25; 10, p. 14; 33, pp. 3, 6, 7
68	Basement-South Motor Room	130	110	4, pp. 9, 25; 10, p. 14; 33, pp. 3, 6, 7
69	Basement-South Motor Room	130	110	4, pp. 9, 25; 10, p. 14; 33, pp. 3, 6, 7
70	Basement-South Motor Room	130	105	4, pp. 9, 25; 10, p. 14; 33, pp. 3, 6, 7
74	#3 Finishing and Shipping	305	265	4, pp. 9, 24; 33, pp. 1, 6, 7
75	#3 Finishing and Shipping	310	334	4, pp. 9, 24; 33, pp. 1, 6, 7
76	North Finishing	525	453	4, pp. 9, 24; 33, pp. 2, 6, 7
77	North Finishing	520	429	4, pp. 9, 24; 33, pp. 2, 6, 7
85	Machine Shop/Slab Storage Bldg.	70	34	4, pp. 9, 24; 10, p. 15; 33, pp. 2, 6, 7
86	Machine Shop/Slab Storage Bldg.	70	33	4, pp. 9, 24; 10, p. 15; 33, pp. 2, 6, 7

Locations of Transformers				
Transformer No.	**Location Description**	**Capacity (Gallons)**	**Gallons Removed**	**References**
87	Machine Shop/Slab Storage Bldg.	70	34	4, pp. 9, 24; 10, p. 15; 33, pp. 2, 6, 7

More than 30 additional transformers under 100 gallons in capacity also were inventoried and, in most cases, drained of PCB oil (Refs. 4, pp. 25, 26; 33, pp. 2, 3, 4, 6, 7). In a few cases, more PCB oil was removed from a transformer than the listed capacity of the transformer (Ref. 33, pp. 1, 2, 3, 4, 6, 7).

2.2.2 HAZARDOUS SUBSTANCES ASSOCIATED WITH THE SOURCE

- Source Samples:
PCB oil samples were collected from PCB transformers during the 2009 time-critical removal action and analyzed using EPA Method 8082 (Refs. 4, p. 24-26; 28; 29). Below are selected samples from transformers at the McLouth site.

Sample ID	Transformer Number	Date Collected	Hazardous Substance	Result (µg/kg)	QL (µg/Kg)	Reference
DSC-051809-trans1	1	5/18/09	Aroclor-1260	575,000,000	47,000,000	4, p. 37; 28, pp. 3, 91
DSC-051809-trans7	7	5/18/09	Aroclor-1260	781,000,000	47,000,000	4, p. 37; 28, pp. 4, 91
DSC-051809-trans9	9	5/18/09	Aroclor-1260	709,000,000	48,500,000	4, p. 37; 28, pp. 6, 91
DSC-051809-trans10	10	5/18/09	Aroclor-1260	799,000,000	53,800,000	4, p. 37; 28, pp. 5, 91
DSC-051909-trans17	17	5/19/09	Aroclor-1260	780,000,000	90,500,000	4, p. 39; 29, pp. 5, 8
DSC-051909-trans18	18	5/19/09	Aroclor-1260	775,000,000	100,000,000	4, p. 39; 29, pp. 5, 9
DSC-051809-trans19	19	5/18/09	Aroclor-1260	771,000,000	48,500,000	4, p. 37; 28, pp. 7, 91
DSC-051809-trans25	25	5/18/09	Aroclor-1260	569,000,000	49,600,000	4, p. 37; 28, pp. 9, 91
DSC-051809-trans26	26	5/18/09	Aroclor-1260	606,000,000	48,700,000	4, p. 38; 28, pp. 10, 91
DSC-051809-trans27	27	5/18/09	Aroclor-1016	765,000,000	46,800,000	4, p. 37; 28, pp. 8, 91
DSC-051909-trans28	28	5/19/09	Aroclor-1260	707,000,000	87,300,000	4, p. 39; 29, pp. 5, 10
DSC-051909-trans29	29	5/19/09	Aroclor-1260	804,000,000	97,000,000	4, p. 39; 29, pp. 5, 11
DSC-051909-trans30	30	5/19/09	Aroclor-1260	707,000,000	93,700,000	4, p. 39; 29, pp. 5, 12
DSC-051909-trans35	35	5/19/09	Aroclor-1016	851,000,000	98,600,000	4, p. 39; 29, pp. 5, 13

Sample ID	Transformer Number	Date Collected	Hazardous Substance	Result (µg/kg)	QL (µg/Kg)	Reference
DSC-051909-trans36	36	5/19/09	Aroclor-1260	571,000,000	88,100,000	4, p. 39; 29, pp. 5, 14
DSC-051809-trans37	37	5/18/09	Aroclor-1016	978,000,000	93,600,000	4, p. 38; 28, pp. 11, 91
DSC-051809-trans38	38	5/18/09	Aroclor-1016	978,000,000	94,700,000	4, p. 38; 28, pp. 12, 91
DSC-051909-trans41	41	5/19/09	Aroclor-1260	911,000,000	96,100,000	4, p. 39; 29, pp. 5, 15
DSC-051909-trans43	43	5/19/09	Aroclor-1254	790,000,000	83,500,000	4, p. 39; 29, pp. 5, 16
DSC-051909-trans44	44	5/19/09	Aroclor-1260	834,000,000	91,600,000	4, p. 39; 29, pp. 5, 17
DSC-051909-trans46	46	5/19/09	Aroclor-1260	641,000,000	73,200,000	4, p. 39; 29, pp. 6, 18
DSC-051909-trans47	47	5/19/09	Aroclor-1260	707,000,000	82,400,000	4, p. 39; 29, pp. 6, 19
DSC-051809-trans68	68	5/18/09	Aroclor-1260	1,060,000,000	66,800,000	4, p. 38; 28, pp. 13, 91
DSC-051809-trans69	69	5/18/09	Aroclor-1260	871,000,000	95,000,000	4, p. 38; 28, pp. 14, 91
DSC-051809-trans70	70	5/18/09	Aroclor-1260	906,000,000	95,900,000	4, p. 38; 28, pp. 15, 91
DSC-051909-trans74	74	5/19/09	Aroclor-1260	658,000,000	95,200,000	4, p. 39; 29, pp. 6, 20
DSC-051909-trans75	75	5/19/09	Aroclor-1260	678,000,000	95,000,000	4, p. 39; 29, pp. 6, 21
DSC-051909-trans76	76	5/19/09	Aroclor-1260	634,000,000	88,300,000	4, p. 39; 29, pp. 6, 22
DSC-051909-trans77	77	5/19/09	Aroclor-1260	852,000,000	96,600,000	4, p. 39; 29, pp. 6, 23
DSC-051909-trans85	85	5/19/09	Aroclor-1260	94,600	18,300	4, p. 39; 29, pp. 6, 24
DSC-051909-trans86	86	5/19/09	Aroclor-1260	84,200	9,460	4, p. 39; 29, pp. 6, 25
DSC-051909-trans87	87	5/19/09	Aroclor-1260	114,000	9,720	4, p. 39; 29, pp. 6, 26

Notes:
µg/kg micrograms per kilogram
QL Quantitation Limit. The QL is equivalent to the method detection limit as defined by the HRS, Section 1.1., Definitions. (Refs. 1, Section 1.1.; 28, p. 2; 29, p. 6).

List of Hazardous Substances Associated with Source
PCBs:
(Aroclor-1016)
(Aroclor-1254)
(Aroclor-1260)

2.2.3 HAZARDOUS SUBSTANCES AVAILABLE TO A PATHWAY

PCB oils were observed leaking from transformers and capacitors (Refs. 4, p. B-4, Photograph #7; 21, pp. 6 to 8). Sewers in the motor rooms of the Pickling Building and the Rolling Mill Building drained to the unlined and earthen Sedimentation Basin (Source 3), also called the Skimmer Pond in the 2009 removal action (Refs. 4, Figure 2; 7, pp. 50, 53). An oil sample collected from the Sedimentation Basin during the 2009 removal action revealed the presence of Aroclor 1260 at 19,400 µg/kg, which documents evidence of hazardous substance migration from the source area (Ref. 32, p. 8). The owner/operator is bankrupt and is no longer maintaining or inspecting waste management units at the facility (Ref. 22, p. 4). EPA contractors observed PCB oils on the floor and saturating absorbent pads leaking from capacitors, and personnel tracking the oils outside buildings (Ref. 21, p. 2).

Containment Description	Containment Factor Value	References
Gas release to air:	Not Scored	- -
Particulate release to air:	Not Scored	- -
Release to groundwater:	Not Scored	- -
Release via overland migration and/or flood: Evidence of hazardous substance migration from the source area. EPA personnel observed oils leaking from transformers and capacitors during the 2009 removal action. Through chemical analysis, the oils in the transformers and capacitors were found to contain high levels of PCBs. PCBs were detected in oils mixed with flood waters in the basement of the motor room. Drains in the buildings where these transformers were abandoned lead to the sedimentation basin (Source 3), which includes PCB contamination.	10	1, Table 4-2; 4, pp. 4, 5, 11-20; 7, pp. 50, 53; 21, pp. 1-15; 30, pp. 1-60; 32, pp. 1-12

2.4.2 HAZARDOUS WASTE QUANTITY

2.4.2.1.1. Hazardous Constituent Quantity

Description

The hazardous constituent quantity for Source No. 1 could not be adequately determined according to the HRS requirements; that is, the total mass of all Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) hazardous substances in the source is not known and cannot be estimated with reasonable confidence (Ref. 1, Section 2.4.2.1.1). There are insufficient historical and current data (manifests, potentially responsible party [PRP] records, state records, permits, and waste concentration data) available to adequately calculate the total mass of all CERCLA hazardous substances in the source and the associated releases from the source. Therefore, there is insufficient information to evaluate the associated releases from the source to calculate the hazardous constituent quantity for Source No. 1 with reasonable confidence (Ref. 1, Section 2.4.2.1.1). Scoring proceeds to the evaluation of Tier B, hazardous wastestream quantity (Ref. 1, Section 2.4.2.1.1).

Hazardous Constituent Quantity Assigned Value: Not Scored

2.4.2.1.2. Hazardous Wastestream Quantity

Description

The hazardous wastestream quantity for Source No. 1 could not be adequately determined according to the HRS requirements; that is, the total mass of all hazardous wastestreams and CERCLA pollutants and contaminants in the source is not known and cannot be estimated with reasonable confidence (Ref. 1, Section 2.4.2.1.2). There are insufficient historical and current data (manifests, PRP records, state records, permits, and waste concentration data) available to adequately calculate the total mass of all hazardous wastestreams and CERCLA pollutants and contaminants in the source and the associated releases from the source. Therefore, there is insufficient information to evaluate the associated releases from the source to calculate the hazardous wastestream quantity for Source No. 1 with reasonable confidence. Scoring proceeds to the evaluation of Tier C, volume (Ref. 1, Section 2.4.2.1.2).

Wastestream Quantity Assigned Value: Not Scored

2.4.2.1.3. Volume

Description

The total quantity of PCB oils still present on the property or that has escaped from transformers and capacitors is unknown. Forty of these capacitors were found to be leaking (Ref. 4, p. 5), and a release of oil from transformers was documented when oils were seen floating on the surface of water in a flooded motor room where many transformers were located (Ref. 4, p. B-4, Photograph#7). A colorimetric PCB test kit shows the presence of PCBs measured in oils from the flooded basement (Ref. 27, pp. 28-34). While much of the PCB oil was removed from transformers and capacitors to an off-site disposal facility, some residual PCB oils remain in on-site transformers and in oils spilled from the transformers and capacitors (Refs. 4, p. 26; 22, p. 5; 33). Therefore, the volume of PCB oils associated with the transformers and capacitors still present at the facility is unknown, but greater than 0 cubic yards. The source type “Tanks and containers other than drums” is evaluated under Tier C and divided by 2.5 to obtain the assigned value, as shown below (Ref. 1, Table 2-5).

Source No: 1

Sum: Unknown but greater than zero (>0)
Equation for Assigning Value (Ref. 1, Table 2-5): (>0)/2.5

Volume Assigned Value: Unknown but greater than zero (>0)

2.4.2.1.4. Area

Description
Tier D is not evaluated for source type "Other" (Ref. 1, Table 2-5).

Area Assigned Value: Not Scored

2.4.2.1.5. Source Hazardous Waste Quantity Value

Highest assigned value assigned from Ref. 1, Table 2-5: Unknown but >0

2.2 SOURCE CHARACTERIZATION

2.2.1 SOURCE IDENTIFICATION

Name of source: Site-Wide Contaminated Soil Number of source: 2

Source Type: Contaminated Soil

Description and Location of Source (with reference to a map of the site):

Source 2 is composed of contaminated surface soil throughout the facility based on samples collected as part of the 2015 ESI sampling event (Ref. 6, Figure 4; see also Figure 2 of this HRS documentation record). Site-wide slag fill and ore storage are two likely origins of soil contamination throughout the facility (Ref. 6, pp. 14, 15).

The ESI sampling event included collection of surface soil from 15 locations within the top 6 inches below ground surface (bgs) (Ref. 6, p. 22, Figure 4). Because some contaminants are naturally occurring or ubiquitous in urban environments, contamination of surface soils was established based on comparison to background and using only concentrations that are elevated above background levels (Ref. 1, Table 2-3). Surface soil contamination was not inferred between contaminated sampling points because past contaminant deposition processes are not fully known. Instead, each contaminated soil sample location represents a discrete point of soil contamination, and those contaminated surface soil sample locations are aggregated as a single source for this documentation record. Source 2 soil samples were aggregated into a single source because these samples: (1) document of the same source type; (2) affect similar target populations; (3) have the same containment features; (4) are in the same watershed; and (5) contain similar hazardous substances (Refs: 4; 6, Tables 8, 9, 16, and 17; 23; 34; 35; 36; 37; 94; 95; see also section 2.2.2 of this source characterization and section 4.1, section 4.1.3.3, section 4.1.4.3 and Figure 3 of this HRS documentation record).

Soil types comprising Source 2 samples includes, to a large degree, non-native materials deposited as fill by past operators (Ref. 6, p. 14, Table 2). All soil samples were collected within the top 0 to 6 inches of surface soil (Ref. 6, Table 2). The following presents soil type descriptions of contaminated soil samples constituting Source 2 (Ref. 6, Table 2):

- SS-01: Moist, dark brown, sand and gravel with some slag.
- SS-02: Gravel and taconite pellets at the surface, with dry, dark brown, sand and gravel with some taconite pellets to 6 inches.
- SS-04: Moist, dark brown, silty fine to medium sand with some fine gravel.
- SS-05: Moist, Black, sand and gravel.
- SS-06: Dry, dark brown to reddish-brown, fine to medium sand with some taconite pellets and organic material.
- SS-07: Moist, black, organic sand.
- SS-08: Gravel at surface, with dry, dark brown, sand and gravel with some flaky metallic material to 6 inches.
- SS-10: Gravel at surface, with dry, dark brown, slag with some sand and gravel to 6 inches.
- SS-12D: Dry, reddish-orange, medium to course sand with trace of fine gravel.
- SS-14: Dry, black, fine sand and silt with some fine gravel and slag.

