

Chapter 6 Lake Superior

Chapter 6. Lake Superior

6.1. Deer Lake AOC, Marquette County, MI

Deer Lake AOC is in Marquette County, MI. The Deer Lake AOC includes the Carp River watershed, which is composed of Deer Lake, Carp Creek, and the Carp River downstream about 20 miles to Lake Superior in Marquette (see AOC map at end of chapter and in Appendix 1). Deer Lake was polluted with mercury from industrial activities (processing of gold ore in the 1880s and assaying test conducted on ore samples from another facility), leading to very high levels of mercury in the fish.

6.1.1. Hazardous Waste Sites Relevant to the Deer Lake AOC

ATSDR has evaluated the data for hazardous waste sites in Marquette County, MI, and reached conclusions regarding the public health threat posed by these sites. These conclusions, along with information regarding the type and location of the site, and the date and type of assessment document, are summarized in Table 6.1-A, for the one site in this AOC that had a public health hazard category of 1–3 at some time during its assessment history.

Table 6.1-A Hazardous Waste Sites in Marquette County, MI

<i>Site Name, City, and CERCLIS ID</i>	<i>ATSDR Document Type</i>	<i>Year of Document</i>	<i>ATSDR Hazard Category</i>	<i>Site Type</i>	<i>Remedial Status</i>
Cliff/Dow Dump, Marquette MID980608970	HA	1988	3	Deleted From NPL	Completed

3 = Indeterminate Public Health Hazard

HA = Public Health Assessment

Further evaluation of the data for this site was conducted by ATSDR in the public health assessment document listed in the table. This evaluation is discussed in the following subsection.

6.1.1.1 Cliff/Dow Dump

The 2-acre Cliff/Dow Dump, located in the city of Marquette, Marquette County MI, received wastes from the Cliffs-Dow Chemical Company, which manufactured charcoal at a facility 2 miles from the site.

Demographic Data: Demographic profile, from the 2000 U.S. Census, for vulnerable populations living within 1 mile of this site:

Children 6 years and younger	137
Females aged 15-44	808
Adults 65 and older	157

ATSDR Conclusions: In 1988 ATSDR concluded that although the site had not been characterized adequately to determine if offsite exposure to contaminants had occurred, the site

posed an *Indeterminate Public Health Hazard* (Category 3) because of presence of contaminants at levels of health concern. Since the time of ATSDR's assessment, the site had been remediated by the removal of waste and fill and replacement with clean fill. Natural attenuation of the groundwater contamination resulted in acceptable levels by 1997. The site was deleted from the NPL in 2000 and deed restrictions on the use of the site and groundwater have been removed.

IJC Critical Pollutants Identified within ATSDR Document: The IJC critical pollutants dibenzofurans and PAHs (including acenaphthalene, phenanthrene, and fluorene), as well as other contaminants previously discussed, were identified during ATSDR's assessment of exposure related issues. For a more complete listing of the hazardous substances that were found at this site, please refer to www.epa.gov/superfund/sites/npl/npl.htm.

6.1.2. TRI Data for the Deer Lake AOC

The TRI onsite chemical releases for Marquette County, MI, are summarized in Table 6.1-B. Total onsite releases in 2001 were 1,000,114 pounds, the majority of which were released to air, followed by releases to land.

IJC critical pollutants accounted for 3,214 pounds (0.3 %) of the total onsite releases. The IJC critical pollutants released were PCDDs and PCDFs (to air), lead and lead compounds (primarily to land) and mercury compounds (primarily to air and land). The facilities that released these pollutants are listed in Table 6.1-C.

The largest release (400,000 pounds) of non-IJC chemicals was of hydrochloric acid aerosols to air. The next largest releases (150,000–299,999 pounds) were of barium compounds (primarily to land) and hydrogen fluoride (to air).

6.1.3. NPDES Data for the Deer Lake AOC

The NPDES permitted discharges for Marquette County, MI are summarized in Table 6.1-D. The total average annual permitted discharges in 2004 were 360,104 pounds, the majority of which was ammonia nitrogen.

The IJC critical pollutant mercury (0.66 pounds) was permitted to be discharged. The facilities permitted to release this pollutant are listed in Table 6.1-E.

6.1.4. Summary and Conclusions for the Deer Lake AOC

6.1.4.1 Hazardous Waste Sites

The only hazardous waste site categorized by ATSDR in public health hazard categories 1-3 was associated with the IJC critical pollutants dibenzofurans and PAHs but has been completely remediated.

At present, contamination of fish with mercury and problems with sewage are of concern at this site as reported by USEPA (June 2004).

6.1.4.2 TRI Data

The TRI onsite chemical releases for Marquette County, MI, in 2001 were 1,000,114 pounds, the majority of which were released to air, followed by releases to land.

IJC critical pollutants accounted for 3,214 pounds (0.3 %) of the total onsite releases. The IJC critical pollutants released were PCDDs and PCDFs (to air), lead and lead compounds (primarily to land) and mercury compounds (primarily to air and land).

The largest release (400,000 pounds) of non-IJC chemicals was of hydrochloric acid aerosols to air. The next largest releases (150,000-299,999 pounds) were of barium compounds (primarily to land) and hydrogen fluoride (to air).

6.1.4.3 NPDES Data

The NPDES permitted discharges for Marquette County, MI are summarized in Table 6.1-D. The total average annual permitted discharges in 2004 were 360,104 pounds, the majority of which was ammonia nitrogen.

The IJC critical pollutant mercury (0.66 pounds) was permitted to be discharged. The facilities permitted to release this pollutant are listed in Table 6.1-E.

6.1.4.4 County Demographic Data

Vulnerable populations in Marquette County, MI, totaled 27,610.

6.1.4.5 Beneficial Use Impairments (BUIs)

There is a fish consumption restriction in the Deer Lake, AOC that has been established on the basis of mercury concentrations exceeding the 1.5mg/kg “do not consume” threshold established by the Michigan Department of Community Health. Currently, there is a possession ban for all fish from Deer Lake. Brook trout from Carp Creek and the Carp River may be consumed but consumption of other species from these sources is not advised. There are no consumption advisories for wildlife in the Deer Lake AOC. (<http://www.epa.gov/glnpo/aoc/>).

