COVER SHEET

Name of Site: St. Clair Shores Drain

EPA ID No.: MIN000510063

Contact Person

United States Environmental Protection Agency (EPA), Region V

Patrick Hamblin

77 West Jackson Boulevard, Mail Code: SR-6J

Chicago, Illinois 60604

(312) 886-6312

Site Investigation: Joseph Walczak

Michigan Department of Environmental Quality

(517) 373-4951

Pathways, Components, or Threats Not Scored

The ground water migration, ground water to surface water migration, soil exposure and air migration pathways are not scored as part of this Hazard Ranking System (HRS) evaluation. The ground water, ground water to surface water, soil exposure, and air migration pathways were not included because a release to these media does not significantly affect the overall site score and because the surface water migration pathway produces an overall site score above the minimum required for the site to qualify for inclusion on the National Priorities List (NPL).

Ground Water Migration Pathway: There are insufficient data to document the HRS requirements for establishing the threat of release via ground water at the St. Clair Shores Drain Site.

Soil Exposure Pathway: While there could be potential for contact with contaminated media, the evaluation of this pathway does not affect the listing decision.

Air Migration Pathway: The majority of surficial and shallow PCB contaminated soil has been removed and the majority of the PCB contamination is located over 2 feet below ground surface, in the storm sewer system, or below water in canal and lake sediments. Therefore, the air pathway at the St. Clair Shores Drain Site was not scored.

HRS DOCUMENTATION RECORD

Name of Site:	St. Clair Shores Drain	**Date Prepared:**	March 2010
EPA Region:	V		
Street Address*:	Intersection of Bon Brae Street and Harper Avenue		
City, County, State, Zip Code:	St. Clair Shores, Macomb County, Michigan, 48081 (Figure 1) (Refs. 3; 4)		
General Location in State:	Southeast Michigan		
Topographic Map:	7.5-Minute Series Topographic Map: Grosse Pointe Quadrangle, Michigan, 1968 (Photorevised 1983) (Ref. 3).		
Latitude:	42º 29' 13" North (Refs. 3; 4, pp. 1, 2)		
Longitude:	82º 53' 57" West (Refs. 3; 4, pp. 1, 2)		

The latitude and longitude listed above mark the location of the Intersection of Bon Brae Street and Harper Avenue (Ref. 4, pp. 1, 2; Figure 1 of this HRS documentation record).

*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 delineated boundaries. A site is defined as where a hazardous substance has been "deposited, stored, placed, or 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 site boundaries at the time of scoring will be refined as more information is developed regarding where the contamination has come to be located.

Scores

Ground Water Migration Pathway	0.00
Surface Water Migration Pathway	97.76
Soil Exposure Pathway	0.00
Air Pathway	0.00
HRS SITE SCORE	**48.88**

WORKSHEET FOR COMPUTING HRS SITE SCORE

		S	S^2
1.	Ground Water Migration Pathway Score (S_{gw}) (from Table 3-1, line 13)	NS	
2a.	Surface Water Overland/Flood Migration Component (from Table 4-1, line 30)	97.76	9557.0176
2b	Ground Water to Surface Water Migration Component (from Table 4-25, line 28)	NS	
2c.	Surface Water Migration Pathway Score (S_{sw}) (enter the larger of lines 2a and 2b as the pathway score)	NS	9557.0176
3.	Soil Exposure Pathway Score (S_s) (from Table 5-1, line 22)	NS	NS
4.	Air Migration Pathway Score (S_a) (from Table 6-1, line 12)	NS	NS
5.	Total of $S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2$		9557.0176
6.	**HRS Site Score** Divide the value on line 5 by 4 and take the square root.		**48.88**

Note:
NS -- Not Scored

SURFACE WATER OVERLAND FLOW/FLOOD MIGRATION COMPONENT SCORESHEET

Factor Categories and Factors **DRINKING WATER THREAT**	**Maximum Value**	**Assigned Value**
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	NS
3. Potential to Release by Flood:		
3a. Containment (Flood)	10	
3b. Flood Frequency	50	
3c. Potential to Release by Flood (lines 3a x 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	*	10,000
7. Hazardous Waste Quantity	*	100
8. Waste Characteristics	100	32
Targets		
9. Nearest Intake	50	1
10. Population		
10a. Level I Concentrations	**	0
10b. Level II Concentrations	**	0
10c. Potential Contamination	**	2
10d. Population (lines 10a+10b+10c)	**	2
11. Resources	5	5
12. Targets (lines 9 + 10d + 11)	**	8
13. DRINKING WATER THREAT SCORE	100	1.70

Notes:
* -- Maximum value applies to waste characteristics category
** -- Maximum value not applicable
NS -- Not Scored

SURFACE WATER OVERLAND FLOW/FLOOD MIGRATION COMPONENT SCORESHEET

Factor Categories and Factors **HUMAN FOOD CHAIN THREAT**	**Maximum Value**	**Assigned Value**
Likelihood of Release		
14. Likelihood of Release (same as line 5)	550	550
Waste Characteristics		
15. Toxicity/Persistence/Bioaccumulation	*	5×10^{8}
16. Hazardous Waste Quantity	*	100
17. Waste Characteristics	1000	320
Targets		
18. Food Chain Individual	50	45
19. Population	**	
19a. Level I Concentrations	**	0
19b. Level II Concentrations	**	0.03
19c. Potential Contamination	**	0
19d. Population (lines 19a+19b+19c)	**	0.03
20. Targets (lines 18 + 19d)	**	45.03
21. HUMAN FOOD CHAIN THREAT SCORE	100	96.06

Notes:

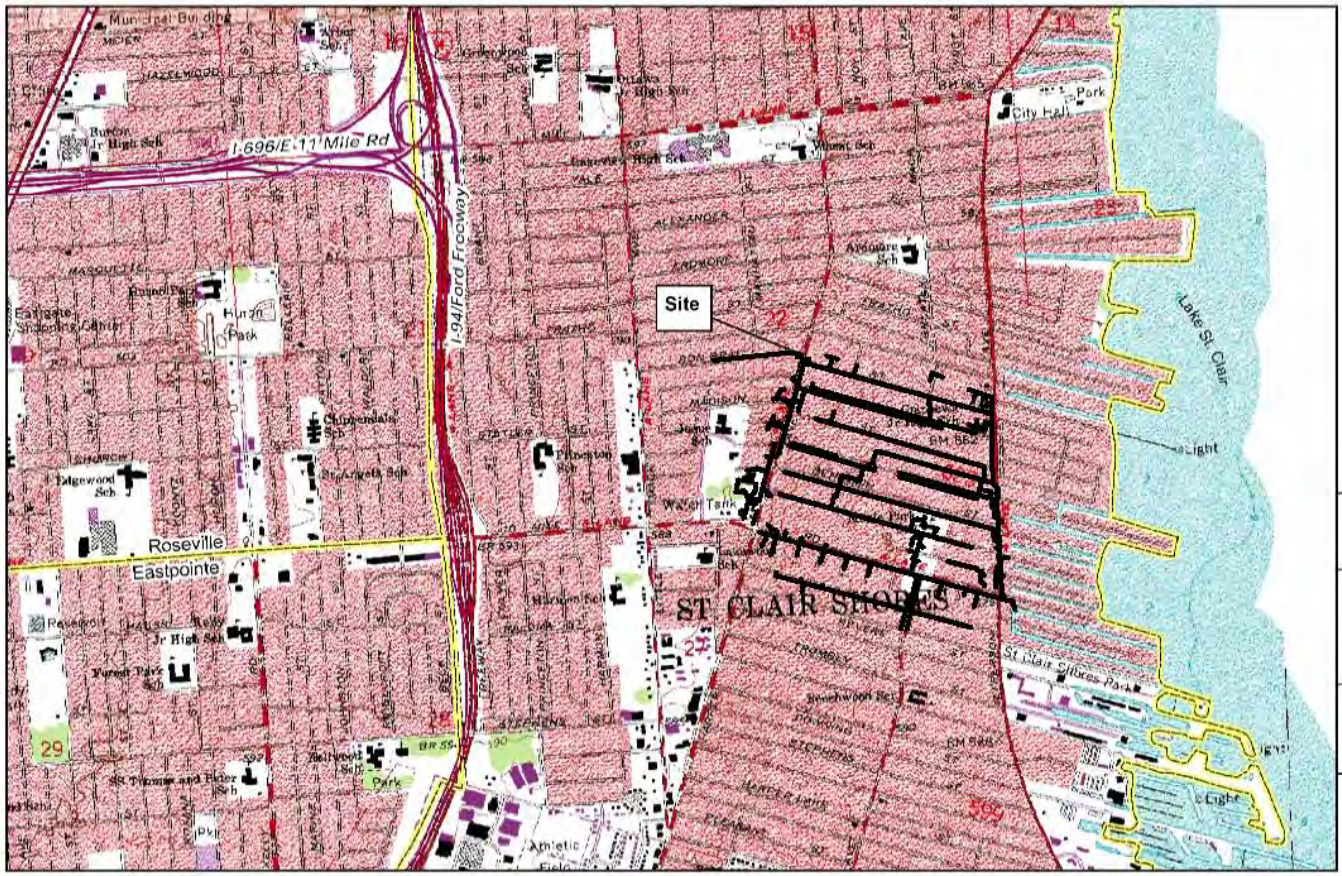
* -- Maximum value applies to waste characteristics category

** -- Maximum value not applicable

SURFACE WATER OVERLAND FLOW/FLOOD MIGRATION COMPONENT SCORESHEET

Factor Categories and Factors **ENVIRONMENTAL THREAT**	**Maximum Value**	**Assigned Value**
Likelihood of Release		
2. Likelihood of Release (same as line 5)	550	NS
Waste Characteristics		
23. Ecosystem Toxicity/Persistence/Bioaccumulation	*	NS
24. Hazardous Waste Quantity	*	NS
25. Waste Characteristics	1000	NS
Targets		
26. Sensitive Environments	**	NS
26a. Level I Concentrations	**	NS
26b. Level II Concentrations	**	NS
26c. Potential Contamination	**	NS
26d. Sensitive Environments (lines 26a+26b+26c)	**	
27. Targets		NS
28. ENVIRONMENTAL THREAT SCORE	60	NS
29. WATERSHED SCORE	100	97.76
30. SURFACE WATER OVERLAND FLOW/FLOOD COMPONENT SCORE	100	97.76

Notes:
* -- Maximum value applies to waste characteristics category
** -- Maximum value not applicable
NS -- Not Scored



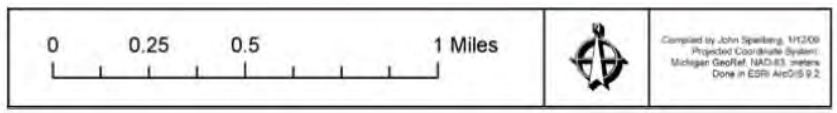
Sources: MDEQ 2007/Weston 2007 (site designation), MDIT 2008/USGS 1971 (topographic map)

LEGEND

- SITE LOCATION
- MUNICIPAL BOUNDARY
- CONTAMINATED SOIL
- SEWER PIPE

Site Location in Southeast Michigan:

Site Location in Michigan:

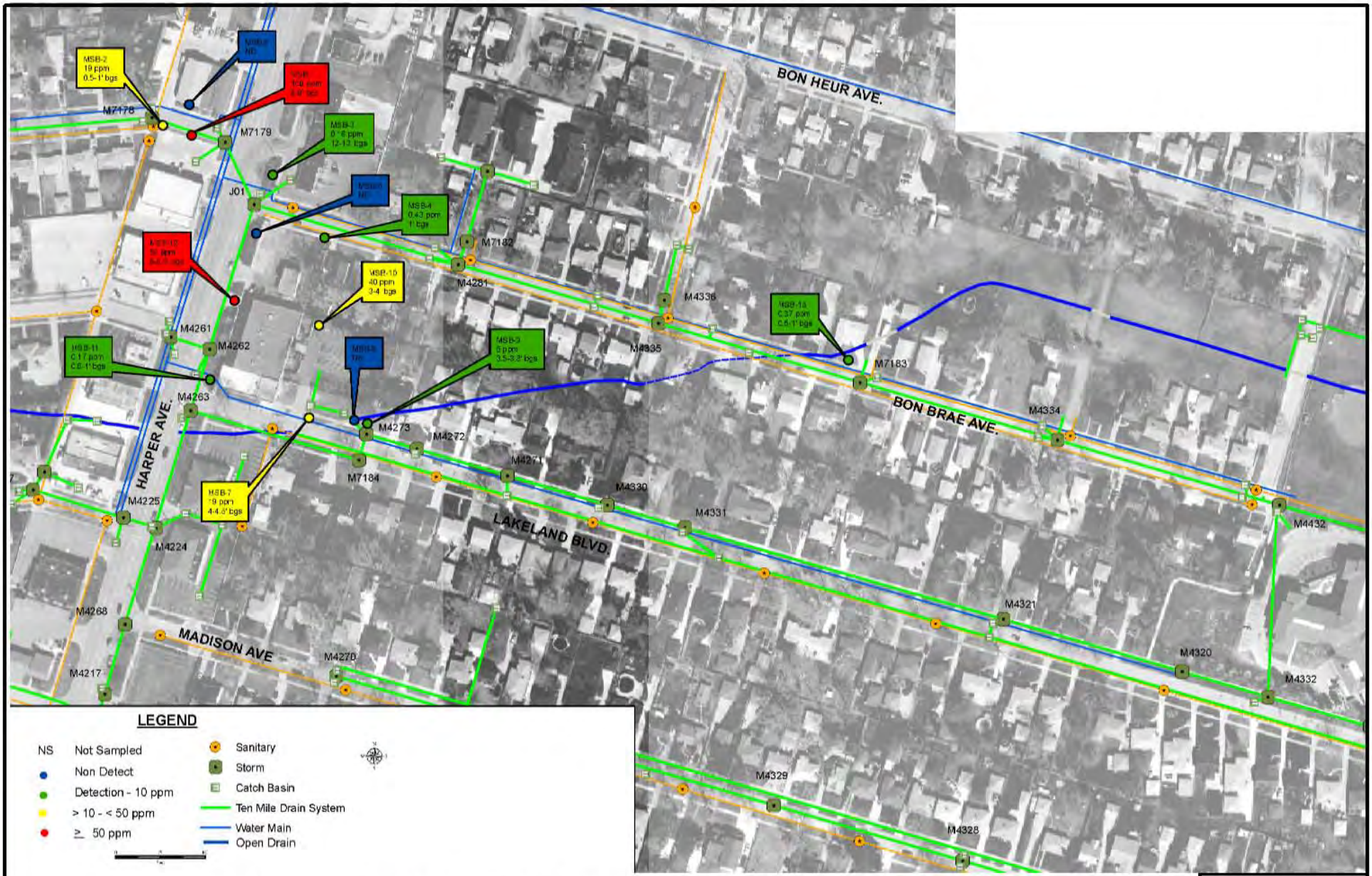


SOURCE: REFERENCE 5, PAGE 24.

Figure 1

Prepared for: U.S. EPA. REGION V Contract No: EP-S5-06-04 TDD: S05-0008-0908-021 DCN: 741-2A-AFJJ	Prepared by: WESTON SOLUTIONS, INC. 750 E. Bunker Ct. Vernon Hills, IL 60061	**Site Location Map** St. Clair Shores Drain Site St. Clair Shores, Macomb County, Michigan

J:\CAD93\000\04809.dwg, 12/18/2009 11:56:49 AM



SOURCE: REFERENCE 8, PAGE 45.

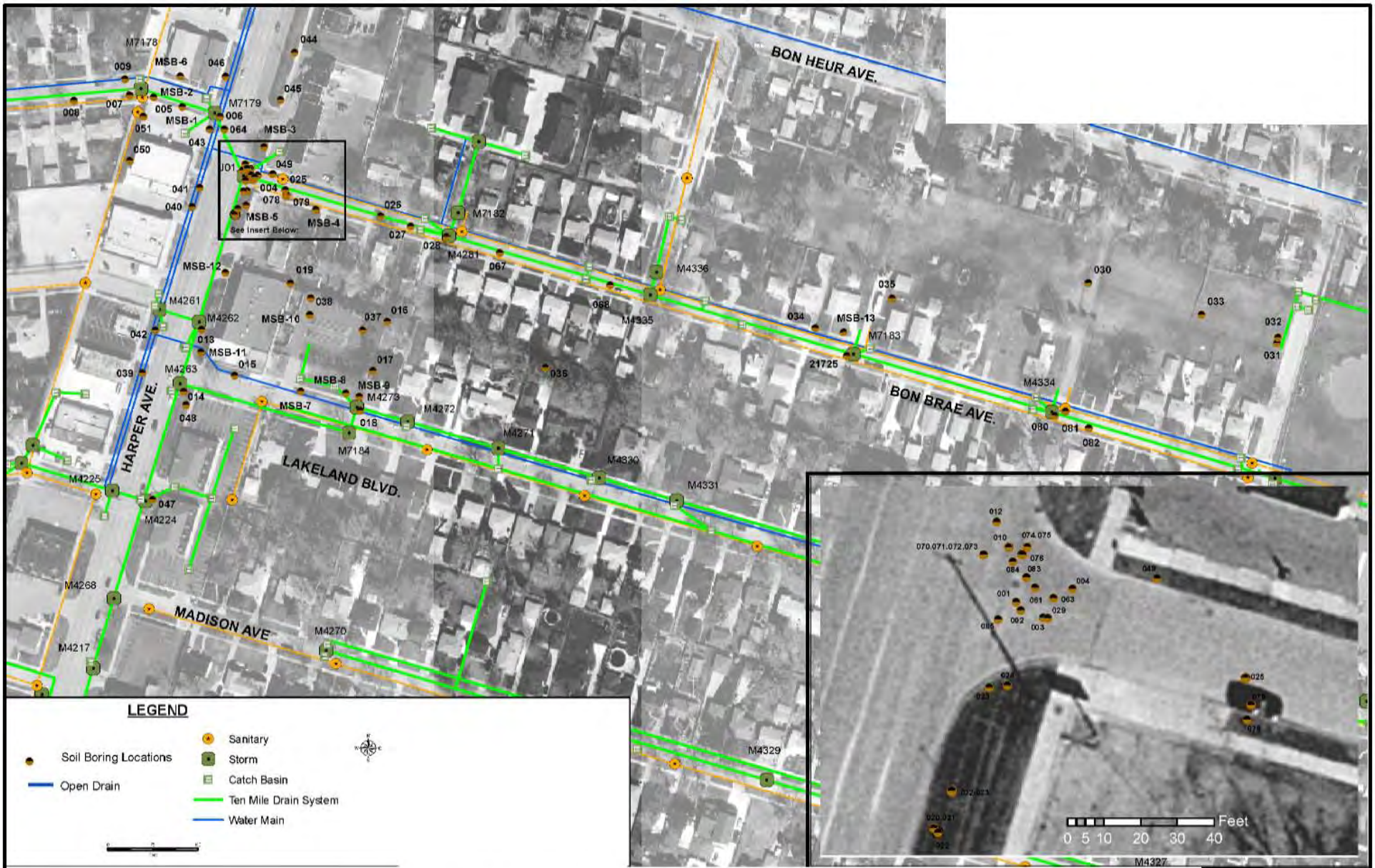
Figure 2

Prepared for:
U.S. EPA. REGION V
Contract No: EP-S5-06-04
TDD: S05-0008-0908-021
DCN: 741-2A-AFJJ

Prepared by:
WESTON SOLUTIONS, INC.
750 E. Bunker Ct.
Vernon Hills, IL 60061

MDEQ Soil Boring Location Map
April 2005
St. Clair Shores Drain Site
St. Clair Shores, Macomb County, Michigan

J:\CAD93\000\04809.dwg, 12/18/2009 11:54:49 AM



SOURCE: REFERENCE 8, PAGE 46.

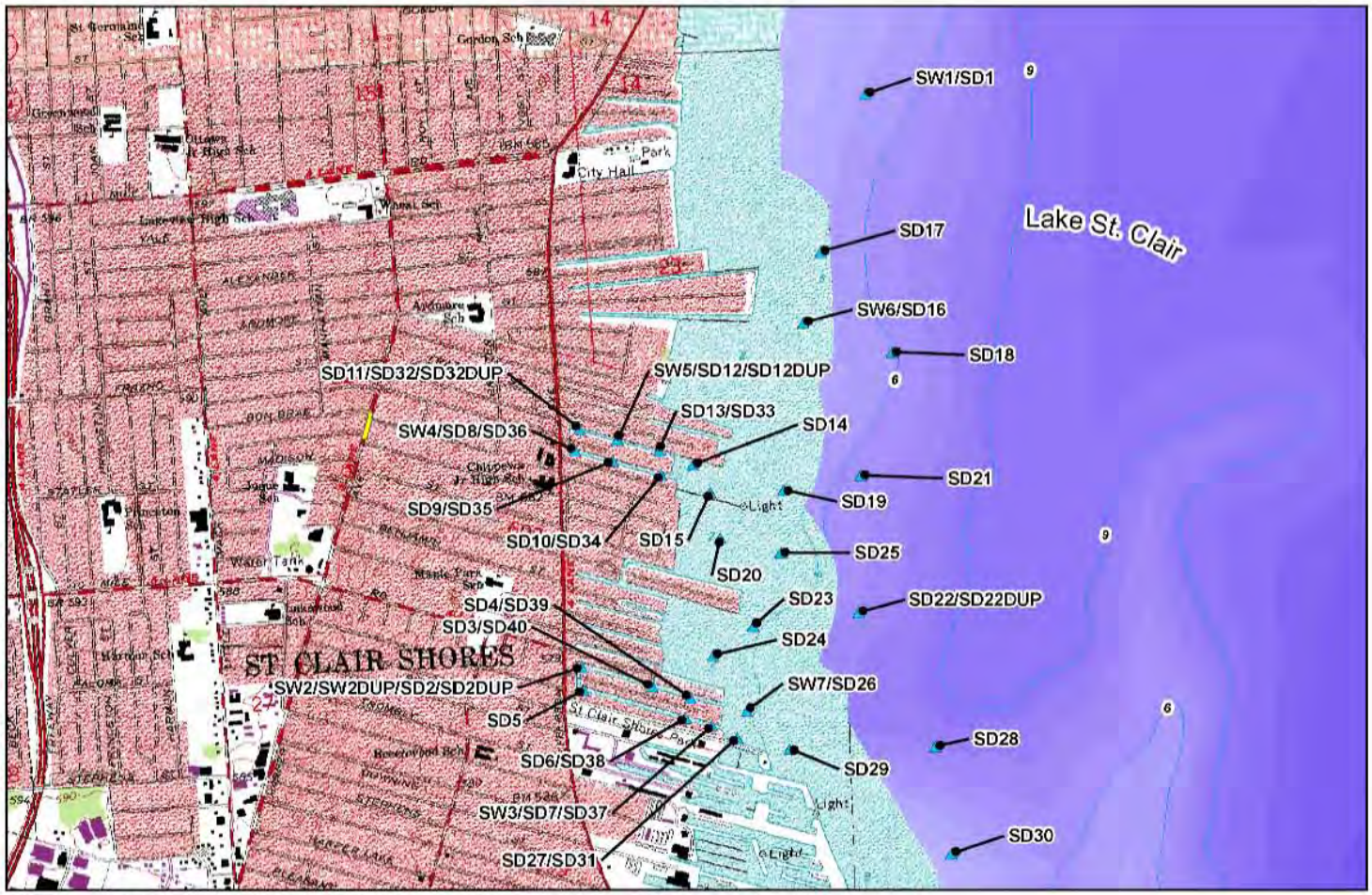
Figure 3

Prepared for:
U.S. EPA. REGION V
Contract No: EP-S5-06-04
TDD: S05-0008-0908-021
DCN: 741-2A-AFJJ

Prepared by:
WESTON SOLUTIONS, INC.
750 E. Bunker Ct.
Vernon Hills, IL 60061

MDEQ/USEPA Soil Boring Location Map
May 2005
St. Clair Shores Drain Site
St. Clair Shores, Macomb County, Michigan

J:\CAD93\000\04809.dwg, 12/18/2009 11:51:33 AM



Sources: MDEQ 2008 (sample locations), MDIT 2009 (topographic map, lake bathymetry), Weston 2007 (site location)

0 1,250 2,500 5,000 Feet

Compiled by John Spellberg 12/14/09 (revised 4/19/09, JES)
Projection Coordinate System: Michigan GeoRef, NAD-83, meters
Done in ESRI Arcview 9.3

SOURCE: REFERENCE 5, PAGE 27.