2.2.2 HAZARDOUS SUBSTANCES ASSOCIATED WITH THE SOURCE

Background Concentrations:
Surface soil sample SS-15 was collected from an area in the northern portion of the property (Ref. 6, Figure 4). Soil composition of SS-15 is described in the ESI as "Moist, dark brown, silty fine to medium sand with some fine to coarse gravel and trace fine roots," which is similar to other soil samples of native material (Ref. 6, Table 2). All soil samples were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), Pesticides/PCBs, Dioxins/Furans (EPA Method 1613B), and inorganics (Refs. 6, p. 26; 34, p. 100). Inorganics, including metals, were analyzed using the Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES) procedure (Ref. 35, p. 4). SVOCs, PCBs, and Pesticides were analyzed according to EPA's Contract Laboratory Program (CLP) Statement of Work (SOW) SOM2.2 and validated according to EPA's National Functional Guidelines for data review of SOM2.2 (Ref. 37, p. 4). The MDEQ laboratory analyzed soil samples for VOCs using EPA Methods 8260 and 624 (Ref. 40, p. 3).

ESI Sample ID	Laboratory Sample ID	Date	Hazardous Substance	Result	SQL/ CRQL	Reference
SS-15	E6BC7	11/5/2015	2,3,7,8-TCDD	0.531 J[a] ng/kg	1.13 ng/kg	34, pp. 30, 51, 89, 188
			2,3,7,8-TCDF	4.20 ng/kg	1.13 ng/kg	
			1,2,3,7,8-PeCDF	5.65 U ng/kg	5.65 ng/kg	
			2,3,4,7,8-PeCDF	4.34 J[a] ng/kg	5.65 ng/kg	
			1,2,3,4,7,8-HxCDF	2.81 ng.kg	5.65 ng/kg	
			1,2,3,6,7,8-HxCDF	6.31 ng/kg	5.65 ng/kg	
			1,2,3,6,7,8-HxCDD	4.89 ng/kg	5.65 ng/kg	
			1,2,3,7,8,9-HxCDD	3.01 ng/kg	5.65 ng/kg	
			2,3,4,6,7,8-HxCDF	5.65 UJ[b] ng/kg	5.65 ng/kg	
			1,2,3,4,6,7,8-HpCDF	21.5 ng/kg	5.65 ng/kg	
			1,2,3,4,6,7,8-HpCDD	81.0 ng/kg	5.65 ng/kg	
			OCDD	575 ng/kg	1.13 ng/kg	
	ME6BC7		Arsenic	10.0 U mg/kg	10 mg/kg	35, pp. 69, 86, 110; 36, p. C-5, C-6
			Beryllium	0.50 U mg/kg	0.5 mg/kg	
			Cadmium	0.61 J[a] mg/kg	2.5 mg/kg	
			Lead	39.1 J[a] mg/kg	5 mg/kg	
			Silver	0.61 J[a] mg/kg	1 mg/kg	
			Zinc	229 J- mg/kg	6 mg/kg	
	E6BC7		2-Methylnaphthalene	190 U µg/kg	190 µg/kg	37, pp. 113, 165, 262
			1,1'-Biphenyl	190 U µg/kg	190 µg/kg	37, pp. 113-114, 165, 263
			Acenaphthene	34 J[a] µg/kg	370 µg/kg	
			Fluorene	190 U µg/kg	190 µg/kg	
			Phenanthrene	160 J[a] µg/kg	190 µg/kg	
			Anthracene	33 J[a] µg/kg	190 µg/kg	
			Carbazole	190U µg/kg	190 µg/kg	
			Fluoranthene	300 J[a] µg/kg	370 µg/kg	

ESI Sample ID	Laboratory Sample ID	Date	Hazardous Substance	Result	SQL/ CRQL	Reference
			Pyrene	350 µg/kg	190 µg/kg	37, pp. 114-115, 165, 264
			Benzo(a)anthracene	310 µg/kg	190 µg/kg	
			Chrysene	430 µg/kg	190 µg/kg	
			Benzo(b)fluoranthene	800 µg/kg	190 µg/kg	
			Benzo(k)fluoranthene	260 µg/kg	190 µg/kg	
			Benzo(a)pyrene	520 µg/kg	190 µg/kg	
			Indeno(1,2,3-cd)pyrene	410 µg/kg	190 µg/kg	
			Dibenzo(a,h)anthracene	140 J[a] µg/kg	190 µg/kg	
			Benzo(g,h,i)perylene	440 µg/kg	190 µg/kg	
			Aroclor-1242	37 U µg/kg	37 µg/kg	37, pp. 116, 165, 352
			Aroclor-1248	34 J[a] µg/kg	37 µg/kg	
			Aroclor-1254	37 U µg/kg	37 µg/kg	
			Aroclor-1260	23 J[a] µg/kg	37 µg/kg	

Notes:
SQL = Sample Quantitation Limit
CRQL = Contract Required Quantitation Limit
J^a = The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample because the concentration of the analyte was below the adjusted CRQL; no bias is associated (Refs. 34, p. 12; 35, p. 9; 37, p. 12, 19).
UJ^b = The analyte concentration was originally reported in the laboratory data as qualified as a result of blank contamination and as a maximum possible concentration due to failure of identification criteria resulting from interference by another compound (Ref. 34, pp. 8, 9, 97, 188). During validation of the laboratory data, the most conservative (worst case scenario) approach was determined to be to assume that the compound is present and to qualify the estimated maximum possible concentration and assign it a "J" qualified, indicating that it is an estimated concentration. Some results were subsequently qualified UJ resulting from blank contamination (Ref. 34, p. 8, 9, 30). The qualifiers in this case would indicate a high bias for the reported CRQL concentration. Therefore, no adjustment was made according to the EPA fact sheet "*Using Qualified Data to Document an Observed Release and Observed Contamination*" (Ref. 60, Exhibit 1 and 3).
J- = Result is an estimated quantity, but the result may be biased low.
U = The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The SQL/CRQL is shown in the adjacent column.
ng/kg nanograms per kilogram
µg/kg micrograms per kilogram
mg/kg milligrams per kilogram

- Source Samples:
Soil samples SS-01, SS-02, SS-04, SS-05, SS-06, SS-07, SS-08, SS-10, and SS-14 were found to be elevated above background when compared to background sample SS-15 (Refs. 1, Table 2-3; 6, Table 8). Sample locations are shown on Figure 2, Source Location Map in this documentation record.

ESI Sample ID	Laboratory Sample ID	Date	Hazardous Substance	Result	SQL/ CRQL	Reference
SS-01	E6BB1	11/6/2015	1,2,3,7,8-PeCDF	9.72 ng/kg	5.63 ng/kg	34, pp. 14, 35, 89, 137
			2,3,4,7,8-PeCDF	19.2 ng/kg	5.63 ng/kg	
			1,2,3,4,7,8-HxCDF	16.0 ng/kg	5.63 ng/kg	
			2,3,4,6,7,8-HxCDF	21.1 ng/kg	5.63 ng/kg	
			1,2,3,4,6,7,8-HpCDF	70.3 ng/kg	5.63 ng/kg	
	ME6BB1		Beryllium	4.9 mg/kg	0.5 mg/kg	35, pp. 13, 85, 94; 36, p. C-5
	E6BB1		2-Methylnaphthalene	1,200 µg/kg	390 µg/kg	37, pp. 24, 164, 185
			1,1'-Biphenyl	350 µg/kg	200 µg/kg	37, pp. 24, 25, 164, 186
			Acenaphthene	7,000 µg/kg	390 µg/kg	
			Fluorene	6,100 µg/kg	200 µg/kg	
			Phenanthrene	55,000 µg/kg	390 µg/kg	
			Anthracene	13,000 µg/kg	390 µg/kg	
			Carbazole	8,300 µg/kg	390 µg/kg	
			Fluoranthene	62,000 µg/kg	200 µg/kg	37, pp. 25, 26, 164, 187
			Pyrene	54,000 µg/kg	200 µg/kg	
			Benz(a)anthracene	32,000 µg/kg	390 µg/kg	
			Chrysene	31,000 µg/kg	390 µg/kg	
			Benzo(b)fluoranthene	35,000 µg/kg	390 µg/kg	
			Benzo(k)fluoranthene	16,000 µg/kg	390 µg/kg	
			Benzo(a)pyrene	26,000 µg/kg	390 µg/kg	
			Indeno(1,2,3-cd)pyrene	13,000 µg/kg	390 µg/kg	
			Dibenz(a,h)anthracene	2,500 µg/kg	390 µg/kg	
			Benzo(g,h,i)perylene	14,000 µg/kg	390 µg/kg	
SS-02	ME6BB2	11/6/2015	Beryllium	4.6 mg/kg	0.5 mg/kg	35, pp. 16, 85, 95; 36, p. C-5
	E6BB2		Aroclor-1242	95 µg/kg	40 µg/kg	37, pp. 29, 163, 332
SS-04	E6BB5	11/6/2015	Aroclor-1254	59 µg/kg	38 µg/kg	37, pp. 56, 163, 339
SS-05	ME6BB6	11/6/2015	Beryllium	7.2 mg/kg	0.5 mg/kg	35, pp. 36, 85, 99; 36, p. C-5
			Cadmium	1.9 mg/kg	0.5 mg/kg	
			Lead	8,710 J mg/kg	10 mg/kg	
SS-06	E6BB7	11/6/2015	2,3,7,8-TCDF	17.2 ng/kg	1.28 ng/kg	34, pp. 20, 41, 89, 156
			1,2,3,7,8-PeCDF	9.66 ng/kg	6.39 ng/kg	
			2,3,4,7,8-PeCDF	19.2 ng/kg	6.39 ng/kg	
			2,3,4,6,7,8-HxCDF	10.9 ng/kg	6.39 ng/kg	

ESI Sample ID	Laboratory Sample ID	Date	Hazardous Substance	Result	SQL/ CRQL	Reference
SS-07	E6BB8	11/6/2015	2,3,7,8-TCDD	3.39 ng/kg	1.5 ng/kg	34, pp. 21, 42, 89, 159
			2,3,7,8-TCDF	46.1 ng/kg	1.5 ng/kg	34, pp. 21, 42, 89, 159
			1,2,3,7,8-PeCDF	90.4 ng/kg	7.5 ng/kg	34, pp. 21, 42, 89, 159
			2,3,4,7,8-PeCDF	142 ng/kg	7.5 ng/kg	34, pp. 21, 42, 89, 159
			1,2,3,4,7,8-HxCDF	34.6 ng/kg	7.5 ng/kg	34, pp. 21, 42, 89, 159
			1,2,3,6,7,8-HxCDF	22.9 ng/kg	7.5 ng/kg	34, pp. 21, 42, 89, 159
			1,2,3,7,8,9-HxCDD	13.2 ng/kg	7.5 ng/kg	34, pp. 21, 42, 89, 159
			2,3,4,6,7,8-HxCDF	44.7 ng/kg	7.5 ng/kg	34, pp. 21, 42, 89, 159
			1,2,3,4,6,7,8-HpCDF	75.4 ng/kg	7.5 ng.kg	34, pp. 21, 42, 89, 159
			OCDD	1,820 ng/kg	15 ng.kg	34, pp. 21, 42, 89, 159
	ME6BB8		Lead	703 J mg/kg	20 mg/kg	35, pp. 43, 85, 101; 36, p. C-5
			Zinc	10,300 J- mg/kg	120 mg/kg	
	E6BB8		Aroclor-1260	2,700 µg/kg	51 µg/kg	37, pp. 71. 163,
SS-08	E6BB9	11/6/2015	2,3,7,8-TCDF	256 ng/kg	1.13 ng/kg	34, pp. 22, 43, 89, 162
			1,2,3,7,8-PeCDF	109 ng/kg	5.65 ng/kg	
			2,3,4,7,8-PeCDF	558 ng/kg	5.65 ng/kg	
			1,2,3,4,7,8-HxCDF	197 ng/kg	5.65 ng/kg	
			2,3,4,6,7,8-HxCDF	193 ng/kg	5.65 ng/kg	
			1,2,3,4,6,7,8-HpCDF	187 ng/kg	5.65 ng/kg	
SS-10	E6BC1	11/6/2015	2,3,7,8-TCDD	2.29 ng/kg	1.22 ng/kg	34, pp. 24, 45, 89, 168
			2,3,7,8-TCDF	31.8 ng/kg	1.22 ng/kg	
			1,2,3,7,8-PeCDF	18.5 ng/kg	6.09 ng/kg	
			2,3,4,7,8-PeCDF	32.4 ng/kg	6.09 ng/kg	
			1,2,3,4,7,8-HxCDF	27.2 ng/kg	6.09 ng/kg	
			1,2,3,6,7,8-HxCDF	21.9 ng/kg	6.09 ng/kg	
			1,2,3,6,7,8-HxCDD	27.9 ng/kg	6.09 ng/kg	
			1,2,3,7,8,9-HxCDD	14.4 ng/kg	6.09 ng/kg	
			2,3,4,6,7,8-HxCDF	30.3 ng/kg	6.09 ng/kg	
			1,2,3,4,6,7,8-HpCDF	73.0 ng/kg	6.09 ng/kg	
			1,2,3,4,6,7,8-HpCDD	477 ng/kg	6.09 ng/kg	
			OCDD	3,660 ng/kg	12.2 ng/kg	
	ME6BC1		Lead	739 J mg/kg	20 mg/kg	35, pp. 50, 86, 104; 36, p. C-5
			Silver	5.6 mg/kg	1 mg/kg	
			Zinc	4,420 J- mg/kg	120 mg/kg	
	E6BC1		Aroclor-1242	150 µg/kg	41 µg/kg	37, pp. 83, 164,
			Aroclor-1248	140 µg/kg	41 µg/kg	
SS-14	ME6BC6	11/6/2015	Lead	1,410 J mg/kg	50 mg/kg	35, pp. 67, 86, 109; 36, p. C-5
			Silver	8.5 mg/kg	1 mg/kg	

ESI Sample ID	Laboratory Sample ID	Date	Hazardous Substance	Result	SQL/ CRQL	Reference
			Zinc	17,200 J- mg/kg	120 mg/kg	

Notes:
SQL = Sample Quantitation Limit
CRQL = Contract Required Quantitation Limit
J = The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample because certain quality control criteria were not met (Refs. 34, p. 12; 35, p. 9; 37, p. 19).
J- = Result is an estimated quantity, but the result may be biased low (Ref. 35, pp. 5, 6, 9).
ng/kg nanograms per kilogram
µg/kg micrograms per kilogram
mg/kg milligrams per kilogram

List of Hazardous Substances Associated with Source

2,3,7,8-TCDD	OCDD	Phenanthrene	Dibenz(a,h)anthracene
2,3,7,8-TCDF	Benzo(g,h,i)perylene	Anthracene	PCBs:
1,2,3,7,8-PeCDF	Beryllium	Carbazole	Aroclor-1242
2,3,4,7,8-PeCDF	Cadmium	Fluoranthene	Aroclor-1248
1,2,3,4,7,8-HxCDF	Lead	Pyrene	Aroclor-1254
1,2,3,6,7,8-HxCDF	Silver	Benz(a)anthracene	Aroclor-1260
1,2,3,6,7,8-HxCDD	Zinc	Chrysene	
1,2,3,7,8,9-HxCDD	2-Methylnaphthalene	Benzo(b)fluoranthene	
2,3,4,6,7,8-HxCDF	1,1'-Biphenyl	Benzo(k)fluoranthene	
1,2,3,4,6,7,8-HpCDF	Acenaphthene	Benzo(a)pyrene	
1,2,3,4,6,7,8-HpCDD	Fluorene	Indeno(1,2,3-cd)pyrene	

2.2.3 HAZARDOUS SUBSTANCES AVAILABLE TO A PATHWAY

Containment Description	Containment Factor Value	References
Gas release to air:	Not scored	- -
Particulate release to air:	Not scored	- -
Release to groundwater:	Not scored	- -
Release via overland migration and/or flood: This in situ contaminated soil source has no maintained engineered cover or a functioning and maintained run-on control system and runoff management system. Maintenance is absent because there is no current facility operator and contamination is left in place.	10	1, Table 4-2; 6, Tables 8, 9, 16, and 17; 94; 95

2.4.2 HAZARDOUS WASTE QUANTITY

2.4.2.1.1. Hazardous Constituent Quantity

Description
The hazardous constituent quantity for Source No. 2 could not be adequately determined according to the HRS requirements; that is, the total mass of all CERCLA hazardous substances in the source is not known and cannot be estimated with reasonable confidence (Ref. 1, Section 2.4.2.1.1). There are insufficient historical and current data (manifests, PRP records, state records, permits, and waste concentration data) available to adequately calculate the total mass of all CERCLA hazardous substances in the source and the associated releases from the source. Therefore, there is insufficient information to evaluate the associated releases from the source to calculate the hazardous constituent quantity for Source No. 2 with reasonable confidence (Ref. 1, Section 2.4.2.1.1). Scoring proceeds to the evaluation of Tier B, hazardous wastestream quantity (Ref. 1, Section 2.4.2.1.1).