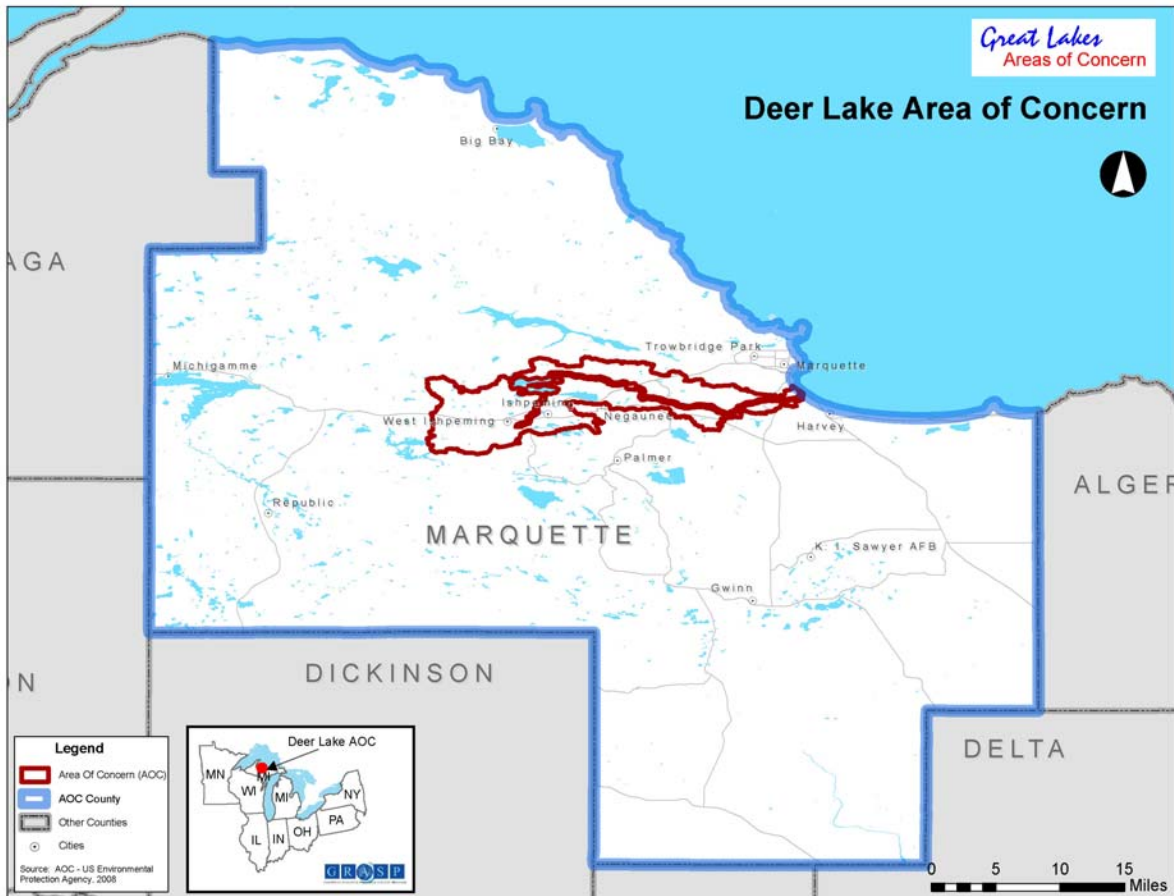


Table 6.1-B TRI Releases (In pounds, 2001) for the Deer Lake AOC

<i>Chemical</i>	<i>IJC Tracking Number</i>	<i>Total Air Emissions</i>	<i>Surface Water Discharges</i>	<i>Under-ground Injection</i>	<i>Releases to Land</i>	<i>Total Onsite Releases</i>	<i>Total Offsite Releases</i>	<i>Total On-and Offsite Releases</i>
DIOXIN AND DIOXIN-LIKE COMPOUNDS	2	0.00200214	No data	0	0	0.00200214	0	0.00200214
<i>(PCDDs and PCDFs)</i>	3							
LEAD	8	5.6	No data	0	0	5.6	0	5.6
LEAD COMPOUNDS	8	36.6	0	0	3012	3048.6	1084.3	4132.9
MERCURY COMPOUNDS	9	115.98	0.006	0	44.1	160.086	16.8	176.886
	Total IJC	158.1820021	0.006	0	3056.1	3214.288002	1101.1	4315.388002
BARIUM		0	No data	0	0	0	117000	117000
BARIUM COMPOUNDS		3000	30	0	260000	263030	0	263030
BENZO(G,H,I)PERYLENE		0	11	0	1.3	12.3	0	12.3
HYDROCHLORIC ACID (1995 AND AFTER 'ACID AEROSOLS' ONLY)		400000	No data	0	0	400000	0	400000
HYDROGEN FLUORIDE		190000	No data	0	0	190000	0	190000
MANGANESE COMPOUNDS		223	720	0	19000	19943	0	19943
NICKEL COMPOUNDS		130	0	0	8500	8630	0	8630
NITRATE COMPOUNDS		1000	No data	0	0	1000	0	1000
POLYCYCLIC AROMATIC COMPOUNDS		1.48	No data	0	7.546	9.026	0	9.026
SULFURIC ACID (1994 AND AFTER 'ACID AEROSOLS' ONLY)		62000	No data	0	0	62000	0	62000
VANADIUM COMPOUNDS		460	No data	0	44000	44460	0	44460
ZINC COMPOUNDS		86	230	0	7500	7816	118	7934
	Total Non-IJC	656900.48	991	0	339008.846	996900.326	117118	1114018.326
	Total	657058.662	991.006	0	342064.946	1000114.614	118219.1	1118333.714

Table 6.1-C TRI Facilities Releasing IJC Critical Pollutants Onsite for the Deer Lake AOC

<i>IJC Critical Pollutant</i>	<i>Number of Facilities</i>	<i>Facility Name</i>	<i>TRIF ID</i>	<i>City</i>
Dioxin and dioxin-like compounds (PCDDs and PCDFs)	1			
Marquette County, MI	1	PRESQUE ISLE POWER PLANT	49855PRSQS2701L	MARQUETTE
Lead and lead compounds	2			
Marquette County, MI	2	L-P GWINN STUDMILL	49841LPGWN650AA	GWINN
		PRESQUE ISLE POWER PLANT	49855PRSQS2701L	MARQUETTE
Mercury and mercury compounds	2			
Marquette County, MI	2	MARQUETTE BD OF LIGHT & POWER	49855MROTTEHAMP	MARQUETTE
		PRESQUE ISLE POWER PLANT	49855PRSQS2701L	MARQUETTE