Figure 4

Prepared for:
U.S. EPA. REGION V
Contract No: EP-S5-06-04
TDD: S05-0008-0908-021
DCN: 741-2A-AFJJ

Prepared by:
WESTON SOLUTIONS, INC.
750 E. Bunker Ct.
Vernon Hills, IL 60061

Sediment Sample Location Map

St. Clair Shores Drain Site

St. Clair Shores, Macomb County, Michigan

J:\CAD93\000\04809.dwg, 12/18/2009 11:49:16 AM

REFERENCES

1. U. S. Environmental Protection Agency (EPA). Hazard Ranking System Final Rule. Title 40 of the *Code of Federal Regulations* (CFR), Part 300, Appendix A. 139 Pages.

   http://www.epa.gov/superfund/sites/npl/hrsres/rule/part1_2.pdf
   http://www.epa.gov/superfund/sites/npl/hrsres/rule/part3a.pdf
   http://www.epa.gov/superfund/sites/npl/hrsres/rule/part3b.pdf
   http://www.epa.gov/superfund/sites/npl/hrsres/rule/part3c.pdf
   http://www.epa.gov/superfund/sites/npl/hrsres/rule/part4a.pdf
   http://www.epa.gov/superfund/sites/npl/hrsres/rule/part4b.pdf
   http://www.epa.gov/superfund/sites/npl/hrsres/rule/part5.pdf
   http://www.epa.gov/superfund/sites/npl/hrsres/rule/toc_sec1.pdf
   http://www.epa.gov/superfund/sites/npl/hrsres/rule/sec2.pdf
   http://www.epa.gov/superfund/sites/npl/hrsres/rule/sec3.pdf
   http://www.epa.gov/superfund/sites/npl/hrsres/rule/sec4a.pdf
   http://www.epa.gov/superfund/sites/npl/hrsres/rule/sec4b.pdf
   http://www.epa.gov/superfund/sites/npl/hrsres/rule/sec4c.pdf
   http://www.epa.gov/superfund/sites/npl/hrsres/rule/sec4d.pdf
   http://www.epa.gov/superfund/sites/npl/hrsres/rule/sec5.pdf
   http://www.epa.gov/superfund/sites/npl/hrsres/rule/sec6.pdf
   http://www.epa.gov/superfund/sites/npl/hrsres/rule/sec7.pdf

2. EPA. Superfund Chemical Data Matrix (SCDM), SCDM Data Versions: January 2004. Excerpt. 1 page. A complete copy of SCDM can be found at:

   http://www.epa.gov/superfund/sites/npl/hrsres/tools/scdm.htm

3. U.S. Geological Survey (USGS). 7.5-Minute Series Topographic Map: Grosse Pointe Quadrangle, Michigan, 1968 (Photorevised 1983). 1 Page.

4. Weston Solutions, Inc. (WESTON). Longitude and Latitude Determination. August 31, 2009. 2 Pages.

5. State of Michigan, Department of Environmental Quality (MDEQ). Site Inspection Report, St. Clair Shores Drain. December 3, 2009. 387 Pages.

6. EPA, Site Assessment Report, Ten Mile Drain Polychlorinated Biphenyl Investigation Site, St. Clair Shores, Macomb County, Michigan, Volume I of II. Prepared by Tetra Tech EM Inc., July 31, 2002. 249 Pages.

7. U.S. Department of Health and Human Services. Ten Mile Lange/Revere Drainage System, Petitioned Health Consultation, December 20, 2002. 60 Pages.

8. WESTON. April-May 2005 Site Investigation Report and Focused Feasibility Study, Volume I of II, St. Clair Shores Drain Site. October 2005. 194 Pages.

8A. MDEQ, Work Plan/Safety Plan, 10 Mile Drain Area, Macomb County, Michigan. April 6, 2005. 19 Pages.

8B. WESTON. April-May 2005 Site Investigation Report and Focused Feasibility Study, Analytical Results, Volume II of II, St. Clair Shores Drain Site. October 2005. 873 Pages.

8C. Weston Solutions Inc., Work Plan, For Source Area Investigation Activities at the Ten Mile Drain Site, Macomb County, Michigan, May 2005. 60 Pages.

9. MDEQ. Analytical Results, Laboratory Work Order # 50400038, Report Date, April 22, 2005. 12 Pages.

10. MDEQ. Analytical Results, Laboratory Work Order # 50400036, Report Date, April 14, 2005. 14 Pages.

11. MDEQ. Analytical Results, Laboratory Work Order # 50400037, Report Date, April 22, 2005. 12 Pages.

12. MDEQ. Analytical Results, Laboratory Work Order # 50400039, Report Date, April 22, 2005. 11 Pages.

13. MDEQ. Analytical Results, Laboratory Work Order # 50400050, Report Date, April 27, 2005. 9 Pages.

14. EPA. Pollution Report, St, Clair Shores Drain, June 13, 2006. 4 Pages.

15. WESTON. Removal Report, St. Clair Shores PCB Site, April 2007. 9 Pages.

16. WESTON. 15-Mile Target Distance Limit Map. August 28, 2009. 1 Page.

17. EPA. Contract Required Quantitation Limits for SOM01.2. 1 Page.

17A. MDEQ. Surface Water/Sediment Sampling Data Sheets, July 28-30, 2008. 30 Pages.

18. WESTON. Record of Telephone Conversation between Gary White, Macomb County Health Department, and Lauren Cook, WESTON. September 8, 2009. 1 Page.

19. St. Clair River and Lake St. Clair Comprehensive Management Plan. June 2004. Excerpt, 22 Pages.

Available in its entirety at http://www.glc.org/stclair/.

20. U.S. Department of Health and Human Services. Health Consultation, St. Clair Shores PCBs – Residential Soils. November 27, 2007. 23 Pages.

21. Michigan Department of Community Health. 2002. Michigan Family Fish Consumption Guide. 25 Pages.

22. Michigan Department of Community Health. 2009. Michigan Family Fish Consumption Guide. 32 Pages.

23. Great Lakes Fishery Commission. Draft Fish Community Goal and Objectives for Lake St. Clair, St. Clair River and Detroit River, March 28, 2003. 44 Pages.

24. Lake St. Clair: Its Current State and Future Prospects. Conference Summary Report, November 30-December 1, 1999. 70 Pages.

25. WESTON. Record of Telephone Conversation between Chuck Bellmore, Mount Clemens Water Department, and Lauren Cook, WESTON. November 24, 2009. 1 Page.

26. Reference reserved.

27. WESTON. Record of Telephone Conversation between Antoine Pogue, Highland Park Water Department, and Lauren Cook, WESTON. November 24, 2009. 1 Page.

28. Reference reserved.

29. WESTON. Record of Telephone Conversation between Scott Homminga, Gross Pointe Farms Water Department, and Lauren Cook, WESTON. September 8, 2009. 1 Page.

30. WESTON. Population Calculation for City of Detroit Water Intake, Omprakash Patel, December 1, 2009. 3 Pages.

31. WESTON. Record of Telephone Conversation between Ron Hayes, Detroit Water Department, and Lauren Cook, WESTON. December 2, 2009. 2 Pages.

32. MDEQ, Laboratory Services Section, Quality Assurance Program Plan, May 5, 2003. 192 Pages.

33. Great Lakes Information Network (GLIN), Lake St. Clair. http:/www.great-lakes.net/lakes/stclair.html. Accessed November 20, 2009. 3 Pages.

34. MDEQ, Interoffice Communication, Fish Consumption Documentation for Lake St. Clair, Joseph Walczak, October 20, 2009. 1 Page.

1.0 SITE DESCRIPTION

The St. Clair Shores Drain (SCSD) comprises an enclosed concrete storm sewer system surrounded by sand and gravel fill materials placed in native clay soils. The SCSD is located in a mixed residential/commercial area in St. Clair Shores, Macomb County, Michigan, near the western shore of Lake St. Clair (Refs. 5, p. 5; 6, p. 9). The SCSD storm sewer system drains approximately 0.5 square mile of the city of St. Clair Shores and terminates in an outfall on the Lange Street Canal (Ref. 8, p. 9). The Lange Street Canal then branches into two parallel canals, the Lange Street Canal and the Revere Street Canal, both of which drain into Lake St. Clair. The two canals are bordered by residences along three streets (Ref. 6, p. 12). Figure 1 is site location map.

In 2001, the county collected sediment samples from the Lange Street Canals in order to secure a dredging permit (Ref. 7, p. 9). Analytical results revealed polychlorinated biphenyls (PCBs) at concentrations up to 150 parts per million (ppm) in the canal sediments (Ref. 7, pp. 9, 37). As a result, the Michigan Department of Environmental Quality (MDEQ) and the Macomb County Public Works Office (MCPWO) initiated an investigation of the SCSD in February 2002 (Ref. 8, p. 10). PCBs were detected at a number of locations within the SCSD concrete piping, with the highest concentration being found at the intersection of Harper Avenue and Bon Brae Avenue (Ref. 8, p. 11).

Subsequently, EPA and MCPO conducted sediment removal and dewatering activities within a combined total of 5.5 miles of SCSD concrete piping (Ref. 8, p.11). However, monitoring efforts in 2003 and 2004 revealed the renewed presence of PCB-contaminated sediment and water within the SCSD drainage system (Ref. 8, p.11). EPA, MDEQ, MCPWO, and the city of St. Clair Shores have coordinated efforts to identify potential source areas and investigate potential migration pathways into or out of the SCSD. These investigations resulted in the discovery of PCBs located in the soils adjacent to the drain in several areas and in surficial soils in the area of Bon Brae and Harper Avenues (Ref. 8, pp.11, 12, Figs. 2 and 3). Figure 2 is an MDEQ soil boring location map, and Figure 3 is an MDEQ/EPA soil boring location map.