Hazardous Constituent Quantity Assigned Value: Not Scored

2.4.2.1.2. Hazardous Wastestream Quantity

Description
The hazardous wastestream quantity for Source No. 2 could not be adequately determined according to the HRS requirements; that is, the total mass of all hazardous wastestreams and CERCLA pollutants and contaminants in the source is not known and cannot be estimated with reasonable confidence (Ref. 1, Section 2.4.2.1.2). There are insufficient historical and current data (manifests, PRP records, state records, and permits) available to adequately calculate the total mass of all hazardous wastestreams and CERCLA pollutants and contaminants in the source and the associated releases from the source. Therefore, there is insufficient information to evaluate the associated releases from the source to calculate the hazardous wastestream quantity for Source No. 2 with reasonable confidence. Scoring proceeds to the evaluation of Tier C, volume (Ref. 1, Section 2.4.2.1.2).

Hazardous Wastestream Quantity Assigned Value: Not Scored

2.4.2.1.3. Volume

Description
The depth of the contaminated soil is not known and is not likely to be uniform, and the areal extent cannot be determined because contamination cannot be consistently inferred between sampling points. The information available is not sufficient to evaluate Tier C source hazardous volume quantity for Source No. 2 with reasonable confidence. Therefore, hazardous volume quantity for Source No. 2 could not be adequately determined according to the HRS requirements (Ref. 1, Section 2.4.2.1.3). As a result, the evaluation of hazardous waste quantity scoring proceeds to the evaluation of Tier D (Ref. 1, Section 2.4.2.1.3).

Volume Assigned Value: 0
(Ref. 1, Section 2.4.2.1.3)

2.4.2.1.4. Area

Description
This contaminated soil source is made up of discrete sample locations with similar hazardous substances associated with facility processes (Refs. 4, p. 5; 6, pp. 22, 27, 41, 47, 48, 68-77; 63, pp. 19, 20). See Section 2.2.2 of Source 2 for hazardous substances source samples. Total area of contaminated soil is unknown but greater than zero.

Source Type	Units (ft^2)	References
Contaminated Soil	>0	4, p. 5; 6, pp. 22, 27, 41, 47, 48, 68-77; 63, pp. 19, 20

Sum (ft^2): >0
Equation for Assigning Value (Ref. 1, Table 2-5): >0/34,000 = >0

Area Assigned Value: Unknown but greater than zero (>0)

2.4.2.1.5. Source Hazardous Waste Quantity Value

Highest assigned value assigned from Ref. 1, Table 2-5: Unknown but >0

2.2 SOURCE CHARACTERIZATION

2.2.1 SOURCE IDENTIFICATION

Name of source: Sedimentation Basin (aka Skimmer Pond) Number of source: 3

Source Type: Surface Impoundment

Description and Location of Source (with reference to a map of the site):
Source 3 is a liquid-filled surface impoundment referred to as the Sedimentation Basin and the Skimmer Pond (Refs. 4, Figure 2; 7, p. 50; 16, p. 12; 98, p. 3).

The Sedimentation Basin (WMU 1) is an earthen basin formerly used for settling and oil separation of storm water and process wastewater from rolling and pickling operations (Refs. 7, p. 50; 98, p. 3). The Sedimentation Basin receives wastewater from the main building (also known as the Finishing and Shipping Building, which includes the Motor Rooms, and Concast, Rehead and Rolling mills) via the West Process Sewer – North (WMU 3) (Refs. 7, pp. 50, 53; 38, pp. 1, 19; 96, p. 1). The West Process Sewer – North was observed and mapped during a 2017 site visit (Ref. 98, pp. 1, 2). At least 28 of the transformers from which PCB oils were removed in 2009 were stored in these areas of the facility that drain to the Sedimentation Basin (Ref. 33, pp. 1-5). EPA observed PCB oil mixed with floodwaters in the South Motor Room basement in 2009 (Ref. 27, photos 28-34). These areas drain directly to the Sedimentation Basin without treatment, because oil skimming and water treatment occurs at the Central Waste Water Treatment Plant (CWWTP) after wastewater leaves the sedimentation basin (Refs. 7, pp. 50-51, 53; 96, p. 1). Treated wastewater from the CWWTP is discharged via a National Pollution Discharge Elimination System (NPDES) permitted outfall on the Trenton Channel of the Detroit River (Ref. 103, pp. 1, 4).

On June 14, 2007, a fire occurred in the Sedimentation Basin at the facility (Ref. 8). The TFD Chief requested emergency removal support from EPA based on visual evidence of possible improper handling of waste materials (Refs. 8; 15; 31). The Sedimentation Basin had a noticeable oil slick that had collected at the northern end of the pond due to wind action (Ref. 96, p. 1). A number of partially buried drums were observed at the south end of the pond and the U.S. Fish and Wildlife Service observed at least one dead bird at the pond area (Ref. 96, p. 1, 2).

The location of the Sedimentation Basin is shown on Figure 2, Source Location Map, of this documentation record. Figure 2 of Reference 4 identifies the Sedimentation Basin as the Skimmer Pond.

2.2.2 HAZARDOUS SUBSTANCES ASSOCIATED WITH THE SOURCE

- Source Samples:
On July 27, 2009, an oil sample was collected from an oil skimmer on the Sedimentation Basin (Refs. 27, p. 53; 32, pp. 7-9; 38). Referred to as "skimmer oil," the sample was analyzed for select inorganics using EPA Method 6010B and for PCBs using EPA Method 8082 (Ref. 32, pp. 7, 8).

Sample ID	Sample Type	Date	Hazardous Substance	Hazardous Substance Concentration	Method Detection Limit	Reference
L09070593-01	Skimmer Oil	7/27/2009	Chromium	5.79 mg/kg	0.474 mg/kg	32, p. 7, 12
			Aroclor-1260	19,400 µg/kg	245 µg/kg	32, p. 8, 12

Notes:
mg/kg milligrams per kilogram
µg/kg micrograms per kilogram

List of Hazardous Substances Associated with Source
Chromium
PCBs (Aroclor-1260)

2.2.3 HAZARDOUS SUBSTANCES AVAILABLE TO A PATHWAY
Free liquids are present in the Sedimentation Basin, and there is no evident diking (Ref. 6, p. 13; 7, pp. 50, 53; 27, p. 53; 45, pp. 49-60; 96, pp. 1, 2). Sewer drains in the buildings where the PCB transformers were stored lead directly to the Sedimentation Basin, so that the Sedimentation Basin receives PCB oils from the basements of the old buildings (Refs. 7, pp. 50, 53; 32, p. 7; 96, p. 1). Operations are abandoned by the bankrupt owner/operator, therefore, there is no current maintenance or inspection of the Sediment Basin (Ref. 22, p. 4). Photos from a 2007 multi-media inspection conducted by MDEQ show free liquids (including oils) present in the impoundment, no diking, and disrepair (Ref 45, pp. 49-60).

Containment Description	Containment Factor Value	References
Gas release to air:	Not scored	- -
Particulate release to air:	Not scored	- -
Release to groundwater:	Not scored	- -
Release via overland migration and/or flood: Free liquids present, no diking and the impoundment is not regularly inspected and maintained. Maintenance is absent because there is no current facility operator and contamination is left in place.	10	1, Table 4-2; 6, p. 4; 7, pp. 50, 53; 22, p. 4; 27, p. 53; 45, pp. 49-60; 74; 94; 95; 96, p. 1, 2; 98, p. 3)

2.4.2 HAZARDOUS WASTE QUANTITY

2.4.2.1.1. Hazardous Constituent Quantity

Description

The hazardous constituent quantity for Source No. 3 could not be adequately determined according to the HRS requirements; that is, the total mass of all CERCLA hazardous substances in the source is not known and cannot be estimated with reasonable confidence (Ref. 1, Section 2.4.2.1.1). There are insufficient historical and current data (manifests, PRP records, state records, permits, and waste concentration data) available to adequately calculate the total mass of all CERCLA hazardous substances in the source and the associated releases from the source. Therefore, there is insufficient information to evaluate the associated releases from the source to calculate the hazardous constituent quantity for Source No. 3 with reasonable confidence (Ref. 1, Section 2.4.2.1.1). Scoring proceeds to the evaluation of Tier B, hazardous wastestream quantity (Ref. 1, Section 2.4.2.1.1).

Hazardous Constituent Quantity Assigned Value: Not Scored

2.4.2.1.2. Hazardous Wastestream Quantity

Description

The hazardous wastestream quantity for Source No. 3 could not be adequately determined according to the HRS requirements; that is, the total mass of all hazardous wastestreams and CERCLA pollutants and contaminants in the source is not known and cannot be estimated with reasonable confidence (Ref. 1, Section 2.4.2.1.2). There are insufficient historical and current data (manifests, PRP records, state records, and permits) available to adequately calculate the total mass of all hazardous wastestreams and CERCLA pollutants and contaminants in the source and the associated releases from the source. Therefore, there is insufficient information to evaluate the associated releases from the source to calculate the hazardous wastestream quantity for Source No. 3 with reasonable confidence. Scoring proceeds to the evaluation of Tier C, volume (Ref. 1, Section 2.4.2.1.2).

Hazardous Wastestream Quantity Assigned Value: Not Scored

2.4.2.1.3. Volume

Description

Source Type	Description	Units (yd^3)	References
Surface Impoundment	Oily water and free phase oily liquids.	8,634	5, p. 8

A volume of 8,634 cubic yards is provided for the Sedimentation Basin in the 2014 CERCLA Reassessment Report (Ref. 5, p. 8). In addition, survey tools were used to calculate the area of the Sedimentation Basin during a site visit in August 2017 (Ref. 98). Based on the measurements taken during the August 2017 site visit, the volume of the Sedimentation Basin is estimated at 8,978.5 cubic yards (Ref. 98, pp. 1, 2). The two estimates differ by approximately 345 cubic yards; the lower of the two volume estimates was used for the volume measure for the source.

Sum (yd^3): 8,634 yd^3
Equation for Assigning Value (Ref. 1, Table 2-5): 8,634/2.5 = 3,453.6

Volume Assigned Value: 3,453.6

2.4.2.1.4. Area

Description
Section 2.4.2.1.3 of the HRS states that if the volume of a source can be determined, then do not evaluated the area measure (Ref. 1, Section 2.4.2.1.3). Therefore, the area measure is not scored for Source 3.

Area Assigned Value: 0
(Ref. 1, Section 2.4.2.1.3)

2.4.2.1.5. Source Hazardous Waste Quantity Value

Highest assigned value assigned from Ref. 1, Table 2-5: 3,453.6

2.2 SOURCE CHARACTERIZATION

2.2.1 SOURCE IDENTIFICATION

Name of source: NPDES Outfall 001 Number of source: 4

Source Type: Other

Description and Location of Source (with reference to a map of the site):
Source 4 is comprised of effluent discharged from NPDES permitted outfall #001 that violated permitted discharge limits (Ref. 46, pp. 353, 354). See Figure 2, Source Location Map of this HRS documentation record.

McLouth and Detroit Steel (McLouth Steel Corp) had a NPDES permit (Permit No. MI0002399) with three primary outfalls (001, 002, and 004) that discharged directly into the Trenton Channel of the Detroit River (Ref. 103, pp. 1, 2, 7). Outfall 001 discharged process wastewater from the basic oxygen furnaces, pickling lines, electric furnaces and the rolling mill (Ref. 103, pp. 2, 7). Process wastewaters and contact cooling waters were collected and conveyed to McLouth's CWWTP (Ref. 46, p. 353). Grit and oil removal occurred in the CWWTP and the pH of the effluent was adjusted using lime in a mixing chamber (Ref. 46, pp. 353, 354). The wastewater flowed into one of three clarifiers where a polymer and spent pickle liquor (ferrous chloride or ferric chloride) were added (Ref. 46, p. 354). All three clarifiers discharged to a closed drain that contained storm water runoff and non-contact cooling water from the hot rolling mill (Ref. 46, p. 354). The effluent was discharged into a pipeline that carried the combined wastewater to Outfall 001 and the Trenton Channel of the Detroit River (Ref. 46, p. 354; see also Figure 2 of this HRS documentation record).

McLouth's NPDES Permit discharge limits were established for oil and grease, total cyanide, total suspended solids (TSS), total lead, total zinc, pH, ammonia, total phenols, total copper, total iron, hardness, residual chlorine, and other parameters (Ref. 46, p. 354-360, Table 8-13). Discharge monitoring reports for October 1987 through December 1990 indicate limits were exceeded for total iron (37), oil/grease (10), pH (6), cyanide (9), TSS (16) and total phenol (1) (Ref. 46, p. 360). The State of Michigan and McLouth entered into a Consent Decree on November 17, 1986, as a result of violations of the NPDES permits (Ref. 46, p. 360). McLouth was required to pay $100,000 for violations of its NPDES permit effluent requirements (Ref. 46, p. 360). The McLouth facility was out of compliance with its NPDES permit for years in the late 1980s and early 1990s because hazardous substance discharges exceeded permitted levels (Ref. 46, p. 360).