Table 6.1-D NPDES Permitted Average Annual Discharges (in pounds, 2004) to Surface Water, Deer Lake AOC

<i>Chemical</i>	<i>IJC Tracking Number</i>	<i>Discharge</i>
MERCURY, TOTAL (AS HG)	9	0.66
	Total IJC	0.66
BERYLLIUM, TOTAL (AS BE)		12.78
NITROGEN, AMMONIA TOTAL (AS N)		332971.25
PHOSPHORUS, TOTAL (AS P)		26937
SELENIUM, TOTAL (AS SE)		73
VANADIUM, TOTAL (AS V)		109.50
	Total Non-IJC	360103.53
	Total	360104.19

Table 6.1-E NPDES Facilities Permitted to Discharge IJC Critical Pollutants, Deer Lake AOC

<i>IJC Critical Pollutant</i>	<i>Number of Facilities</i>	<i>Facility Name</i>	<i>NPDES</i>	<i>City</i>
Mercury	2			
Marquette County, MI	2	MARQUETTE WWTP	MI0023531	MARQUETTE
		NEGAUNEE WWTP	MI0021296	NEGAUNEE

6.2. Torch Lake AOC, Houghton County, MI

The Torch Lake AOC and its immediate environs, located on the Keweenaw Peninsula (Michigan's upper peninsula), includes the Keweenaw Waterway (North Entry Harbor of Refuge, Portage Lake, and Torch Lake), its watershed, portions of two other watersheds (Trout River and the Eagle River Complex), and several miles of western Lake Superior shoreline. The contaminant problem shared by these areas is copper mining waste materials. The largest and only waste site within the AOC is the western shore of Torch Lake (see AOC map at end of chapter and in Appendix 1). Information regarding this site is taken from the 1989 ATSDR public health assessment, the 1998 ATSDR health consultation, and the 2003 USEPA NPL fact sheet for the site.

6.2.1. Hazardous Waste Sites Relevant to the Torch Lake AOC

ATSDR has evaluated the data for hazardous waste sites in Houghton County, MI, and reached conclusions regarding the public health threat posed by these sites. These conclusions, along with information regarding the type and location of the site, and the date and type of assessment document are summarized in Table 6.2A, for the site that had a public health hazard category of 1-3 at some time during its assessment history.

Table 6.2-A Hazardous Waste Sites in Houghton County, MI

<i>Site Name, City, and CERCLIS ID</i>	<i>ATSDR Document Type</i>	<i>Year of Document</i>	<i>ATSDR Hazard Category</i>	<i>Site Type</i>	<i>Remedial Status</i>
Torch Lake, Houghton County	HA	1998	3	NPL	Completed
MID980901946	HC	1998	2		

3 = Indeterminate Public Health Hazard

2= Public Health Hazard

HA = Public Health Assessment

HC= Health Consultation

Further evaluation of the data for this site was conducted by ATSDR in the document listed in the table. These evaluations are discussed in the following subsection.

6.2.1.1 Torch Lake

Torch Lake, a 2,700 acre lake located in the Keweenaw Waterway, was heavily polluted by copper mining activities from the 1890s until 1969. These activities resulted in mill tailings (stamp sands) being dumped into the lake and on the shoreline. The tailings were then dredged up and processed with flotation chemicals (creosotes and xanthates) to reclaim the copper, after which the wastes were returned to the lake and the shoreline. Fish in the lake had a high incidence of tumors. The causative agent has not been identified. Information regarding this site is taken from the 1989 ATSDR public health assessment, the 1998 ATSDR health consultation, and the 2003 USEPA NPL fact sheet for the site.

Demographic Data: Demographic profile, from the 2000 U.S. Census, for vulnerable populations living within 1 mile of this site:

Children 6 years and younger

259

Females aged 15-44	516
Adults 65 and older	559

Public Health Outcome Data: The 1989 health assessment mentioned that the incidence of cancer deaths from 1970 to 1981 indicated that all but stomach cancer were at or below the state average for age-adjusted cancer mortality. ATSDR suggested that stomach cancer in this locale may be higher because of the predominantly Scandinavian descent of the population. Scandinavians have a high intake of salt and salted foods. Consumption of high levels of salt and salted foods is a risk factor for stomach cancer. Further details were not provided.

ATSDR Conclusions: In 1989, ATSDR categorized this site as an Indeterminate Public Health Hazard (Category 3). In 1998 ATSDR concluded levels of arsenic and the IJC critical pollutant lead in soil of some of the Brownfield properties posed a *Public Health Hazard* (Category 2) in the event of long-term exposure from incidental ingestion (arsenic), or pica behavior (lead) on the properties being considered for residential development. In 2006, USEPA (2006) reported that the Michigan Department of Natural Resources has not received any reports of fish tumors since 1993.

Remediation of the area has included removal of drums buried in piles of tailings on the shore and in the lake, as well as contaminated soil beneath the drums. About 800 acres of tailings and slag piles are being covered with soil and vegetation. This process was to be completed in 2004. Long-term monitoring of Torch Lake is in place and indicates that contamination levels are within safety standards.

USEPA reported (2006) that the Superfund program remedy consisted of covering almost 800 acres of tailings and slag piles with clean soil and vegetation to stabilize the soil. In September 2005, the Superfund program declared the site construction complete. Remediation of the approximately 480 acres of the Superfund site that were within the AOC was completed in 2002. This means that all planned remedial activities under the Superfund program have been completed.

IJC Critical Pollutants Identified within ATSDR Document: The IJC critical pollutant lead, as well as other contaminants previously discussed, were identified at this site during ATSDR's assessment of exposure related issues. For a more complete listing of the hazardous substances that were found at this site, please refer to www.epa.gov/superfund/sites/npl/npl.htm.