In 2006, EPA excavated surficial PCB-contaminated soils from several residential properties which were identified during the previous investigations, and installed an impermeable liner in the storm drain in the vicinity of Harper and Bon Brae Avenues, as a temporary measure to prevent PCBs from continuing to enter the drain (Ref. 5, p. 9). EPA also injected slurry into the soils of the utility corridor near the terminus of the liner to prevent PCBs from migrating through the soils in this vicinity (Ref. 5, p. 9).

It was subsequently determined that the site should be evaluated through the CERCLA site assessment process (Ref. 5, p. 6). MDEQ completed a Preliminary Assessment in June 2008, completed a Site Inspection (SI) Work Plan on July 3, 2009, and conducted SI field work July 28-30, 2008 (Ref. 5, p. 6). The scope of the SI included surface water and sediment sampling of the canals that currently receive drainage from the SCSD, as

well as surface water and sediment sampling of Lake St. Clair and two canals that historically received drainage from an open drain in the vicinity of the SCSD (Ref. 5, pp. 6, 7, 16, Fig. 4). Findings of the SI revealed PCB contamination at varying levels in all of the water bodies sampled (Ref. 5, pp. 6, 7, 16). Figure 4 is a sediment sample location map corresponding to the SI sampling event. Lake Saint Clair and associated canals are used for recreation and fishing (Ref. 5, p.19).

Several sediment samples have exceeded TSCA Subpart D Cleanup Standards of 1,000 µg/kg; U. S. EPA Region 5 RCRA Ecological Screening Levels for sediments (59.8 µg/kg); MDEQ Part 201 Residential and Commercial I Direct Contact Criteria of 4,000 µg/kg; and several other recommended guidance limits and effect levels (Ref. 5, p. 59),

The site, as currently scored for HRS purposes, includes the contamination within the SCSD concrete sewer pipes and contaminated subsurface soil surrounding the SCSD concrete pipe. The contaminated soil surrounding the SCSD pipes was documented through soil sampling at various depths near the intersection of Harper and Bon Brae Avenues. In addition, there is an observed release of PCBs to the sediments of Lange and Revere Street Canals, as well as to Lake St. Clair.

2.2 SOURCE CHARACTERIZATION

2.2.1 Source Identification

Number of the source: 1

Name and description of the source: Contamination in the SCSD sewer pipes and subsurface contaminated soil surrounding the SCSD sewer pipes.

Source Type: Other -- Source type "other" was chosen because the contamination in the SCSD sewer pipes and subsurface contaminated soil surrounding the pipes fit no other HRS category.

Source 1 consists of PCB contamination in the SCSD storm sewer pipes which are connected to the drain discharging into the Lange Street and Revere Street canals and leaking to/from the subsurface contaminated soil surrounding the pipes. In 2001, MCPWO collected sediment samples from the Lange Street canals to support its efforts to secure a dredging permit (Ref. 7, p. 9). The analytical data results indicate the presence of PCBs at concentrations up to 150 ppm in canal sediment samples (Ref. 7, pp. 9, 37). As a result, MDEQ and MCPWO initiated an investigation of the SCSD utility corridor in February 2002. The highest concentration of PCBs (3,270 ppm) was detected in sediment samples collected within the SCSD concrete piping at the intersection of Harper Avenue and Bon Brae Street (Ref. 8, p.11). EPA initiated sediment removal and dewatering activities in 2002 in the areas of the SCSD concrete piping exhibiting the highest levels of PCB contamination. EPA vacuumed and power jetted approximately 1.25 miles of SCSD concrete piping from Lakeland Boulevard to Bon Brae Street and from Harper Avenue to the SCSD outlet at the Lange Street canals (Ref. 8, p.11). MCPWO conducted sediment removal and dewatering activities along 4.25 miles of the remaining 5.75 miles of the SCSD concrete piping in the project area and installed steel plates near the SCSD outlet structure to trap and prevent additional discharge of PCB-contaminated sediments into the canal (Ref. 8, p.11).

Monitoring efforts in 2003 and 2004 revealed the renewed presence of PCB-contaminated sediment and water within the SCSD drainage system (Ref. 8, p. 11). EPA, MDEQ, MCPWO, and the City of St. Clair Shores have coordinated efforts to identify potential source areas and investigate potential migration pathways into or out of the SCSD utility corridor. In April 2005, direct-push soil borings were advanced at 13 locations within the SCSD utility corridor along Bon Brae Street, Lakeland Boulevard, and Harper Avenue (Ref. 8, pp. 11, 12). The highest PCB concentration detected was 100 ppm at a depth of 8 to 8.5 feet below ground surface (bgs) (Ref. 8, p. 19). In May 2005, 64 additional direct-push soil borings were advanced at suspected source locations within the SCSD utility corridor along Bon Brae Street and Harper Avenue (Ref. 8. p. 12). The highest PCB concentration detected was 31,820 ppm at a depth of 0 to 1 feet bgs (Ref. 8, p. 19).

In 2006, EPA excavated surficial PCB-contaminated soil from several residential properties identified during previous investigations (Ref. 5, p. 8). The contaminated areas were excavated to 8 to 12 inches bgs and then

sampled for PCBs (Refs. 14, p. 3; 15, p. 6). If PCB contamination exceeding the site-specific cleanup goal (4 ppm) remained, then additional excavation to 2 feet bgs was conducted. Confirmatory soil samples were collected after excavation (Refs. 14, p. 3; 15, p. 6). These areas were backfilled, compacted and seeded to eliminate any direct contact threat to residents (Refs. 14, p. 3; 15, p.6). Following removal of PCB contaminated soil to a depth of 2 feet, PCB contaminated soil still remained at a depth greater than 2 feet bgs at some locations (see section 2.2.2 of this HRS documentation record). The PCB-contaminated surficial soil (approximately 2-feet bgs) that was excavated from residential properties in 2006 is not considered as part of this source area.

Based on the information presented above, it is thought that the PCBs were allegedly released in the SCSD concrete sewer pipes area near Bon Brae Street and Harper Avenue by an unknown entity. The PCBs were then transported through the SCSD concrete sewer pipes that discharge into the Lange/Revere Street Canals through an outfall. The subsurface soil contamination in the vicinity of SCSD concrete sewer pipes is most likely caused by leaky sewer pipes.

Location of the source, with reference to a map of the site: The contamination in the SCSD concrete sewer pipes that are connected to the drain discharging into the Lange Street Canal and Revere Street Canal and the contaminated soil surrounding the pipes are considered to be the source. The source area location is shown on Figure 1.

Containment: Releases to surface water through overland migration and/or flood: This source consists of contamination in the SCSD sewer pipes and contaminated soil surrounding the SCSD sewer pipes. The Lange Street and Revere Street canals, and Lake St. Clair have been contaminated with PCBs detected in the source area, therefore, there is evidence of hazardous substance migration from the source. A surface water containment factor value of 10 was assigned (Ref. 1, Table 4-2, pp. 51609, 51610).

2.2.2 Hazardous Substances

Contamination in the Piping

The presence of PCBs has been documented into the SCSD sewer system that drains to the southeast and discharges to the canals (Refs. 6, p. 33; 8, p.11; 15, p. 2). A February 2002 MDEQ/MCPWO study (Ref. 8, p. 10) and a March 2002 START study (Ref. 6, pp. 32, 33) revealed high levels of PCBs in the sediment in the SCSD piping. The highest concentration of PCBs (3,270 ppm) was detected within the SCSD concrete piping at the intersection of Harper Avenue and Bon Brae Avenue (Ref. 8, p.10).

During March 2002 the USEPA Emergency Response Branch launched efforts in support of the MDEQ and MCPWO to characterize the nature and extent of PCB contamination in the SCSD utility corridor and the

Lange Street Canals (Ref. 8, p.10). Laboratory analytical results from sediment samples collected by USEPA in the SCSD concrete piping indicated the presence of PCBs at a maximum concentration of 121,000 ppm at manhole location M4335 near the intersection of Bon Brae Avenue and E Street (Ref. 8, pp. 10, 11).

While EPA and the County conducted substantial removal and cleaning activities within the piping, as shown by the results of the MDEQ SI, PCB impacts from the contamination in the piping remain in the sediments of the Lange and Revere Street canals. The removal did not address the substances that already had escaped the piping prior to the removal, therefore, PCBs are associated with this portion of Source 1.

Contamination in the Subsurface Soil

Analytical results indicate that PCBs were present in 133 soil samples collected from 76 direct-push soil boring locations installed during April and May 2005 (Ref. 8, p. 19). On April 4 and 5, 2005, direct-push soil borings were advanced by MDEQ at 13 locations next to the SCSD utility corridor along Bon Brae Street, Lakeland Boulevard, and Harper Avenue. (Ref. 8, p. 11). The work was performed by MDEQ in accordance with the work plan (Ref. 8A, p. 1). In May 2005, 64 additional direct-push soil borings were advanced at suspected source locations next to the SCSD utility corridor along Bon Brae Street and Harper Avenue (Ref. 8, p.12). The work was performed by Weston Solutions of Michigan for MDEQ in accordance with the work plan (Refs. 8, p. 13; 8C).

Background Level: In order to characterize the soil portion of Source 1 through chemical analysis, soil samples collected from soil borings MSB-5 and MSB-6 are considered to represent background contaminant levels (Ref. 8, p. 45). Soil boring MSB-5 is located in the northeastern portion of the contaminated soil area (Ref. 8, p. 45). Although this sample location is in the area of PCB contamination, this sample location was selected as a background sample because the primary contaminants of concern (PCB) were not detected in soil samples collected from this location. Soil boring MSB-6 is located at the northern border of the contaminated soil area (Ref. 8, p. 45). This location appears to be outside the influence of soil contamination (Ref. 8, p. 45). The soil boring location was selected because the primary contaminants of concern (PCBs) were not detected in soil samples collected from this location. The soil samples were collected from MSB-5 and MSB-6 at similar depths to the contaminated samples.

Although the HRS does not require that contamination meet observed release criteria to be associated with the source, EPA considers that contamination levels that meet the observed release criteria are sufficient to be associated with the source.