2.2.2 HAZARDOUS SUBSTANCES ASSOCIATED WITH THE SOURCE

- Permit Violations and Spills by date:

December 1974 H_2SO_4 Spill:
On December 27, 1974, an acid storage tank containing sulfuric acid (H_2SO_4) associated with the pickling operation was ruptured by a fork lift truck, releasing approximately 4,000 gallons of sulfuric acid (Refs. 101; 102). Approximately 1,000 gallons of the H_2SO_4 was released from Outfall 001 to the Trenton Channel of the Detroit River (Refs. 101; 102). The relative density of H_2SO_4 is 1.8 (Ref. 108, p. 6), which means that H_2SO_4 is 1.8 times as heavy as water. By knowing the relative density of H_2SO_4, the pounds of H_2SO_4 released can be calculated as follows (Ref. 24):

$$Pounds\ of\ H2SO4\ (lbs) = H2SO4\ specific\ gravity\ \left(\frac{lbs}{ga}\right) \times water\ density\ \left(\frac{lbs}{ga}\right) \times sulfuric\ acid\ solution\ (gallons)$$

or,

15,012 = 1.8 X 8.34 X 1,000

Therefore, the release in 1974 equates to approximately 15,012 pounds of H_2SO_4, which is greater than the CERCLA hazardous substance reportable quantity for H_2SO_4 of 1,000 pounds (Ref. 109, p. 18).

December 1976 Violation:
McLouth was issued a Notice of Noncompliance (NON) by the MDNR Water Resources Commission on February 11, 1977 (Ref. 106, p. 1). The NON states that McLouth failed to comply with NPDES Permit MI0002399 issued on September 26, 1975, which constitutes a violation of the permit (Ref. 106, p. 1). The NON violations were based on monthly monitoring reports submitted for December 1976 (Ref. 106, p. 1). McLouth sent a response to the NON dated February 25, 1977 which does not contest the violations and explains that they were the result of uneven furnace temperatures due to fuel changes (Ref. 107). The following table summarizes this violation for total cyanide.

Hazardous Substance	Reported		Discharge Limitations		Outfall	Reference
	Daily Average	Daily Maximum	Daily Average	Daily Maximum		
Total cyanide	0.29 mg/L	1.08 mg/L	0.2 mg/L	0.71 mg/L	001	106
	96 lbs/day	358 lbs/day	95 lbs/day	235 lbs/day	001	

Notes:
Daily Average reported values were based on the average for the month of December 1976.
Daily Maximum reported values were based on samples collected on December 27, 1976.
lbs/day is pounds per day.
mg/L is milligrams per liter.

October 1980 Violation:
McLouth was issued a Notice of Noncompliance (NON) by the MDNR Water Resources Commission on December 30, 1980 (Ref. 104, p. 1, 2). The NON states that McLouth failed to comply with NPDES Permit MI0002399 issued on September 26, 1975, which constitutes a violation of the permit (Ref. 104, p. 1). The NON violations were based on monthly monitoring reports submitted for October 1980 (Ref. 104, p. 1). McLouth sent a response to the NON dated December 31, 1980 which does not contest the violations and explains that they were the result of equipment repair and failure (Ref. 105, p. 1). In addition, no wastewater discharge flow measurements were taken during the first three days of October due to an on-going labor strike that occurred during this time (Ref. 105, p. 1). The NON also identifies violations for "Oil and Grease-Freon" and oxidizable cyanide as well as the failure to monitor flow and report results for October 1, 2, and 3, 1980 (Ref. 104, pp. 1, 2). The following table summarizes this violation for oxidizable cyanide.

Hazardous Substance	Concentration	Discharge Limit*	Date	Outfall	Reference
Oxidizable cyanide	1.26 mg/L	0.2 mg/L	10/19/1980	001	104, pp. 1, 2
	0.21 mg/L		10/26/1980	001	

List of Hazardous Substances Associated with Source
Sulfuric acid
Oxidizable cyanide
Total cyanide

2.2.3 HAZARDOUS SUBSTANCES AVAILABLE TO A PATHWAY

Containment Description	Containment Factor Value	References
Gas release to air:	Not scored	- -
Particulate release to air:	Not scored	- -
Release to ground water:	Not scored	- -
Release via overland migration and/or flood: Evidence of hazardous substance migration from the source area based on documented violations of the NPDES permit number MI0002399.	10	1, Table 4-2; 101; 102; 104, pp. 1, 2; 106

2.4.2 HAZARDOUS WASTE QUANTITY

2.4.2.1.1. Hazardous Constituent Quantity

Description
The hazardous constituent quantity for Source No. 4 could not be adequately determined according to the HRS requirements; that is, the total mass of all CERCLA hazardous substances in the source is not known and cannot be estimated with reasonable confidence (Ref. 1, Section 2.4.2.1.1). There are insufficient historical and current data (manifests, PRP records, state records, permits, and waste concentration data) available to adequately calculate the total mass of all CERCLA hazardous substances in the source and the associated releases from the source. Therefore, there is insufficient information to evaluate the associated releases from the source to calculate the hazardous constituent quantity for Source No. 5 with reasonable confidence (Ref. 1, Section 2.4.2.1.1). Scoring proceeds to the evaluation of Tier B, hazardous wastestream quantity (Ref. 1, Section 2.4.2.1.1).

Hazardous Constituent Quantity Assigned Value: Not Scored

2.4.2.1.2. Hazardous Wastestream Quantity

Description
Adequate data are available to estimate the hazardous wastestream quantity for the month of December 1976. McLouth was issued a violation for exceedance of permitted effluent limitations for the entire month of December 1976 (Refs. 106; 107). The daily effluent flow was calculated using the Daily Average concentration and quantity of total cyanide from the table above in section 2.2.2 for this source (Ref. 106), as follows (see Ref. 24 for constants):

$$Mass\ loading\ (lbs/day) = Concentration\ (mg/L) \times Effluent\ volume\ (gal/day)\ \left(\frac{1\ lb}{453{,}592\ mg}\right) \times \left(\frac{3.785\ L}{gal}\right)$$

or,

96 lbs/day x 453,592 mg/lb x 1 L/0.29 mg x 1 gallon/3.785 L = 39,670,962.5 gallons of waste water per day

- Calculation uses constants of 453,592 milligrams per pound, and 3.785 liters per gallon. (Ref. 24)
- At an average of 96 pounds per day for December 1976, that would equate to a monthly average flow of 39,670,962.5 gallons per day of wastewater discharged from Outfall 001 (see equation above; Ref. 106).

Based on an average daily discharge rate of 39,670,962.5 gallons per day of wastewater at Outfall 001, the total discharge for the month of December 1976 (31 days) is 1,229,799,837.5 gallons (Ref. 106) (39,670,962.5 x 31 = 1,229,799,837.5). This discharge rate is consistent with a separately reported discharge rate of 39,889,972 gallons per day for Outfall 001 from January 20 to 21, 1976, approximately 11 months prior to the violation (Ref. 103, p. 6). This value was converted from cubic meters per day using a conversion factor of 264.172 gallons per cubic meter (Ref. 24). The flow at Outfall 001 is also reported as 39.8 million gallons per day in January 1975 (Ref. 102).

Total effluent quantity for Source 4 for December 1976: 1,229,799,837.5 gallons

Hazardous Wastestream Quantity (pounds): 1,229,799,837.5 gallons x 10 pounds/gallon = 12,297,998,375 pounds

See Reference 1, Footnote b of Table 2-5 for conversion factor for gallons to pounds.

Hazardous Wastestream Quantity Assigned Value: 12,297,998,375/5000 = 2,459,599.67 (Ref. 1, Table 2-5).

2.4.2.1.3. Volume

Description
The hazardous wastestream quantity is incomplete, but the volume of additional effluent discharged from Outfall 001 cannot be determined with reasonable accuracy.

Sum (yd^3): Unknown but >0
Equation for Assigning Value (Ref. 1, Table 2-5):

Volume Assigned Value: >0

2.4.2.1.4. Area

Description
HRS Table 2-5 specifies Tier C, Volume as the lowest Tier for a source type of "Other" (Ref. 1, Table 2-5).

Area Assigned Value: Not Scored

2.4.2.1.5. Source Hazardous Waste Quantity Value

Highest assigned value assigned from Ref. 1, Table 2-5: 2,459,599.67

SUMMARY OF SOURCE DESCRIPTIONS

Source Number	Source Hazardous Waste Quantity Value	Source Hazardous Constituent Quantity Complete? (Yes/No)	Containment Factor Value by Pathway				
			Ground Water (GW) (Ref. 1, Table 3-2)	Surface Water (SW)		Air	
				Overland/flood (Ref. 1, Table 4-2)	GW to SW (Ref. 1, Table 3-2)	Gas (Ref. 1, Table 6-3)	Particulate (Ref. 1, Table 6-9)
1	>0	No	NS	10	NS	NS	NS
2	>0	No	NS	10	NS	NS	NS
3	3,453.6	No	NS	10	NS	NS	NS
4	2,459,599.67	No	NS	10	NS	NS	NS

Notes:
NS Not Scored

Hazardous Substances Associated With the Site but Not Attributed to a Specific Source:
Two hazardous substances can be associated with facility operations or attributed to the facility based on non-source sampling. The hazardous substances associated with the facility, but not a specific source, and the rationale for such association is provided in the table below:

Hazardous Substance	Rational for Association with the McLouth Steel Corp Facility	References
Manganese	Steel slag is composed primarily of calcium silicates and ferrites combined with fused oxides of iron, aluminum, manganese, calcium, and magnesium.	63, p. 19
Nickel	Nickel is associated with discharge associated with McLouth processes. Nickel is identified as a substance of concern in NPDES permits and was found in effluent in elevated concentrations.	46, Table 8-5, pp. 330, 354

Descriptions of Other Areas of Concern at the McLouth facility:
Numerous other area exist throughout the former McLouth facility where contamination might have originated. In the late 1980s, McLouth Steel documented waste management units (WMUs) and areas of concern (AOCs) as part of a RCRA facility assessment (Ref. 7, pp. 50-57). These WMUs and AOCs are located throughout the facility and within portions included in this listing and in the northern former RTRR portion of the facility (Ref. 7, p. 53).

4.0 SURFACE WATER MIGRATION PATHWAY

4.1 OVERLAND/FLOOD MIGRATION COMPONENT

The surface water migration pathway evaluation for the McLouth Steel Corp site includes the overland/flood migration component. While groundwater to surface water discharge is a likely route of contaminant migration from sources at McLouth to surface water, the overland/flood component yields a higher overall surface water migration pathway score. One watershed encompasses the facility and includes an in-water segment that begins on the Trenton Channel (a part of the Detroit River) and flows south and terminates in Lake Erie (see Figure 3 of this HRS documentation record, Surface Water Migration Pathway 15-Mile Target Distance Limit [TDL] and Probable Points of Entry [PPEs]).

4.1.1.1 Definition of Hazardous Substance Migration Path for Overland/Flood Component

This section describes the overland flow and flood migration component of the surface water migration pathway, including the hazardous substance migration path and observed releases to the Trenton Channel of the Detroit River. Figure 3 of the HRS documentation record illustrates the in-water segment of the hazardous substance migration path, including the PPEs, to the end of the 15-mile TDL.

Description of the Overland Segments and PPEs
The McLouth facility has more than 1 mile of frontage on surface water bodies, specifically the Trenton Channel of the Detroit River (Ref. 3). While there are many possible sources potentially releasing hazardous substances at the facility (Ref. 7, pp. 50-57), overland segments are described only for the four sources scored in this HRS documentation record. Three PPEs are illustrated in Figure 3 of this documentation record and described below to define the endpoints to the overland segments, beginning with the farthest upstream and ending with the farthest downstream:

- **PPE 1** is a partially submerged storm water discharge outfall that enters the Trenton Channel of the Detroit River on the eastern side of the facility (Ref 99). PPE 1 constitutes the farthest upstream PPE scored in this HRS documentation record (Ref. 99; see also Figure 3 of the HRS documentation record). PPE 1 is identified as NPDES discharge outfall No. 004 (Refs. 99; 103, p. 7).
- **PPE 2** is an overland drainage feature that terminates on the Trenton Channel near the southeastern portion of the McLouth property just upstream of the CWWTP and near the location where ESI sediment sample SD-10 was collected in the Trenton Channel. PPE 2 is the overland terminus into the Trenton Channel of a drainage feature shown on Figure 1 of the CERCLA Re-Assessment (Refs. 5, Figure 1; 6, Figure 7).
- **PPE 3** is the NPDES-permitted outfalls (outfalls 001A/001 and 002) for the CWWTP that discharge (or discharged) into the Trenton Channel (Refs. 7, p. 53; 46, p. 354; 103, pp. 2, 7). Both outfalls are co-located at one point on the Trenton Channel of the Detroit River (Refs. 99; 103, pp. 2, 7).

Another means of hazardous substance migration overland from sources to the Trenton Channel is via sheet flow and direct drainage via surface features; however, this is not shown as a PPE for HRS scoring (Ref. 6, pp. 30, 31). Some sources have more specific overland flow routes to surface water, such as the Sedimentation Basin (Source 3), which drains to the West Process Sewer – South and to the CWWTP (Ref. 7, pp. 50-53). Surface flooding at the former McLouth facility follows the same general path as the overland flow, which follows gradual property contours sloping east and north toward the Trenton Channel and Monguagon Creek, with steep banks or man-made bulkheads at the water's edge (Refs. 3; 6, p. 30; 99). The table below presents overland segment

descriptions for hazardous substance migration for each source evaluated in this documentation record, and Figure 3 illustrates each PPE's location with respect to these sources.

Source #	PPEs	Overland Segment Descriptions	Reference
1	1, 3	Overland migration from transformers is primarily via entering the West Process Sewer – North to the Sedimentation Basin and ultimately to the CWWTP where it is discharged via outfall 001A/001 and 002 (PPE 3). Surficial contamination may also enter the storm sewer system and enter the Trenton Channel at PPE 1.	6, pp. 30, 31; 7, p. 50, 53
2	1, 2, 3	Overland flow from contaminated soils is generally east via sheet flow or small drainage features toward the Trenton Channel. In the building area, the contamination may enter the West Process Sewer – North (PPE 3) or the storm drain system (PPE 2). For overland flow, each contaminated soil sample has different / multiple paths ending at different points along the Trenton Channel. Soil sample SS-04, SS-05, SS-07 and SS-08 also drain to the West Process Sewer – North and ultimately PPE 3. Soil samples SS-06 and SS-10 drain toward the eastern drainage feature, ending at PPE 1. Soil sample SS-02 drains to the West Process Sewer – South ending up in the CWWTP and discharging at PPE 3.	6, pp. 30, 31; 7, pp. 50, 53; Figures 2 and 3 of the HRS documentation record
3	3	Drainage from the Sedimentation Basin enter the West Process Sewer – South and migrates via sewers to the CWWTP, which discharges at NPDES outfall 001A/001 and 002 following treatment.	7, pp. 50, 52, 53; 46, pp. 353, 354
4	3	Source 4 is the effluent from NPDES-permitted outfalls (outfalls 001A/001 and 002) for the CWWTP that discharge (or discharged) into the Trenton Channel. Both outfalls are co-located at one point on the Trenton Channel of the Detroit River.	7, p. 53; 46, p. 354; 99; 101; 103, pp. 2, 7; 106; 107

Hazardous substance migration to the Trenton Channel is also occurring via groundwater to surface water recharge (Ref. 6, pp. 29, 30, 31, Tables 8, 9, 13, 15). Hazardous substances detected in groundwater significantly above background and associated with operations at the facility include toluene, 2-chloronaphthalene, naphthalene, antimony, cadmium, cyanide, manganese, and zinc, were detected above background levels in samples from sources, groundwater, and sediment (Ref. 6, Tables 8, 9, 13, 15). While these data could be used to evaluate an observed release for the ground water to surface water component of the surface water pathway, this HRS documentation record scores only the overland/flood component.