6.2.2. TRI Data for the Torch Lake AOC

The TRI onsite chemical releases for Houghton County, MI, are summarized in Table 6.2-B. Total onsite releases in 2001 were 487,148 pounds, all of which were released to air.

IJC critical pollutants accounted for only 0.332 pounds of the total onsite releases. The IJC critical pollutants released were lead and lead compounds (to air). The facilities that released these pollutants are listed in Table 6.2-C.

The largest release (408,000 pounds) of non-IJC chemicals was of ammonia (to air). No other chemicals release in quantities at least as large as 150,000.

6.2.3. NPDES Data for the Torch Lake AOC

The NPDES permitted discharges for Houghton County, MI are summarized in Table 6.2-D. The total average annual permitted discharges in 2004 were 9,490 pounds, all of which was

phosphorus. No IJC critical pollutants were the subject of permitted (quantity average limit) discharge amounts.

6.2.4. Summary and Conclusions for the Torch Lake AOC

6.2.4.1 Hazardous Waste Sites

The only hazardous waste site assessed in the public health hazard categories 1-3 by ATSDR was Torch Lake site. The more recent assessment for this site focused on Brownfields properties near the lake, and concluded that arsenic and possibly the IJC critical pollutant lead are present at levels of concern if some of the properties were to be developed residentially. Many of the Brownfield sites have been remediated and no longer pose a threat as reported by USEPA (June 2004).

Torch Lake, in the past, was directly impacted by the dumping of tailings into the lake and around the shoreline. The older ATSDR assessment noted that fish had high incidences of tumors in the past, and the etiologic agent was not known. Tumor incidences in fish have returned to normal.

Remediation has been conducted, and monitoring indicates that contamination levels are within safety standards. USEPA reported (2004) that exposure of residents to contaminants at this site (e.g.) pica ingestion by children) no longer existed. USEPA reported (2006) that since 1999 when Superfund remediation began, almost 800 acres of the Torch Lake Superfund site have been remediated. However, only a small portion of the 800 acres (approximately 480 acres) is located within the boundaries of the Torch Lake AOC.

6.2.4.2 TRI Data

The TRI onsite chemical releases for Houghton County, MI in 2001 were 487,148 pounds, all of which were released to air.

IJC critical pollutants accounted for only 0.332 pounds of the total onsite releases. The IJC critical pollutants released were lead and lead compounds (to air).

The largest release (408,000 pounds) of non-IJC chemicals was of ammonia (to air). No other chemicals were released in quantities as large as 150,000.

6.2.4.3 NPDES Data

The NPDES permitted discharges for Houghton County, MI are summarized in Table 6.2-D. The total average annual permitted discharges in 2004 were 9,490 pounds, all of which was phosphorus. No IJC critical pollutants were the subject of permitted (quantity average limit) discharge amounts.

6.2.4.4 Beneficial Use Impairments (BUIs)

The USEPA Website states a restriction on fish and wildlife consumption was documented in the 1987 Remedial Action Plan but was not updated. The advisory was limited to sauger and walleye in Torch Lake and announced April 1983. (<http://www.epa.gov/glnpo/aoc/>)

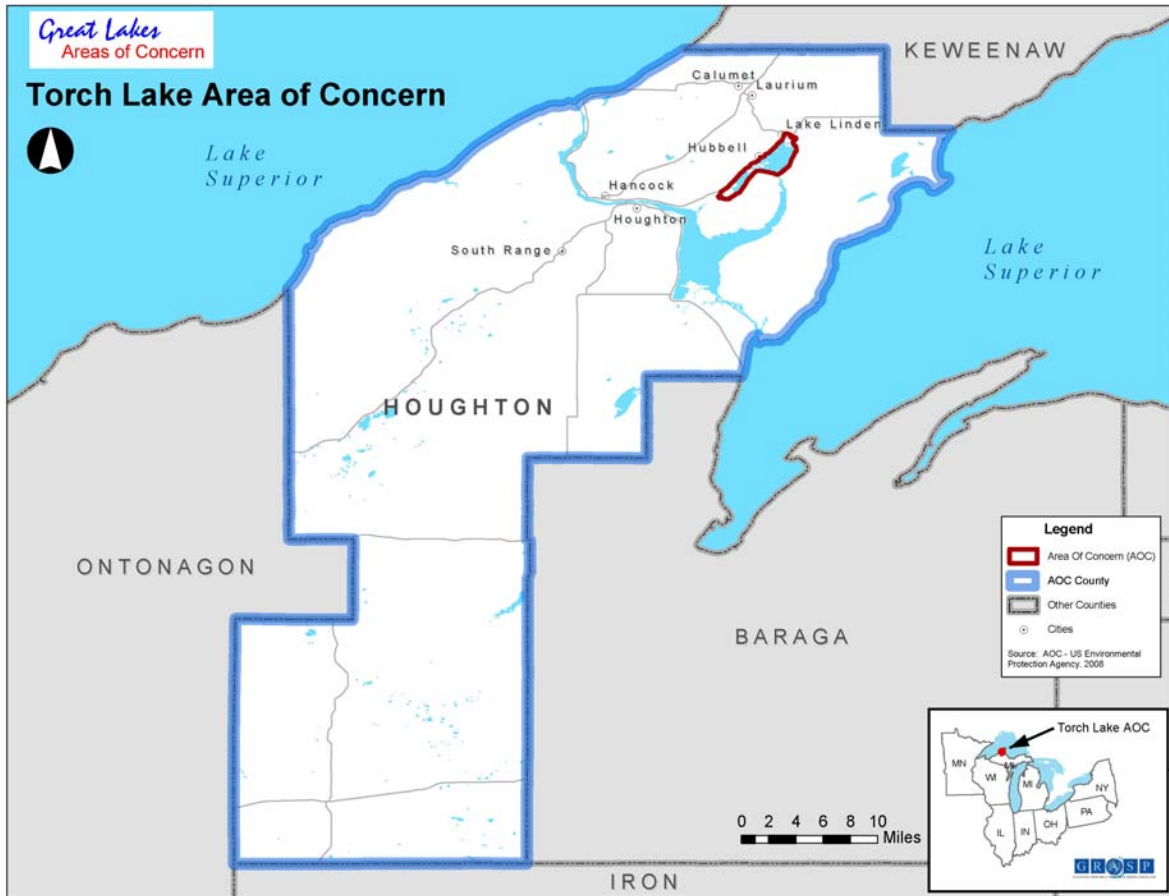


Table 6.2-B TRI Releases (in pounds, 2001) for the Torch Lake AOC

LEAD	8	0.3	No data	0	0	0.3	0	0.3
LEAD COMPOUNDS	8	0.032	No data	0	0	0.032	5.52	5.552
	Total IJC	0.332	No data	0	0	0.332	5.52	5.852
AMMONIA		408109	No data	0	0	408109	0	408109
COPPER COMPOUNDS		500	No data	0	0	500	59011	59511
METHYL METHACRYLATE		1398	No data	0	0	1398	0	1398
STYRENE		77141	No data	0	0	77141	0	77141
	Total Non-IJC	487148	No data	0	0	487148	59011	546159
	Total	487148.332	No data	0	0	487148.332	59016.52	546164.852