- Background Levels at Source 1 – Contaminated soil from unknown source

Three background soil samples were collected from soil boring MSB-6 from depths ranging from 0.5 to 1, 8.5 to 9, and 15 to 16 feet bgs (Ref. 8, pp. 107). Five background soil samples were collected from soil boring MSB-5 from depths ranging from 0.5 to 1, 3 to 4, 7 to 8, 11 to 11.5 and 15 to 16 feet bgs (Ref. 8, pp. 106)

TABLE 1
BACKGROUND SOIL SAMPLES
PCB (AROCLOR) CONCENTRATIONS

Sampling Location	Type and USCS Description	Depth (ft bgs)	Date	Hazardous Substance(s)	RL (µg/kg)	Concentration (µg/kg)	References
MSB-5	Soil; CL	0.5 -1	4/5/2005	Aroclor-1248	110.0	ND	Refs. 8, pp. 62, 106; 10, pp. 1, 2;8A, p.1
	Soil; CL	3 -4	4/5/2005	Aroclor-1248	110.0	ND	Refs. 8, pp. 62, 106; 10, pp.1, 3;8A, p.1
	Soil; CL	7 - 8	4/5/2005	Aroclor-1248	120.0	ND	Refs. 8, pp. 62, 106; 9, pp. 1, 6;8A, p.1
	Soil; CL	11 - 11.5	4/5/2005	Aroclor-1248	110.0	ND	Refs. 8, pp. 62, 106; 13, pp. 1,6
	Soil; CL	15 - 16	4/5/2005	Aroclor-1248	120.0	ND	Refs. 8, pp. 62, 106; 9, pp. 1, 7;8A, p.1
MSB-6	Soil; SP	0.5 -1	4/5/2005	Aroclor-1248	130.0	ND	Refs. 8, pp. 62, 63, 107; 9, p. 8;8A, p.1
	Soil; SW, CL	8.5 -9	4/5/2005	Aroclor-1248	120.0	ND	Refs. 8, pp. 62, 63, 107; 9, p. 9;8A, p.1
	Soil; CL	15 - 16	4/5/2005	Aroclor-1248	120.0	ND	Refs. 8, pp. 62, 63, 107; 9, p. 10;8A, p.1

Notes:
µg/kg – Microgram per kilogram
Aroclor-1248 - one PCB congener
bgs – Below ground surface
CL – Clay
ft – Feet
ND – Non-detect
PCB – Polychlorinated biphenyl
RL – Reporting limit is at or above the MDL and is based on a calibration standard at or below the RL. RL is determined based on the calculated MDL using the specific reference method, the MDL spiking concentration, or a concentration based on these factors and Best Professional Judgment (Ref. 32, pp. 15, 16).
MDL – Method Detection Limit
SP – Poorly graded sand
SW – Well-graded, fine to coarse sand
USCS – Unified Soil Classification System

- Source 1 – Contamination in the SCSD concrete sewer pipes and subsurface contaminated soil surrounding the pipe area

It is thought that the PCBs were released in the SCSD sewer pipes area near Bon Brae Street and Harper Avenue by an unknown entity. The PCBs were then transported through the SCSD sewer pipes that discharge into the Lange Street Canal through an outfall. The subsurface soil contamination in the vicinity of SCSD concrete sewer pipes is most likely caused by leaky sewer pipes. The excavated PCB contaminated surficial soil (approximately 2-feet bgs) from residential properties in 2006 is not considered as part of this source area.

During the April 2005 soil boring investigation, PCBs were detected in 21 soil samples collected from 12 direct-push locations (Ref. 8, p. 19). The MDEQ Environmental Laboratory analyzed the samples using Method 8082 (Ref. 9, pp. 1-12; Ref. 10, pp. 1-14; Ref. 11, pp. 1-12; Ref. 12, pp. 1 -11; Ref. 13, pp. 1- 9). During the May 2005 soil boring investigation, PCBs were detected in 112 soil samples collected from 64 direct-push soil boring locations (Ref. 8, p. 19). Envirosystems Laboratory and the MDEQ Environmental Laboratory analyzed the samples for PCBs (Ref. 8, pp. 13, 14). Envirosystems Laboratory analyzed the samples using CLP SOW OLM04.3, Modification Reference Number 1238.0, Title R5051605 (Ref. 8B, pp. 6, 30-34, 130, 212, 280, 510, 580, 622, 686).

In 2006, EPA excavated surficial PCB-contaminated soil from several residential properties identified during previous investigations (Ref. 5, p. 8). The contaminated areas were excavated to 8 to 12 inches bgs and then sampled for PCBs (Refs. 14, p. 3; 15, p. 6). If PCB contamination exceeding the site-specific cleanup goal (4 ppm) remained, then additional excavation to 2 feet bgs was conducted. Confirmatory soil samples were collected after excavation (Refs. 14, p. 3; 15, p. 6). These areas were backfilled, compacted and seeded to eliminate any direct contact threat to residents (Refs. 14, p. 3; 15, p.6); therefore, soil represented by the samples collected from 0 to 2 feet bgs and subsequently removed during the 2006 removal action are not included as part of the source area.

TABLE 2
CONTAMINATED SOIL SAMPLES
PCB (AROCLOR) CONCENTRATIONS

Sampling Location	Type and USCS Description	Depth (ft bgs)	Date	Hazardous Substance	RL/SQL (µg/kg)	Hazardous Substance Concentration (µg/kg)	References
MSB-1	Soil; SW	8-9	4/4/2005	Aroclor-1248	11,000	100,000 D JD	Refs. 11, pp. 1, 3, 12; 8, p. 102; 8A, p.1; 8B, p. 837
MSB-2	Soil; SW	8-8.5	4/4/2005		120	320 JA JD	Ref. 11, pp. 1, 6, 12; 8, p. 103 ;8A, p.1; 8B, p. 837
MSB-3	Soil; CL, SW	12-13	4/4/2005		120	160 JD	Refs. 11, pp. 1, 11, 12;8, p. 104;8A, p.1; 8B, p. 837
MSB-7	Soil; CL	4-4.5	4/5/2005		2,300	19,000 D	Refs. 10, pp. 1, 4, 14; 8, p.108;8A, p.1; 8B, p. 835
MSB-9	Soil; S, CL	3.5-3.8	4/5/2005		1,100	5,000 D	Refs. 10, pp. 1, 5, 14; 8, p.110; 8A, p.1; 8B, p. 835
		3.8-4	4/5/2005		120	310 JD JA	Refs. 10, pp. 1, 6, 14; 8, p.110;8A, p.1; 8B, p. 835
MSB-10	Soil; CL	3-4	4/5/2005		2,400	24,000 D JA	Refs. 10, pp. 1, 9, 14; 8, p.111;8A, p.1; 8B, p. 835
		4-4.5	4/5/2005		2,700	13,000 D JA	Refs. 10, pp. 1, 10, 14; 8, p.111;8A, p.1; 8B, p. 835
MSB-12	Soil; CL	5-5.5	4/5/2005		6,000	27,000 D, JD	Refs. 10, pp. 1, 12, 14; 8, p.113;8A, p.1; 8B, p. 836
		8-8.5	4/5/2005		6,100	52,000 D JD	Refs. 10, pp. 1, 13, 14; 8, p.113;8A, p.1; 8B, p. 836
MSB-10	Soil; CL	10-10.5	4/5/2005		110	180 JD	Refs. 12, pp. 1, 4, 11; 8, p.111;8A, p.1; 8B, p. 839
		13-13.5	4/5/2005		640	3,100 D JA	Refs. 12, pp. 1, 5, 11; 8, p.111;8A, p.1; 8B, p. 839

Sampling Location	Type and USCS Description	Depth (ft bgs)	Date	Hazardous Substance	RL/SQL (µg/kg)	Hazardous Substance Concentration (µg/kg)	References
SCS-001/ E0O39DL	SC	4.5-9	5/17/05	Aroclor-1248	200	2,100 DL	Refs. 8B, pp. 5-10, 15, 23, 62, 74-77; 8, p.137;8C, 18, 24-31
SCS-001/ E0O40DL	CL	9-12	5/17/05		85,000	990,000 DL	Refs. 8B, pp. 5-10, 16, 23, 64, 74-77;8, p.137;8C, 18, 24-31
SCS-002/ E0O51	SC	6-9	5/17/09		37	450	Refs. 8B, pp. 509-514, 515, 525, 541, 570-574; 8, p.138;8C, 18, 24-31
SCS-003/ E0O56	SC	9-12	5/17/09		39	76	Refs. 8B, pp. 509-514, 517, 525, 552, 570-574; 8, p.139;8C, 18, 24-31
SCS-005/ E0O29DL	SP	6-9	5/17/09		450	4,000 DL	Refs. 8B, pp. 5-10, 12, 21, 47, 74-77; 8, p.141;8C, 18, 24-31
SCS-005/ E0O30DL	SP	9-12	5/17/09		200	2,400 DL	Refs. 8B, pp. 5-10, 13, 21, 49, 74-77; 8, p.141;8C, 18, 24-31
SCS-005/ E0O28DL	SP	12-15	5/17/09		400	2,800 DL	Refs. 8B, pp. 5-10, 12, 21, 45, 74-77; 8, p.141;8C, 18, 24-31
SCS-006/ E0O62	CL	9-12	5/17/09		34	47	Refs. 8B, pp. 509-514, 519, 527, 559, 570-574; 8, p.142;8C, 18, 24-31
SCS-007/ E0O66	CL	6-9	5/18/09		34	95	Refs. 8B, pp. 509-514, 520, 527, 566, 570-574; 8, p.143;8C, 18, 24-31

Sampling Location	Type and USCS Description	Depth (ft bgs)	Date	Hazardous Substance	RL/SQL (µg/kg)	Hazardous Substance Concentration (µg/kg)	References
SCS-014/ E0O79	SP/CL	11.5-13	5/18/09	Aroclor-1248	39	120	Refs. 8B, pp. 5-10, 17, 25, 69, 74-77; 8, p.150;8C, 18, 24-31
SCS-023/ E0OC1DL	SP	9-12	5/19/09		3,900	22,000 DL	Refs. 8B, pp. 211-216, 221, 229, 267, 272-274; 8, p. 159;8C, 18, 24-31
SCS-024/ E0OC4DL	CL	9-12	5/19/09		370	3,700 DL	Refs. 8B, pp. 579-585, 586, 595, 608, 609, 611; 8, p.160;8C, 18, 24-31
SCS-025/ E0OC9DL	SP	4-6	5/20/09		350	3,800 DL	Refs. 8B, pp. 129-134, 137, 162, 190, 196-198; 8, p. 161;8C, 18, 24-31
SCS-025/ E0OD0DL	SP	6-9	5/20/09		770	6,800 DL	Refs. 8B, pp. 129-134, 137, 162, 192, 196-198; 8, p. 161;8C, 18, 24-31
SCS-025/ E0OC6DL	SP	12-15	5/20/09		38,000	110,000 DL	Refs. 8B, pp. 129-134, 136, 162, 184, 196-198; 8, p. 161;8C, 18, 24-31
SCS-025/ E0OC7DL	CL	15-16	5/20/09		210,000	1,500,000 DL	Refs. 8B, pp. 129-134, 136, 162, 186, 196-198; 8, p. 161;8C, 18, 24-31
SCS-026/ E0OD3	SP	5-6	5/20/09		35	530	Refs. 8B, pp. 579-585, 587, 596, 608, 609, 616; 8, p.162;8C, 18, 24-31

Sampling Location	Type and USCS Description	Depth (ft bgs)	Date	Hazardous Substance	RL/SQL (µg/kg)	Hazardous Substance Concentration (µg/kg)	References
SCS-026/ E0OD4DL	SP	7.5-9	5/20/09	Aroclor-1248	100	950 DL	Refs. 8B, pp. 129-134, 138, 162, 195, 196-198; 8, p. 162;8C, 18, 24-31
SCS-027/ E0OG4	CL	12-15	5/24/09		38	193	Refs. 8B, pp. 630, 621-628, 639, 659, 678-681; 8, p. 163;8C, 18, 24-31
SCS-035/ E0O85	CL	4-5	5/18/09		41	78	Refs. 8B, pp. 296, 334, 346-349, 278-284; 8, p.120;8C, 18, 24-31
SCS-040/ E0OD8	SP	9-9.5	5/19/09		39	110	Refs. 8B, pp. 302, 318-321, 579-585, 588, 597; 8, p. 125;8C, 18, 24-31
SCS-041/ E0OD9DL	SP/CL	4-8	5/20/09		410	3,300 DL	Refs. 8B, pp. 304, 318-321, 579-585, 588, 597; 8, p. 126;8C, 18, 24-31
SCS-061/ E0OG3DL	CL	9-12	5/24/09		7,800	31,000 DL	Refs. 8B, pp. 630, 621-628, 638, 658, 678-681; 8, p. 167;8C, 18, 24-31
SCS-063/ E0OG9DL	CL	12-15	5/24/09		390	3,200 DL	Refs. 8B, pp. 631, 621-628, 638, 666, 678-681; 8, p. 169;8C, 18, 24-31
SCS-078/ E0OL0DL	CL	6-9	5/25/09		830	6,500 DL	Refs. 8B, pp. 684-692, 700, 708, 757; 8, p. 183;8C, 18, 24-31