Description of the In-Water Segment (Comprised of three segments)

The TDL for the McLouth site is more than 15 miles long because it begins at the farthest upstream PPE (PPE 1) and extends downstream in the Trenton Channel of the Detroit River, the Detroit River main channel, and Lake Erie for 15 miles from the farthest downstream PPE (PPE 3) (see Figure 3 of the HRS documentation record). For purposes of HRS scoring, the in-water segment is further broken into three segments based on changes in flow rate or water body type, as illustrated in Figure 3, and can be described as (Ref. 3):

1. **Segment 1:** The Trenton Channel portion of the in-water segment starts at PPE 1 and flows approximately 5 miles south (downstream) to its confluence with the main channel of the Detroit River. This segment includes the zone of actual contamination based on the observed releases to surface water.
2. **Segment 2:** The Detroit River main channel portion of the in-water segment flows for approximately 3 miles south/southeast from its confluence with the Trenton Channel to its mouth at Lake Erie.

3. **Segment 3:** The Lake Erie in-water segment extends radially out approximately 7 miles from mouth of the Detroit River, the terminus of which extends in an arc from the Canadian border on the east to just before Stony Point, Michigan, on the west.

A portion of the Trenton Channel from PPE 1 to ESI sediment sample SD-15, constitutes a zone of actual contamination for the human food chain and environmental threats of the surface water pathway (see Sections 4.1.2.1.1, 4.1.3.3, and 4.1.4.3.1 of this HRS documentation record). The approximate locations of the zone of actual contamination is shown with on Figure 3 of this HRS documentation record.

Segment 1: The Trenton Channel of the Detroit River

Approximately 0.5 mile of frontage on the eastern edge of the McLouth facility comprises the west bank of the Trenton Channel of the Detroit River; starting at the farthest upstream point is at PPE 1 (Ref. 3). The Trenton Channel flows south for approximately 5 miles downstream from PPE 1 along the west side of Grosse Ile, where it joins the main stem of the Detroit River (Ref. 47, Figure 3). While the Detroit River has an approximate flow rate of 180,000 cubic feet per second (cfs), the Trenton Channel carries approximately 21 percent of the Detroit River flow, or approximately 38,000 cfs (Ref. 47, p. 14-16, Table 3).

The Detroit River (including the Trenton Channel) is described as an intense seasonal fishery for walleye and other fish (Refs. 53, p. 1, 6; 97). In 2013, the State of Michigan Natural Resource Department reported charter boat harvest of 7,839 fish in the St. Clair-Detroit River System, including walleye, yellow perch, and smallmouth bass (Ref. 79, p. 3). One creel survey from boaters accessing the Trenton Channel at Elizabeth Park (located approximately 1 mile downstream of the McLouth site) noted that more than 20,000 walleye were harvested in April and May 2000 alone (Ref. 53, Table 5). Interviews with anglers indicate that very few walleyes of legal size are released (and are therefore consumed) (Ref. 53, p. 2). The Detroit River Riverkeeper confirms that the portion of the Trenton Channel subject to actual contamination adjacent to the McLouth facility is fished for consumption purposes (Ref. 97).

The Trenton Channel is part of the Detroit River National Wildlife Refuge, the nation's first "International" Wildlife Refuge (Refs. 49, p. 8; 100, p. 3). The Detroit River, which includes the Trenton Channel, has been identified as a spawning area for the lake sturgeon (*Acipenser fulvescens*), a State of Michigan designated threatened species (Refs. 49, p. 4; 50, p. 257; 58, p. 3). The northern riffleshell mussel (*Epioblasma torulosa rangiana*), a federally designated endangered species, also has historically been found in the Detroit River within a few miles of the McLouth site (Refs. 58, p. 1; 76; 77, p. 1; 78, p. 1). As recently as 30 years ago, the Detroit River (which includes all of the Trenton Channel) was habitat known to be used by the northern riffleshell (Refs. 76; 77, p. 1; 78, p. 1). As a result, the northern riffleshell recovery plan identifies the Detroit River (which includes the entire Trenton Channel) as a drainage requiring restoration as a necessary objective for achieving northern riffleshell habitat recovery (Ref. 81, p. 29). In addition, the Detroit River is habitat historically known to be used by seven of the State of Michigan's 18 other threatened or endangered native mussels (family *Unionidae*) (Refs. 58; 77; 78). The Humbug Marsh is a rare undeveloped wetland along the Detroit River located approximately 2 miles downstream from the McLouth site (Refs. 52; 100, pp. 40, 56, 101). The Humbug Marsh is Michigan's only designated Wetland of International Importance designated under the Ramsar Convention (Ref. 52).

Segment 2: The Detroit River

At the southern-most point of Grosse Ile, the Trenton Channel rejoins the main channel of the Detroit River, which then flows for approximately 3 miles before entering Lake Erie (Ref. 3; Figure 3 of this HRS

documentation record). Where the Detroit River discharges into Lake Erie, the flow is approximately 180,000 cfs (Ref. 47, p. 14). The Detroit River is also part of the Detroit River National Wildlife Refuge and is a major fishery for walleye and other fish (Refs. 49, p. 8; 53, pp. 1, 2; 100, p. 3).

Segment 3: Lake Erie
The TDL for the surface water migration pathway ends in an arc extending approximately 7 miles out into Lake Erie (see Figure 3 of this HRS documentation record) (Ref. 3). The entire TDL from the Trenton Channel to Lake Erie is a major recreational and commercial fishery, and it is habitat for species designated as endangered and threatened by the state and federal government, including the lake sturgeon, the northern riffleshell mussel and the rufa red knot (*Calidris canutus rufa*) (Refs. 53, pp. 3, 4; 54, pp. 16-17; 55; 58).

4.1.2.1 Likelihood of Release
The Likelihood of Release section includes documentation of observed releases by both direct observation and by chemical analysis. Potential to release is not scored.

4.1.2.1.1 Observed Release

Direct Observation

- Basis for Direct Observation Observed Release:
An observed release by direct observation is documented based on hazardous substance concentrations above permitted levels in wastewater discharged from NPDES-permitted outfall 001 to the Trenton Channel of the Detroit River (Refs. 46, pp. 355 to 359, Table 8-13; 101; 104; 106; Figure 2 and 3 of this HRS documentation record).

McLouth Steel Corp had a NPDES permit (Permit No. MI0002399) with three primary outfalls (001, 002, and 004) that discharged directly into the Trenton Channel of the Detroit River (Ref. 103, pp. 1, 2, 7). The three primary outfalls are described in a June 1978 Inspection Report as follows (Ref. 103, pp. 1, 2):

- Outfall 001 discharges all process wastewater from the basic oxygen furnaces, pickling lines, electric furnaces and the rolling mill, routed through the CWWTP. Larger solids are removed in scale pits, slag ponds, and settling basins. Outfall 001 is at the point of discharge to the Trenton Channel, but also includes outfalls 000 and 001A, which are points of measurement prior to final discharge.
- Outfall 002 discharges non-contact cooling water from the blast furnaces and boiler house operations and roof/yard drainage, and is released without treatment.
- Outfall 004 discharges non-contact cooling water from the electric furnaces in the Melt Shop and cooling water from the Blooming mill and the Air Separation Plant, and is discharged without treatment.

In the late 1970s, McLouth had additional NPDES permit discharge violations and uncontrolled spills of hazardous substances, primarily from Outfall 001 (Refs. 101; 102; 103, p. 1; 104; 106). The violations associated with Outfall 001 (Source 4) are summarized in HRS Documentation Record Section 2.2 Source Characterization for Source 4.

- Hazardous Substances in Direct Observation Observed Releases:
Based on the observed release by direct observation at PPE 3 (Outfall 001), the following hazardous substances are present in observed releases by direct observation.

Hazardous Substance	Evidence (Outfall Number)	References
Cyanide	001	101; 102; 104; 105; 106
Sulfuric acid	001	

Chemical Analysis – ESI Sediment Sampling
An observed release by chemical analysis to the Trenton Channel of the Detroit River has been documented. Fifteen sediment samples (including one duplicate) were collected from 14 locations along Monguagon Creek and the Trenton Channel by MDEQ as part of the 2015 ESI sampling event (Ref. 6, p. 7, 25). One background and four downstream sediment samples (including one duplicate) were collected from Monguagon Creek on November 5, 2015, while one background and nine downstream sediment samples were collected from the Trenton Channel on November 10, 2015 (Ref. 6, p. 25, Figure 7). All sediment samples were collected consecutively from farthest downstream to upstream on the sampling days (Ref. 6, p. 25).

The McLouth facility is split into two areas, the North and South, for listing and cleanup funding purposes (see Figures 1 and 2 of this HRS documentation record). The observed release by chemical analysis for this documentation record is established based on the sediment samples downstream of PPEs to the Trenton Channel of the Detroit River for the South portion of the facility only. Trenton Channel observed release sediment samples are compared with the higher background concentration from either Monguagon Creek (SD-01) or the Trenton Channel (SD-05) to ensure that contaminants in the Trenton Channel are also not originating from upstream sources on Monguagon Creek.

- Background Concentrations (Trenton Channel/Monguagon Creek):
Sediment sample SD-05 was collected upstream of the Riverview Bridge and the confluence of Monguagon Creek and the Trenton Channel (Ref. 6, Figure 7). Sample SD-05 is upstream of the former McLouth facility, but downstream of any upstream sources of contamination (Ref. 6, p. 25, Figure 7). Sample SD-01 is located upstream of the facility, but downstream of any other upstream sites on Monguagon Creek (Ref. 6, Figure 7, Table 6). Sediment sample SD-01 was collected from near-shore submerged sediment upstream of the West Jefferson Avenue Bridge (Ref. 6, Figure 7, Table 6). Both samples together represent the background level for the former McLouth facility.

Sample ID	Lab Sample ID	Sample Medium	Sample Location	Depth	Date	References
SD-05	E6BE4 ME6BE4	Sediment: Silty fine sand with trace gravel	Trenton Channel	0 to 4 Inches	11/10/2015	6, Table 6; 56, pp. 91
SD-01	E6BD9 ME6BD9	Sediment: Silty fine sand with trace gravel	Monguagon Creek	0 to 4 inches	11/5/2015	6, Table 6, Figure 7; 56, p. 89

To account for background levels from upstream sources on the Trenton Channel and entering the Trenton Channel from Monguagon Creek from the McLouth facility, the table below presents the highest background concentration from either SD-05 or SD-01 as the background level for the Trenton Channel (Ref. 6, Figure 7).

Sample ID	Hazardous Substance	Result	CRQL	References
SD-01	Cadmium	1.2 mg/kg	0.5 mg/kg	36, p. C-5; 56, pp. 46, 89, 115
	Chromium	97.653 mg/kg[b] (75.7 J mg/kg)	1 mg/kg	36, p. C-5; 56, pp. 6, 46, 89, 115
	Manganese	896 mg/kg	1.5 mg/kg	36, p. C-5; 56, pp. 46, 89, 115
	Nickel	21.4 mg/kg	4 mg/kg	36, p. C-5; 56, pp. 46, 89, 115
	Silver	1.8 U mg/kg	1 mg/kg	36, p. C-5; 56, pp. 46, 89, 115
	Zinc	556.5 mg/kg[a] (371 J- mg/kg)	6 mg/kg	36, p. C-5; 56, pp. 5, 46, 89, 115
	Cyanide	0.5115 mg/kg[b] (0.33 J- mg/kg)	0.5 mg/kg	36, p. C-6; 56, pp. 5, 6, 47, 89, 189
SD-05	2,3,7,8-TCDD	2.45 ng/kg	1.21 ng/kg	34, pp. 5, 6, 31, 52, 89, 90, 191, 192
	2,3,7,8-TCDF	16.1 ng/kg	1.21 ng/kg	
	1,2,3,7,8-PeCDF	13.7 ng/kg	6.04 ng/kg	
	1,2,3,7,8-PeCDD	6.04 U ng/kg	6.04 ng/kg	
	2,3,4,7,8-PeCDF	7.81 ng/kg	6.04 ng/kg	
	1,2,3,4,7,8-HxCDF	24.4 ng/kg	6.04 ng/kg	
	1,2,3,6,7,8-HxCDF	6.76 ng/kg	6.04 ng/kg	
	1,2,3,4,7,8-HxCDD	1.47 ng/kg	6.04 ng/kg	
	1,2,3,6,7,8-HxCDD	22.4 ng/kg	6.04 ng/kg	
	1,2,3,7,8,9-HxCDD	11.4 ng/kg	6.04 ng/kg	
	2,3,4,6,7,8-HxCDF	6.04 U ng/kg	6.04 ng/kg	
	1,2,3,7,8,9-HxCDF	6.04 U ng/kg	6.04 ng/kg	
	1,2,3,4,6,7,8-HpCDF	31.6 ng/kg	6.04 ng/kg	
	1,2,3,4,6,7,8-HpCDD	94.0 ng/kg	6.04 ng/kg	
	1,2,3,4,7,8,9-HpCDF	8.74 ng/kg	6.04 ng/kg	
	OCDD	549 ng/kg	1.21 ng/kg	
	OCDF	172 ng/kg	1.21 ng/kg	

Notes:
U – The analyte was analyzed for, but was not detected above the reported sample quantitation limit (Refs. 34, p. 12; 56, p. 9). The CRQL is shown in the adjacent column.
CRQLs – Contract Required Quantitation Limits are used for metals analysis (Ref. 36, pp. B-32, C-5, C-6). When the sample was diluted by the laboratory, the CRQLs reported have been adjusted for dilution (Ref. 36, p. B-32).
[a] – The "J-" qualified background concentrations for zinc and cyanide are biased low and, therefore, the reported concentrations have been adjusted according to EPA fact sheet "*Using Qualified Data to Document an Observed Release and Observed Contamination"* (Refs. 56, pp. 5, 6, 9; 60, p. 8, 18). Laboratory reported concentrations are shown in parentheses.
[b] – The "J" qualified background concentration for chromium has unknown bias and, therefore, the reported concentration has been adjusted according to EPA fact sheet "*Using Qualified Data to Document an Observed Release and Observed Contamination*" (Refs. 56, pp. 6, 9; 60, p. 8). Laboratory reported concentration shown in parentheses.