Table 6.2-C TRI Facilities Releasing IJC Critical Pollutants Onsite for the Torch Lake AOC

<i>IJC Critical Pollutant</i>	<i>Number of Facilities</i>	<i>Facility Name</i>	<i>TRIF ID</i>	<i>City</i>
Lead and lead compounds	2			
Houghton County, MI	2	CALUMET ELECTRONICS CORP.	49913CLMTL25830	CALUMET

Table 6.2-D NPDES Permitted Average Annual Discharges (in pounds, 2004) to Surface Water, Torch Lake AOC

<i>Chemical</i>		<i>PENINSULA COPPER INDS. INC.</i>	<i>49934PNNSL1700D</i>	<i>HUBBELL</i>
		IJC Tracking Number	Discharge	
		Total IJC	0	
PHOSPHORUS, TOTAL (AS P)			9490	
		Total Non-IJC	9490	
		Total	9490	

6.3. St. Louis River and Bay AOC, St. Louis and Carlton Counties, MN and Douglas County, WI.

The St. Louis River and Bay AOC is the 39 miles of the St. Louis River below Cloquet, MN (see AOC map at end of chapter and in Appendix 1).

6.3.1. Hazardous Waste Sites Relevant to the St. Louis River and Bay AOC

ATSDR has evaluated the data for hazardous waste sites in the counties relevant to this AOC, and reached conclusions regarding the public health threat posed by these sites. These conclusions, along with information regarding the type and location of the site, and the date and type of assessment document, are summarized in Table 6.3-A, for sites that had public health hazard categories of 1-3 at some point during their assessment history. (No waste sites in Carlton County, MN, were assessed by ATSDR.)

Table 6.3-A Hazardous Waste Sites in St. Louis and Carlton Counties, MN, and Douglas County, WI

<i>Site Name, City, and CERCLIS ID</i>	<i>ATSDR Document Type</i>	<i>Year of Document</i>	<i>ATSDR Hazard Category</i>	<i>Site Type</i>	<i>Remedial Status</i>
Arrowhead Refinery Co., St. Louis, Hermantown MND980823975	HA	1986	3	NPL	Completed
	HA	1993	2		
St. Louis River site, St. Louis, St. Louis County MND039045430	HA	1989	3	NPL	Ongoing
	HC	2001	2		
Koppers Co. Superior Plant, Douglas, Superior WID006179493	HC	2001	2	Non NPL	TBD
	HC	2003	3		
American Linen, Hibbing, St. Louis MND022817308	HA	2001	3	Non NPL	Ongoing

2 =Public Health Hazard, 3 =Indeterminate Public Health Hazard

HA = Public Health Assessment, HC =Health Consultation, SRU=Site Review and Update

Further evaluation of the data for the sites with Public Health Hazard Categories of 1–3 was conducted by ATSDR in the public health assessments and other health-related documents listed in the table. These evaluations are discussed in the following subsections.

6.3.1.1 Arrowhead Refinery Company

The 10-acre Arrowhead Refinery site is located about 8 miles northwest of Duluth in Hermantown, St. Louis County, MN. Prior to 1945, the facility re-tinned milk cans. From 1945 to 1977, Arrowhead Refinery recycled waste oil. In 1977, it was ordered to stop onsite dumping of a waste sludge from the oil refining process. Information regarding this site was taken from the 1993 ATSDR public health assessment, and the 2003 USEPA NPL fact sheet for the site.

Demographic Data: Demographic profile, from the 2000 U.S. Census, for vulnerable populations living within 1 mile of this site:

Children 6 years and younger	33
Females aged 15-44	82
Adults 65 and older	56

ATSDR Conclusions: In 1986, ATSDR categorized this site as an *Indeterminate Public Health Hazard* (Category 3) because of potential exposures to lead contaminated soil and waste sludge. In 1993, ATSDR assessed site-related exposures and concluded that the site is a *Public Health Hazard* (Category 2) because of the potential for health effects from future exposures if the site is not cleaned up. ATSDR also concluded that processes resulting from the onsite contamination have provided a mechanism for the mobilization and transport of manganese by groundwater at the site. In the past, residents with downgradient private wells may have been exposed to manganese at levels of health concern, but municipal water has been extended to downgradient residents near the site.

Since ATSDR's 1993 health assessment, the site have been fully remediated, including the excavation and treatment of sludge, excavation and offsite disposal of soils and sediments, and installation of groundwater extraction and treatment.

IJC Critical Pollutants Identified within ATSDR Document: The IJC critical pollutant lead, mercury, DDT, DDD, B[a]A, B[a]P, and chrysene, as well as other contaminants previously discussed, were identified at this site during ATSDR's assessment of exposure related issues. For a more complete listing of the hazardous substances that were found at this site, please refer to www.epa.gov/superfund/sites/npl/npl.htm.

6.3.1.2 St. Louis River Site

This site actually comprises two sites: the 255-acre St. Louis River/Interlake/Duluth Tar site and the 640-acre U.S. Steel site, located in western Duluth on the St. Louis River. The U.S. Steel site operated an integrated steel mill from about 1915 to 1979. There is extensive contamination of soil, surface water, and groundwater with coke and tar products, which contain high concentrations of PAHs. The Interlake Duluth Tar site was used by several companies for iron, steel, and tar manufacturing from the late 1800s until about 1960. This site also is extensively contaminated with PAHs. Information regarding this site is taken from the 1989 ATSDR public health assessment and the 2003 USEPA NPL fact sheet for this site.