Sampling Location	Type and USCS Description	Depth (ft bgs)	Date	Hazardous Substance	RL/SQL (µg/kg)	Hazardous Substance Concentration (µg/kg)	References
SCS-078/ E0OL1DL	CL	9-12	5/25/09	Aroclor-1248	200	2,400 DL	Refs. 8B, pp. 684-692, 701, 708, 761; 8, p. 183;8C, 18, 24-31
SCS-078/ E0OK8DL	SP	12-15	5/25/09		800	6,300 DL	Refs. 8B, pp. 684-692, 699, 708, 754; 8, p. 183;8C, 18, 24-31

Notes:
µg/kg – Microgram per kilogram
bgs – Below ground surface
CL – Clay
D – Analyte value quantified from dilution(s); reporting limit raised
ft – Feet
JA – Result considered estimated because multiple Aroclors present
JD – Because of severe degradation, specific Aroclor identification difficult and quantitation estimated
PCB – Polychlorinated biphenyl
RL – Reporting limit is at or above the MDL and is based on a calibration standard at or below the RL. RL is determined based on the calculated MDL using the specific reference method, the MDL spiking concentration, or a concentration based on these factors and Best Professional Judgment (Ref. 32, pp. 15, 16). RL is applicable to samples analyzed by MDEQ laboratory (April 2005 borings).
MDL – Method Detection Limit
S – Sand
SC – Clayey sands, sand-silt mixtures
SP– Poorly graded sand
SQL – Sample Quantitation Limit, the SQL was derived from the non-detected Aroclors from the respective samples. SQL is applicable to the samples analyzed by CLP laboratory (May 2005 borings).
SW– Well-graded, fine to coarse sand
USCS – Unified Soil Classification System

The qualified data (JA and JD) are useable for source characterization, because while the identification of the exact Aroclor mix or the specific PCB congener may have been difficult in the qualified samples (based on type of J qualifier), these factors do not raise any question regarding presence of the PCBs in the samples.

The MDEQ background and source soil samples collected in April 2005 were similar because the samples: (1) were most likely collected using the same equipment and procedures by the same individuals (Appendix A of Reference 8, pp. 102-114); (2) were collected within the same time frame (4th April 2005 and 5th April 2005) and therefore, the same weather conditions (Ref. 8, pp. 59-66); (3) were analyzed using the same methods as documented in References 9 through 13; and (4) were collected from similar soil types and similar depths as documented in Tables 1 and 2 of this documentation record.

The WESTON source soil samples collected in May 2005 were similar because the samples: (1) were collected using similar procedures (Ref. 8, p. 13, Appendix A); (2) were collected within the same time frame (May 17-25, 2005) (Ref. 8, p. 12); and (3) were collected from similar soil types and similar depths as documented in Tables 1 and 2 of this documentation record.

HAZARDOUS WASTE QUANTITY

2.4.2.1 Source Hazardous Waste Quantity

2.4.2.1.1 Hazardous Constituent Quantity (Tier A)

The information available is not sufficient to adequately determine Tier A as required in Section 2.4.2.1.1 of the HRS. As a result, the evaluation of the source hazardous waste quantity proceeds to the evaluation of Tier B, hazardous waste stream quantity (Ref. 1, Section 2.4.2.1.1, pp. 51590-51591).

2.4.2.1.2 Hazardous Wastestream Quantity (Tier B)

The information available is not sufficient to adequately determine Tier B as required in Section 2.4.2.1.2 of the HRS. As a result, the evaluation of the source hazardous waste quantity proceeds to the evaluation of Tier C, volume (Ref. 1, Section 2.4.2.1.2, p. 51591).

2.4.2.1.3 Volume (Tier C)

Since the hazardous waste quantity was not adequately determined under Tier A or B, the volume will be evaluated under Tier C. For the migration pathways, the source is assigned a value for volume using the appropriate Tier equation from Table 2-5 (Ref. 1, Section 2.4.2.1.3). The equation for source type "other" is V/2.5, where V is expressed in cubic yards. It is not known how much PCB-containing material was originally spilled or discharged into the SCSD storm sewer system, nor is it known how much PCB-contaminated soil surrounds the piping. Despite the removal action, some quantity is present in the piping and in the surrounding soil, and some quantity has reached the Lange and Revere Street Canals. For Source 1, a value of greater than zero but an amount unknown was assigned for the hazardous waste quantity value for volume (Tier C). (Ref. 1, Section 2.4.2.1.3, Table 2-6, p. 51591).

2.4.2.1.4 Area (Tier D)

Area, Tier D, is not applicable for source type "other" (Ref. 1, Table 2-5).

2.4.2.1.5 Calculation of Source Hazardous Waste Quantity Value

As described in the HRS rule, the highest value assigned to a source from among the four tiers of hazardous waste quantity – constituent quantity (Tier A), wastestream quantity (Tier B), volume (Tier C), or area (Tier D)

– shall be selected as the source hazardous waste quantity value (Ref. 1, Table 2-6, p. 51591). As summarized in Table 3 below, Source 1 has a source hazardous waste quantity value of greater than zero. Table 4 below summarizes the source description.

TABLE 3
SOURCE 1-- HAZARDOUS WASTE QUANTITY VALUE

Tier Measure	Source Value
Tier A, Hazardous Constituent Quantity	Not Evaluated
Tier B, Hazardous Wastestream Quantity	Not Evaluated
Tier C, Volume	>0
Tier D, Area	0

Notes:
>-- greater than

TABLE 4
SUMMARY OF SOURCE DESCRIPTION

Source No.	Source Hazardous Waste Quantity Value	Source Hazardous Constituent Quantity Complete (Y/N)	Containment Factor Value by Pathway				
			GW (Table 3-2)	SW		Air	
				Overland/Flood (Table 4-2)	GW to SW (Table 3-2)	Gas (Table 6-3)	Particulate (Table 6-9)
1	>0	N	NS	10	NS	NS	NS

Notes:
>-- greater than
GW – Ground water
HRS – Hazard Ranking System
NS – Not scored
SW – Surface water

The Source Hazardous Waste Quantity Value for the SCSD Site therefore is greater than 0.

4.0 SURFACE WATER MIGRATION PATHWAY

The surface water pathway includes the overland flow and flood migration component and the ground water-to-surface water component. The overland flow and flood migration component has been evaluated as part of this HRS documentation record.

4.1 OVERLAND AND FLOOD MIGRATION COMPONENT

This section describes the overland and flood migration component of the surface water pathway.

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

The presence of PCBs has been documented in the SCSD sewer system that drains to the southeast and discharges to the Lange and Revere Street canals (Refs. 6, p. 33; 8, p. 11; 15, p. 2). The canals are connected to Lake St. Clair (Ref. 16). The probable point of entry (PPE) to surface water is the point where the SCSD sewer system discharges into the canals. This is the beginning of the in-water segment of the surface water migration pathway (Ref. 16). PCB contamination is present in the source area at the site (see section 2.2.2 of this HRS documentation record). PCB contamination also is present in the Lange Street and Revere Street canals (Ref.5, p. 6). PCB contamination was detected in samples collected from the Lange Street and Revere Street canals, and Lake St. Clair (Ref. 5, p. 6). The hazardous substance migration path consists of the Lange and Revere Street canals, Lake St. Clair, and the Detroit River in-water segment (Ref. 16).

4.1.1.2 Target Distance Limit

The 15-mile target distance limit (TDL) begins at the SCSD outfall where the drain discharges into the canals, which in turn discharge to Lake St. Clair; the TDL continues along the Detroit River. The TDL is documented in Reference 16.

4.1.2 Drinking Water Threat

4.1.2.1 Likelihood of Release

Numerous investigations have been conducted to determine the extent of contamination. Historical information and analytical data from the recent investigations are used to document an observed release to surface water through chemical analysis.

4.1.2.1.1 Observed Release

Direct Observation:

An observed release through direct observation to the surface water migration pathway has not been established at the site.

Chemical Analysis:

An observed release to the surface water pathway has been established at the SCSD Site through chemical analysis. The observed release is based on the detection of PCBs in sediment samples collected from the canals and Lake St. Clair. In July 2008, 44 sediment samples, including 1 upgradient background sample and 4 duplicate samples, 2 equipment blank samples, and 2 field blank samples, were collected (Ref. 5, pp. 13, 14). Sediment samples were collected from 0 to 33 inches below the sediment-water interface (Ref. 5, pp. 31-40). The samples were analyzed for PCBs by CompuChem- Liberty Analytical Corporation in accordance with the Contract Laboratory Program (CLP) Statement of Work (SOW) SOM01.2 (8/2007) (Ref. 5, pp. 15, 76, 145, 253). If the background concentration is not detected (or is less than the detection limit), an observed release is established when the sample measurement equals or exceeds the sample quantitation limit. (Ref. 1, Table 2-3, p. 51589). Figure 4 of Reference 5 shows the sediment sampling locations, and Table 2 of Reference 5 describes the sediment samples (Refs. 5, pp. 27, 31-40; 17A, pp. 1-30). The sample descriptions are also presented in Table 5 below (Refs. 5, pp. 31 – 40; 17A, pp. 1-30).

TABLE 5
SEDIMENT SAMPLE DESCRIPTIONS
SAINT CLAIR SHORES DRAIN SITE
(Ref. 5, pp. 31-40; 17A, pp. 1-30)

SAMPLE NUMBER	DEPTH OF WATER AT SAMPLE LOCATION	UNIT THICKNESS	LITHOLOGICAL DESCRIPTION	SAMPLE INTERVALS AND COMMENTS
SD1	8ft	0-2 in. 2-9 in.	Wet, dark gray, fine to coarse sand with silt, gravel, some organic plant matter, and shell fragments. Moist, grayish brown clay with some silt.	SD1 sample collected from 0-9 in.
SD2	7 ft.	0-2 in. 2-7 in. 7-15 in.	Wet, blackish gray silt with some fine sand and clay. Very moist, gray, loose, silt and clay. Moist gray silty clay with trace sand, loose.	SD2 sample collected from 0-8 in.
SD3	8.5 ft.	0-4 in. 4-10 in.	Wet, dark blackish gray, loose silt with some fine sand. Very moist, dark gray, silty fine sand with some clay.	SD3 sample collected from 0-10 in.
SD5	9 ft.	0-13 in.	Very moist, blackish gray, loose silt with some fine sand and clay.	SD5 sample collected from 0-8 in.
SD6	6 ft.	0-6 in. 6-10 in.	Wet, dark gray, loose, silty, fine sand. Very moist, grayish brown, loose, silty clay.	SD6 sample collected from 0-10 in.
SD7	7 ft.	0-4 in. 4-18 in.	Wet, blackish gray, fine sand with some silt and organic matter. Wet, greenish brown, fine to medium sand with some silt and trace gravel.	SD7 sample collected from 0-9 in.