- Contaminated Samples (Trenton Channel):
The McLouth facility is split into two areas, the North and South, for listing and cleanup funding purposes (see Figures 1 and 2 of this HRS documentation record). The observed release by chemical analysis for this

documentation record is established based on the sediment samples downstream of PPEs for the South portion of the facility only. Sediment samples SD-02, SD-03, SD-04, SD-06, and SD-07 are associated with the North portion of the former McLouth facility, so they are not used in this HRS documentation record to establish an observed release by chemical analysis. Sediment samples SD-09, SD-10, SD-11, SD-12, SD-13, SD-14 and SD-15 were collected from downstream from the farthest upstream PPE on the Trenton Channel for the South portion of the former McLouth facility (see Figure 3 of this HRS documentation record) (Ref. 6, Figure 7, Table 6). Sample SD-09 is downstream of PPE 1 and SD-10 is downstream of PPE 1 and PPE 2 (see Figure 3 of this HRS documentation record) (Ref. 6, Figure 7, Table 6). Samples SD-11, SD-12, SD-13, SD-14 and SD-15 are downstream of all three PPEs (Ref. 6, Figure 7, Table 6).

Sample ID	Laboratory Sample ID	Sample Medium	Sample Location/Distance from PPE	Depth	Date	References
SD-09	E6BE8 ME6BE8	Sediment: silty fine to medium sand with some shells and black streaks	Trenton Channel near west bank: Approximately 200 feet downstream from PPE 1	0-4 Inches	11/10/2015	6, Table 6, Figure 7; 42, p. 116; 56, p. 91
SD-10	E6BE9 ME6BE9	Sediment: silty fine sand with trace clay, some wood and stones, occasional black streaks	Trenton Channel near west bank: Approximately 1,800 feed downstream of PPE 1 and 100 feet downstream of PPE 2	0-4 Inches	11/10/2015	6, Table 6, Figure 7; 42, p. 117; 56, p. 91
SD-11	E6BF0 ME6BF0	Sediment: fine to coarse sand with trace silt, fine gravel and slag	Trenton Channel near west bank: Approximately 2,500 feet downstream of PPE 1; 800 feet downstream of PPE 2; and 300 feet downstream of PPE 3	0-3 Inches	11/10/2015	6, Table 6, Figure 7; 42, p. 118; 56, p. 91
SD-13	E6BF3 ME6BF3	Sediment: silty fine sand with some clay and occasional black lenses	Trenton Channel near west bank at the tip of peninsula just east of the Black Lagoon. Approximately 4,000 feet downstream of PPE 1; 2,300 feet downstream of PPE 2; and 1,800 feet downstream of PPE 3.	0-4 Inches	11/10/2015	6, Table 6, Figure 7; 42, p. 120; 56, p. 91
SD-14	E6BF4 ME6BF4	Sediment: silty fine sand with some clay	Trenton Channel at the mouth of the Black Lagoon. Approximately 4,050 feet downstream of PPE 1; 2,350 feet downstream of PPE 2; and 1,850 feet downstream of PPE 3	0-4 Inches	11/10/2015	6, Table 6, Figure 7; 42, p. 121; 56, p. 91
SD-15	E6BF5 ME6BF5	Sediment: fine sand with trace shells, stones and organic matter/lenses	Trenton Channel 100 feet from the western bank. Approximately 4,300 feet downstream of PPE 1; 2,600 feet downstream of PPE 2; and 2,100 feet downstream of	0-3 Inches	11/10/2015	6, Table 6, Figure 7; 42, p. 122; 56, p. 91

Sample ID	Laboratory Sample ID	Sample Medium	Sample Location/Distance from PPE	Depth	Date	References
			PPE 3.			

Sediment samples were analyzed for metals using the CLP Statement of Work ISM02.2 analysis procedure (Ref. 56, p. 4). All sediment sample analyses for metals, SVOCs, PCBs and dioxins/furans underwent a Level 3 data validation (Refs. 34, p. 1; 35, p. 1; 56, p. 1; 62, p. 1; 65, p. 1; 66, p. 1; 67, p. 1; 68, p. 1).

Sample ID	Hazardous Substance	Concentration	CRQL	References
SD-09	Chromium	737.20 mg/kg[a] (951 J mg/kg)	10 mg/kg	36, p. C-5; 56, pp. 6, 69, 91, 131
	Manganese	6,350 mg/kg	15 mg/kg	36, p. C-5; 56, pp. 69, 91, 131
	Nickel	508 J mg/kg[c]	40 mg/kg	36, p. C-5; 56, pp. 6, 9, 69, 91, 131, 143
	Silver	2.9 mg/kg	1 mg/kg	36, p. C-5; 56, pp. 69, 91, 131
	Zinc	1,770 J- mg/kg[b]	60 mg/kg	36, p. C-5; 56, pp. 5, 9, 69, 91, 131
	2,3,7,8-TCDF	65.6 ng/kg	1.38 ng/kg	65, pp. 13, 23, 55, 96
	1,2,3,7,8,9-HxCDF	7.63 ng/kg	6.89 ng/kg	65, pp. 13, 23, 55, 96
SD-10	Cadmium	6.9 mg/kg	5 mg/kg	36, p. C-5; 56, pp. 74, 91, 133
	Silver	3.0 mg/kg	1 mg/kg	36, p. C-5; 56, pp. 74, 91, 133
	2,3,7,8-TCDD	26.5 ng/kg	1.6 ng/kg	65, pp. 14, 24, 55, 99
	2,3,7,8-TCDF	392 ng/kg	1.6 ng/kg	65, pp. 14, 24, 55, 99
	1,2,3,7,8-PeCDF	309 ng/kg	8.02 ng/kg	65, pp. 14, 24, 55, 99
	1,2,3,7,8-PeCDD	37.0 ng/kg	8.02 ng/kg	65, pp. 14, 24, 55, 99
	2,3,4,7,8-PeCDF	141 ng/kg	8.02 ng/kg	65, pp. 14, 24, 55, 99
	1,2,3,4,7,8-HxCDF	313 ng/kg	8.02 ng/kg	65, pp. 14, 24, 55, 99
	1,2,3,6,7,8-HxCDF	63.9 ng/kg	8.02 ng/kg	65, pp. 14, 24, 55, 99
	1,2,3,4,7,8-HxCDD	9.84 ng/kg	8.02 ng/kg	65, pp. 14, 24, 55, 99
	1,2,3,6,7,8-HxCDD	133 ng/kg	8.02 ng/kg	65, pp. 14, 24, 55, 99
	1,2,3,7,8,9-HxCDD	70.5 ng/kg	8.02 ng/kg	65, pp. 14, 24, 55, 99
	2,3,4,6,7,8-HxCDF	18.3 ng/kg	8.02 ng/kg	65, pp. 14, 24, 55, 99
	1,2,3,7,8,9-HxCDF	47.0 ng/kg	8.02 ng/kg	65, pp. 14, 24, 55, 99
	1,2,3,4,6,7,8-HpCDF	345 ng/kg	8.02 ng/kg	65, pp. 14, 24, 55, 99
	1,2,3,4,6,7,8-HpCDD	761 ng/kg	8.02 ng/kg	65, pp. 14, 24, 55, 99
	1,2,3,4,7,8,9-HpCDF	78.8 ng/kg	8.02 ng/kg	65, pp. 14, 24, 55, 99
	OCDF	2,100 ng/kg	16 ng/kg	65, pp. 14, 24, 55, 99
SD-11	Manganese	4,320 mg/kg	30 mg/kg	36, p. C-5; 56, pp. 76, 91, 135
	Cyanide	5.4 mg/kg	2.5 mg/kg	36, p. C-6; 56, pp. 77, 91, 199
SD-13	2,3,7,8-TCDD	10.4 ng/kg	1.8 ng/kg	65, pp. 17, 27, 55, 108
	2,3,7,8-TCDF	74.1 ng/kg	1.8 ng/kg	65, pp. 17, 27, 55, 108
	1,2,3,7,8-PeCDD	19.0 ng/kg	9.02 ng/kg	65, pp. 17, 27, 55, 108
	1,2,3,6,7,8-HxCDF	20.4 ng/kg	9.02 ng/kg	65, pp. 17, 27, 55, 108
	1,2,3,6,7,8-HxCDD	80.4 ng/kg	9.02 ng/kg	65, pp. 17, 27, 55, 108
	1,2,3,7,8,9-HxCDD	37.7 ng/kg	9.02 ng/kg	65, pp. 17, 27, 55, 108
	2,3,4,6,7,8-HxCDF	18.7 ng/kg	9.02 ng/kg	65, pp. 17, 27, 55, 108
	1,2,3,7,8,9-HxCDF	12.2 ng/kg	9.02 ng/kg	65, pp. 17, 27, 55, 108

Sample ID	Hazardous Substance	Concentration	CRQL	References
	1,2,3,4,6,7,8-HpCDF	230 ng/kg	9.02 ng/kg	65, pp. 17, 27, 55, 108
	1,2,3,4,6,7,8-HpCDD	386 ng/kg	9.02 ng/kg	65, pp. 17, 27, 55, 108
	OCDD	2,640 ng/kg	18 ng/kg	65, pp. 17, 27, 55, 108
	OCDF	740 ng/kg	18 ng/kg	65, pp. 17, 27, 55, 108
SD-14	1,2,3,4,6,7,8-HpCDF	108 ng/kg	11.8 ng/kg	65, pp. 18, 28, 55, 111
	OCDF	608 ng/kg	23.6 ng/kg	65, pp. 18, 28, 55, 111
SD-15	1,2,3,7,8,9-HxCDF	7.87 ng/kg	6.23 ng/kg	65, pp. 19, 30, 55, 114
	OCDF	702 ng/kg	12.5 ng/kg	65, pp. 19, 30, 55, 114

Notes:
CRQLs – Contract Required Quantitation Limits are used for metals analysis (Ref. 36, pp. B-32, C-5, C-6). When the sample was diluted by the laboratory, the CRQLs reported have been adjusted for dilution (Ref. 36, p. B-32).
[a] - The "J" qualified observed release concentrations for these substances have unknown bias, and, therefore, the reported concentrations have been adjusted according to EPA fact sheet "*Using Qualified Data to Document an Observed Release and Observed Contamination*" (Refs. 56, pp. 6, 9; 60, pp. 8, 18). Original concentration shown in parenthesis.
[b] - The "J-" qualified observed release concentrations for these substances are biased low and, therefore, need not be adjusted according to EPA fact sheet "*Using Qualified Data to Document an Observed Release and Observed Contamination"* (Refs. 56, pp. 5, 6, 9; 60, pp. 8, 18). Original concentration shown in parenthesis.
[c] - The "J" qualified observed release concentration for Nickel in sample SD-09 was qualified for slightly exceeding EPA Region 5's control criteria for duplicate relative percent difference (RPD) and no bias is discussed (Ref. 56, pp. 6, 143). The Nickel duplicate RPD results were not discussed in the validation findings and are thus considered acceptable per the validation findings statement, "*All data, except those qualified above, are acceptable*" (Ref. 56, p. 8). Therefore no adjustment was made according to the EPA fact sheet "*Using Qualified Data to Document an Observed Release and Observed Contamination"* (Ref. 60, Exhibit 1).

Attribution:
All hazardous substances detected in the observed release by chemical analysis can be attributed at least in part to sources or processes at the facility, or are transformation products attributable to processes, operations and conditions at the facility. In addition, an observed release by direct observation to the Trenton Channel is documented from the site. This section will discuss hazardous substance attribution to the site.

Inorganics and Cyanide Attribution:
Cadmium, chromium, lead, mercury, nickel, selenium, silver, thallium, and zinc are inorganics associated with K061 RCRA hazardous waste generated from air treatment systems associated with electric arc furnaces (Refs. 69, pp. 12, 66; 70, p. 36). Cyanide is introduced into steel production process wastewater as a result of the reaction of nitrogen in the blast air, with carbon from the coke charge in the reducing atmosphere of the blast furnace (Ref. 63, p. 20). BOF and EAF slags also are known to contain antimony, cadmium, chromium, copper, lead, manganese, mercury, molybdenum, nickel, selenium, silver, thallium, and zinc (Refs. 75, Table 2; 80, pp. 2, 3).

Total cyanide, oxidizable cyanide, and sulfuric acid were detected in NPDES discharges from Outfall 001 between 1975 and 1990, which constitutes an observed release by direct observation to the Trenton Channel (Refs. 46, p. 360; 103, pp. 1-6; 104, p. 1). Trenton Channel sediment sample SD-11 contained cyanide at a

concentration significantly above background levels (see observed release by chemical analysis tables above for concentrations and references).

The following table associates inorganic hazardous substances and cyanide that met the criteria for an observed release by chemical analysis with the sources that contain those inorganics and cyanide or to site related operations and wastes (see source documentation in Section 2.2.2 of this HRS documentation record):

Inorganics/Cyanide	Sources
Cadmium	2
Chromium	3
Manganese	Facility/Wastes
Nickel	Facility/Wastes
Silver	2
Zinc	2
Cyanide	4

Dioxin/Furan Attribution:
The only known sampling for dioxins and furans at the McLouth site was during the 2015 MDEQ ESI. Dioxins and furans were detected in contaminated soil samples SS-01, SS-06, SS-07, SS-08 and SS-10, which comprises half of sample locations for Source 2, Contaminated Soil (see Section 2.2.2 of this HRS documentation record). Dioxins and furans are known to be produced in various steel production processes used at the McLouth facility, including sinter production, coke combustion, and ferrous metal smelting/refining (Ref. 7, pp. 50-54; 73, p. 7-27, 7-32, 7-33). Combustion of PCBs is another source of dioxin and furan production (Ref. 73, p. 6-32). The fire in 2007 at the Sedimentation Basin (Source 3) is likely to have produced dioxins and furans because the Sedimentation Basin is documented to be contaminated with PCB oils (Refs. 15; 32). Trenton Channel sediment samples SD-09, SD-10, SD-13, SD-14, and SD-15 all contained dioxins or furans at concentrations significantly above background levels (see observed release by chemical analysis tables above for concentrations and references).

Other Possible Facilities:
The McLouth facility is located in an industrial suburb of Detroit (Ref. 3). Other facilities that could contribute hazardous substances to surface water exist north and west of the McLouth facility (Refs. 3; 5, p. 4). A remedial investigation (RI) was conducted of the Trenton Channel upstream of the McLouth facility, with the farthest downstream RI sample located approximately 1 mile upstream of the McLouth facility (Ref. 88, Figures 2-1, 5-1). The Trenton Channel RI identified five other possible sites along the Trenton Channel 2 miles upstream of the McLouth facility, including the Wyandotte Power facility, the BASF Southworks facility, the Arkema Eastern Plant facility, a Firestone facility and the BASF Riverview facility (Ref. 88, p. 9, Figure 2-1). Between 2006 and 2008, BASF Riverview performed remedial action at the facility, including a sediment cleanup project that removed approximately 30,000 cubic yards of contaminated sediments (Refs. 88, pp. 7, 8, 9). A 2004 study of the sediments adjacent to the Firestone facility found elevated concentrations of mercury, PCBs and various heavy metals (Ref. 88, p. 8). A 2005 study of the Arkema Eastern Plant detected SVOCs in sediment samples (Ref. 88, p. 9). All of these sites are upstream from the McLouth facility.