Demographic Data: Demographic profile, from the 2000 U.S. Census for vulnerable populations living within 1 mile of this site:

Children 6 years and younger	417
Females aged 15-44	934
Adults 65 and older	756

ATSDR Conclusions: In 1989, ATSDR categorized this site as an *Indeterminate Public Health Hazard* (Category 3) because of the risk to human health from possible exposure to hazardous substances through dermal contact, ingestion, or inhalation of contaminated soil or sediments. In the 2001 health consultation, ATSDR concluded that the site is a *Public Health Hazard* because of the possibility of exposure to contaminated sediments.

This site appears to have contributed to the contaminant burden of the St. Louis River, particularly with regard to PAHs, and probably including IJC critical pollutant B(a)P. Offsite, methylmercury has contaminated fish. ATSDR recommended the cleanup of sediments and other remedial actions (e.g., dredging contaminated sediments) and evaluating human health risks for these remedial actions. Remedial actions have included the removal of sediments at this site. USEPA reports that remediation activities at this site included the removal of tar seeps, contaminated soil, and sediments; the solidification of wastes in-place, and capping contaminated areas. The need for additional remediation is being evaluated.

IJC Critical Pollutants Identified within ATSDR Document: The IJC critical B[a]A, B[a]P, I[123cd]P, DB[ah]A, chrysene, furans, dioxin, mercury, and hexachlorobenzene, as well as other contaminants previously discussed, were identified at this site during ATSDR's assessment of exposure related issues. For a more complete listing of the hazardous substances that were found at this site, please refer to www.epa.gov/superfund/sites/npl/npl.htm.

6.3.1.3 Koppers Company Superior Plant

The Koppers facility in the Town of Superior, Douglas County, WI, contaminated the Crawford Creek basin soils and sediments with chemicals related to wood treatment processes. Information regarding this site is taken from the 2003 ATSDR health consultation for the site.

ATSDR Conclusions: In 2002, ATSDR concluded that creosote wastes and PAHs in the soils and sediments of lower Crawford Creek pose a Public Health Hazard (Category 2). In 2003, ATSDR categorized the site as an *Indeterminate Public Health Hazard* (Category 3) for PCDD and PCDF contamination of fish. The Koppers facility has contaminated the Crawford Creek basin with PAHs, probably including the IJC critical pollutant B(a)P, and other creosote-related chemicals at levels of public health concern.

IJC Critical Pollutants Identified within ATSDR Document: The IJC critical dioxins, furans, B[a]A, B[a]P, B[b]F, chrysene, DB[a,h]A, and I[123cd]P, as well as other contaminants previously discussed, were identified at this site during ATSDR's assessment of exposure related issues.

6.3.1.4 American Linen

The site currently occupies a full city block, bordered on the north by railroad tracks, to the east by 6th Avenue East, to the south by 19th Street, and to the west by 5th Avenue East.

Commercial and industrial buildings occupy properties to the east and north (the Hibbing Public Utilities steam plant and warehouses).

AmeriPride began commercial laundry operations at the site in the early 1920s, occupying the building on the southeastern corner of the block. Three underground storage tanks (USTs), two containing fuel oil and one containing gasoline, were removed from the site in 1987.

During geotechnical drilling on the northeast portion of the site in 1994, petroleum contaminated soil was discovered. Approximately 1,400 cubic yards of soil previously removed from the site for geotechnical reasons was also suspected of being contaminated with petroleum products.

The results of the investigation showed that low levels of petroleum products remained in soil in the central portion of the site. Analysis of groundwater samples also showed detectable levels of petroleum products. Volatile organic compounds (VOCs), primarily tetrachloroethylene (also

known as perchloroethylene, or PCE), were also detected in soil and in groundwater at levels in excess of the MDH Health Risk Limit (HRL).

Demographic Data: The City of Hibbing in St. Louis County and has a population of 17,720, in an estimated 7,478 households (1998 estimates; MOP 2000). The site is located in a mixed use area, with commercial and industrial buildings to the east, north, and west, and residences to the south.

ATSDR Conclusions: Levels of VOCs in soil significantly exceed the MPCA's soil evaluation criteria for direct human contact. However, the contaminated soil is beneath the site building where the likelihood of human contact is minimal. The shallow groundwater beneath the site is grossly contaminated with PCE and its breakdown products, at levels significantly in excess of the HRLs. Levels of vinyl chloride, a known human carcinogen, are many hundreds of times its HRL. Concentrations of VOCs in the shallow groundwater have varied widely, with no clear upward or downward trend. Petroleum related VOCs also continue to be detected at the site, although analyses for GRO and DRO have not been conducted since 1997.

Indoor air samples collected using SUMMA canisters in the basements of the AmeriPride building and Hibbing Public Utilities plant show detectable levels of VOCs. Actual exposure to these levels of VOCs for an entire work day is likely not occurring given the reported and observed use of the basements. The source of some of the VOCs may be other processes or products in use at the two facilities. The potential migration of gaseous VOCs along utility lines and/or through soil into other neighboring businesses or residences has not been evaluated. For that reason the site represents an indeterminate public health hazard.

IJC Critical Pollutants Identified within ATSDR Documents: No IJC critical pollutants were identified at this site during ATSDR's assessment of exposure related issues.

6.3.2. TRI Data for the St. Louis River and Bay AOC

The TRI onsite chemical releases for St. Louis and Carlton Counties, MN, and Douglas County, WI, are summarized in Table 6.3-B. Total onsite releases in 2001 were 1,253,524 pounds, the majority of which were released to air, followed by releases to land. St. Louis County accounted for 37%, Carlton County accounted for 46%, and Douglas County accounted for 17% of the total onsite releases.

IJC critical pollutants accounted for 4,417 pounds (0.4 %) of the total onsite releases. The IJC critical pollutants released were PCDDs and PCDFs (to air and land), lead and lead compounds (to air and land), and mercury compounds (primarily to air). The facilities that released these pollutants are listed in Table 6.3-C.

The largest onsite release (300,000-499,999 pounds) of non-IJC chemicals was of methanol (to air). The next largest release category (150,000-299,999 pounds) also had only one chemical, barium compounds (primarily to land).