SAMPLE NUMBER	DEPTH OF WATER AT SAMPLE LOCATION	UNIT THICKNESS	LITHOLOGICAL DESCRIPTION	SAMPLE INTERVALS AND COMMENTS
SD16	8.5 ft.	0-2 in. 10-16 in.	Wet, greenish gray, fine to medium sand with trace silt and plant matter and soil fragments. Moist, grayish brown, clay with some silt.	SD16 sample collected from 0-10 in.
SD19	8 ft.	0-1 in. 10-16 in.	Wet, greenish gray, fine to medium sand with trace plant material and silt Moist, variegated - grayish brown/greenish gray, clayey silt.	SD19 sample collected from 0-6 in.
SD20	6 ft.	0-2 in. 3-11	Wet, greenish gray, medium sand with trace silt. Moist, greenish gray, clay	SD20 sample collected from 0-7 in.
SD26	8.5 ft.	0-2 in. 2-4 in. 4-10 in.	Wet, greenish gray, silty fine sand with organic matter. Wet, dark gray, fine sand with some silt and organic matter and shell fragments. Very moist, brownish gray, clayey fine sand.	SD26 sample collected from 0-7 in.
SD27	6 ft.	0-15 in.	Wet, greenish gray, fine to medium sand with trace silt some root matter in top couple of inches.	SD27 sample collected from 0-8 in.
SD29	10 ft.	0-0.5 in. 0.5-7 in.	Wet, gray silt and fine to medium sand with trace organic root material and shell fragments.. Moist, grayish brown clay with some silt.	SD29 sample collected from 0-7 in.

Background Sediment Samples

The Lange Street Canal and Revere Street Canal are contiguous to Lake Saint Clair, and the SCSD outfall drain is located upstream of the canals. Sediment samples SD1, SD16, SD19, SD20, SD27 and SD29 collected from Lake St. Clair are identified to represent background levels. SD16, SD19, SD20, SD27 and SD29 were collected closer to the canals. These samples were selected as background samples because PCBs were not detected in these samples. Non detection of PCBs in these samples suggests that the PCBs are not widespread in this portion of Lake St. Clair. The locations of the background sediment samples SD20 and

SD27 are very close to canals and appear to be within the zone of sediment deposition from other nearby canals (Ref. 5, pp. 27). Table 6 below summarizes the analytical results for background sediment samples SD1, SD16, SD19, SD20, SD27, and SD29.

TABLE 6
BACKGROUND SAMPLES
PCB (AROCLOR) CONCENTRATIONS

Sample No.	Hazardous Substance	Concentration (µg/kg)	Q	SQL (µg/kg)	Sampling Date	References
SD1/E2955	Aroclor-1248	39	U	39	7/29/2008	Refs. 5, pp. 44, 76-82, 88-92, 115; 17A, p. 1)
SD27/E2981RE	Aroclor-1248	41	U	41	7/29/2008	Refs. 5, pp. 53, 261, 269, 251-258, 324; 17A, p. 27)
SD29/E2983	Aroclor-1248	38	U	38	7/29/2008	Refs. 5, pp.54, 262, 269, 251-258, 326; 17A, p. 29)
SD16/E2970	Aroclor-1248	41	U	41	7/29/2008	Refs. 5, pp. 49, 76-81, 86, 88-92, 138; 17A, p. 16)
SD19/E2973	Aroclor-1248	38	U	38	7/29/2008	Refs. 5, pp. 50, 76-81, 86, 88-92, 141; 17A, p. 19)
SD20/E2974	Aroclor-1248	39	U	39	7/29/2008	Refs. 5, pp. 50, 76-81, 87-92, 142; 17A. 20)

Notes:
µg/kg - Microgram per kilogram
PCB - Polychlorinated biphenyl
Q - Laboratory data qualifier
SD - Sediment sample
SQL – Sample Quantitation Limit, the SQL was derived from the non-detected Aroclors from the respective samples.
U - Not detected

PCB Contaminated Sediment Samples

PCBs were detected above background sample levels in sediment samples collected from the canals and Lake St. Clair. Observed release through chemical analysis has been documented because PCBs were not detected at or above the detection limit in the background sediment samples and the concentrations of PCBs in the release sediment samples were above the detection limits. Furthermore sediment sample SD26 was collected close to the Lange Street and Revere Street canals (see Figure 4 of this HRS documentation record). Table 7

below summarizes the PCB concentrations detected above the reference criteria in the investigative sediment samples.

TABLE 7
SEDIMENT RELEASE SAMPLES
PCB (AROCLOR) CONCENTRATIONS

Sample No.	Hazardous Substance	Concentration (µg/kg)	Q	SQL (µg/kg)	Sampling Date	References
SD2/E2956DL (Lange Street Canal)	Aroclor-1248	6,800	DL	940	7/30/2008	Refs. 5, p. 43, 75-80, 81, 83, 90, 122, 143; 17, p. 1; 17 A, p. 2
SD3/E2957DL (Lange Street Canal)	Aroclor-1248	1,500	DL	290	7/30/2008	Refs. 5, p. 43, 75-80, 83, 90, 124, 143 ; 17, p. 1; 17 A, p. 3
SD5/E2959DL (Revere Street Canal)	Aroclor-1248	2,800	DL	420	7/30/2008	Refs. 5, p. 44, 75-80, 84, 90, 127, 143; 17, p. 1; 17 A, p. 5
SD6/E2960 (Revere Street Canal)	Aroclor-1248	260		65	7/30/2008	Refs. 5, p. 44, 75-80, 84, 90, 128, 143; 17, p. 1; 17 A, p. 6
SD7/E2961 (Revere Street Canal)	Aroclor-1248	140		45	7/30/2008	Refs. 5, p. 45, 75-80, 84, 90, 129, 143; 17, p. 1; 17 A, p. 7
SD26/E2980RE (Lake Saint Clair)	Aroclor-1248	41		39	7/29/2008	Refs. 5, p. 260, 252-258, 268, 321; 17, p.1; 17 A, p. 26

Notes:
µg/kg - Microgram per kilogram
DL - Sample or extract reanalyzed at higher dilution factor because the concentration of the analyte exceeded upper calibration range. The sample concentrations are for reanalyzed sample.
PCB - Polychlorinated biphenyl
Q - Laboratory data qualifier
SD - Sediment sample
SQL – Sample Quantitation Limit, the SQL was derived from the non-detected Aroclors from the respective samples.

The background and the release sediment samples were similar because the samples: (1) were collected using the same equipment and procedures as is documented in Reference 17 A; (2) were collected within the same time frame (29 and 30 April 2005) and therefore, the same weather conditions (Ref. 17A, pp. 1-30); (3) were collected within the canals contiguous with Lake St. Clair and within Lake St. Clair (Refer to Figure 4 of this HRS documentation package); (4) were analyzed using the same methods as documented in Appendix E of Reference 5; and (5) were collected from similar depths (Refer to Table 4 of this HRS documentation record).

In accordance with the HRS, if an observed release can be established for a watershed, an observed release factor value of 550 should be assigned to that watershed (Ref. 1, p. 51609).

Observed Release Factor Value: 550

Attribution

The sediment samples collected from the SCSD sewer pipes in 2002 were found to contain PCBs at high concentrations at the intersection of Harper Avenue and Bon Brae Street (Ref. 8, p. 11). This suggested that the PCBs were allegedly disposed of in the SCSD sewer pipes area near Bon Brae Street and Harper Avenue by an unknown entity. The PCB contamination has also been detected in the Lange Street and Revere Street canals and Lake Saint Clair (Refs. 5, p. 16; 7, p. 9, 37). Because their discharge point is on the canals, the SCSD sewer pipes carried and discharged the PCBs into the Lange Street and Revere Street canals causing sediment contamination. The Lange Street and Revere Street canals are contiguous to Lake Saint Clair. The PCB contamination was then carried from the Lange Street and Revere Street canals into Lake Saint Clair. This transport mechanism has contaminated sediments in the Lake Saint Clair. Therefore, the PCBs detected in the Lange Street Canal, Revere Street Canal and Lake Saint Clair are attributable to Source 1 because the PCBs released in the SCSD sewer pipes were carried to the outfall that discharged into the Lange Street and Revere Street Canals and Lake Saint Clair. Furthermore, sediment sample SD26 was collected from close proximity to Lange Street Canal and Revere Street Canal. Since SD26 is very close to the Lange Street and Revere Street canals and is probably within the sediment deposition area of these canals the contamination detected in SD26 is most likely from Lange/Revere Street canals. Furthermore, the location of background samples SD19, SD20, SD27, and SD29 around the release sample SD26 effectively serve to isolate the portion of the lake under the site's influence indicating that the impact to Lake St. Clair in SD26 has come from the SCSD source and not from other offsite source(s) of contamination.

4.1.2.1.2 Potential to Release

4.1.2.1.2.1 Potential to Release by Overland Flow

Because an observed release has been documented through chemical analysis (Section 4.1.2.1.1 of this HRS documentation record), the potential to release by overland flow has not been scored (Ref. 1, Section 4.1.2.1.1).

Potential to Release by Overland Flow: NS

4.1.2.2 Drinking Water Threat – Waste Characteristics

4.1.2.2.1 Toxicity/Persistence

Table 8 below provides Drinking Water Threat Waste Characteristics Factor Values for analytes present in the source at the SCSD Site (see Sections 2.2.2 and 4.1.2.1.1 of this HRS documentation record).

TABLE 8
DRINKING WATER THREAT WASTE CHARACTERISTICS FACTOR VALUES

Hazardous Substance	Source No.	Toxicity Factor Value	Persistence Factor Value*	Toxicity/ Persistence/ Factor Value (Table 4-12)	References
PCBs	1	10,000	1.0	10,000	Ref. 1, Table 4-12; Ref. 2, p. BI-10

Note:
*Persistence value assigned based on rivers, oceans, coastal tidal waters and Great Lakes (Note: Lake St. Clair is located between lakes Huron and Erie; Lake St. Clair is the smallest lake in the Great Lakes system) (Ref. 33, p. 1).

The hazardous substances with the highest toxicity/persistence factor value are PCBs.

Toxicity/Persistence Factor Value: 10,000

4.1.2.2.2 Hazardous Waste Quantity

Table 9 below summarizes the source hazardous waste quantity value.

TABLE 9
DRINKING WATER THREAT WASTE CHARACTERISTICS FACTOR VALUES

Source No.	Source Hazardous Waste Quantity Value (HRS Rule Section 2.4.2.1.5)	Is Source Hazardous Constituent Quantity Data Complete? (Y/N)
1	>0	N

Source : >0

According to Section 2.4.2.2 of the HRS, a minimum pathway hazardous waste quantity factor value of 100 was assigned based on that the hazardous constituent quantity is not adequately determined, and based on the Level II concentrations in the surface migration pathway (Section 2.4.2.2).

Hazardous Waste Quantity Factor Value: 100

4.1.2.2.3 Waste Characteristics Factor Category Value

The waste characteristics factor category value was assigned based on the waste characteristics product. The waste characteristics product is the product of the toxicity/persistence factor value and the hazardous waste quantity factor value (Ref. 1, Section 4.1.2.2.3). Values from the substance with the highest toxicity/persistence factor value for the watershed (PCBs) were used (Ref. 1, Section 4.1.2.2.3).

A hazardous waste quantity factor value of 100 was assigned as described above (Ref. 1, Section 2.4.2.2).

Toxicity/Persistence Factor Value: 10,000

Hazardous Waste Quantity Factor Value: 100

(Toxicity/Persistence x Hazardous Waste Quantity):

$10{,}000 \times 100 = 1.0 \times 10^6$

(subject to a maximum product of 1×10^8) (Ref. 1, Section 4.1.2.2.3, p. 51613)

A waste characteristics product value of 1.0×10^6 receives a waste characteristics factor category value of 32 (Ref. 1, Section 2.4.3.1, Table 2-7).