Sediment sample SD-01 was located just upstream from the facility on Monguagon Creek to account for contamination originating from facilities upstream from the McLouth facility on Monguagon Creek; therefore, hazardous substance concentrations in that sample account for any upstream sources of contamination that drain

to Monguagon Creek (Refs. 3; 6, Figure 7; see also Figure 3 of this HRS documentation record). Similarly, the location of sediment sample SD-05 is just upstream from the McLouth facility on the Trenton Channel; therefore, hazardous substance concentrations in SD-05 account for any upstream sources of contamination that migrate from upstream on the Trenton Channel (Refs. 3; 6, Figure 7; 88, Figure 2-1; see also Figure 3 of the HRS documentation record). As for facilities to the west of the McLouth site, mapping imagery from September 2016 shows that the east and west sides of West Jefferson Avenue south of Sibley Road have curbs and storm drains that prevent rainfall runoff from entering the facility from the west, thereby ensuring that all runoff to the east toward the Trenton Channel is solely from the McLouth facility. North of Sibley Road, curbs and storm drains exist on the west side of West Jefferson Avenue, which would also prevent rainfall runoff from entering the facility from the west (Ref. 3).

Hazardous Substances in Observed Release by Chemical Analysis:

Cadmium	2,3,7,8-TCDF	1,2,3,7,8,9-HxCDD
Chromium	1,2,3,7,8-PeCDF	1,2,3,7,8,9-HxCDF
Cyanide	1,2,3,7,8-PeCDD	2,3,4,6,7,8-HxCDF
Manganese	2,3,4,7,8-PeCDF	1,2,3,4,6,7,8-HpCDF
Nickel	1,2,3,4,7,8-HxCDD	1,2,3,4,6,7,8-HpCDD
Silver	1,2,3,4,7,8-HxCDF	1,2,3,4,7,8,9-HpCDF
Zinc	1,2,3,6,7,8-HxCDD	OCDD
2,3,7,8-TCDD	1,2,3,6,7,8-HxCDF	OCDF
Sulfuric Acid		

Surface Water Observed Release Factor Value: 550

4.1.2.2 Drinking Water Threat Waste Characteristics

The Drinking Water Threat is not scored in this HRS documentation record.

4.1.3.2 Human Food Chain Threat Waste Characteristics

4.1.3.2.1 Toxicity/Persistence/Bioaccumulation

Hazardous Substance	Source No.	Toxicity Factor Value (Ref. 1a, Section 2.4.1.1)	Persistence Factor Value[1] (Ref. 1, Section 4.1.3.2.1.2)	Bio-accumulation Value[2] (Ref. 1, Section 4.1.3.2.1.3)	Toxicity/ Persistence/ Bioacc. Factor Value[3]	Reference
Beryllium	2	10,000	1	50	500,000	2, p. 16
Cadmium	2, +	10,000	1	50,000	5×10^8	2, p. 18
Chromium	3, +	10,000	1	5	50,000	2, p. 22
Cyanide	4, +	10,000	0.4	0.5	2,000	2, p. 26
Lead	2	10,000	1	5,000	5×10^7	2, p. 56
Manganese	+	10,000	1	500	5,000,000	2, p. 58
Nickel	+	10,000	1	5	50,000	2, p. 62
Silver	2, +	100	1	50	5,000	2, p. 80
Zinc	2, +	10	1	500	5,000	2, p. 88
2-Methylnaphthalene	2	1,000	0.07	50,000	3,500,000	2, p. 60
Acenaphthene	2	10	0.4	500	2,000	2, p. 2
Fluorene	2	100	1	500	50,000	2, p. 30
Phenanthrene	2	1	0.4	5,000	2,000	2, p. 74
Anthracene	2	10	0.4	50,000	200,000	2, p. 4
Carbazole	2	10	0.07	500	350	2, p. 20
Fluoranthene	2	100	1	5,000	500,000	2, p. 12
Pyrene	2	100	1	50,000	5,000,000	2, p. 78
Benzo(a)anthracene	2	100	1	50,000	5×10^6	2, p. 6
Chrysene	2	10	1	5	50	2, p. 24
Benzo(b)fluoranthene	2	NS	NS	NS	NS	NS
Benzo(k)fluoranthene	2	10	1	50,000	500,000	2, p. 14
Benzo(a)pyrene	2	10,000	1	50,000	5×10^8	2, p. 8
Indeno(1,2,3-cd)pyrene	2	1,000	1	50,000	5×10^7	2, p. 54
Dibenz(a,h)anthracene	2	10,000	1	50,000	5×10^8	2, p. 28
Benzo(g,h,i)perylene	2	0	1	50,000	0	2, p. 10
PCBs*	1, 2, 3	10,000	1	50,000	5×10^8	2, p. 76
2,3,7,8-TCDD	2, +	10,000	1	50,000	5×10^8	2, p. 86
2,3,7,8-TCDF	2, +	10,000	1	5,000	5×10^7	2, p. 82
1,2,3,7,8-PeCDF	2, +	10,000	1	50,000	5×10^8	2, p. 68
1,2,3,7,8-PeCDD	+	10,000	1	50,000	5×10^8	2, p. 72
2,3,4,7,8-PeCDF	2, +	10,000	1	50,000	5×10^8	2, p. 70
1,2,3,4,7,8-HxCDD	+	10,000	1	5,000	5×10^7	2, p. 48
1,2,3,4,7,8-HxCDF	2, +	10,000	1	50,000	5×10^8	2, p. 40
1,2,3,6,7,8-HxCDD	2, +	10,000	1	50,000	5×10^8	2, p. 50

Hazardous Substance	Source No.	Toxicity Factor Value (Ref. 1a, Section 2.4.1.1)	Persistence Factor Value[1] (Ref. 1, Section 4.1.3.2.1.2)	Bio-accumulation Value[2] (Ref. 1, Section 4.1.3.2.1.3)	Toxicity/ Persistence/ Bioacc. Factor Value[3]	Reference
1,2,3,6,7,8-HxCDF	2, +	10,000	1	50,000	5×10^8	2, p. 42
1,2,3,7,8,9-HxCDD	2, +	10,000	1	50,000	5×10^8	2, p. 52
1,2,3,7,8,9-HxCDF	+	10,000	1	50,000	5×10^8	2, p. 44
2,3,4,6,7,8-HxCDF	2, +	10,000	1	50,000	5×10^8	2, p. 46
1,2,3,4,6,7,8-HpCDF	2, +	10,000	1	50,000	5×10^8	2, p. 32
1,2,3,4,6,7,8-HpCDD	2, +	10,000	1	50,000	5×10^8	2, p. 38
1,2,3,4,7,8,9-HpCDF	+	10,000	1	50,000	5×10^8	2, p. 34
OCDD	2, +	10,000	1	5,000	5×10^7	2, p. 66
OCDF	+	10,000	1	50,000	5×10^8	2, p. 64
Sulfuric Acid	4, +	NS	NS	NS	NS	NS

Notes:

[1] Persistence value for rivers.

[2] Bioaccumulation factor value for freshwater.

[3] Toxicity/Persistence/Bioacc. Factor Values are from Reference 1, Table 4-16.

\+ Substance is present in an observed release either by direct observation, chemical analysis or both.

NS Not Scored.

* PCBs values are used here based on Aroclor-1016, Aroclor-1242, Aroclor-1248, Aroclor-1254, and Aroclor-1260 identified in source and observed release.

Toxicity/Persistence/Bioaccumulation Factor Value: 5×10^8

4.1.3.2.2 Hazardous Waste Quantity

Source No.	Source Type	Source Hazardous Waste Quantity	Source Hazardous Constituent Quantity Complete?
1	Other	>0	No
2	Contaminated Soil	>0	No
3	Surface Impoundment	3,453.6	No
4	Other	2,459,599.67	No

Sum of Values: >2,463,053.27

Hazardous Waste Quantity Factor Value: 1,000,000
(Ref. 1, Table 2-6)

4.1.3.2.3 Waste Characteristics Factor Category Value

Substances with highest toxicity/persistence/bioaccumulation factor values are:
Cadmium
PCBs (Aroclor-1016, Aroclor-1242, Aroclor-1248, Aroclor-1254, and Aroclor-1260)
Benzo(a)pyrene
Dibenz(a,h)anthracene
2,3,7,8-TCDD
1,2,3,7,8-PeCDF
1,2,3,7,8-PeCDD
2,3,4,7,8-PeCDF
1,2,3,4,7,8-HxCDF
1,2,3,6,7,8-HxCDD
1,2,3,6,7,8-HxCDF
1,2,3,7,8,9-HxCDD
1,2,3,7,8,9-HxCDF
2,3,4,6,7,8-HxCDF
1,2,3,4,6,7,8-HpCDF
1,2,3,4,6,7,8-HpCDD
1,2,3,4,7,8,9-HpCDF
OCDF

Toxicity/Persistence Factor Value: 10,000
Hazardous Waste Quantity Factor Value: 1,000,000
Bioaccumulation Factor value: 50,000

Toxicity/Persistence Factor Value ×
Hazardous Waste Quantity Factor Value: 1×10^8 (10,000 x 1,000,000 = 1 x 10^{10}, subject to a maximum product of 1 x 10^8) (Ref. 1, Section 4.1.3.2.3)

(Toxicity/Persistence Factor Value × Hazardous Waste Quantity Factor Value) × Bioaccumulation Factor Value: 1×10^{12} [(1 x 10^8) x 50,000 = 5 x 10^{12}, subject to a maximum product of 1 x 10^{12}] (Ref. 1, Section 4.1.3.2.3)

Waste Characteristics Factor Category Value: 1,000
(Ref. 1, Table 2-7)

4.1.3.3 Human Food Chain Threat Targets

Recreational fisheries for various species exist throughout the Trenton Channel of the Detroit River adjacent to the facility and throughout the 15-mile TDL (Refs. 3, 53, pp. 3, 6, Table 5; 54, pp. 67, 68; 57, p. 2; 97; Figure 3 of this HRS documentation record). Commercial fisheries also exist in Lake Erie within the 15-mile TDL (Ref. 79, p. 4, Table 5).

Fish consumption advisories on the Detroit River (including the Trenton Channel) exist for several fish species (Refs. 53; 54, pp. 67, 68). These consumption advisories do not prohibit fish consumption, but rather limit it by stating, for example "no one should eat more than six meals per year of walleye from the Detroit River due to elevated concentrations of PCBs and dioxin" (Ref. 54, pp. 6, 68). Recent fisheries reports support recreational fish harvest (Ref. 79, p. 3). In June 2013, fishermen were caught fishing on private property near Meyer Ellias Park, which is downstream from the former McLouth Steel Corp facility property and near sediment samples SD-13, SD-14 and SD-15 (Refs. 5, p. 22; 6, Figure 7; 57, p. 2). The Detroit River Riverkeeper confirms that the portion of the Trenton Channel subject to actual contamination adjacent to the McLouth facility is fished for consumption purposes (Ref. 97).

Actual Human Food Chain Contamination

Sample ID	Sample Medium	Distance from PPE in Feet (PPE)	Hazardous Substances with BPFV of 500 or Greater	References
SD-09	Sediment	200 (PPE1)	Manganese, Zinc, 2,3,7,8-TCDF, 1,2,3,7,8,9-HxCDF	2, pp. 44, 58, 82, 88; 6, Table 6, Figure 7; Figure 3 of the HRS documentation record.
SD-10	Sediment	1,800 (PPE1) 100 (PPE2)	Cadmium, 2,3,7,8-TCDD, 2,3,7,8-TCDF, 1,2,3,7,8-PeCDF, 1,2,3,7,8-PeCDD, 2,3,4,7,8-PeCDF, 1,2,3,4,7,8-HxCDF, 1,2,3,6,7,8-HxCDF, 1,2,3,4,7,8-HxCDD, 1,2,3,6,7,8-HxCDD, 1,2,3,7,8,9-HxCDD, 2,3,4,6,7,8-HxCDF, 1,2,3,7,8,9-HxCDF, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,7,8,9-HpCDF, OCDF	2, pp. 18, 32, 34, 38, 40, 42, 44, 46, 48, 50, 52, 64, 68, 70,72, 82, 86 ; 6, Table 6, Figure 7 Figure 3 of the HRS documentation record
SD-11	Sediment	2,500 (PPE1) 800 (PPE2) 300 (PPE3)	Manganese	2, p. 58; 6, Table 6, Figure 7 Figure 3 of the HRS documentation record
SD-13	Sediment	4,000 (PPE1) 2,300 (PPE2) 1,800 (PPE3)	2,3,7,8-TCDD, 2,3,7,8-TCDF, 1,2,3,7,8-PeCDD, 1,2,3,6,7,8-HxCDF, 1,2,3,6,7,8-HxCDD, 1,2,3,7,8,9-HxCDD, 2,3,4,6,7,8-HxCDF, 1,2,3,7,8,9-HxCDF, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,6,7,8-HpCDD, OCDD, OCDF	2, pp. 32, 38, 42, 44, 46, 52, 64, 66, 72, 82, 86, ; 6, Table 6, Figure 7 Figure 3 of the HRS documentation record
SD-14	Sediment	4,050 (PPE1) 2,350 (PPE2) 1,850 (PPE3)	1,2,3,4,6,7,8-HpCDF, OCDF	2, pp. 32, 64; 6, Table 6, Figure 7 Figure 3 of the HRS documentation record
SD-15	Sediment	4,300 (PPE1)	1,2,3,7,8,9-HxCDF, OCDF	2, pp. 44, 64; 6, Table 6,

Sample ID	Sample Medium	Distance from PPE in Feet (PPE)	Hazardous Substances with BPFV of 500 or Greater	References
		2,600 (PPE2) 2,100 (PPE3)		Figure 7 Figure 3 of the HRS documentation record

Notes:
BPFV Bioaccumulation Potential Factor Value

Most Distant Level II Sample
SD-15 is the farthest downstream sediment sample that meets the criteria for an observed release by chemical analysis (see Figure 3 of this HRS documentation record).