6.3.3. NPDES Data for the St. Louis River and Bay AOC

The NPDES permitted discharges for St. Louis and Carlton Counties, MN and Douglas County, WI are summarized in Table 6.3-D. The total average annual permitted discharges in 2004 were 3,468 pounds, the majority of which was phosphorus. No IJC critical pollutants were the subject of permitted (quantity average limit) discharge amounts.

6.3.4. Summary and Conclusions for the St. Louis River and Bay AOC

6.3.4.1 Hazardous Waste Sites

Four hazardous waste sites relevant to this AOC were evaluated by ATSDR as public health hazard categories 1–3. The IJC critical pollutant B(a)P [or total PAHs, probably including B(a)P], was a contaminant of concern at three sites, and in a completed exposure pathway (from soil and sediment) at three of the four sites. USEPA (2006) reported that sediment evaluation projects had been undertaken at this AOC under the Great Lakes Legacy Act.

St. Louis River site: This site (comprising two sites on the river) has not been completely remediated, and appears to have contributed significantly to the river's burden of contaminants, including B(a)P.

Koppers Co. Superior Plant: ATSDR was concerned that the levels of PCDDs and PCDFs in sediment of the nearby creek may bioaccumulate into fish at levels of concern. None of the site-related contaminants in the creek soil and sediments had been cleaned up as of the 2003 ATSDR health consultation.

Issues for Follow-Up

St. Louis River site: None of the site-related contaminants in the creek soil and sediments had been cleaned up as of March 2008.

6.3.4.2 TRI Data

The TRI onsite chemical releases for St. Louis and Carlton Counties, MN, and Douglas County, WI, in 2001 were 1,253,524 pounds, the majority of which were released to air, followed by releases to land. St. Louis County accounted for 37%, Carlton County accounted for 46%, and Douglas County accounted for 17% of the total onsite releases.

IJC critical pollutants accounted for 4,417 pounds (0.4 %) of the total onsite releases. The IJC critical pollutants released were PCDDs and PCDFs (to air and land), lead and lead compounds (to air and land), and mercury compounds (primarily to air).

The largest release (300,000-499,999 pounds) of non-IJC chemicals was of methanol (to air). The next largest release category (150,000-299,999 pounds) also had only one chemical, barium compounds (primarily to land).

6.3.4.3 NPDES Data

The NPDES permitted discharges for St. Louis and Carlton Counties, MN and Douglas County, WI are summarized in Table 6.3-D. The total average annual permitted discharges in 2004 were 3,468 pounds, the majority of which was phosphorus. No IJC critical pollutants were the subject of permitted (quantity average limit) discharge amounts.

6.3.4.4 Beneficial Use Impairments (BUIs)

Restrictions of fish consumption in Lake Superior and the St. Louis River have been issued by both Minnesota and Wisconsin based on mercury and polychlorinated biphenyl levels in fish tissue. Further information is available at the USEPA Web site (<http://www.epa.gov/glnpo/aoc/>).