Waste Characteristics Factor Category Value: 32

4.1.2.3 Drinking Water Threat Targets

4.1.2.3.1 Nearest Intake

Analysis of sediment samples from Lake St. Clair indicate that PCB concentrations have met the observed release criteria (see Section 4.1.2.1.1 of this HRS documentation record). The observed release of PCBs establishes a zone of actual Level II contamination. Drinking water intakes are not subject to actual contamination because they are located outside the zone of actual contamination; therefore, based on available information, these drinking water intakes are not affected by actual contamination. The nearest drinking water intake is located approximately 5.68 miles from the PPE and is not subject to actual contamination. Lake St. Clair is located between lakes Huron and Erie; Lake St. Clair is the smallest lake in the Great Lakes system (Ref. 33, p. 1). The depth of Lake St. Clair is greater than 20 feet and less than 200 feet (Ref. 24, p. 8) The dilution weight for Lake St. Clair from Ref. 1, Table 4-13, is 0.00001 (modest depth ocean zone or Great Lakes). In accordance with Ref.1, Section 4.1.2.3.1, by multiplying the dilution weight (0.00001) by 20, a factor value of 0.0002 was calculated. The product was rounded to the nearest integer and a factor value of 1 was assigned for the nearest intake (Ref. 1, Section 4.1.2.3.1).

4.1.2.3.2 Population

4.1.2.3.2.2 Level I Concentrations

Level I concentrations have not been established based on the samples collected.

4.1.2.3.2.3 Level II Concentrations

No drinking water intake located within the in-water segment has met the Level II actual contamination criteria.

4.1.2.3.2.4 Potential Contamination

Within the 15-mile TDL two drinking water intakes are located in Lake St. Clair, and one intake is located at the mouth of the Detroit River (Ref. 5, p.18). The intakes are denoted on the 15-mile TDL map (Ref. 16, p. 1). The City of Mount Clemens and Gross Pointe/Highland Park operate the intakes on Lake St. Clair (Refs. 5, p. 18; 25, p.1; 27, p.1; 29, p. 1). The populations served by the City of Mount Clemens and Gross Point/Highland Park intakes have not been included because they would have no effect on the potential factor value.

The Detroit Water and Sewerage Department operates three intakes, one at the mouth of the Detroit River (Water Works Park intake), one approximately 30 miles downstream of the mouth of the Detroit River (Southwest intake), and one in Lake Huron (Lake Huron intake) (Ref. 31, p. 1). The water from Water Works Park intake is supplied to three water treatment plants: Water Works Park Water Treatment Plant, Spring Wells Water Treatment Plant and Northeast Water Treatment Plant (Ref. 31, p.1). The water from Southwest intake is supplied to Southwest Water Treatment Plant and water from Lake Huron intake is supplied to Lake Huron Water Treatment Plant (Ref. 31, p.1). All five water treatment plants are interconnected so that it would allow distribution of water to customers throughout the system (Ref. 31, pp. 1, 2). However, the water distribution system piping is connected such that water from one system can be supplied to another system during emergency and periods of high demand (Ref. 31, p. 2). In the last 24 years water has never been exchanged between the three intakes (Ref. 31, p. 2). The Water Works Park intake lies within the 15-mile TDL (Ref. 16, p. 1). The City of Detroit serves approximately 3.5 million people (Ref. 31, p. 1). Based on the production rates the Water Works Park intake provides approximately 63 percent of the water (Ref. 31, p. 1). Based on the Water Works Park intake providing 63 percent of the water required, the intake serves approximately 2,205,000 people (Ref. 30, p. 1,2). Since the Water Works Park intake appears to be located closer to the Lake St. Clair (Ref. 16) and the zone of influence of the intake could extend to Lake St. Clair, the dilution weight for Lake St. Clair is used. The depth of Lake St. Clair is greater than 20 feet and less than 200 feet (Ref. 24, p. 8). Using Table 4-14 from the HRS, the value for the moderate ocean zone or Great Lakes (depth 20 to 200 feet), and the population of 2,205,000, a dilution-weighted population value of 16 was assigned (Ref. 1, Section 4.1.2.3.2.4). This value (16) was divided by 10, rounded to the nearest integer, and assigned as the potential contamination factor for the watershed (Ref. 1, Section 4.1.2.3.2.4).

Potential Contamination Factor: 2

4.1.2.3.5 Calculation of Population Factor Value

The population factor value is equal to 2 as calculated below.

Level I Concentrations (0) + Level II Concentrations (0) + Potential Contamination (2) = 2

4.1.2.3.3 Resources

Industries that are supplied by the Detroit water system include breweries, the automobile industry, and steel mills (Ref. 31, p. 2). Since water from the Detroit water intake within the 15-mile TDL is used for commercial food preparation, therefore, in accordance with the HRS Section 4.1.2.3.3 a Resource Factor Value of 5 is assigned.

Resource Factor Value: 5

4.1.2.3.4 Calculation of Drinking Water Threat - Targets Factor Category Value

The Drinking Water Threat - Targets Factor Category Value was calculated by summing the nearest intake (1) and population (2), and resource (5) factor values for the watershed as summarized below (Ref. 1, Section 4.1.2.3.4).

Calculation of Drinking Water Threat – Targets Factor Category Value: 1 + 2 + 5 =8

4.1.3.2 Human Food Chain Threat -- Waste Characteristics

4.1.3.2.1 Toxicity/Persistence/Bioaccumulation

Table 10 below summarizes the Human Food Chain Threat - Waste Characteristics Factor Values for PCBs present in the source at the SCSD Site (see Sections 2.2.2 and 4.1.2.1.1 of this HRS documentation record).

TABLE 10
HUMAN FOOD CHAIN THREAT - WASTE CHARACTERISTICS FACTOR VALUES

Hazardous Substance	Source No.	Toxicity Factor Value	Persistence Factor Value*	Bioaccumulation Factor Value*	Toxicity/ Persistence/ Bioaccumulation Value (Table 4-15)	Reference
PCBs	1	10,000	1.0	50,000	500,000,000	Ref. 2, p. B1-10

Note:
*Persistence factor value and bioaccumulation factor value for fresh water, because Lake St. Clair is a fresh water body, and therefore, the targets are in fresh water.

The hazardous substance having the highest toxicity/persistence/bioaccumulation value of 5×10^8 is for PCBs.

Toxicity/Persistence/Bioaccumulation Factor Value: 5×10^8 (500,000,000)

4.1.3.2.2 Hazardous Waste Quantity

Table 11 below summarizes the Hazardous Waste Quantity Value and the Containment Value for Surface Water for the source at the SCSD site (see Sections 2.2.2 and 4.1.2.1.1 of this HRS documentation record).

TABLE 11
HAZARDOUS WASTE QUANTITY VALUE AND
CONTAINMENT VALUE FOR SURFACE WATER

Source	Source Hazardous Waste Quantity Value*	Containment Value for Surface Water**
1. Other – Sewer pipes and contaminated soil surrounding sewer pipes	>0	10

Notes:
* - See Section 2.4.2.2 of this HRS documentation record
** - Ref. 1, p. 51610, Table 4-2

The source Hazardous Waste Quantity Value is unknown but greater than zero. According to Section 2.4.2.2 of the HRS, a minimum pathway hazardous waste quantity factor value of 100 was assigned based on that the hazardous constituent quantity is not adequately determined, and based on the Level II concentrations in the surface migration pathway (Section 2.4.2.2).

Hazardous Waste Quantity Factor Value: 100

(Ref. 1, p. 51591, Table 2-6)

4.1.3.2.3 Waste Characteristics Factor Category Value

4.1.2.2.3 Waste Characteristics Factor Category Value

The waste characteristics factor category value was assigned based on the waste characteristics product. The waste characteristics product is the product of the toxicity/persistence factor value and the hazardous waste quantity factor value (Ref. 1, Section 4.1.2.2.3). Values from the substance with the highest toxicity/persistence factor value for the watershed (PCBs) were used (Ref. 1, Section 4.1.2.2.3).

A hazardous waste quantity factor value of 100 was assigned as described above.

Toxicity/Persistence Factor Value: 10,000

Hazardous Waste Quantity Factor Value: 100

(Toxicity/Persistence x Hazardous Waste Quantity):

$10{,}000 \times 100 = 1.0 \times 10^6$

Bioaccumulation Potential Factor Value: 50,000

(Toxicity/persistence x hazardous waste quantity) x food chain bioaccumulation factor value: 5×10^{10} (Ref. 1, p. 51592)

$(1 \times 10^6) \times (5 \times 10^4) = 5 \times 10^{10}$

Waste Characteristics Factor Category Value: 320

(Ref. 1, p. 51592, Table 2-7)

4.1.3.3 Human Food Chain Targets

Level I concentrations for the Human Food Chain Threat were not evaluated.

The zone of actual contamination associated with the surface water pathway is bounded by sediment samples SD2 and SD3 collected from Lange Street Canal; SD5, SD6 and SD7 collected from Revere Street Canal, and SD26 collected from Lake St. Clair. All of these sediment samples meet observed release criteria (Refer to Section 4.1.2.1.1 of this documentation record). Lake St. Clair is considered a fishery; fish are caught for human consumption within the zone of actual contamination, based on interviews with persons who fish within this zone (Refs. 18, p. 1;19, pp. 9, 10; 34). Lake St. Clair also is used for boating, and swimming (Ref. 18, p. 1). The most likely source of human exposure to PCBs is through the eating of contaminated fish (Ref. 20, p. 11). The Michigan Department of Community Health (MDCH) has issued a Do Not Eat advisory for several fish species caught in Lake St. Clair because of PCB contamination (Refs. 20, pp. 11, 12; 21, p. 8; 22, p. 8).

4.1.3.3.1 Food Chain Individual

There are Level II releases of contaminants having a bioaccumulation factor of 500 or greater to Lake St. Clair, which is considered a fishery (see Section 4.1.3.3 of this HRS documentation record). The observed release has been established by the presence of hazardous substances in an observed release through chemical analysis (Ref. 1, p. 51620); therefore, a food chain individual factor value of 45 was assigned.

Food Chain Individual Factor Value: 45

4.1.3.3.2 Population

4.1.3.3.2.1 Level I Concentrations

Level I concentrations were not evaluated.

Level I Concentrations: NS

4.1.3.3.2.2 Level II Concentrations

An observed release of PCBs has been documented (see Section 4.1.2.1.1 of this HRS documentation record). Lake St. Clair is considered a fishery (Refs. 18, p. 1; 19, pp. 9, 10). The zone of actual contamination is bounded by sediment samples SD2 and SD3 collected from Lange Street Canal; SD5, SD6 and SD7 collected from Revere Street Canal and SD26 collected from Lake St. Clair. All these sediment samples meet observed release criteria (refer to Section 4.1.2.1.1 of this documentation record). Lake St. Clair also is used for boating, and swimming (Ref. 18, p. 1). The most likely source of human exposure to PCBs is through the eating of contaminated fish (Ref. 20, p. 11). The MDCH has issued a Do Not Eat advisory for several fish species caught in the Lake St. Clair because of PCB contamination (Refs. 20, pp. 11, 12; 21, p. 8; 22, p. 8; 23, p. 39). The fish caught in Lake St. Clair within the zone of contamination described above are utilized for human

consumption (Ref. 34, p. 1). While the exact amount is unknown, the amount of fish caught for consumption by humans within the zone of actual contamination is estimated to be greater than 0 pounds (Ref. 34, p. 1). As instructed in Section 4.1.3.3.2.2 and Table 4-18 of the HRS (Ref. 1 p. 51621), the human food chain population was assigned a value of 0.03.

Level II Concentrations: 0.03

4.1.3.3.2.3 Potential Contamination

Fisheries (the Detroit River) are present downstream of releases associated with the site (Ref. 19, p. 9); however, downstream fisheries were not included because they would not significantly impact the site score.

4.1.4 Environmental Threat

Sensitive environments (wetlands) are located within the TDL (Refs. 22, 23); however, these targets were not included because they would not significantly impact the site score.