Sample ID: SD-15
Distance from the farthest upstream probable point of entry (PPE1): 4,300 Feet
Reference: 3; 6, Figure 7

Level II Fisheries

Identity of Fishery	Extent of Level II Fishery (Relative to PPE or Level I Fishery)	References
Trenton Channel of the Detroit River (Walleye and Other Species)	Approximately 4,300 feet of the Trenton Channel from PPE 1 at NPDES discharge outfall No. 004 downstream to SD-15	3; 6, Figure 7; 53, pp. 3, 6, Table 5; 54, pp. 67, 68; 57, p. 2; 97; Figure 3 of the HRS documentation record

4.1.3.3.1 Food Chain Individual

Sample ID: SD-09, SD-10, SD-11, SD-13, SD-14, SD-15
Level I/Level II/or Potential: Level II
Hazardous Substances: Cadmium, Manganese, Zinc, 2,3,7,8-TCDD, 2,3,7,8-TCDF, 1,2,3,7,8-PeCDF, 1,2,3,7,8-PeCDD, 2,3,4,7,8-PeCDF, 1,2,3,4,7,8-HxCDF, 1,2,3,6,7,8-HxCDF, 1,2,3,4,7,8-HxCDD, 1,2,3,6,7,8-HxCDD, 1,2,3,7,8,9-HxCDD, 2,3,4,6,7,8-HxCDF, 1,2,3,7,8,9-HxCDF, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,7,8,9-HpCDF, OCDD, OCDF
Bioaccumulation Potential: 500, 5,000, 50,000

Food Chain Individual Factor Value: 45

4.1.3.3.2 Population

4.1.3.3.2.1 Level I Concentrations
There are no known Level I concentrations within fisheries.

4.1.3.3.2.2 Level II Concentrations

The Detroit River Riverkeeper confirms that the portion of the Trenton Channel subject to actual contamination adjacent to the McLouth facility is fished for consumption purposes (Ref. 97). The Detroit River, which includes the Trenton Channel, is described as being an intense seasonal fishery for walleye and other fish (Ref. 53, p. 1). In 2013, the State of Michigan Natural Resource Department reported charter boat harvest of 7,839 fish in the St. Clair-Detroit River System, including walleye, yellow perch, and smallmouth bass (Refs. 79, p. 3; 97). One creel survey from boaters accessing the Trenton Channel at Elizabeth Park (located approximately 1 mile downstream of the McLouth site) noted that more than 20,000 walleye were harvested in April and May 2000 alone (Ref. 53, Table 5). However, specific production values are unknown for the portion of the Trenton Channel subject to Level II concentrations.

Level II Population Targets

Identity of Fishery	Annual Production (pounds)	References	Human Food Chain Population Value
Trenton Channel of the Detroit River (Walleye and Other Species)	>0 (greater than zero)	1, Table 4-18; 53, Table 5; 79, p. 3; 97	0.03

Sum of Level II Human Food Chain Population Values: 0.03

Level II Concentrations Factor Value: 0.03

4.1.3.3.2.3 Potential Human Food Chain Contamination

Potential Population Targets

While fisheries exist outside of the zone of Level II concentrations and within the 15-mile TDL in the Trenton Channel, Detroit River (main channel) and Lake Erie, these fisheries are not scored in the HRS documentation record because scoring them will have little impact on the overall pathway score.

Potential Human Food Chain Contamination Factor Value: Not Scored

4.1.4.2 Environmental Threat Waste Characteristics

4.1.4.2.1 Ecosystem Toxicity/Persistence/Bioaccumulation

Hazardous Substance	Source No.	Ecosystem Toxicity Factor Value[1] (Ref. 1, Section 4.1.4.2.1.1)	Persistence Factor Value[2] (Ref. 1, Section 4.1.3.2.1.2)	Ecosystem Bio-accumulation Value[3] (Ref. 1, Section 4.1.3.2.1.3)	Ecosystem Toxicity/ Persistence/ Ecosystem Bioacc. Factor Value[4]	References
Beryllium	2	1,000	1	50	50,000	2, p. 16
Cadmium	2, +	10,000	1	50,000	5×10^8	2, p. 18
Chromium	3, +	10,000	1	500	5,000,000	2, p. 22
Cyanide	+	1,000	0.4	0.5	200	2, p. 26
Lead	2	1,000	1	50,000	5×10^7	2, p. 56
Manganese	+	100	1	50,000	5,000,000	2, p. 58
Nickel	+	100	1	50,000	5,000,000	2, p. 62
Silver	2, +	10,000	1	50	500,000	2, p. 80
Zinc	2, +	10	1	50,000	500,000	2, p. 88
2-Methylnaphthalene	2	100	0.07	50,000	350,000	2, p. 60
Acenaphthene	2	10,000	0.4	500	2,000,000	2, p. 2
Fluorene	2	1,000	1	5,000	5,000,000	2, p. 30
Phenanthrene	2	10,000	0.4	50,000	2×10^8	2, p. 74
Anthracene	2	10,000	0.4	50,000	2×10^8	2, p. 4
Carbazole	2	1,000	0.07	500	35,000	2, p. 20
Fluoranthene	2	10,000	1	5,000	5×10^7	2, p. 12
Pyrene	2	10,000	1	50,000	5×10^8	2, p. 78
Benzo(a)anthracene	2	10,000	1	50,000	5×10^8	2, p. 6
Chrysene	2	1,000	1	5,000	5,000,000	2, p. 24
Benzo(b)fluoranthene	2	NS	NS	NS	NS	NS
Benzo(k)fluoranthene	2	0	1	50,000	0	2, p. 14
Benzo(a)pyrene	2	10,000	1	50,000	5×10^8	2, p. 8
Indeno(1,2,3-cd)pyrene	2	0	1	50,000	0	2, p. 54
Dibenzo(a,h)anthracene	2	0	1	50,000	0	2, p. 28
Benzo(g,h,i)perylene	2	0	1	50,000	0	2, p. 10
PCBs*	1, 2, 3	10,000	1	50,000	5×10^8	2, p. 76
2,3,7,8-TCDD	2, +	0	1	50,000	0	2, p. 86
2,3,7,8-TCDF	2, +	0	1	5,000	0	2, p. 82
1,2,3,7,8-PeCDF	2, +	0	1	50,000	0	2, p. 68
1,2,3,7,8-PeCDD	+	0	1	50,000	0	2, p. 72
2,3,4,7,8-PeCDF	2, +	0	1	50,000	0	2, p. 70
1,2,3,4,7,8-HxCDD	+	0	1	5,000	0	2, p. 48
1,2,3,4,7,8-HxCDF	2, +	0	1	50,000	0	2, p. 40
1,2,3,6,7,8-HxCDD	2, +	0	1	50,000	0	2, p. 50
1,2,3,6,7,8-HxCDF	2, +	0	1	50,000	0	2, p. 42
1,2,3,7,8,9-HxCDD	2, +	0	1	50,000	0	2, p. 52

Hazardous Substance	Source No.	Ecosystem Toxicity Factor Value[1] (Ref. 1, Section 4.1.4.2.1.1)	Persistence Factor Value[2] (Ref. 1, Section 4.1.3.2.1.2)	Ecosystem Bio-accumulation Value[3] (Ref. 1, Section 4.1.3.2.1.3)	Ecosystem Toxicity/ Persistence/ Ecosystem Bioacc. Factor Value[4]	References
1,2,3,7,8,9-HxCDF	+	0	1	50,000	0	2, p. 44
2,3,4,6,7,8-HxCDF	2, +	0	1	50,000	0	2, p. 46
1,2,3,4,6,7,8-HpCDF	2, +	0	1	50,000	0	2, p. 32
1,2,3,4,6,7,8-HpCDD	2, +	0	1	50,000	0	2, p. 38
1,2,3,4,7,8,9-HpCDF	+	0	1	50,000	0	2, p. 34
OCDD	2, +	0	1	50,000	0	2, p. 66
OCDF	+	0	1	5,000	0	2, p. 64
Sulfuric Acid	4, +	NS	NS	NS	NS	NS

Notes:

[1] Ecosystem toxicity value for freshwater.

[2] Persistence value for rivers.

[3] Ecosystem Bioaccumulation Factor Value for freshwater.

[4] Ecosystem Toxicity/Persistence/Ecosystem Bioaccumulation Factor Values are from Reference 1, Table 4-21.

\+ Substance is present in an observed release either by direct observation, chemical analysis or both.

NS Not Scored.

* PCBs values are used here based on Aroclor-1016, Aroclor-1242, Aroclor-1248, Aroclor-1254, and Aroclor-1260 identified in source and observed release.

Ecosystem Toxicity/Persistence/Environmental Bioaccumulation Factor Value: 5×10^8

4.1.4.2.2. Hazardous Waste Quantity

Source No.	Source Type	Source Hazardous Waste Quantity	Source Hazardous Constituent Quantity Complete?
1	Other	>0	No
2	Contaminated Soil	>0	No
3	Surface Impoundment	3,453.6	No
4	Other	2,459,599.67	N0

Sum of Values: >2,463,053.27

Hazardous Waste Quantity Factor Value (Ref. 1, Table 2-6): 1,000,000

4.1.4.2.3. Waste Characteristics Factor Category Value

Substances with highest toxicity/persistence/bioaccumulation factor values are:
Cadmium
PCBs (Aroclor-1016, Aroclor-1242, Aroclor-1248, Aroclor-1254, and Aroclor-1260)
Benzo(a)anthracene
Benzo(a)pyrene
Pyrene

Ecosystem Toxicity/Persistence Factor Value: 10,000
Hazardous Waste Quantity Factor Value: 1,000,000
Ecosystem Bioaccumulation Factor value: 50,000

Ecosystem Toxicity/Persistence Factor Value ×
Hazardous Waste Quantity Factor Value: 1×10^8 (10,000 x 1,000,000 = 1 x 10^{10}, subject to a maximum product of 1 x 10^8) (Ref. 1, Section 4.1.4.2.3)

(Ecosystem Toxicity/Persistence Factor Value × Hazardous Waste Quantity Factor Value) × Ecosystem Bioaccumulation Factor Value: 1×10^{12} [(1 x 10^8) x 50,000 = 5 x 10^{12}, subject to a maximum product of 1 x 10^{12}] (Ref. 1, Section 4.1.4.2.3)

Waste Characteristics Factor Category Value: 1,000
(Ref. 1, Table 2-7)

4.1.4.3 Environmental Threat Targets

Most Distant Level II Sample
SD-15 is the farthest downstream sediment sample that meets the observed release by chemical analysis criteria (see Figure 3 of this HRS documentation record.).

Sample ID: SD-15
Distance from the farthest upstream probable point of entry (PPE1): 4,300 Feet
(Reference: 3; 6, Figure 7)

4.1.4.3.1 Sensitive Environments

4.1.4.3.1.1 Level I Concentrations

No samples meet the criteria for Level I Concentrations.

4.1.4.3.1.2 Level II Concentrations

Level II Sensitive Environment Targets
The Trenton Channel is part of the Detroit River National Wildlife Refuge system, the nation's first "International" Wildlife Refuge (Refs. 49, p. 8; 82, p. 2, 3; 100, pp. 1, 14, 15). The Detroit River International Wildlife Refuge is part of the National Wildlife Refuge System and protects islands, coastal wetlands, shoals, and riverfront along 48 miles of the lower Detroit River, which includes the Trenton Channel (Refs. 49, pp. 3, 4; 100, p. 3). The Detroit River and western Lake Erie have been noted for their variety of plants and animals in the North American Waterfowl Management Plan, the United Nations Convention on Biological Diversity, and the Biodiversity Investment Area Program of Environment Canada and the U.S. Environmental Protection Agency (Refs. 49, p. 4; 100, pp. 1, 14, 15).

The Detroit River, which includes the Trenton Channel, has been identified as a spawning area for the lake sturgeon (*Acipenser fulvescens*), a State of Michigan designated threatened species (Refs. 49, p. 4; 50, pp. 256, 257; 58, p. 3). Lake sturgeon habitat was restored immediately upstream of the McLouth site, and a large lake sturgeon was caught within the Trenton Channel immediately upstream of the facility in 2009 (Refs. 87; 88, p. 6).

The northern riffleshell mussel (*Epioblasma torulosa rangiana*), a federally designated endangered species, has also been historically found at several locations in the Detroit River, including within a few miles of the McLouth facility (Refs. 76; 77, p. 1; 78, p. 1; 81, pp. 9, 10, 11, 16). As recently as 30 years ago, the Detroit River (which includes the Trenton Channel) was habitat known to be used by the northern riffleshell (Refs. 76; 77, p. 1; 78, p. 1; 81, pp. 9, 10, 11, 16). As a result, the northern riffleshell recovery plan identifies the Detroit River (which includes the entire Trenton Channel) as a drainage requiring restoration as a necessary objective for achieving northern riffleshell habitat recovery (Ref. 81, p. 29). USFWS identifies the Trenton Channel as habitat for the northern riffleshell mussel (Ref. 83). For these reasons, the Trenton Channel of the Detroit River is considered historical habitat known to be used by the northern riffleshell mussel.

In addition, the Detroit River is historical habitat known to be used by seven of the State of Michigan's 18 other threatened or endangered native mussels (family Unionidae) (Refs. 58; 77; 78). The white catspaw mussel

(*Epioblasma obliquata perobliqua*) is a State of Michigan designated endangered species within the Detroit River (which includes the Trenton Channel) identified as habitat known to be used by the species (Ref. 86).

Sensitive Environment	**Distance from PPE to Nearest Sensitive Environment**	**References**	**Sensitive Environment Value**
National Wildlife Refuge – Detroit River National Wildlife Refuge	0 feet from PPE 1	1, Table 4-23; 49, p. 8; 82, p. 2	75
Habitat known to be used by Federal designated endangered species – northern riffleshell mussel (*Epioblasma torulosa rangiana*)	0 feet from PPE 1	1, Table 4-23; 76; 77, p. 1; 78, p. 1; 81, pp. 9-11.	75
Habitat known to be used by Federal designated endangered species – snuffbox (*Epioblasma triquetra*)	0 feet from PPE 1	1, Table 4-23; 77, Table 2; 92; 93	75
Habitat known to be used by Federal designated threatened species – red knot (*Calidris canutus rufa*)	0 feet from PPE 1	1, Table 4-23; 84; 85	75
Habitat known to be used by State designated endangered species – salamander mussel (*Simpsoniconcha ambigua*)	0 feet from PPE 1	1, Table 4-23; 89	50
Habitat known to be used by State designated endangered species – round hickorynut (*Obovaria subrotunda*)	0 feet from PPE 1	1, Table 4-23; 90	50
Habitat known to be used by State designated endangered species – hickorynut (*Obovaria olivaria*)	0 feet from PPE 1	1, Table 4-23; 91	50
Habitat known to be used by State designated endangered species – white catspaw mussel (*Epioblasma obliquata perobliqua*)	0 feet from PPE 1	1, Table 4-23; 86	50
Habitat known to be used by State designated threatened species – purple wartyback (*Cyclonaias tuberculata*)	0 feet from PPE 1	1, Table 4-23; 59	50
Habitat known to be used by State designated threatened species – lake sturgeon (*Acipenser fulvescens*)	0 feet from PPE 1	1, Table 4-23; 49, p. 4; 50, pp. 256, 257; 87; 88, p. 6	50

Sum of Level II Sensitive Environments Value: 600

Level II Wetland Frontages

No wetlands exist within the zone of actual contamination.

Wetlands Value (Ref. 1, Table 4-24): 0

Sum of Level II Sensitive Environments Value + Wetlands Value: 600

Level II Concentrations Factor Value: 600

4.1.4.3.1.3 Potential Contamination

Not scored.