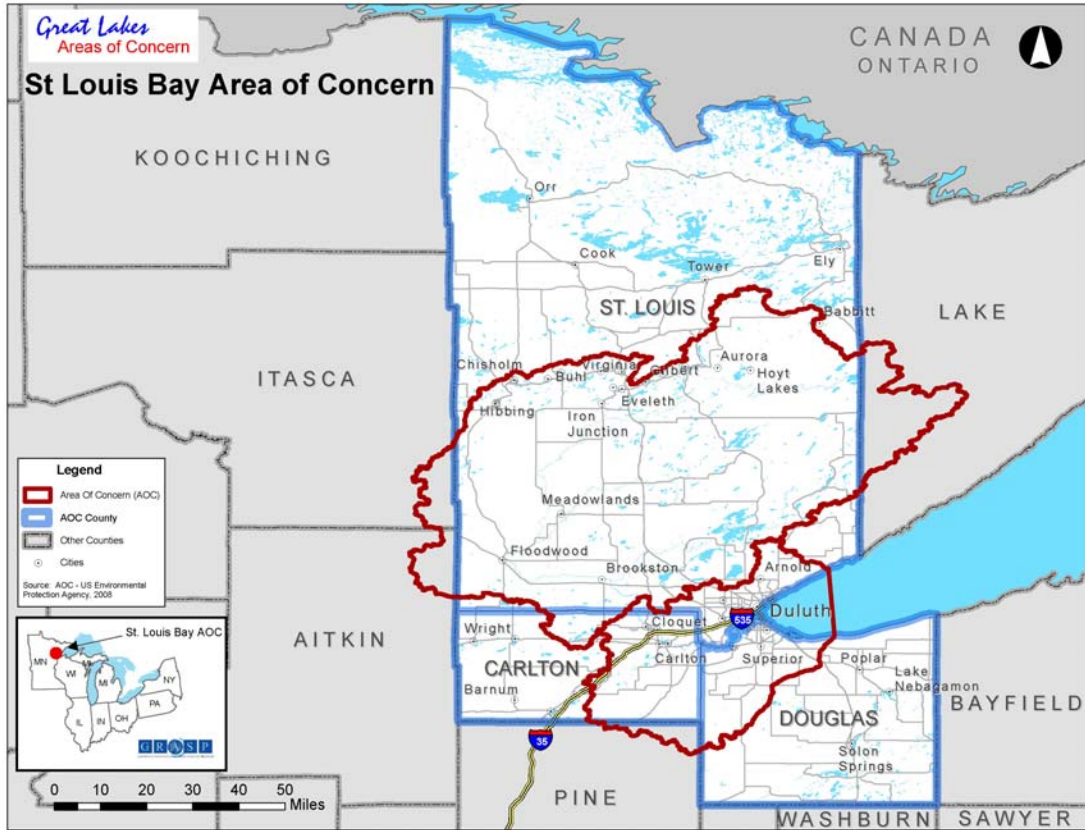


Table 6.3-B TRI Releases (in pounds, 2001) for the St. Louis River and Bay AOC

DIOXIN AND DIOXIN-LIKE COMPOUNDS	2	0.002014709	0	0	0.001554525	0.003569234	0	0.003569234
<i>(PCDDs and PCDFs)</i>	3							
LEAD	8	355.3	0	0	17	372.3	16.9	389.2
LEAD COMPOUNDS	8	224.21	0.1	0	3785	4009.31	3372.65	7381.96
MERCURY	9	1.59	0	0	0	1.59	0	1.59
MERCURY COMPOUNDS	9	28.6	0	0	5.1	33.7	9.6	43.3
Total IJC		609.7020147	0.1	0	3807.101555	4416.903569	3399.15	7816.053569
CHROMIUM		0	0	0	0	0	12189	12189
NICKEL COMPOUNDS		0	0	0	0	0	696	696
BENZO(G,H,I)PERYLENE		0.03	0	0	0.65	0.68	0.4	1.08
COPPER		1	0	0	0	1	21	22
CATECHOL		0	0	0	5	5	0	5
HYDROGEN FLUORIDE		5	0	0	0	5	0	5
BARIUM		10	5	0	0	15	1850	1865
CHROMIUM COMPOUNDS (EXCEPT CHROMITE ORE MINED IN THE TRANSVAAL REGION)		10	5	0	0	15	4104	4119
MOLYBDENUM TRIOXIDE		10	5	0	0	15	100	115
NICKEL		10	5	0	0	15	150	165

MALEIC ANHYDRIDE	66	0	0	0	66	0	66
ETHYLENE	68	0	0	0	68	0	68
1,2,4-TRIMETHYLBENZENE	140	0	0	0	140	0	140
POLYCYCLIC AROMATIC COMPOUNDS	90.2	0.1	0	52	142.3	29.7	172
PHENOL	250	0	0	0	250	0	250
CYCLOHEXANE	267	0	0	0	267	0	267
CHLORINE	500	0	0	0	500	0	500
NAPHTHALENE	500	0	0	0	500	0	500
PROPYLENE OXIDE	500	0	0	0	500	0	500
CRESOL (MIXED ISOMERS)	755	0	0	5	760	0	760
TRICHLOROETHYLENE	889	0	0	0	889	0	889
NITRATE COMPOUNDS	0	0	0	1072	1072	0	1072
CREOSOTE	1280	1	0	0	1281	320	1601
TOLUENE	1302	0	0	0	1302	0	1302
BENZENE	1303	0	0	0	1303	0	1303
PROPYLENE	2088	0	0	0	2088	0	2088
METHYL ETHYL KETONE	2346	0	0	5	2351	0	2351
N-HEXANE	2485	0	0	0	2485	0	2485
ACROLEIN	13700	0	0	0	13700	0	13700
CHLORINE DIOXIDE	17124	0	0	0	17124	0	17124
ETHYLBENZENE	26588	0	0	0	26588	0	26588
ACETALDEHYDE	44146	0	0	5	44151	0	44151

HYDROCHLORIC ACID (1995 AND AFTER 'ACID AEROSOLS' ONLY)	47557	0	0	0	47557	0	47557
FORMALDEHYDE	49963	0	0	5	49968	0	49968
MANGANESE COMPOUNDS	1461	15	0	89526	91002	41375	132377
XYLENE (MIXED ISOMERS)	114886	0	0	0	114886	0	114886
AMMONIA	123042	0	0	259	123301	0	123301
BARIUM COMPOUNDS	9441	12000	0	243059	264500	24599	289099
METHANOL	440294	0	0	0	440294	2033	442327
Total Non-IJC	903077.23	12036.1	0	333993.65	1249106.98	87467.1	1336574.08
Total	903686.932	12036.2	0	337800.7516	1253523.884	90866.25	1344390.134

Table 6.3-C TRI Facilities Releasing IJC Critical Pollutants Onsite for the St. Louis River and Bay AOC

<i>IJC Critical Pollutant</i>	<i>Number of Facilities</i>	<i>Facility Name</i>	<i>TRIF ID</i>	<i>City</i>
Dioxin and dioxin-like compounds (PCDDs and PCDFs)	1			
Carlton County, MN	1	Sappi Cloquet LLC (Formerly POTLATCH CORP.)	55720PTLTCNORTH	CLOQUET
Lead and lead compounds	11			
Carlton County, MN	1	POTLATCH CORP. MN P & P DIV.	55720PTLTCNORTH	CLOQUET
Douglas County, MN	2	CLM CORP.	54880CLMCRHILLA	SUPERIOR
		GEORGIA-PACIFIC CORP.	54880SPRRFNORTH	SUPERIOR
St. Louis County, MN	8	GEORGIA-PACIFIC CORP.	55816SPRWD14THA	DULUTH
		HIBBING PUBLIC UTILITIES COMMISSION	55749HBBNG1832S	HIBBING
		L & M RADIATOR INC.	55746LMRDT1414E	HIBBING
		LASKIN ENERGY CENTER	55705LSKNN5699C	HOYT LAKES
		ME GLOBAL INC.	55808MNTRN200EA	DULUTH
		NOBLE INDS. LTD.	55746HBBNG3430E	HIBBING
		NORTHERN CASTINGS CORP.	55746NRTHR555WE	HIBBING
		POTLATCH CORP.	55723PTLTCPOBOX	COOK
Mercury and mercury compounds	5			
Douglas County, MN	2	CLM CORP.	54880CLMCRHILLA	SUPERIOR
		MURPHY OIL USA INC.	54880MRPHY24THA	SUPERIOR
St. Louis County, MN	3	HIBBING PUBLIC UTILITIES COMMISSION	55749HBBNG1832S	HIBBING
		LASKIN ENERGY CENTER	55705LSKNN5699C	HOYT LAKES
		POTLATCH CORP.	55723PTLTCPOBOX	COOK

Table 6.3-D NPDES Permitted Average Annual Discharges (in pounds, 2004) to Surface Water, St. Louis River and Bay AOC

<i>Chemical</i>	<i>IJC Tracking Number</i>	<i>Discharge</i>
	Total IJC	0
CHROMIUM, HEXAVALENT TOT RECOVERABLE		47.45
CHROMIUM, TRIVALENT (AS CR)		573.05
PHENOLS		489.10
PHOSPHORUS, TOTAL (AS P)		1770.62
SULFITE (AS S)		587.65
	Total Non-IJC	3467.87
	Total	3467.87